de Kastelein

Passive design strategies in Texel's dune landscape

tutors

Roel van de Pas	*Architecture*
Mauro Parravicini	*Building Technology*
Carolin Bellstedt	*Research*
Roberto Cavallo	*Board of Examiners*

6 October 2017

P4 presentation

Max van den Berg

aE graduation studio

context: dune landscape

3 Stories

3 Stories

de Kastelein

3 Stories

de Kastelein

the Path

3 Stories

de Kastelein

the Path

the Settlement

de Kastelein

de Kastelein

de Kastelein van Eyerland

Het Eyerlandse Huis

I de Schelling
le Vlie
Midland
Osteynde
Vlieland I.
Westeynde
Grind
Eyerland
I de Teßel
Fort-Digue
du Tessel ou Marsdiep
Passage du
Wieringen I.
Bolswar

ca. 1600

I de Schelling
le Vlie
Midland
Osteynde
Vlieland I.
Westeynde
Grind
Eyerland
I de Teßel
Fort-Digue
du Tessel ou Marsdiep
Passage du
Wieringen I.
Harlin
SEL
Bolswar
Worcum

ca. 1600

I de Schelling
le Vlie
Midland
Osteynde
Vlieland I.
Westeynde
Grind
Eyerland
I de Teßel
Fort Digue
du Tessel ou Marsdiep
Passage du
Wieringen I.
Bolswar

ca. 1600

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Passage du
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Bolswar

ca. 1600

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Fort Digue
du Tessel ou Marsdiep
Passage du
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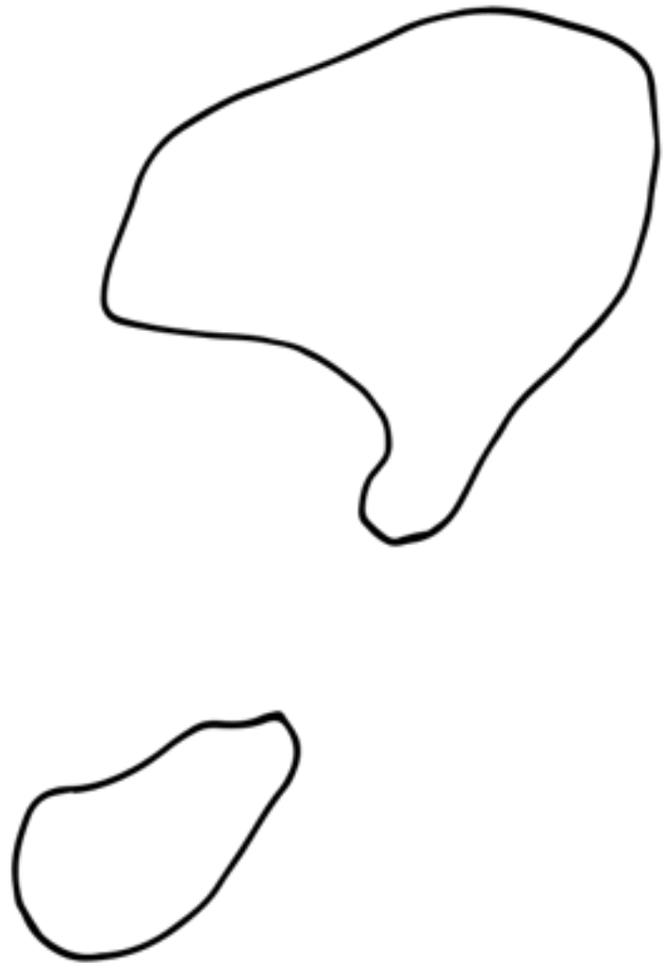
Bolswar

