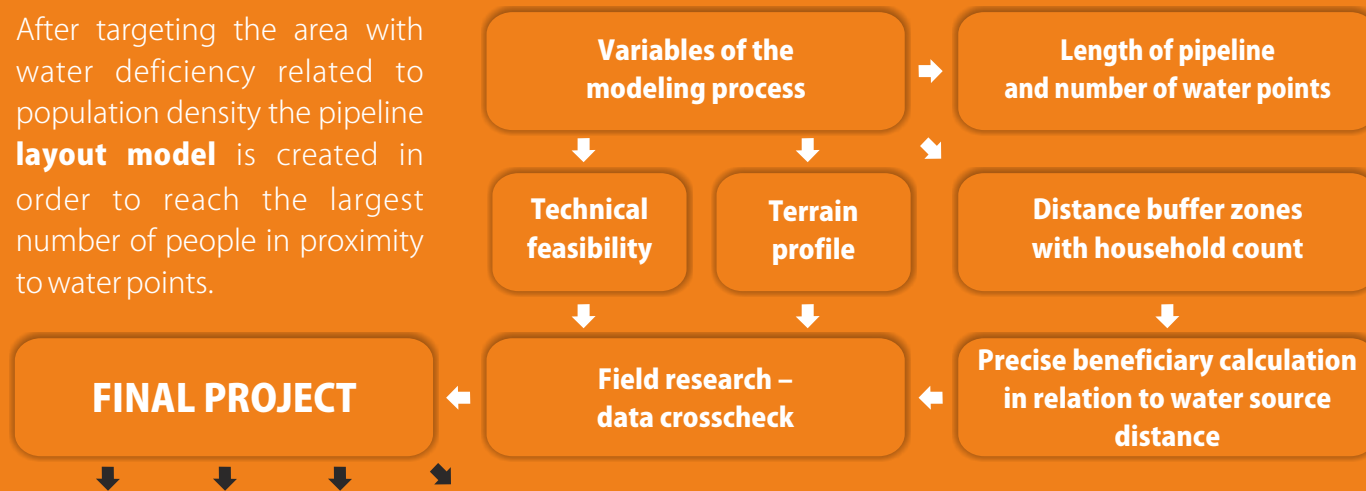


# Water distribution schemes modeling

After targeting the area with water deficiency related to population density the pipeline **layout model** is created in order to reach the largest number of people in proximity to waterpoints.



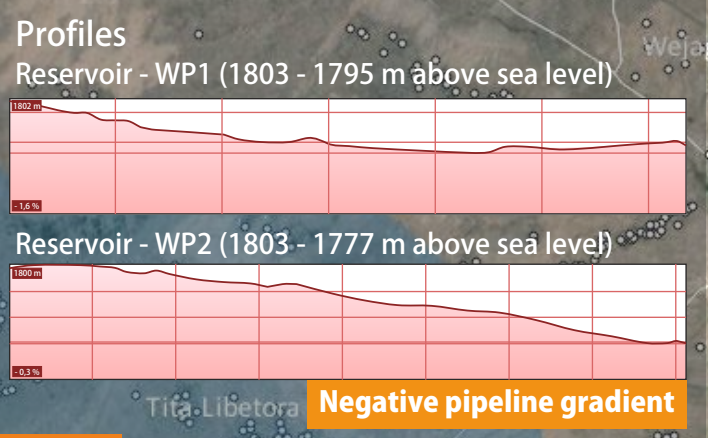
## PIN WASH TECHNOLOGY INNOVATIONS

Using geo-information for precise targeting

### Cost of distance analysis

Detailed information about population density, distribution and water source coverage is necessary for precise targeting of WASH interventions. As rural water sources are often decentralized and unevenly spread over vast areas it is important to locate communities farthest from the source. Data from census and official statistics that respect administrative borders do not reflect the real water fetching situation which is defined by natural barriers. PIN uses satellite mapping and geospatial analysis to locate gaps in water source coverage.

