



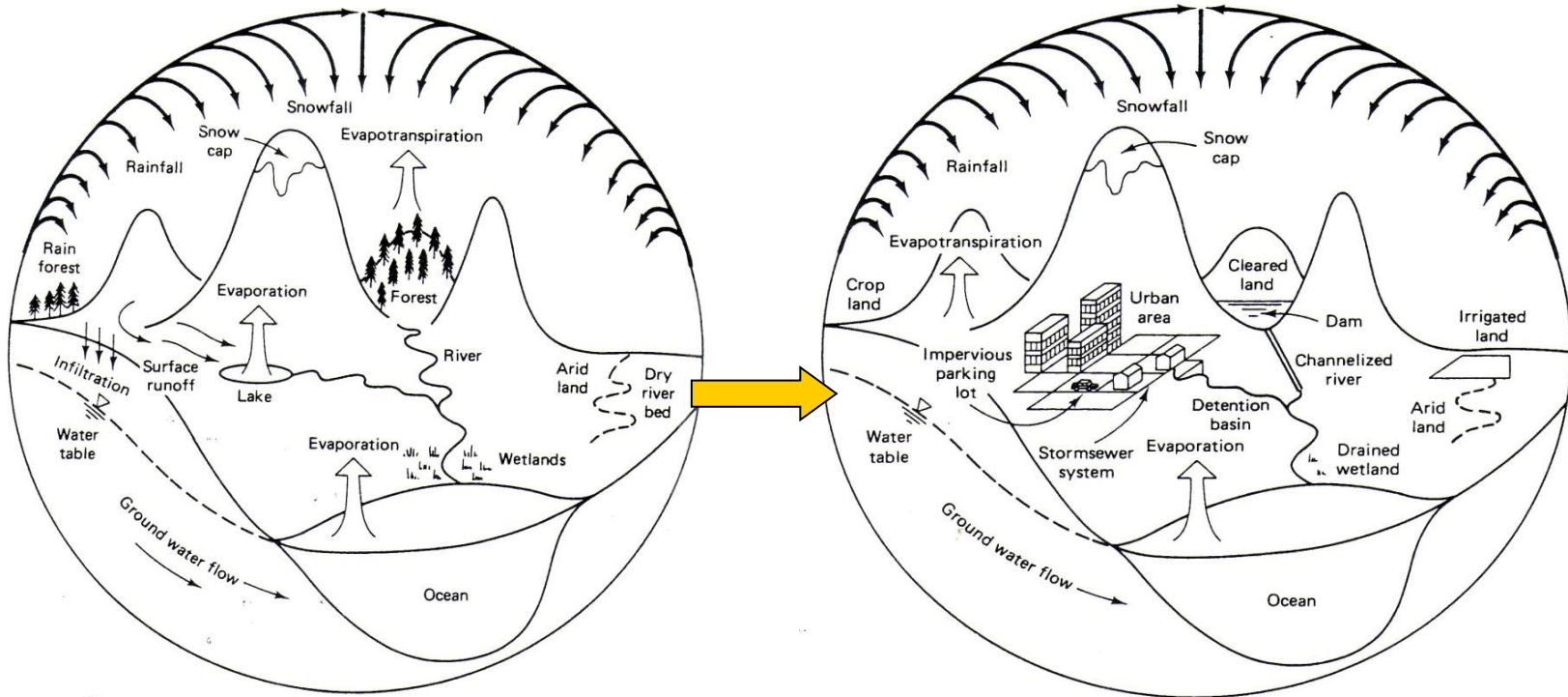
Blágrænar ofanvatnslausnir

Hvað – hvers vegna og hvernig?

Halldóra Hreggviðsdóttir, framkvæmdastjóri Alta

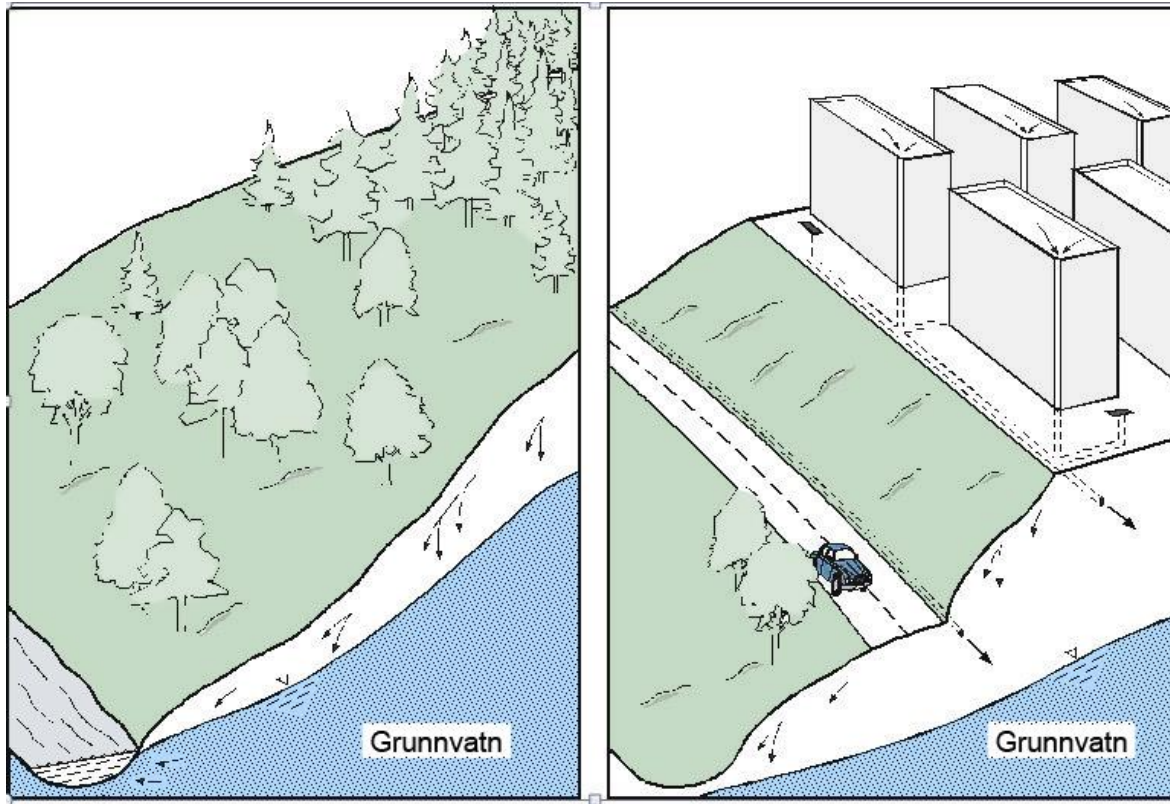
Tom Liptan, Portland

Natural water cycle v.s. water cycle in the built environment



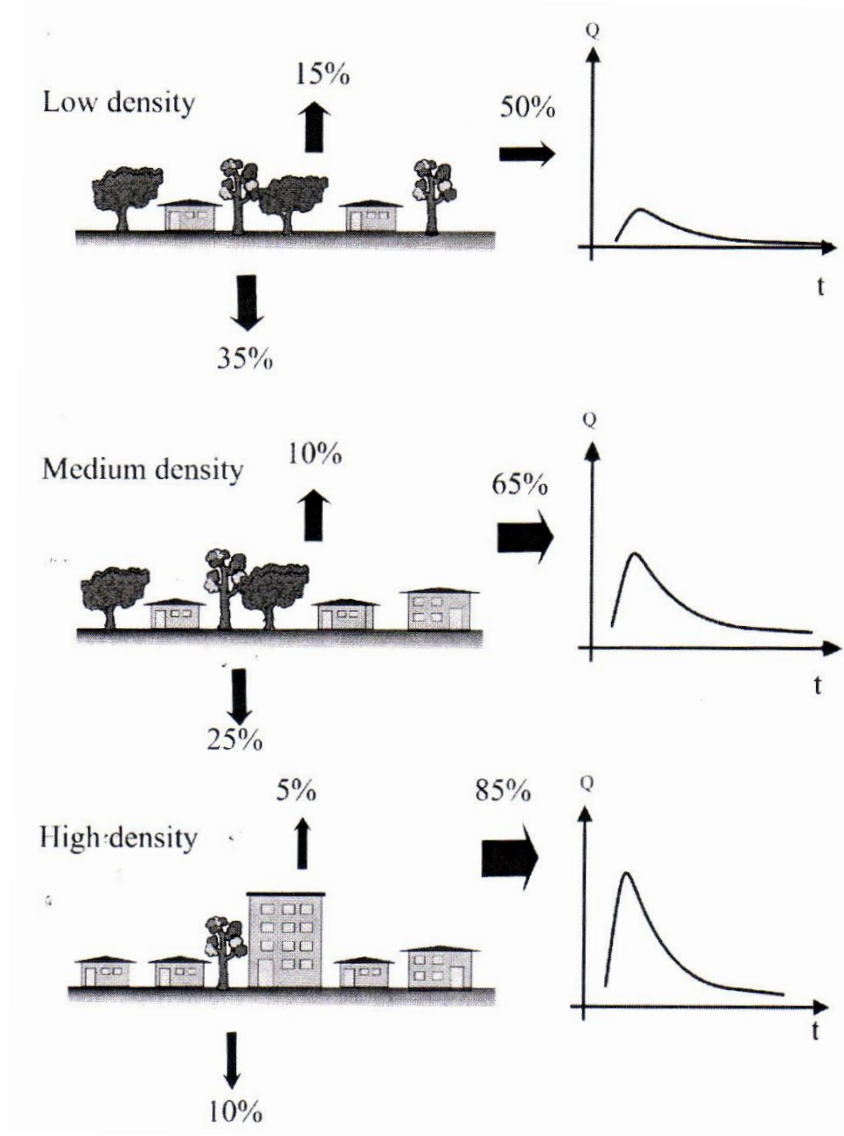
McCUEN R.H. (1998)

