

# Restoring heathland & deciduous forest edges for climate adaptation

## Results of changes implemented to the 'Heiberg' site by Natuurpunt



### UNDERSTANDING THE CATCHMENT

Peat bog can only occur under permanent wet conditions and a water level that does not fluctuate more than 30 cm on an annual basis. This used to be the case in Heiberg, situated in the larger Kleine Nete catchment. The peat bog 'Lavendelven' lies in a depression at the basis of a drifting sand dune complex where the difference in height causes groundwater seepage to the bog. In the past, the depression could hardly drain because it was squeezed between higher grounds. Under these permanently wet and anaerobic conditions, plant material breaks down very slowly and forms layers of peat.

From the Middle Ages onwards, peat was cultivated in the Campine region, including Herentals. Peat was used as an alternative fuel to firewood, because all but a few domains had been cut down. Later on coniferous forest (mainly *Pinus sylvestris*) was planted on many other infiltration soils in Heiberg and by extension the Campine. This was partly to provide the mining industry with standing timber. These forests were preserved even after the mines closed. In many places, they still hinder optimal infiltration of rainwater, which is necessary to maintain groundwater reserves. This is necessary not only to preserve the 'Lavendelven' but also for nearby agriculture and drinking water supplies in the wider region.

### PRIORITISING LOCATIONS FOR CLIMATE ADAPTATION MEASURES

The protection of this bog relic and the restoration of the valuable inland dunes with sandy heathlands in the landscape by Natuurpunt is an Ecosystem-based Adaptation measure and part of the Interreg 2 Seas project PROWATER. Ecosystem-based Adaptation (EbA), a Nature-based approach to climate change adaptation, harnesses ecosystem services to increase resilience and reduce the vulnerability of human communities and natural systems to the effects of climate change. These EbA measures can be integrated into adapted agriculture, forestry and environmental management.

Next to the 'Lavendelven', pine forest was transformed to heathland and to extensive arable land which used to be present in many larger heathland systems. On other spots pine forest will gradually be transformed to deciduous forest. A first step in this transformation is the removal of invasive alien species such as black cherry (*Prunus serotina*) and northern red oak (*Quercus rubra*) from the existing forests. In this way these higher grounds can recharge with water during rain periods. As a result, more water is retained in the infiltration area and the potential difference between the high grounds and the depression is greater, which increases the seepage pressure in the 'Lavendelven'.

To create a natural gradient from heathland to forest, a forest fringe, including coppice is provided. Especially the present and rare butterfly Ilex hairstreak (*Satyrrium ilicis*) needs young and/or coppiced common oak (*Quercus robur*) to lay their eggs on.

