

# Alternative ways to stay dry

by Hans Oerlemans

urban development experiences from a flood prone country





# Context

1. Peat Developments

2. Connect with the river

3. Floating houses

Relevant for WA ?



# Context



Easy to develop land is running out



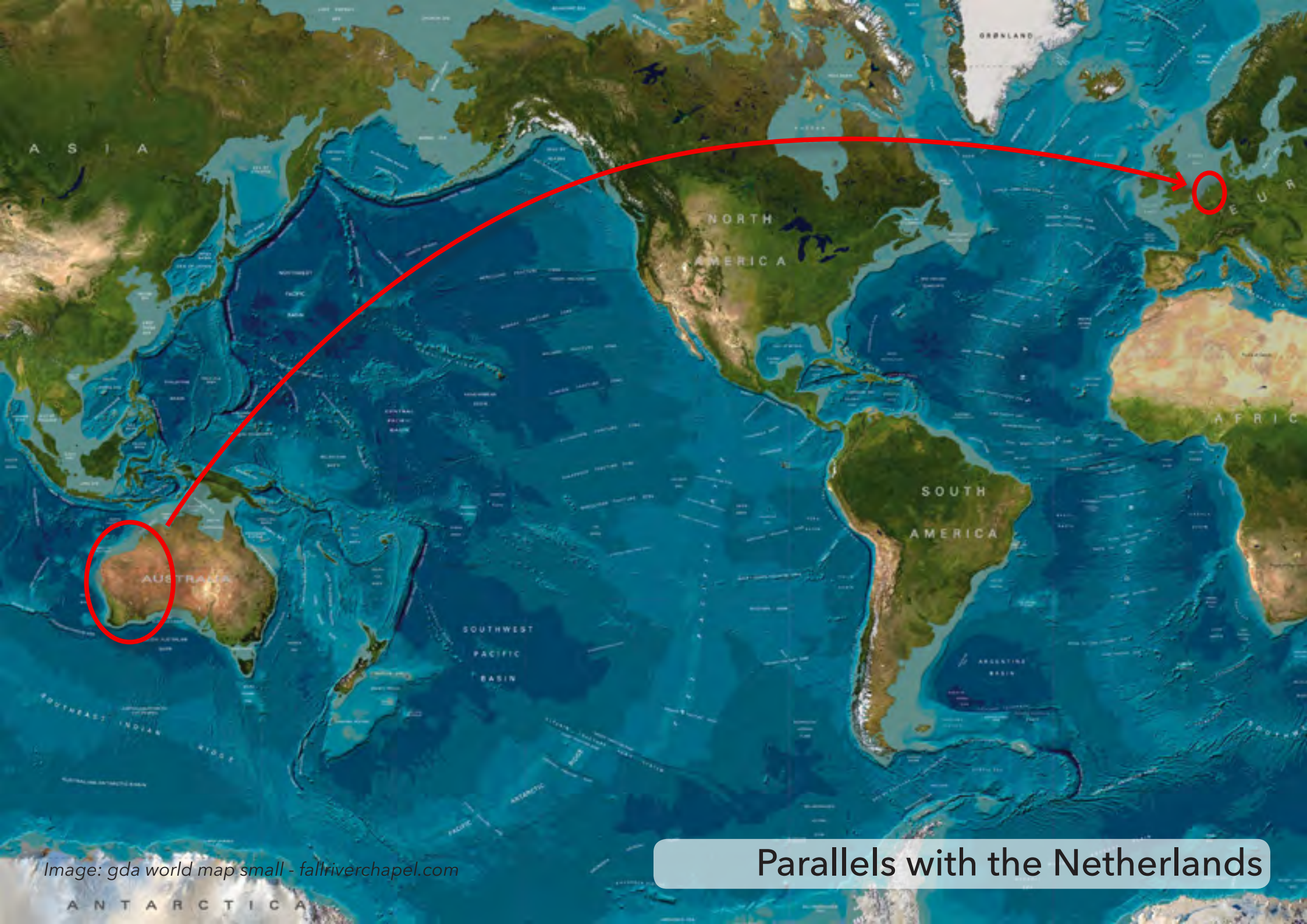


Image: gda world map small - fallriverchapel.com

Parallels with the Netherlands





Wet land, under sea level