Influence of the built env. on the water cycle



Sveinn Torfi Þórólfsson, NTNU

Change in permeability with increase in density

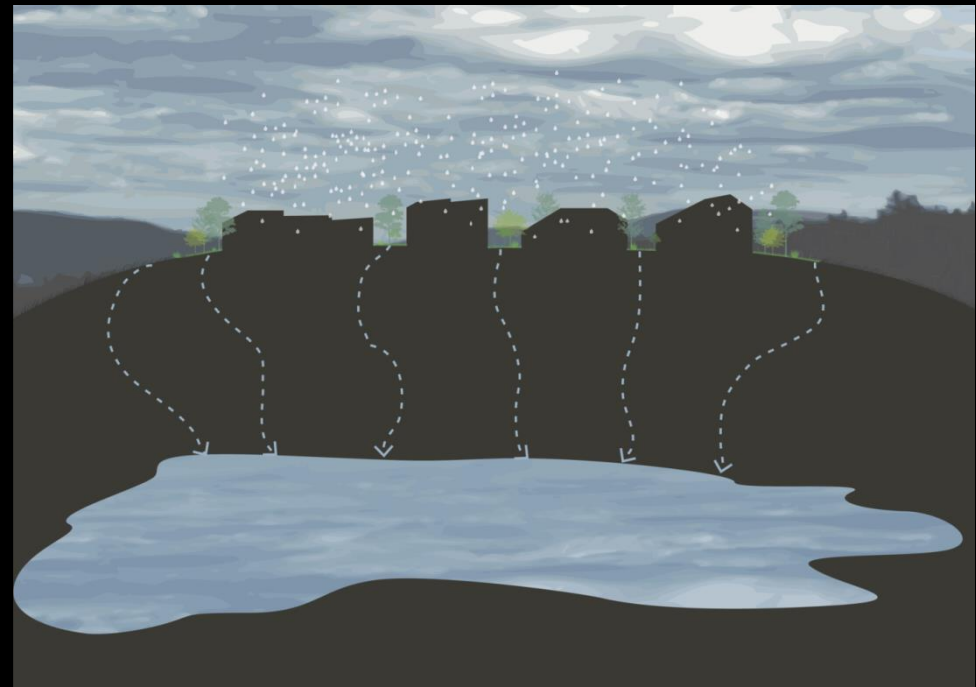
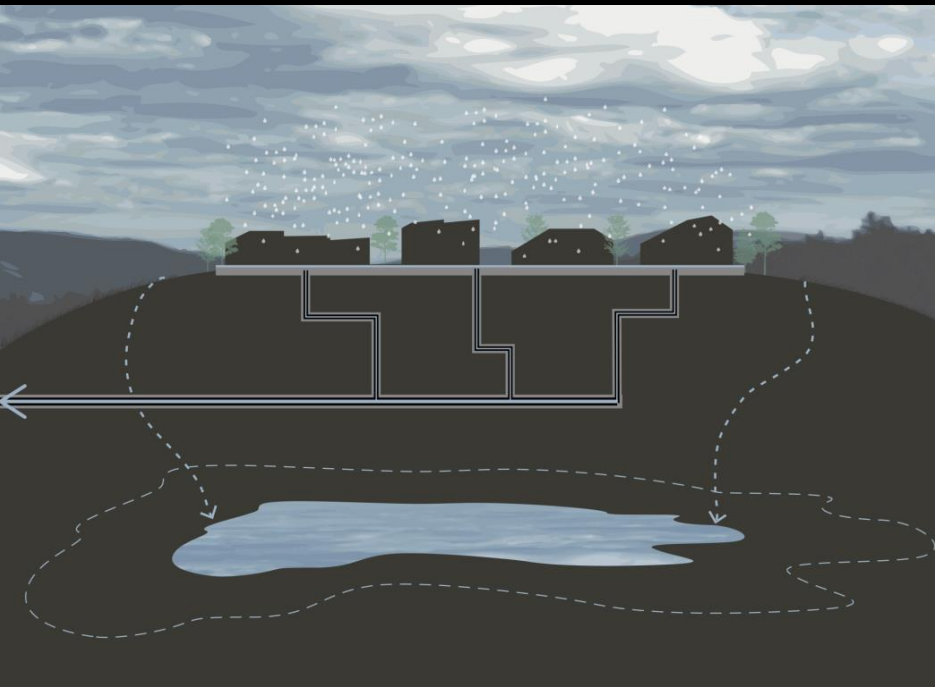


Butler et.al (2010)

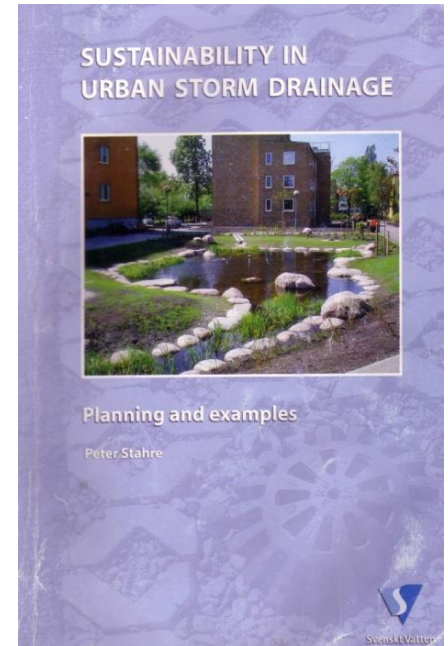
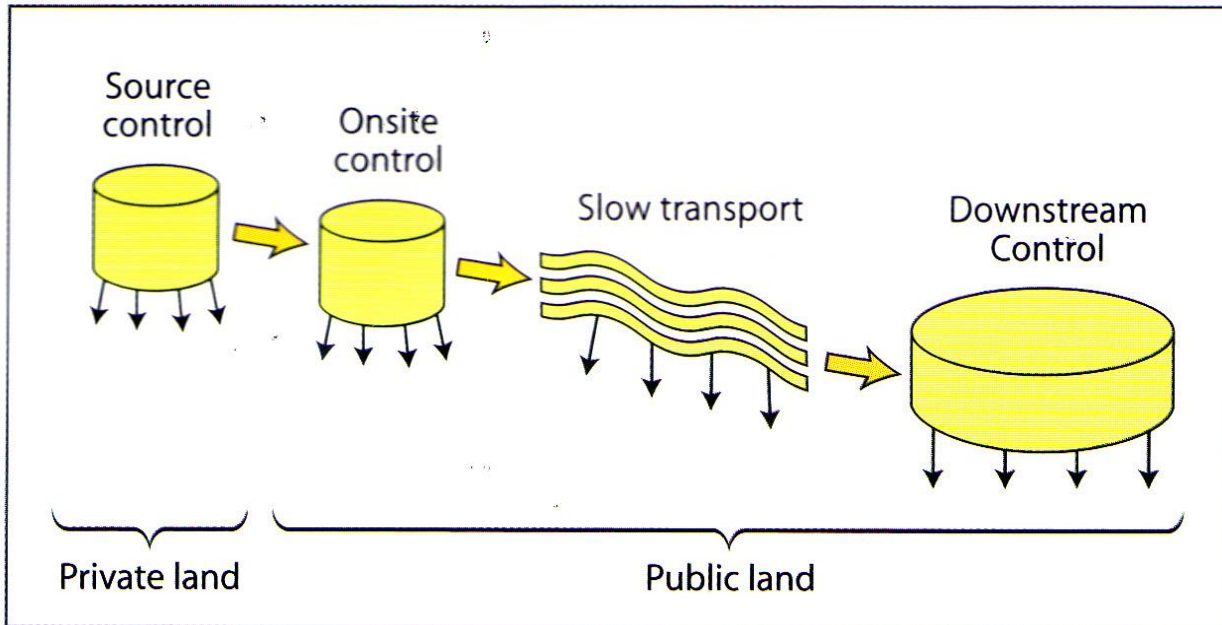
More extreme situations with climate change



Traditional v.s. Blue green solutions



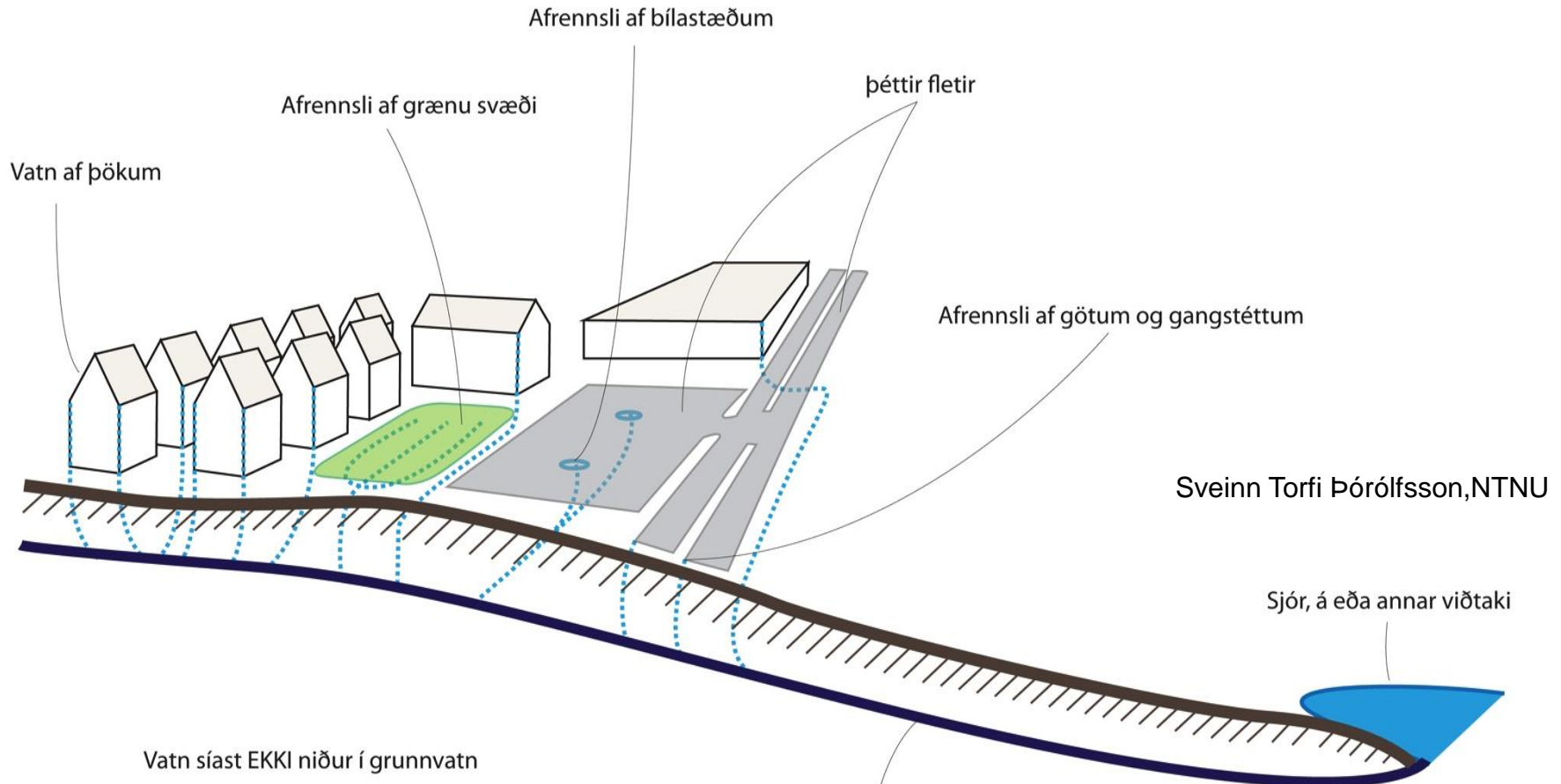
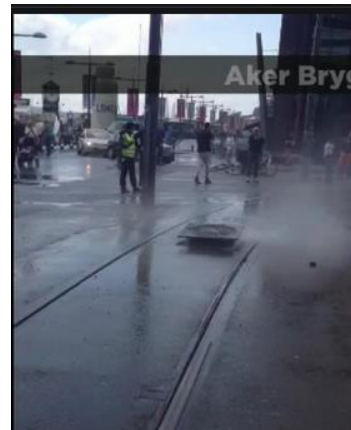
Key factors in the blue-green solutions



