

Demer Valley Project

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The Sigma Plan protects Flanders from flooding while enhancing the estuarine environment.

The Scheldt is a tidal river with the typical dynamics of ebb and flow. It is affected by the position of the earth and the moon, and spring tides with higher water levels occur twice a month. When this coincides with a northwesterly storm at sea, this results in a storm tide with exceptionally high water levels due to high-speed winds pushing the water towards the coast. The Gale of January 1976 is a well-known example of a storm tide. It caused severe damage in the Belgian provinces of Antwerp and East Flanders, so the government decided that better protection was needed. This resulted in a large-scale water safety project called the Sigma Plan. The Sigma Plan was created in response to the floods caused by the Gale of January 1976.

The updated Sigma Plan of 2005 is committed to both flood protection and the restoration of valuable estuarine nature.

The Demer Valley

The Demer Valley Sigma Plan project covers a long stretch of 2,851 hectares. This vast area has been divided into eight subzones with a step-by-step approach for the flooding and aridification issues. The subzones are: Vinkenbergh, Demerbroeken, Laarbeek-Motte, Testelt-Langdorp, Amerbeemd, Demer meanders, Laakvallei and Rechteroever Werchter.

A number of specific interventions is bringing the Demer Valley back to life. It is regaining its original appearance but with a contemporary touch. A meandering Demer will prevent uncontrolled floods and strengthen the connection between the river and nature in a special way. The Sigma Plan is creating a dream habitat for a wide range of rare animals and plants.

Location

Diest, Scherpenheuvel-Zichem, Aarschot, Begijnendijk, Tremelo and Rotselaar

Surface area: 2,851 hectares

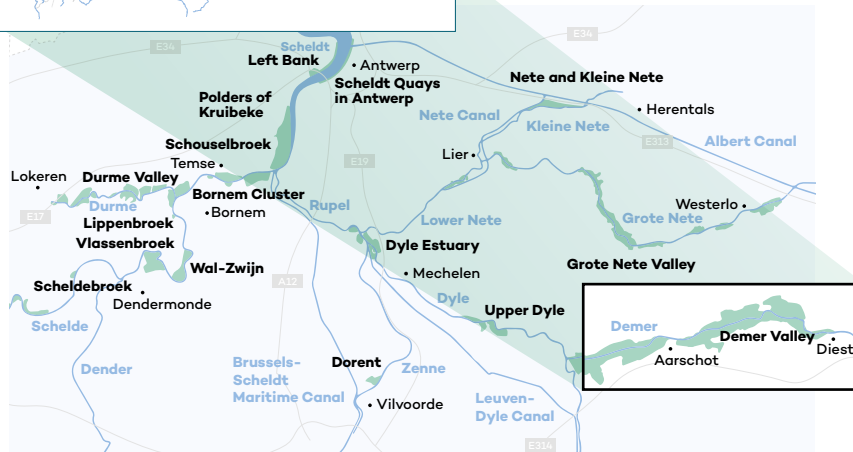
River: Demer

Interventions

- Construction of breaches and excavation of levees
- Restoration of meanders (natural water storage)
- Construction of barriers

Why?

- Flood protection
- Restoration of European protected nature
- A solution to aridification



What measures are being taken?

The Demer has been forced into a tight straitjacket ever since the nineteenth century. This 'canalisation' saved people time and money, but also made the valley more susceptible to flooding (in periods of heavy rainfall) and aridification (in dry periods). Cutting off the river from its valley means high water levels are no longer naturally curbed. This has resulted in regular flooding in recent decades. To permanently rule out severe floods like the one in September 1998, the Flemish government, the province of Flemish Brabant and the Demer municipalities of Diest, Scherpenheuvel-Zichem, Aarschot, Begijnendijk, Tremelo and Rotselaar are undoing some of the river's canalisation. The historic landscape of the grassland valley with open views is also being restored. Smaller watercourses and ditches are being adapted to foster a more natural hydrological regime.



Demer meander

Breaches and levees

At high water levels, the Demer Valley needs to be able to store more water. The river's historical course is therefore complemented by chutes in targeted places that allow it to flood more naturally. This stops other valuable zones – residential areas and agricultural land – from flooding. We are lowering the levee in eight locations along the Demer. We are building new safety levees or locally raising the existing ones where necessary.

We are restoring the winter riverbed – the area a river takes up in winter – in certain places. This will create just under 2,000 hectares of controlled water storage space in the Demer Valley.

Re-meandering

The Sigma Plan is reconnecting a total of 11 kilometres of historic meanders to the Demer. These river bends slow down the water flow and reconnect the Demer to its valley so that more water can be stored for longer. This has two main advantages. In wet periods, the Demer Valley will be able to store more water. And in dry periods, the water will drain away more slowly, resulting in less aridification. A meandering Demer will allow nature and people to breathe again.