### MONITORING & EVALUATION

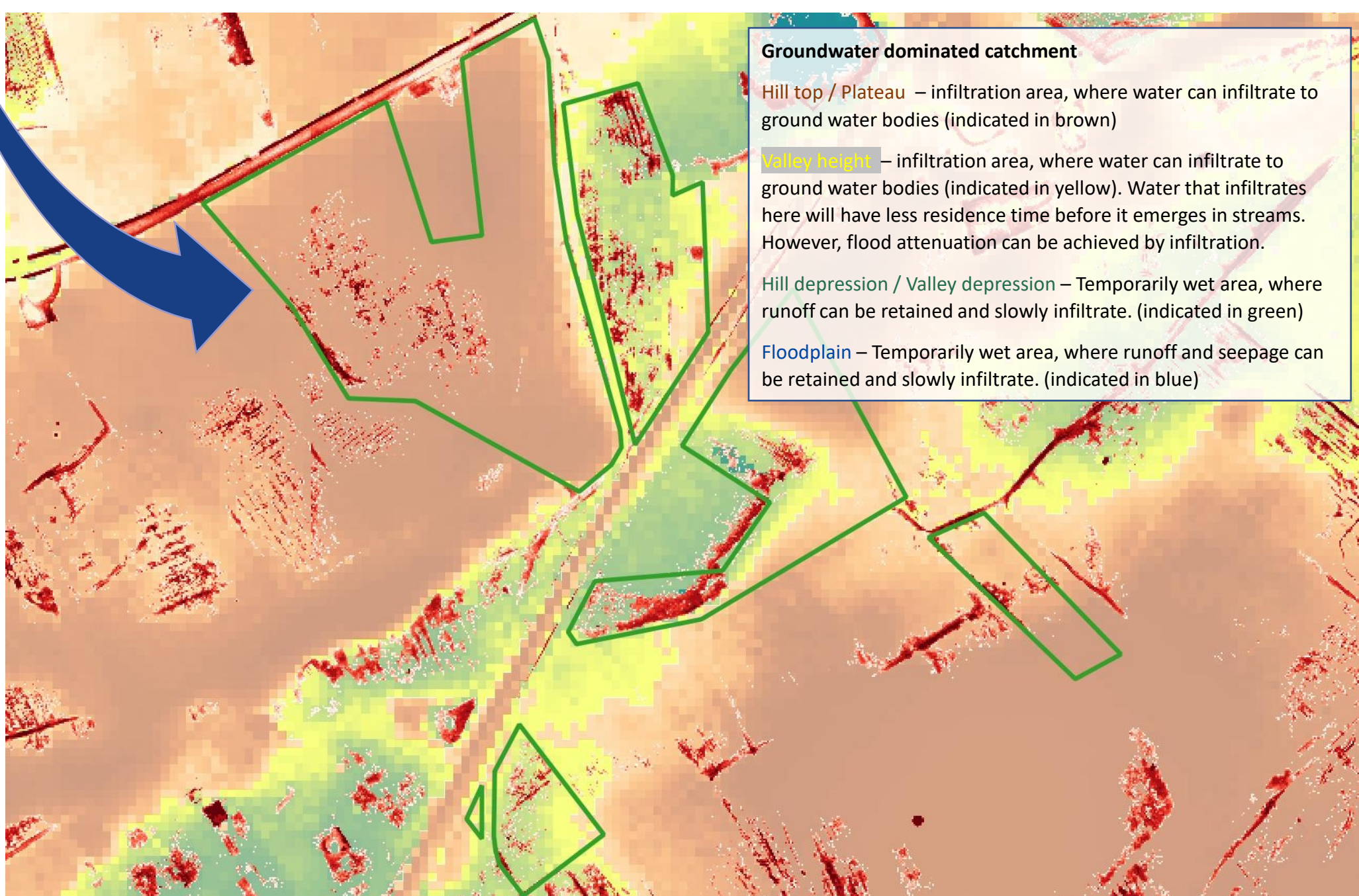
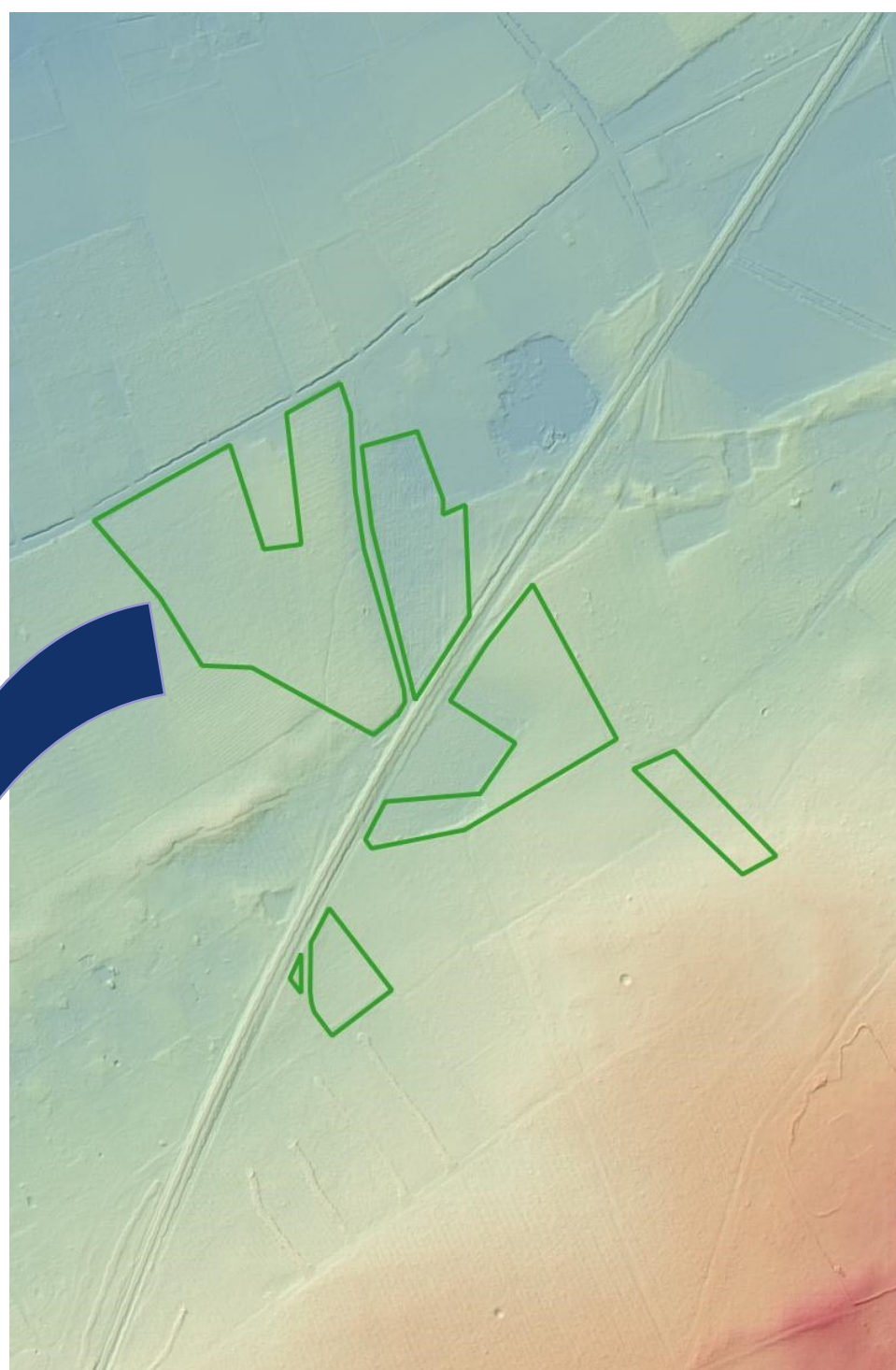
The works were carried out in autumn and winter of 2018 and 2021. With the extremely dry and wet years it's hard to say what the exact influence of the restoration work were on the 'Lavendelven' but further monitoring over the next years will tell.