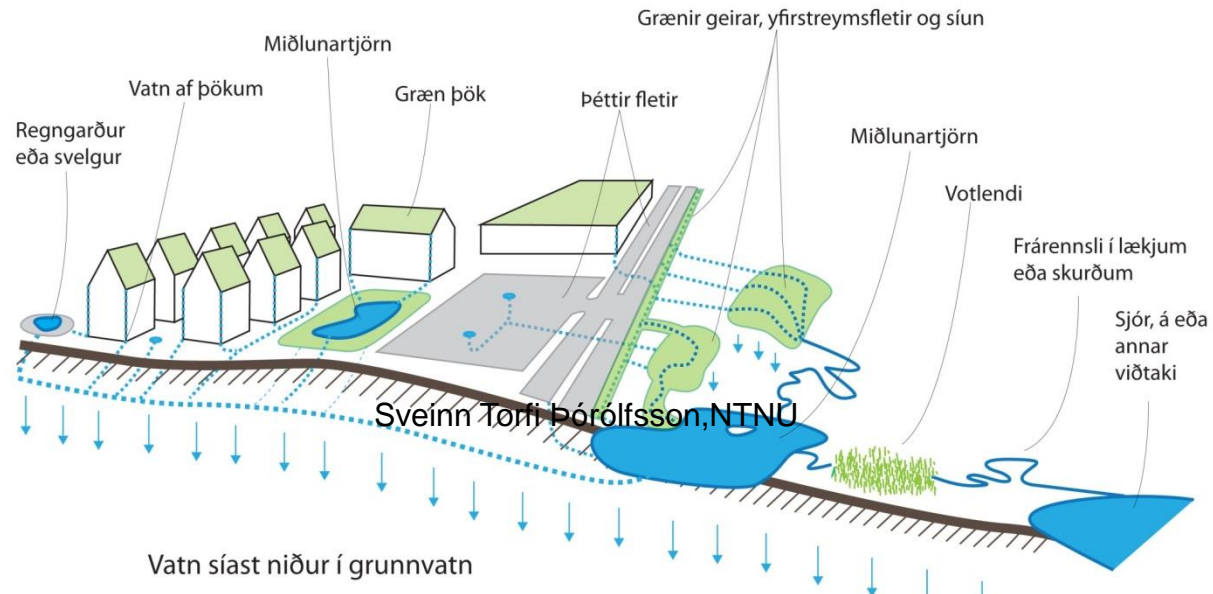
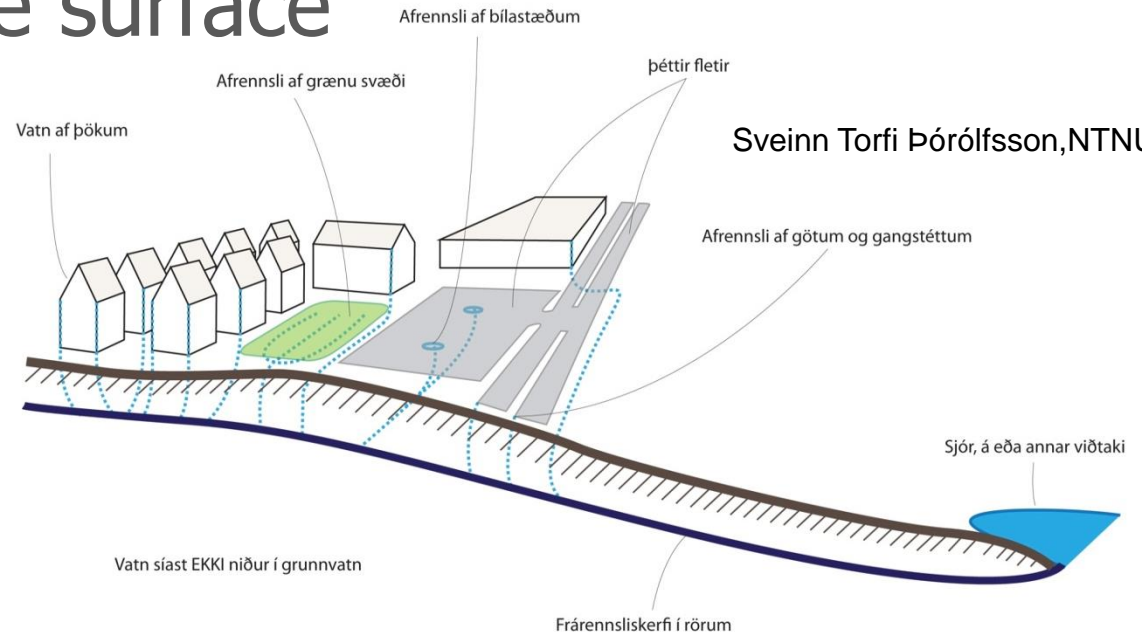
Stahre (2006)

Key elements on the blue-green solutions

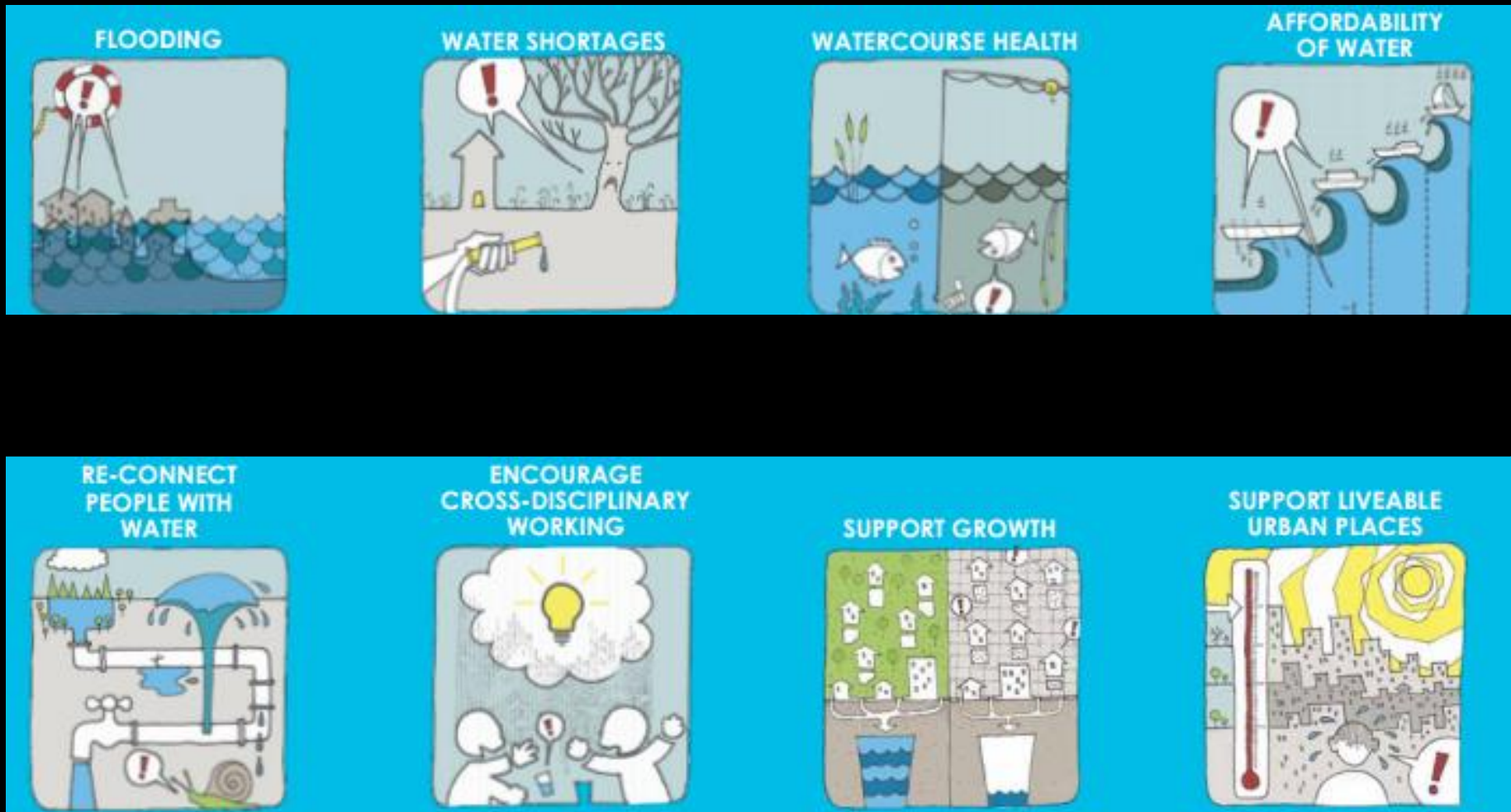
Category	Examples of technical configuration
Source control (private land)	Roofs with vegetation cover (moss/sedum) Infiltration on lawns Permeable paving Infiltration in stone fillings (percolation) Local ponds Collection and recycling of roof runoff for irrigation, toilet flushing, etc.
Onsite control (public land)	Permeable paving Filter strips Temporary flooding onto especially prepared surfaces Ponds
Slow transport (public land)	Swales i.e. vegetated surfaces Greeks/ditches Channels
Downstream control (public land)	Large ponds Wetlands Lakes



From pipes to the surface



B-G drainage solutions – fast implementation



[Myndband frá CIRIA um blágrænar ofanvatnslausnir](#)

Why should they be implemented?

- ▶ Lower cost of building and maintenance of storm water system
- ▶ Better built environment
- ▶ Healthier and more sustainable water management



Arkadien – Asperg - Pýskaland

Kostir blágrænu ofanvatnslausnanna

- Lower cost of building and maintenance of storm water system
- Better built environment
- Healthier and more sustainable water



***Costs of
Low Impact Development***

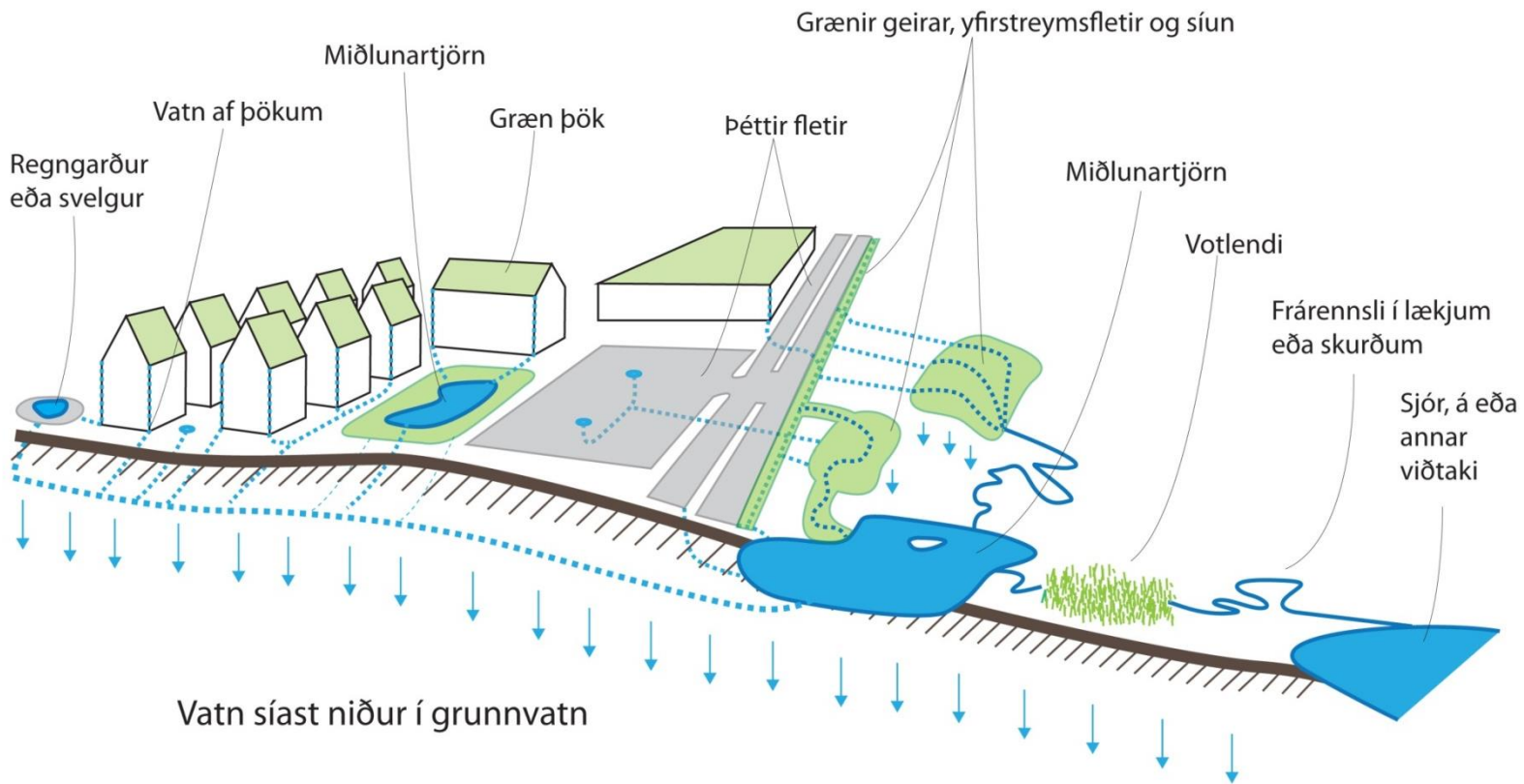
LID Saves Money and Protects Your Community's Resources

