

Nete and Kleine Nete



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

The Scheldt and its tributaries are tidal rivers and that includes the Nete. Twice a month, the ebb and flow dynamic causes a spring tide, with higher water levels. If this coincides with a northwesterly storm at sea, the water rises even higher and it becomes a storm tide. The Gale of January 1976 is a well-known example of a storm tide and 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. Another important goal in addition to flood protection was the restoration of wetlands and tidal nature along our tidal rivers.

Nete and Kleine Nete

Within this Sigma Plan project in the Kempen region, agriculture, nature, forests and built-up areas alternate. Adjusting the valley to climate change is an exceptional feat. In this area we are simultaneously creating 351 hectares of breathing space for unique fauna and flora.

At the Lower Nete (in Duffel and Lier) the flood control area Polder of Lier was given a makeover. A larger sluice now allows the area to drain more quickly after storm tides, and there is once again room for wetlands in the river valley. Sub-area Anderstadt 1 will be depoldered. Hof van Lachenen and Vijvers at Anderstadt are being transformed into wetlands. Flood area Anderstadt 2 remains unchanged. Varenheuveld-Abroek, an area of 211 hectares stretching across Nijlen, Grobbendonk and Zandhoven, is designated as wetland. The Grote Nete Estuary in Nijlen, Berlaar and Lier, is being transformed into 65 hectares of wetlands.