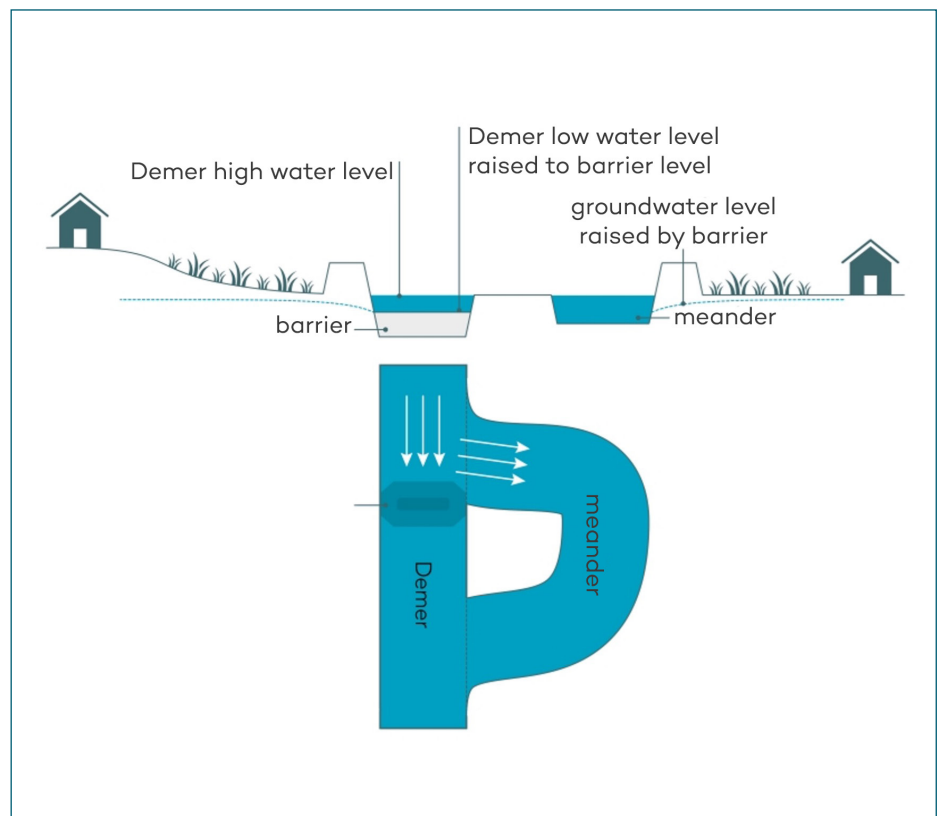
Diest levee relocation

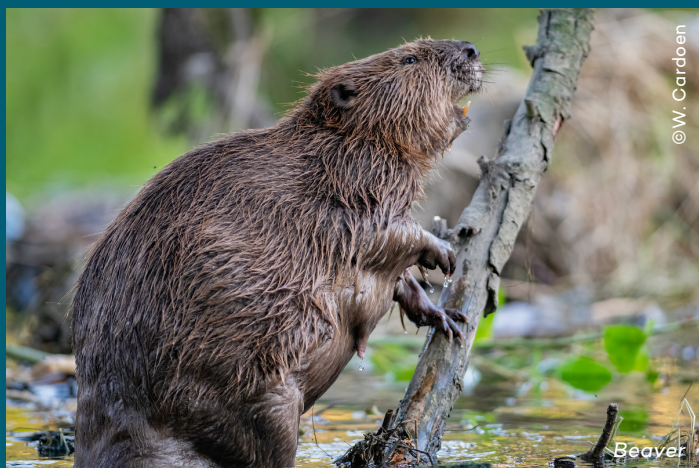


Riverbed barriers

Many nature areas in the Demer Valley are drying out. This is caused by the Demer's significant depth, which leads to particularly low groundwater levels in summer. As a result, many vegetation types in the valley dry out. To solve this problem, we will be placing barriers at the Demer meanders we are reconnecting. Those barriers will make the water flow towards the meanders, which are on a higher level than the Demer. The barriers raise both the river level and groundwater level during dry periods.

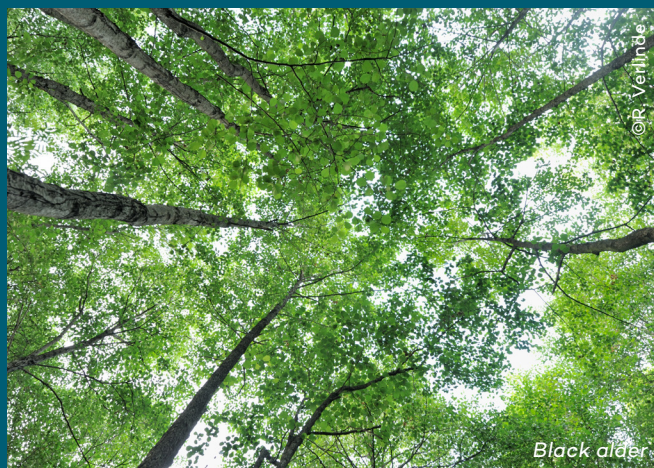
So does that also mean they increase the risk of flooding at higher water levels? No, because in that case the Demer's water will simply flow across the barriers.