Image: Provincie Utrecht, the Netherlands

Water from the hinterland





*Image: Lucas de Boer*

Wet, swampy landscape





Image: Freek Mayenburg

Swamp drained for agricultural use



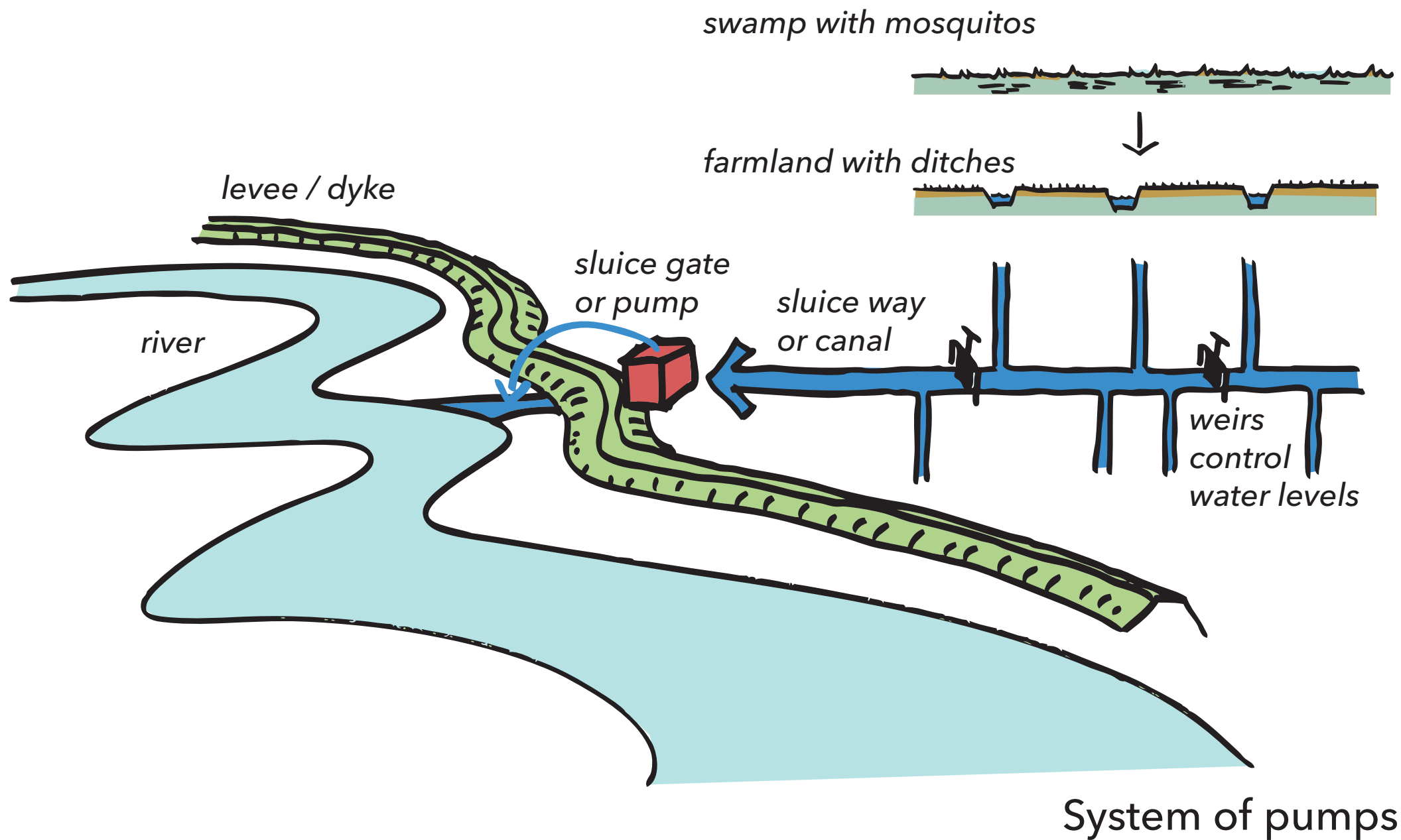






Image: Siebe Swart

Urbanising the wet landscape

Siebe Swart

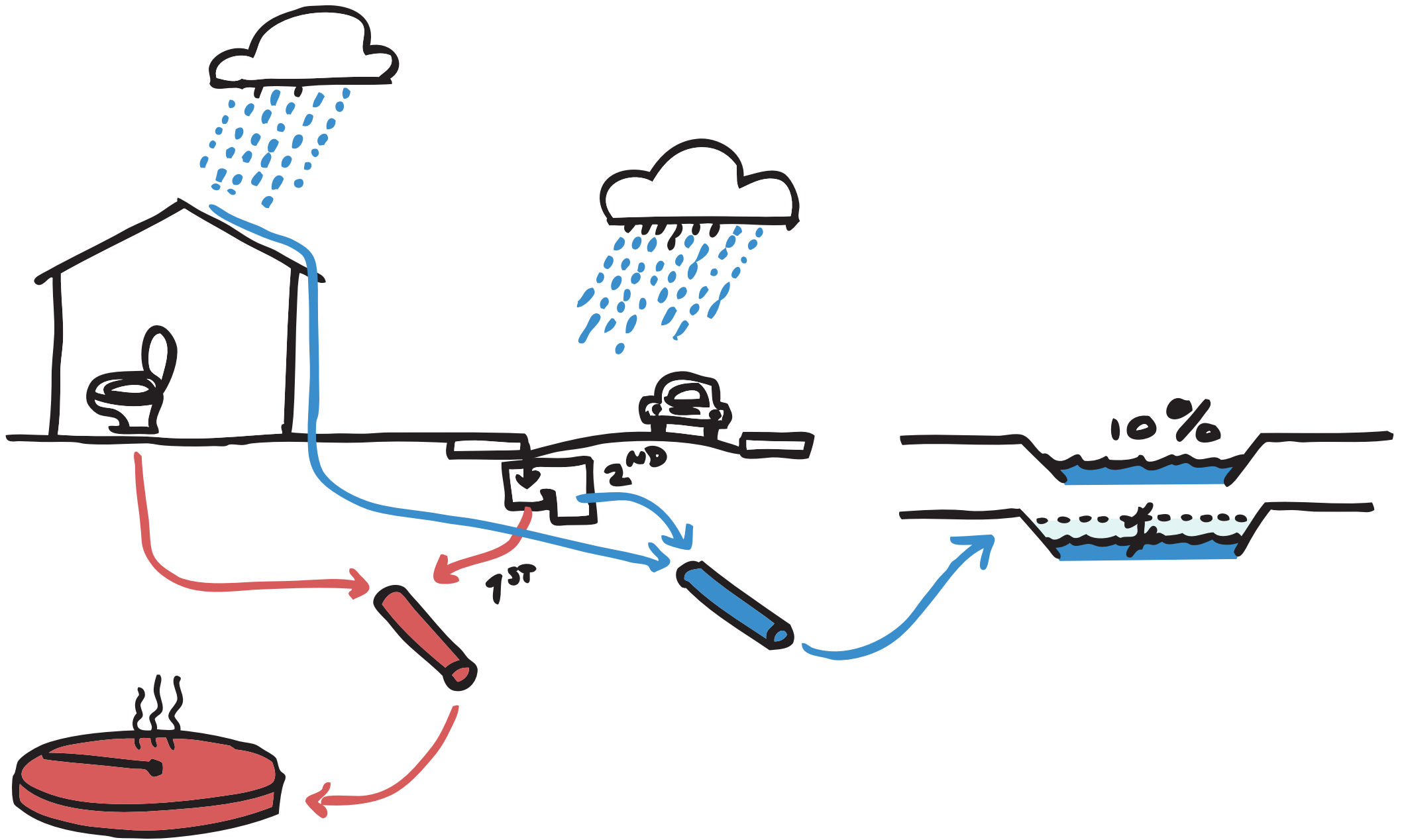




Image: knipscheer.com (inset: bezoekerscentrum.rijkswaterstaat.nl)

