



Rijkswaterstaat
*Ministry of Infrastructure and the
Environment*

Project Afsluitdijk

Caring for nature



This brochure describes the relationship between Project Afsluitdijk and nature. How will we be taking flora and fauna into consideration during work on the dyke and in the final situation?

Afsluitdijk Project

Caring for nature



Construction of the Afsluitdijk in 1932 was a tour de force in the nation's battle against the water. However, it can also be regarded as the biggest ecological disaster our country has ever experienced. After all, no matter how impressive this 30 kilometre-long iconic structure might be, it actually signalled the end of the Zuiderzee, which was a unique inland sea featuring unique flora and fauna. The gradual transition between river and sea was reduced to a single line; in true Mondriaan fashion.

No matter how impressive this 30 kilometre-long iconic structure might be, it actually signalled the end of the Zuiderzee, which was a unique inland sea featuring unique flora and fauna.

With this history in mind, it seems logical to give nature a prominent position now that the dike is being renovated. Logical, but is it feasible? I am a member of the Afsluitdijk Project Quality Team and my role involves overseeing the conservation of plants and animals during and after work on the Afsluitdijk. I am optimistic about what can be

achieved. The Fish migration river will help to soften the dividing line between the saltwater Wadden Sea and the freshwater IJsselmeer. In time, salt marshes and reed marshes could form in this spot, like one sees along the full length of the dike. However, the artificial training walls and longitudinal dikes in the Wadden Sea must be kept in a form that supports unique plants like sea kale, samphire and sea beet. Sites where seals, seabirds and the unique spoonbill colony come onshore and forage will also be preserved. This means an open structure, without enclosed sheet piling.

The long verge on the IJsselmeer side of the dike offers a home to plants (and associated animal life) that have difficulty surviving in a lot of places in our heavily fertilised country. We must endeavour to create lush vegetation which also provides a home to all kinds of small animals on the dike. Finally, the Kornwerderzand and Breezanddijk junctions offer many exciting opportunities for nature development, including marram grass pastures and dune thickets. All in keeping with natural values at European level: Natura 2000.

Everything is in place. A few years from now, I do hope we'll be able to say that we managed to accomplish what we set out to achieve.

Joop Schaminée

*Afsluitdijk Project Quality Team
Professor of Systems Ecology, Radboud University
and Wageningen University and Research Centre*



Reinforcing the Afsluitdijk

The Afsluitdijk has been protecting the Netherlands from the sea for over 85 years. However, the dike, which was built in 1932, no longer satisfies current standards for water safety. That is why the Rijkswaterstaat (Dutch Ministry for Infrastructure and the Environment) is working on reinforcing the Afsluitdijk. During 2018 and 2022, we will be reinforcing the Afsluitdijk and strengthening the locks and drainage sluices. Powerful pumps will also be introduced in the sluice complex at Den Oever. This will allow us to drain more excess water from the IJsselmeer into the Wadden Sea.

The Afsluitdijk is a natural habitat for a wide array of plants and animals and has a number of important ecological qualities:

1. The Afsluitdijk serves as an ecological transitional zone. Although the Afsluitdijk itself is not a nature reserve, it borders two Natura 2000 areas. That's why we do not see the Afsluitdijk as a piece of architecture, but as part of a wider ecological system.
2. The Afsluitdijk has resulted in spontaneous nature on an artificial structure. The nature-friendly character of the dike profile, the open structure of rock-fill and basalt, and the large areas of grassland help to support development.
3. The Afsluitdijk introduces shelter to a dynamic environment where the elements have free rein.



...whilst caring for nature

The plans for reinforcing the Afsluitdijk have respected these unique qualities. However, the Nature Conservation Act also stipulates that we must take protected species and Natura 2000 areas into consideration during renovation activities and in the new setting once the Afsluitdijk is complete. This brochure highlights the involved species and explains which measures are being taken to this end.

Natura 2000

Natura 2000 is a coherent European network of areas that have been designated under the Nature Conservation Act, in order to comply with legal arrangements established in the EU's Birds Directive and Habitats Directive. The areas contain irreplaceable natural features of international significance, and play a major role in efforts to preserve and restore biodiversity. Both directives identify the Wadden Sea and IJsselmeer as Natura 2000 areas for a wide range of unique natural features. The Afsluitdijk is located in their midst.

