



Ecosystem benefits from safety operations in river Meuse

*Ministry of Transport, Public Works and Water
Management, The Netherlands*

October 2007

P.J. Meesen

E.M. Sies



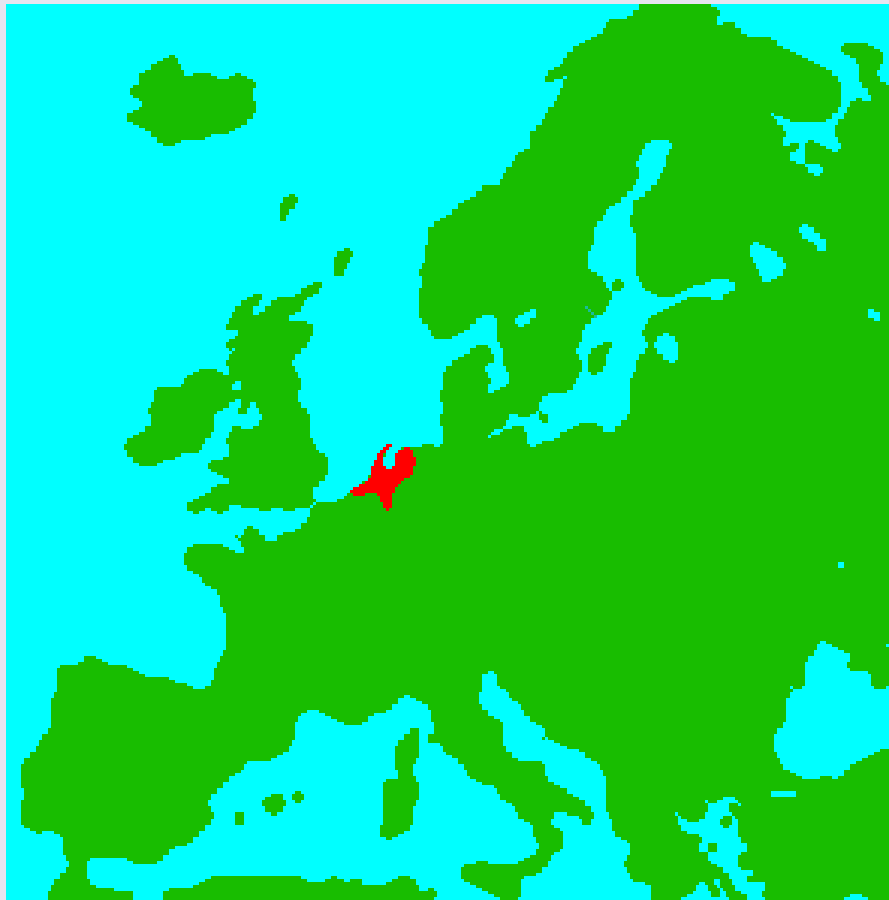
Werken aan
de Maas van morgen



De Maaswerken



Project Location, The River Meuse



Werken aan
de Maas van morgen



Present Situation



Werken aan
de Maas van morgen

 De Maaswerken



Are Safety Operations Necessary?





A new Strategy?

Why not simply rising the dikes/embankments?

More intelligent river basin management is needed using wetlands and alternative methods to decrease the water levels in case of high discharges



Werken aan
de Maas van morgen



De Maaswerken



Wetlands, alternative Methods?

Main goal: reducing flood levels

- Deepening and widening of River Summer Bed
- Flood channels
- Creating of Retention areas
- River freedom – removing revetments
- Rising embankments at City's



Werken aan
de Maas van morgen



What are the disadvantages?

