virtual design prototypes

key of the measures included

climate-responsive design strategies

- shading / evapotranspiration / ventilation
- long-wave radiation / water infiltration
- water vaporisation
- accessibility to water

cooling effects

+++ most significant effects

++ significant effects

+ less significant effects

WAGENINGEN
UNIVERSITY & RESEARCH

2020

virtual design prototypes

prototype A. wide quays

WATER NOZZLES CLOSE TO PEOPLE
summer. temperates local air temperature through evaporation, direct body cooling

++

PERMEABLE GROUND SURFACES
summer. evaporative cooling
year-round. water infiltration

+++

OPEN CANOPIES AND VARIED CROWN SHAPES
summer. cooling by wind, long-wave radiation allowance
winter. wind protection

+++

WATER FOUNTAINS CLOSE TO PEOPLE
summer. temperates local air temperature through evaporation, direct body cooling

++

ACCESSIBILITY TO WATER
summer. psychological 'cooling'
year-round. physical and mental health

+

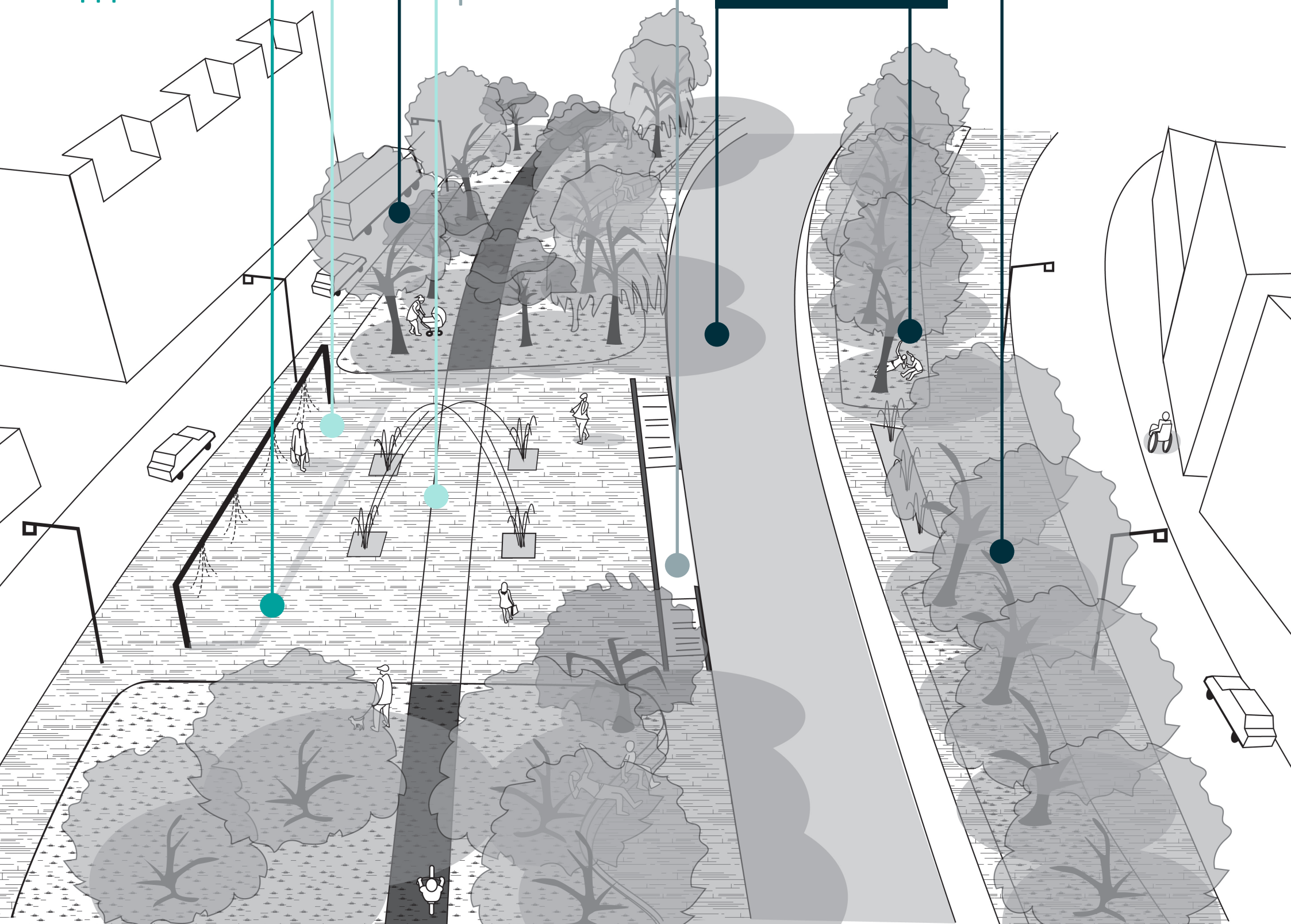
SHADE WATER
summer. although this does not cool water, it can help prevent the blooming of pathogens

