

環境平衡教材套

ENVIRONMENTAL BALANCE PACK

SECONDARY SCHOOL  
ENVIRONMENTAL EDUCATION RESOURCE

中學環境教育教材

活動手冊

Activity Guide &  
Student Worksheets



世界自然基金會製作  
Produced by  
World Wide Fund For Nature Hong Kong



陶氏化學太平洋有限公司贊助  
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# 環境平衡教材套

# Environmental Balance Pack

中學環境教育教材

Secondary School Environmental Education Resource



世界自然(香港)基金會

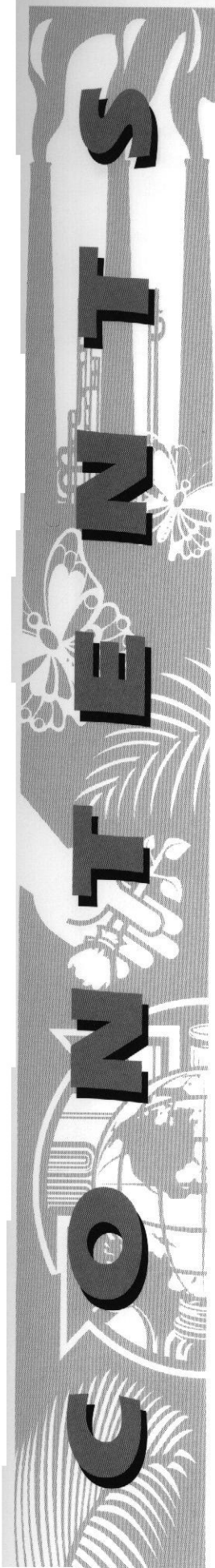
World Wide Fund For Nature Hong Kong

一九九九年五月 May 1999

本資料套以再造紙印製

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# WEB OF ISSUES

## Aim

This activity aims to guide the students by discovering the relationship between different environmental issues in Hong Kong through a webbing game.

Environmental issues are always complicated and inter-related with socio-economic issues. This exercise will help students understand the relationship between different issues and make the linkage visual. In the activity, students will first analyse charts and figures about the environment based on their current knowledge. Through discussion with classmates, they will recognize the inter-relationship between different issues and how they affect our lives.

## Level of study

Form 4 or above

## Time

30 minutes

## Resources

- Data Cards 1 to 10
- Tape
- Balls of wool or string (The number of balls needed is equal to the number of student groups formed.)

## Grouping

- For a class in which the number of students is a multiple of 10, divide the class into groups of 10 students.
- For a class with the number of students other than a multiple of 10, teachers can EITHER reduce the number of Data Cards used, for example, use only 9 cards for 3 groups of students for class size of 27.
- OR divide the students into groups of different size, for example, one group with 11 students, the other with 10 for a class size of 21.
- It is essential to include Card 1 in all groups.

## Procedures

1. Photocopy Data Cards according to the number of groups formed. Each group should have a set of Data Cards with the number of cards being equal to the number of students in the group.
2. Give each group a set of Data Cards for distribution to each group member. The card held by each student should be different from other members of his/her group.
3. Let the students have 5 minutes to analyse the charts shown on the cards and think about the questions raised on them.
4. Arrange members of each group in a circle. Let each student interpret his/her chart to members of the group in no more than 1 minute. Each



student should use tape to fix the card onto his/her chest after interpretation so that all members of the group can read the figure clearly.

5. Give each group a ball of wool or string. Starting from one student, he/she has to hold one end of the wool and pass the ball to another member of the group whose card shows a related issue. The student passing the wool/string has to explain the relationship at the time the connection is made.
6. As the activity continues, a spider's web of connections between the ten issues will be produced.

### **Potential**

The web of string formed in the activity offers a visual symbol of the interlocking/systematic nature of contemporary environmental issues. Throughout the discussion, it is helpful to keep the web intact. Class members can be encouraged to describe the web and reflect the connection they made during the exercise. Discussion of the absence of connections and a comparison of web formation by different groups can also be very productive.

### **Variations**

Woolly thinking is an ideal unit for exploring relationships between topics about which students already have some background knowledge. The topics used are open to considerable variation. For instance, this method has been widely used to illustrate food webs and other types of ecological interdependence.

### **Follow-up Activity**

Activity 2

# CAUSE AND EFFECT ANALYSIS

## Aim

This simple activity aims to guide students to formulate hypotheses by focusing on the population issue. Students will extend their scope of systematic thinking and recognize the value dilemma involved in environmental issues.

The activity stimulates students to brainstorm suggestions, formulate propositions, predict outcomes or consequences, and develop tentative explanations about environmental issues.

## Level of Study

Form 1 or above

## Time

30 minutes

## Resources

- Data Cards 1 to 10

## Groupings

Divide class into 4 groups.

## Procedures

1. Illustrate the logic of systematic thinking with a simple example. A schematic example about 'Developing Ecotourism at a Nature Reserve' is given in Figure 2. Start brainstorming about the pros and cons of the topic starting in the middle, and working out as many as possible the consequence for each branch.
2. Announce that the topic for the group exercise is 'Population Growth in Hong Kong'. Give each group a set of the Data Cards as reference information. Based on the reference materials and the group discussion, students have to work out their own systematic thinking chart for the issue. They should state both the pros and cons about each point, draw conclusions about the overall impact of population increases in Hong Kong, and make recommendations to address the problem. Ask the students to present their charts within one week after the briefing.
3. Let the students present their findings and allow members of the other groups to voice their opinions and make comments.

## Potential

Systematic thinking trains students to develop in a broader view rather than in a simple linear way. In the process of environmental education, it is important to make students understand the many different consequences sparked off by every single decision made. Class members should be encouraged to describe the dilemmas they come across in their problem analysis process. This activity enables us to be conscious of not only the benefit of the chosen measures but also to be aware of the negative impacts. One step further is to work out precautions to avoid negative impacts whenever possible.



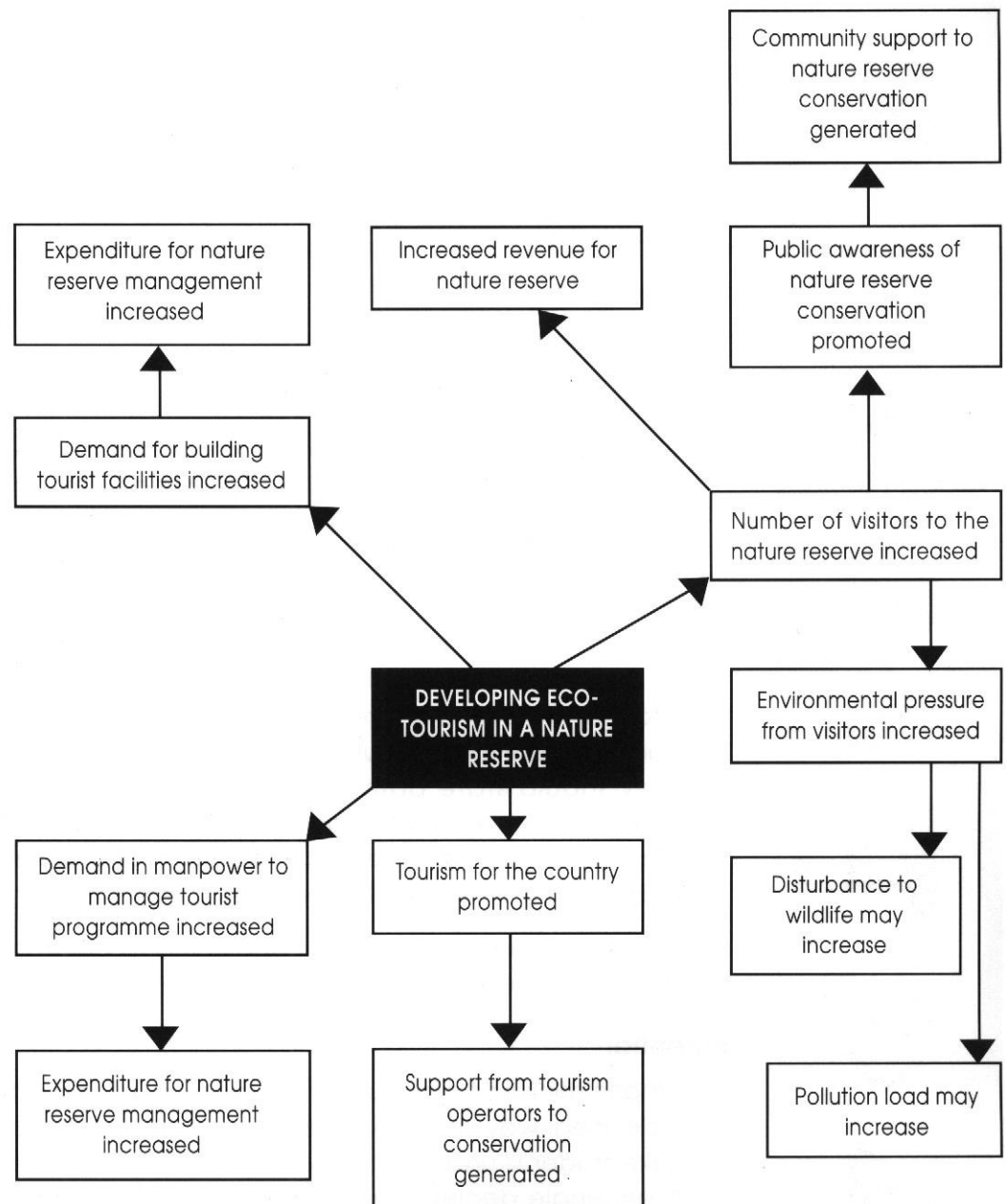
## Variations

Systematic thinking is an exercise to help people make conscious decisions with due consideration of all possible consequences. It can be applied to a wide variety of topics, ranging from simple daily decisions, like whether we should install paper recycling bins in schools, to government policy related issues.

### Follow-up Activity

### Activity 3

Figure 2 - Example of 'Developing Ecotourism at a Nature Reserve'



## CASE STUDY

### Aim

This activity aims to help students study and collect information about environmental issues through a case study of new town development in Hong Kong.

An urban environment with which the student is familiar is chosen as a case study in this activity. The activity process will bring reality to students' understanding of the importance of town planning in environmental conservation.

### Level of Study

Form 4 or above

### Part 1 – Case Study of New Towns in Hong Kong Time:

- 30 minutes for transparency presentation to tune in to the issue
- 2 weeks for student project work
- 1 hour for post-project presentation

### Resources

- Transparencies 1-10
- Information about New Town Development in Teachers' Guidebook

### Groupings

- Divide the students in groups of 4 to 8 students for project work.