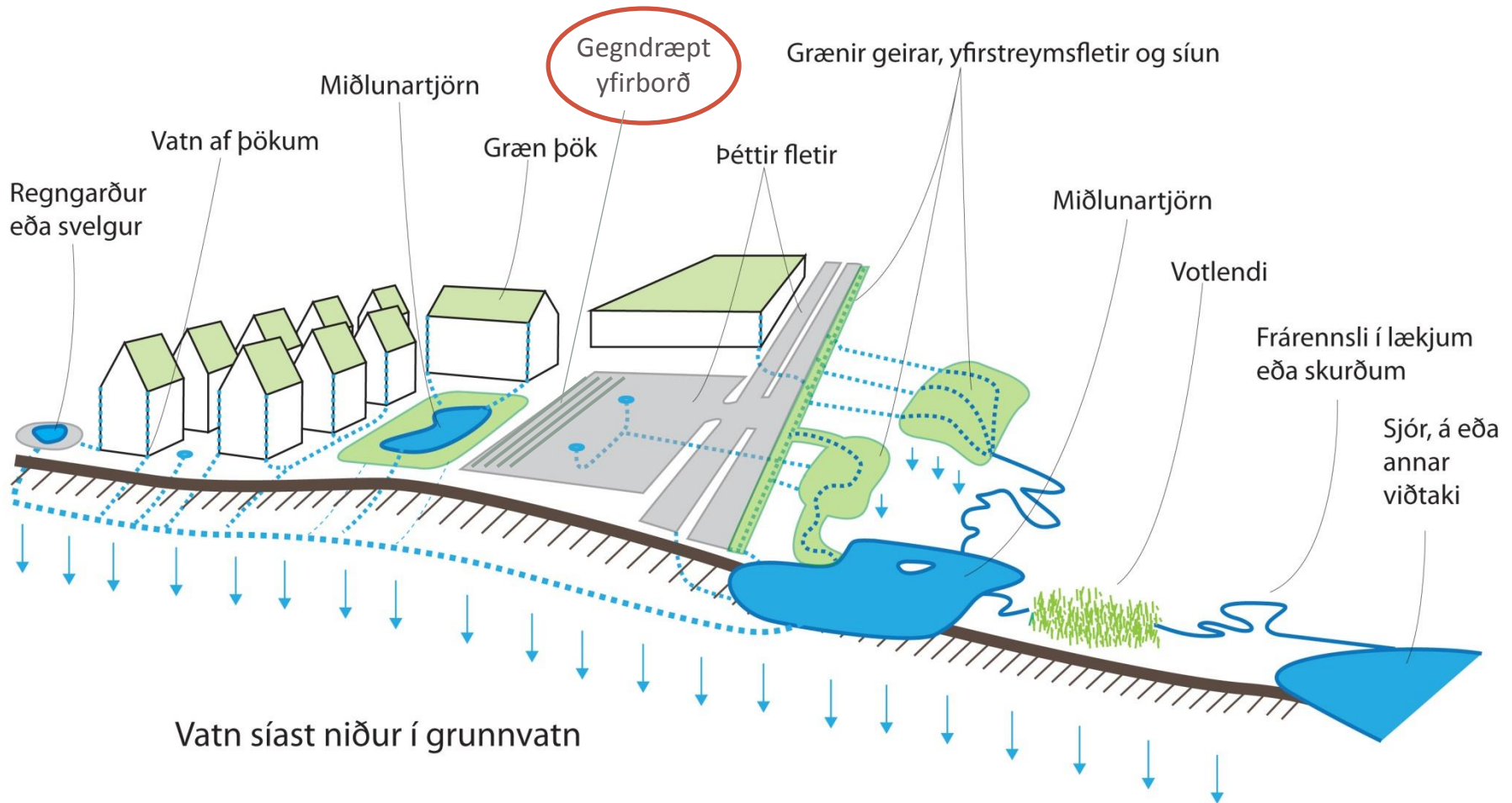


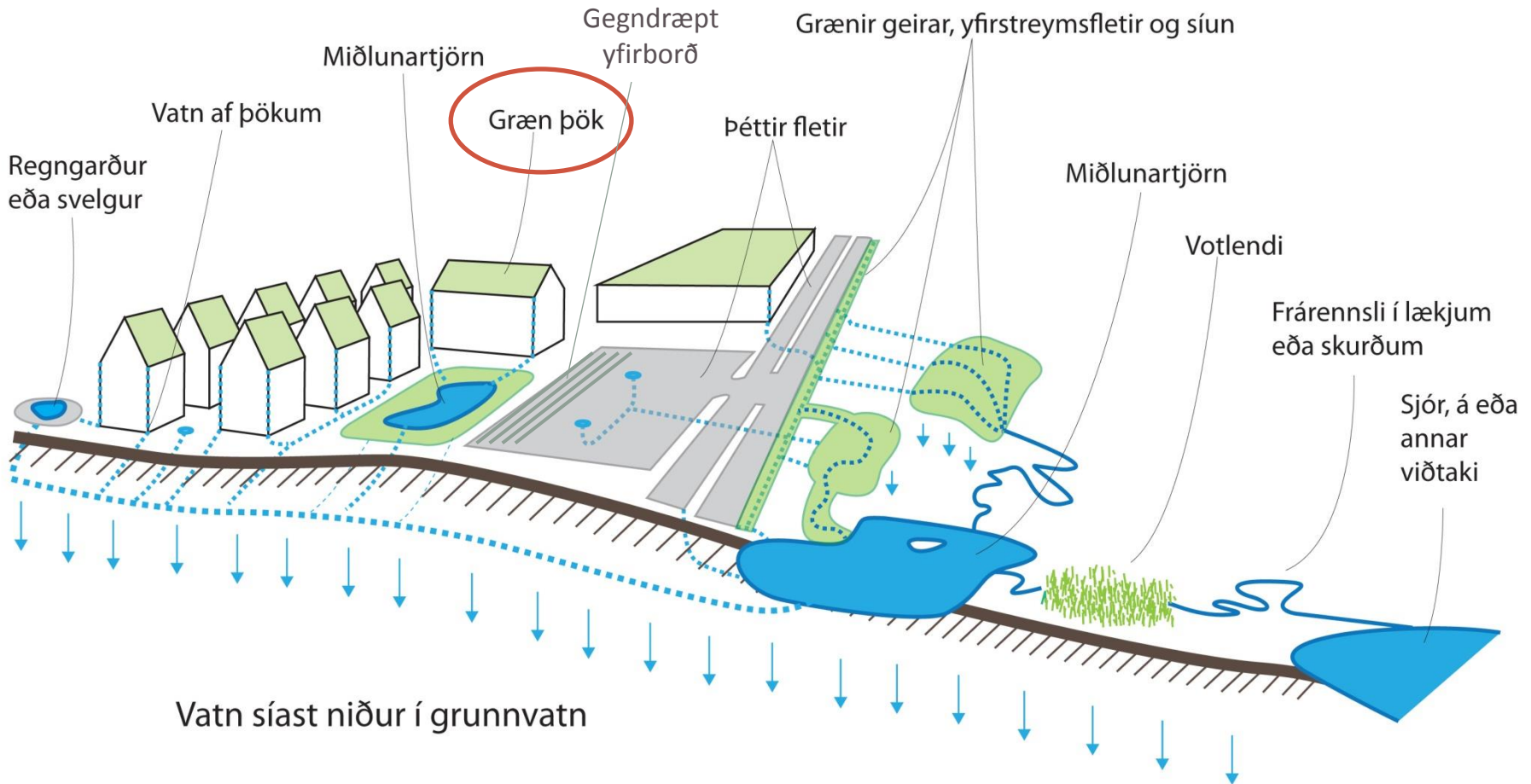
Key to a well implemented system

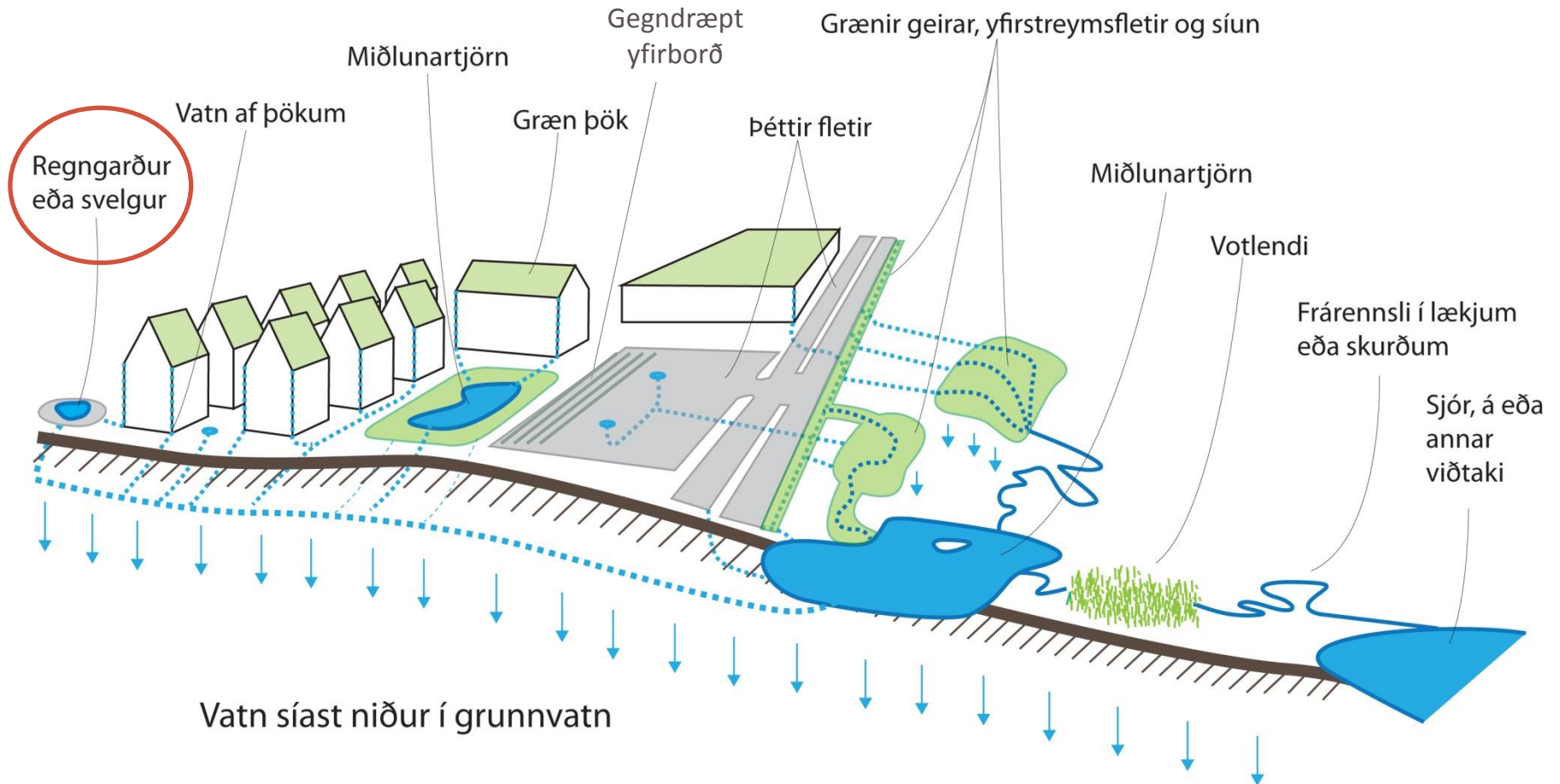
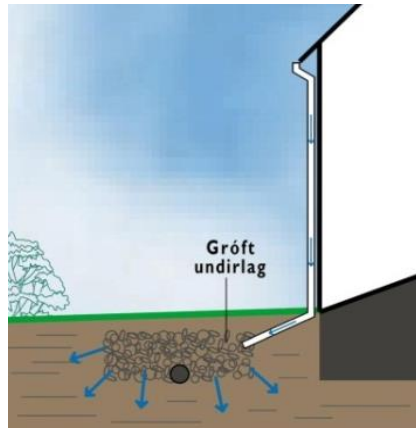
- ▲ Good understanding
- ▲ Permeable surface
- ▲ Slowing of flow
- ▲ Dual use of areas
- ▲ Implementations in steps
- ▲ Longterm vision in planning and management of drainage