TREES IN SOJOURN LOCATIONS
summer. shade, evaporative cooling
winter. wind protection

+++

TREES ALONG THE WATERBODY
summer. shade, evaporative cooling
winter. wind protection

+++



virtual design prototypes

prototype B. narrow quays

VINES AND/OR SHADING DEVICES
summer. shade (when trees are not possible)
winter. wind protection
+++

GROUPS OF SMALL TREES AND VARIED CROWN SHAPES
summer. shade, evapotranspiration
winter. wind protection
+++

TREES IN SOJOURN LOCATIONS
summer. shade, evaporative cooling
winter. wind protection
+++

WATER NOZZLES CLOSE TO PEOPLE
summer. temperates local air temperature through evaporation, direct body cooling
++

GREEN WALLS
summer. evaporative cooling
year-round. thermal insulation of facades
+++

PERMEABLE GROUND SURFACES
summer. evaporative cooling
year-round. water infiltration
+++

SHADE WATER
summer. although this does not cool water, it can help prevent the blooming of pathogens

ACCESSIBILITY TO WATER
summer. psychological 'cooling'
year-round. physical and mental health
+

virtual design prototypes

prototype C. squares

TREES ALONG THE WATERBODY
summer. shade, evaporative cooling
winter. wind protection
+++

OPEN CANOPIES AND VARIED CROWN SHAPES
summer. cooling by wind, long-wave radiation allowance
winter. wind protection
+++

PERMEABLE GROUND SURFACES
summer. evaporative cooling
year-round. water infiltration
+++

TREES IN SOJOURN LOCATIONS
summer. shade, evaporative cooling
winter. wind protection
++

WATER FOUNTAINS CLOSE TO PEOPLE
summer. temperates local air temperature through evaporation, direct body cooling
++

WATER NOZZLES CLOSE TO PEOPLE
summer. temperates local air temperature through evaporation, direct body cooling
++

GREEN WALLS
summer. evaporative cooling
year-round. thermal insulation of facades
+++

SHADE WATER
summer. although this does not cool water, it can help prevent the blooming of pathogens

ACCESSIBILITY TO WATER
summer. psychological 'cooling'
year-round. physical and mental health
+

virtual design prototypes

prototype D. crossroads

TREES IN SOJOURN LOCATIONS
summer. shade, evaporative cooling
winter. wind protection
+++

OPEN CANOPIES AND VARIED CROWN SHAPES
summer. cooling by wind, long-wave radiation allowance
winter. wind protection
+++

TREES ALONG THE WATERBODY
summer. shade, evaporative cooling
winter. wind protection
+++

PERMEABLE GROUND SURFACES
summer. evaporative cooling
year-round. water infiltration
+++

WATER NOZZLES CLOSE TO PEOPLE
summer. temperates local air temperature through evaporation, direct body cooling
++

SHADE WATER
summer. although this does not cool water, it can help prevent the blooming of pathogens

GREEN WALLS
summer. evaporative cooling
year-round. thermal insulation of facades
+++

ACCESSIBILITY TO WATER
summer. psychological 'cooling'
year-round. physical and mental health
+

WATER FOUNTAINS CLOSE TO PEOPLE
summer. temperates local air temperature through evaporation, direct body cooling
++