Pilot Aa of Weerijs – profile optimizer

TKI 5 – Brabantse Delta

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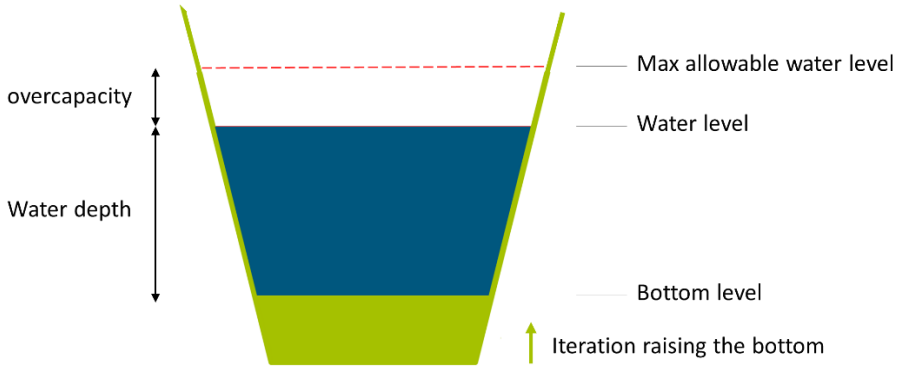
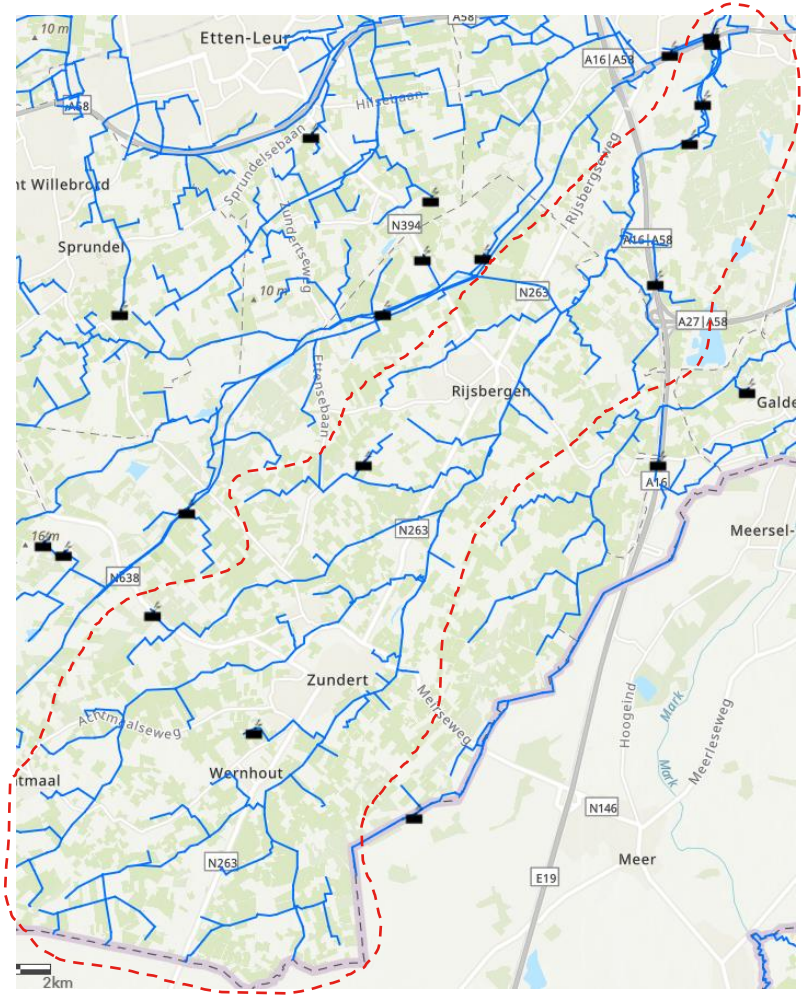
Casestudie Aa of Weerijs