[Read more →](#)



'As an advisor on ecology and nature legislation, it feels special to play a role in such an important project, where technology and nature are combined. My main task involves examining how technology needed to revamp the Afsluitdijk can be used to support nature without breaching the Nature Conservation Act. These efforts have now led to all necessary nature permits being obtained and to nature-related contractual requirements being established for the contractor. Contractors will thus be well prepared when they start work.

I look forward to seeing a beautifully renovated Afsluitdijk in 2022. This includes plants and animals that will find a new habitat in the finished project. I'm confident that this will happen, which means I will have succeeded in my task.'

Sophie Lauwaars

*Senior Advisor Eco-engineering, Nature Legislation
Rijkswaterstaat*

Nature conservation

Activities for reinforcing the Afsluitdijk will be carried out in the immediate vicinity of the Wadden Sea and the IJsselmeer. And this could have an effect on protected animals and plants. At an early stage, Rijkswaterstaat started applying for nature permits for all activities that could have adverse effects on protected nature. These permits were issued by the Ministry of Economic Affairs at the start of 2016, with the understanding that damage will not be done to the natural characteristics of the concerned Natura 2000 areas, the Wadden Sea and the IJsselmeer.

These permits include special provisions and restrictions concerning, for example, the protection of bats. It is also forbidden to disturb the mating, sleeping or living habitat of the common seal, the grey seal and the stone marten. All of them are protected animal species found in the area on or near the Afsluitdijk. No special provisions have been identified for plants.

Nature Conservation Act

On 1 January 2017, the Nature Conservation Act 2017 superseded the following three acts:

1. Nature Conservation Act 1998
2. Flora and Fauna Act
3. Forest Act

Working with a single act will make nature legislation more transparent.



Spoonbills on the Banana



Reinforcement work will not only be carried out on the Afsluitdijk itself but also on the accompanying levees and breakwaters. The levee at Den Oever, which is around 700 metres long and four metres wide, will be fitted with new cladding along its entire length. This will have consequences for the colony of spoonbills nesting there.

Spoonbill colony

The levee at Den Oever – which is called the ‘Banana’ due to its curved shape – is home to a spoonbill nesting colony featuring over a hundred nests. The colony has an ecological relationship with the Wadden Sea. The birds have an abundance of food; shrimps in the salt water and sticklebacks, water insects and dragonfly larvae in the fresh water of the IJsselmeer. Moreover, the levee offers ideal conditions for building nests and raising offspring. The isolated dam cannot be reached by predators like foxes, nor by cats or dogs. It is also impossible for people to come ashore. The spoonbills can thus nest in tranquillity and safety. And an ample supply of food is always available close to the nesting site.

There were 16 nests in 2008 but, since 2010, around 100 spoonbill pairs have been nesting there.

The first nesting pairs were spotted on the Banana in 2006. This increased to 16 nests in 2008, but by 2010, around 100 spoonbill pairs could be seen nesting on the levee. The first birds arrive from southern Europe and Mauritania in March each year and the last birds fly south to their wintering grounds at the end of September. During the migration, around 60% of the young die due to hunting, predation, exhaustion and, in particular, high-voltage cables.



Rijkswaterstaat and the spoonbill

Rijkswaterstaat has drawn up contractual requirements for work carried out on the levee; they stipulate that the spoonbill colony must be taken into consideration.

- Activities will not be carried out when spoonbills are staying and nesting on the dam.
- The top layer on the crest and the upper parts of the incline are made from stone with an open structure for returning vegetation.
- In order to restore the nesting ground once activities have been completed, endemic species of vegetation, like sea wormwood, will be introduced between stones on the crest along the entire length of the levee.

*Read the interview about spoonbills
with Leon Kelder from Staatsbosbeheer →*

‘There are various options when it comes to keeping spoonbills on the dam at Den Oever.’

