



The Afsluitdijk, new stories



Information Centre The Afsluitdijk

€ 1,-



Welcome!

Welcome to our “De Afsluitdijk, new stories” information centre.

In this information centre, we tell about the past, the present and the future of the international icon that is the Afsluitdijk.

This brochure contains a translation of the information on the columns in the information centre. The numbers on the columns correspond to the numbers in this brochure.
This brochure is available in the following languages: English, German, French, Spanish and Chinese.

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More information

Do you want to learn more about our projects? Visit www.theafsluitdijk.com, also available in English, German, French and Chinese.

You can also follow us on [@Afsluitdijk2020](https://www.facebook.com/DeNieuweAfsluitdijk) and www.facebook.com/DeNieuweAfsluitdijk

An overview of the facts

- The work on the Afsluitdijk started in 1927, and the last hole was closed in 1932. This means that the work on the 32 kilometre long dyke took five years.
- Over 5000 men worked on the construction of the Afsluitdijk. As a tribute to these workmen, a statue of a craftsman is located near the Monument.
- The first truck driving over the Afsluitdijk was the Heineken beer truck.
- Did you know that the Afsluitdijk can be seen from space? André Kuipers could see the Pyramids of Giza, the Great Wall of China and the Afsluitdijk when he flew over the Earth in his rocket.



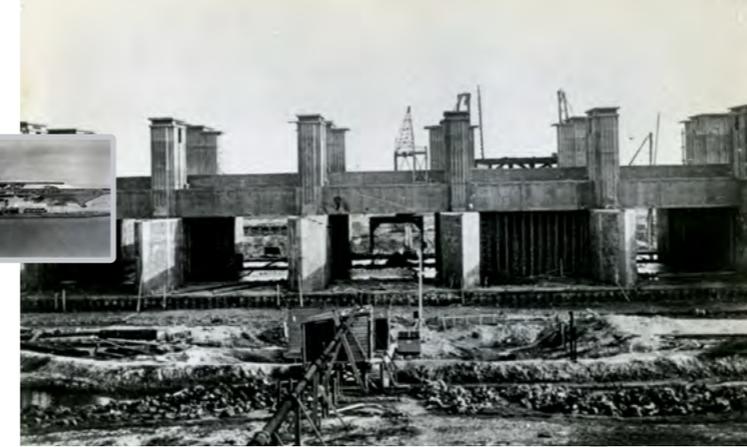
1932: Flow in Western plug hole De Vlieter

The work started in 1927, and the last hole was closed in 1932. This hole was located on the spot where the Monument stands now, a design of the famous architect Willem Dudok and a gift to Holland from the former contractor. Near the Monument, there is a statue of the craftsman, a tribute to the 5000 craftsmen who built the Afsluitdijk mostly by hand.

1931: Work in progress in the port of Breezanddijk



The construction of the Afsluitdijk changed the salty Zuiderzee into the fresh IJsselmeer. Part of the IJsselmeer was turned into polder in phases. The fresh IJsselmeer water still functions as one of the main water facilities for drinking water and agriculture.



1930: Constructing sea floodgates at Den Oever

The Zuiderzee area was vulnerable to flooding. This is why plans for closing off the Zuiderzee were already in development in the 17th century. Engineer Cornelis Lely developed his first plan for the construction of the Afsluitdijk in 1892. The dyke had to close off the sea and reduce the risk of flooding. The construction of the Afsluitdijk created the opportunity to create new polders with agricultural land: good for the economy and the food supply.

The floods in 1916 and the famine in 1918 were determining factors for the construction of the 32 kilometre long dam. Large parts of the IJsselmeer area flooded in 1916. Dykes collapsed, people died and the damage was significant.



