

# 9. GENERAL EVALUATION

The creation of the Bergenmeersen flood control area with controlled reduced tide (FCA-CRT) was a major operation. To learn lessons from the project with a view to future large-scale projects, the path followed was thoroughly evaluated. Despite various unforeseen circumstances, the high level of involvement of the local community and even one or two conflicts of interest, the partners involved succeeded in cooperating flexibly and efficiently. In this way the Bergenmeersen project developed into a socially valuable project, without tampering with the vision defined at the outset.

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## 9.1 Concept: adjusting the land use plan

When it was announced that the Bergenmeersen area would be selected as part of the updated Sigma Plan, it was clear that large-scale social involvement would play a part. For example, local residents ran campaigns during the initial presentation of the plan to the municipal council. Later on, an organised action committee made itself heard, with press articles and campaigns during information sessions. From the design phase, a resolute decision was therefore taken to adapt the area as much as possible to the wishes of the local residents, obviously within the chosen type interpretation.

This finally led to a much-altered land use plan to satisfy the concerns of local residents. This was possible due to the developed project and process structure and the close cooperation between, among others,

the engineering firm Tractebel Engineering, the Agency for Nature and Forest (ANB) and the client, Waterways and Sea Canal.

All subsequent steps were therefore completed without much resistance. The extensive consultation in the project and process structure ensured that few unexpected aspects emerged during public participation sessions. The expected aspects were absorbed by preparation, study and reasoning from the preliminary phase.

## 9.2 Studies as the basis for the design

During the preliminary study, the preconditions for developing the area were defined. In this regard it was possible to make flexible use of a number of framework contracts and cooperation agreements with the various firms of experts. This provided the opportunity to promptly react to certain needs that emerged while the plans were

being developed, without having to work through new contracts in each case as per government legislation. This made for faster working, and kept the additional administrative burden to a minimum.

Trouble-free cooperation with the advisory bodies, such as the Flanders Heritage Agency and the ANB, made it possible to adapt the plan on the basis of the results of the preliminary study.

All these preliminary studies were then used by Tractebel Engineering as the basis for developing a design. The only thing that could not be completed in time was the model tests. This was compensated for by a theoretical calculation based on empirical formulae. As a result, the design was ready in time. A few points for attention came to light:

- The siting of the structure must be better prepared on the basis of soil surveys. Specifically this involves a survey of the impermeable layers. After the experience in Bergenmeersen, the land-inwards location is to be chosen as default for FCA-CRTs too when developing Sigma projects. This offers the possibility of letting in less sediment and reducing construction costs.
- The wooden structure must be designed to be more solid and more use must be made of the expertise of e.g. the ANB. Greater exchange of experience during the design phase seems advisable.
- Retrieving old plans (and archiving them) and better knowledge of the land could predict additional costs, allowing the design to be adapted accordingly.

### 9.3 Flexibility during implementation

During implementation, solutions were in each case sought constructively with the contractor, Herbosch-Kiere NV, and the engineering firm Tractebel Engineering. The parties displayed a certain flexibility. This made certain modifications possible, which resulted in a better-quality project:

- The reuse of local earth (excavated channel source to protect the archaeological heritage in the centre of the area) was limited to raising the depression in the area. As a result, technically better-quality material was delivered to cover the dyke, in addition to recovery of the material present on the existing dykes.
- The position of the sluice was moved further inland. This provides significant benefits for the implementation and operation of the area.
- The walkway was strengthened and moved slightly to have a better view of the operation of the combined inlet and outlet.

During implementation this flexibility, together with provision of large amounts of equipment by the contractor, proved decisive in achieving a trouble-free implementation. The various sub-contracts were implemented simultaneously. As a result, it was possible for the area to become operational two years earlier than planned.

### 9.4 Full operation

What really counts are obviously the results of the intensive cooperation, studies and

implementation work. From the moment of coming into operation on 25 April 2013, the result appeared excellent. Within just a few days the first video clips from birdwatchers were appearing on YouTube, showing the remarkable increase in foraging birds. The

walkway is already being heavily used by visitors and locals. In short, from now on the river and its nature will have room to show themselves off to their best, in complete safety.

