

Deep but natural  
profile of the reopened  
Beekstraat.  
Photo VLM

# Blue-green

**IN THE FLEMISH PERIPHERY OF  
BRUSSELS, BROOK VALLEYS ARE  
ENLISTED IN NUMEROUS SPATIAL  
PLANS AS BLUE-GREEN LINKS.**

Water plays a vital role in spatial planning and development. Waterways which help to shape an area with their green structure are often referred to by planners as ‘blue-green fingers’. In built-up areas, creating such fingers often comes down to re-opening waterways. The collaboration with technical experts is crucial to turn the blue-green links drawn on the plan into reality. In doing so, it is better not to be overly strict in drawing boundaries between the initial conceptual design and the ‘technical design’.

This article discusses two cases in the Flemish Periphery around Brussels – the Woluwe Valley and the Wezembeek brook – which illustrate how the relationship between concept and technique can influence the success of such operations.

# fingers in the Flemish Periphery of the Brussels Agglomeration

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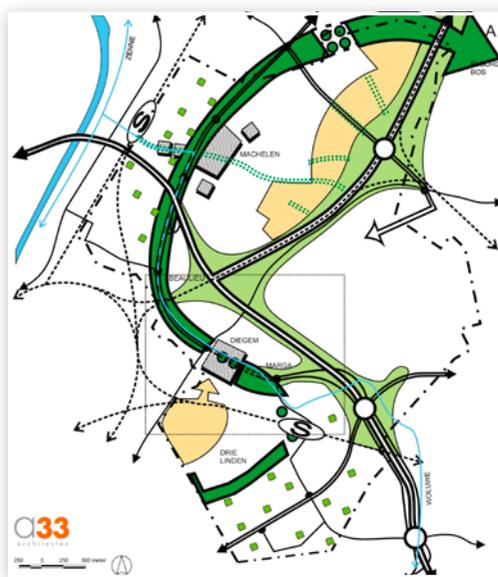
## Blue-green fingers in the Flemish Periphery

The Flemish Land Agency (Vlaamse Landmaatschappij - VLM) has been working on a land-use planning project in the Flemish Periphery for several years. The VLM's remit is largely complementary to the designation process of the ‘Flemish Strategic Area around Brussels’ (VSGB). The VLM acts in support of the VSGB's open space policy by developing land *in-situ*. It is from this perspective that this article elaborates on the importance of blue-green links in the Flemish Periphery of the Brussels agglomeration, with focus on the Woluwe Valley.

In the Flemish Periphery, brook valleys are enlisted in numerous spatial plans as blue-green links. The plans of the Flemish Strategic Area around Brussels, for instance, assign a key role to the Zenne, Woluwe, Maalbeek brook, Zuunbeek brook, etc. as structure-defining brook valleys.

Municipal structure plans are examples at a different level. In Machelen, for example, the plan includes a ‘green S’ around the Woluwe and in Wezembeek-Oppem plans refer to the soft axis that is made up by the Wezembeek brook. (Fig. 1, 2)

Such ‘fingers’ are capable of delivering a major contribution to the quality of the living environment. The multifunctional aspect of a blue-green network is paramount in urban and suburban areas. Just as with the open spaces in suburban areas, their added value is found in a combination of various ‘ecosystem services’ affecting a large target public.



1 The Woluwe as a green S in the municipal structure plan of Machelen



2 Wezembeek-Oppem municipal structure plan: developing a ‘soft axis’ along the Wezembeek Valley

For instance, they provide:

- water storage and water retention (blue)
- ecological added value (green)
- a public network with parks, cycle paths and walkways.

They also raise the quality of the residential and working environment by:

- connecting residential centres
- regulating the city climate through the supply of colder air
- enhancing the image and appeal of the region.

The dense infrastructure and buildings which typify the (sub)urban area make it difficult in many ways — not to mention, extremely expensive — to re-open waterways. During the



3 VLM planning vision for open space in the Woluwe basin in the Flemish Region (VLM, 2010). The black lines show the locations where a watercourse should ideally be reopened.