1. History

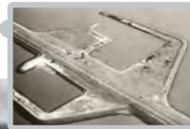
1932: Some days before closing the plug hole De Vlieter



1955: The Monument near plug hole De Vlieter



1950: Working ports at Breezanddijk



1935: De Lorentz sea floodgates at Kornwerderzand



1932: The Afsluitdijk just after its closing



1935: The bus to Wieringen



1929: Placing basalt columns



1929: Earthmoving with the wheelbarrow

1928: The brushwood bundle is placed



1928: Passing on stones to let the mattress sink

1928: Workmen create a brushwood bundle for a mattress



1928: The brushwood bundle is lugged onto the mattress





2. Water Management

Disposal of water

We use the sea floodgates in Den Oever and Kornwerderzand to carry the excess water in the IJsselmeer to the Waddenzee. When the water level in the Waddenzee is low, the sea floodgates can open. The fresh water from the IJsselmeer then flows into the Waddenzee.

We can no longer keep the water level with the current sea floodgates. This is why we build the pumps in the sluice complex at Den Oever. The pumps will be constructed during 2018 and 2022.



Largest pumping station of Europe

Met pompen in de Afsluitdijk kan water naar de Waddenzee worden afgevoerd als spuien niet mogelijk is. Door het plaatsen van de pompen in de Afsluitdijk ontstaat het grootste gemaal van Europa met een pompcapaciteit van ongeveer 10 olympische zwembaden per minuut. De pompen worden ingebouwd in het Stevin spuicomplex bij Den Oever. Zo kunnen de bestaande constructie van de spuisluizen en instroom- en uitstroombekkens worden benut. Dat is veel goedkoper dan aanleg van deze voorzieningen op een nieuwe locatie in de dijk en voorkomt effecten op natuur en milieu van de Waddenzee en het IJsselmeer. Er worden eerst pompen ingebouwd met voldoende pompcapaciteit tot tenminste 2028. Afhankelijk van de ontwikkeling van het klimaat kunnen daarna pompen worden bijgebouwd. Zo kan worden ingespeeld op de mate van stijging van de zeespiegel en de ontwikkeling van rivierafvoeren en piekbuien. Dat heet adaptief deltamanagement.





3. Water Safety

Extreme conditions

Dykes are designed to resist extreme weather conditions. In case of the Afsluitdijk, this concerns a spring tide in combination with an extremely strong North-Western storm. The dyke will be able to withstand storms which occur once every 10,000 years. This is a much stronger storm than the storm of 1953, which caused the flood in Zeeland. Reinforcing the dyke will ensure that it meets the safety requirements until at least the middle of this century. We will take into account a sea level rise of 35cm until 2050 (calculated from 1990)



Stronger floodgates at Den Oever

We will do the following to reinforce the floodgates at Den Oever:

- The outer harbour dams will be heightened and reinforced.
- In order to protect the locks against extreme water levels and waves, we will place a flood lock in front of them. This flood lock is also called a storm surge barrier. The flood lock is usually open, but will close if the water level rises too much.
- We will also reinforce the construction of the floodgate complexes. The construction of the floodgate complex in Den Oever consists of the floodgate groups with five drainage chutes each. Each chute has two slides. We will replace the slides and the mounts in each chute. We will also reinforce the island and port dams.

Stronger locks at Kornwerderzand

We will also reinforce the locks here in the Frisian Kornwerderzand:

- We will place a new flood lock on the Waddenzee side, north of the existing swing bridges. This protects the floodgate complex.
- Just like in Den Oever, we will reinforce the floodgate complex in Kornwerderzand by replacing the slides and mounts. We will also reinforce the island and the port dams, and we will improve the stability of the floodgate complex.



Reinforcing the Afsluitdijk

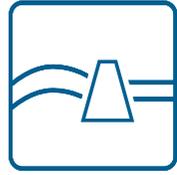
The Afsluitdijk is over 80 years old and has protected the Netherlands against the water since its construction. Nowadays, it no longer meets the stringent requirements for water safety. This is why Rijkswaterstaat will reinforce the dyke between 2018 and 2022. They will take into account the changing circumstances caused by climate change



Reinforcing embankments

The outside of the dyke (on the side of the Waddenzee) will get a new embankment. This embankment will be able to resist a super storm. We will make the dyke burst-proof. This means that the entire dyke will be constructed in such a manner that any water pouring over it due to large waves will not affect the inside of the dyke (on the side of the IJsselmeer).





