

Durme Valley Project



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

The Scheldt is a tidal river. Twice a month, the ebb and flow dynamic causes a spring tide, which comes with higher water levels. If this coincides with a northwesterly storm at sea, water levels become dangerously high and it becomes a storm tide. The Gales of January 1953 and 1976 are well-known examples of a storm tide, both of which caused severe damage in the Belgian provinces of Antwerp and East Flanders. The Sigma Plan was developed in the wake of the 1976 Gale to protect Flanders against flooding of our tidal rivers.

The Sigma Plan was updated in 2005. The objective remains flood protection but at the same time the Flemish government will restore and further develop the tidal nature

along the river. The Durme Valley is part of the updated Sigma Plan.

The Durme Valley

The Durme is a tormented river with an eventful past. We are relocating the levees further inland to give the river proper space to flow again. This requires several measures. In the seven zones – from Hamme to Temse, Waasmunster, Zele and Lokeren – some areas (mainly near the estuary) have a safety function by designating them as flood control areas, while others (further upstream) become pure nature reserves. The play forests are the place to be for sports and play.

Location:

Province of East Flanders (Hamme, Temse, Waasmunster, Zele and Lokeren)

Surface area: 373 hectares

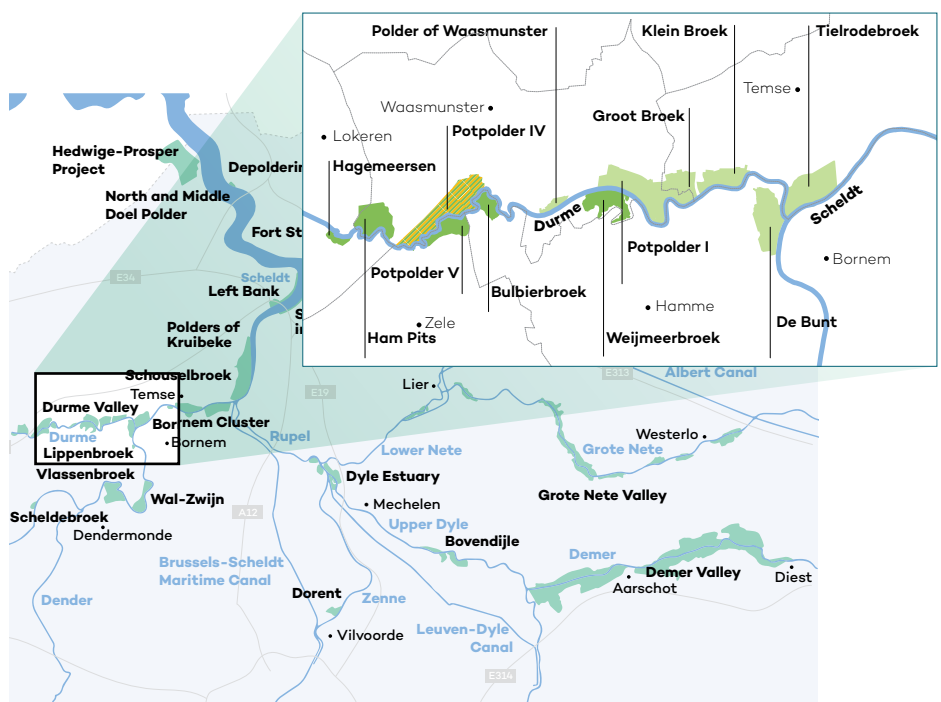
River: Scheldt and Durme

Interventions:

- Flood control area with reduced tides (FCA-CRT)
- Flood control area (FCA)
- Depoldering
- Wetlands

Why?

- Flood protection
- Restoration of European protected nature



What measures are being taken?

Flood control areas increase safety

Over time several areas in the Durme Valley will transform into tidal nature with marshes and mudflats. A number of measures are being taken to achieve this result: constructing ring levees, building an inlet and outlet sluice, constructing overflow levees and creating breaches, building pumping stations, digging ditches...