Despite realised measures, more transformation from coniferous forest to heathland or deciduous forest would likely have a positive influence on the 'Lavendelven' and other wet habitats lying within nearby depressions. Besides positive hydrological effects also biodiversity will profit from such measures. European habitats like old acidophilous oak woods with *Quercus robur* on sandy plains (9190), Dry sand heaths with *Calluna* and *Genista* (2310) and Inland dunes with open *Corynephorus* and *Agrostis* grasslands (2330) are targeted here. Recovery of these habitats will boost populations of European protected species like European nightjar (*Caprimulgus europaeus*), Woodlark (*Lullula arborea*), Middle spotted woodpecker (*Dendrocopos medius*), Black woodpecker (*Dryocopus martius*), European honey buzzard (*Pernis apivorus*) are good examples.

More Ecosystem-based Adaptation measures, such as this heathland restoration and transformation from coniferous to deciduous forest, in the Kleine Nete catchment would further stabilise groundwater levels, making it more feasible to keep enough water for nature and the ecosystem services it provides as well as allowing extraction for human usage.

**FOR MORE INFORMATION:**

- [www.pro-water.eu/output-library](http://www.pro-water.eu/output-library)
- <https://www.pro-water.eu/heiberg-be>



### A cross-border cooperation

From November 2017 to March 2023, 10 partners from Flanders, the Netherlands and the United Kingdom work together on PROWATER. The project has a budget of more than 5.5 million euros. In each country, water production companies, governments and research institutes as well as land managers are involved in order to achieve a supported vision for Ecosystem-based Adaptation (EbA).

The project PROWATER receives 3.315.974 € through the Interreg 2 Seas fund, co-funded by the European Regional Development Fund (ERDF), to work on climate change adaptation and to increase resilience against droughts and extreme precipitation based on ecosystem services.