4. Water Safety



Spatial quality

The Afsluitdijk has a large cultural-historical and tourist value. The dyke is an icon for the Dutch struggle against the water and is an international business card for the field of Dutch engineering. Engineer Lely designed the dyke. The Monument at the location where the last hole was closed has been designed by architect Dudok. The Afsluitdijk also has a major military history. We will ensure that these unique values will be preserved as well as possible when reinforcing the dyke.

Nature

The Afsluitdijk separates the Waddenzee and the IJsselmeer, two unique natural areas. We will keep this in mind when we work on the dyke. Water birds rest and forage in the lee of the dyke. This is why we will not work at all locations throughout the year. Seals also need to have adequate rest. We will take this into account by making as little noise as possible during our work.





5. Economy & Water



Broadening locks

Companies in Fryslân, Overijssel and Flevoland construct luxury yachts. The locks at Kornwerderzand are too small for the increasingly larger yachts and freight ships. These ships often cannot be finished inside the dykes. This is why the region works on plans to expand the lock, which benefits the yacht builders, and boosts the Dutch economy. A wider lock also offers a shorter sailing route for coastal shipping to Northern Europe (Scandinavia and the Baltic States). Various inland ports (Makkum, Urk, Zwolle, Meppel and Kampen) benefit from this.

Expanding the locks solves an important bottleneck for short sea shipping on trade routes to Northern England, Scandinavia and the Baltic States. A cost-benefit analysis has shown that a wider and deeper lock leads to an immediate increase in turnover of EUR 65 million per year for the shipbuilding sector around the IJsselmeer. The expansion is also expected to result in 2600 new jobs in the maritime cluster. Expanding the lock does not only boost the areas of Northern, Eastern and Central Netherlands, it also has an economic structural multiplier effect for the whole of the Netherlands.

3 possible implementations



The construction of the Afsluitdijk closed off the Zuiderzee and created the IJsselmeer. It became the largest fresh water reservoir of Western Europe, partly intended for the agricultural sector and very important as drinking water for approximately two million people. This gave a major boost to the economic development of the Netherlands. We still profit from this.



Future plans

The Afsluitdijk still offers opportunities for economic development. The dyke is a major tourist attraction for especially foreign guests and an international icon for the field of water engineering in the Netherlands. Over the year, the Northern provinces, municipalities, nature conservation organisations, entrepreneurs and universities have been inspired by it. This has led to a large number of initiatives. The initiators have joined forces under the name De Nieuwe Afsluitdijk. Together with the government, they work on realising their plans





6. Economy & Water

Cycling and hiking path along the Waddenzee

Cycling on the Afsluitdijk is like cycling along the highway. To better enjoy the Waddenzee, a cycling and hiking path will be constructed from Den Oever to the Monument and from Zurich to Kornwerderzand granting a view on the World Heritage Site of the Waddenzee. These paths will be connected to the current cycling path.



Waddenpark Fryslân

The Kornwerderzand-Zurich-Makkum triangle is very important to the Afsluitdijk. It creates the connection with Fryslân. The connections are improved where necessary which make the Afsluitdijk and the triangle better accessible to tourists/holiday makers. We will also explore the possibilities for natural reinforcement.

The Frisian halter of the Afsluitdijk deserves an upgrade. In this halter, various landscapes meet: the wide and open landscape of the IJsselmeer and the Waddenzee face the landscape of mounds and lakes. We want to make this unique area more interesting and accessible to tourists.

The developments on the Kornwerderzand (including Experience Centre and Fish Migration River), the connection of the Afsluitdijk with the Frisian coast and the development of Harlingen-South are part of this.

An important objective of Waddenpark Fryslân is the promotion of the local economy in which the connection with regional entrepreneurs is very important.