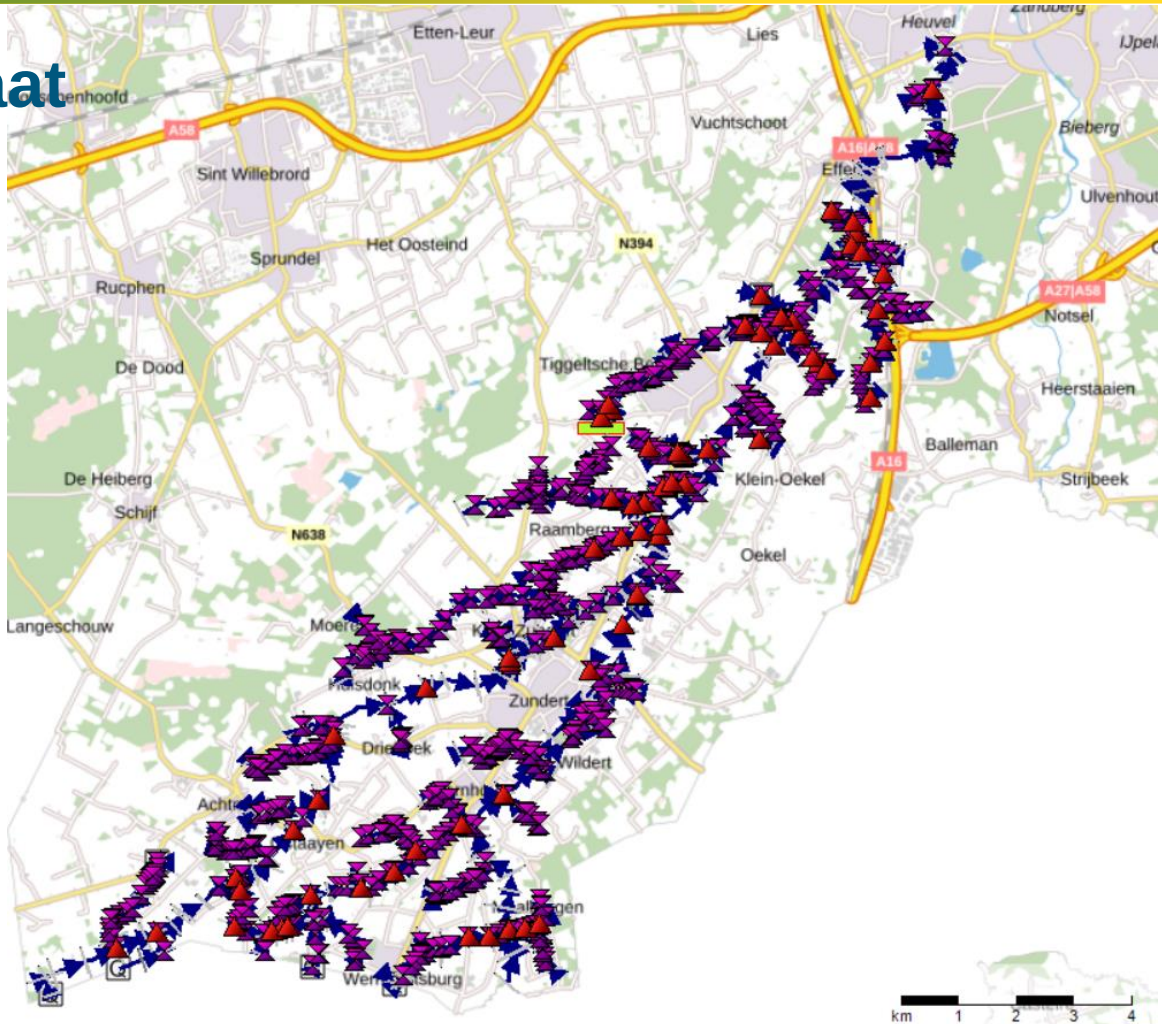
- Droogteproblematiek. Hoe kunnen we D-HYDRO Suite hiervoor inzetten?
  - Impact dempen waterlopen
  - Impact minder / niet baggeren
  - Impact minder onderhoud