Cover with sand





New water system, with black water & storm water





Increasing hard surface overburdens sewer system





Image: Bart van Eyck

Flood water from the hinterland







# 1. Peat developments



*Image: OKRA landscape architects*

New-Peat-Lands, Meppel





City district, 5300 dwellings





Building in a wet landscape

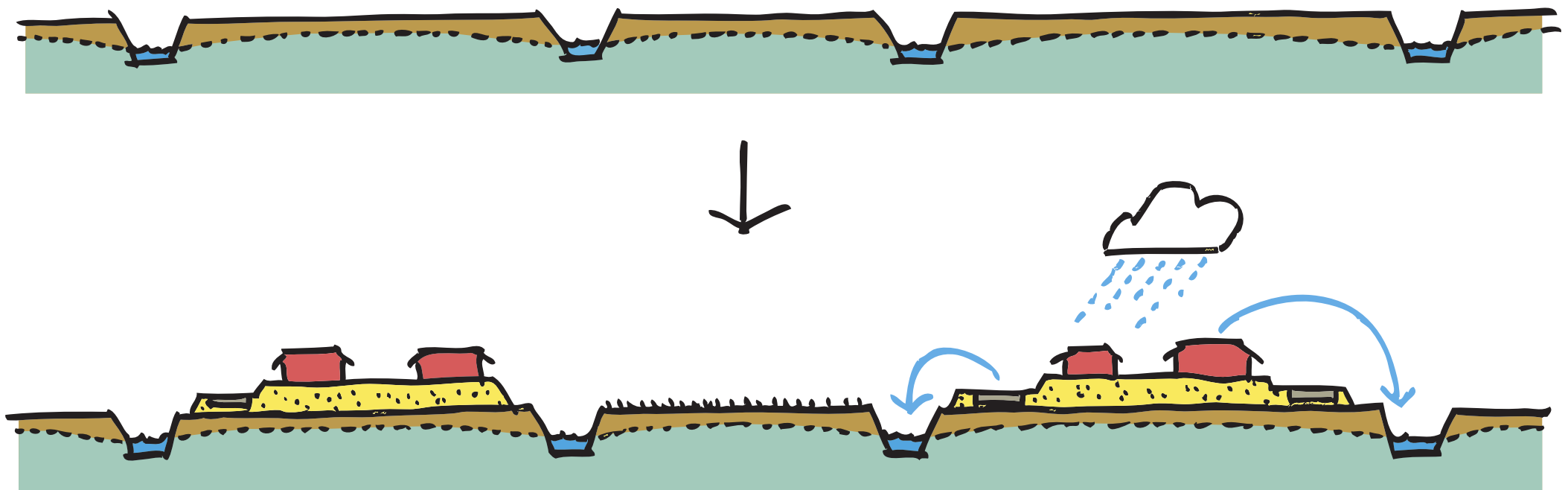
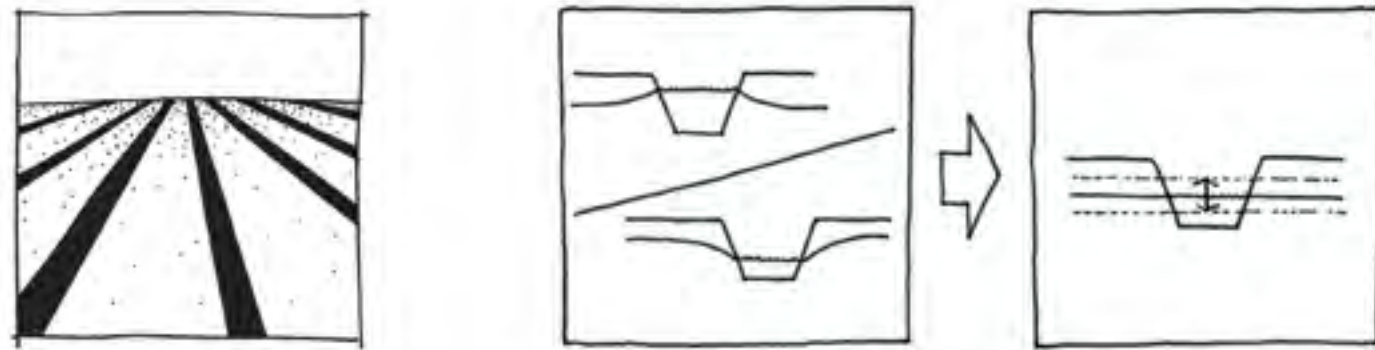