Monument

The Monument has been built on the place where the Afsluitdijk was closed off on May 28, 1932. The Monument provides a beautiful view over the IJsselmeer and the Waddenzee. This is the place that attracts most tourists: approximately 250,000 per year. Foreign tourists particularly love this special place. When renovating the Afsluitdijk between 2018 and 2022, the area around the Monument will be given a facelift. It will also have a modern catering facility. Visitors will be able to enjoy the Afsluitdijk and the beautiful view even more.



Waddenzee Gate Den Oever

Den Oever is located right on the Afsluitdijk and borders the Waddenzee and the IJsselmeer. This makes Den Oever both the northern entrance to North Holland and a gateway to the Waddenzee and the Afsluitdijk. To give this special area greater publicity, we want to make it more attractive. Together with inhabitants and entrepreneurs, we work on a better reception of holiday makers and tourists. This means establishing new shops and businesses and extra support for the current entrepreneurs. Ideas are the construction of a small beach and a kiosk in the Zuiderhaven, the construction of a supermarket and a Waddenzee-experience next to nature park 'Het Schor'. This vantage point provides a view on the Waddenzee, the Afsluitdijk and the IJsselmeer.





7. Economy & Water

Experience centre

As a known icon of Dutch water engineering, the Afsluitdijk annually attracts over 300,000 visitors from Holland and abroad. In order to give these visitors a worthy reception and to tell and experience the many stories about the Afsluitdijk, an Experience Centre on the Kornwerderzand will be opened in 2018. The goal of the educational visitor centre is to tell the various stories about the Afsluitdijk and its surroundings. Examples are the (cultural) history, water engineering, the Fish Migration River, the World Heritage Site of the Waddenzee and the former Zuiderzee region.

The Experience Centre is open to visitors from the whole area, passer-by's and visitors from the immediate surroundings and guests from abroad that already visit the Afsluitdijk in great numbers. There are plenty of things to do in and around the Centre. From exciting attractions and educational exhibitions to diverse story routes, mooring places for ferry and pleasure boating, hiking paths, and a family cycling path along the Waddenzee. The restaurant grants a view on both the Waddenzee and the IJsselmeer.





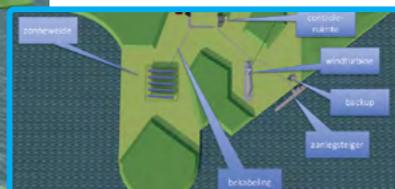
8. Energy & Water

Sustainable Energy

The Afsluitdijk is a perfect location for testing and developing new forms of renewable energy. There is often a strong wind and the light intensity is higher than in many other places in the Netherlands. There is also a difference in water levels, and the Waddenzee consists of salt water, and the IJsselmeer of fresh water. All these elements make it possible to create clean and sustainable energy. Examples are solar energy, kinetic energy and Blue Energy..

Off grid test centre

Four SMEs from the North Holland are developing an Off Grid Energy System. Wind, sun, water and storage have been combined into a sustainable autonomous energy system which can always meet the demand for electricity and is not connected to the electricity network. It consists of a temporary installation in which various technologies that generate sustainable energy are linked: a small wind turbine, 600m2 of solar panels and kinetic energy.



Breezanddijk



Breezanddijk is located in the middle of the Afsluitdijk. Breezanddijk used to be a work island created for the construction of the Afsluitdijk. In the future, the region wants to facilitate new initiatives in the field of sustainable energy here. The first step was made with the Blue Energy Plant. It can also be a great location for future tourist developments.