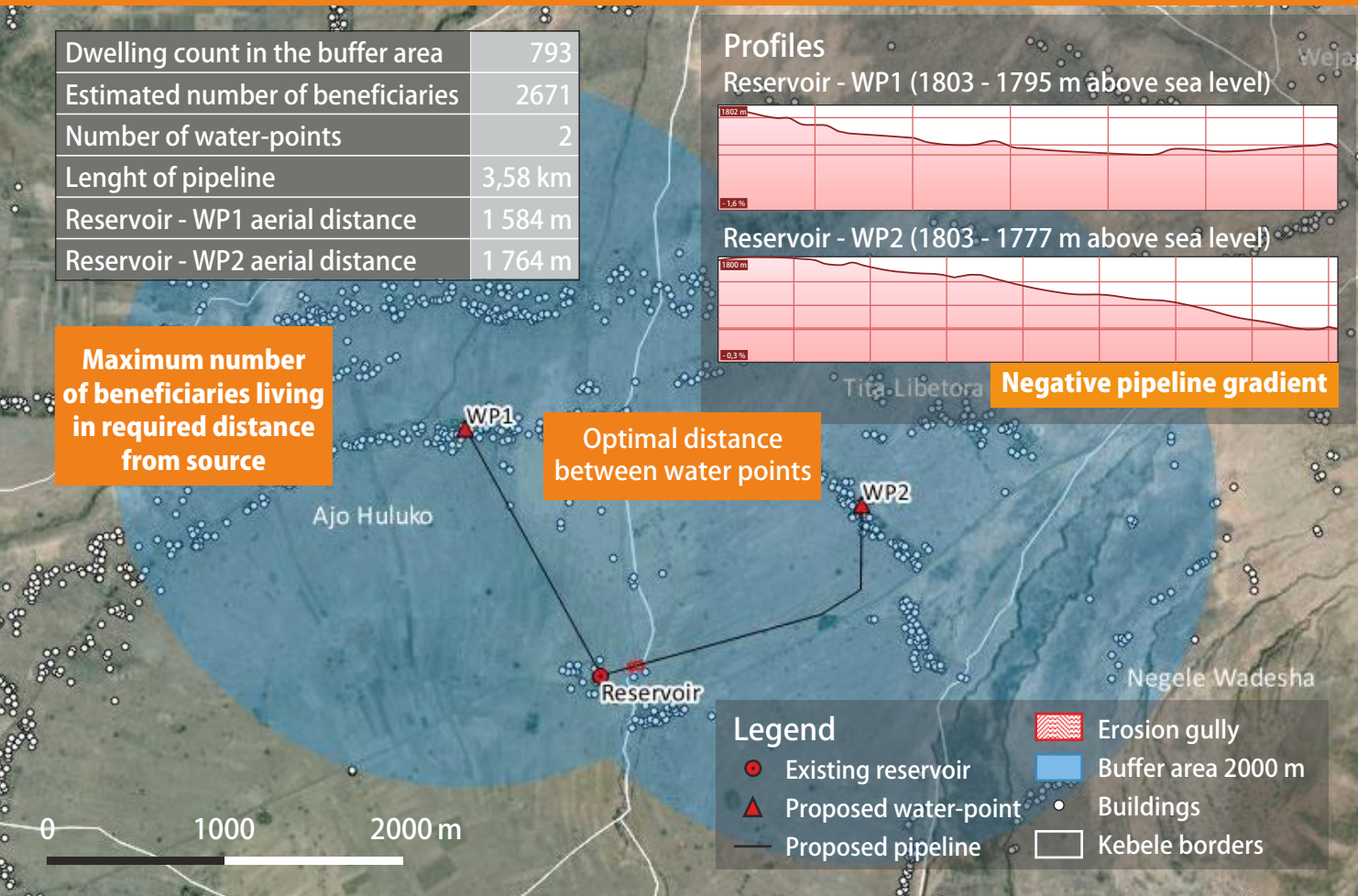
|                                   |         |
|-----------------------------------|---------|
| Dwelling count in the buffer area | 793     |
| Estimated number of beneficiaries | 2671    |
| Number of water-points            | 2       |
| Length of pipeline                | 3,58 km |
| Reservoir - WP1 aerial distance   | 1 584 m |
| Reservoir - WP2 aerial distance   | 1 764 m |



Maximum number of beneficiaries living in required distance from source

Optimal distance between water points

Negative pipeline gradient



**Legend**

- Existing reservoir
- Proposed water-point
- Proposed pipeline
- Erosion gully
- Buffer area 2000 m
- Buildings
- Kebele borders