Image: OKRA landscape architect

Marrying city and landscape





Change drainage management + fill partially



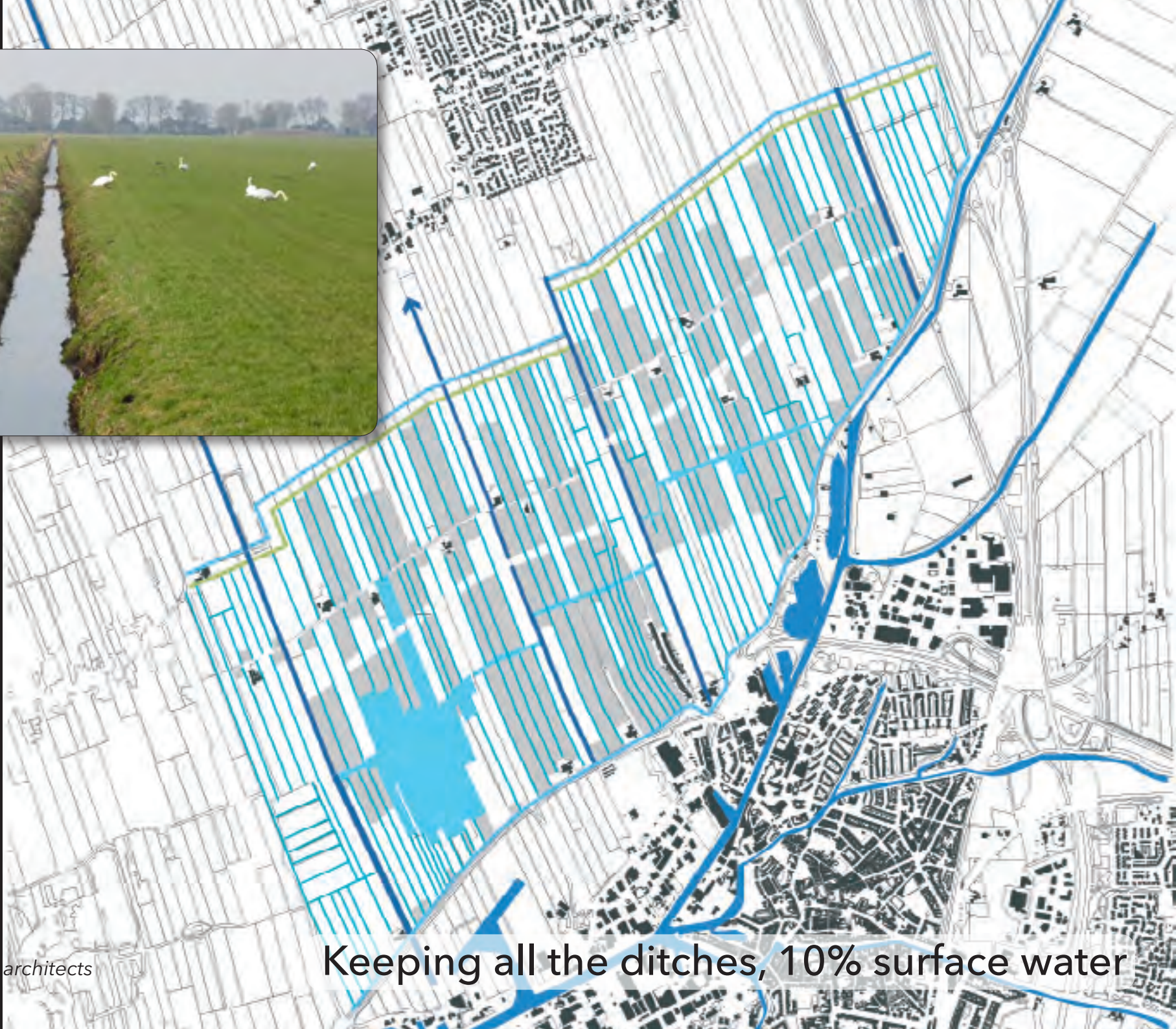


Image: OKRA landscape architects

Keeping all the ditches, 10% surface water



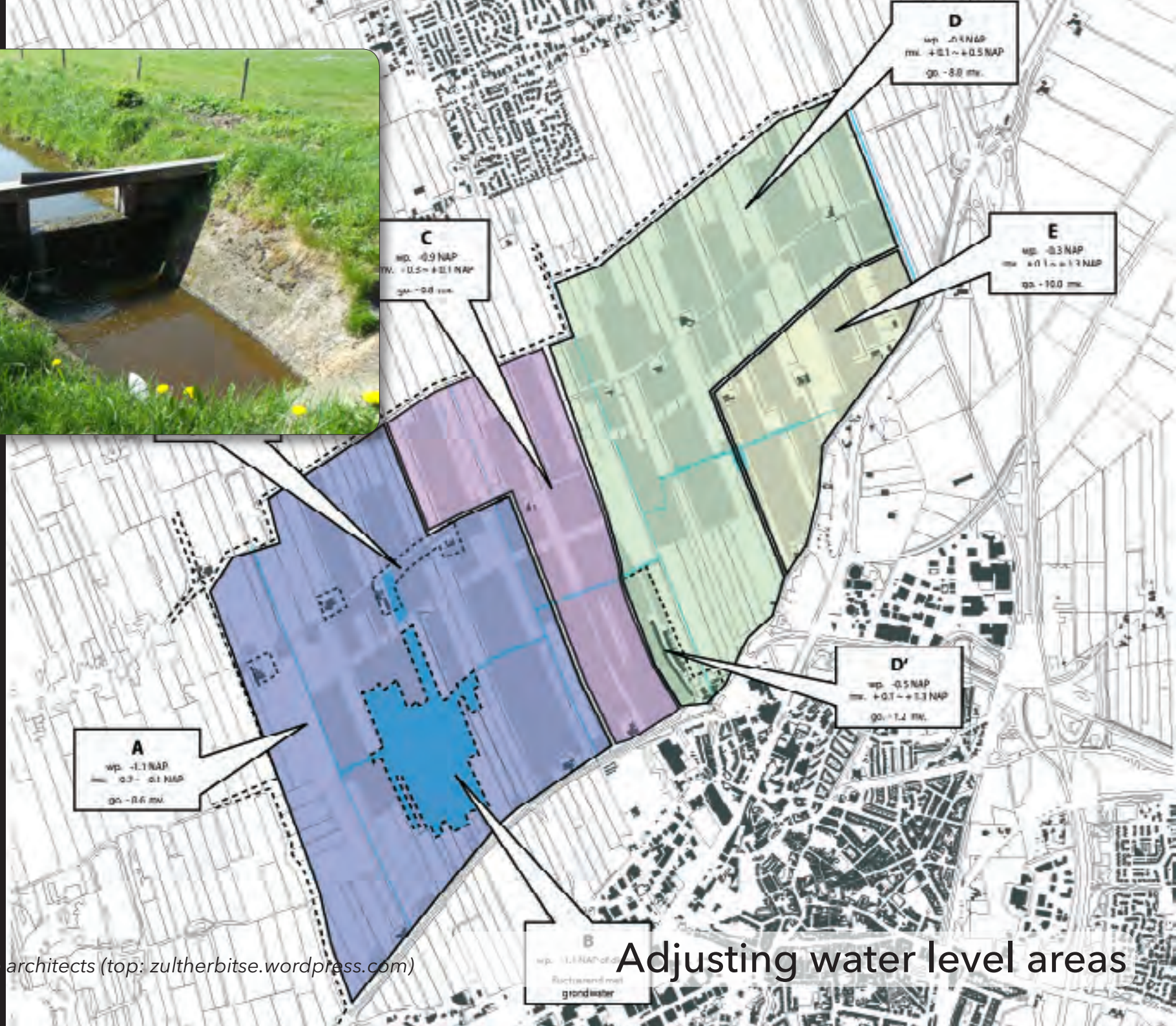


Image: OKRA landscape architects (top: zultherbitse.wordpress.com)