Flood control area with reduced tides (FCA-CRT)

The flood control area with reduced tides De Bunt in Hamme will make the Durme and Scheldt Valley a great deal safer. The levees along both rivers will hold up better, even during extremely high water levels. De Bunt will only hold water a few times a year, at storm tide. The rest of the year rare tidal mudflats and marshes will be able to develop thanks to the limited volume of Durme water flowing in and out of the area every day via an inlet and outlet structure.



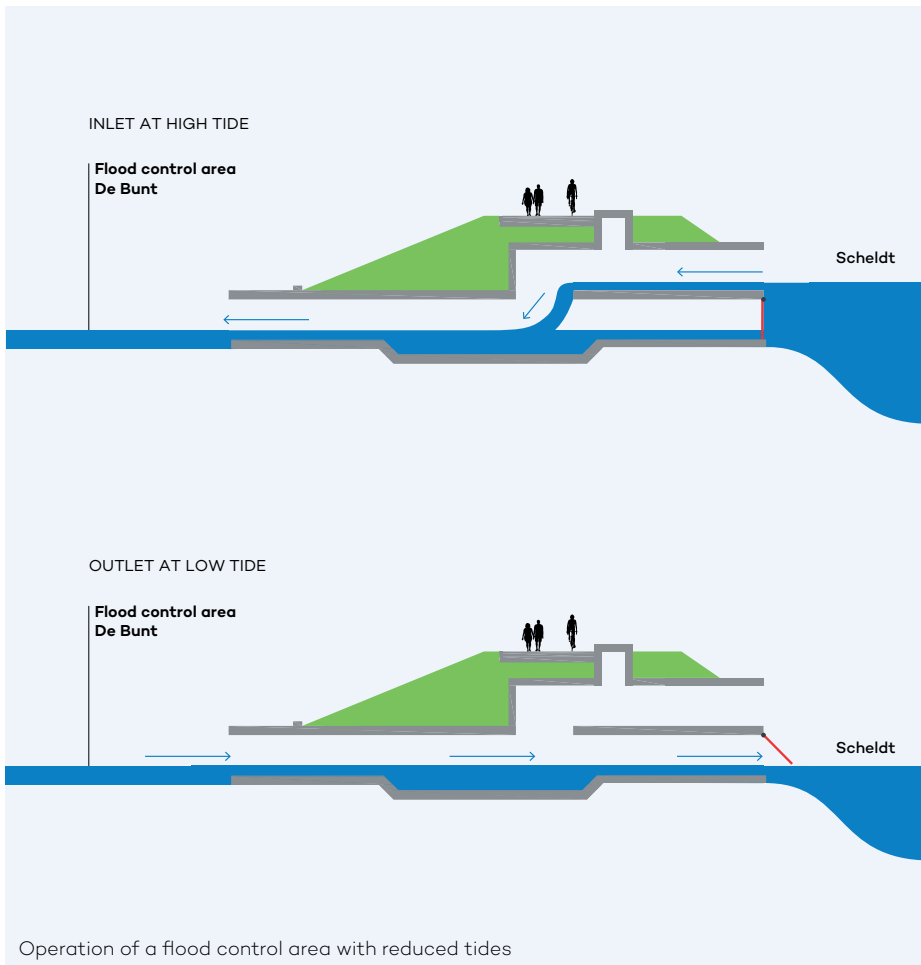
Depoldering makes Durme more robust

The areas Klein Broek and Groot Broek, on the territory of Temse and Waasmunster, will be depoldered. First we built new levees around them. Then breaches will be created in the old levee so water can flow in and out of the area at low and high tide. Depoldering gives the river more space again to overflow, increasing water safety and fostering the development of valuable tidal nature. At Groot Broek two new pumping stations will be installed and during heavy rainfall these will transfer excess water from the area via the ring canals to the areas and thus to the Durme river.



A chain of wetlands

The areas Hagemeersen, Hof ten Rijen, Bulbierbroek and Weijmeerbroek are part of a centuries-old grassland ecosystem along the Durme and are being transformed into wetlands. Wetlands are wet nature areas that are not subject to tidal influences. They act as a sponge and hold the rainwater for a certain period, thereby contributing to the prevention of floods and water shortages.



Flood control area (FCA)

A flood control area is an area of flat land alongside a river that buffers water under extreme weather conditions.