Disadvantages:

- More area is needed
- Land has to be obtained
- Some people have to move
- Contaminated Sediments
- Effects on agriculture
- Effects on shipping



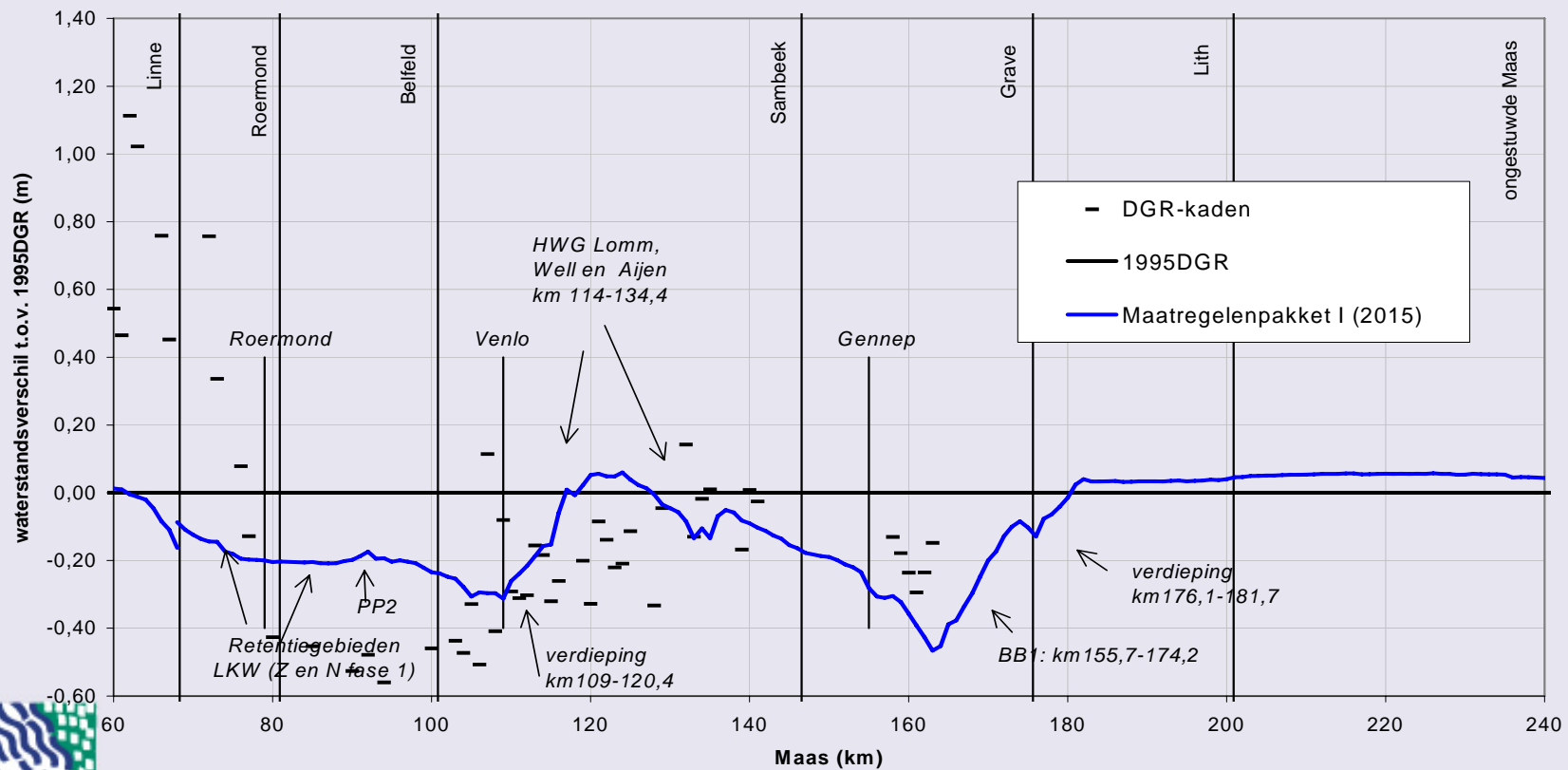
Werken aan
de Maas van morgen



De Maaswerken



Waqua



Werken aan
de Maas van morgen

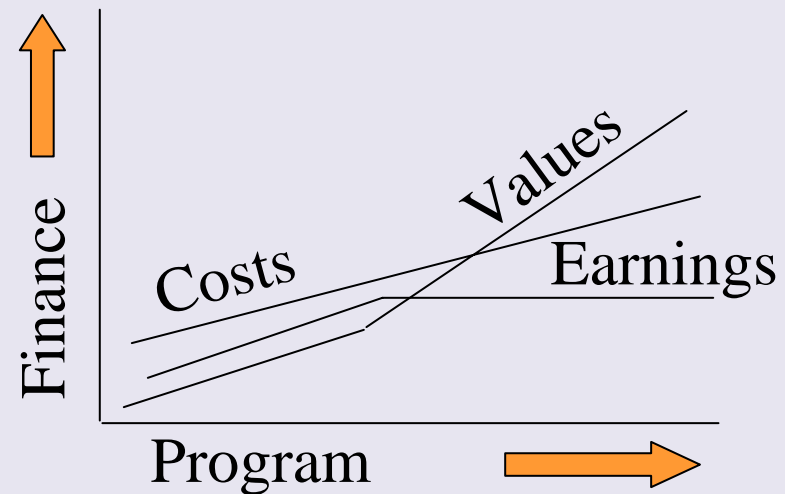
De Maaswerken



How to handle Costs?

Make it a Programme with different stakeholders and create additional values

- Flood protection
- Nature conservation
- Inland navigation