Solar energy

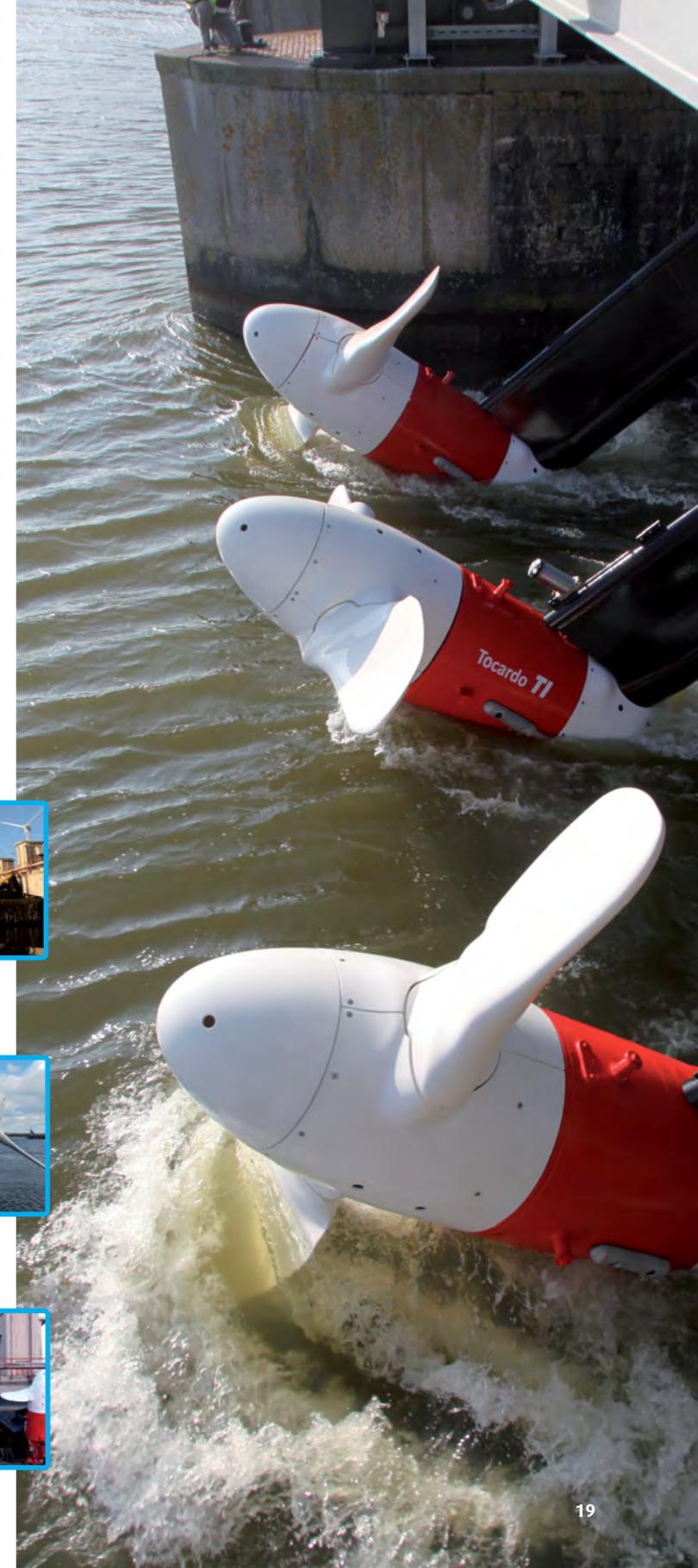
A long ribbon with solar panels on/in the dyke: a possible outcome of this renewable energy project. The Afsluitdijk is a very suitable location for the collection of solar energy. Among other reasons, because the light intensity in the north is higher than elsewhere in the Netherlands. This is why De Nieuwe Afsluitdijk is studying different forms of solar energy on the Afsluitdijk.



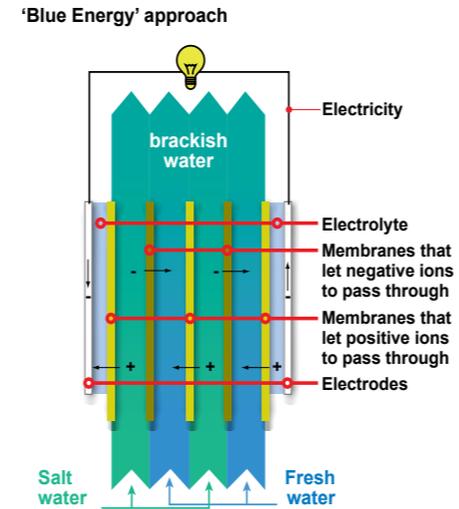
Kinetic energy

Kinetic energy is an environmentally friendly form of electricity generation. It uses flowing water. Flow is created by tide differences, but also by gravity drainage in locks. Learning about and developing efficiency systems in the field of kinetic energy is one of the projects in the field of sustainable energy on the Afsluitdijk.