4 Instruments and principles for the Woluwe Valley (Secchi/Vigano/ECOREM 2012)

urbanisation wave that came after the 1950s, natural structures were ignored, waterways were culverted over and valleys were filled in. In addition, it is not just pure water that flows through this underground infrastructure, as separating effluent and rainwater is complex as well as costly. As long as the hydrological system remains invisible it is ignored in area development and conversion, with all the consequences this entails. However, waiting for separation or treatment programmes in the long term is not an option.

A specific feature of the Woluwe area are the 'moerriolen' (large collectors that carry off rainwater, groundwater and effluent), which were installed after the Second World War to collect water in the flood-sensitive Woluwe region. But while the dimensions of these collectors have long ceased being adequate to prevent floods, they do divert a large portion of the spring and rainwater from the original waterways. This means natural flood areas are completely cut off from the brook water, leaving them unavailable during heavy rainfall.

Lack of visibility means that many project developers will not invest much energy in an open watercourse. Often they do not even realise a watercourse is present; to them, it is simply one of the many utility pipes in the ground. This results in a vicious cycle, which will eventually make it extremely difficult to re-open a watercourse.

Private owners and project developers will not readily give up a piece of land to build a quality open watercourse, not even if this comes with fast cycling and

walking links. Sadly, town planning can do little about such situations, especially if the watercourse is still invisible.

Sometimes the watercourse runs fairly deep, which requires extra space to be able to offer added value in terms of landscape and experiential value. Yet, as in any urbanised region, extra space is severely limited. Moreover, the complexity of watercourse structures makes re-opening a stream so difficult that hardly anybody is prepared to even attempt it.

Re-opening a watercourse not only demands a due understanding of the course itself, it also requires knowledge of the sewers connected to it. The complexity of the water system in densely built-up areas and the fragmentation of administrative powers means that the right information is not always available.

The intensity of construction and infrastructure projects makes it sometimes difficult for various parties to keep up-to-date with each other's plans and to discover potential win-win situations in doing so. The storage capacity of a new open watercourse for instance could make an expensive planned buffer basin superfluous, but to do so, all stakeholders need to be fully *au fait* with these plans... The fact that the Woluwe area is intersected mid-way by a regional border does not make things any easier.

The added value of blue-green links in the Flemish Periphery is still often viewed from a mono-functional perspective (storage capacity, ecological value, landscape value,

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### 01 water

01. buffer for bottleneck

02. infiltration zones (wadi)

03. reopening of buried streams

### 02 equipped landscape

01. public transport pool

02. potential

### 03 infrastructures

01. buffer alongside infrastructure

02. logistics parks

03. narrowing street profile

### 04 patches

01. densification of uses

02. retaining openness



5 A more technical approach: open Woluwe in Diegem (Secchi-Vigano/Ecorem, 2012)

etc.), without taking the context of Brussels and its large population size into account. Moreover, the substantial investments demanded by waterways in such areas are often weighed against what could be done with the same money with waterways and their valleys elsewhere in Flanders. In such cases, the logical conclusion is often not to take any action.

## The Woluwe and the airport region

Along with the Flanders Environment Agency (Vlaamse Milieumaatschappij - VVM) and the municipal authorities, the Flemish Land Agency wants to focus on the Woluwe and its tributaries as part of its open space assignment in the Flemish Periphery. All the more so as the Woluwe Valley is a strategic space for the future of Brussels and the Periphery. The Valley faces huge pressure, as quite a few bottlenecks converge in the Woluwe basin: the R0 (the Brussels Ring Road), the airport, the planned Uplace shopping complex, a new prison, new tram infrastructure, a new NMBS (railway) station, the conversion of a canal zone, etc. Even though the existence of the Woluwe is not denied in spatial plans, most projects do not set out from a landscape basis<sup>1</sup>. As a result, the legibility of the Woluwe will disappear entirely in due course.