Adjusting water level areas



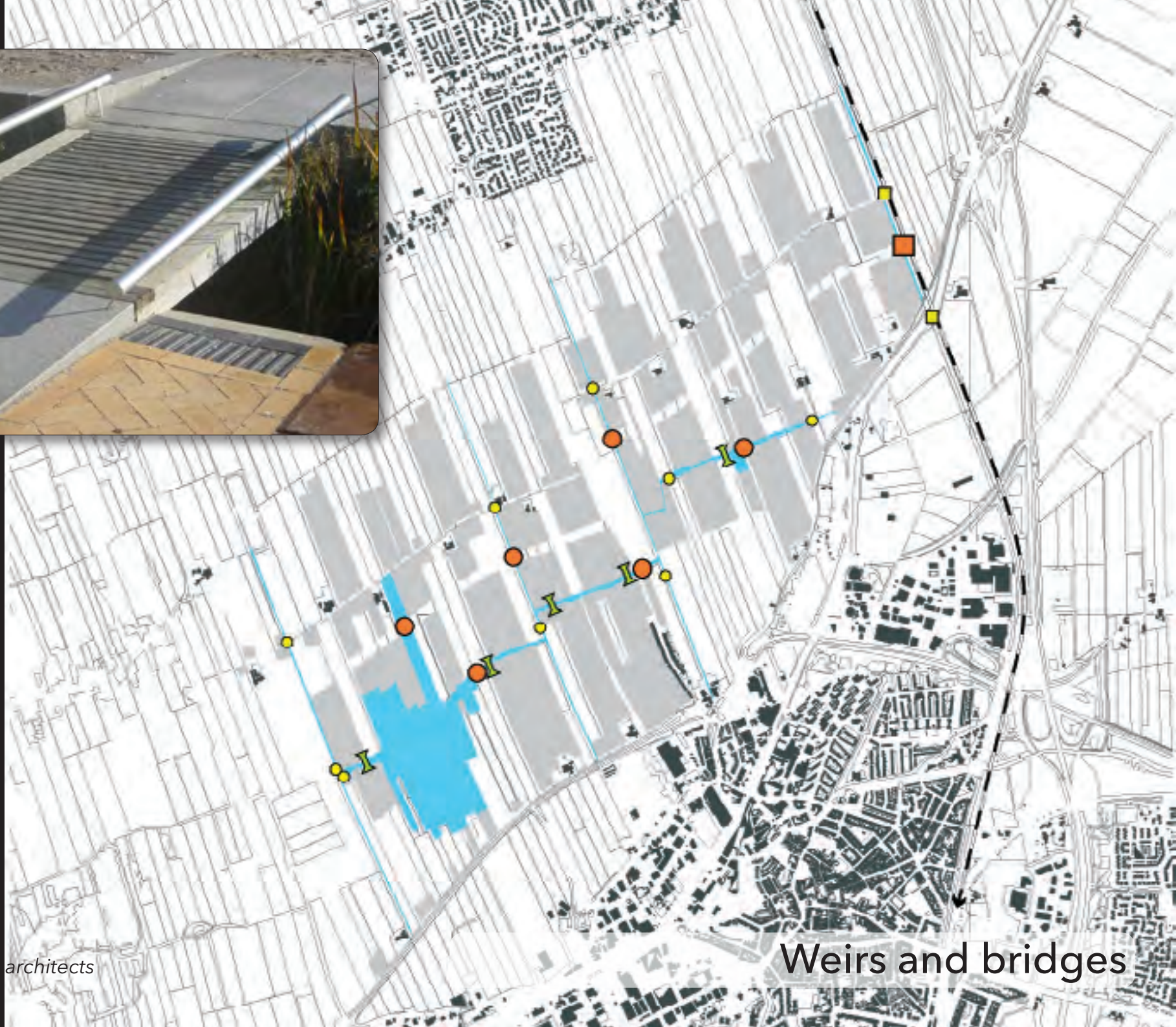


Image: OKRA landscape architects

Weirs and bridges



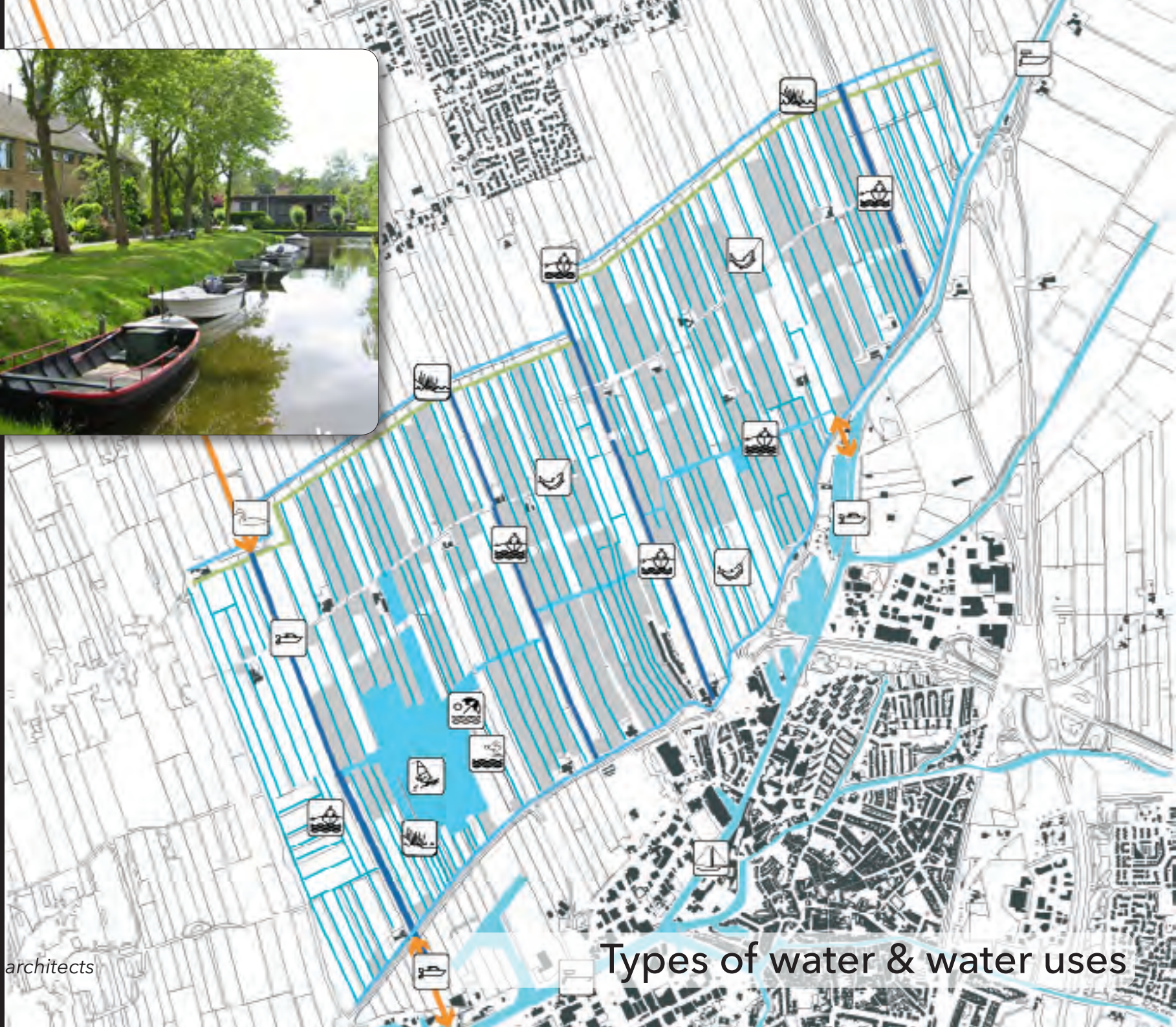


Image: OKRA landscape architects

Types of water & water uses





Surface run-off & water quality





Surface run-off & water quality





Buffering & water quality





Green roofs: water buffer & insulation





Visible storm water run off





Image: Aannemingsbedrijf C. de Kwaadsteniet



Image: fronikbv.nl (left) - Wegenbouw.be (right)

Permeable paving



## 2. Connect with the river



Image: Raoul Suermondt

IJssel Quay, Doesburg



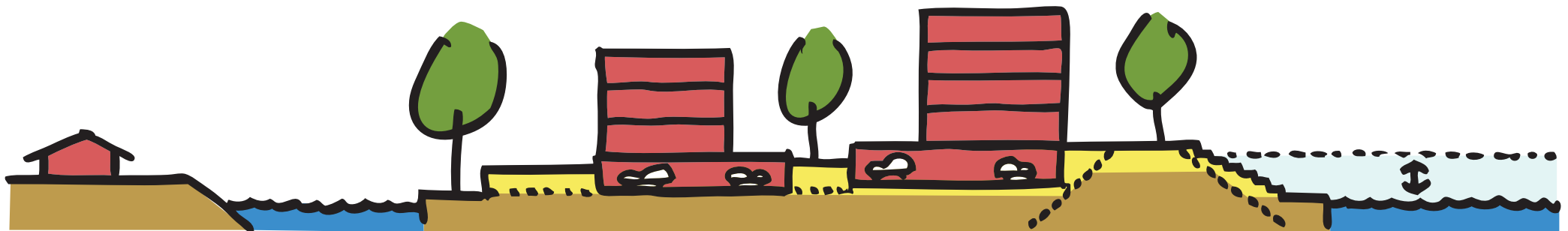


Image: Siebe Swart

Connecting to the river

© 2014 Siebe Swart





Reducing need for fill





Image: [peter038 on skyscrapercity.com](#)