Location

Duffel, Lier, Berlaar, Nijlen, Grobbendonk and Zandhoven

Surface area: 351 hectares

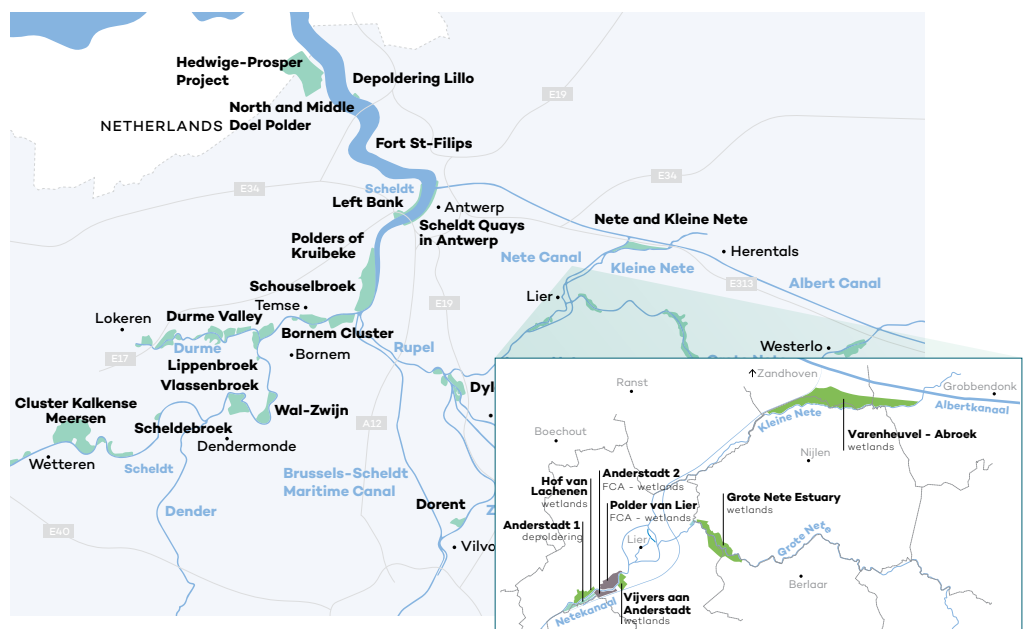
River: Nete and Kleine Nete

Interventions

- Flood control area (FCA)
- Depoldering
- Wetlands

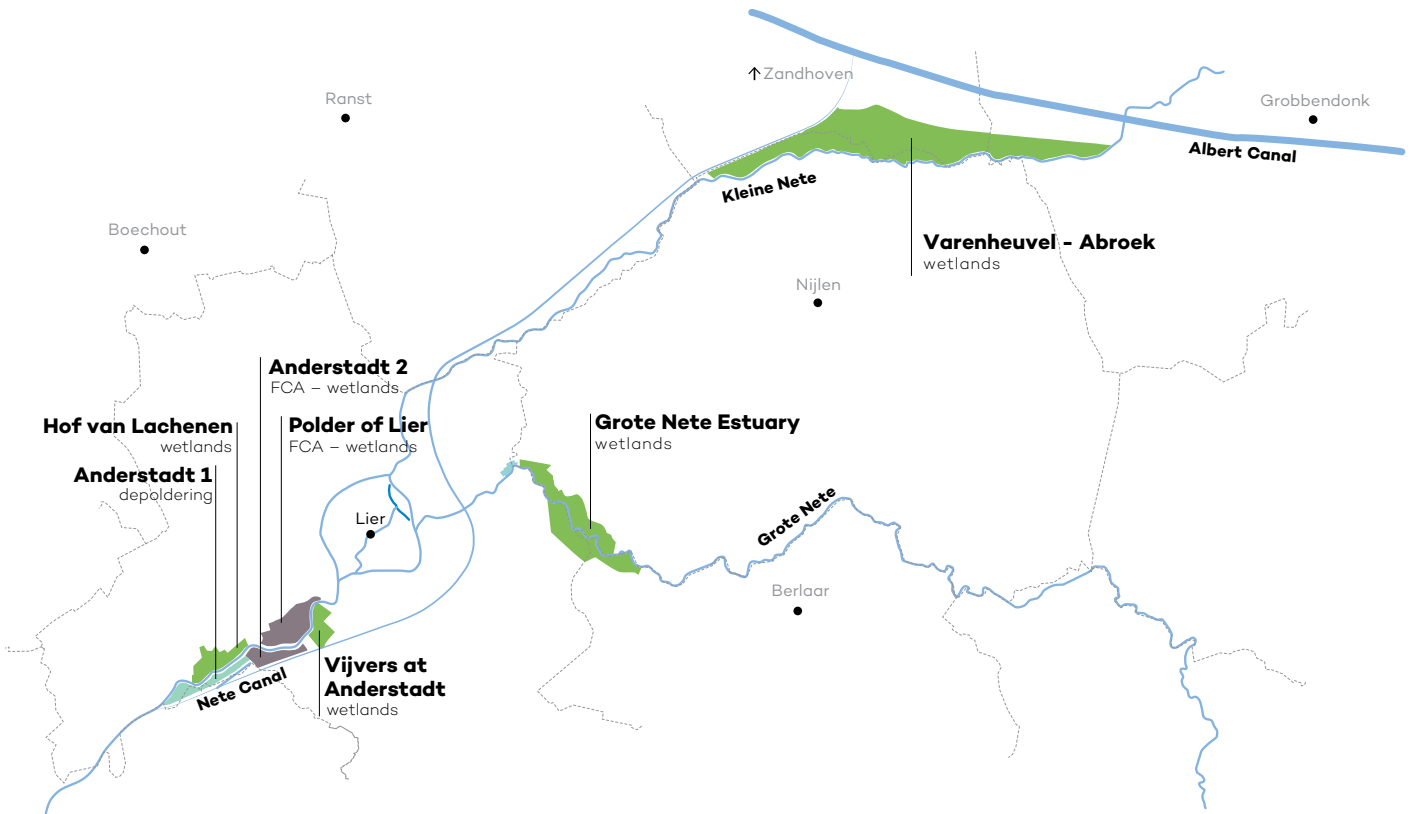
Why?

- More room to accommodate flooding
- Higher groundwater level to keep the area from drying up
- More wetlands



What measures are being taken?

We are taking a series of measures to make the region **safer**. We are establishing flood control areas (Polder of Lier and Anderstadt 2), depoldered areas and wetlands. This also creates more space for typical estuarine nature.