See where spoonbills are located on the map in the cover



‘This colony of spoonbills at Den Oever is unique. In southern Europe, spoonbills build their nests high up in the trees. But here in Den Oever, the nests are simply located on the ground, on top of the dam. As it happens, it isn’t even bare all year round. Since its construction, it has been worn down considerably by the elements. This has allowed vegetation to grow. During the summer, all sorts of things can be seen growing there. And that’s something spoonbills appear to appreciate.

It’s great to have such a colony here. With its snow-white feathers, fantastic quiff and black spoon-shaped bill, the bird appeals to a lot of people’s imaginations. Boat excursions head out onto the Wadden Sea from Den Oever. Besides seal-spotting, people like visiting the Banana so they can admire the spoonbill colony. These majestic birds can be observed from a suitable distance.

Because renovation work on the Afsluitdijk could have an adverse effect on the nesting colony, the Lepelaar Nederland work group got in touch with Rijkswaterstaat and offered several recommendations. This included dividing renovation work on the Banana into two phases. Start by addressing half of the dam first, and do the other half a couple of years later. However, this is not feasible from a cost perspective. But there are also other options for keeping spoonbills on the dam. For instance, there needs to be vegetation, otherwise the birds will not be able to nest. So it wouldn’t be a good idea to cover the dam in cladding to which seeds are unable to attach themselves. Instead, an open structure should be chosen, certainly on top of the dike, where endemic plants should be sown. This will maximise the chances of returning vegetation and returning spoonbills.’

Leon Kelder

Forester Ecology, Staatsbosbeheer



Peace and quiet for birds, space for humans

Staatsbosbeheer is one of the partners of the 'Peace and quiet for birds, space for humans' projects, which is run by Vogelbescherming Nederland. Over the next few years, this project will aim to improve conditions for nesting, sleeping and foraging birds in the Wadden area. Besides creating new nesting grounds and high-water places of refuge, the project wants visitors to enjoy the wading birds by offering them interactive information and creating new bird-watching sites. The levee at Den Oever is part of the project.

www.rustvoorvogelsruimtevoormensen.nl

A close-up photograph of a stone marten, a small mammal with dark brown fur, resting on a mossy log. The background is a soft-focus green, suggesting a natural, wooded environment.

Stone martens in Casemates

Large pumps will be installed near the sluice complex at Den Oever so excess water can be drained from the IJsselmeer into the Wadden Sea. And there is a good chance of the stone marten's habitat being disturbed during (pile-driving) activities.

Stone marten spotted

It is likely that a stone marten has made its way from Friesland to the Afsluitdijk because its tracks were found when casemates were being inspected. Prey leftovers were found at Kornwerderzand, while excrement and regurgitated food was found in two casemates at Den Oever. A motion-sensing camera was actually used to spot the stone marten in a casemate on the Robbenplaat. The marten was then captured on camera several times in different months. This suggests a permanent place of residence and perhaps even a mating site. Evidence of a nest or young stone martens has not (yet) been found. Because stone martens often use several hiding places, it is plausible that various casemates on the Robbenplaat, on both sides of the A7 motorway, are part of the stone marten's territory.

The casemates will be temporarily sealed off during work on the sluice complex. As a result, the marten's permanent place of residence will be temporarily lost.

Prey leftovers were found at Kornwerderzand, while excrement and regurgitated food was found in two casemates at Den Oever.



Rijkswaterstaat and stone martens

The exemption from the Flora and Fauna Act features certain conditions relating to stone martens when performing activities that disturb or affect casemates:

- Before the mating season (1 March - 1 August) for stone martens starts, casemates where stone martens live will be sealed off and rendered unsuitable for breeding. There are enough alternative resting and living places for stone martens in the surroundings.
- Casemates that are not fully earthed will be reopened once the activities have been completed, so the stone marten can return to its former habitat.

See where the stone marten is located on the map in the cover



Bats in transit

The Afsluitdijk will be given new exterior cladding which is strong enough to withstand a heavy storm. During the renovation work, existing vegetation on the dike's incline will disappear. This will have an impact on the bats on and around the dike.