The water flows over an overflow levee and onto the plain, lowering the water level of the river. A ring levee always protects the hinterland to prevent any residential areas from being flooded as well.

Flood control area with reduced tides (FCA-CRT)

A flood control area with reduced tides has the same structure as an ordinary flood control area but its overflow levee also has a smart sluice system. At high tide, a high inlet sluice allows a limited amount of water in, just enough to trigger the development of tidal mudflats and marshes. At low tide, the water slowly flows back through a low outlet sluice and towards the river Scheldt. The area therefore ensures water safety while fostering the development of tidal nature.

Depoldering

Depoldering means giving back land to the river. First we construct a new levee inland. Subsequently we remove the old levee either partially or entirely and also make deeper breaches, creating additional room between the old and the new levee where the river can (over)flow. This reduces the power of the water and the water level of the river while limiting the risk of flooding. The tides are given free rein again, resulting in the resurgence of valuable tidal nature.

Wetlands

Wetlands are marshy areas that are home to rare plants and animals. The groundwater there is high in winter and drops in summer. The landscape can range from open water and reed beds to alluvial forests and wet grasslands.





© Jo Verboven

Great bittern



© Tom Linster

Scarlet dragonfly



© Rollin Verlinde

European bitterling

River and valley nature are given a boost.

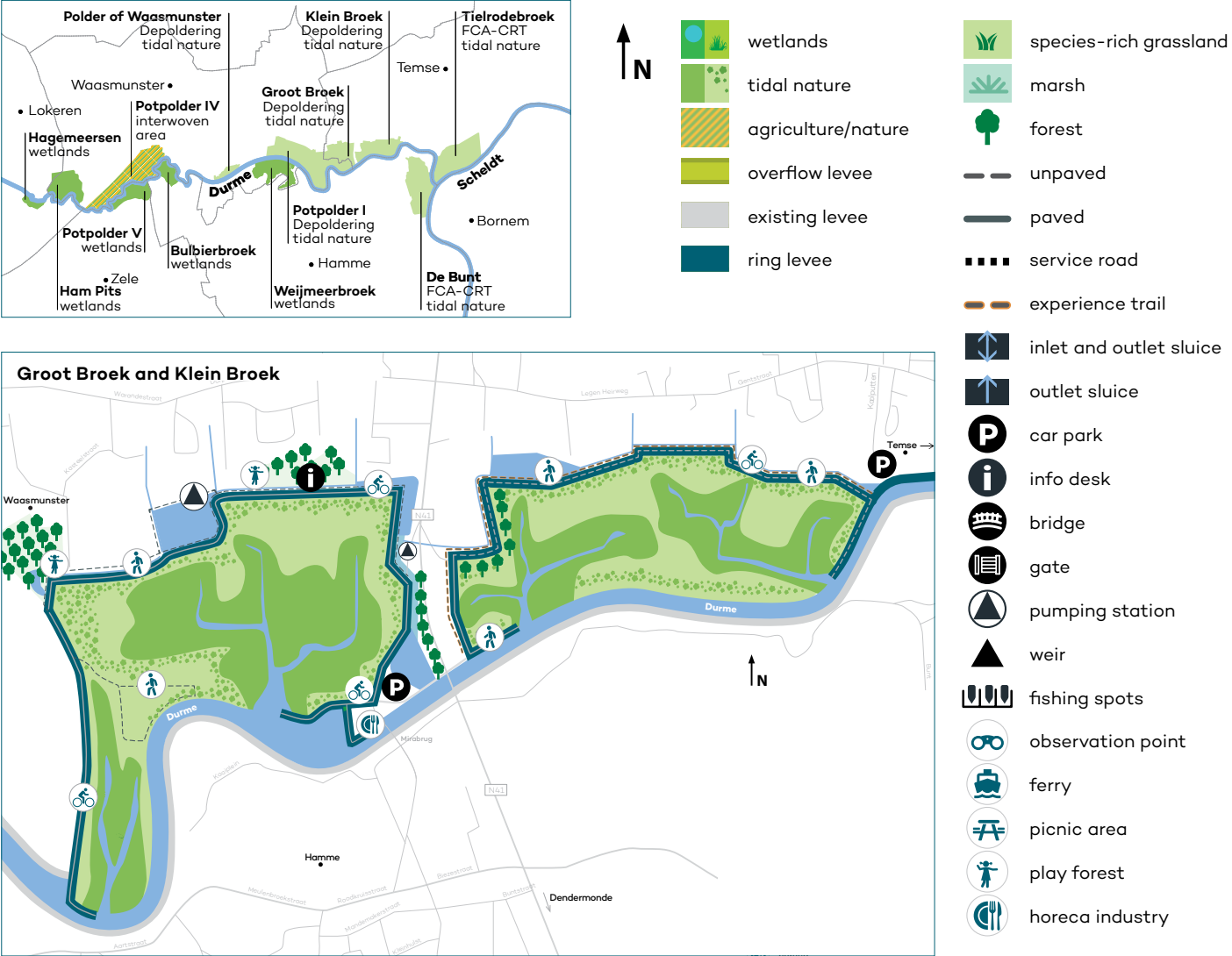
Tidal natural environment: unique freshwater mudflats and marshes