Double promenade and panoramic views





*Image: Marchel Chevalking*

Protecting against high river levels





Image: OKRA landscape architects

Grandstand to the landscape





Image: Raoul Suermondt

Land side residential street



# 3. Floating dwellings



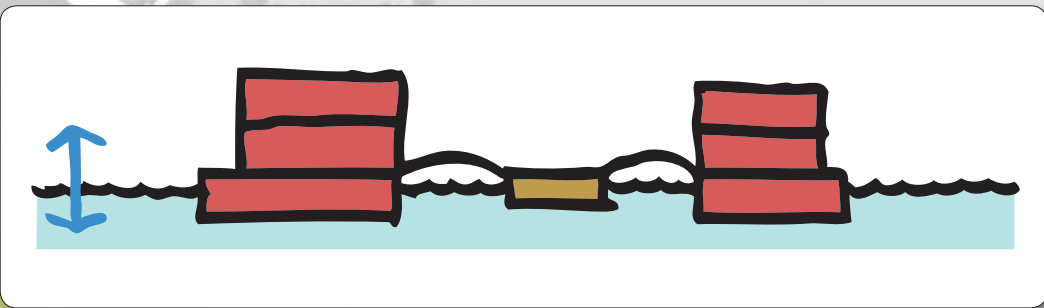
Waal River Front, Tiel





Connecting the city to the river





Dwellings in the flood zone





Image: Birkhäuser Basel

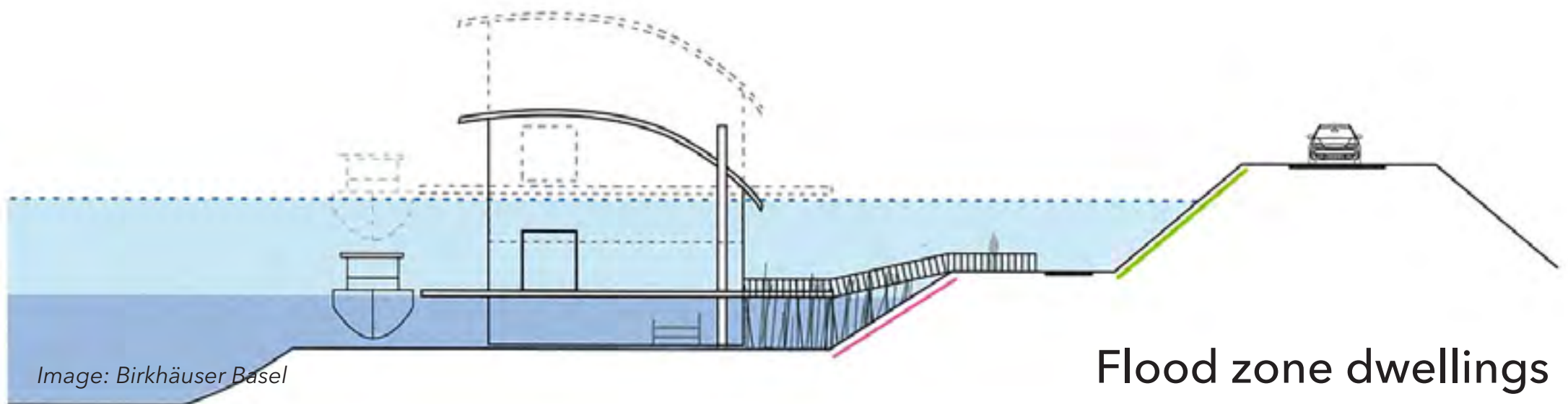


Image: Birkhäuser Basel