### Procedures

1. Organize the students into groups of 4 to 8.
2. Use Transparencies 1 to 10 to conduct a presentation to illustrate the development of New Towns in Hong Kong. A suggested script for the transparency presentation is provided on P.48 for reference.
3. Four topics are proposed here for the student project. Teachers can decide whether to have all groups work on the same topic or to have each group work on a different one.
  - What are the major differences between the environment of a new town and an older urban area (for example, by comparing Mong Kok and Tai Po)? What is the importance of town planning?
  - How has the pattern of land use in the New Territories changed since the 1970s? What is the current trend? What government controls are in place, or planned, to regulate the use of the land?
  - Are there any environmental problems associated with new town development in Hong Kong? Give at least one example.
  - With reference to the forecast of a further increase by 1.6 million to the population within the next 15 years, what are the factors that will determine whether or not the overall situation with respect to the environment in the



New Territories deteriorates? How can we protect the environment so that Hong Kong remains a place which is fit to live in?

4. Photocopy and deliver the information provided in the Teacher's Guidebook to the students. The student notes provided on P.47 aims to remind students about the questions and let them know how to search for information.
5. Let the students have at least two weeks to prepare for the project presentation. Here are some procedures about how to organize the preparation work that you can recommend to the students.
  - Identify and refine the questions which need to be addressed under the project topic.
  - Identify what type of information is needed to answer the questions and locate the resources.
  - Draw up a plan for information gathering with a timeframe and, discuss work allocation among group members.
  - Collect data.
  - Organize the data to analyse the issue.
  - Draw up conclusions about for the issue and recommend solutions to the question.
  - Prepare and conduct the group presentation
  - Review the opinions and comments received during the presentation.
  - Submission of project report to teacher.
6. Conduct a group presentation session for students to exchange their findings and opinions. It is recommended to conduct the presentation after school and make it open for students of other classes to participate in.

### Potential

The case study will guide students to go through the process of organizing an environmental issue inquiry by themselves, which is an important and transferable skill for studying environmental issues. The discussion, and comparison of similarities and contrasts in the conclusions made by different groups in the presentation session can be very productive for value clarification and analysis. Students should be encouraged to consider if they can take any action to help solve the problems they have analyzed.

### Variations

The whole activity process will guide students to work from identifying an issue to considering social action, which is an important skill for solving environmental problems. The topics used are open to considerable variation. For instance, this method can be used to address environmental problems such as a traffic jam near the school, or boarder issues like the illegal trade in wildlife.

### Follow-up Activity

Activity 4 can be conducted either as an activity for students to collect information for project work or it can be conducted as a follow-up activity to enhance students' understanding of environmental issues and value establishment.



### THINK ABOUT THESE QUESTIONS IN YOUR CASE STUDY:

- What are the major differences between the environment of a new town and an older urban area (for example, by comparing Mong Kok and Tai Po)? What is the importance of town planning?
- How has the pattern of land use in the New Territories changed since the 1970s? What is the current trend? What government controls are in place, or planned, to regulate the use of the land?
- What are the environmental problems associated with new town development in Hong Kong? Give at least one example.
- With reference to the forecast of a further increase by 1.6 million to the population within the next 15 years, what are the factors that will determine whether or not the overall situation with respect to the environment in the New Territories deteriorates? How can we protect the environment so that Hong Kong remains a place which is fit to live in?



### Where can you find useful information for your project?

- You can visit environmental resource libraries or log in to the websites to collect information. The most efficient way to search for information is to decide what kind of information you need BEFORE you go ahead with the searching process!
1. WWF HK Island House Conservation Studies Centre (Please make advance telephone booking on 26520285);  
Address: Island House Lane, Tai Po, N.T.
  2. Environmental Protection Department Resources Library;  
Address: 213 Queen's Road East, Wanchai, Hong Kong



### Useful Websites:

Name of Department/Organisation	Homepage address
World Wide Fund For Nature Hong Kong	<a href="http://www.wwf.org.hk">http://www.wwf.org.hk</a>
Government Information Centre, HKSAR	<a href="http://www.info.gov.hk">http://www.info.gov.hk</a>
Environmental Protection Department, HKSAR	<a href="http://www.info.gov.hk/epd">http://www.info.gov.hk/epd</a>
Lands Department, HKSAR	<a href="http://www.info.gov.hk/landsd">http://www.info.gov.hk/landsd</a>
Planning Department, HKSAR	<a href="http://www.info.gov.hk/planning">http://www.info.gov.hk/planning</a>
Agriculture and Fisheries Department, HKSAR	<a href="http://www.info.gov.hk/afd">http://www.info.gov.hk/afd</a>
Territory Development Department, HKSAR	<a href="http://www.info.gov.hk/tdd">http://www.info.gov.hk/tdd</a>
Planning, Environment & Lands Bureau, HKSAR	<a href="http://www.pelb.gov.hk">http://www.pelb.gov.hk</a>

- You can collect MORE information by conducting a site visit, interviews, surveys, review news clippings, and analyse data, maps and statistics.
- Apart from presenting your findings with charts and words, why not ENRICH YOUR PRESENTATION with photos, slides, videos or an audio tape?

Do remember to make summary statements and recommend solutions to the problem you have studied.

**AS SECONDARY SCHOOL STUDENTS, WHAT CAN YOU DO TO HELP SOLVE THE PROBLEM?**



# New Town Development in Hong Kong

## No. Description

1. The population of Hong Kong was only 7,450 in 1841, which is less than the total number of residents living in one public housing estate nowadays. The population had increased to over 6.5 million in 1997. The population increase is due to both immigration and natural increase as the number of births exceeds deaths. Immigration is expected to be of increasing importance in the coming years. It is estimated that the population will further increase by 1.6 million within the next 15 years. (Figures for 1998 to 2016 are projections based on the 1996 Population By-census).
  2. Before the 1960s, the majority of the urban developments were concentrated along both coasts of Victoria Harbour on Hong Kong Island and the Kowloon Peninsula. Due to the rapid population increase and the scarcity of land available in the developed urban area, the government first adopted a decentralization policy to set up satellite towns like Kwun Tong in the 1960s. This then evolved into the New Town Development Policy.
  3. The development of new towns was accelerated after the "Ten-Year Housing Programme" was adopted in 1972. There are altogether nine New Towns in Hong Kong now. The total population of the New Territories increased by 1.23 million from 1987 to 1997, which is almost equivalent to the overall population increase in Hong Kong over the past ten years.
  4. The basic objectives of new town development in Hong Kong are to alleviate the problems of congestion in urban areas by decentralizing the population and to provide new areas for industrial development. As a result, although residential is a dominating land use type in the new towns, they provide over 40% of the industrial land in Hong Kong.
  5. New towns are subjected to comprehensive planning and land use types are comparatively better zoned than in the early developed urban areas. The improvement in the living environment is obvious when the planning of new towns is compared with that of the old urban areas.
  6. Even by comparing the environment in different generations of new towns, for example, by comparing Tin Shui Wan with Tsuen Wan, the improvement is still obvious.
  7. However, new towns are not exempt from environmental problems. The pollution of Tolo Harbour is one well known example which reflects the environmental deterioration related to New Town Development. After the development of Tai Po and Shatin New Towns, red tides occurred in Tolo Harbour regularly in the early 1980s and reached a peak in 1988, which not only imposed a serious impact on the marine ecology but also affected the daily life of residents living there. To help solve the problem, the Tolo Harbour Action Plan was introduced since 1995 and was fully implemented in 1997 to divert and discharge the sewage that comes from the two municipal treatment plants at Shatin and Tai Po to Victoria Harbour, instead of direct discharge into Tolo Harbour.
  8. The pattern of land use in the New Territories has been changing rapidly since the 1970s and development of the New Territories to meet the requirement of further population growth is stated as one main strategy in the Territorial Development Plan.
  9. As population continues to grow, what are the factors that will determine whether the overall situation with respect to the New Territories environment improves or deteriorates?
  10. What should be done to regulate the use of the land to cater for a rising standard of living and an ever increasing population but also to address the need to protect the environment so that Hong Kong remains a place which is fit to live in.
- Script for the transparency presentation is provided for reference only. Teachers are encouraged to modify the sequences and the script according to their own teaching needs.

**FIELD TRIP****Aim**

This activity aims to guide students to discover environmental problems related to urban development through a field trip activity.

Tai Po New Town is chosen as an example to illustrate the arrangement for this field trip activity. Teachers are recommended to choose a site near their schools to conduct this activity to stimulate students to discuss and recognize how the issue relates to and affects their lives.

**Level of Study**

Form 4 or above

**Time**

- 30 minutes for pre-trip briefing
- Half-day for field trip
- 1 week for student project work
- 30 minutes for post-trip discussion
- Teachers are advised to carry out a pre-trip site visit. A check list for the pre-trip arrangement is provided on P.54.

**Resources**

- Transparencies 1-15
- Student worksheet. The worksheet is provided as a reference material for students to prepare for the field trip. Teachers are recommended to choose the appropriate worksheet according to teaching needs.

**Groupings**

- Divide the students into groups of 4 to 8 students for project work. Assign one student per group as group leader for discipline control and to co-ordinate discussion during the field trip.

**Procedures**

1. Conduct a pre-trip visit, if you are not familiar with the chosen site.
2. Revise the route plan and worksheet based on the pre-trip findings. Here are some points that you have to consider in the pre-trip visit:
  - Does the site provide all the things that you plan to ask the students to study?
  - Does the site fit with the mode of transportation you plan to take?
  - Is a parking area available for the coach?
  - Is the place safe for your students to do on-site observations (if you plan to do so)?
  - Does the worksheet fit the situation of the site?



3. Decide the mode of transportation and make a reservation if necessary.
  4. Organize the students into groups of 4 to 8 and ask them to do a project about a new town in Hong Kong.
    - Use Transparencies 1 -15 to illustrate the focus of the field trip.
    - Script for presentation is given on P.52-53.
    - Tai Po New Town is chosen as an example of this activity and the following script for the transparencies is drafted based on the Tai Po situation.
  5. Conclude the presentation with the following focus areas for the field trip.
    - What are the basic facilities and land use types in a new town?
    - How to avoid conflicts between different land use types?
    - Are there any environmental problems in the field trip area?
    - Is the problem related to new town development?
    - Is there any legislation/facilities to control the problem? Why does the problem persist?
    - As secondary school students, what can we do to help solve the problem?
  6. Distribute the worksheets for students to prepare for the field trip.
  7. Remind the students about the safety rules of the field trip (Please refer to the field trip reminder).
  8. Remind the students to study the worksheet before the field trip.
1. Remind the students about the objectives of the field trip before the start.
  2. Ask the students to stay with the group they belong to throughout the field trip.
  3. Ask the students key questions (identified in the the student worksheet) at each stop to stimulate their thoughts and discussions.
  4. Make a brief summary of the field trip.
  5. Remind the students about the post field trip discussion.

### Teaching tips during the field trip

### Potential

The field trip provides an opportunity to discovery learning in the environment with a real life case study. The activity will help students to make sense of concepts through first hand experiences. Choice of a field trip area that the students are familiar with will also promote their understanding of and concern about the environment closely related to their daily lives.