In Klein Broek, Groot Broek and De Bunt we are making room for freshwater mudflats and marshes. They will become unique pieces of nature, which are rare in Europe. When water flows in and out of an area twice a day, this gives rise to tidal nature with marshes and mudflats. Tidal mudflats are the lower-lying areas that are inundated with each tide. This abundance of water is not very inviting for plants but it teems with tiny creatures such as worms, insect larvae and water snails, which are eagerly devoured by various water birds and fish. With each tide, the receding water deposits a thin layer of silt, which begins to accumulate in certain places. When these silted-up parts protrude above the average waterline, we refer to them as tidal marshes. The highest places only flood at spring tide, on average twice a month. On those tidal marshes, reed beds and extremely rare tidal willow forests develop. Mammals such as beaver, and birds such as bluethroat, marsh warbler, western marsh harrier and common reed warbler call them home.

Wetlands: a biodiversity hotspot

Hagemeersen, Hof ten Rijen, Bulbierbroek and Weijmeerbroek are being cultivated as wetlands. Here wetlands with a variety of grasslands, flower meadows, reed beds, patches of swamp forests and open water alternate. In the wetlands we work with the local farmers. They manage the grasslands in a nature-oriented way.

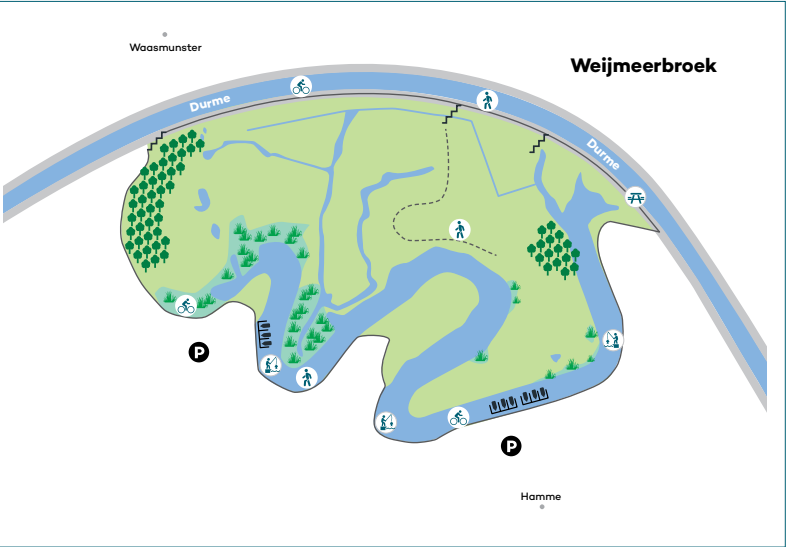
Wetlands are a biodiversity hotspot. We expect species such as marsh marigold, cuckoo flower, slender tufted sedge, plants from the genus *Rhinanthus* and ragged-robin to thrive. Hopefully farmland birds such as black-tailed godwit and corncrake will find their way to the Durme. The reed beds are home to reed-dwelling birds such as great bittern, common reed warbler and sedge warbler. In the open water a host of fish species find an ideal habitat, such as pike, eel, common rudd, European bitterling and tench. Other water enthusiasts such as dragonflies and the common and water frog, reproduce in the still waters.