Flood zone dwellings





Marina dwellings



# Combining all 3

Image: Google maps

Braassemerland, Roelofarendsveen





Images: SVP & OKRA landscape architects

2500 dwellings, marina and town centre

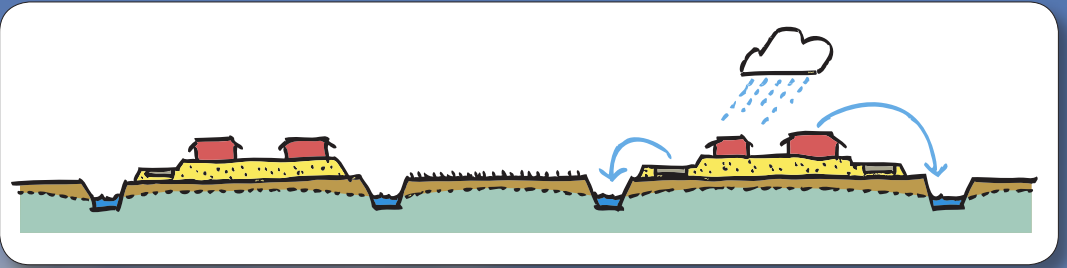


# Relevant for WA?



Image: gda world map small - fallriverchapel.com





Wet agricultural land ?



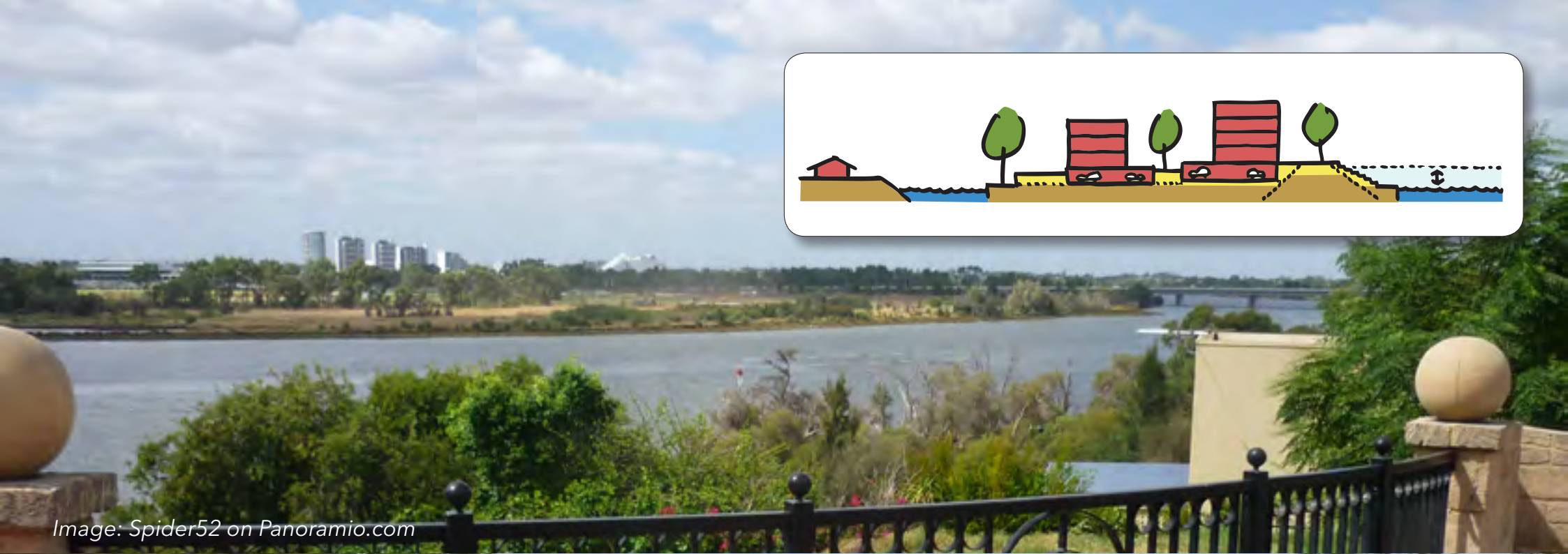
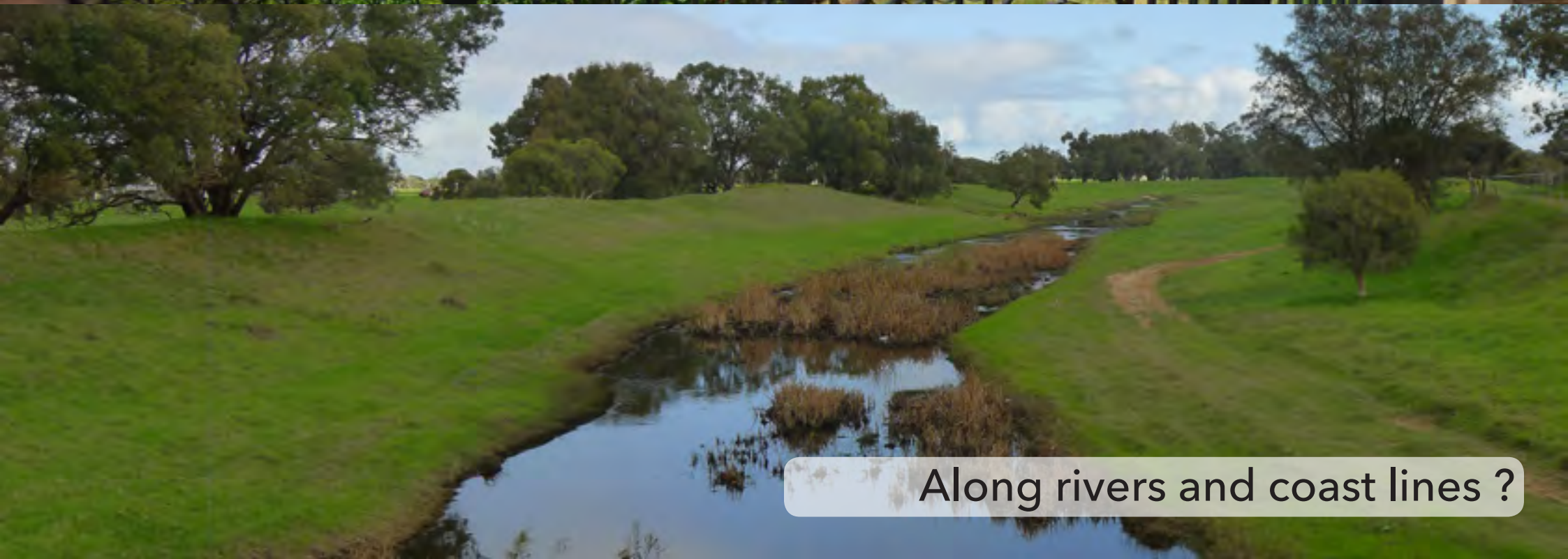
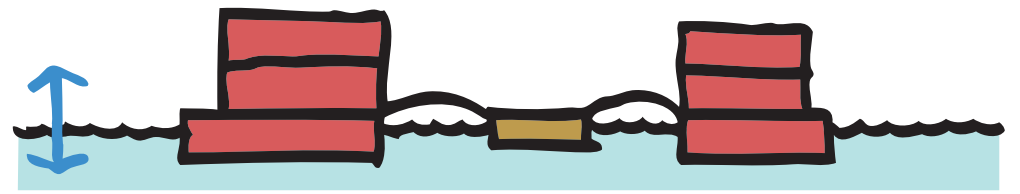