- Gravel extraction



Werken aan
de Maas van morgen

 De Maaswerken



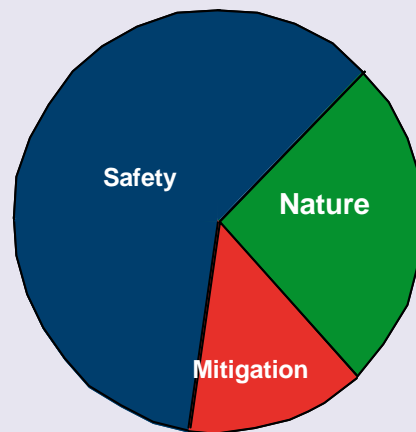
Costs

Costs flood protection and nature development:

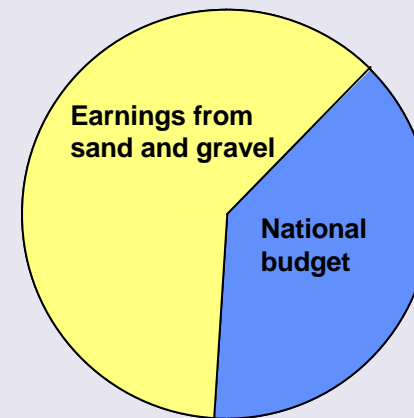
€1.4 billion

Costs improvement shipping route:

€391 million



Costs per item



Budget



Werken aan
de Maas van morgen



De Maaswerken



Advantages

- More Flexibility in handling floods
- Ecological benefits
- Opportunities for Recreation
- Industry benefits from gravel extraction
- Improving inland shipping