Nathusius' pipistrelle

The Afsluitdijk is a popular place for bats, which is strange because bats don't normally like open, windy areas. However, the Afsluitdijk is located on the route followed by the Nathusius' pipistrelle, which migrates to the Netherlands from the Baltic countries and Scandinavia. They mainly migrate along the coast and see the Afsluitdijk as part of the 'coastline'. The route from Friesland to North Holland is fast and safe. And because there are a lot of mosquitoes on and around the dike, food is never in short supply. That's why the Afsluitdijk is a popular sleeping and foraging location for bats during spring and autumn. They sometimes pass through here in their hundreds.

Other species of migratory bats are also found around the Afsluitdijk, like the pond bat, the parti-coloured bat and the common noctule.

Public and site lighting installed on the Afsluitdijk will be bat-friendly.



Rijkswaterstaat and bats

The permit issued under the Nature Conservation Act includes conditions for the bats:

- No artificial light can be switched on between sunset and sunrise during the months of March/April and August/September. Work lighting can only be used to illuminate the work site during these periods. Light emissions cannot escape into the surrounding area.
- Lighting on ships, vehicles and work sites can only be switched on if needed to perform work and transport activities in a safe manner.
- Light emissions must be stopped from escaping to Natura 2000 areas wherever possible.

- Public and site lighting installed on the Afsluitdijk must be bat-friendly.
- Use of the sluice complexes at Den Oever and Kornwerderzand, and new pumps in the sluice complex at Den Oever, cannot increase light and sound in a manner that disturbs pond bats.

Read the interview about bats with Bob Jonge Poerink and Jasja Dekker from The Fieldwork Company →

‘The Afsluitdijk is not only like motorway for bats, it’s also a great foraging area.’

*View the bat route
on the map in the cover*



‘We’ve only known for the past few decades that bats actually migrate like birds. Collaborative research shows that the delicate little creatures cover distances of up to two thousand kilometres. This is quite a risky journey. That’s why it’s important to consider bat migration in the nature conservation measures implemented during activities on the Afsluitdijk.’

We approached Rijkswaterstaat of our own accord. Ecologists want all bats associated with the Afsluitdijk to be taken into consideration. So we’re studying exactly where they live, how they fly and what they eat. We’ve hung up bat boxes at Kornwerderzand and Breezanddijk. A pole featuring a bat detector can be found close to the Monument on the Afsluitdijk. The detector monitors bats that fly past it every night. And that’s a lot of bats. The Afsluitdijk is not only like a motorway for bats, it’s also a great foraging area. Rose hip bushes are found along

the rugged stretches of the incline. They attract huge swarms of chironomids, which bats go crazy for. A single bat can easily consume 1,000 chironomids a night. They feast on them before setting off on their long journeys, which means vegetation around the dike is a matter of life and death for them. But it also keeps the animals away from the A7 motorway, where they could be hit by vehicles. That’s why we recommend replanting vegetation at various locations on the dike in due course.’