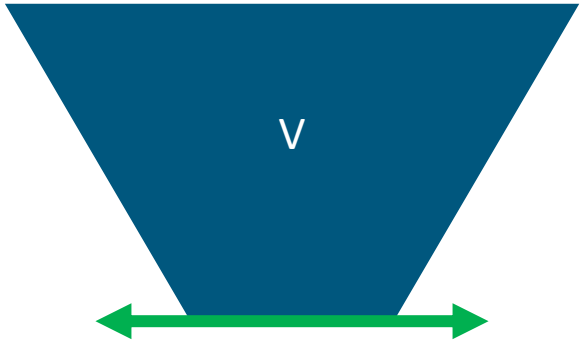
Modelbouw - Resultaat

- Workflow opgezet van brondata naar D-HYDRO Suite model
- Preprocessing (python) gegeneraliseerd (toepasbaar in andere gebieden)



Startpunt TKI 4

- Doelwaarde: stroomsnelheid
- Eén geparameteriseerd optimaal profiel



Optimalisatie-script

HydroLIB-core

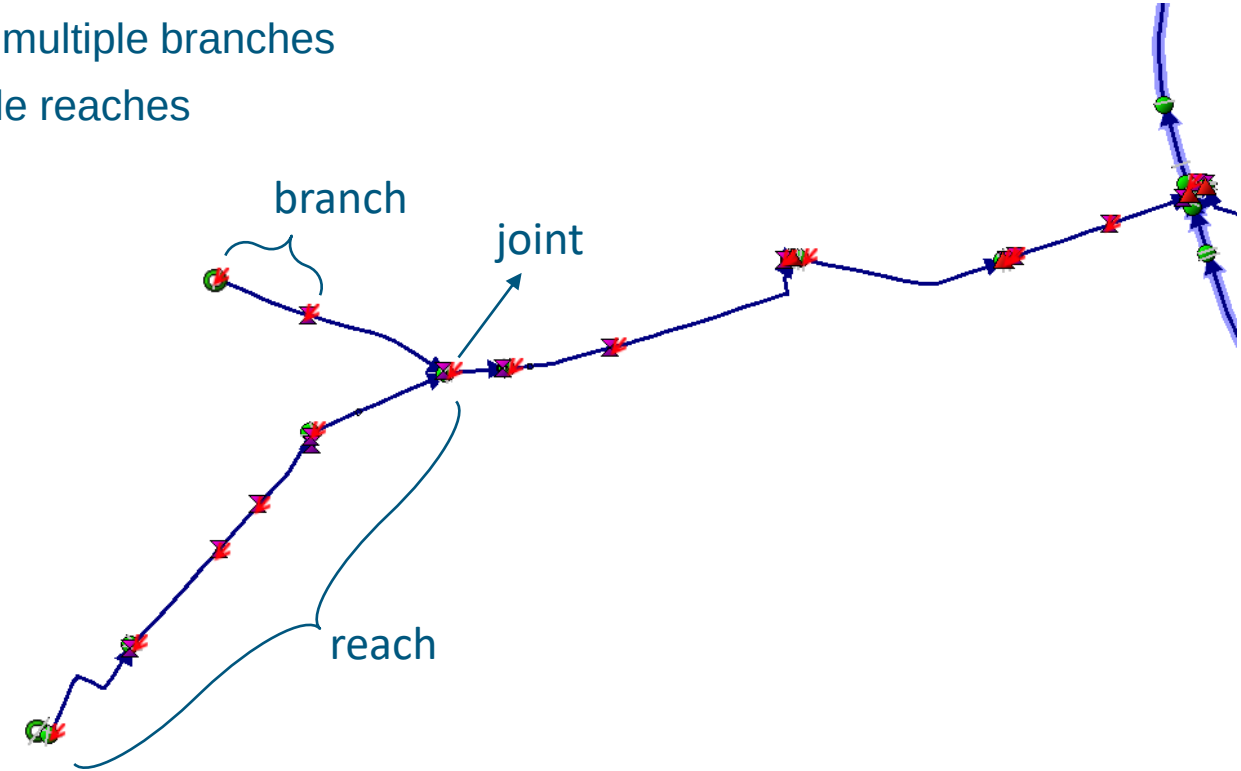
D-HYDRO Suite 1D2D

Workflow Profile Optimizer – TKI 5

- Startpunt: D-Hydro FM model (Model met RR, RTC, 2D niet getest)
  Stationair
  YZ-profielen