### Variations

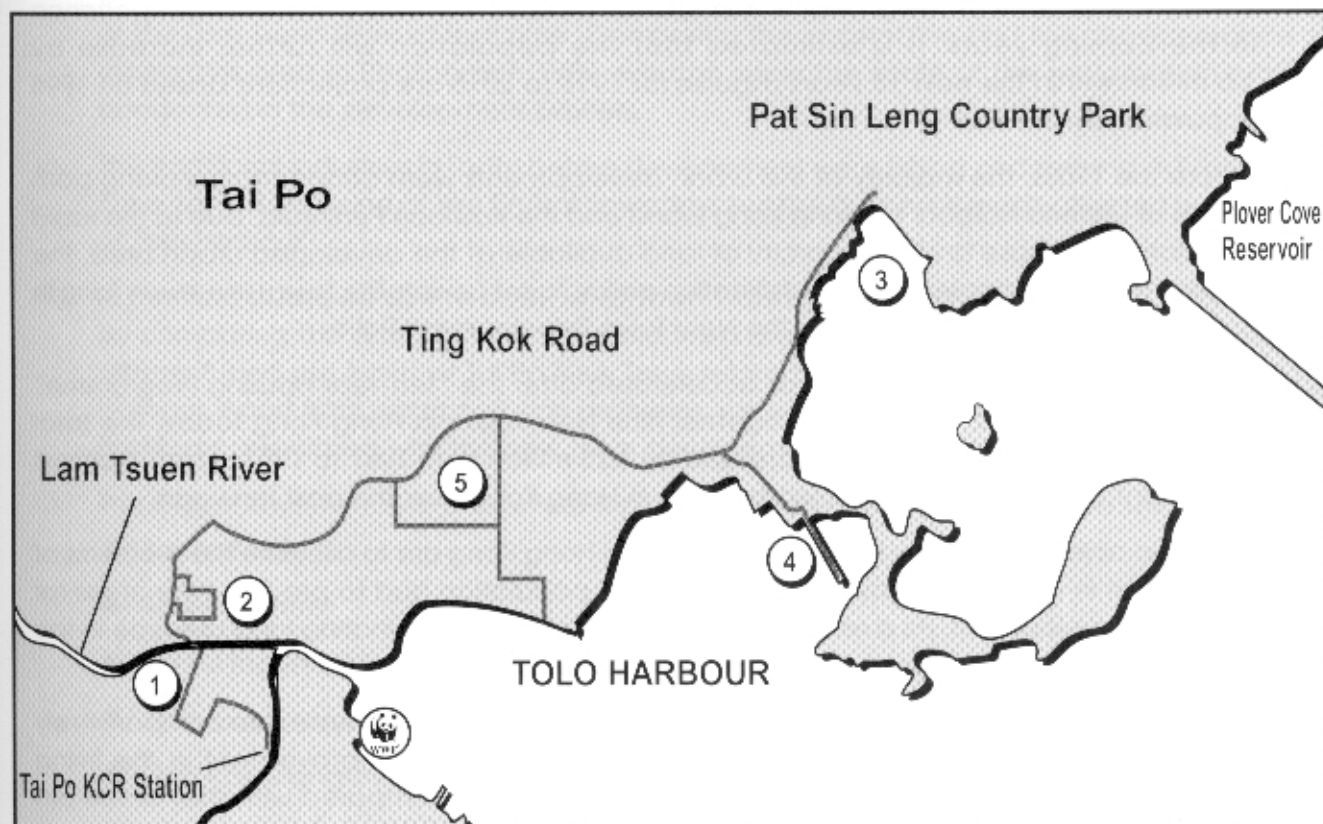
Tai Po New Town is chosen as an example to illustrate this field trip activity. Teachers can either adopt the plan suggested or modify the worksheet according to teaching needs.

- WWF HK Island House Conservation Studies Centre offers a Field Study Visit Programme around Tai Po New Town to secondary school students of Form 4 or above. Please contact our Education Officer on 2652 0285 should you need advice on preparing the field trip to a new town.

## Follow-up

Students should be recommended to present their findings to fellow students in school during assembly. This will not only offer presentation training opportunities for students but let the students use the information they have learnt to arouse environmental awareness in the school as a whole.

Figure 1 - Route for field study around Tai Po area



- |                     |  |
|---------------------|--|
| ① Tai Po Market     | ④ Yim Tin Tsai Mariculture Zone              |
| ② Tai Po Centre     | ⑤ Tai Po Industrial Estate                   |
| ③ Ting Kok Mangrove | WWF Island House Conservation Studies Centre |

## Pre-trip Briefing

### No. Description

1. The population of Hong Kong was only 7,450 in 1841, which is less than the total number of residents living in one public housing estate today. The population increased to over 6.5 million in 1997. The population increase is due to both immigration and a natural increase as the number of births exceeds deaths. Immigration is expected to be of increasing importance in the coming years. It is estimated that the population will further increase by 1.6 million within the next 15 years (Figures for 1998 to 2016 are projections based on 1996 Population By-census).
2. Before the 1960s, the majority of the urban developments were concentrated along both coasts of Victoria Harbour on Hong Kong Island and the Kowloon Peninsula. Due to the rapid population increase and the scarcity of land available at the developed urban area, the government first adopted a decentralization policy to set up satellite towns like Kwun Tong in the 1960s. This is then evolved into the New Town Development Policy.
3. The development of new towns was accelerated after the "Ten-Year Housing Programme" was adopted in 1972. There are altogether nine New Towns in Hong Kong today. The total population of the New Territories increased by 1.23 million from 1987 to 1997, which is almost equivalent to the overall population increase in Hong Kong over the past ten years.
4. The basic objectives of new town development in Hong Kong are to alleviate the problems of congestion in urban areas by decentralizing the population and to provide new areas for industrial development. As a result, although residential is a dominating land use type in the new towns, they provide over 40% of the industrial land in Hong Kong.
5. New towns are subjected to comprehensive planning and land use types are comparatively better zoned than in the early developed urban areas. The improvement in the living environment is obvious when the planning of new towns is compared with that of the old urban areas.
6. Even by comparing the environment in different generations of new towns, for example, by comparing Tin Shui Wan with Tsuen Wan, the improvement is still obvious.
7. However, new towns are not exempt from environmental problems. The pollution of Tolo Harbour is one well known example which reflects the environmental deterioration related to New Town Development. After the development of Tai Po and Shatin New Towns, red tides occurred in Tolo Harbour regularly in the early 1980s and reached a peak in 1988, which not only imposed a serious impact on the marine ecology but also affected the daily life of residents living there. To help solve the problem, the Tolo Harbour Action Plan was introduced since 1995 and was fully implemented in 1997 to divert and discharge the sewage that comes from the two municipal treatment plants at Shatin and Tai Po to Victoria Harbour, instead of direct discharge in to Tolo Harbour.
8. The pattern of land use in the New Territories has been changing rapidly since the 1970s and development of the New Territories to meet the requirement of further population growth is stated as one main strategy in the Territorial Development Plan.
9. As population continues to grow, what are the factors that will determine whether the overall situation with respect to the New Territories environment improves or deteriorates?



10. What should be done to regulate the use of the land to cater for a rising standard of living and an ever increasing population but also to address the need to protect the environment so that Hong Kong remains a place which is fit to live in?
11. We are going to study one of the new towns developed in the 1980s in our field trip, that is, the Tai Po New Town and the old town area of Tai Po. The current population of Tai Po new town is over 260,000, which has increased by 7 times in the past twenty years.
12. These two photographs, which were taken in 1972 and 1989, respectively, illustrate the scale of the Tai Po New Town development. Ting Kok Road, highlighted in Photograph 1972, was the original coastal road and there was a large area of mangrove located at the river mouth of the Lam Tsuen River at that time. Comparing the coastal line and the disappearance of mangrove area in Photograph 1989, we can assess the scale of the reclamation project conducted in the development process.
13. The traditional industries in Tai Po before development were fishing and farming. A Mariculture Zone can still be found at Yim Tin Tsai nowadays but the business is much affected by pollution of Tolo Harbour.
14. In this field study, we aim to study what Town Planning can do to improve the environment by comparing the environment of the old town area and the new town area and how the different land use types at Tai Po New Town related to the water pollution problem of Tolo Harbour. Apart from water pollution problems, we will also study the potential environmental problems associated with the new town development through this case study.
15. This map shows the route of our field trip. There are six check points that we will focus on:
  - Tai Po Market
  - Tai Po Centre
  - Tai Po Industrial Estate
  - Lam Tsuen River
  - Ting Kok Mangrove
  - Mariculture Zone

The whole trip will take four hours. Jeans and sportshoes are recommended.

**Other logistical arrangements like the means of transportation and meeting times are omitted from here.**

**Please refer to the Checklist for a Pre-trip briefing for details.**

*Source : The aerial photos for Transparency No.12 reproduced with permission of the Director of Lands,  
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# CHECK-LIST FOR PRE-TRIP SITE VISIT



## BEFORE GOING ON THE PRE-TRIP:

- Have you planned the route of the field trip? Is there an alternative route?
- It is advisable to plan at least two extra stops when you carry out the site visit. It will allow you more flexibility should you find any stops unsatisfactory after the site visit.
- Have you decided the means of transportation for the field trip? Where do you plan to stop and let the students study the area?
- You can choose to walk if the stops along the route planned are within walking-distance and it is safe to do so.
- You can consider using public transport if your class is of a manageable size and the field trip is not planned to be conducted during rush hours.
- You should consider hiring a school coach for the field trip if neither of the above two points is met. You have to consider the matter of parking while you plan the route.
- Have you got enough information and photographs for the pre-trip briefing?
- If not, find out what you are missing. Bring along your camera and check in advance if you can collect more information from the District Office.



## DURING THE PRE-TRIP, YOU HAVE TO:

- Keep a record of the time taken for different activities and check out the time you need.
- Collect information and take photographs in case of need.
- Potential hazards at the field trip site should be identified. Omit the stop if necessary.
- Record places where there are potential dangers (for example, busy traffic). Remind students of the need for safety precautions in the pre-trip briefing and during the field trip.
- Confirm the travel route to make it the most time-efficient, but also ensure that the stops are in sequence.
- Record on the route map where parking areas are available.
- Record the location where students have to get down from the vehicle to do field work.



## PLANNING AND PREPARATION FOR THE FIELD TRIP

Teachers are strongly recommended to refer to the following documents for detailed guidelines and official procedures that should be taken when organizing field trips.

- *Guidelines on Outdoor Activities*, issued by the Education Department in 1996.
- School Miscellaneous Circular captioned *Organized Visits for School Children: Safety Precautions* which is issued by the Education Department at the beginning of each school year.

# STUDENT WORKSHEET

## CASE STUDY AROUND TAI PO NEW TOWN – TOWN PLANNING –

### INTRODUCTION

Tai Po, which lies at the head of the south-western arm of Tolo Harbour, owes its origin to the fishing and farming industries. The town was an important market centre for the New Territories but it was not until the 1960s that major expansion occurred. At this time, the land between Tai Po Market and the District Office was developed in accordance with a plan prepared by the Town Planning Office of the Public Works Department, the new development being known as the Tai Po Centre Area.

Tai Po was one of the sites chosen by the Government in 1972 for the Ten-Year Housing Scheme development. At that time, it was expected to develop Tai Po to accommodate only 33,000 people. In 1974 a decision was taken that Tai Po should be the site for the development the first purpose-built industrial estate in Hong Kong. As a result of a major revision in the public housing programme, the status of Tai Po was then up-graded to that of a New Town in January 1979. The current population of Tai Po New Town exceeds 260,000.