The Afsluitdijk is a perfect location to generate kinetic energy and its development: there is no lack of tide differences and flows. Due to this tide difference on the Waddenzee, excess water in the IJsselmeer is drained two times per day. Den Oever hosts a test location for kinetic energy. This test location experiments with a (submersed) turbine driven by the water flowing into the Waddenzee through the locks. The turbine is used to convert the flow into kinetic energy



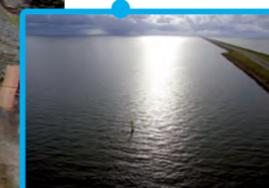
9. Energy & Water



Blue Energy

Blue Energy is the technology in which energy is recovered from the differences in salt concentrations of salt and fresh water. This technology can create energy anywhere in the world where fresh and salt water flows meet, for example where water from a river or purified sewage water of a sewage plant flows into the sea.

In order to optimise this technology, a test site has been built on the Afsluitdijk. The Afsluitdijk is the ideal place to test this technology on a large scale: the fresh IJsselmeer water flows into the salt Waddenzee. There is sufficient fresh and salt water available. The test plant has been in use since May 2014. You can see the plant with its inflow and outflow pipes at Breezanddijk..



10. Nature & Water



Diving through the Fish Migration River

De Blijje Vis®

De Blijje Vis® is the symbol for people, organisations and projects that want to give water back to fish. The symbol unites worldwide initiatives of individuals, nature conservations organisations and governments that promote and reinstate fish migration. The Blijje Vis® icon is meant to give fish back their water through publicity and fund-raising actions and allow them to reach their old nursery, spawning, growth and living grounds so that their populations can grow again. When the Fish Migration River is finished, hundreds of Blijje Vissen (Happy Fish) will create a special landscape artwork in the Fish Migration River Afsluitdijk. The concept and artwork have been designed by land scape architect Bruno Doedens. .