Bob Jonge Poerink
*Ecologist/Researcher,
The Fieldwork Company*

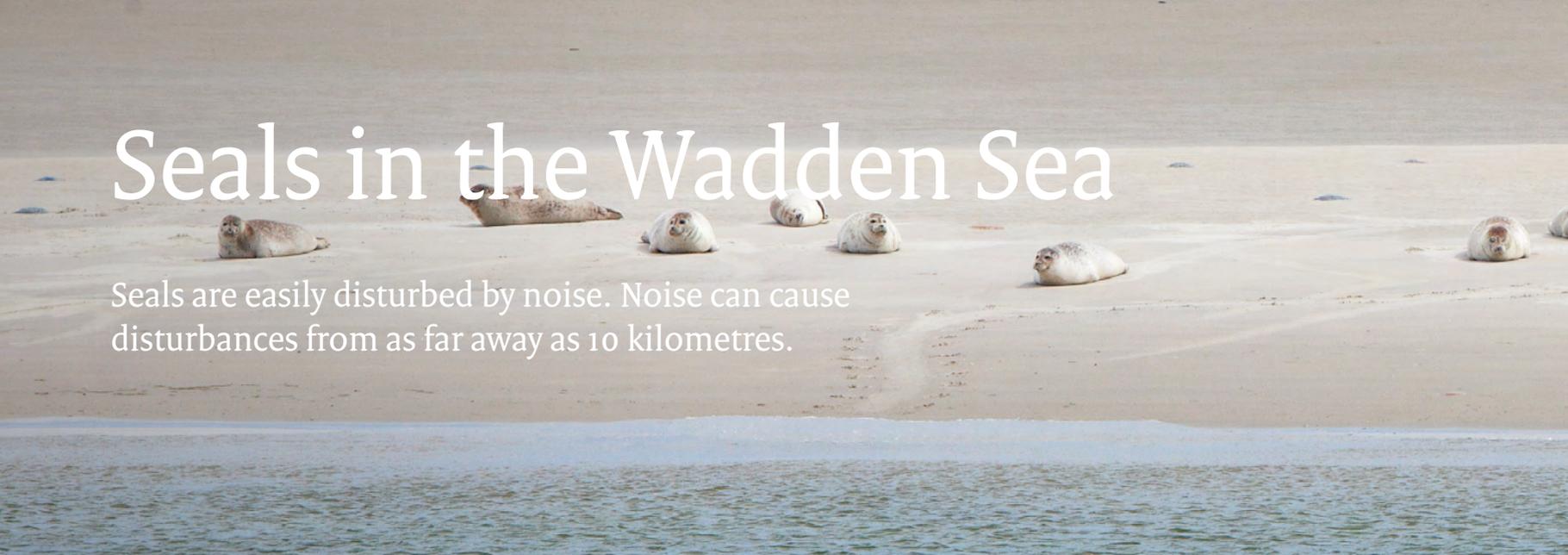
Jasja Dekker
Zoologist



The Fieldwork Company

The Fieldwork Company has been studying bats on the Afsluitdijk for a few years. The company specialises in amassing data for ecological research. The Fieldwork Company mainly does this by taking frequent measurements using cameras, recorders, drones and telemetry. For many years, it has been suspected that the Afsluitdijk is home to many bats. But this has now been confirmed by measurements. www.fieldworkcompany.nl

Seals in the Wadden Sea



Seals are easily disturbed by noise. Noise can cause disturbances from as far away as 10 kilometres.

Common and grey seals

Grey seals and common seals live in the Wadden area. Their resting places are located two and a half kilometres from the Afsluitdijk, near Kornwerderzand. Seals can also be found around the sluice complexes at Den Oever and Kornwerderzand. During low tide, they use the drying mudflats and sandbanks to give birth and suckle their young. Water around the sandbanks serves as an access route and provides food in abundance.

Activities on the dike could disturb the mating, sleeping and foraging sites of common seals and grey seals. The seals will probably leave their current habitats and look for an alternative.

Both species of seal will remain in the vicinity of the Afsluitdijk. After all, the neighbouring areas feature enough space for them to live, pass through and forage. Once activities have been completed, grey and common seals can fully use their habitat once more.

A 'soft start' will give seals the opportunity to calmly leave the area.



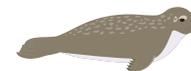
Rijkswaterstaat and seals

The exemption from the Flora and Fauna Act features certain conditions relating to seals when performing pile-driving activities on the Afsluitdijk. This will allow us to minimise the adverse effects on seals.

- No pile-driving activities can be started during the mating season in June, July and August. Pile-driving activities started in April/May cannot be interrupted for more than five days during the mating season.

- Pile-driving activities must always be started at low capacity, increase gradually and only reach full power after 15 minutes. This 'soft start' will give seals the opportunity to calmly leave the area around the pile-driving location.
- The above-water noise level of maximum 60db cannot exceed a distance of 500 metres.

See where seals are located
on the map in the cover



Fish migrating between salt water

The Afsluitdijk is a major barrier for fish migrating from salt water to fresh water and vice versa. That's why Rijkswaterstaat is committed to fish-friendly sluice and lock management. There is also a fish passage at Den Oever. A regional partnership entitled De Nieuwe Afsluitdijk is constructing the Afsluitdijk Fish Migration River near Kornwerderzand. Rijkswaterstaat will be creating a hole in the dike so the river can be created.