Werken aan
de Maas van morgen



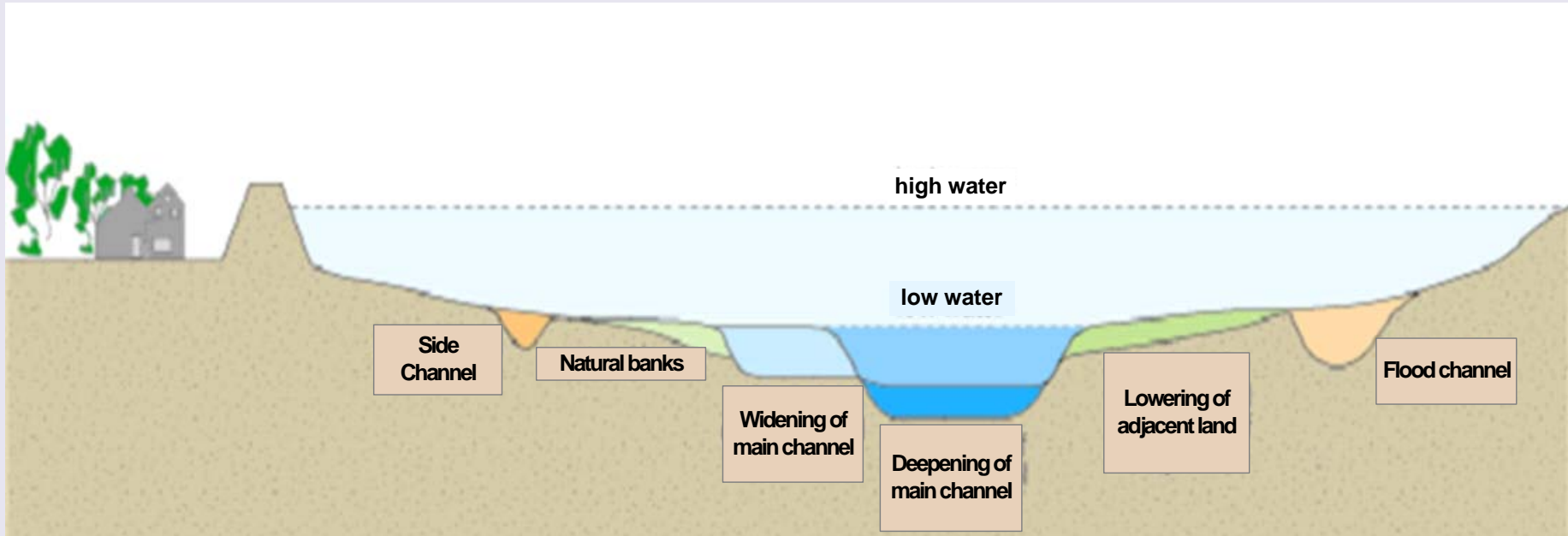
Who are involved in such a Programme?

- 3 Ministries
- 6 Water Boards
- 42 Dutch local authorities
- 1 Belgian Province