### What to do?

Imagine your role was to produce a plan for the early stage of development of Tai Po New Town. You have to produce a plan to include the following land use types:

1. Public housing area covering an area of 74ha.
2. Commercial/Residential area of 200 ha.
3. Community facilities\* covering an area of 90 ha
4. An industrial estate covering an area of 70 ha.
5. District open space covering an area of 50 ha.

\*Community facilities include a wide array of infrastructural development such as schools, hospitals, transportation, Fire services and Police Stations.



### Other Information:

- You are allowed to reclaim 300 ha of land from the sea.
- You do not have to locate the land use types at places where there are no existing buildings. You can compulsorily purchase land and buildings in order to obtain the necessary sites for the various schemes.
- The plan should make the best use of the land but must also try to avoid as much conflict as possible.



### Procedures

1. Study each planned landuse and on a large scale plan drafted by yourself, sketch how the area will look.
2. Study the plans carefully and write out the location requirements for each of the five land use types.

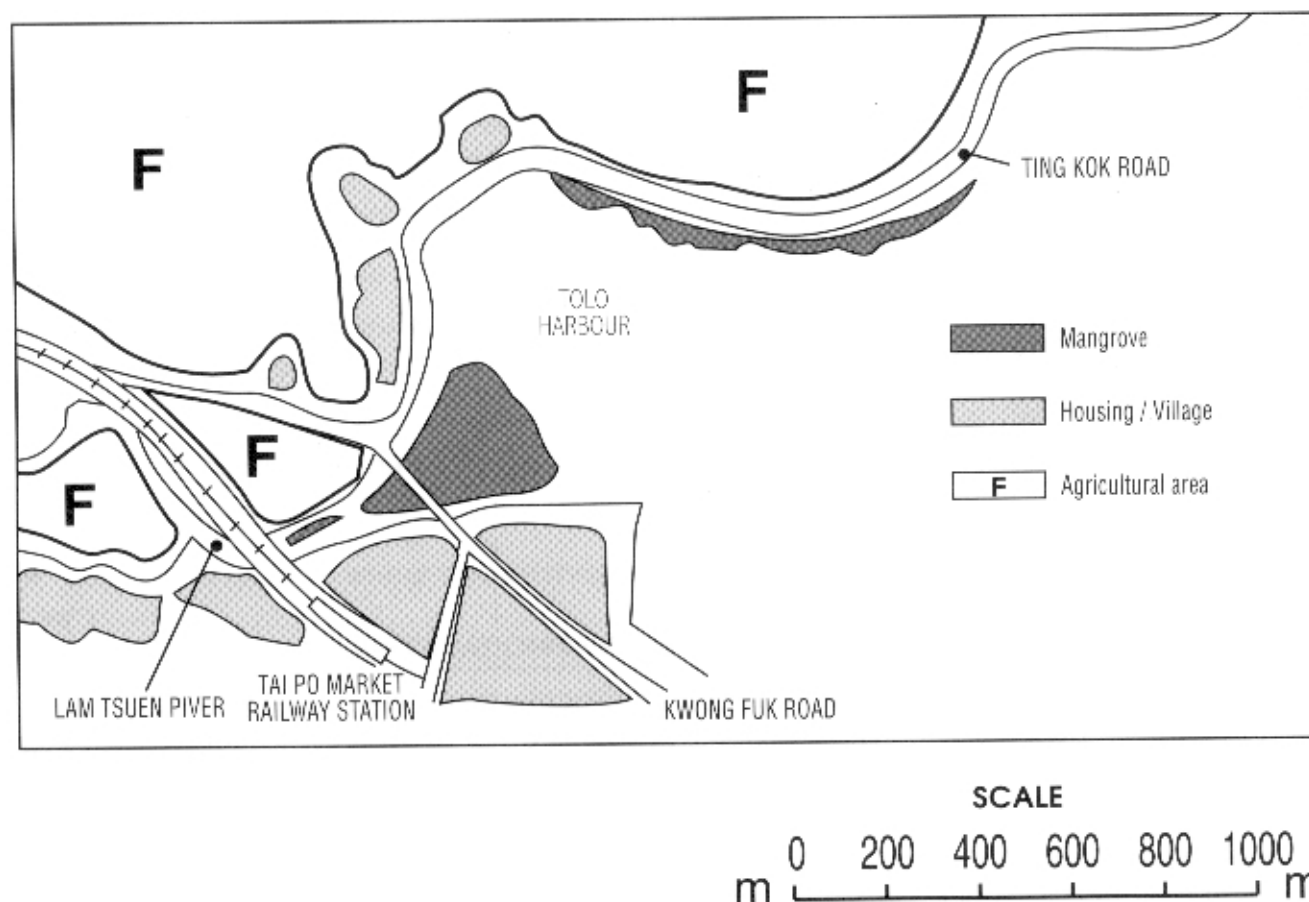


3. Study the map of Tai Po (Figure 1). You have to locate the various landuses within the area of the map.
4. Mark the following things clearly on the map:
  - The coastline
  - The main roads
  - Accurate locations of the five additional land use types
5. Give detailed reasons why each particular site is chosen.

Answer the following questions by studying your plan and the original map of Tai Po (Figure 1),

- What conflicts would occur if your plan was accepted?
- What should be done to minimize such conflicts?
- Compare your plans with those of a classmate. What are the differences between your plans? Discuss why there are such differences?
- Observe the land use zoning at Tai Po New Town carefully during your field trip and see if there is any difference to the plan you developed.

Figure 1 - Map of Tai Po in 1972



# STUDENT WORKSHEET

## CASE STUDY AROUND TAI PO NEW TOWN - RESIDENTIAL AREA -

### Background Information

Name of the site : Tai Po Centre and Tai Po Market

Date of visit :

Time :

Weather : Sunny/Cloudy/Rainy

### INTRODUCTION

One objective for new town development was to alleviate the problem of congestion in the old urban areas of Kowloon and the northern shore of Hong Kong Island by decentralizing the population to the New Territories. Therefore, residential land use is a dominant land use type in new towns.

Tai Po New Town started to be developed in the 1970s. The population of the new town has increased from less than 25,000 to over 260,000 in less than twenty years. You are going to compare the environment of two residential areas, Tai Po Centre, which has been developed under the New Town Plan, and Tai Po Market, which is an old town area developed before Tai Po was designated as a new town. Compare the environmental quality and features of the two areas and study how town planning affects the development of residential areas.



### THINK ABOUT THESE QUESTIONS BEFORE THE FIELD TRIP

- What should be planned to attract people to move to a new town?
- What kind of community facilities need to be built for new town development?
- What kind(s) of land use conflict with residential land use?
- What are the potential impacts associated with urbanization?



### WHAT TO DO?

1. Compare the socio-economic facilities and zoning of different land uses in the old and new town areas by recording your observations in Table 1.
2. Answer the following questions after the field trip:
  - Which of the two areas, Tai Po Market or Tai Po Centre, provides a better living environment? Why?
  - Are there any environmental impacts associated with the growth of the population of Tai Po New Town? What are they?
  - Do you think the overall environmental quality of the site is better or getting worse after the development of the residential area? Please explain why there is a change in environmental quality and state possible remedies.

For items marked with '\*\*', please rank the degree of satisfaction according to this scale of rating:



= Excellent



= Good



= Fair



= Poor

- the rank is decided by your subjective judgement. For open questions, please fill in the blank and tick the appropriate options whenever options are provided.

Items for Comparison	Old Area				New Area			
General appearance								
Choose a building which belongs to the most commonly seen style of the area.								
Dirt on the external wall of building*								
Visible drain pipes outside the building*								
Number of storeys of residential buildings								
Approximate age of residential buildings								
The distance between this building and its nearest neighbour								
	metre				metre			
Facilities								
Shopping place (variety/convenience/cleanliness)*								
Market place (variety/convenience/cleanliness)*								
Recreational facilities - indoor (eg. library, cultural centre)*								
Recreational facilities - outdoor (eg. swimming pool, parks)*								
Schools (facilities and environment)*								
Transport								
Bus services and bus stops (frequency/accessibility/safety)*								
Connection with MTR/KCR/LRT*								
Road safety (clear road sign, traffic lights)*								
Traffic flow*								
Car-parking space*								
Have you spotted any illegal parking?	Yes/No				Yes/No			
Environmental Quality								
Green area*								
Cleanliness of road (Littering/rubbish bins/recycling bins)*								
Is there any open drainage?	Yes/No				Yes/No			
Garbage Collection/Transfer Station (Tidiness/disturbance to nearby residents) *								
Is there any trace of visible pollution? If yes, record the type of pollution here:	Yes/No				Yes/No			
Is there any visible source of pollution? If yes, record the source here:	Yes/No				Yes/No			



# **STUDENT WORKSHEET**

## **CASE STUDY AROUND TAI PO NEW TOWN – INDUSTRIAL AREA –**

### **Background Information**

Name of the site : Tai Po Industrial Estate

Date of visit :

Time :