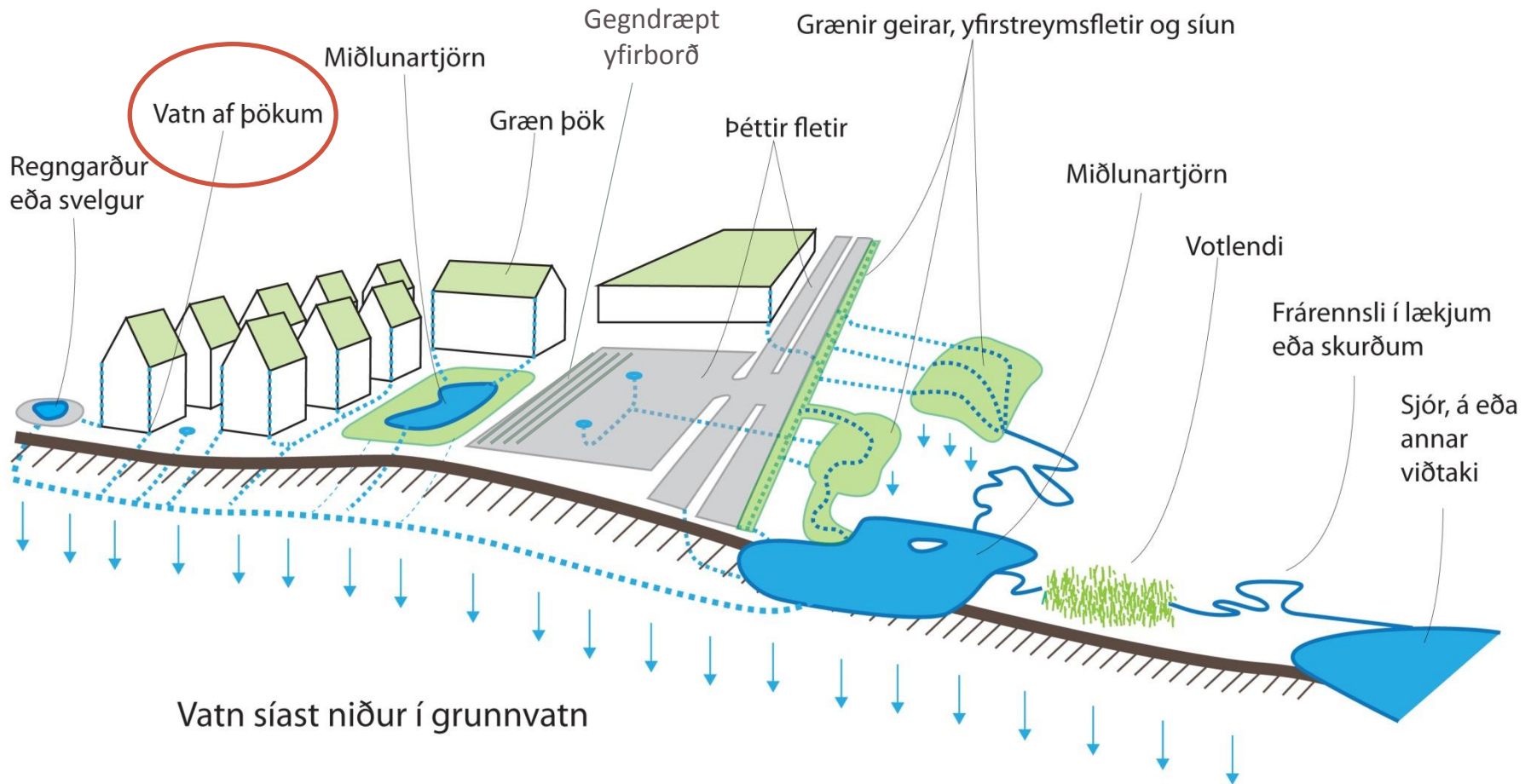


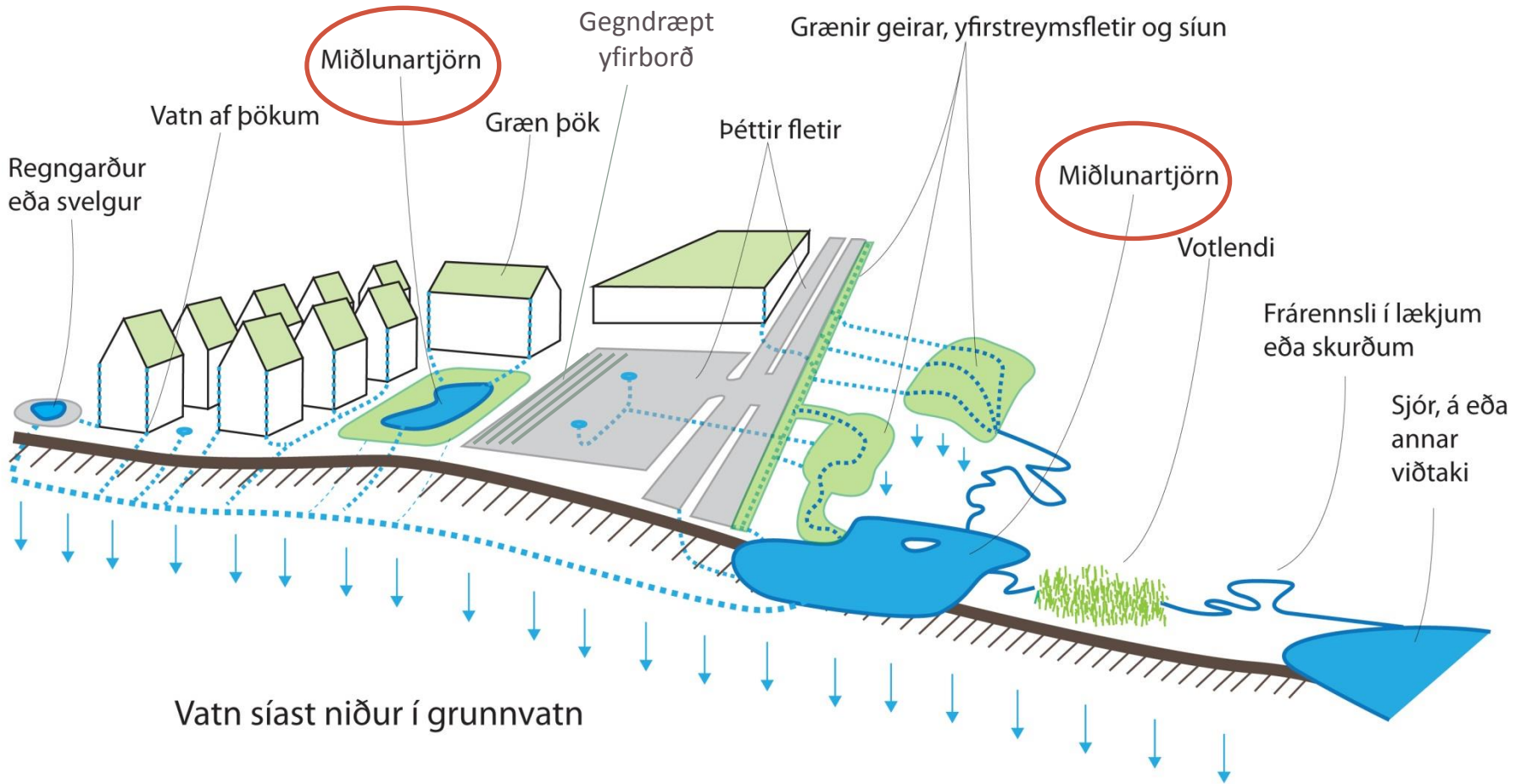


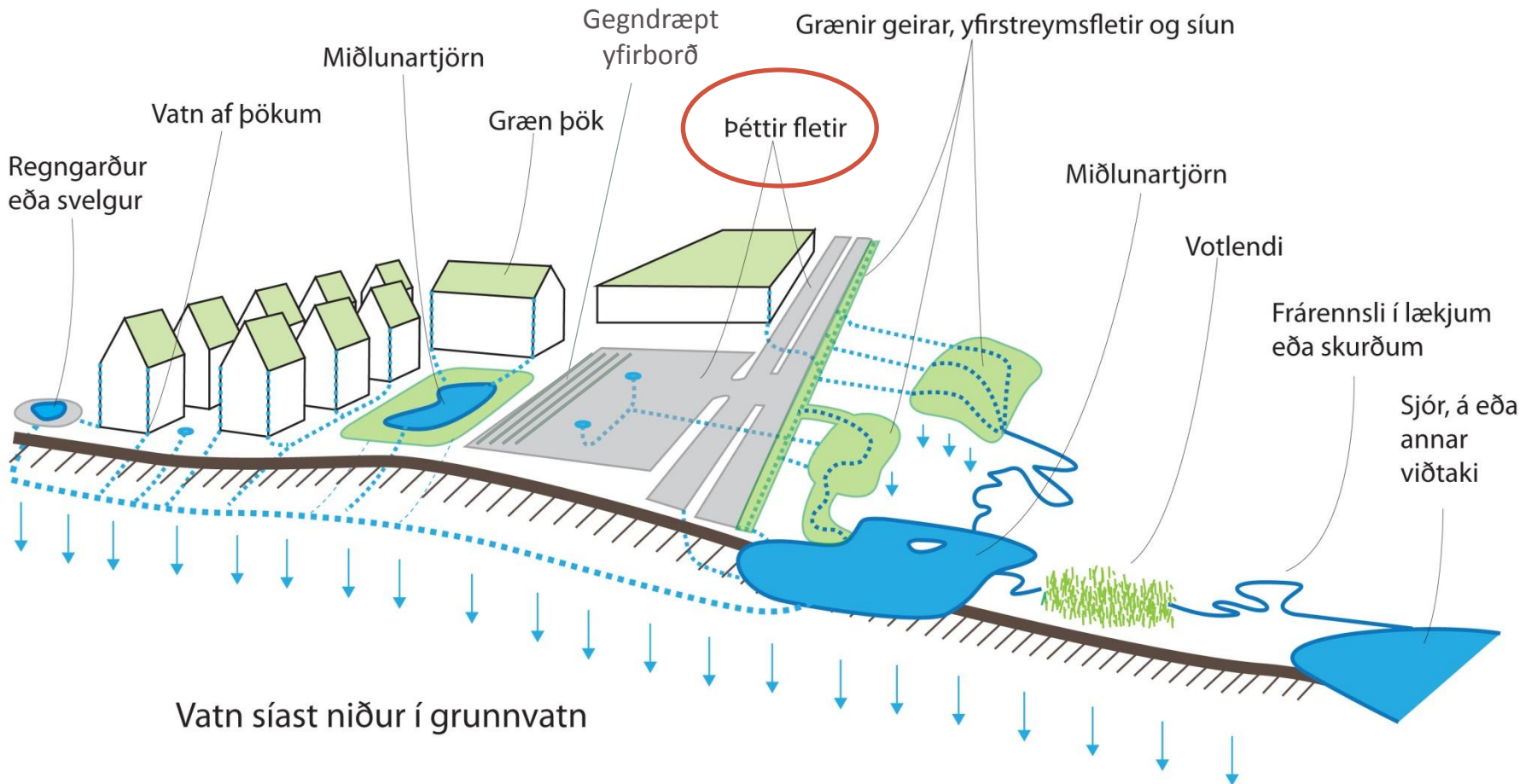


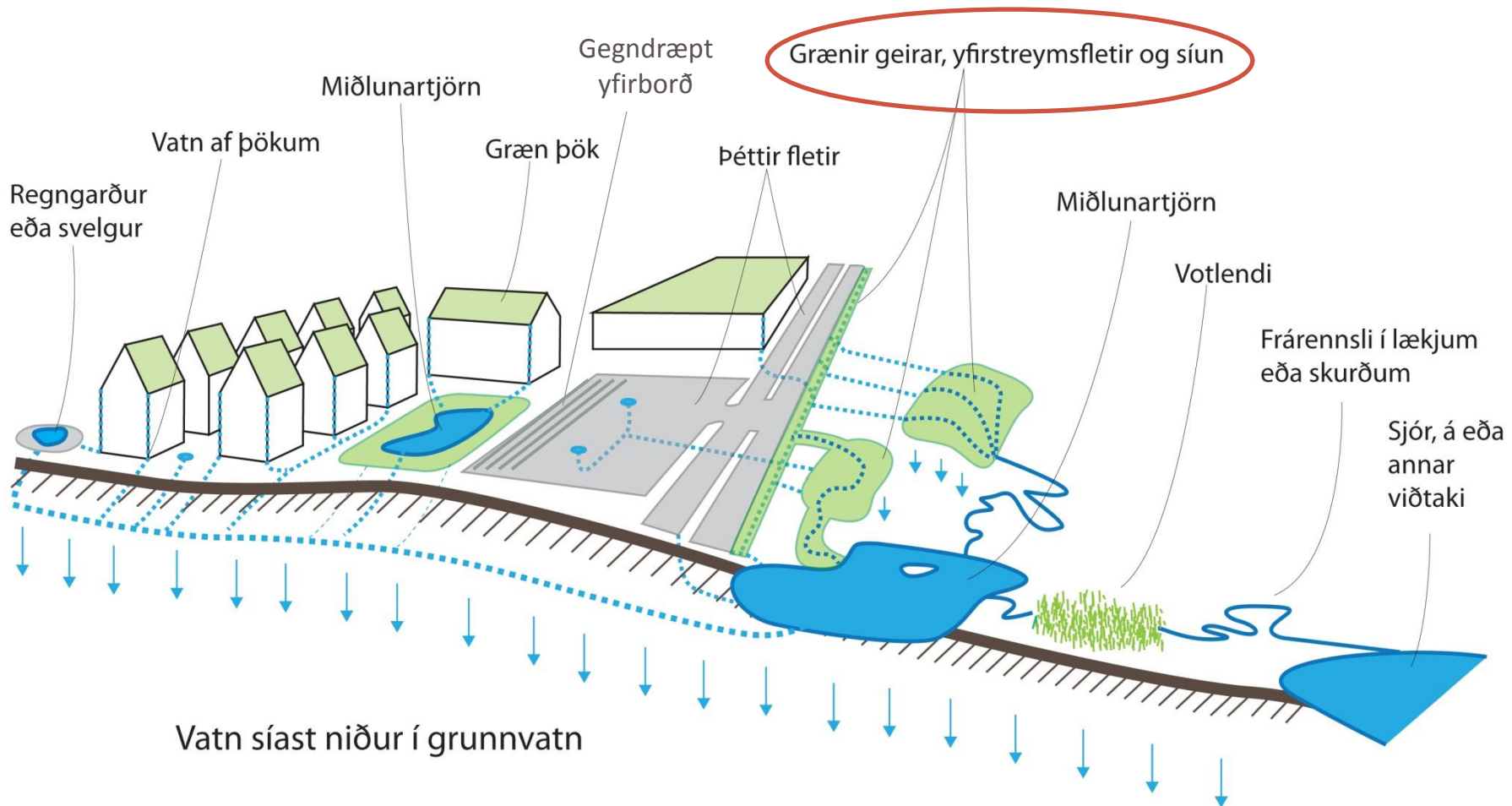