Werken aan
de Maas van morgen

 De Maaswerken

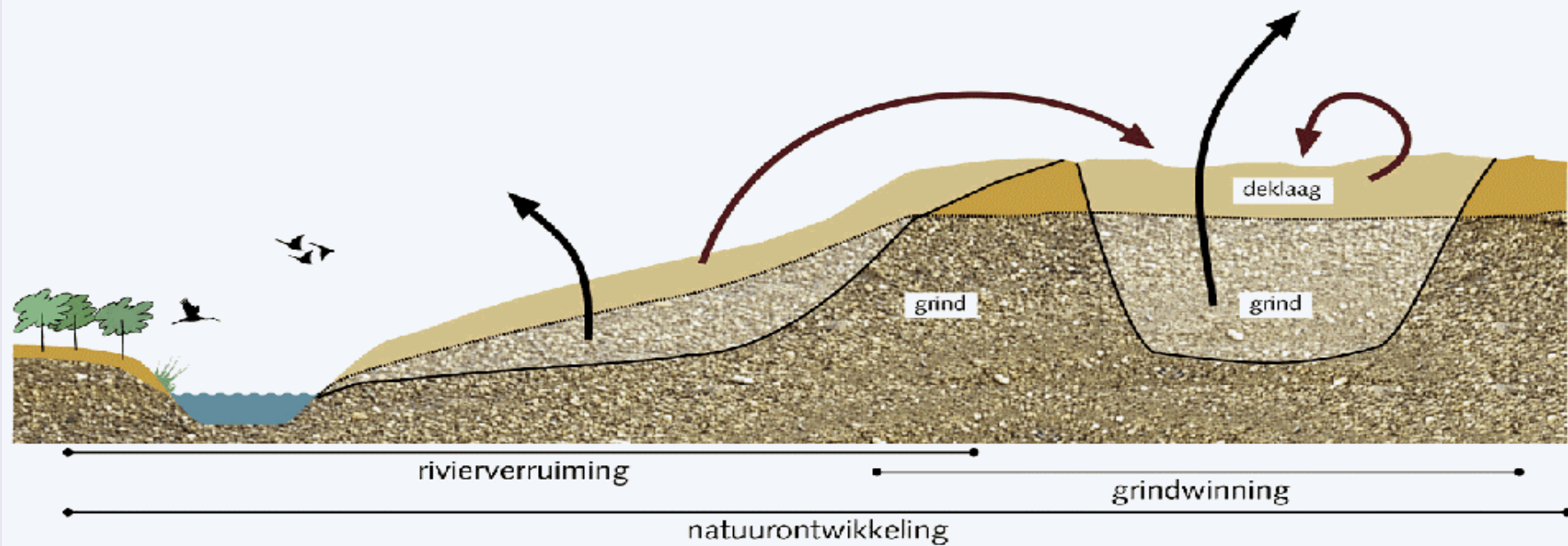


