



## Delta-Expo & Storm Surge Barrier

### Questions and exercises Primary school - upper level

Dear teaching staff,

Enclosed you will find a number of questions and exercises, which you can use for your pupils in the Delta-Expo exhibition, in/on the storm surge barrier and the "safe Zeeland" exhibition you will find there. Everything is multiple choice and the pupils can do them alone or in groups.

All the elements of the exhibition are dealt with, i.e. the geographical, historical, technical and biological aspects.

It would be impractical to have every pupil complete every exercise and about four exercises per pupil or group should suffice. We recommend maintaining a good balance of multiple choice and open questions.

Next to each question and exercise are instructions on where in the exhibition it is to be completed.

You can download this material from our website if you wish and make as many copies as you need.

If you have any comments on the material or come across any discrepancies, we would appreciate hearing from you.

We would also like to wish you and your pupils an enjoyable and educational visit to Deltapark Neeltje Jans.

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## Questions and exercises

### Delta-Expo & Storm surge barrier

The Delta-Expo exhibition is in the Deltaplaza.  
Deltaplaza is the reception building at Deltapark Neeltje Jans.

There are three chapters to the Delta-Expo exhibition:

**Water, friend and foe:** about the history of the Delta. This chapter can be found on the ground floor of the Deltaplaza.

**The 1953 flood disaster:** This chapter can be found on the ground floor of the Deltaplaza.

**The Delta Works:** This chapter can be found on the ground floor of the Deltaplaza.

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*Eyes open*

Hello there girls and boys!

You are now going to visit the Delta-Expo exhibition. This exhibition deals mainly with the 1953 flood disaster and the Delta Works. The storm surge barrier in the Eastern Scheldt Eastern Scheldt gets some extra attention.

In Delta-Expo you can see how we keep our feet dry here in the Netherlands. The strange thing about the Netherlands is that more than half the country is under sea level. To put it another way: if there were no dikes, dunes, dams etcetera, the sea would flood half the Netherlands!

This is something the Dutch people have known about for a long time. They started building dikes 1000 years ago. Although in those days the dikes were quite small, they did provide the people with some protection against flooding.

Nevertheless sometimes, when the weather was stormy, the sea rose high enough to crash over the dikes. When this happens we call it a storm surge. The last great storm surge was in 1953 and when it occurred the Dutch Delta was hit with a vengeance. Many people and animals drowned in the disaster.

Following the 1953 disaster the government swore that this should never happen again. A plan was drawn up to make the Delta safe; this was the Delta plan. A whole range of dams built to keep the sea outside the door.

The last dam in the plan was built in the Eastern Scheldt and is a very special one: a storm surge barrier.

You will now be given some questions to answer. None of them are really difficult. You just need to keep your eyes open and read what you see. You may occasionally need to do a bit of searching!

Each exercise sheet tells you where you have to be in the Deltaplaza.



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## Exercise 1

### Water, friend and foe (ground floor)

Roman times

Find the model of the landscape as it was in Roman times. Look at it carefully and read the blue, upright information plate.

#### 1 Sea level in Roman times

What do you think the level of the sea was in Roman times? Was it higher or lower than now? Write down your reasons.

#### 2 Dike building

How much dike building did the Romans do in our country?

#### 3 Romans and trade

What did the Romans consider important about the Netherlands?

The Golden Age

Find the Golden Age on the ground floor. Found it? The Netherlands was very important in those days. Ships from Holland, Friesland and Zeeland sailed all over the world. In the past Dutch merchants traded in every corner of the world. They paid frequent visits to the East Indies (now called Indonesia) where there were rich pickings. However, the ships had to take great care to avoid the pirates, who laid in wait for them! They often stole the entire ship with all it contained!

Look for the model of a sailing ship. Found it? Take a good look at it and try to answer these questions:

#### 1 The sailing ship

What is the name of this ship?

2 When was the ship built?

3 Why did a merchant ship need to carry cannons?

4 You can see two animals on the stern (the back) of the ship. What animals are they?

5 At the prow (the front) you can see a monster with a wide-open mouth. Why do you think the monster is there?

6 You already know what a sailing ship is. If you look carefully you will see the rigging going up the mast and along the sails. The cabin boys used to have to climb up the rigging to get to the crow's nest. What do you think they were doing up there in the crow's nest?



## Exercise 2

### Water, friend and foe (ground floor)

The Nineteenth century

Find the wooden model of a floodgate, look at the photograph underneath and read the text.

**1 Model floodgate**

In the 19th century a material became important for the protection of banks and shores. What was it?

2 How many people worked on the canal through Walcheren in 1868?

3 Later, far fewer workers were needed because of new technology. What was this?

Look very carefully at the model of the landscape

1 Give the name of two sandbanks in the Eastern Scheldt

2 Give the name of three towns you can see in the model

3 In the model a black and silver checked wire runs between Goes and Middelburg. What do you think this is supposed to represent?



## Exercise 3

### 1953 flood disaster (ground floor)

Go to the big, circular display showing the 1953 disaster. Behind you there is a long, circular screen with photographs and texts. The next questions concern these texts.

#### 1 **Photographs and texts about the 1953 flood disaster**

##### **Dikes too low**

Give two reasons why no work had been carried out on the dikes before the disaster?

#### 2 **The Storm**

From what direction was the storm blowing during the 1953 flood disaster?

#### 3 **Wild evacuations speedy action**

What is an evacuation?

4 Why are people evacuated?

#### 5 **Youth Red Cross**

In what country was a holiday camp founded?

In the inner circle you will see lots of cupboards with doors from which coloured lights shine. If you open a door you will see and hear all sorts of things about the 1953 flood disaster.