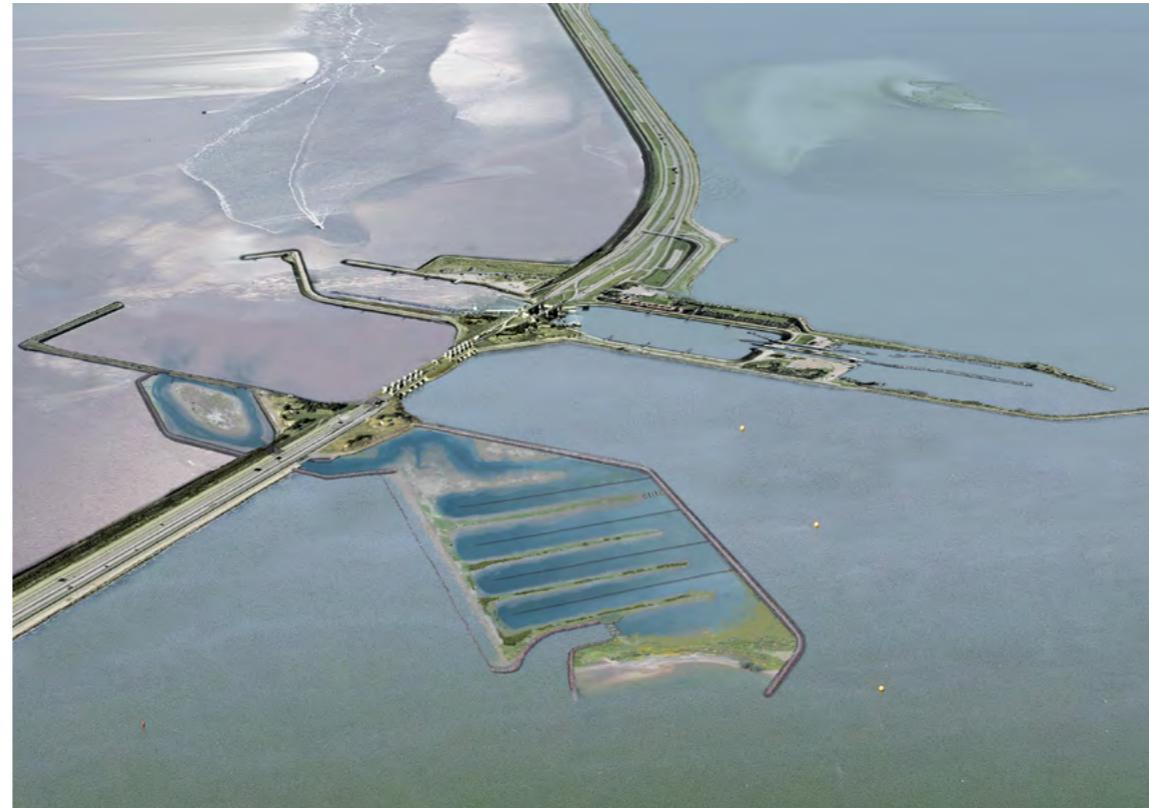
Houting



Shad



River prick



Eft

The construction of the Afsluitdijk between 1927 and 1932 had considerable benefits for the water safety and the development of the economy of Northern Holland, but the construction also caused damage to the natural area. An ancient delta was suddenly closed and the dyke became an insurmountable obstacle for migrating fish populations. Many types of migratory fish were disconnected from their inland spawning and living areas, which resulted in a strongly diminished fish population. Rijkswaterstaat and De Nieuwe Afsluitdijk want to restore the ecological connection between the Waddenzee and the IJsselmeer. This is good for the environment and particularly the fish populations in both important natural reserves. The government has started to restore these ecological connections a number of years ago.

Fish Migration River Afsluitdijk

The construction of the Fish Migration River creates an open connection between the salt Waddenzee and the fresh IJsselmeer. It is a passage through the dyke which is open 24 hours a day, all year round. It gives migratory fish an easy way to swim back and forth between the sea and the lake. Examples are eel (glass eel), stickleback, river prick, eel, flounder and houting. But it also used by twaite shad, shad, salmon, sea trout and sea prick. Even herring, sea bass and sturgeon can reach the former Zuiderzee. Thanks to the almost 100 hectares covered by the Fish Migration River, a new dynamic nature area is created with a unique tide river of approximately four kilometres for a gradual transition from salt to fresh water. The Fish Migration River will be constructed during 2018 and 2022.



Stickleback



Sea prick



Sea trout



Flounder



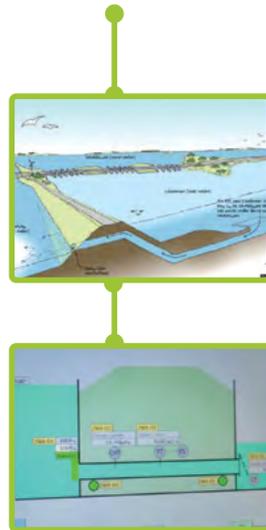
Large stern



Salt water drainage system

Due to the fish-friendly floodgate management, salt water from the Waddenzee enters the IJsselmeer. To prevent this water from spreading and affecting the drinking water facilities and the agriculture sector, salt water drainage systems have been constructed at Den Oever and Kornwerderzand.

The salt water drainage system works in accordance with the system of communicating vessels. Salt water is heavier than fresh water and drops into the deep wells on the IJsselmeer side of the Afsluitdijk. When the water level in the Waddenzee is lower than the IJsselmeer, the water pressure and gravity causes the water to flow from the IJsselmeer to the Waddenzee through a pipe.