Image: Spider52 on Panoramio.com



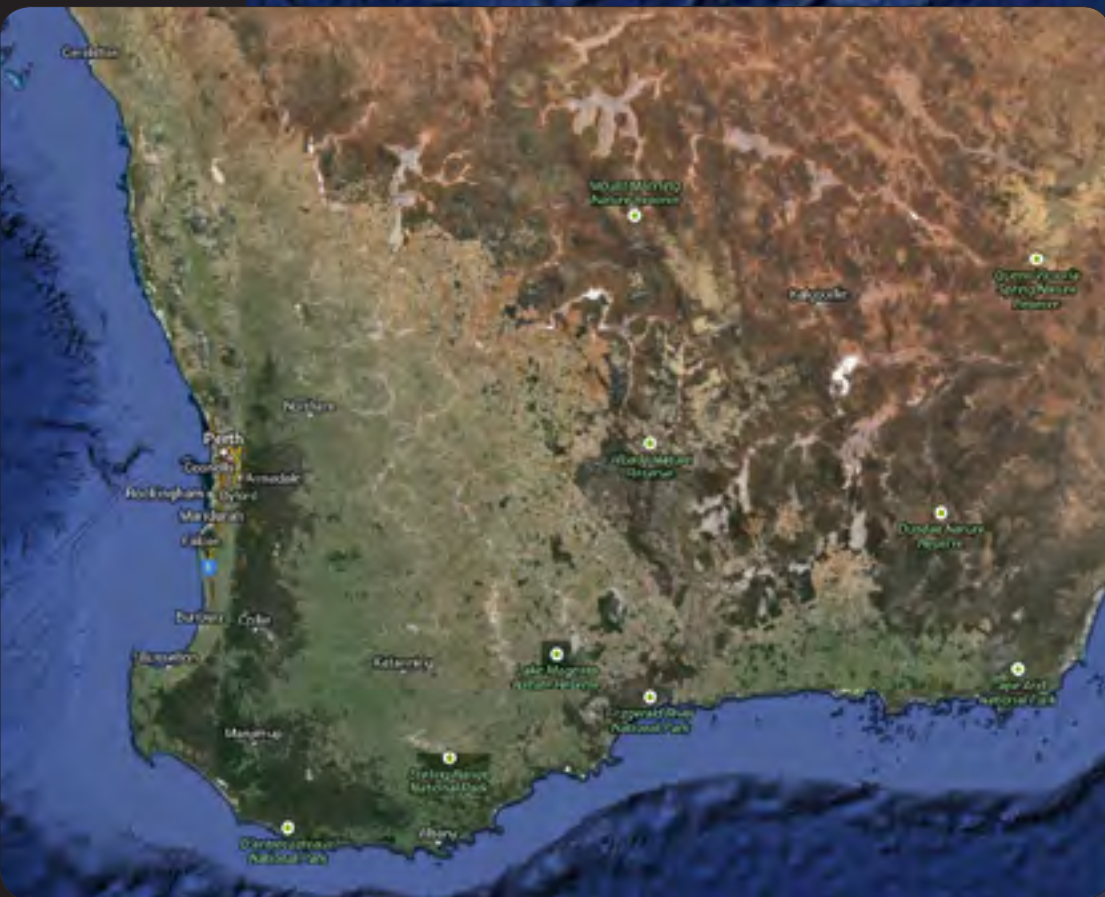
Along rivers and coast lines ?





Marina's and tidel areas ?





Relevant ? Great Australia Bight



# Water as an urban quality

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