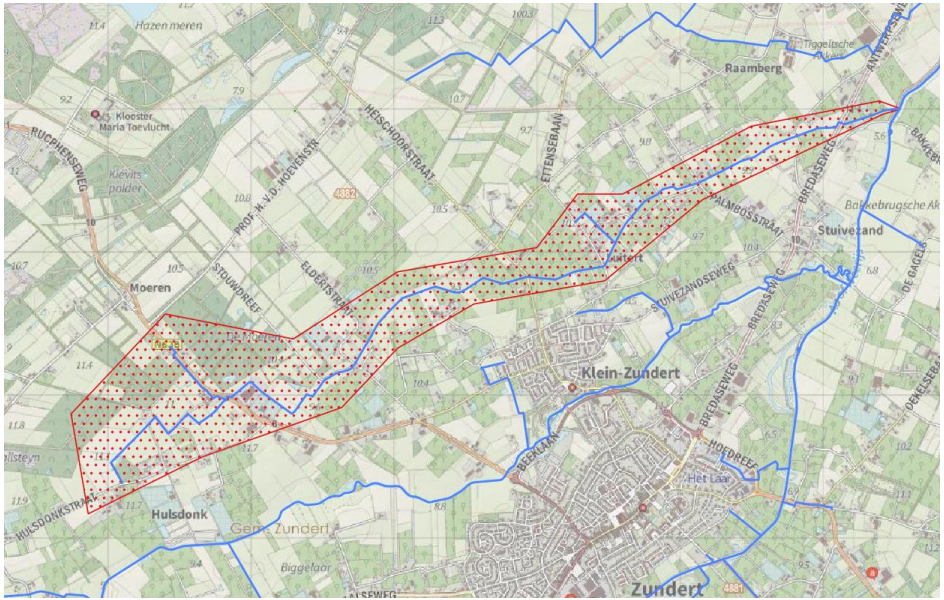
Concepts

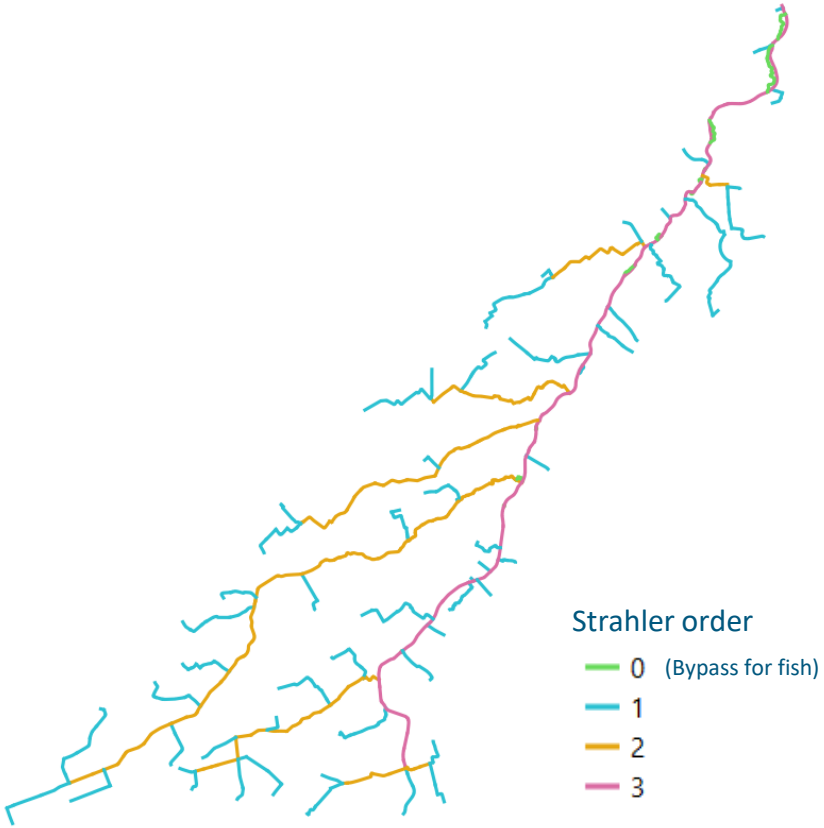
- Branch: defined in D-Hydro
- Reach: consists of multiple branches
- Joint: join of multiple reaches