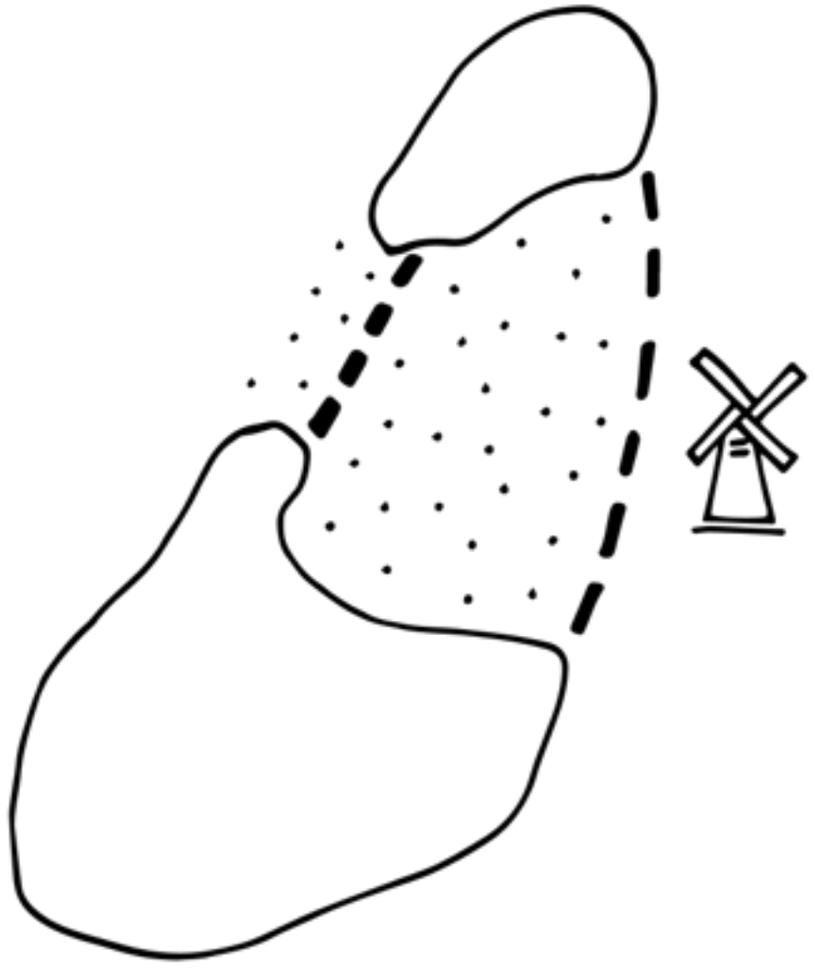
ca. 1600

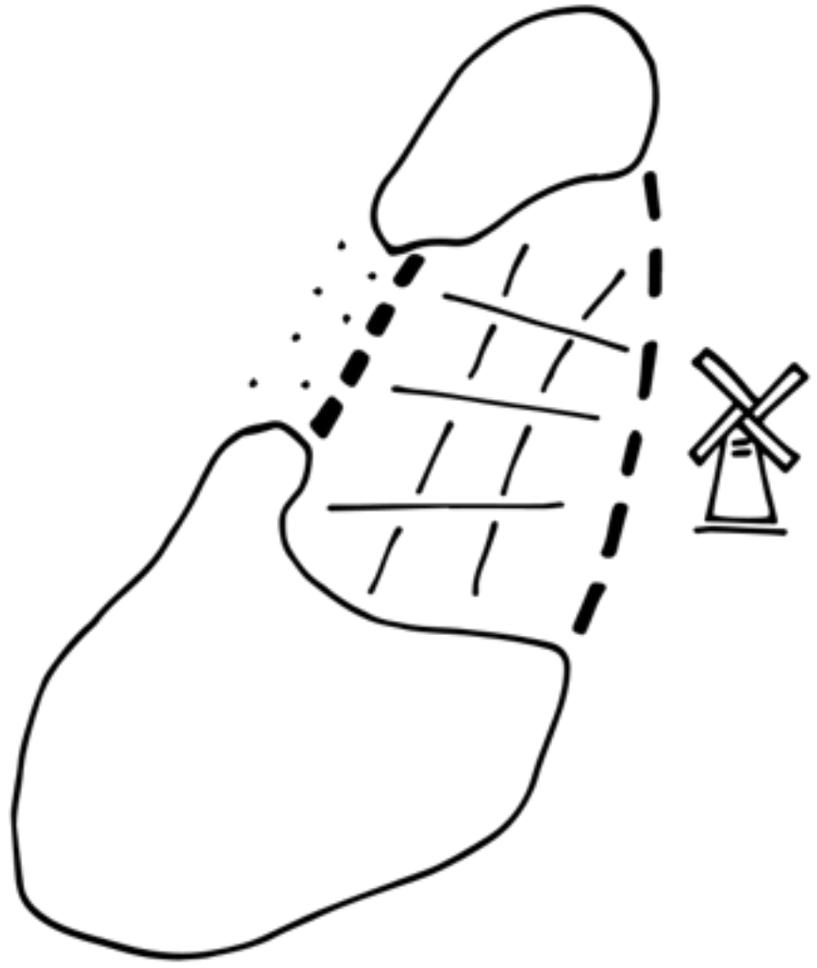


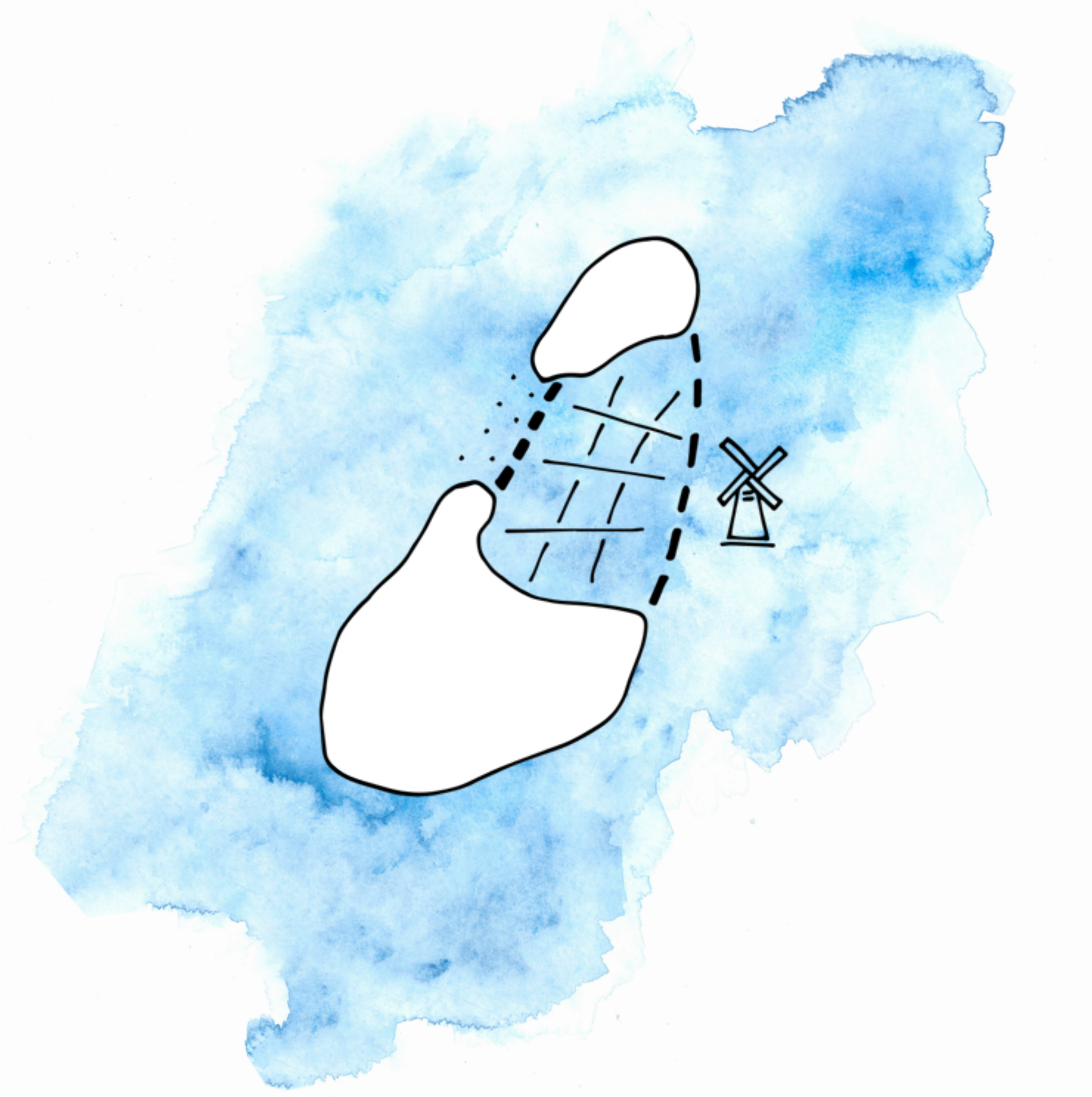
1630

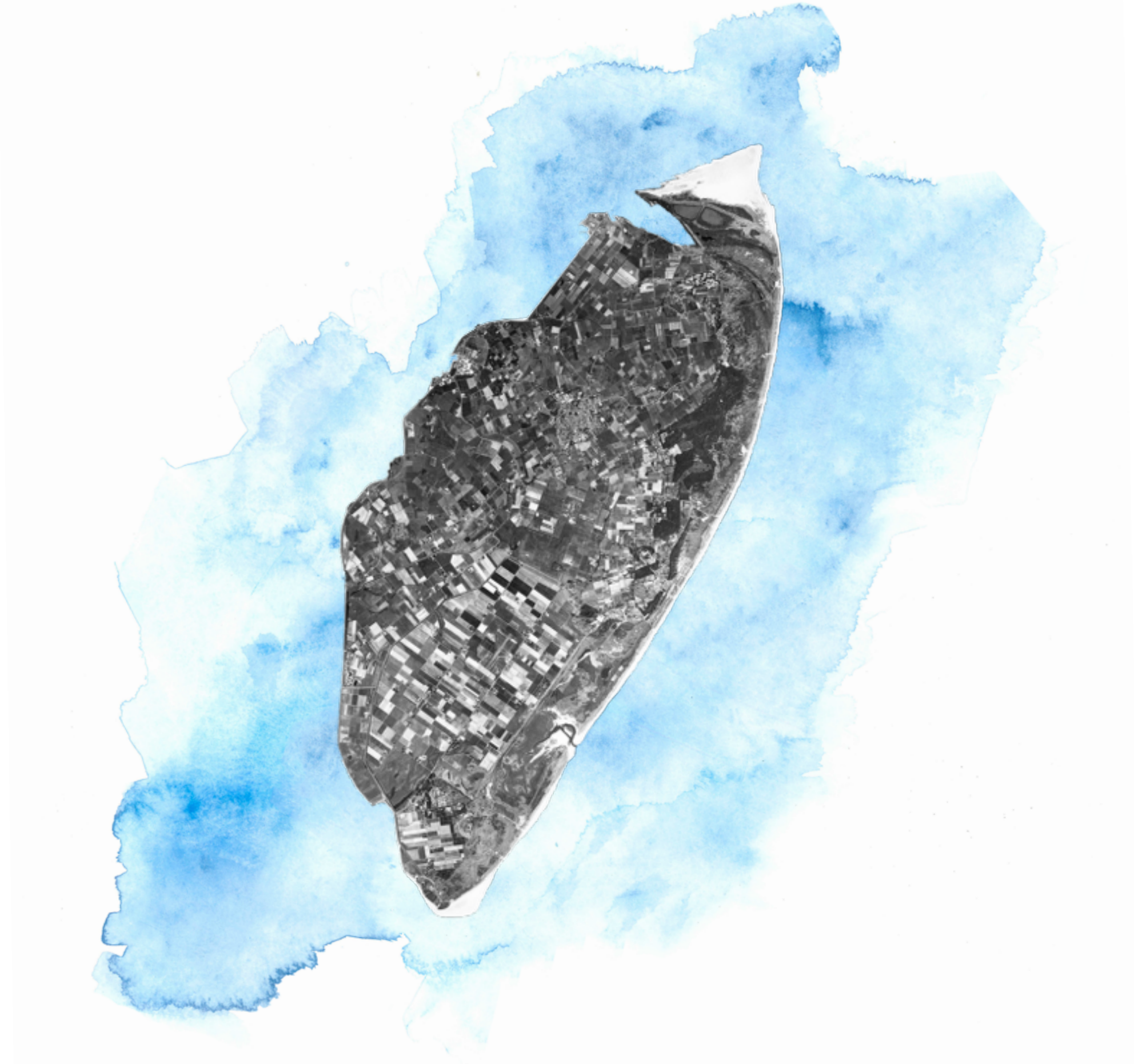
1630 - 1835

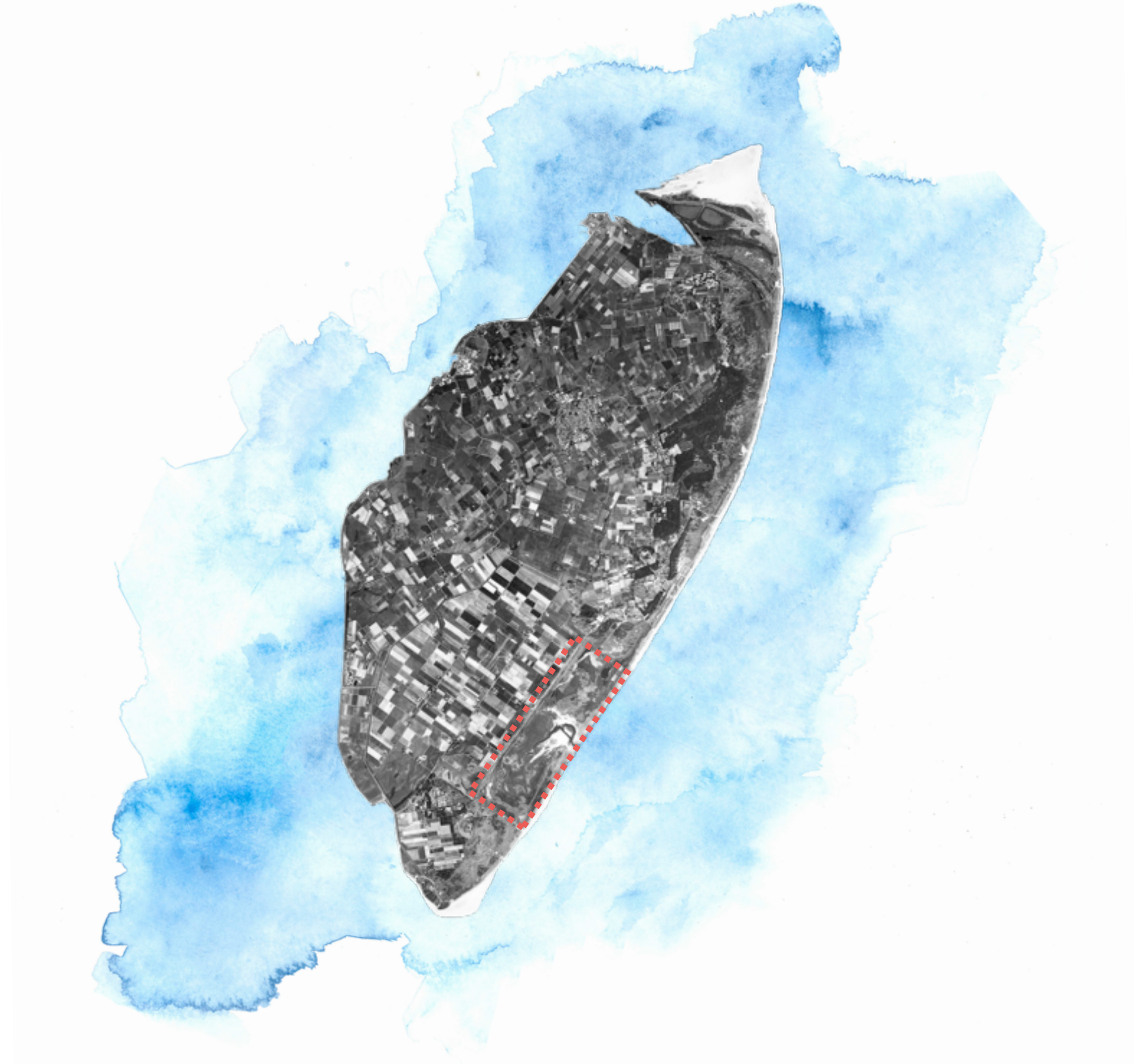
1835

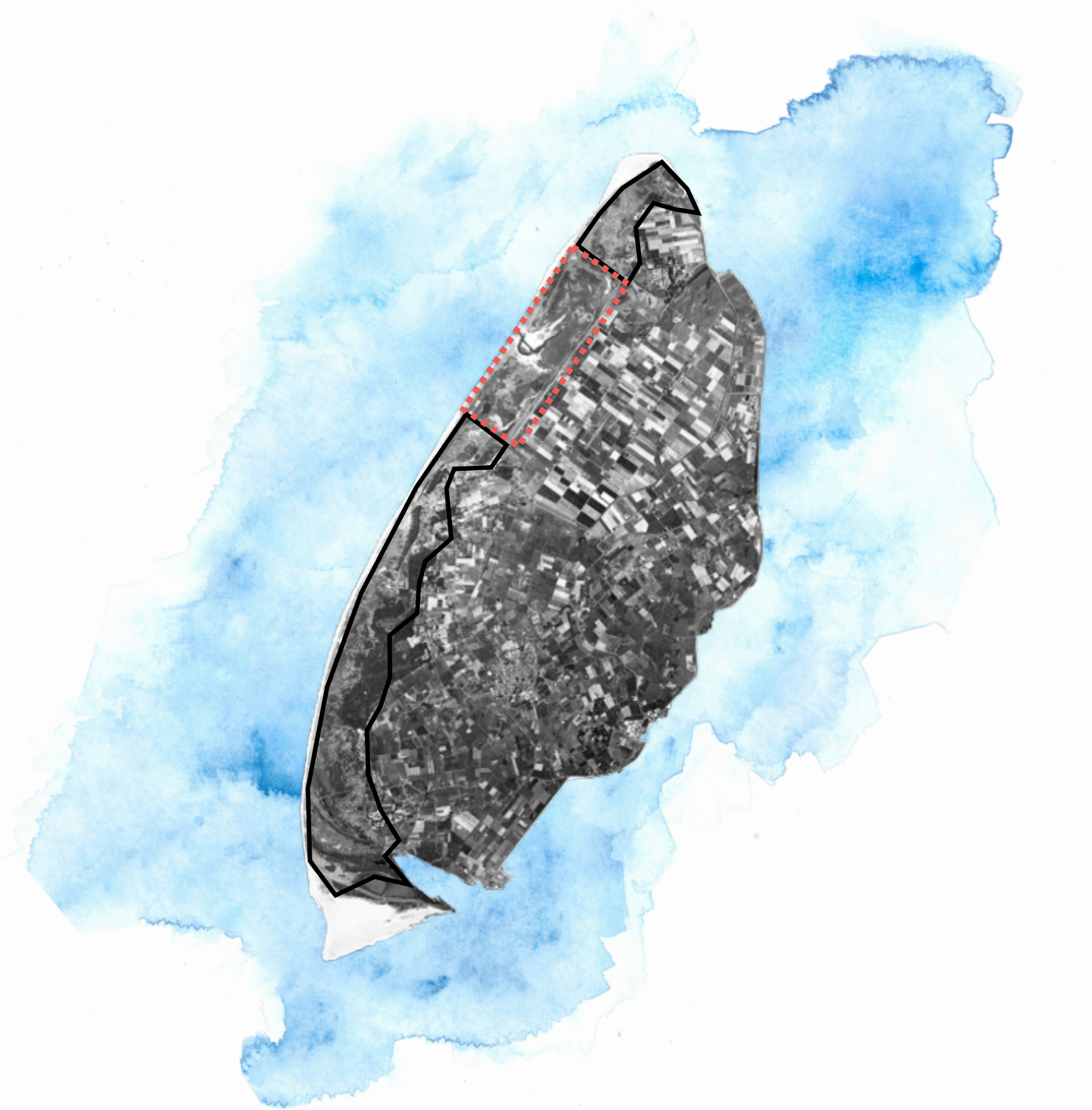


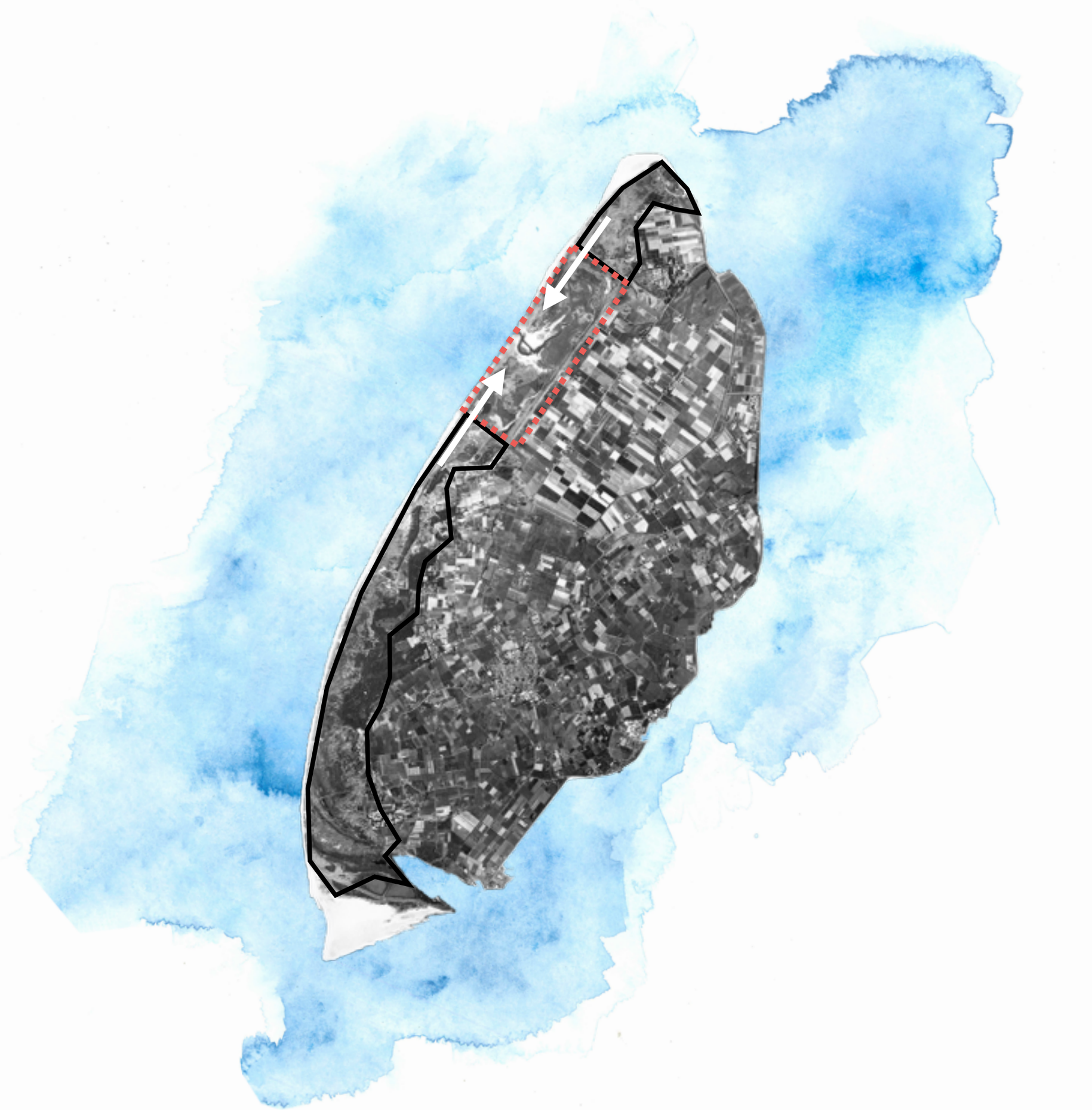


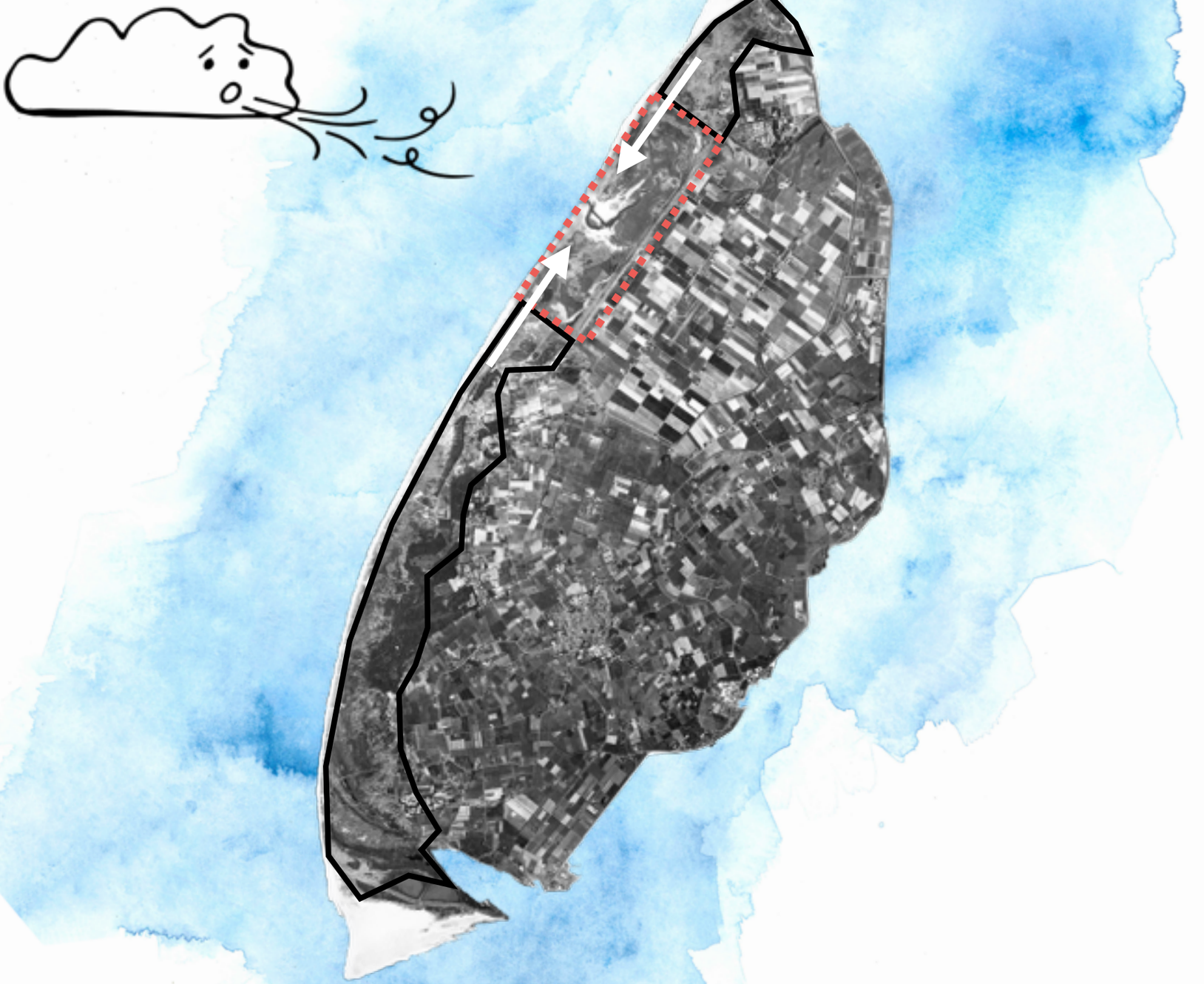


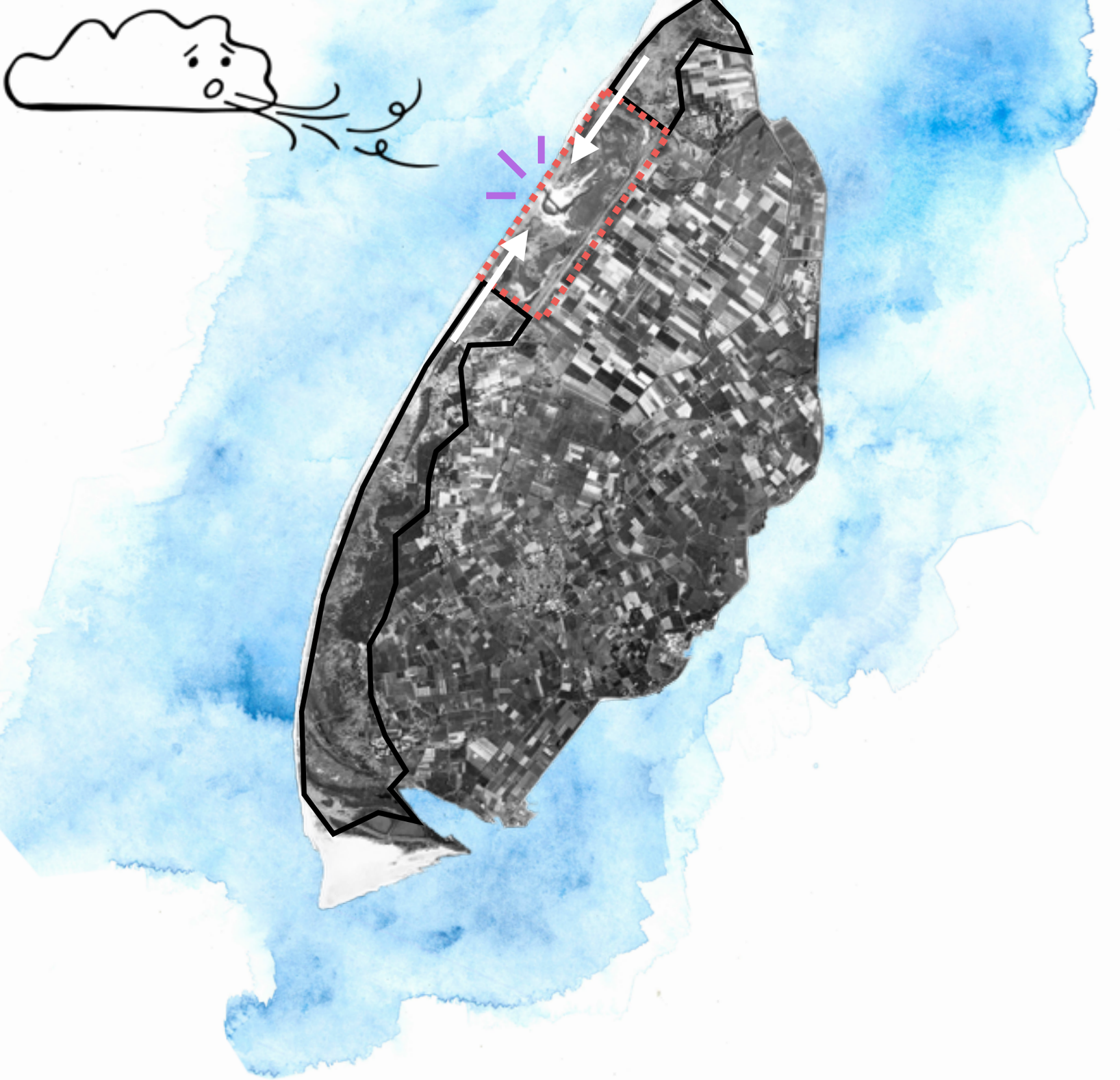


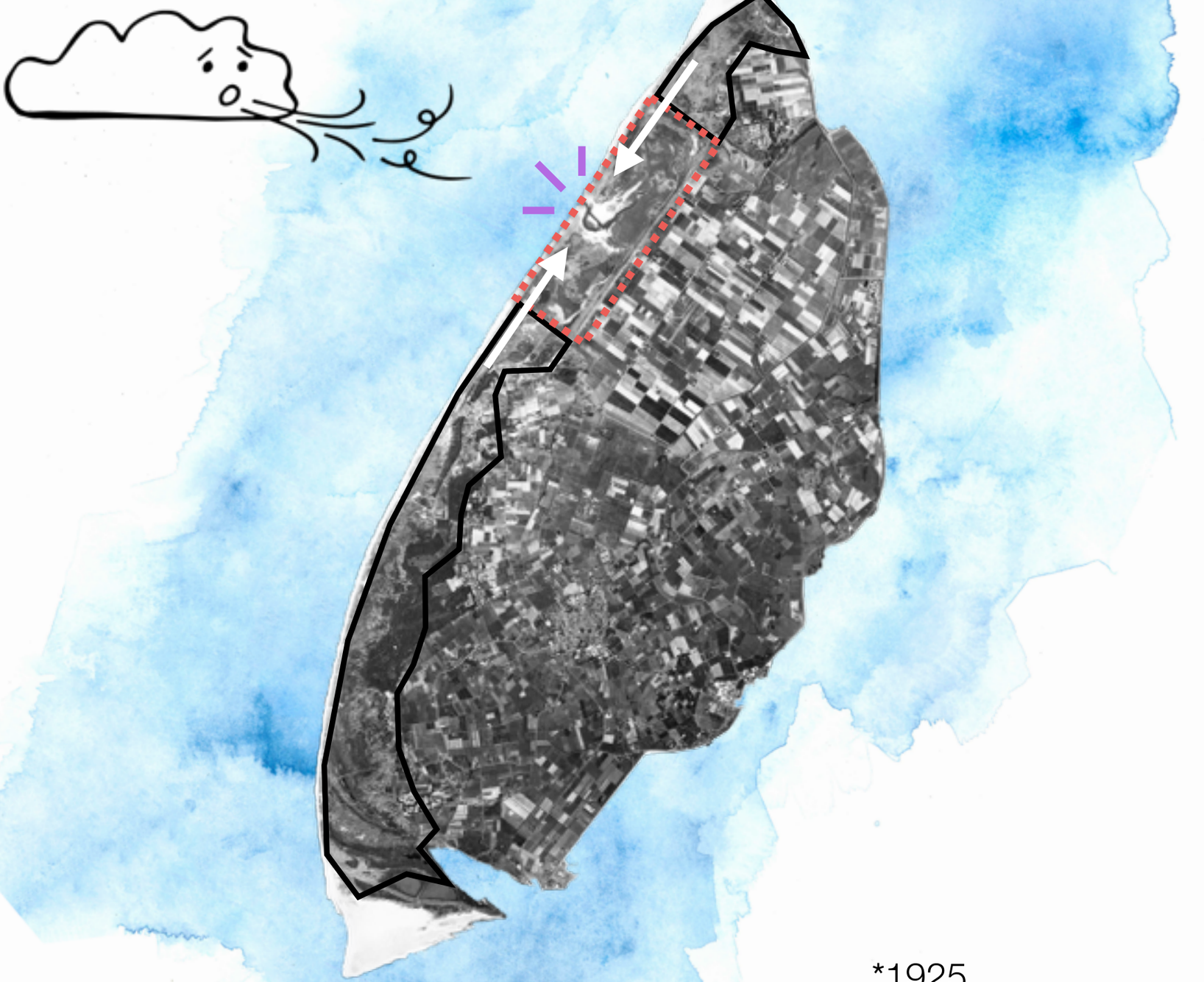




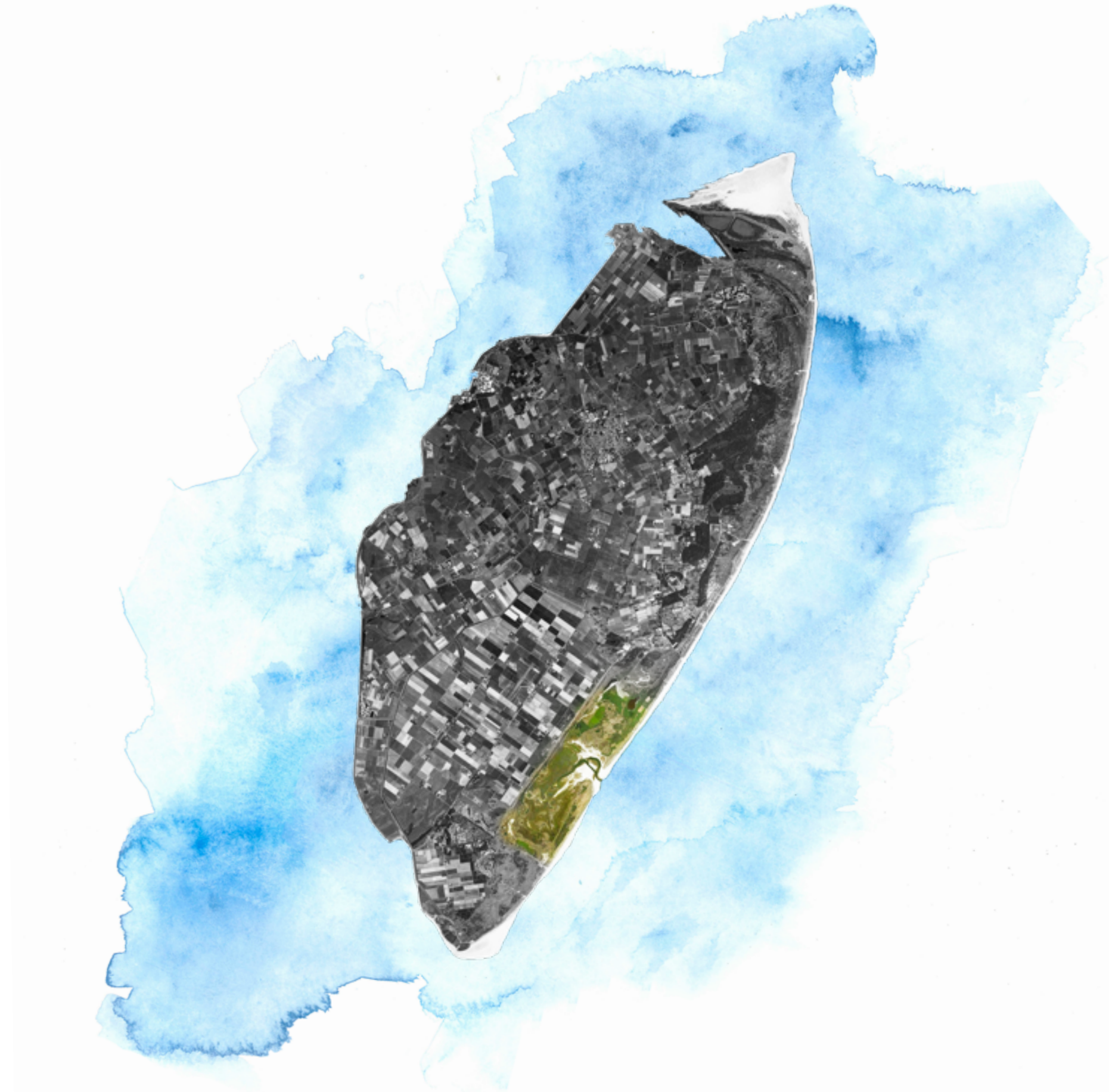


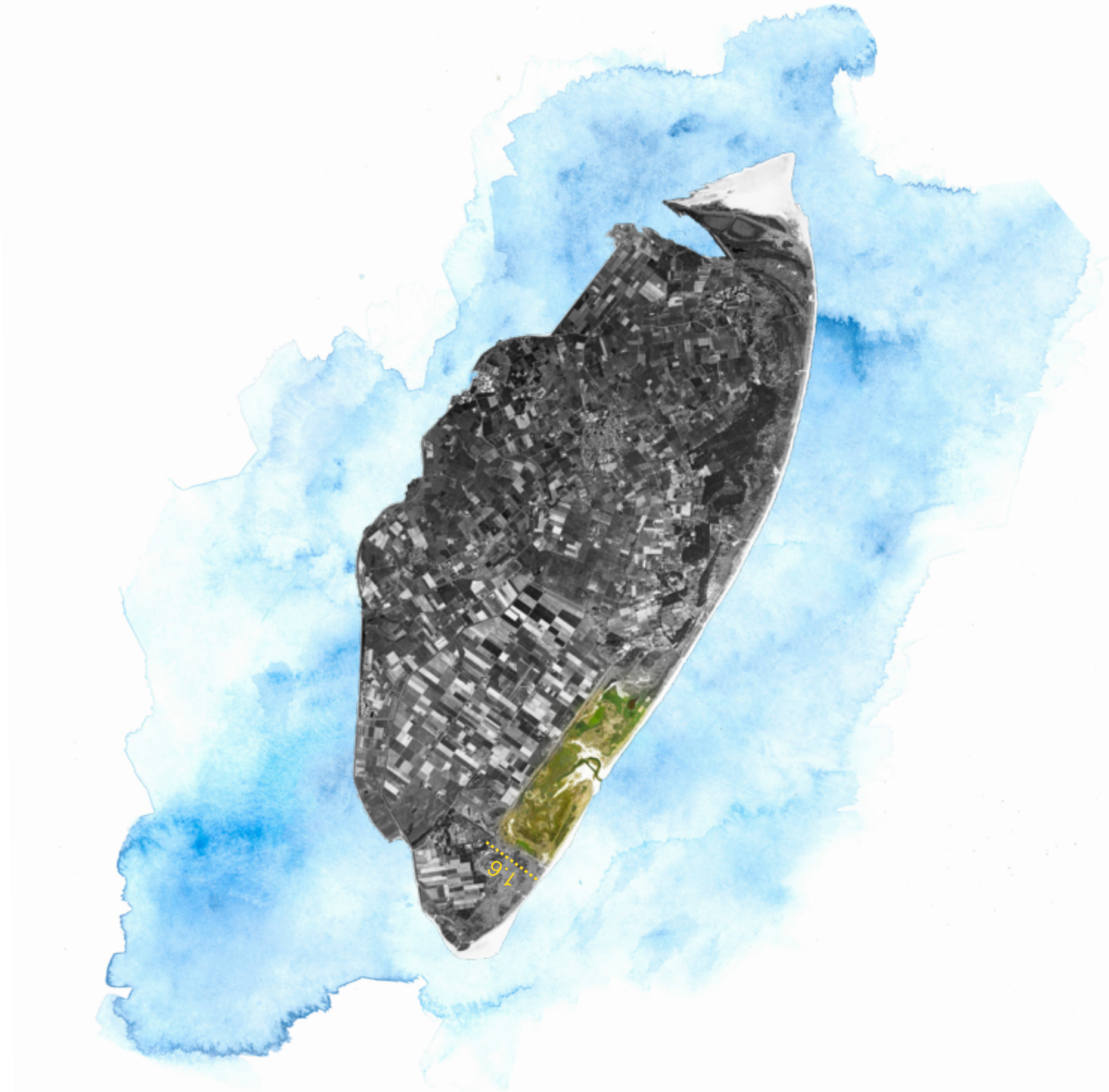




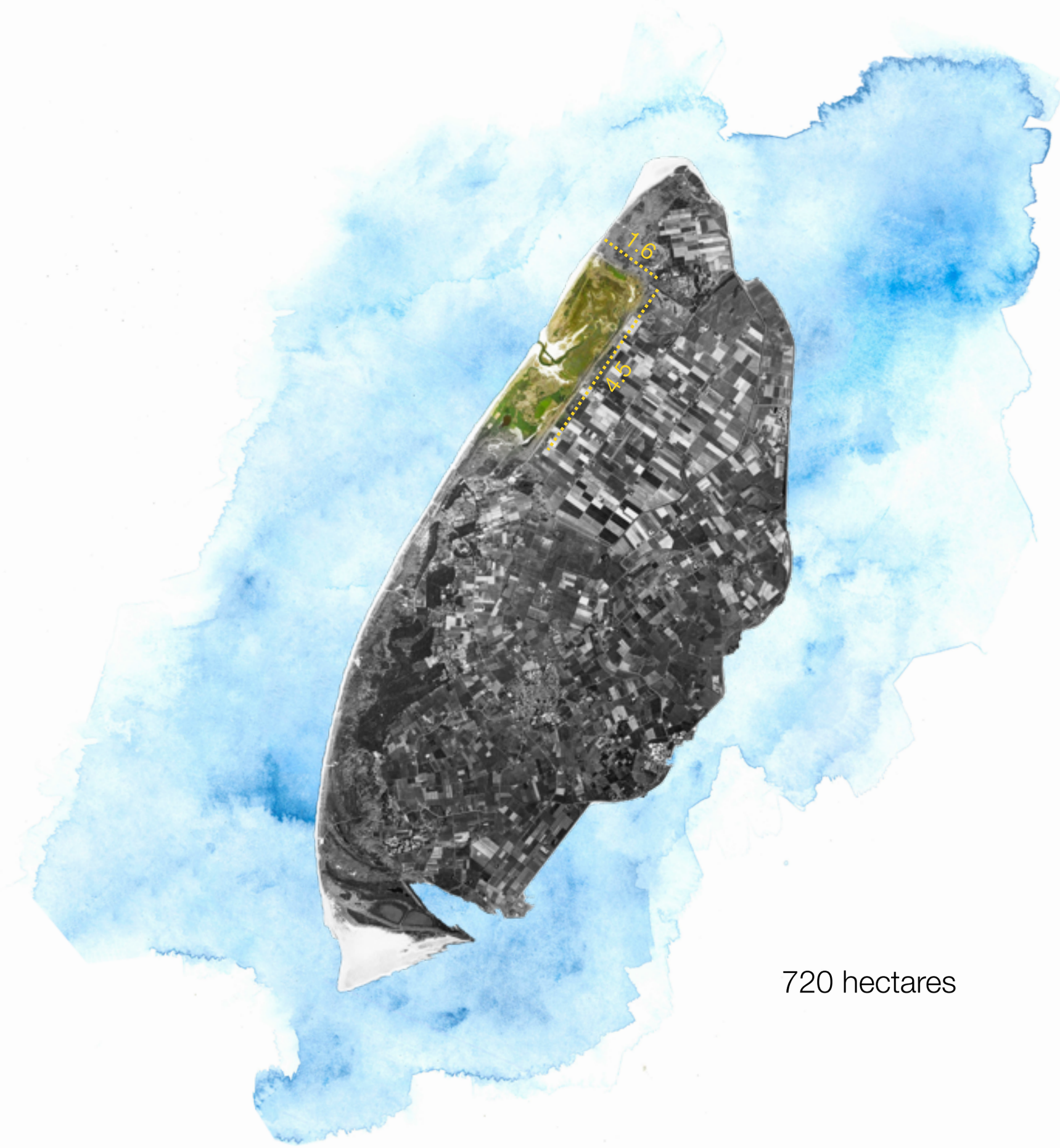


*1925

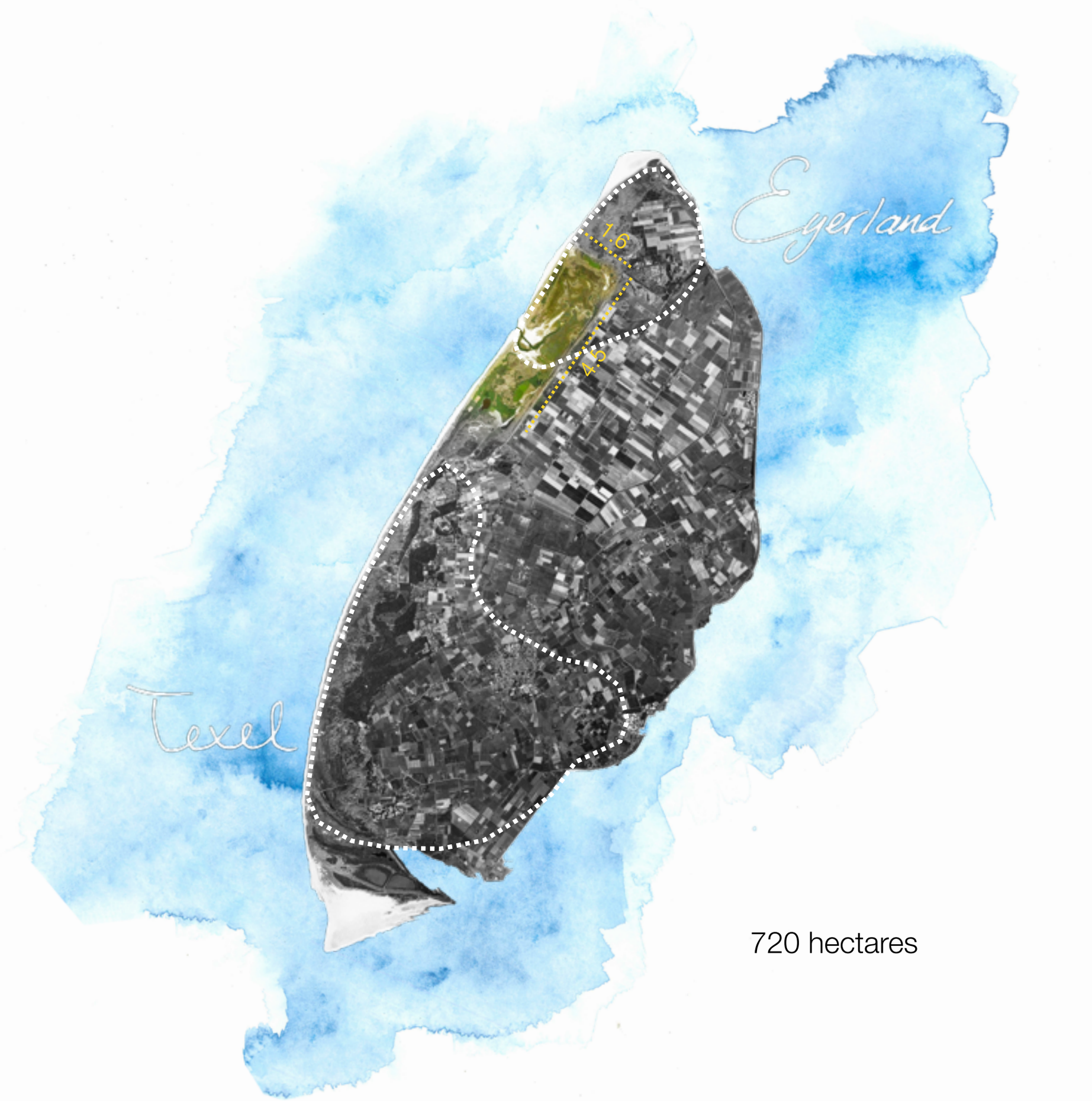



16
9

4.5
1.6



720 hectares



720 hectares

20km

Schiermonnikoog

Ameland