The plan supervisory committee<sup>2</sup> of the land-use planning project asked for an engineering agency to look into this complex issue. The contract went to the Secchi-Vigano/Ecorem tandem,

which in 2012 presented the cross-regional study 'Preparing an area vision for the Woluwe Valley'<sup>3</sup>. Within the VLM, this methodology is often adopted for projects situated in brook valleys. A vision at higher level, drawn up perhaps by an engineering agency, is intended to lead to strategic installations on the ground and to build the required consensus among the partners. This was recently done for the Molenbeek brook, south of Brussels<sup>4</sup>. Because such an engineering study would ultimately also need to provide the basis for design plans of the VLM, the remit was to zoom in closer and also to propose a number of actions. Additionally, the remit was also to work on an open Woluwe in Diegem in greater detail, with greater emphasis on the technical aspects. Because by this time, it had become clear that a short-term opportunity could arise thanks to a planned downgrading of the Woluwelaan.

Secchi-Vigano/Ecorem saw the preparation of an area vision for the Woluwe Valley rather as an operational dimension for the concepts that had been developed in the 'Brussels 2040' study in which the Woluwe had also been discussed. According to



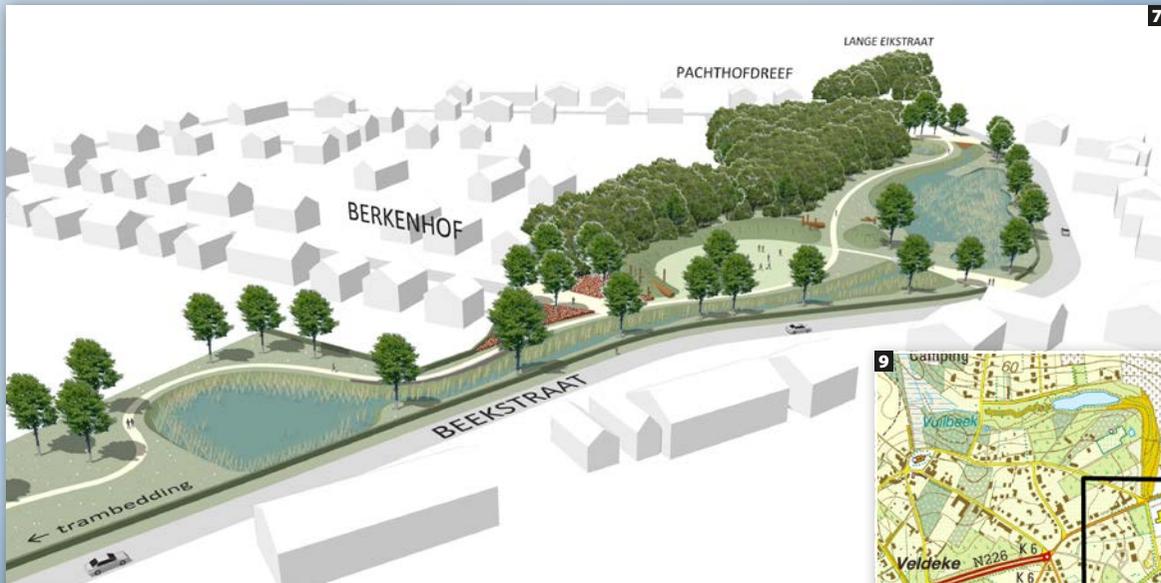
6 Picture of a study model: the relationship between a new urbanism and the ecological space of the Woluwe.

1 The approach to laying new tram lines does focus on landscape contextualisation.

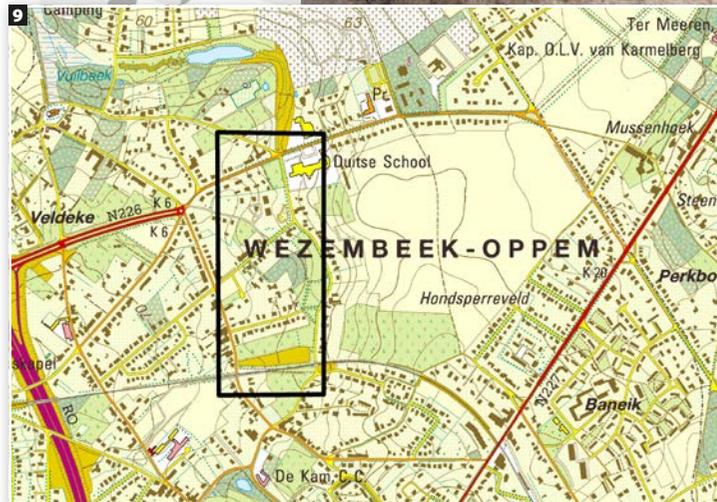
2 The plan supervisory committee directs the preparation of design plans by the VLM in a land-use planning project