Fish migration

Construction of the Afsluitdijk in 1932 had a major impact on the fish population. Migratory fish can only survive if they can migrate from salt water to fresh water (or vice versa) to lay their eggs and raise their young. When the sea was cut off from the IJsselmeer, the gradual transition from fresh water to salt water was lost, and fish migration was impeded. This led to dramatic changes in fish stocks. In recent years, Rijkswaterstaat has partly restored the connection between salt water and fresh water by creating a fish passage in Den Oever and by implementing fish-friendly sluice management.

The four-kilometre-long Fish Migration River, which will wind its way through the Afsluitdijk at Kornwerderzand, is the finishing touch in measures aimed at re-opening the Afsluitdijk to fish. Migratory fish that will use the Fish Migration River to go back and forth between

the IJsselmeer and Wadden Sea include eel, salmon, stickleback, smelt, sea lamprey, common sturgeon and sea trout. Freshwater fish that involuntarily end up in the sea via the drainage sluices will be able to return through the Fish Migration River. And saltwater fish like herring and sea bass will be able to use the Fish Migration River as a foraging area. Incidentally, not only fish will benefit from the new passage once it has been completed. For instance, it will also become an appealing nature reserve for birds.

An underwater photograph showing several fish swimming in a greenish, slightly murky water. Large, dark green seaweed stalks are visible in the foreground and background, creating a natural habitat environment.

and fresh water

Migratory fish can only survive if they can swim from salt water to fresh water (and vice versa).

Rijkswaterstaat and migratory fish

Rijkswaterstaat has drawn up conditions relating to migratory fish, which must be respected when performing activities:

- Noise-related nuisance caused by the activities must be kept to a minimum.
- It must always be possible for fish to migrate via the fish passage, lock or sluice complex at Den Oever and Kornwerderzand when activities are being carried out.
- The new pumps at Den Oever must feature the very best technology so fish safety can be ensured.

Read the interview about the Fish Migration River with Meinard Bos from De Nieuwe Afsluitdijk →

‘Constructing the Afsluitdijk harmed fish stocks. Harm that we’re now in a position to remedy by means of the same Afsluitdijk.’

See the location of the fish passage and the Fish Migration River on the map in the cover



‘The idea of a Fish Migration River is revolutionary. It will enable us to provide migratory fish with the passage they need through the Afsluitdijk to be able to spawn. Back in the days of the Zuiderzee there was a natural, brackish transition from salt water to fresh water. This abruptly disappeared with the construction of the Afsluitdijk. Migratory fish were no longer able to migrate. We harmed fish stocks. Harm that we’re now in a position to remedy by means of the same Afsluitdijk. After all, the large-scale work will also present opportunities for new projects.

The Afsluitdijk Fish Migration River is one of these. In recent years, regional parties in the provinces of North Holland and Friesland have been working extremely hard to make the plans for the Fish Migration River part of the government’s renovation plans. It’s great that these efforts succeeded. The Fish Migration River is on its way, and will be complete by 2023. Thereafter we will have the river artificially “sluiced

back and forth” twice a day. At low tide, fish coming from the sea and swimming in against the current will have a shortcut through to the IJsselmeer. Other fish and larvae hitch a ride when the river is washing the other way at high tide. It’s exciting how quickly the migratory fish in the Wadden Sea can find the opening heading through to the IJsselmeer. We’re going to measure that. The river is also a learning project. We will be optimising how we manage things, subjecting what happens to scrutiny, learning from new situations and making adjustments where necessary. These things have also been incorporated into the plans. We can adapt the river to the migration of the migratory fish. The entire concept has been thought up from the perspective of the fish. What do they need to survive? The fish are key. That’s what makes this project unique.’

Meinard Bos

Project Manager DNA, Friesland provincial authority



De Nieuwe Afsluitdijk (DNA)

De Nieuwe Afsluitdijk is the name for the regional partnership between the provincial authorities of North Holland and Friesland and the local authorities of Hollands Kroon, Súdwest-Fryslân and Harlingen. Together they are engaged in the development of numerous new projects and initiatives. DNA is keen for the Afsluitdijk to serve as an example of sustainable innovation in the fields of Energy & Water, Nature & Water and Economy & Water.