©W. Cardoen

Beaver



©P. Verlinde

Black alder



©Y. Adams

Corncrake



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Great bittern

A green oasis attracting some rare guests

Allowing the Demer to follow some of its natural course again, improving the connection with the valley and making the banks more nature-friendly will attract European protected species, such as the European bitterling, weatherfish and great bittern. This is how we help to achieve the European conservation objectives.

The Demer Valley has always been rich in flora and fauna. And yet in recent decades, its biodiversity took a serious hit due to agricultural intensification, water pollution and the subsoil's steady aridification. As a result, many distinctive landscapes have almost completely disappeared: flowery grasslands, wet woodlands, natural floodplains, floating mats ...

Variety is key

In the places where the Sigma Plan is investing in nature development, diversity will be key, with wet grasslands, reed marshes, shrublands and wet forests. By stopping aridification and taking other targeted actions, we aim to create the perfect environment for vulnerable birds, insects and plants. The great bittern, for example, loves vast reed marshes. The corncrake and common snipe seek out wet grasslands that are mowed late in the season. A wide variety of colourful water-loving plants, trees and insects will thrive and create new life in the wetlands of the Demer valley.

Amphibians like the great crested newt also thrive in the marshlands near the old Demer watercourses. In the semi-open valley landscape of the Demer meanders we will create wet forests with native trees such as the black alder, maple, ash and willow. These will attract extraordinary animals such as the beaver. By connecting fragmented forests, we are also hoping to welcome back the rare black stork in the near future.

The Demer's fish stock currently includes some 20 species and will also benefit from the meanders.



^ Demer meanders

The many meanders make this wooded area unique. The interconnected meanders help restore nature and the landscape and act as water buffers as well. This is great news for target species such as the beaver, black stork, great crested newt and weatherfish.



Testelt-Langdorp >

In this part of the valley, we try to intertwine agriculture and nature as much as possible. In Langdorp, farmers use land that is currently already part of the winter riverbed and therefore floods regularly.



Laarbeek-Motte >

This historic branch of the Demer River plays an important role in the valley's water management. We aim to improve water buffering here to restore groundwater-dependent vegetation such as the marsh marigold, sharp-flowered rush and devil's-bit.

< Demerbroeken

We raised the Demer's base water level in this vast natural area where the valley is at its widest. We did this by constructing targeted barriers, connecting meanders and installing weirs in the tributary streams. The restored reed marshes also hold on to the water at times when its levels are decreasing.



< Laakvallei

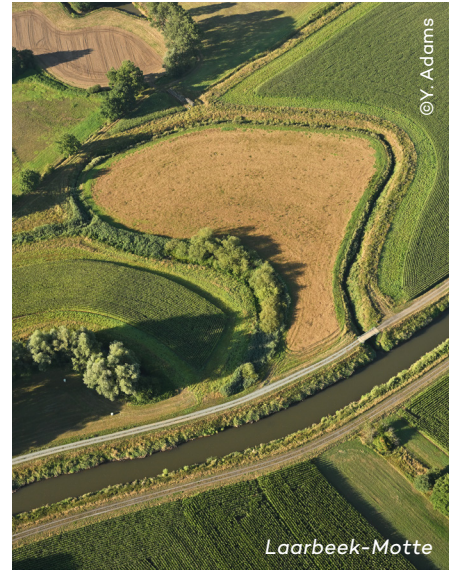
The Laak is an old river branch that we are reconnecting to the Demer in two places. This will add a side stream. The Laakvallei can also store excess water.

Werchter Rechteroever >

We are reconnecting the old meanders in this nearby woodland area just like in the Demer meanders area. The built-up areas of Werchter, Leybos and Guldentop will be protected from flooding.

< Vinkenberg

The Vinkenberg sub-area has great natural wealth. It is a mosaic of marsh, grassland and ditches, shrubland, woodland and thickets, in which we safely raised the groundwater level. A small safety levee was constructed to the east to protect neighbouring houses from flooding. We connected the very first meander in this sub-area.