(You can use the translated texts on a plastic mobile textboard)

#### 1 **Find the cupboard with the essay by Janny Kosten and read it.**

What is the subject of the essay?

2 Where was the bell that Janny heard ringing?

#### 3 **Find the cupboard with wood inside**

What were the flashboards used for?

4 Why did the flashboards fail to work?

#### 5 **Find the cupboard with the two children's shoes**

What does the woman say when you open the door?

6 What do you think happened to the child who was wearing the shoes?



## Exercise 4

### Delta Works (ground floor)

Walk past the large photographs of the 1953 flood disaster into the exhibition and turn left. This will bring you to the story of the Delta Works. The story starts with the storm surge barrier in the Hollandse IJssel.

- 1 Storm surge barrier Hollandse IJssel**  
Why are the gates of this storm surge barrier so high up above the water?
  
- 2 In what year was this storm surge barrier completed?
  
- 3 Haringvliet locks**  
Name the 2 most important functions of these locks?
  
- 4 How were the last channels closed off?
  
- 5 Brouwers dam**  
Which 2 techniques were used in building this dam?
  
- 6 What is the sea between Brouwers dam and Grevelingen dam called?
  
- 7 Protest**  
The first plans for the Eastern Scheldt are prevented.  
What was to have been built in the Eastern Scheldt (and should have been finished in 1978)?
  
- 8 What kind of people protested against the first plan?
  
- 9 Why did these people protest?



## Exercise 5

Delta Works, Storm Surge Barrier Eastern Scheldt (ground floor)

Go to the long model of the storm surge barrier and read the text panels.

- 1 **Model**  
**In the model you can see coloured balls, small yellow ones, slightly bigger green ones and bigger pink and blue ones.**  
What are these balls supposed to represent?
  
- 2 What is the name of the white upright things in the model?
  
- 3 What are the black panels suspended between them?
  
- 4 **Work ships/pontoons.**  
**Continue through the exhibition and look for the work ships**  
Give the name of three of the huge work pontoons
  
- 5 Put the type of work it did next to the name of each of the three pontoons.
  
- 6 **Mobile model of the storm surge barrier**  
**Read the text panel**  
In which months do the most storms occur?
  
- 7 What is alarm level for the storm surge barrier?
  
- 8 How often is this alarm level reached?



## Exercise 6

Delta Works (ground floor)

Birds

In a huge glass panorama case you can see a model of a piece of the Eastern Scheldt. Take a good look at the mudflat (no growth) and the salt marsh (plant growth) and the dike.

### 1 The mudflat

On the mudflat you can see black and white birds with orange beaks. What are they called?

2 The birds live mainly on shellfish. How do you think they open them?

3 Name two kinds of shellfish you can see in the glass case?

### 4 The salt marsh

Name 3 plants that grow in the salt marsh?

5 What materials make up the salt marshes?

6 Who created the salt marshes? (put a circle round the right answer)

- A Man
- B Water and currents
- C Birds and other animals

### 7 The stone slopes

Name 2 types of seaweed that grow on the stones of the dike

8 Name 2 fish you can see in the diorama

9 Is a sea anemone a plant or an animal?

10 Who created the stone slopes in the Eastern Scheldt? (put a circle round the correct answer)

- A Man
- B Water and currents
- C The ice age



## Exercise 7

### Storm surge barrier: 'Safe Zeeland' exhibition

You can actually pay a visit to the storm surge barrier. Inside the dam you will find the 'Safe Zeeland' exhibition. The next questions are about the exhibition. Look at the photographs and read the texts.

Each of the panels has a title in large letters. The name of the panel is at the top of each question

- 1 Tides**  
Which two planets cause the movement of the tides on earth?
  
- 2 Storms**  
If the weather report is for 'severe storm', what number is that on the Beaufort scale?
  
- 3 History**  
Give the dates (year) of the last three flood disasters in the Netherlands?
  
- 4 The Netherlands without dikes**  
When were the first dikes built in the Netherlands?
  
- 5 Delta Works**  
The smallest dams were built first. What was used for these?
  
- 6 Fishing**  
Where do most of the mussels cultivated in the Eastern Scheldt come from?
  
- 7 Eastern Scheldt Politics**  
Give the date on which the storm surge barrier was opened?
  
- 8 Storm surge barrier/foundations**  
Prince Willem-Alexander of the Netherlands painted his name on a pillar with red paint. When was that?
  
- 9 Operation**  
The storm surge barrier is closed when a certain sea level is expected. What level is this?
  
- 10 Storm surge barrier/operation**  
How long does it take to close the storm surge barrier?



## Exercise 8

### Storm surge barrier

You have now been standing inside the dam for a while, in a sort of tunnel. The official name of the tunnel is a traffic channel. Move on to the following channel. Here you will see 2 big blue containers containing all sorts of equipment.

- 1 Occasionally you will hear some noise from above.  
What do you think it is?
- 2 What do you think the traffic channel is made of?

Opposite the blue 'electro-container' you will find information printed on transparent panels. Read this.

- 3 How many gates are there in the storm surge barrier?
- 4 How big was the risk of a flood in 1953?
- 5 How big is the risk of a flood nowadays?

OK, let us move outside and take a look at the real storm surge barrier!

- 6 Outside, next to you, you can see a very long black panel. What do you think it is?
- 7 What do you think the gate is made of?
- 8 The water below you flows nearly all the time. Which way is it flowing now?  
Towards the Eastern Scheldt or towards the sea? What tide is it?
- 9 How high was the water level here during the 1953 disaster?
- 10 The water you see flowing below is (tick):  
 sweet                       brackish                       salt