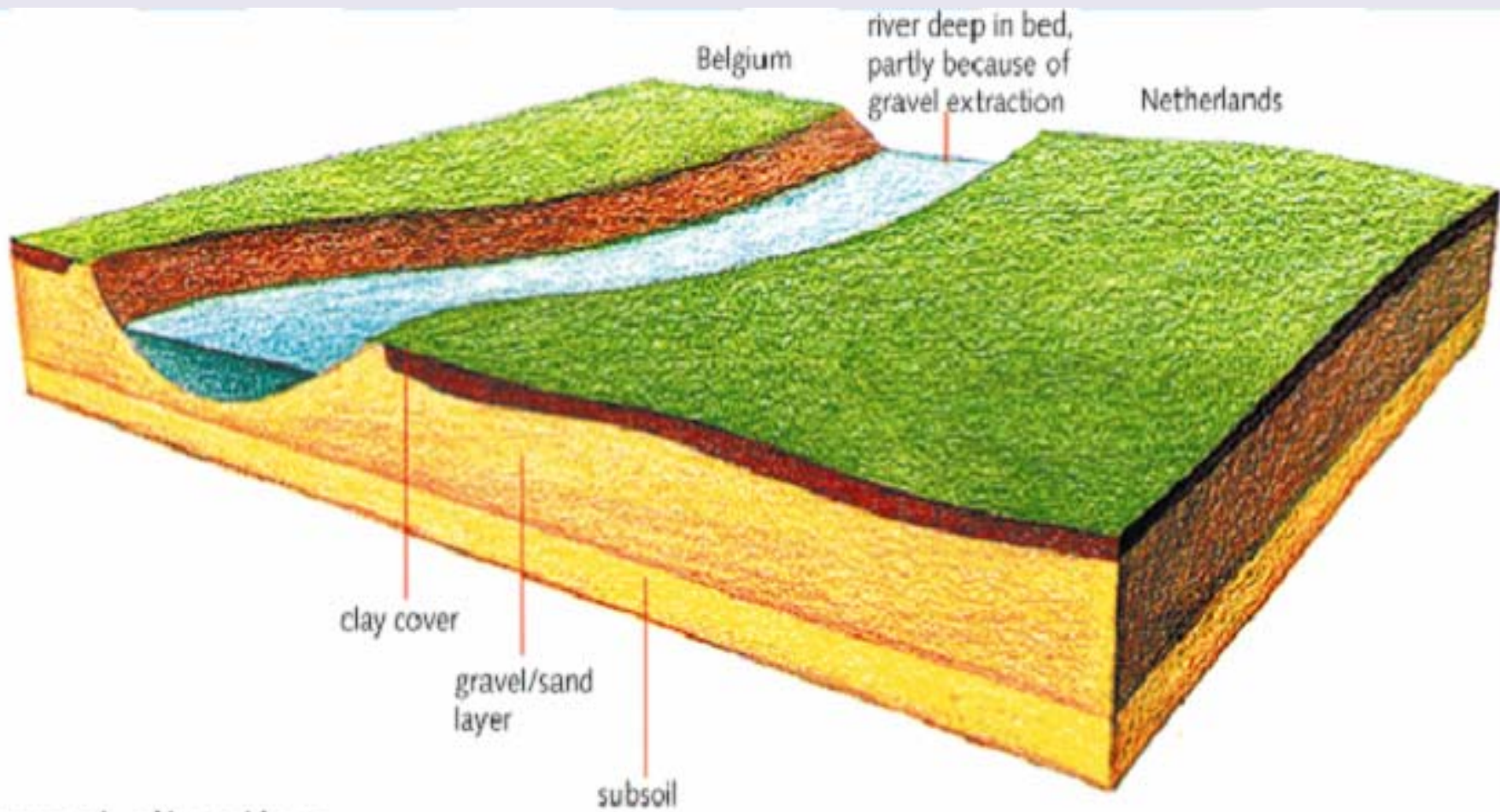
Werken aan
de Maas van morgen

 De Maaswerken

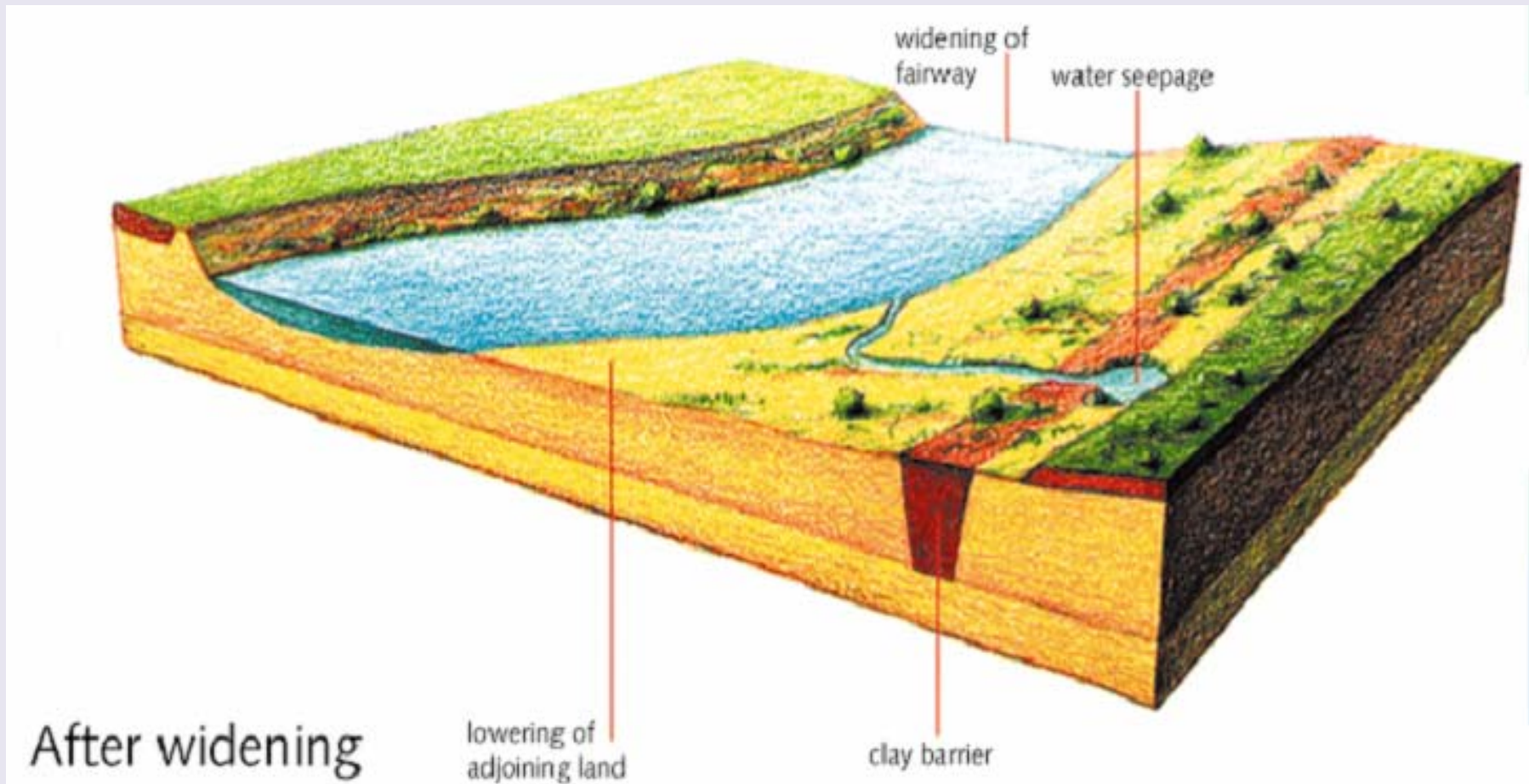