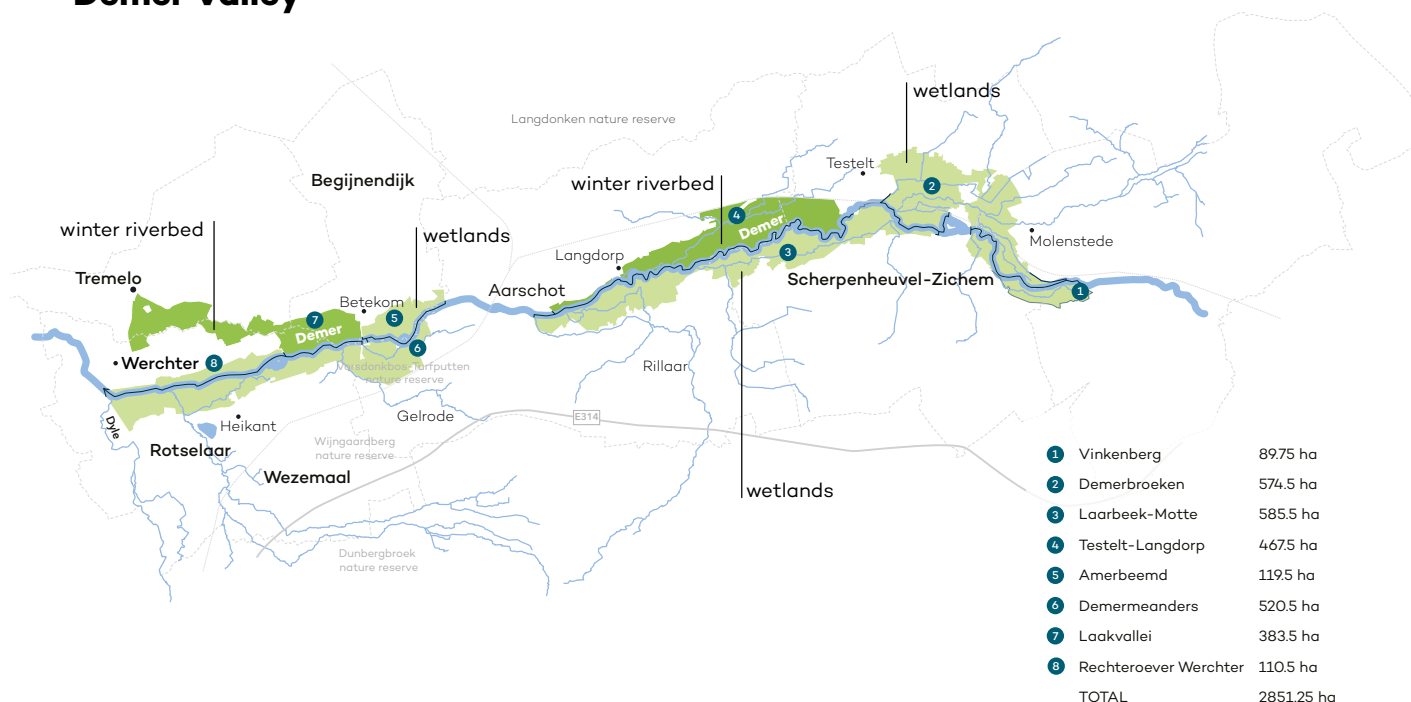


> Amerbeemd

This meadow used to flood regularly as the water levels in the Demer rose. Now we mainly see rows of poplars, fields and pollard willows, but we are designing this area as a mix of wet, floodable grasslands and shrublands interspersed with thickets and woodland.



Demer Valley



Project name	Surface area	Municipality	Duration	Intervention
Vinkenbergh	90 hectares	Scherpenheuvel-Zichem and Diest	2017-2019	- Construction of breaches and excavation of levees - Restoration of meanders (natural water storage) - Construction of barriers
Demerbroeken	575 hectares	Scherpenheuvel-Zichem (Testelt)	2017-2025	- Construction of breaches and excavation of levees - Restoration of meanders (natural water storage) - Construction of barriers
Laarbeek-Motte	585 hectares	Scherpenheuvel-Zichem (Rillaar) and Aarschot (Langdorp)	2017-2025	- Construction of breaches and excavation of levees - Restoration of meanders (natural water storage) - Construction of barriers
Testelt-Langdorp	467 hectares	Scherpenheuvel-Zichem (Rillaar) and Aarschot (Langdorp)	2025-2027	- Construction of breaches and excavation of levees - Restoration of meanders (natural water storage) - Restoration of historic riverbed
Amerbeemd	120 hectares	Aarschot and Begijnendijk (Betekom)	2025-2027	- Restoration of meanders (natural water storage) - Construction of barriers
Demer meanders	520 hectares	Aarschot and Rotselaar (Werchter)	2017-2027	- Restoration of meanders (natural water storage) - Construction of barriers
Laakvallei	384 hectares	Begijnendijk and Tremelo	After 2030	
Werchter Rechteroever	110 hectares	Rotselaar (Werchter)	From 2027	- Safety levee - Restoration of meanders (natural water storage)