Flood control area (FCA)

At dangerously high water levels on the Nete or Kleine Nete, the water flows over the overflow levee and into the flood area, which makes the tidal wave lose its strength. The water in the flood area reaches a height of several decimetres to several metres.

A ring levee always protects the hinterland to prevent any residential areas from being flooded as well. A system of ditches and drainage sluices ensures that the water in the FCA flows back to the Nete as quickly as possible following a flood. This significantly reduces the risk of flooding in the area. Sometimes the FCA serves an auxiliary purpose, such as in the Polder of Lier and Anderstadt 2, which are designated as wetlands. Flood areas are most useful during winter: that is when most storms occur and water levels are highest.



Depoldering

Depoldering means giving land back to the river. First we construct a new levee inland. Subsequently we remove the old levee, either partially or entirely, and we create breaches, providing additional room between the old and the new levee where the river can (over)flow. This lowers the water level in the river and reduces the force of the tidal wave, thereby decreasing the risk of flooding. The tides are given free rein again, resulting in the resurgence of valuable tidal nature. One example of such a depoldered area is Anderstadt 1.

The existing overflow levee along the Lower Nete is breached in several places to give Anderstadt 1 back to the tides.

Wetlands

Valuable wetlands are developing in the areas Anderstadt 2, Polder of Lier, Zone Hof van Lachenen, Vijvers at Anderstadt and Varenheuvel-Abroek. The term wetlands is self-explanatory. In the Sigma Plan we use this designation for reed beds and wet grasslands that are not under the influence of the tides. Small weirs - thresholds - at the bottom of the ditches in the area hold the water back, causing ground water levels to rise.

The landscape can range from open water and reed beds to alluvial forests and wet

grasslands. Wetlands filter the water, give aquatic life a boost. This way the Sigma Plan makes an important contribution to the European conservation objectives for Flanders, which envisage the restoration of estuarine nature. Wetlands also act as genuine climate buffers as they retain rain-water during wet periods.

They gradually release this water to the environment in times of drought. Wetlands are also extremely efficient for CO₂ storage.





Tree planting



Corncrake



Spotted crane



Common reed warbler



Smelt



Little bittern

Rare wetland nature

The Sigma Plan not only makes the Nete Valley a safer place, it also creates more space for typical estuarine nature. The valley between the Lower Nete and the Nete Canal is a rare bird sanctuary with broad reed beds and open water that acts as a fish nursery. In the Grote Nete Estuary water and marsh plants now have room to grow again, giving rise to a mosaic of plants and broad reed beds full of sheltered spots. Dragonflies and amphibians such as the common toad and the common frog spawn there. A variety of fish find a hospitable environment here: pike, common rudd and such rarities as the European bitterling and the spined loach. Also on the guest list: spotted crane, water rail and shy members of the family Ciconiiformes such as the great bittern

and little bittern. The western marsh harrier will rule the roost here. Other loyal guests such as roes and kingfishers will also feel at home here. Varenheuvel-Abroek is ideal for the development of flower-rich grasslands, where corncrake and whinchat will also feel welcome.

Designed for a unique experience

These areas connect to Pallieterland, a park southwest of Lier that groups several nature reserves. Pallieterland further enhances the visitor experience along the Nete rivers, making the whole valley area more attractive to visitors by offering a balanced mix of nature and recreational elements, such as a forest playground, community gardens and a dog park.