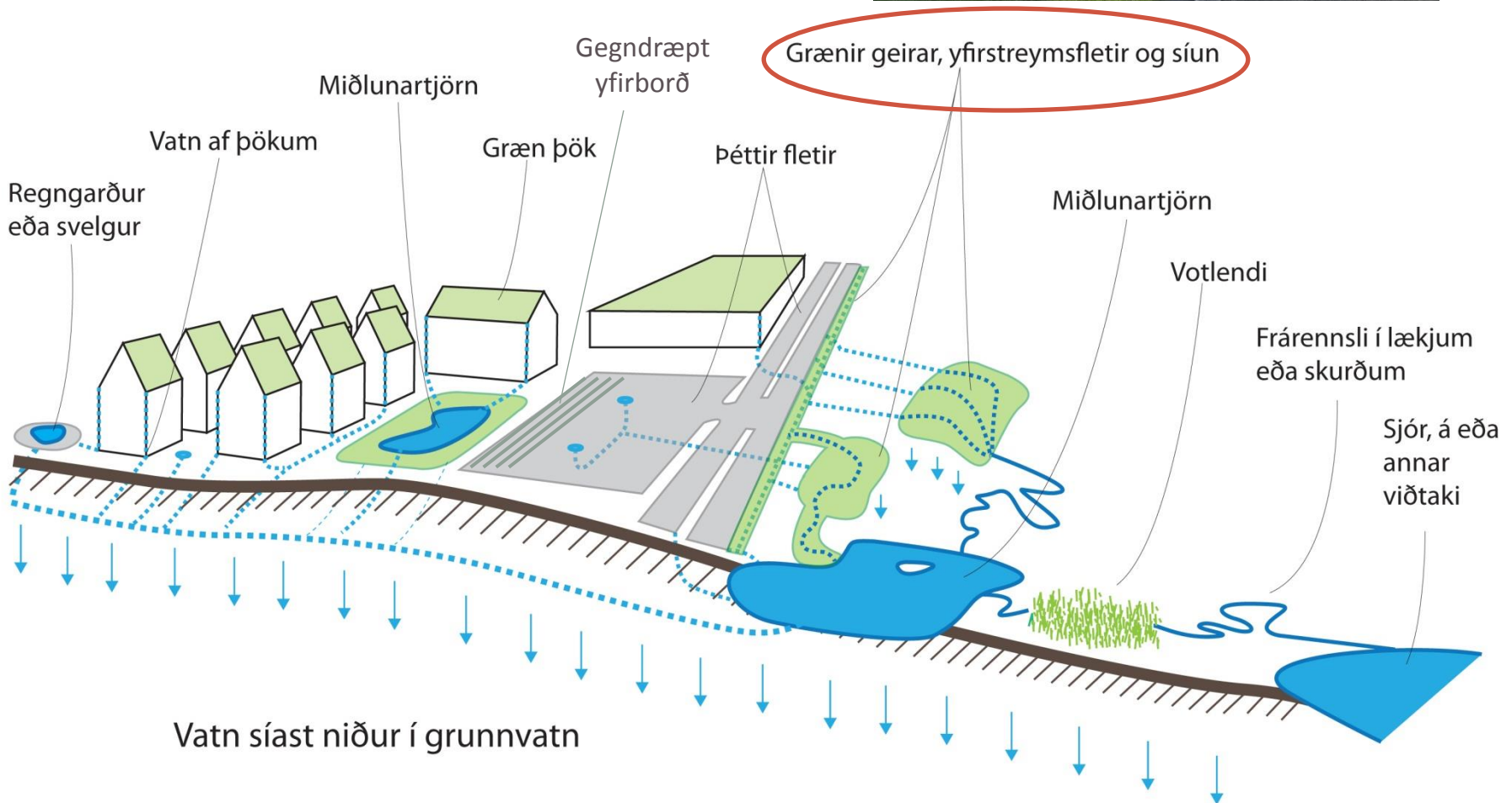


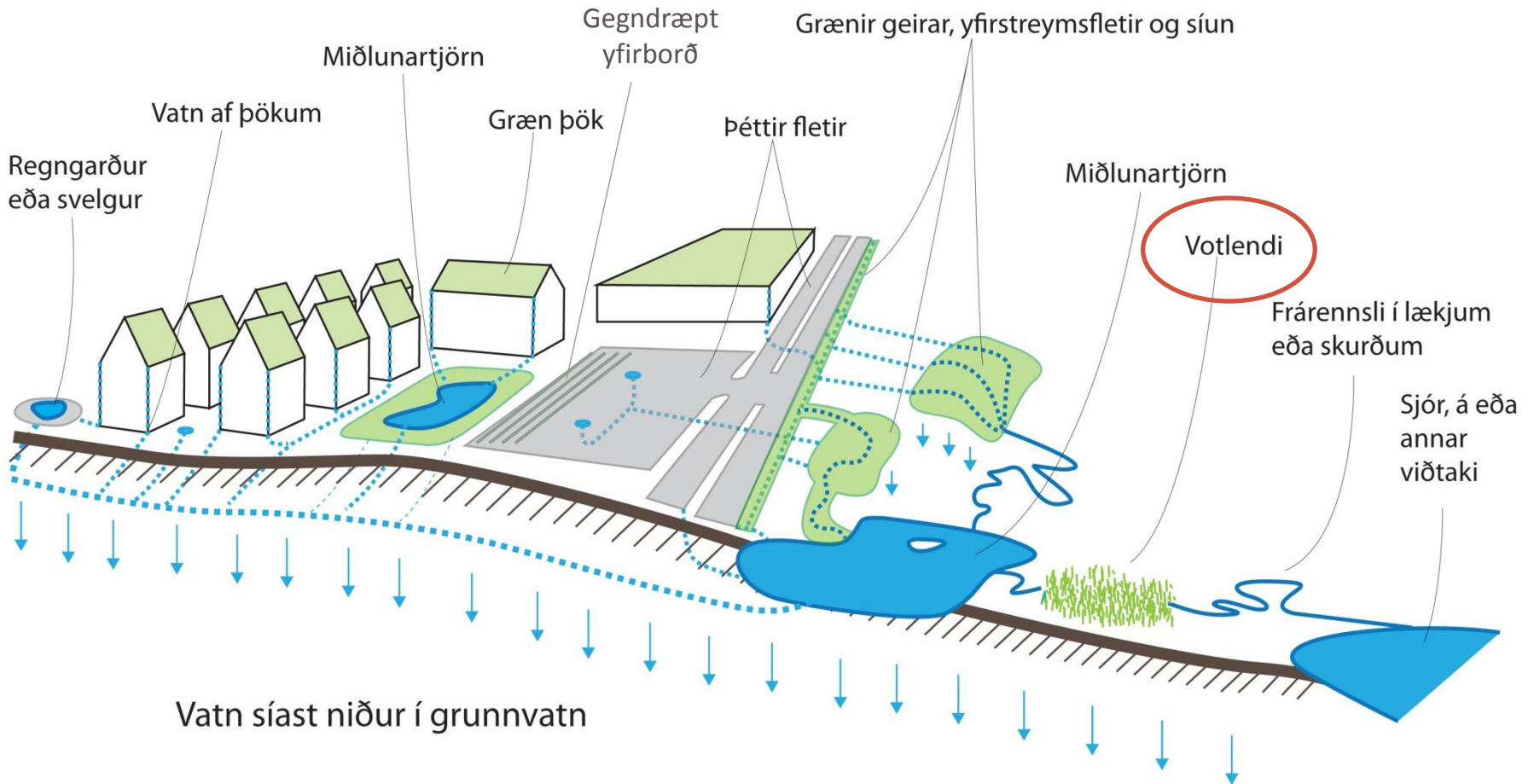


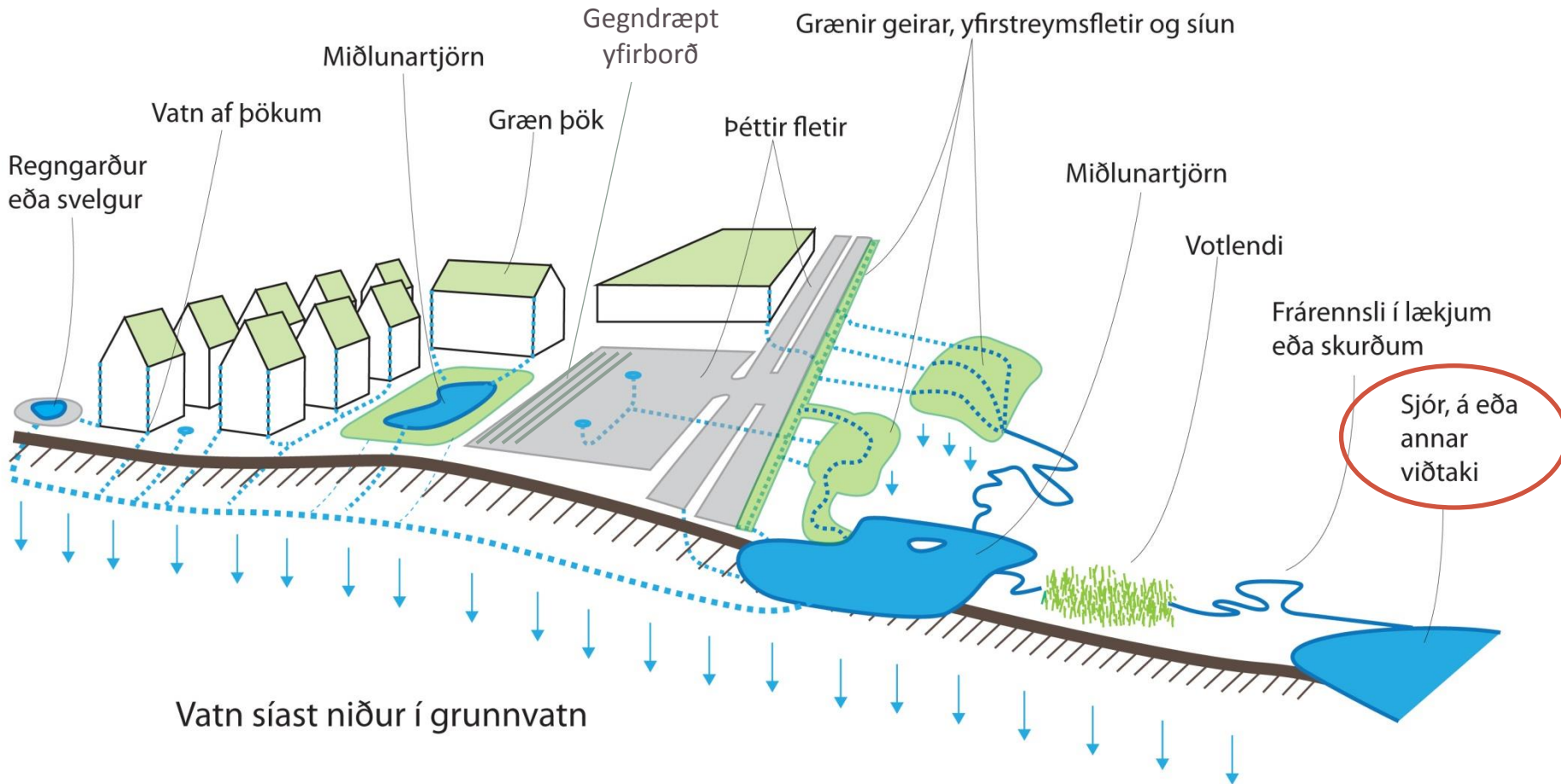
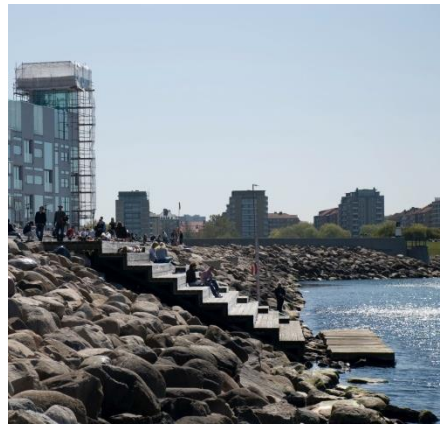