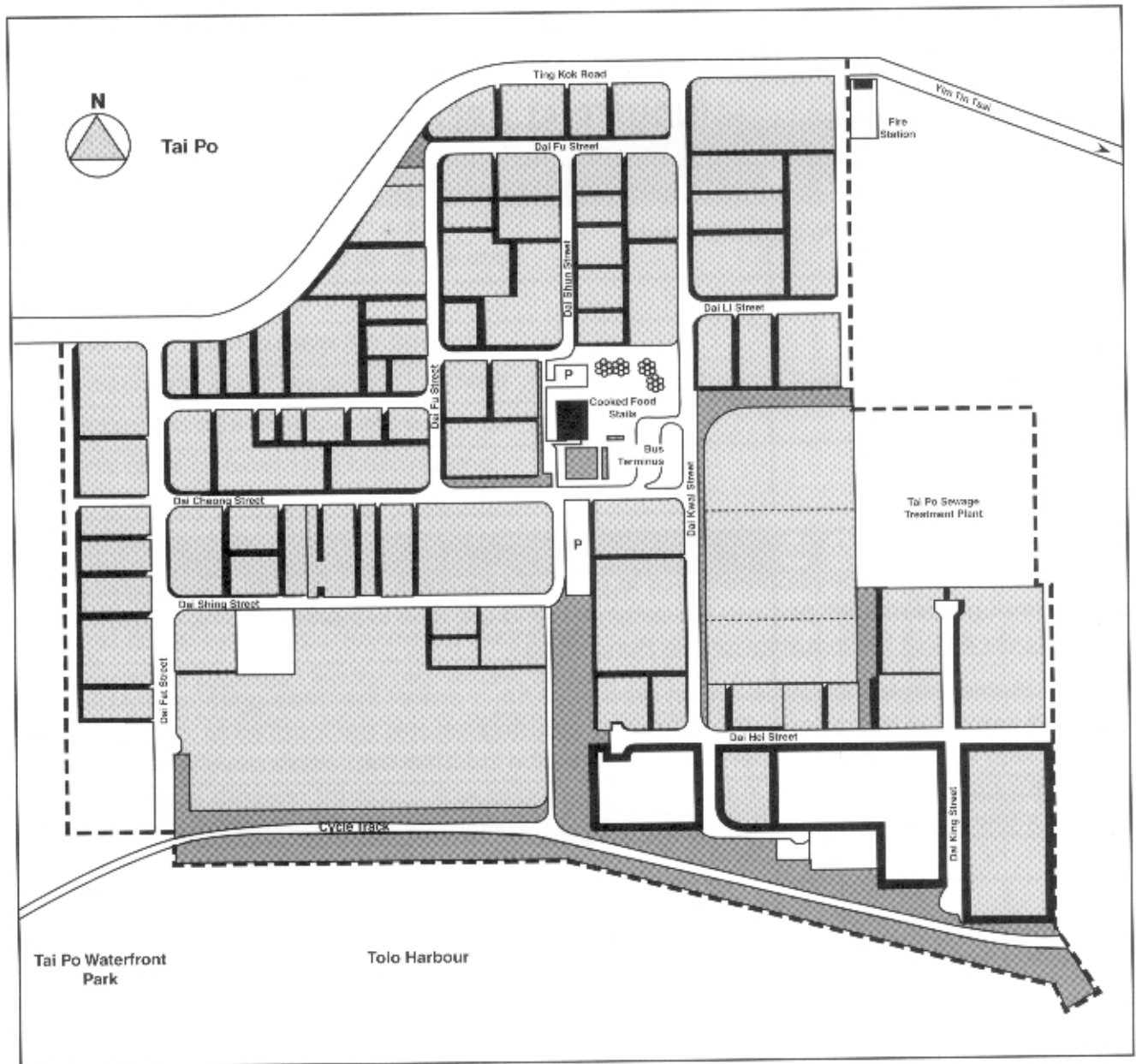
Weather : Sunny/Cloudy/Rainy

### **INTRODUCTION**

Besides alleviating the problem of population congestion in existing urban areas, another main objective of new town development was to provide new areas for industrial development. As a result, although residential land use is a dominant land use type in the new towns, the new towns provide over 40% of the industrial land in Hong Kong.

Tai Po Industrial Estate, which covers an area of 73 ha, is one of the three government planned industrial estates in Hong Kong. The other two industrial estates are located at Yuen Long and Tseung Kwan O. In contrast to other industrial areas, the industrial estates are developed to provide for those industries with new or improved technologies which cannot operate in existing multi-storey factory buildings.

Figure 1 - Map of Tai Po Industrial Estate





## **THINK ABOUT THIS BEFORE THE FIELD TRIP**

- If you were a industrial developer, what factors would you consider in the choice of a site for development?
- If you were an employee, what would you consider as criteria to judge the quality of the working environment?
- What are the potential environmental impacts caused by industrial development?
- What are the possible ways to reduce environmental impacts caused by industrial development?

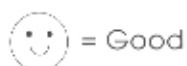


## **WHAT TO DO?**

1. Record your observations of Tai Po Industrial Estate in Table 1.
2. After the field trip, answer the following questions:
  - If you were an industrial developer, would you think Tai Po Industrial Estate a good place for development? Why/Why not?
  - If you were an employee working at the Tai Po Industrial Estate, do you think it offers a good working environment? Why/Why not?
  - What are the major differences between the Tai Po Industrial Estate and the older industrial areas like Kwun Tong or Kwai Chung? Why is there a difference in environmental quality?
  - Is there any visual environmental impact caused by the Industrial Estate to the nearby residents? Why?
  - What do you think are the most effective ways to solve the conflicts between industrial land use with other land use types like residential land use?
  - How can the environmental friendliness of an industrial area be improved?
  - Is a plan for development important for building a better working and living environment?



Record the environment quality of the industrial area by filling in the following table. For items marked with '\*\*', please tick the appropriate box using the following scale rating:



- the rank is decided by your subjective judgement. For open questions, please fill in the blank and tick the appropriate options whenever options are provided.

Items	Answer
<b>General appearance</b>	
Choose a building which belongs to the most commonly seen style of the area.	
Dirt on the external wall of the building*	
Visible drain pipe in the industrial area*	
Number of storeys of the building*	
Approximate age of industrial building*	
The distance between this building and its nearest neighbour	metre
The distance between the industrial area and the nearest residential area	metre
Please list three most dominant types of industry:	
<b>Facilities</b>	
Fire Service	Yes/No
Water treatment facilities	Yes/No
Recreational/Green Area	
Restaurants/Canteen	
<b>Transport</b>	
Bus services and bus stops (frequency/accessibility/safety)*	
Connection with MTR/KCR/LRT*	
Traffic flow*	
Road safety (clear road sign, traffic lights)*	
Width of road	
Car-parking space*	
Have you spotted any illegal parking?	Yes/No
<b>Environmental Quality</b>	
Green area*	
Cleanness of road (Littering/rubbish bins/recycling bins) *	
Waste Collection/Transfer Station*	
Is there any residential building near the industrial area?	Yes/No
Does the industrial area create any possible disturbance to the nearest residents?	Yes/No
Please record:	
Is there any trace of visible pollution caused by the industries?	Yes/No
If yes, please record:	

# STUDENT WORKSHEET

## CASE STUDY AROUND TAI PO NEW TOWN - RIVER POLLUTION -

### Background information

Name of the river : Lam Tsuen River

Date of visit :

Time :

### INTRODUCTION

As part of the new town development, the lower course of the Lam Tsuen River has been re-routed and elongated to fit in with the reclamation work. The mangrove habitat formerly located at the Lam Tsuen River estuary was removed in the early 1980s. Drainage work has been done in the urban areas to reduce the risk of flooding.

The water quality of the Lam Tsuen River is monitored by the Environmental Protection Department and the Water Quality Index (WQI)<sup>(a)</sup> of the Lam Tsuen River (Figure 1) reflects that there has been a gradual improvement in water quality. The improvement in river quality is mainly due to improved pollution control under the Water Pollution Control Ordinance (enacted in 1980 and amended in 1990) and the Waste Disposal Ordinance (enacted in 1987 and amended in 1994) which control the disposal of livestock and chemical wastes. The keeping of livestock in urban areas and new towns has been banned since 1988, and strict controls have been enforced in the Tolo Harbour catchment. These have significantly contributed to a reduction in the pollution load of the Lam Tsuen River (Figure 2).

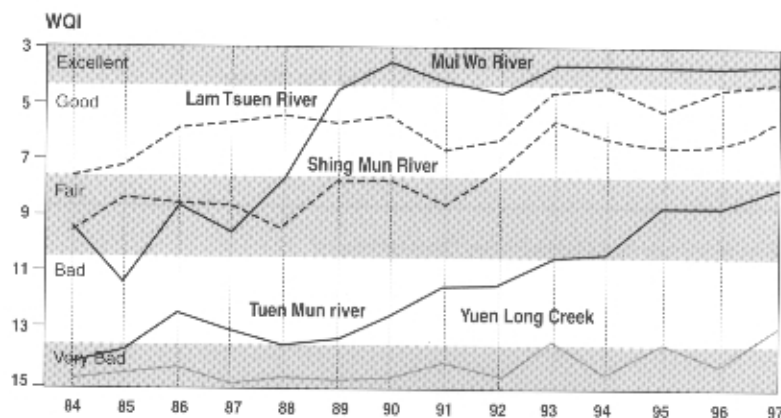
<sup>(a)</sup> *Water Quality Index (WQI): The Water Quality Index is a numerical value which is used to summarize the state of river water quality. The index is calculated from the water quality measurements of dissolved oxygen (DO), 5-day biochemical oxygen demand (BODs), and ammonical nitrogen (NH<sub>3</sub>-N).*



### THINK ABOUT THESE QUESTIONS BEFORE THE FIELD TRIP

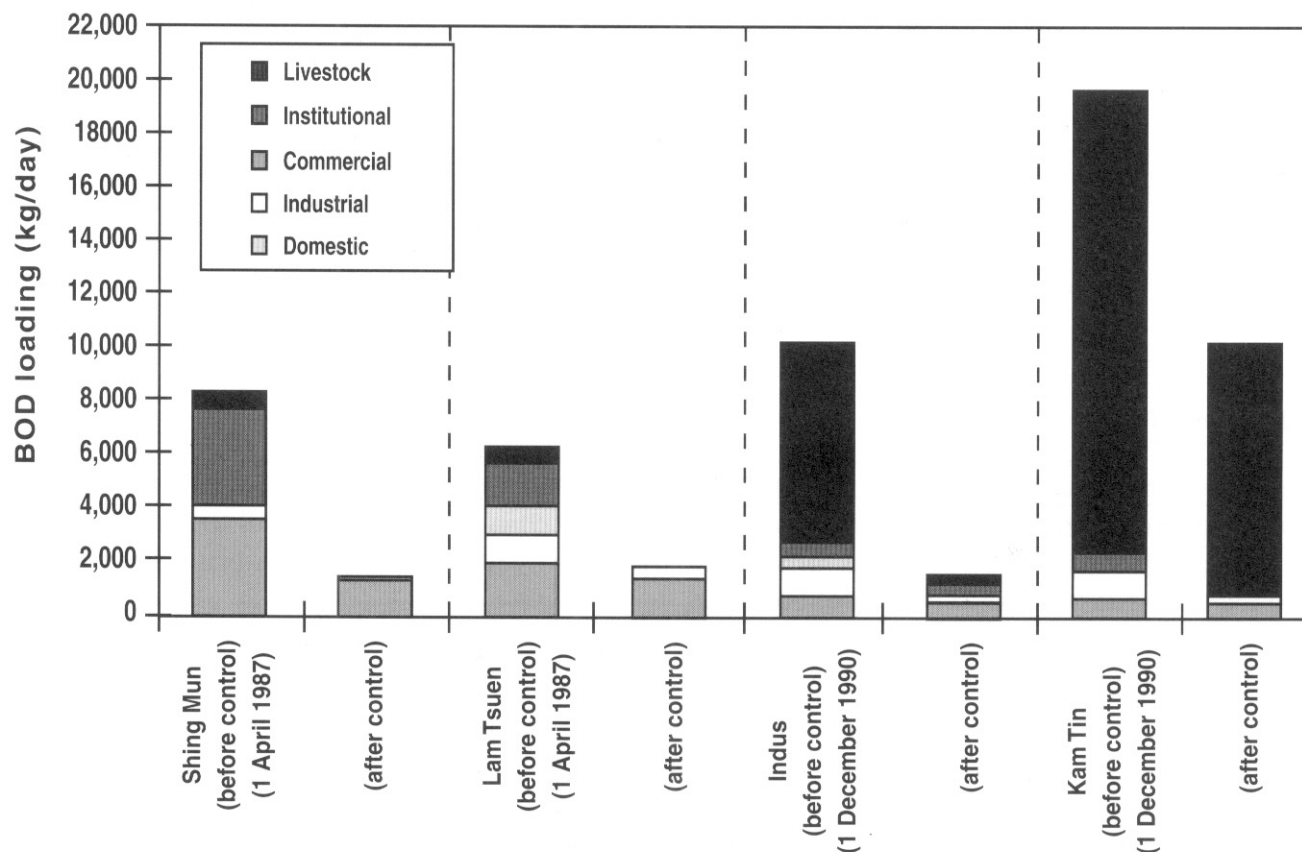
- What are the differences between a natural river and an artificial water-catchment? Which one is more ecologically important? Why?
- Do human activities and increasing population along the river pose any pressure to it?