Terschelling

Vlieland

Texel

20km

Schiermonnikoog

Ameland

Terschelling

Vlieland

Texel
14k

20km

Schiermonnikoog
Ameland
Terschelling
Vlieland
Texel
14k
800k
20km

50km

50KM

“by 2020 Texel wants to be self-sufficient in the areas of energy and fresh water.”
50km

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“Texel wants to be a laboratory for experimentation in the area of sustainability.”
50km

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island = clearly defined community

50km

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scale = small = achievable

50km

“by 2020 Texel wants to be self-sufficient in the areas of energy and fresh water.”

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Potential

island = clearly defined community

scale = small = achievable

50km

“by 2020 Texel wants to be self-sufficient in the areas of energy and fresh water.”

“Texel wants to be a laboratory for experimentation in the area of sustainability.”

Potential

island = clearly defined community

scale = small = achievable

inspire people from all over who visit Texel

50km

100km

100km

Samsø

Samsø

- Until 1997: Oil & coals for electricity + heating

Samsø

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- 1997 Government competition: model renewable energy community

Samsø

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- since 2004, 100% energy self-sufficient & 100% CO2 neutral

Samsø

- Until 1997: Oil & coals for electricity + heating

- 1997 Government competition: model renewable energy community

- since 2004, 100% energy self-sufficient & 100% CO2 neutral

Instruments:

- 11 onshore wind turbines (1.0MW)
- 10 offshore wind turbines (2.3MW)
- 3 straw heating plants
- 1 solar & wood chip heating plant

Samsø

Prof. Søren Hermansen

Samsø

Prof. Søren Hermansen

Samsø

- Community becomes the Plan

Prof. Søren Hermansen

Samsø

- Community becomes the Plan

Prof. Søren Hermansen

Samsø

- Community becomes the Plan

Søren Hermansen
+ Tor Nørretranders

commonities

=
com-
mons
+
commu-
nities

Samsø Energiakademi

Prof. Søren Hermansen

Samsø

- Community becomes the Plan

1. Why? to build ***Commonities***
   > become independent

Søren Hermansen
+ Tor Nørretranders

commonities

=
com-
mons
+
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nities

Samsø Energiakademi

Prof. Søren Hermansen

Samsø

- Community becomes the Plan

1. Why? to build *Commonities*
   > become independent

2. How? **Good conversations**
   > the *Campfire*

Søren Hermansen
+ Tor Nørretranders

commonities

= com-mons + commu-nities

Samsø Energiakademi

Prof. Søren Hermansen

Samsø

- Community becomes the Plan

1. Why? to build ***Commonities***
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Samsø

Samsø

Texel

Samsø

Texel

- Campfire

Samsø

Texel

- Campfire

- Community owned & operated (Commonity)