1: select area

- Shapefile (polygon): one or multiple polygons, add constraints infomation in the polygons
- Strahler order: calculated on branches.shp

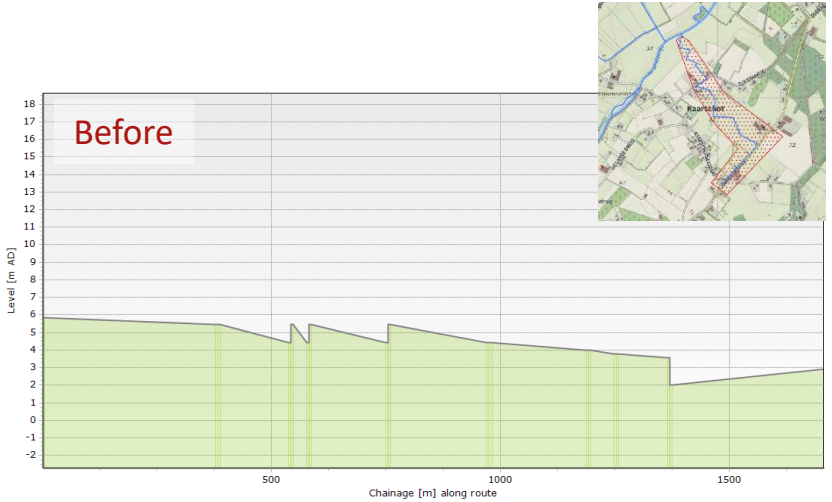


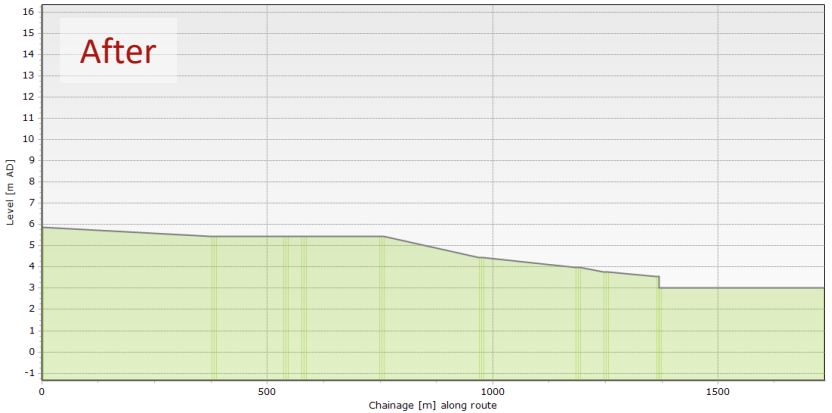


2: spatial check

- Two types:
  - Before optimization: within one reach and at joints
  - During optimization: at joints