Figure 1 - Trend in Water Quality Index (WQI) for Selected Rivers



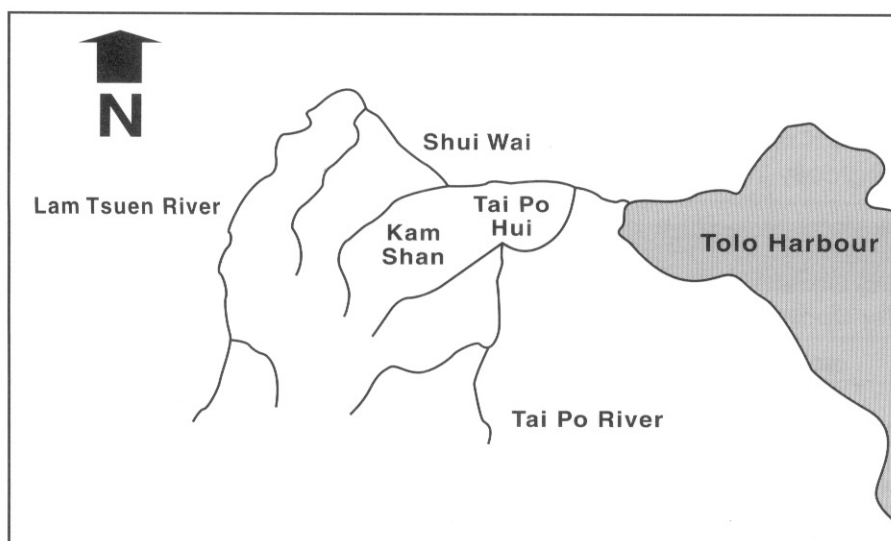
Source: Environmental Protection Department

Figure 2 - Differences in estimated pollution loading in various watercourses before controls initiated, and at the end of 1996 after controls have been implemented



Note : Loading in Lam Tsuen River includes that in Tai Po River

Figure 3 - Location Map of Lam Tsuen River



Source: Environmental Protection Department

# STUDENT WORKSHEET

## CASE STUDY AROUND TAI PO NEW TOWN – RIVER POLLUTION –

### Weather

Temperature : \_\_\_\_\_ °C

Rainfall in preceding 24 hours\* None/Some/Heavy

### River appearance

Colour of the water*	Clear	Light yellow	Brown	Black
Smell*	None	Some	Moderate	Strong
Water flow speed*	Fast	Moderate	Slow	Stagnant
Water level*	Full	Normal	Low	
Amount of floating matter*	None	Some	Plentiful	Abundant

Please specify type of the floating matter:

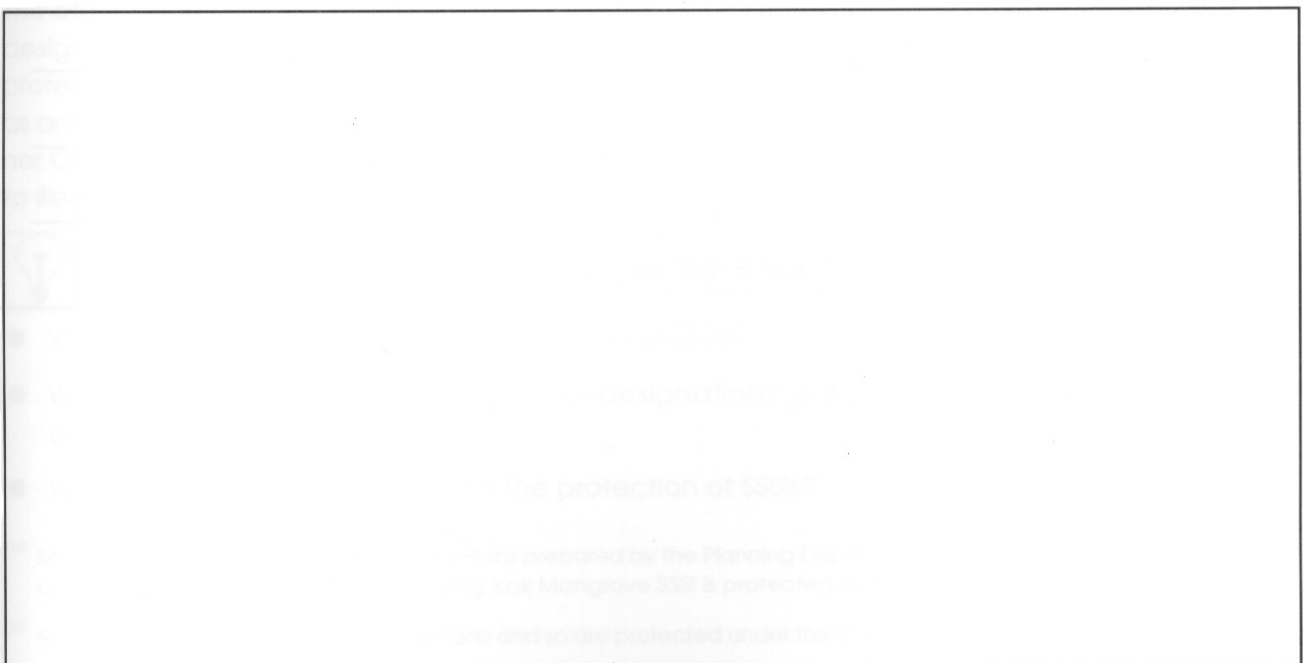
Green algae\* None Some Plentiful Abundant

### Land use in the vicinity

You are advised to go about 100m upstream or downstream to see what the surrounding land uses are. You may circle more than one of the options listed below:\*

Commercial/Industrial/Market/Residential/Residential-commercial/ Public Housing Estate/Private housing area/Construction site/Open space/Other\*: \_\_\_\_\_

Draw a sketch of the river with the river banks also shown.





Are there any plants along the river bank?\*      None      Some      Plentiful      Abundant

Are there any animals in the river?\*      None      Some      Plentiful      Abundant

If there is/are animals there, please record species/type: \_\_\_\_\_

Is there any observable sewage discharge point?\*      Yes/No

Is there any observable rainwater drainage discharge point?\*      Yes/No

Has there been any artificial construction work done to the river?\*      Yes/No

If yes, please state three differences between this river and a natural one.

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

Is there any visible pollution in the river? What are the possible sources of pollution? Please record three possible sources of pollution?

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

Based on Figure 1, the water quality of the Lam Tsuen River in 1998 has been graded as good since 1984 and the river quality has been gradually improving. According to Figure 2, the pollution load to the Lam Tsuen River was reduced significantly after the implementation of the Waste Disposal Ordinance and the Water Pollution Control Ordinance. What can you learn from these facts?

\_\_\_\_\_

Can you suggest measures to further improve the water quality of the Lam Tsuen River?

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

# STUDENT WORKSHEET

## CASE STUDY AROUND TAI PO NEW TOWN – TING KOK MANGROVE –

### Background Information

Name of the site : Ting Kok Mangrove

Date of visit :

### INTRODUCTION

Ting Kok mangrove was designated as a Site of Special Scientific Interest (SSSI) in March 1985. The designated site covers an area of about 37.5 ha. Five species of mangrove can be found there, including *Kandelia*, *Aegiceras*, *Avicennia*, *Lumnitzera* and *Bruguiera*.

There were 60 SSSIs in Hong Kong in 1999 and their locations are shown in Figure 1. SSSIs are designated by the Agriculture and Fisheries Department to highlight their special scientific interest and are registered with the Planning Department. The scientific interest of SSSIs may be biological or geological, marine or terrestrial. The site and its features will be assessed for possible designation as a SSSI on the following criteria:

- Its uniqueness, naturalness or rareness in a territory-wide context.
- Its scientific value in a territorial or regional context.
- Whether it is representative or typical of its kind.
- The present protection status, the land status, and the urgency for listing the site as an SSSI are other factors for consideration.

After designation, the owners, tenants or occupiers of SSSIs are advised that their land merits SSSI designation. Special attention is paid to these sites during land use planning.



### What level of protection does SSSI designation offer?

The site is not managed after SSSI designation and the general public may not be aware of the designation. The SSSIs designation remains an administration system. It does not by itself ensure protection against human activities and undesirable development, unless the site is also designated as another type of protected area. Some SSSIs are neither covered by any statutory land use plan<sup>(a)</sup>, nor Country Park plan<sup>(b)</sup>, and thus receive no legal protection. This makes the site more susceptible to illegal development or to incompatible land uses.