## 9.5 Info sheet

Coordinating plan	Updated Sigma Plan - decided by the Flemish Government on 22 July 2005	Total cost of project	EUR 3,584,846 (EUR 2,957,460.41 2005 price level)
Project title	Bergenmeersen		= 100.98% of the estimate in 2005 = 83.31% based on 2005 price level
Function of the area	FCA-CRT	Engineering firm	Tractebel Engineering
Expected climax vegetation	70% willow tidal forest, 30% mud flats and open water	Contractor	Herbosch-Kiere NV
Water-storing volume of area	1,500,000 m <sup>3</sup>	Number of specific government contracts	3
Surface area of area	41.37 ha	Number of framework contracts used	5
Length of ring dyke	1,155 m	Estimated start and end date	1 July 2009 - 1 July 2015
Length of overflow dyke	1,970 m	Preparation period	2.5 years
Average polder level	3.75 m TAW	Duration of procedures	3.5 years
Total estimate for 2005	EUR 3,550,000	Duration of implementation	1 year
Cost of study work	EUR 112,192	Operational	25 April 2013
Cost of work	EUR 1,887,552		
Cost of extra work and price adjustments	EUR 200,130.76		
Cost of land acquisition and flanking agricultural policy	EUR 967,117		

Task Name	Duration	Start	Finish	2005												2006				2007			
				J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A
<b>Specification 16E 0531 Land use</b>	<b>775d</b>	<b>Sep 20, 2005</b>	<b>Sep 8, 2008</b>													■				■			
Publication of specification 0531	56d	Sep 20, 2005	Dec 6, 2005													■				■			
Study 0531	719d	Dec 7, 2005	Sep 8, 2008													■				■			
<b>Specification 16E 0830 Design</b>	<b>1235d</b>	<b>Jul 9, 2008</b>	<b>Apr 2, 2013</b>																				
Publication of specification 0830	40d	Jul 9, 2008	Sep 2, 2008																				
Study 0830	1160d	Oct 22, 2008	Apr 2, 2013																				
<b>Specification 16E 1041 Works</b>	<b>1806d</b>	<b>May 15, 2006</b>	<b>Apr 15, 2013</b>													■				■			
Publication of specification 1041	41.4d	Oct 6, 2010	Nov 16, 2010																				
Works 10/41	283d	Mar 15, 2012	Apr 15, 2013																				
<b>Procedures</b>	<b>1806d</b>	<b>May 15, 2006</b>	<b>Apr 15, 2013</b>													■				■			
AIA	259d	May 15, 2006	May 10, 2007													■							
Expropriations	1364d	Jan 23, 2008	Apr 15, 2013																				
Flemish Parliament Act on Flood Defences	164d	Mar 22, 2011	Nov 4, 2011																				
GRUP	201d	Jun 19, 2009	Mar 26, 2010																				
EIA project	531d	Jun 1, 2008	Jun 11, 2010																				
SBV	161d	Jun 25, 2010	Feb 4, 2011																				
SBV 2	80d	Aug 1, 2012	Nov 20, 2012																				
<b>Work groups</b>	<b>1247d</b>	<b>May 10, 2007</b>	<b>Feb 17, 2012</b>																	■			
Project-based WG	1247d	May 10, 2007	Feb 17, 2012																	■			
SubWG Nature	102d	Oct 9, 2007	Feb 27, 2008																	■			
SubWG Agriculture	11d	Nov 29, 2007	Dec 13, 2007																	■			
SubWG Agriculture	1d	May 10, 2007	May 10, 2007																	■			
SubWG Recreation	1d	Oct 16, 2007	Oct 16, 2007																	■			
SubWG Recreation	1d	Apr 15, 2008	Apr 15, 2008																	■			
SubWG Water	1d	Oct 10, 2007	Oct 10, 2007																	■			
<b>Info sessions</b>	<b>1160d</b>	<b>Dec 13, 2007</b>	<b>May 23, 2012</b>																	■			
Info land use plan	1d	Dec 13, 2007	Dec 13, 2007																	■			
Info GRUP	1d	Jun 19, 2009	Jun 19, 2009																				
Info SBV	1d	Jun 17, 2010	Jun 17, 2010																				
Info Works	1d	May 23, 2012	May 23, 2012																				