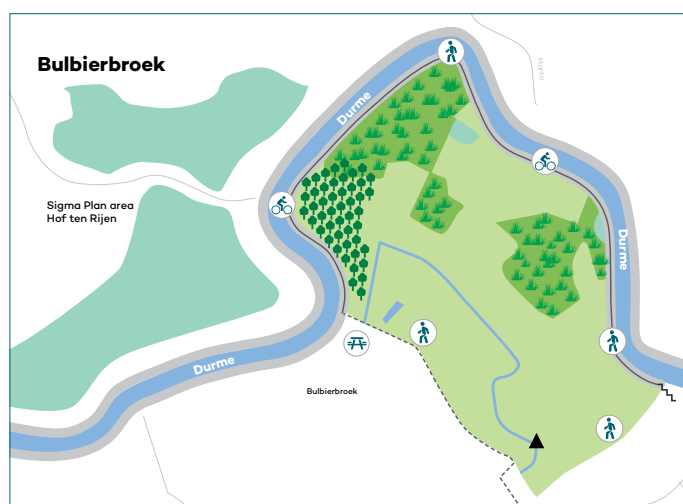
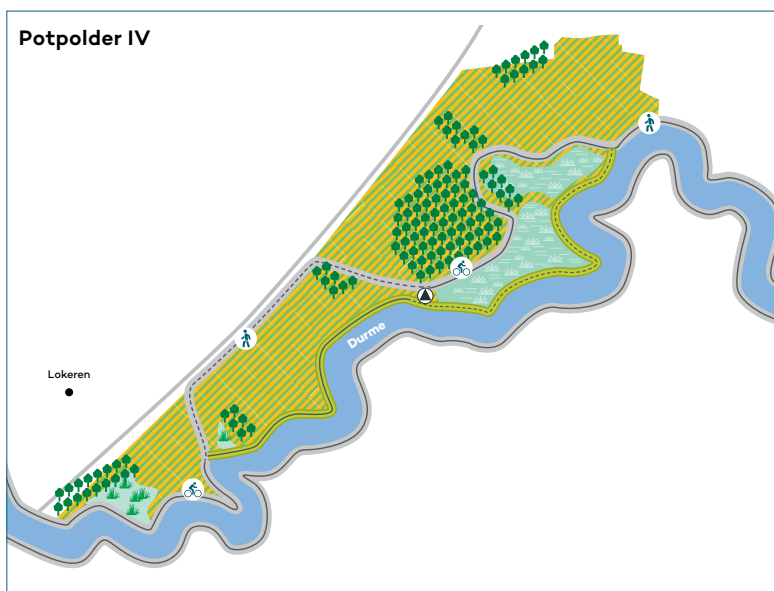
LIFE Sparc

Thanks to the Sigma Plan, the Scheldt Valley is better equipped to deal with the consequences of climate change, such as rising sea levels and periods of heavy rainfall. In Europe the Sigma Plan serves as a perfect example. That is why a number of Sigma Plan projects including **De Bunt, Klein and Groot Broek**, receive additional EU funding through the LIFE Sparc project (life-sparc.eu).

The pumping stations in Groot Broek receive support through the Blue Deal.



Project name	Surface area	Municipality	End date	Intervention
De Bunt	83 hectares	Hamme	2025	Flood control area with reduced tides (FCA-CRT)
Klein Broek	42 hectares	Temse		Depoldering
Groot Broek	60 hectares	Waasmunster	2025	Depoldering
Weijmeerbroek	50 hectares	Waasmunster	2026	Wetlands



Project name	Surface area	Municipality	End date	Intervention
Potpolder IV	101 hectares	Waasmunster	2035	Part wetlands, part agricultural land
Hagemeersen	12 hectares	Lokeren	2017	Wetlands
Bulbierbroek	25 hectares	Hamme	2025	Wetlands