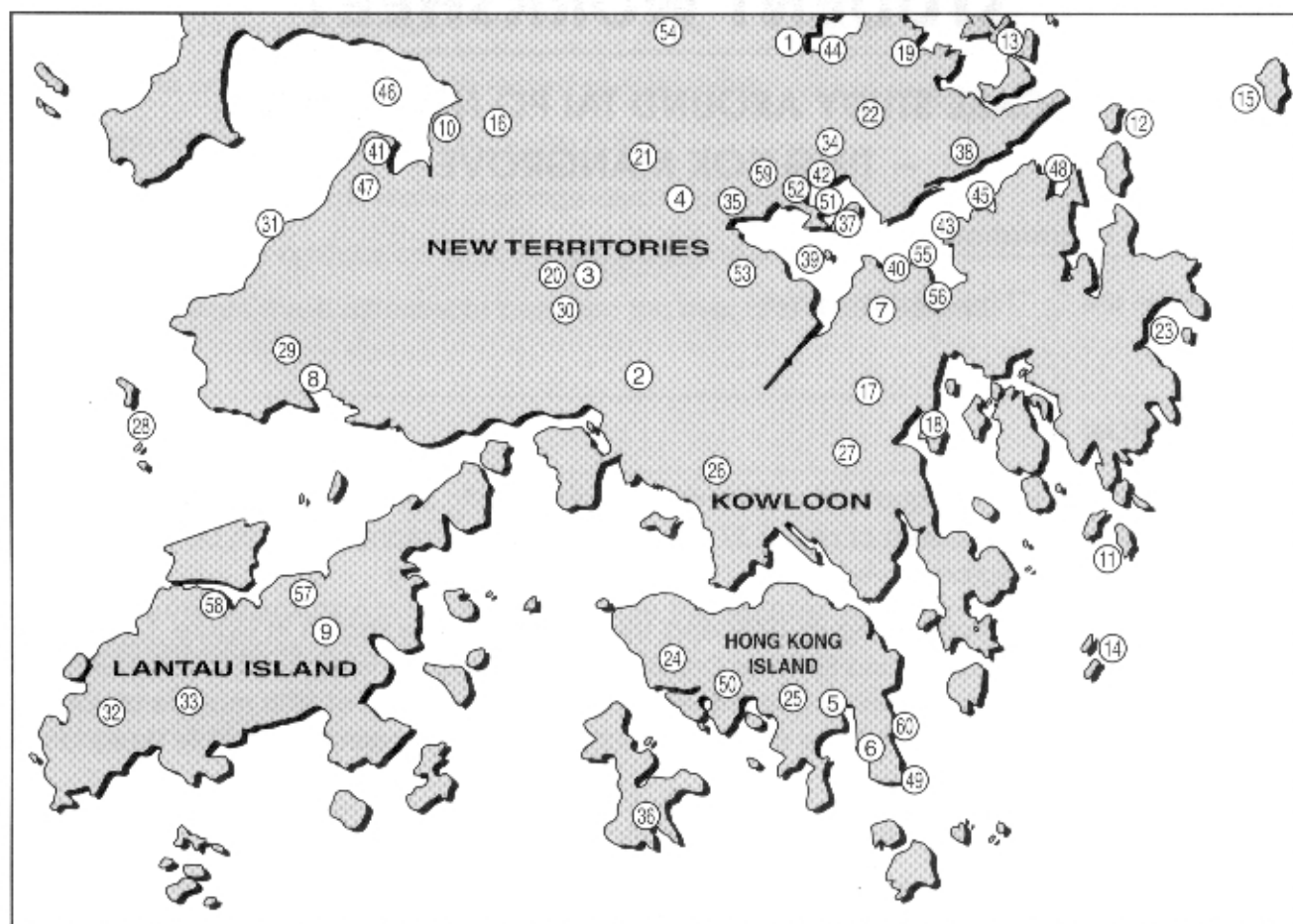
### THINK ABOUT THESE QUESTIONS BEFORE THE FIELD TRIP

- Why do we need to designate special sites as SSSIs?
- What is the protection offered by SSSI designation? Is it enough to protect the site from destruction?
- What can be done to strengthen the protection of SSSIs?

<sup>(a)</sup> Some SSSIs are shown on Outline Zoning Plans prepared by the Planning Department. Such sites are afforded protection under the Town Planning Ordinance. Ting Kok Mangrove SSSI is protected in this way.

<sup>(b)</sup> Some SSSIs are in Country and Marine Parks and so are protected under the Country Parks and Marine Parks Ordinances.

Figure 1 - Location of Sites of Specific Scientific Interests (SSSIs) in Hong Kong



NO.	LOCATION
1	YIM TSO HA EGRETRY
2	SHING MUN FUNG SHUI WOODLAND
3	TAI MO SHAN MONTANE SCRUB FOREST
4	SHE SHAN FUNG SHUI WOODLAND
5	TAI TAM HARBOUR (INNER BAY)
6	D'AGUILAR PENINSULA
7	MA ON SHAN
8	TSING SHAN TSUEN
9	SUNSET PEAK
10	MAI PO MARSHES
11	BLUFF ISLAND & BASALT ISLAND
12	PORT ISLAND
13	KAT O CHAU
14	NINEPIN GROUP
15	PING CHAU
16	MAI PO VILLAGE
17	MAU PING
18	PAK SHA WAN PENINSULA
19	LAI CHI WO BEACH
20	NG TUNG CHAI
21	PAK TAI TO YAN
22	CHIU KENG TAM
23	TAI LONG BAY
24	POK FU LAM RESERVOIR CATCHMENT AREA
25	TAI TAM RESERVOIR CATCHMENT AREA
26	BEACON HILL
27	HO CHUNG VALLEY
28	LUNG KWU CHAU, TREE ISLAND & SHA CHAU
29	CASTLE PEAK
30	TAI MO SHAN

NO.	LOCATION
31	PAK NAI
32	MAN CHEUNG PO
33	LANTAU PEAK
34	PAT SIN RANGE
35	FUNG YUEN VALLEY
36	SOUTH LAMMA ISLAND
37	YIM TIN TSAI & MA SHI CHAU
38	TOLO CHANNEL (NORTHERN COAST)
39	CENTRE ISLAND
40	NAI CHUNG COAST
41	TSIM BEI TSUI
42	TING KOK
43	SHAM CHUNG COAST
44	A CHAU
45	LAI CHI CHONG
46	INNER DEEP BAY
47	TSIM BEI TSUI EGRETRY
48	HOI HA WAN
49	HOK TSUI (CAPE D'AGUILAR)
50	NAM FUNG ROAD WOODLAND
51	SAM MUN TSAI EGRETRY
52	SHUEN WAN EGRETRY
53	TAI PO EGRETRY
54	LIN MA HANG LEAD MINES
55	TSENG TAU COAST
56	KEI LING HA MANGAL
57	POK TO YAN AND POK KAI SHAN
58	SAN TAU BEACH
59	SHA LO TUNG
60	SHEK O HEADLAND

# STUDENT WORKSHEET

## CASE STUDY AROUND TAI PO NEW TOWN – TING KOK MANGROVE –

*\*Please delete the inappropriate.*

### Background Information

Name of the site : Ting Kok Mangrove Date of visit : \_\_\_\_\_  
Time : \_\_\_\_\_ Weather : Sunny/Cloudy/Rainy  
Temperature : \_\_\_\_\_ °C Wind Direction\* Onshore/Offshore  
Rainfall in preceding 24 hours\* None/Some/Heavy  
Wind Strength\* Strong/Moderate/Light  
State of tide\* High/Intermediate/Low

### Wildlife

What is the dominant wildlife in the Ting Kok SSSI? \_\_\_\_\_

Have you found any plants in the SSSI?*	None	Some	Plentiful	Abundant
---	------	------	-----------	----------

Have you found any animals in the SSSI?*	None	Some	Plentiful	Abundant
--	------	------	-----------	----------

Why do you think Ting Kok deserves SSSI designation?

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### Land use in the vicinity

Record the land use types that you spotted along the beach. You may circle more than one of the options listed below:\*

Commercial/Industrial/Market/Residential/Residential-commercial/ Public Housing Estate/Private Housing area/Agricultural/Construction site/Open space/Other\*:

---

### **Record the following observations:**

Have you seen any notice about the SSSI designation?	Yes/No*
--	---------

Is there clear boundary between Ting Kok SSSI and the surrounding land use?	Yes/No*
---	---------

Are the surrounding land uses posing any threats to the conservation of the SSSI?	Yes/No*
---	---------

What are the threatening land uses? \_\_\_\_\_



What would be the best neighbouring land use type for the Ting Kok SSSI? Why?

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What do you think is the future of Ting Kok SSSI? Why?

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How can the conservation of Ting Kok SSSI be secured?

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# STUDENT WORKSHEET

## CASE STUDY AROUND TAI PO NEW TOWN – MARICULTURE INDUSTRY –

*\*Please delete the inappropriate.*

### Background Information

Name of the site : Yim Tin Tsai Mariculture Zone

Date of visit :

### INTRODUCTION

Tolo Harbour is an eutrophic water body with limited tidal exchange and suffers from the problem of red tides<sup>(a)</sup>. In 1993, due to algal bloom problems and toxic red tides associated with nutrient loading, the Environmental Protection Department recommended that fish culture should be phased out in confined areas such as Tolo Harbour. With the progressive implementation of the Tolo Harbour Action Plan to reduce sewage loadings being discharged into Tolo Harbour, the inputs of nitrogen from mariculture are now regarded as the major anthropogenic source in the harbour.

At the same time, the mariculture industry has also been strongly affected by the occurrence of red tides in Tolo Harbour.

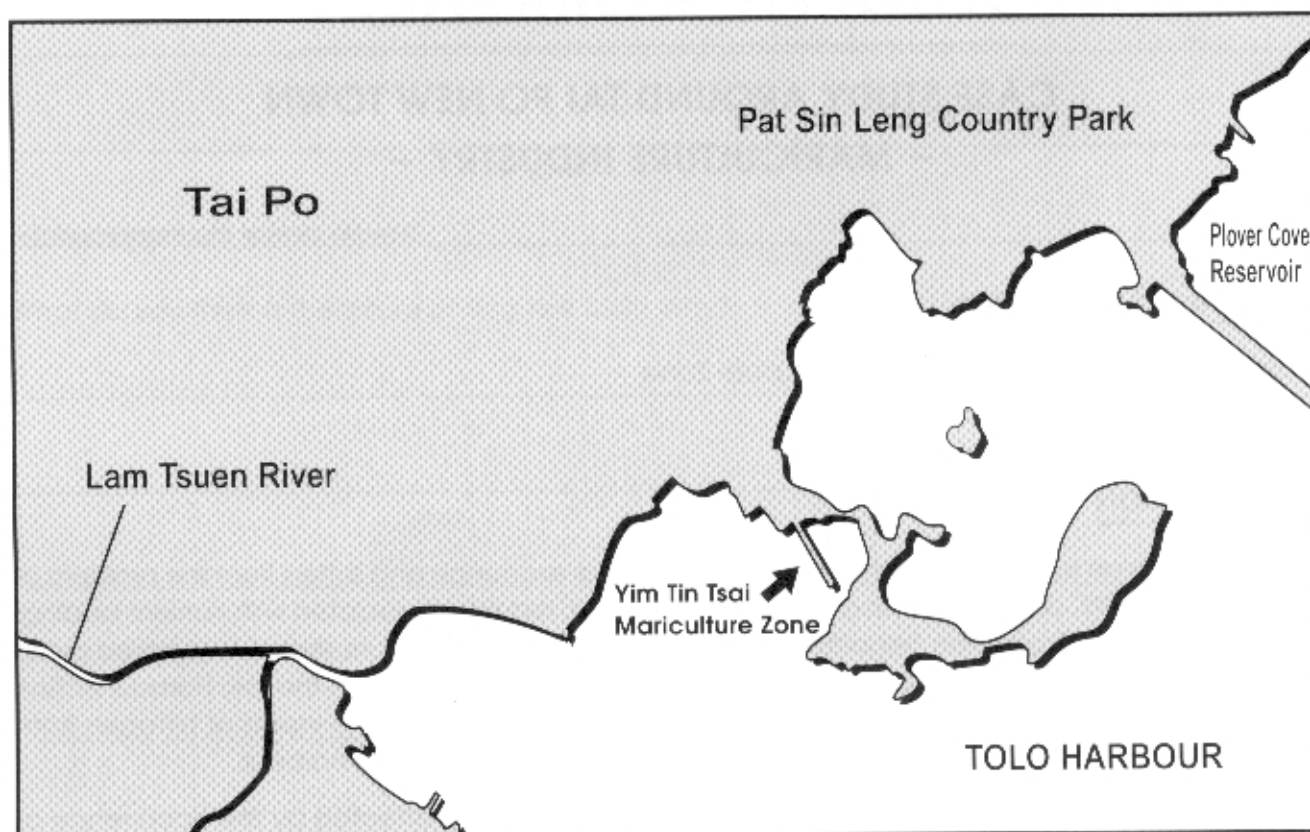


### THINK ABOUT THESE QUESTIONS BEFORE THE FIELD TRIP

- How does mariculture industry affect the water quality?
- What is the impact of red tide to mariculture?
- What should be done to solve the problem?