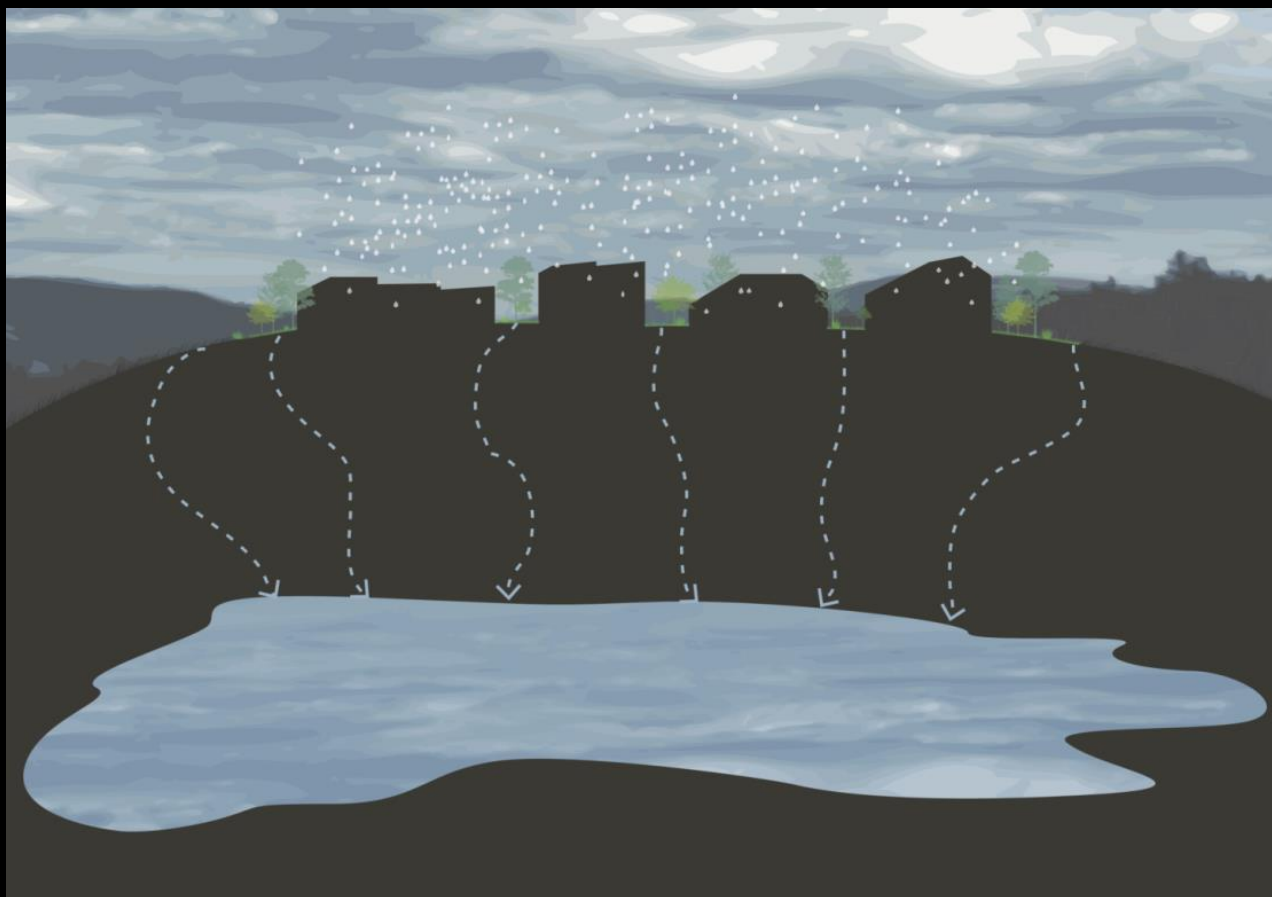
Urriðaholt

Urriðavatn





Blue green solutions in Urriðaholt

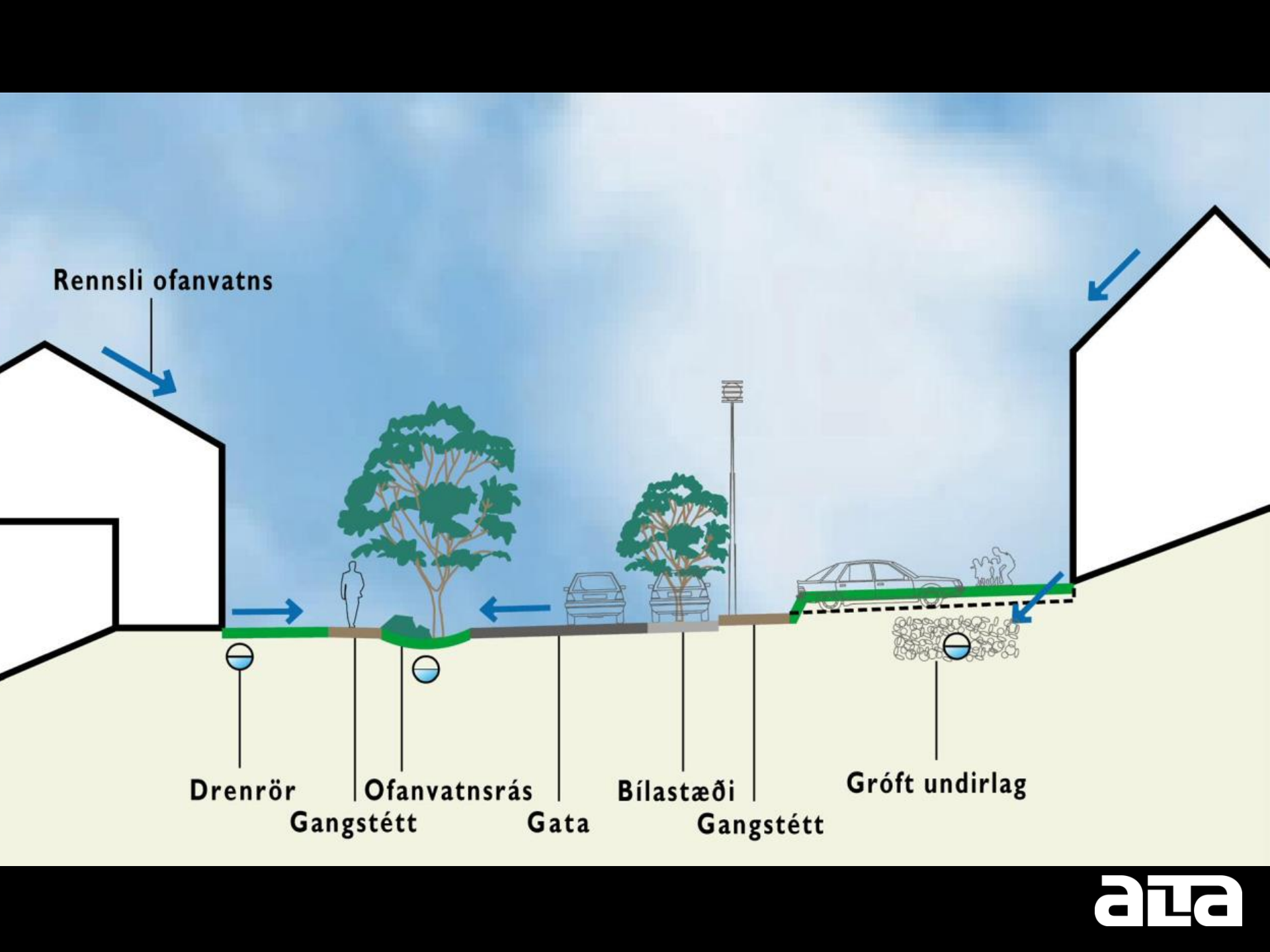


URRIDAHOLT









Rennsli ofanvatns

Drennrör

Gangstétt

Ofanvatnsrás

Gata

Bílastæði

Gangstétt

Gróft undirlag



ATA



URRIDAHOLT



URRIDAHOLT





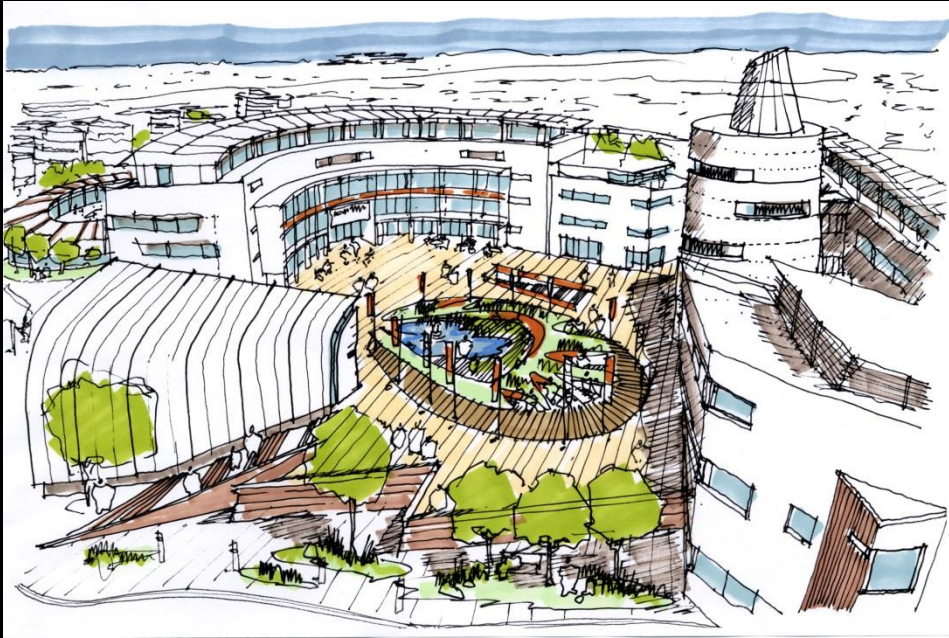








ata



BREEAM Communities

Technical Manual SD202 - 02.2012



bre

The British Society of Architects
a chapter of the
American Institute of Architects

BSA 2007

in accordance with the judgment of the
Urban Design Awards Jury
presents this:

Citation for Urban Design
of
Alta dät
for
Urridaholt Masterplan
Handwritten signature

THE INTERNATIONAL AWARDS
FOR LIVEABLE COMMUNITIES

The International Awards for Liveable Communities 2007
Environmentally Sustainable Projects

SILVER AWARD

Urridaholt Masterplan
Gardabaer

26th November 2007

UNEP CHIEF EXECUTIVE *Ala S. A.*

SHORTLISTED PROJECTS

Urridaholt
John Thompson & Partners describe a pioneering scheme for a site in the challenging Icelandic climate:

The Urridaholt project is a large-scale urban scheme located in the northern municipality of the Icelandic capital, Reykjavik. The Urridaholt scheme has numerous strong points, and has together with the other projects been selected as one of the top 10 projects in the world. The Urridaholt scheme is a large-scale urban scheme located in the northern municipality of the Icelandic capital, Reykjavik. The Urridaholt scheme has numerous strong points, and has together with the other projects been selected as one of the top 10 