3 [https://www.vlm.be/nl/sitecollectiondocuments/plateau\\_van\\_moorsel/finaal\\_rapport\\_studie\\_woluwe.pdf](https://www.vlm.be/nl/sitecollectiondocuments/plateau_van_moorsel/finaal_rapport_studie_woluwe.pdf)

4 [https://www.vlm.be/nl/sitecollectiondocuments/regio\\_oost/open\\_ruimte\\_visie\\_molenbeek\\_fase\\_i\\_ii\\_iii.pdf](https://www.vlm.be/nl/sitecollectiondocuments/regio_oost/open_ruimte_visie_molenbeek_fase_i_ii_iii.pdf)



7 Visualisation Open brook in Wezembeek-Oppem (Antea, 2011).  
 8 Flooding at Wezembeek collector. Photo Stéphane de Burbure.  
 9 Situation Beekstraat project in Wezembeek-Oppem.



Secchi-Vigano/Ecorem, the Woluwe would need to be restored as an active entity and not, as now, be considered an awkward and sometimes insurmountable prerequisite. The study resulted in a vision of to-be situations and a number of tools to achieve this. These tools were subsequently applied to test cases and a number of strategic spaces. The more technical aspect of the open Woluwe in Diegem was developed earlier by Ecorem as part of a separate contract (fig 5).

In Secchi-Vigano/Ecorem's vision, the metropolitan space takes on a prominent position. For instance, they assume that claiming the Woluwe Valley as a public space, as is happening in Brussels, offers the opportunity to give the Woluwe a more active role in Flanders as well. This kind of interaction between urban fabric and waterways has never been so expressly featured in earlier VLM studies. (fig. 6)

## The Woluwe study: a post script, dated 2015

The whole idea behind the Woluwe study, according to Secchi-Vigano/Ecorem, was to foster consultation. They wanted to inform planners and developers about the importance of their project within a wider context. In practice, however, this study has hardly been used by the partners and there is not a single trace of it to be found in plans or designs. Then again, within the tight time and budget restraints, this approach was extremely ambitious.

An interesting conclusion, however, is that the technical component in Diegem, which was largely designed separately from the to-be study, did have an impact on the area development. As Secchi-Vigano/Ecorem were able to deliver a fairly specific plan, it is likely to enable a link between the opened Woluwe and the building of a new tram line in Diegem. The VMM is now endeavouring to re-open the Woluwe at various locations. This means that this watercourse will also be getting greater attention in other planning processes in the Woluwe Valley.

## Beekstraat Project in Wezembeek-Oppem

In the VLM 'Beekstraat' project in Wezembeek-Oppem, the Wezembeek brook (formerly 'Vuilbeek' or 'Dirt brook') was opened over a certain length in 2014. The Wezembeek is a tributary of the Woluwe. The preparation of the plans for opening the Wezembeek (Antea, 2010) preceded the study of the Wezembeek (Secchi Vigano/Ecorem, 2012). From the outset, it was fairly obvious that an open brook, associated with ecology and recreation, would offer added value. In addition, it was municipal property.

According to the study of the Woluwe, which was conducted after the Antea study, the tributaries of the Woluwe should be given the 'same treatment' as the Woluwe itself, as, in the view of Secchi Vigano/Ecorem, they are no less important. The perception is often different, as the Wezembeek is situated in a different landscape than the Woluwe, yet the two cannot be seen in isolation.