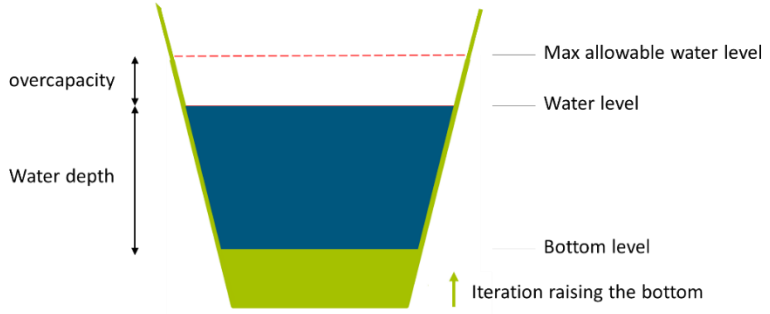
- Key steps:
  - Route to create route number and reach number for cross sections
  - Find and mark depression cross sections in each reach
  - Fill depressions: change the depression cross section’s bottom level



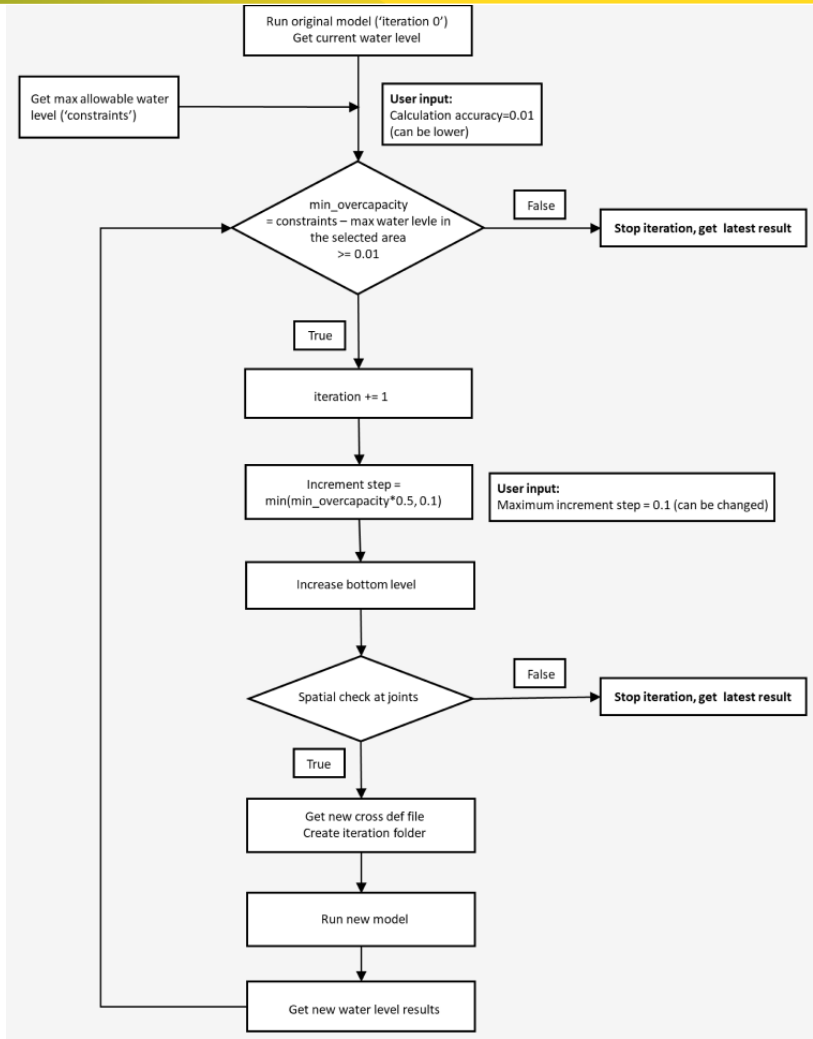


3: optimization procedure

Constraints TKI5:
- Water level



- Calculation accuracy: how close to the constraint, user defined
- Overcapacity: constraint – wl
- Max increment step: user defined
- Increment step: min(overcapacity*0.5, max)



4: progress

- Geometry
  - Developed: whole model
- Select area
  - Developed: whole model
- Spatial check
  - Developed: before optimization, within one reach and at joints
  - On-going: during optimization, at joints
- Optimization
  - Developed: single reach
  - On-going: multiple reaches with joints