Water quality

The IJsselmeer provides a large part of the Netherlands with drinking water. The IJsselmeer water is also very important to the agricultural sector. The government has the duty to control the quality of the water. Since water does not respect national boundaries, there are European agreements and guidelines for the management of water. We work on improving fish populations and strictly monitor that the IJsselmeer does not become overly salt.



Little tern

Fish-friendly lock management

A lock is used to provide ships with access to the IJsselmeer from the Waddenzee and vice versa. The ship enters the lock, the lock closes, the water in the lock is brought to the same level as the lake or sea the ships want to go, the lock opens on the other side, and the ship can go through the Afsluitdijk. The system is also used to provide passage to fish. They mainly swim in the evenings and at night.



Eel



Fish-friendly floodgate management

The Afsluitdijk has 25 floodgates, which are large holes in the dyke covered with a slide. Through the holes, Rijkswaterstaat lets out the excess water in the IJsselmeer into the Waddenzee twice a day. Millions of litres of water flow through these floodgates in a short period of time. Fish are able to swim with this flow to enter the Waddenzee at these moments.

For a lot of fish species, this flow is too strong to swim against and enter the IJsselmeer. They cannot access the IJsselmeer and access their spawning and growth grounds. This is why we also open the floodgates when the height difference is relatively small and the flow less strong. This enables weaker swimmers to swim back and forth between the IJsselmeer and the Waddenzee.



Natural riverbanks

The Afsluitdijk is located on the separation of the Natura2000 areas the Waddenzee and the IJsselmeer. The renovation of the Afsluitdijk offers opportunities for nature-friendly development of the shore areas. These can contribute to the restoration and development of both natural areas.

According to the N2000-Management Plan Waddenzee, there is a shortage of breeding options for a number of bird species along the Waddenzee. There may also be solutions for the lack of high water refuge places. With the release of material (stone and sand) of the work on and around the Afsluitdijk, we realise natural riverbanks along the IJsselmeer side of the Afsluitdijk.



11. Nature & Water



Salmon

The construction of the Afsluitdijk in 1932 had considerable benefits for the safety and the development of the economy of Northern Holland. But the construction also caused damage to the environment, as fish could no longer swim back and forth from salt to fresh water. Rijkswaterstaat has taken measures to restore to the ecological connection between the Waddenzee and the IJsselmeer.

Fish passage

In Den Oever is aan de westkant van de schutsluis vispassage aangelegd. Het is een buis door de dijk die afgesloten kan worden. Als de buis open staat kunnen de vissen heen en weer zwemmen tussen de Waddenzee en het IJsselmeer. In Kornwerderzand legt De Nieuwe Afsluitdijk samen met het Rijk ook een vismigratierivier aan.



12. History

Casemates

Fort Kornwerderzand consists of 17 heavy casemates, of which 9 in the first line. The Kazemattenmuseum site has three monuments for the fallen. It also provides more information about the fortifications and the heroic battle in May 1940. The museum also organises guided tours

Fortress

When it was decided to construct the Afsluitdijk in 1921, the Department of War called for strengthening Fortress Holland. It was decided to add casemates (bunkers) to the Afsluitdijk.

Second World War

Nazi-Germany invaded the Netherlands on May 10, 1940. Two days later, the Germans stood on the Afsluitdijk. The attempts to quickly take the dyke were halted at Kornwerderzand. Dutch troops held the German forces off for three days, despite being outnumbered and less well armed.

They withstood artillery shelling and an attack of German shock troops. After the bombardment of Rotterdam on May 14, the Netherlands surrendered. Fortress Kortwerderzand was the only Dutch fortress to stop the German troops, however short it lasted.



Visit the 
Kazemattenmuseum
(walking distance)

Afsluitdijk 5
Kornwerderzand
www.kazemattenmuseum.nl



Colophon

This is a publication of the Afsluitdijk and Rijkswaterstaat.

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