projects in the world. The Urridaholt scheme is a large-scale urban scheme located in the northern municipality of the Icelandic capital, Reykjavik. The Urridaholt scheme has numerous strong points, and has together with the other projects been selected as one of the top 10 projects in the world.

SHORTLISTED PROJECTS

Urridaholt Masterplan
Gardabaer

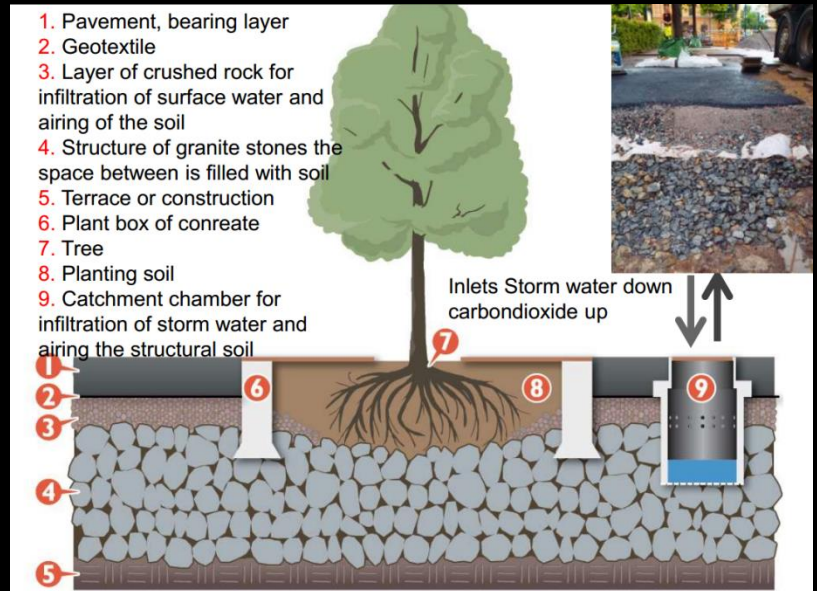
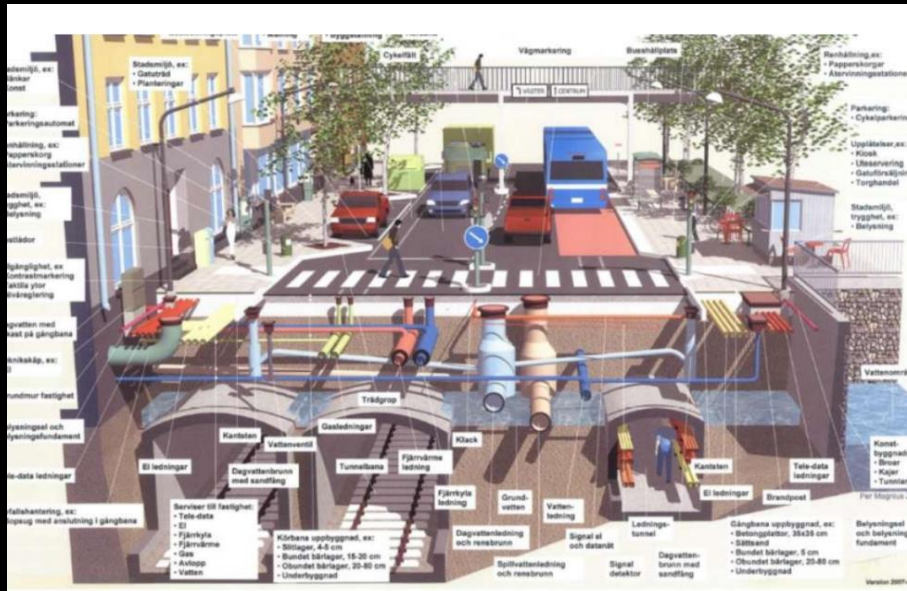
The Urridaholt project is a large-scale urban scheme located in the northern municipality of the Icelandic capital, Reykjavik. The Urridaholt scheme has numerous strong points, and has together with the other projects been selected as one of the top 10 projects in the world. The Urridaholt scheme is a large-scale urban scheme located in the northern municipality of the Icelandic capital, Reykjavik. The Urridaholt scheme has numerous strong points, and has together with the other projects been selected as one of the top 10 projects in the world.

Project Awards and recognitions – Bream certified **ATA**



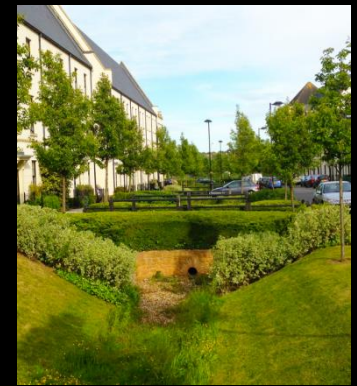


Change in the way we do things – New issues



Cross sectoral cooperation is the key

Cost of implementation different – not in pipes



Blue green solutions = the greening of cities
Landscaping and vegetation



30. MAY 2013

Turning Copenhagen Blue and Green



Less flooding and more blue and green urban spaces. Copenhagen's cloudburst mitigation plan takes an integrated approach to heavy rainfall catchment by proposing solutions that both handle rainwater and improve the quality of urban life.