# ANALYZING PROCESS

Household detection on satellite images + census data

Water source catchment area identified by Thiessen polygons

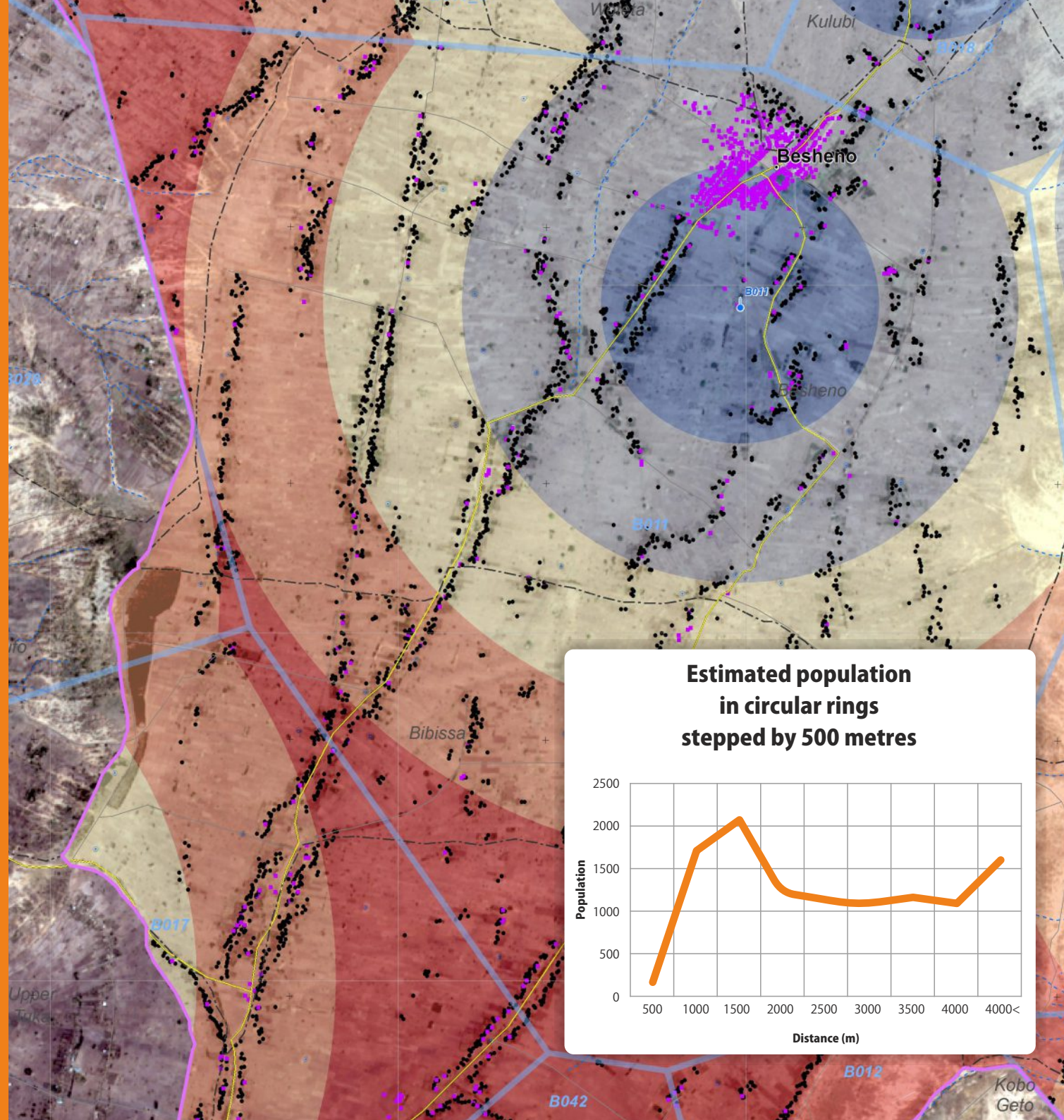
Household layer

Catchment layer

Buffer zones showing a number of people in relation to water source distance

Digital maps

Detecting most vulnerable communities and water scarcity areas



**Estimated population in circular rings stepped by 500 metres**