The 'Beekstraat' project is situated in a municipal park in Wezembeek-Oppem, which was built when the watercourse was filled in. The municipal structure plan shows the importance of the Wezembeek, which acts as a green backbone or 'soft axis' for the municipality. It therefore seems logical to re-open the rivulet, thereby strengthening the soft axis and simultaneously putting additional water storage in place. This park is upstream from a point where flooding problems exist at the confluence of two water collectors.

During further development however, the project turned out to be not quite as simple. The park's spring water runs into a collector and was not really available for an open watercourse. All the more so as spring water is generally discharged and drained via the collectors for reasons of stability.

The original brook water, which comes from higher up, ended



10 Partition to retain water in the brook. Photo VLM 11 Before and after, in Beekstraat. Photo VLM

up in a different sewer, along with effluent. This water was not available for a new open watercourse in the short term either. Due to these obstacles, a preparatory study was first launched in 2010 (Antea). This study, with the resounding title 'Study into the re-opening of the upper stream section of the Wezembeek' was a sort of hybrid between a concept study and a technical design. Under the land-use planning legislation, no actual technical design is permitted to be drawn up while a land-use plan is still under preparation. So this came outside the scope of the remit. But the study was technically oriented. It was intended to provide a sufficiently 'technical basis' for proceeding with the project and therefore requested a design proposal in 'one or more technically motivated scenarios'. In doing so, a number of technical questions were articulated which demanded a clear answer.

Drawing on this study, and with the support of the water management boards such as Vivaqua and the support of Wezembeek-Oppem's town alderman in charge of the living environment, a broadly supported scenario was ultimately put forward. This scenario not only took the short term into account, where only local water was collected, but also considered the situation in the longer term, where the brook water could possibly be made available again. By taking the time to explore the technical aspects in an engineering study, with the help of the water management boards, it became possible to build an open watercourse in this difficult situation. Consequently, the blue-green link which had been envisioned from the very outset, could be built whilst at the same time serving as an inducement to push the water treatment of this rivulet higher up on the list of priorities.

Several technical elements helped to supply a water-less brook with water:

- The plan involved the use of partitions, which retained the water in the brook. This would ensure that, even in times of drought, the brook would hold a minimum amount of water.
- Special connections to a collector were planned for emergencies, to prevent flooding.
- The choice of depth when the brook was built took already into account the future connection of the actual brook water.
- Groundwater measurements were performed to estimate the best depth to ensure an interesting landscape profile whilst diverting sufficient water into the brook. (photo p. 12)
- Resorting to broader areas, the fairly deep profile of the new

watercourse was used to store the water run-off from an adjacent field and to keep this water away from the sewer.

The works were carried out in 2014. The location ultimately proved even better suited than originally thought. In theory, the study set out on the assumption that, as long as the original water was not connected, the brook would temporarily run dry during summer. In practice, the brook held water continuously during the hot summer of 2015. In landscape terms, the new park looks fairly natural and in an ecological sense, interesting fauna and flora have already been spotted. In spite of the radical changes, the new park is appreciated and used by the public. This local consensus is also seen in the changed name of the brook: the 'Vuilbeek' (dirt brook) is once again called the 'Wezembeek'. This change of name was requested by the municipality and residents alike on the occasion of the project. The Beekstraat project now stands as a practical example that allows other places in the Woluwe Valley to set to work in a similar fashion. This makes it easier for the blue-green fingers drawn on the plans in the Woluwe basin (fig. 3, p. 14) to be actually built. In Zaventem, for example, another tributary of the Woluwe is to be opened up in a municipal park in 2017. The initial situation is similar to that in Beekstraat.

In the neighbouring valleys of the Woluwe too, there are a number of privately-owned castle parks, which are in a similar situation to the park in Beekstraat. Let us hope that they also follow this example.

As such, the technical aspect plays an important role in this area for achieving the spatial concept of blue-green fingers. Particularly in complex circumstances, technical designs are best not treated as mere 'afterthoughts', that eventually emerge during the execution phase. Technical design could play a part in 'research by design' from as early on as the planning phase. This would probably take more time and energy, but a pile of theoretical plans that cannot be implemented is not exactly cost-efficient either.