<sup>(a)</sup> Red tides are brought about by dense aggregations of a single or several species of unicellular algae which are mainly dinoflagellates. Red tides, in general, lead to deoxygenation of seawater and this can also lead to fish kills by hypoxia or simply by gill clogging. Among red tide organisms, the toxin-producing species can result in the death of fish and marine invertebrates. Their toxins can also accumulate in shellfish and consumption of the intoxicated shellfish by humans may lead to various forms of shellfish poisoning such as paralytic, neurotoxic and diarrhetic shellfish poisoning. Most red tides in Hong Kong are not toxic.

Map 1 - Location Map of Yim Tin Tsai Mariculture Zone



# STUDENT WORKSHEET

## CASE STUDY OF NEW TOWN – MARICULTURE INDUSTRY –

*\*Please delete the inappropriate.*

### Background Information

Name of the site : Yim Tin Tsai Mariculture Zone Date of visit : \_\_\_\_\_  
Time : \_\_\_\_\_ Weather : Sunny/Cloudy/Rainy  
Temperature : \_\_\_\_\_ °C Wind Direction\* Onshore/Offshore  
Rainfall in preceding 24 hours\* None/Some/Heavy  
Wind Strength\* Strong/Moderate/Light  
State of tide\* High/Intermediate/Low

### Water Quality

Colour of the water*	Clear	Light yellow	Brown	Black
Smell*	None	Some	Moderate	Strong
Algae*	None	Some	Plentiful	Abundant
Amount of floating matter in the sea*	None	Some	Plentiful	Abundant

List three types of visible pollutants you spotted \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Please state possible sources of pollution:

\_\_\_\_\_

Amount of litter along the shore*	None	Some	Plentiful	Abundant
-----------------------------------	------	------	-----------	----------

### Land use in the vicinity

Record the land use types that you spotted along the shore. You may circle more than one of the options listed below\*:

Commercial/Industrial/Market/Residential/Resident-commercial/ Public Housing Estate/Private Housing area/Agricultural/Construction site/Open space/Other\*: \_\_\_\_\_



According to your observations, what do you think are the basic criteria for selecting of a site as a mariculture zone?

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The inputs of nitrogen from mariculture have been regarded as the major source of anthropogenic pollution in the harbour. How are pollutants generated by the mariculture industry?

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The occurrence of red tides in Tolo Harbour poses a serious threat to the fish farming industry in Yim Tin Tsai. What can be done to solve the problem?

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# STUDENT WORKSHEET

## CASE STUDY AROUND TAI PO NEW TOWN – MARINE POLLUTION –

### Background information

Name of the harbour : Tolo Harbour

Date of visit :

### INTRODUCTION

Rarely recorded in Hong Kong prior to 1970, red tides have since occurred frequently especially in sheltered and eutrophic areas such as Tolo Harbour. There were 25 instances of red tides reported in 1996, of which 52% were recorded from Tolo Harbour. Figure 1 shows that the occurrence of red tides in Tolo Harbour has increased significantly since 1980 and reached a peak in 1988. The number of red tides has declined since then probably due to the implementation of Tolo Harbour Action Plan<sup>(a)</sup> in 1987.

#### <sup>(a)</sup> **Tolo Harbour Action Plan**

The Tolo Harbour Action Plan consists of a number of separate actions to reduce and control the polluting inputs in the area. In 1987, the area was gazetted as the first Water Control Zone with a Water Quality Objective set under the Water Pollution Control Ordinance. Initially, control covered 12 categories of industrial discharges with exemptions granted to others. The Ordinance was strengthened in 1990 when the controls were extended to cover all types of discharges, and all exemptions were removed.

In 1988, complementary controls were introduced under the Waste Disposal Ordinance to address the problems of livestock waste discharges. The whole of Shatin and part of Tai Po new town were designated as livestock waste prohibition areas, while the surrounding environments were categorised as Livestock Waste Restriction/Control Areas.

Actions were also taken on the discharge of sewage from sewage treatment works. There are two sewage treatment works in the area, the Shatin and the Tai Po Sewage Treatment Plants. In 1992, modification of the treatment process was carried out to increase its effectiveness and hence reduce the pollution loading of effluent discharged into Tolo Harbour. Further improvement in the water quality of the Harbour is expected under the implementation of the Effluent Export Scheme which started in 1995 and was fully implemented in 1997. Treated sewage from Shatin and Tai Po is piped to Victoria Harbour, via the Tai Tak Nullah, for disposal. Sludge from both sewage and water treatment works from Tolo Harbour, previously disposed of in the south-eastern regional waters, is now disposed of at landfills.

Restoration of the Shuen Wan Landfill, after its decommissioning in 1995, is helping to reduce leachate running off, which contains pollutants such as heavy metals, organic and inorganic substances, into the Harbour.

The action of a Sewage Master Plan and sewage first-aid measures help minimise sewage flow directly into the Harbour by collecting the sewage on a catchment-by-catchment basis and directing it to the treatment works. The condition will be further improved when the village sewage plan is started.

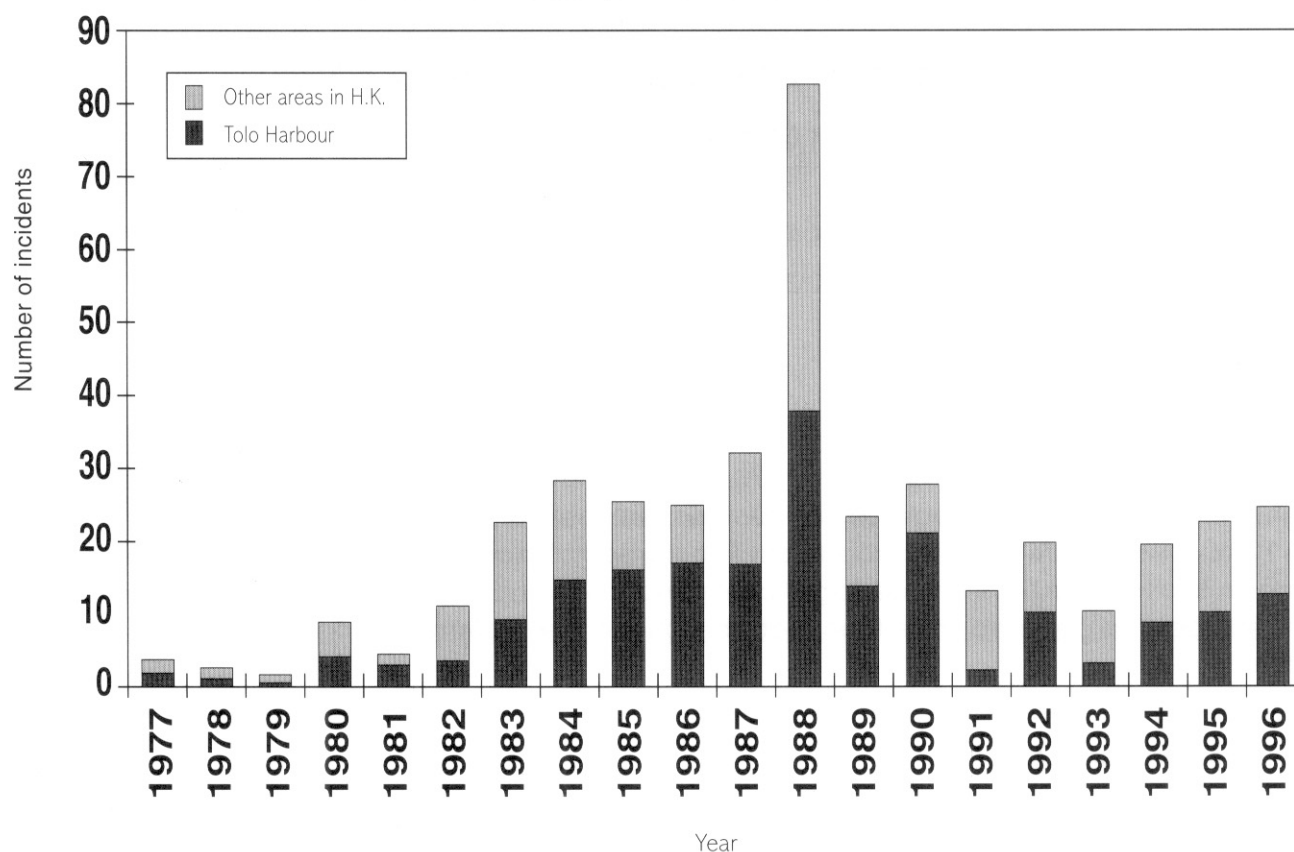
*Source: Environmental Protection Department*



### **THINK ABOUT THESE QUESTIONS BEFORE THE FIELD TRIP**

- What are the potential causes of red tides in Tolo Harbour?
- How does the occurrence of red tides relate to the surrounding land uses?
- How does the red tide problem affect people living around Tolo Harbour?

Figure 1 - Number of Red Tides in Tolo Harbour and other areas of Hong Kong, 1977 to 1996



Source: Environmental Protection Department

# STUDENT WORKSHEET

## CASE STUDY AROUND TAI PO NEW TOWN - MARINE POLLUTION -

*\*Please delete the inappropriate.*

### Background Information

Name of the harbour : Tolo Harbour

Date of visit : \_\_\_\_\_

Time : \_\_\_\_\_

Weather : Sunny/Cloudy/Rainy

Temperature : \_\_\_\_\_ °C

Wind Direction\* Onshore/Offshore

Rainfall in preceding 24 hours\*

None/Some/Heavy

Wind Strength\*

Strong/Moderate/Light

State of tide\*

High/Intermediate/Low

### Weather

Temperature : \_\_\_\_\_ °C

Rainfall in preceding 24 hours\* None/Some/Heavy

Wind Direction\* Onshore/Offshore

Wind Strength\* Strong/Moderate/Light

### Water appearance

Colour of the water*	Clear	Light yellow	Brown	Black
Colour of the water*	Clear	Light yellow	Brown	Black
Smell*	None	Some	Moderate	Strong
Algae*	None	Some	Plentiful	Abundant
Amount of floating matter in the sea*	None	Some	Plentiful	Abundant
Amount of litter along the shore*	None	Some	Plentiful	Abundant

List three types of visible pollutants you spotted: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Please state the possible sources of pollution:

\_\_\_\_\_



## Land use in the vicinity

Record the land use types that you spotted along the beach. You may circle more than one of the options listed below:\*

Commercial/Industrial/Market/Residential/Residential-commercial/ Public housing estate/Private housing area/Agricultural/Construction site/Open space/Other\*: \_\_\_\_\_

## Wildlife

Are there any plants along the seashore?\*      None      Some      Plentiful      Abundant

Are there any animals in the sea?\*      None      Some      Plentiful      Abundant

Is there any observable sewage discharge point?\*      Yes/No

Is there any observable river leading to the sea?\*      Yes/No

Please record three possible pollution sources in Tolo Harbour:

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

Does marine pollution affect the lives of people and wildlife? Yes/No If yes, please state how.

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

Can you suggest remedial measures to improve marine water quality?

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

Is the Tolo Harbour Action Plan the best solution to solve the marine pollution problem? Why?

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