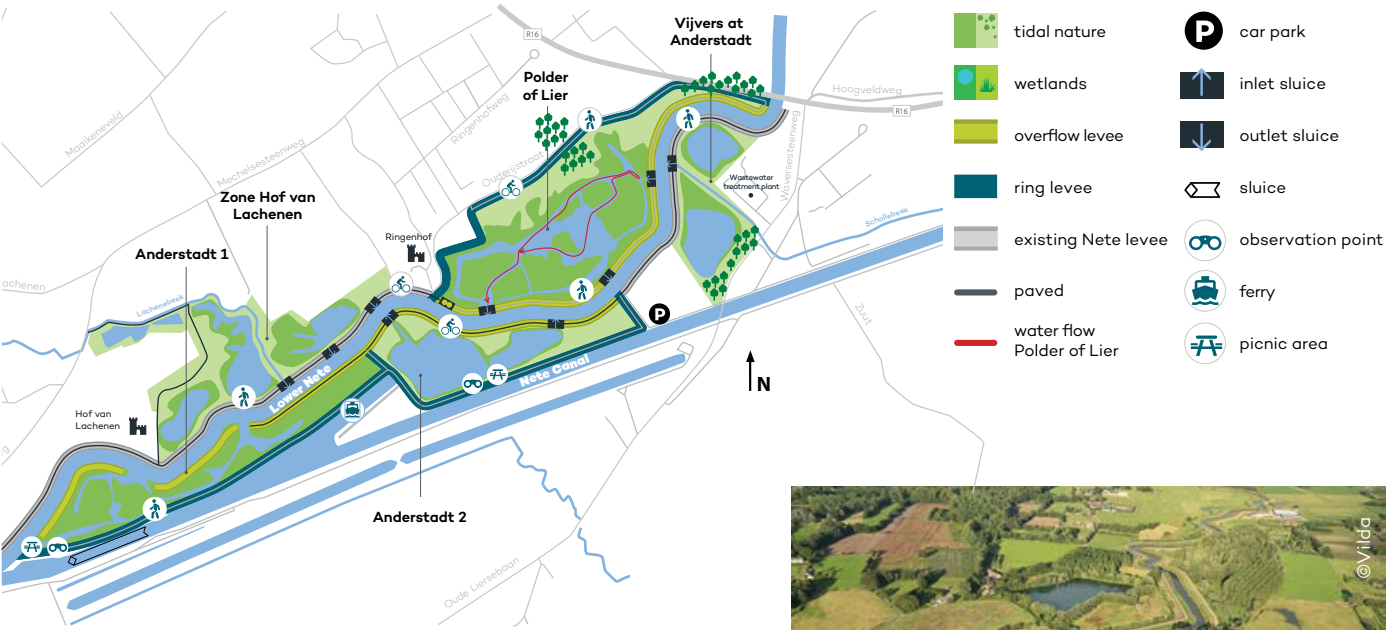
Lower Nete >

Breathtaking and functional water area

Anderstadt 2 and Polder of Lier, two existing flood control areas of the original Sigma Plan, have been designated as wetlands. The same goes for the Vijvers at Anderstadt and Zone Hof van Lachenen. Anderstadt 1 is to be depoldered to foster the development of unique tidal nature.



Polder of Lier



Grote Nete Estuary

< Grote Nete Estuary

An oasis of open water and reeds

In the Grote Nete Estuary we created level-controlled tidal marshes. The installation of adjustable weirs allows us to retain rainwater and groundwater for longer periods. Also, we can let water from the Grote Nete into the area. Global warming leads to warmer, drier periods, making it necessary to supplement with river water to maintain the wet nature of the marshes. This way this 65 hectare landscape can evolve from wet grasslands into marshy areas and patches of open water surrounded by reeds. In a few years' time, these adjustments will attract a variety of plant and animal species that are struggling right now.