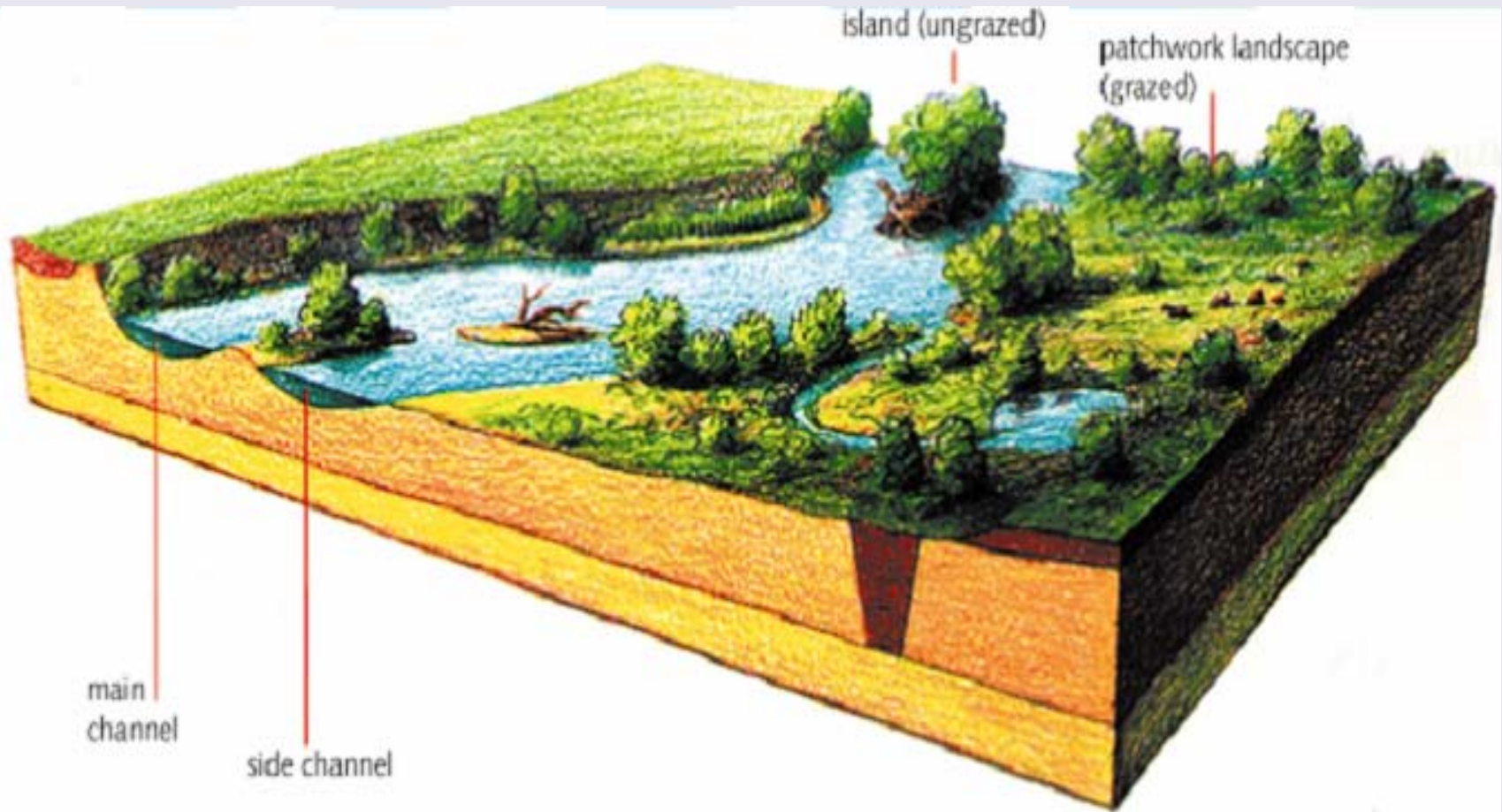
Basisprincipe uitvoering Grensmaas





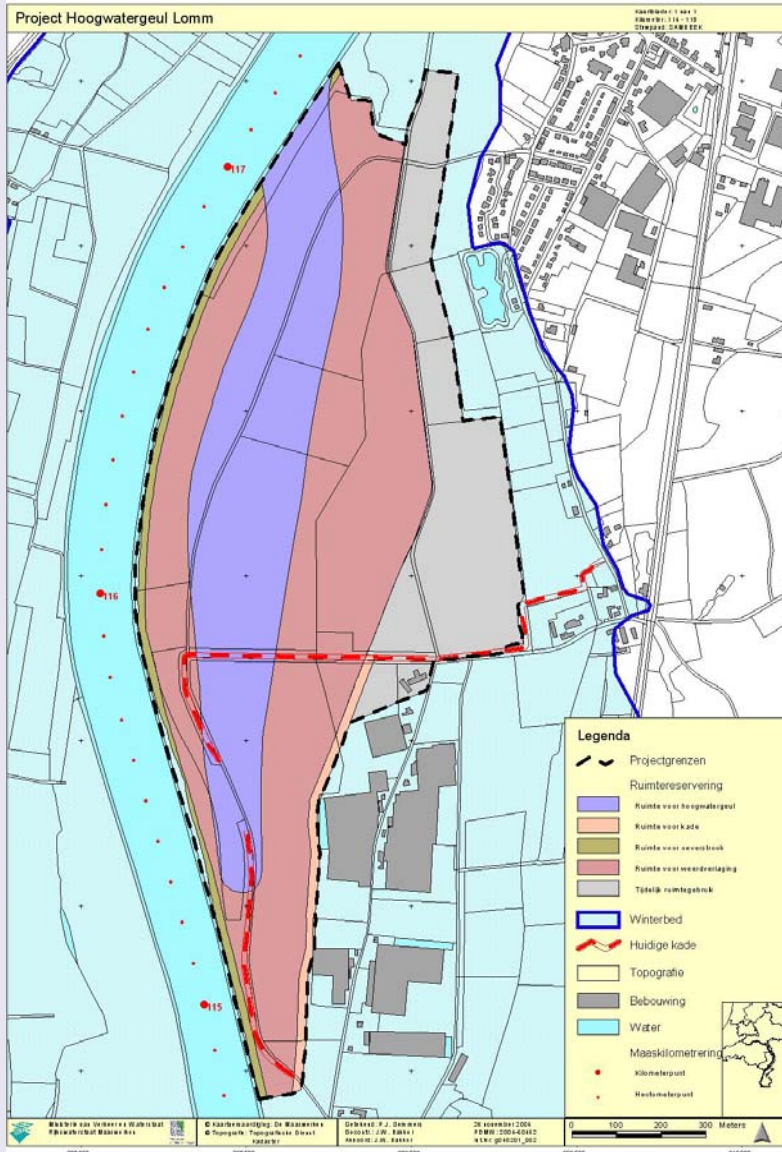
Current situation





Future situation





Werken aan
de Maas van morgen

 De Maaswerken