Throughout the renovation of the Afsluitdijk, Rijkswaterstaat will actively be taking into consideration the nature and ecological systems present on and around the dike. In this regard, we have no intention of glossing over any criticism expressed. It Fryske Gea, for example, requested several changes to be made to the permit issued under the Nature Conservation Act, also on behalf of Vogelbescherming Nederland.

Concerns

In conjunction with Vogelbescherming Nederland, It Fryske Gea indicated three points of concern:

1. The probability of high water and flooding of birds' nests in the IJsselmeer is increasing due to the sluices having to be partially closed during the nesting season.
2. The dike's classing must be made suitable for birds and plant and seaweed cover.
3. The work on the Afsluitdijk must be viewed in conjunction with other work around the IJsselmeer, such as the construction of nature-friendly banks for the Water Framework Directive.

'Let's start by saying that we're happy with the Fish Migration River, which Rijkswaterstaat is actively cooperating with. However, the consequences for nesting and foraging birds during the work on the Afsluitdijk are drastic. The same goes for the vegetation on the dike and the marine life on the Wadden side. We'll have to see whether and how that recovers. We've expressed our concerns in order to prevent these drastic effects from being underestimated. And Rijkswaterstaat has certainly devoted attention to these. They've been extensively discussed in various meetings.

The issues of safety and mobility around the Afsluitdijk are so significant that there is little room for manoeuvre in terms of acting on our concerns and the opportunities we're highlighting. In projects following on from the project on the Afsluitdijk, such as 'Frisian IJsselmeer Coast Opportunities for Connection' and the 'IJsselmeer Area Agenda 2050', we see significant efforts on the part of Rijkswaterstaat to aid the recovery of nature in the IJsselmeer. This is amply compensating for the potential harm to nature due to the renovation of the Afsluitdijk. A significant success for us in the Afsluitdijk project itself is the fact that the dike cladding will not

Rijkswaterstaat and It Fryske Gea

Rijkswaterstaat organised various information meetings in order to discuss concerns and collect questions. Ecologists charted the risks and opportunities for nature and stated whether or not anything could be done about these. The results were as follows:

- The increased risk of flooding nests during the nesting season has been reduced.
- Asphalt will not be used for the dike's cladding, presenting opportunities for new vegetation once the Afsluitdijk has been reinforced.
- Within the compass of the Afsluitdijk project there is no elbow room for doing anything extra for plants, seaweed and fish currently living at the foot of the dike and for linking the task (from the Water Framework Directive) of ensuring the banks of the IJsselmeer are more nature-friendly to the Afsluitdijk renovation work.

consist of asphalt. That would have been the worst possible scenario for new vegetation following reinforcement of the Afsluitdijk. To this end, a measure has now been incorporated into the permit issued under the Nature Conservation Act.'

Chris Bakker

Head of Nature Quality, It Fryske Gea

It Fryske Gea

It Fryske Gea is the provincial association for nature conservation in Friesland. The association manages such things as nature beyond the dikes along the Frisian IJsselmeer coast.



The Afsluitdijk Facts and figures

The Afsluitdijk



since 1932

the Afsluitdijk has been protecting the Netherlands from the sea.

Spoonbills



100 nests

on the training wall at Den Oever, which is called the 'Banana' due to its curved shape.

Bats



4 months

a year between sunset and sunrise, working with artificial light is prohibited.

Seals



2.5 kilometres

from the Afsluitdijk (level with Kornwerderzand) and around the sluices seals are to be found.

Stone martens



01/03 - 01/08

is the mating season for the stone marten.

Migratory fish



by 2023

the Fish Migration River will be complete. Thereafter we will have the river artificially 'sluiced back and forth' twice a day.



Wadden Sea

Friesland

A7

places where seals lie

Afsluitdijk Wadden Center (2018)

Fish Migration River

Lorentzsluizen casemates

Kornwerderzand

place where stone marten lives

bats' route

Breezanddijk



places where seals lie

spoonbills on 'the Banana'



The Monument

IJsselmeer

casemates

place where stone marten lives

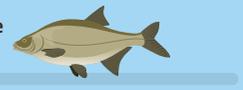


Den Oever

A7

Stevinsluizen

fish passage



North Holland



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