Samsø

Texel

- Campfire

- Community owned & operated (Commonity)

- 3* Population

4k

14k

Samsø

Texel

- Campfire

- Community owned & operated (Commonity)

- 3* Population

- 5* Visitors

4k

170k

14k

800k

Samsø

Texel

- Campfire

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- 5* Visitors

≠ Inspirator

4k

170k

14k

800k

Samsø

Texel

- Campfire

- Community owned & operated (Commonity)

- 3* Population

- 5* Visitors

≠ Inspirator

≠ Vision

4k

170k

14k

800k

Texel

Ambitions > Reality

Texel

Ambitions > Reality

Texel

Design a building

Ambitions > Reality

Texel

Design a building

- *Campfire*
  discuss & develop ideas

Ambitions > Reality

Texel

Design a building

- *Campfire*
  discuss & develop ideas

- *Open to visitors*
  showcase projects & ideas > inspire visitors

Ambitions > Reality

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- As a *Commonity*
  Community owned & operated

Ambitions > Reality

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de Kastelein

MEUBEL MAKERIJ

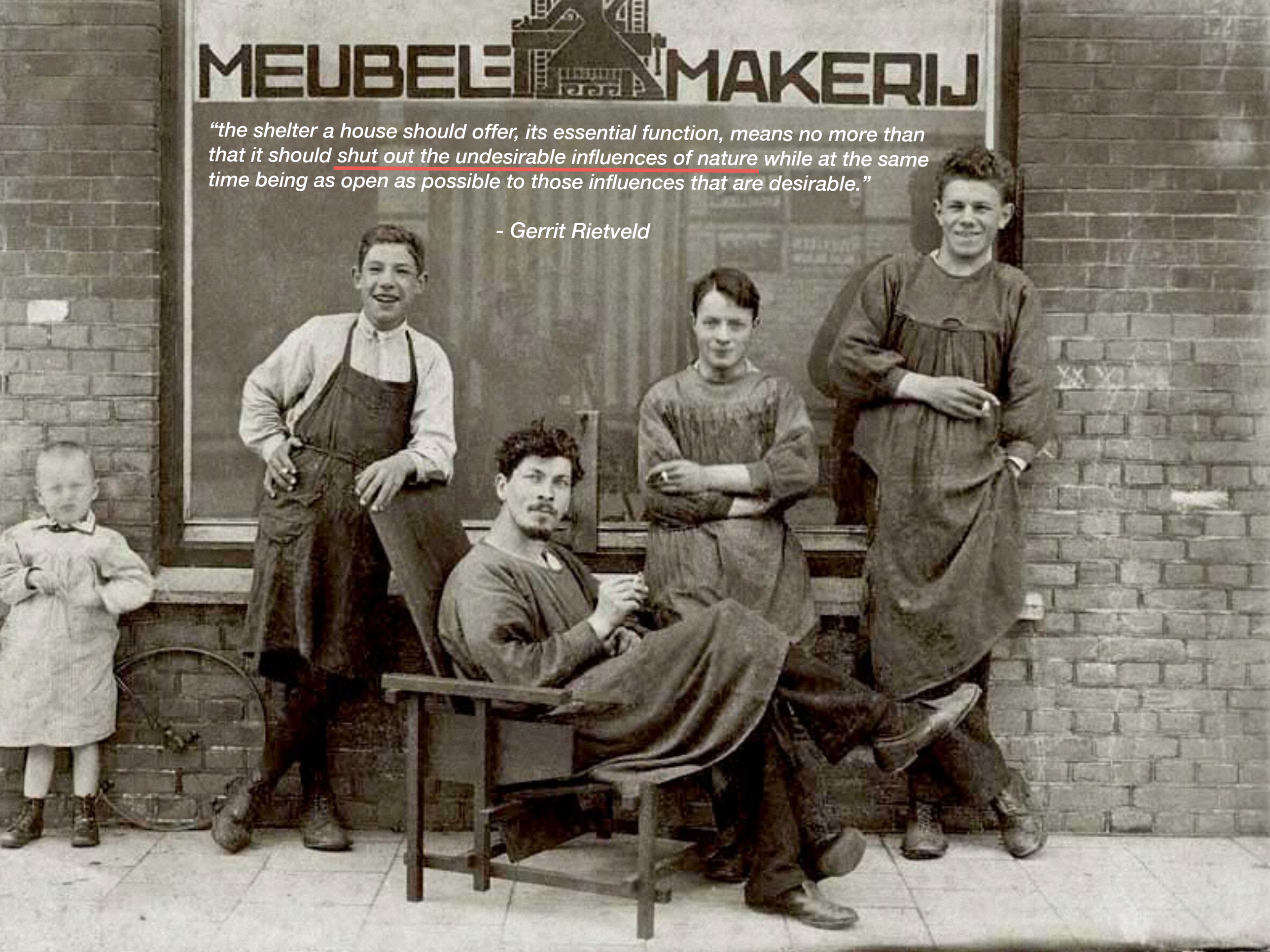
MEUBELMAKERIJ

“the shelter a house should offer, its essential function, means no more than that it should shut out the undesirable influences of nature while at the same time being as open as possible to those influences that are desirable.”

MEUBELMAKERIJ

“the shelter a house should offer, its essential function, means no more than that it should shut out the undesirable influences of nature while at the same time being as open as possible to those influences that are desirable.”

- Gerrit Rietveld



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MEUBELMAKERIJ

“the shelter a house should offer, its essential function, means no more than that it should shut out the undesirable influences of nature while at the same time being as open as possible to those influences that are desirable.”

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Passive design strategies

Passive design strategies

shelter

Passive design strategies

shelter *filter*

3 basic principles of the

Vernacular Approach

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Vernacular Approach

1. React to climatic conditions
   create indoor comfort

3 basic principles of the

Vernacular Approach

1. React to climatic conditions

   create indoor comfort ** Passive Design Strategies*

3 basic principles of the

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   from natural source; wood, stone, clay,…

3 basic principles of the

Vernacular Approach

1. React to climatic conditions

   create indoor comfort * *Passive Design Strategies*

2. Local building materials

   from natural source; wood, stone, clay,…

3. Low-tech building techniques

   preserve cultural identity of a region & sustain community

Texelse Schapenboet

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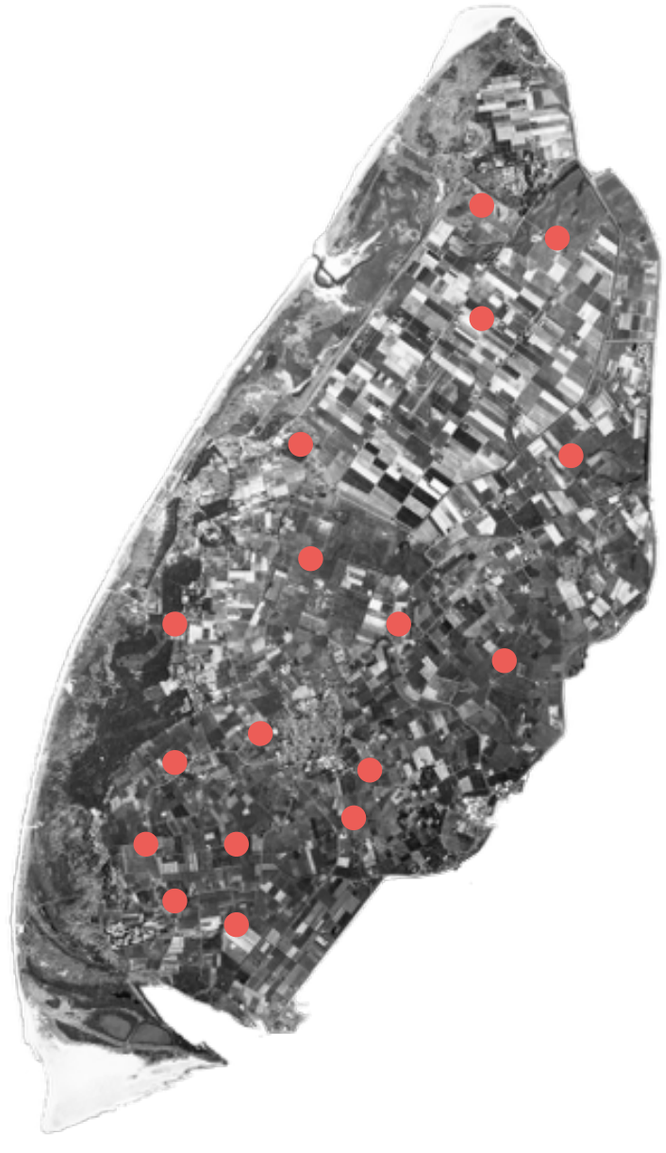