Varenheuvel-Abroek >

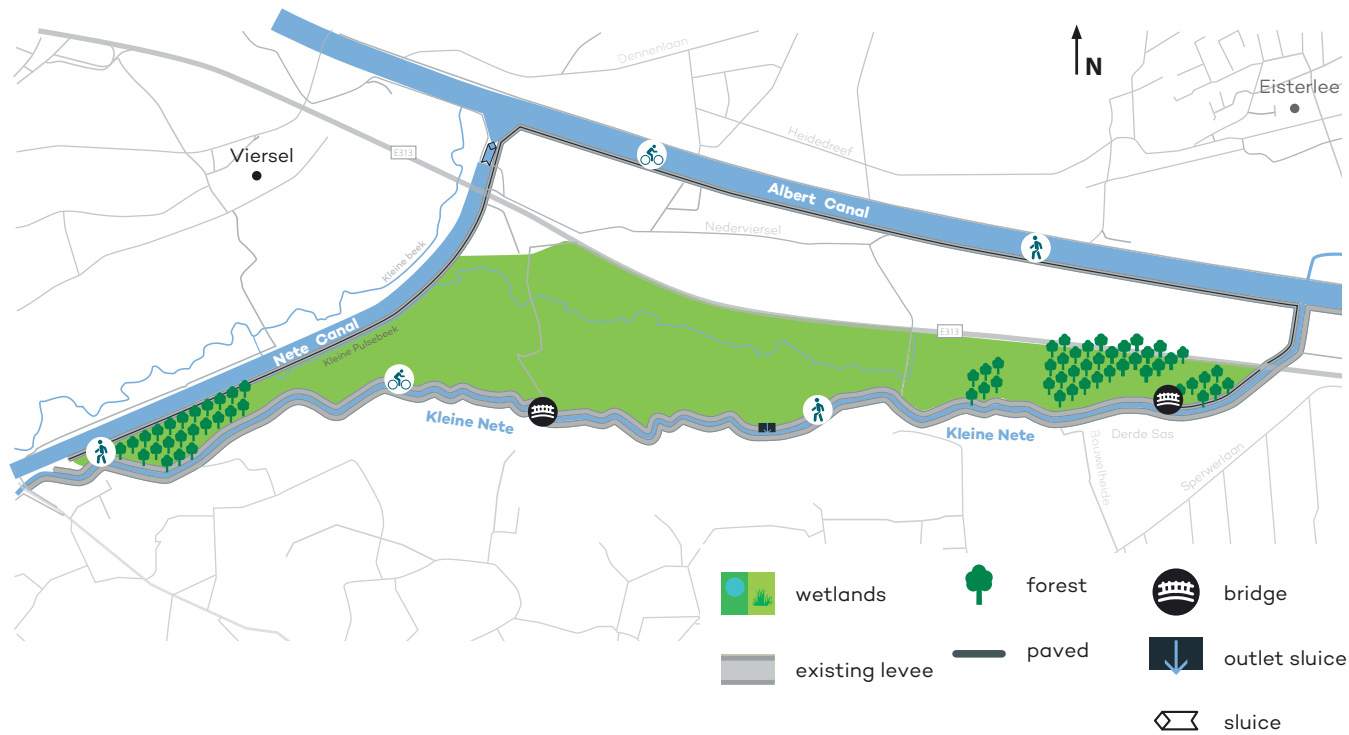
A flower-rich and expansive hay meadow

Varenheuvel-Abroek will become species-rich wet grasslands that will be flooded in winter and in late spring. During heavy rainfall the grasslands absorb the water, which is then released very slowly in periods of drought. In other words, it is a natural sponge that is crucially important during prolonged periods of drought. To the north of the Kleine Nete and along the Nete Canal, the Kleine Pulsebeek will still be able to hold excess water in winter in the surrounding grasslands. This way the local residents will still be protected against flooding. In the coming years, the local farmers will actively contribute to the transition management in the area that will see fields and monotonous grasslands evolve into flower-rich hay meadows.



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Flower-rich grasslands



Project name	Surface area	Municipality	Duration	Intervention
Lower Nete	75 hectares	Duffel and Lier	2013-2030	• Flood control area (FCA) • Depoldering • Wetlands
Grote Nete Estuary	65 hectares	Nijlen, Berlaar and Lier	2011-2030	• Wetlands
Varenheuvel-Abroek	211 hectares	Zandhoven, Grobbendonk and Nijlen	2011-2030	• Wetlands