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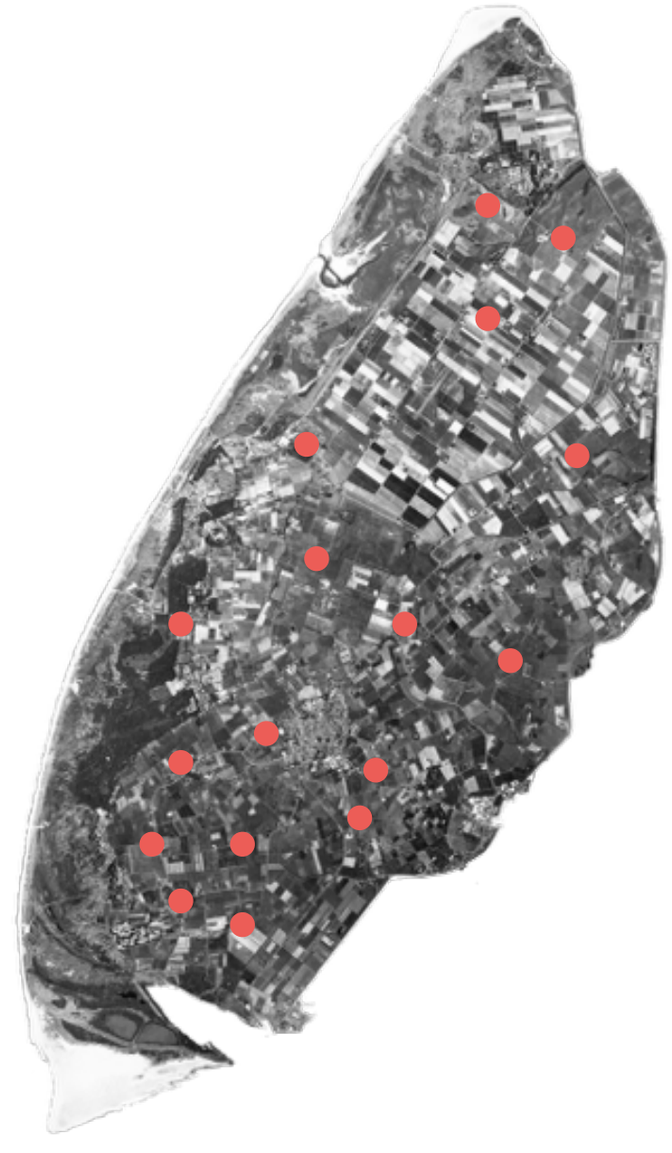

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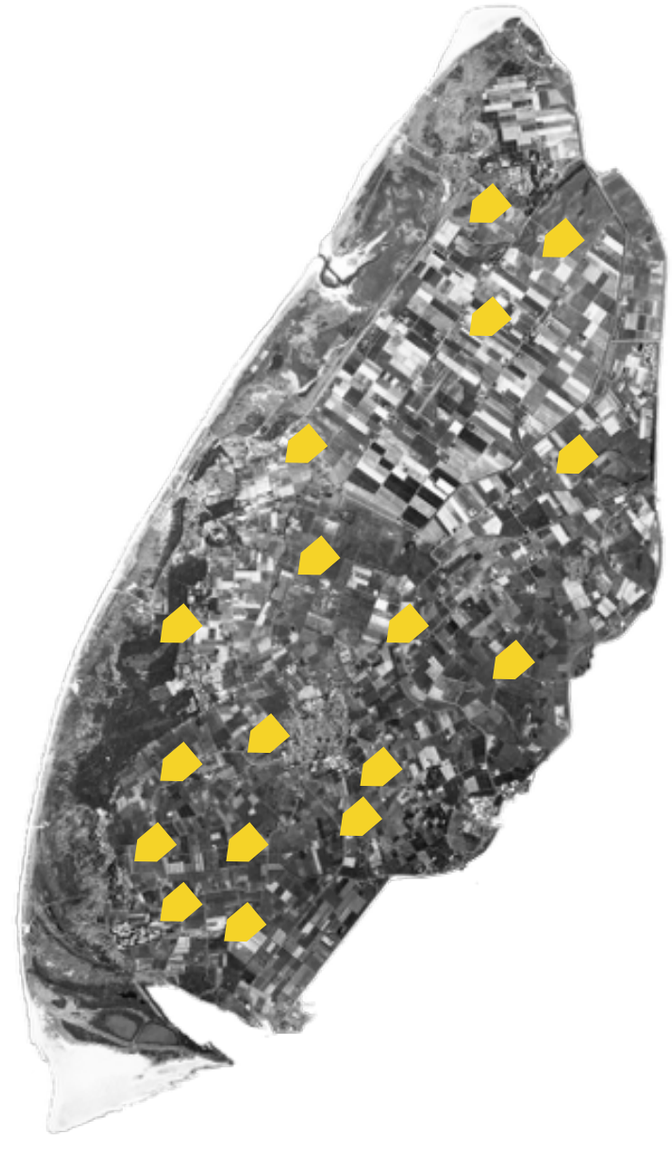
Texelse Schapenboet



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Texelse Schapenboet

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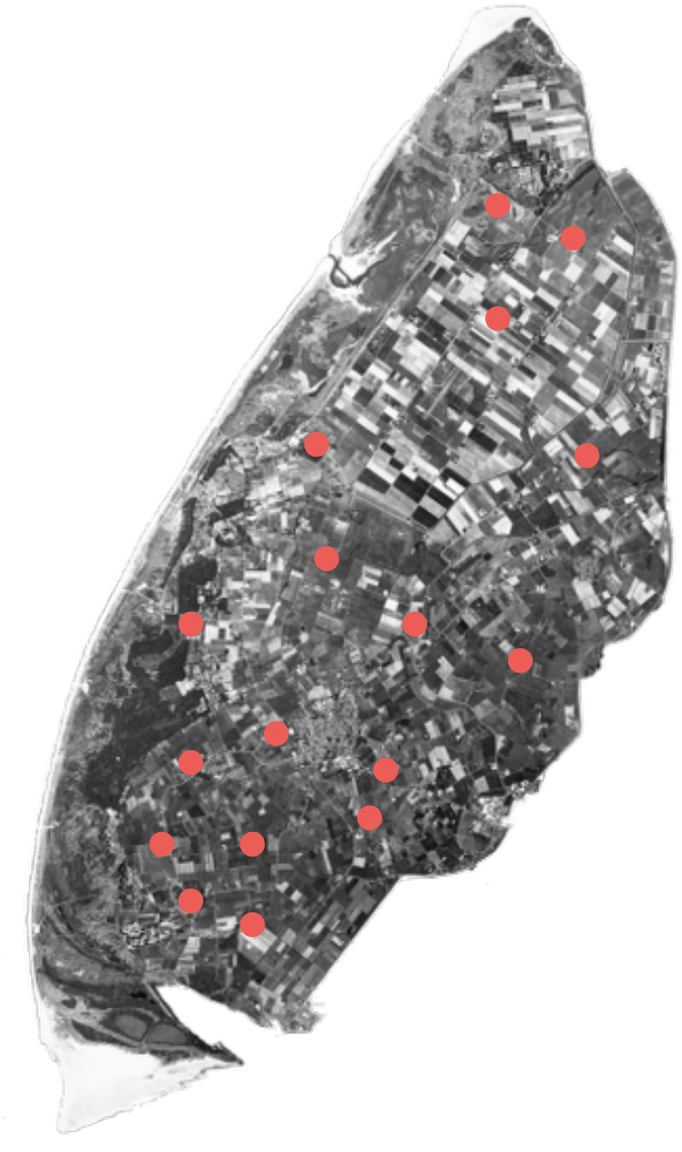

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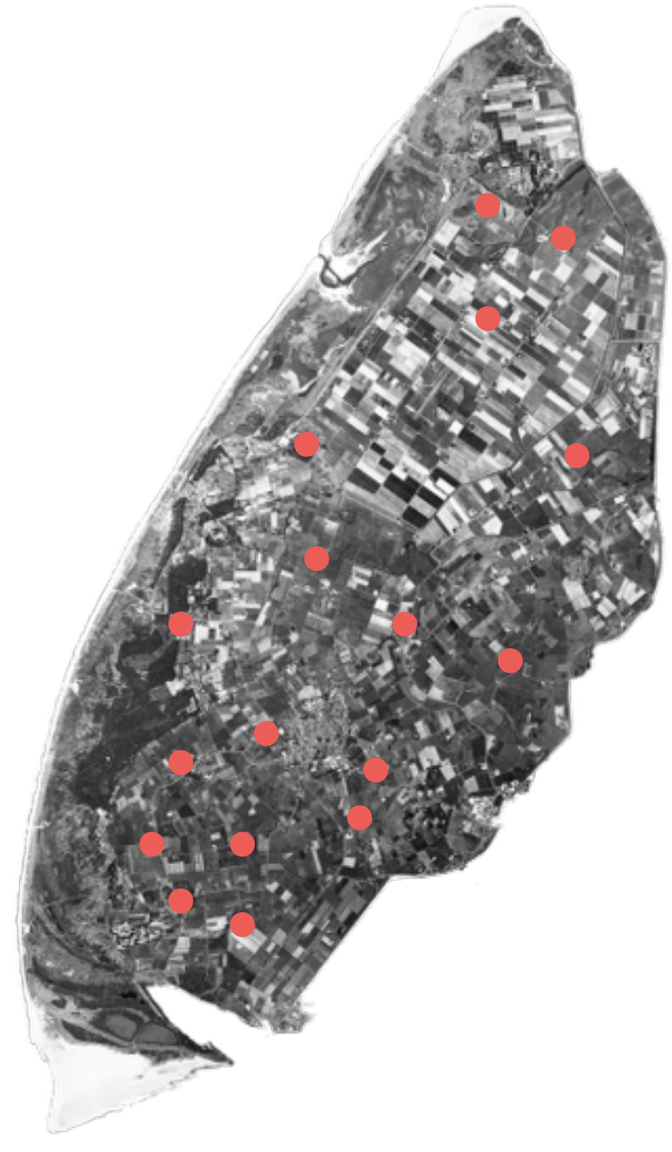

N

Texelse Schapenboet

N

Apply Vernacular Approach

Apply Vernacular Approach

1. React to climatic conditions
   create indoor comfort

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Apply Vernacular Approach

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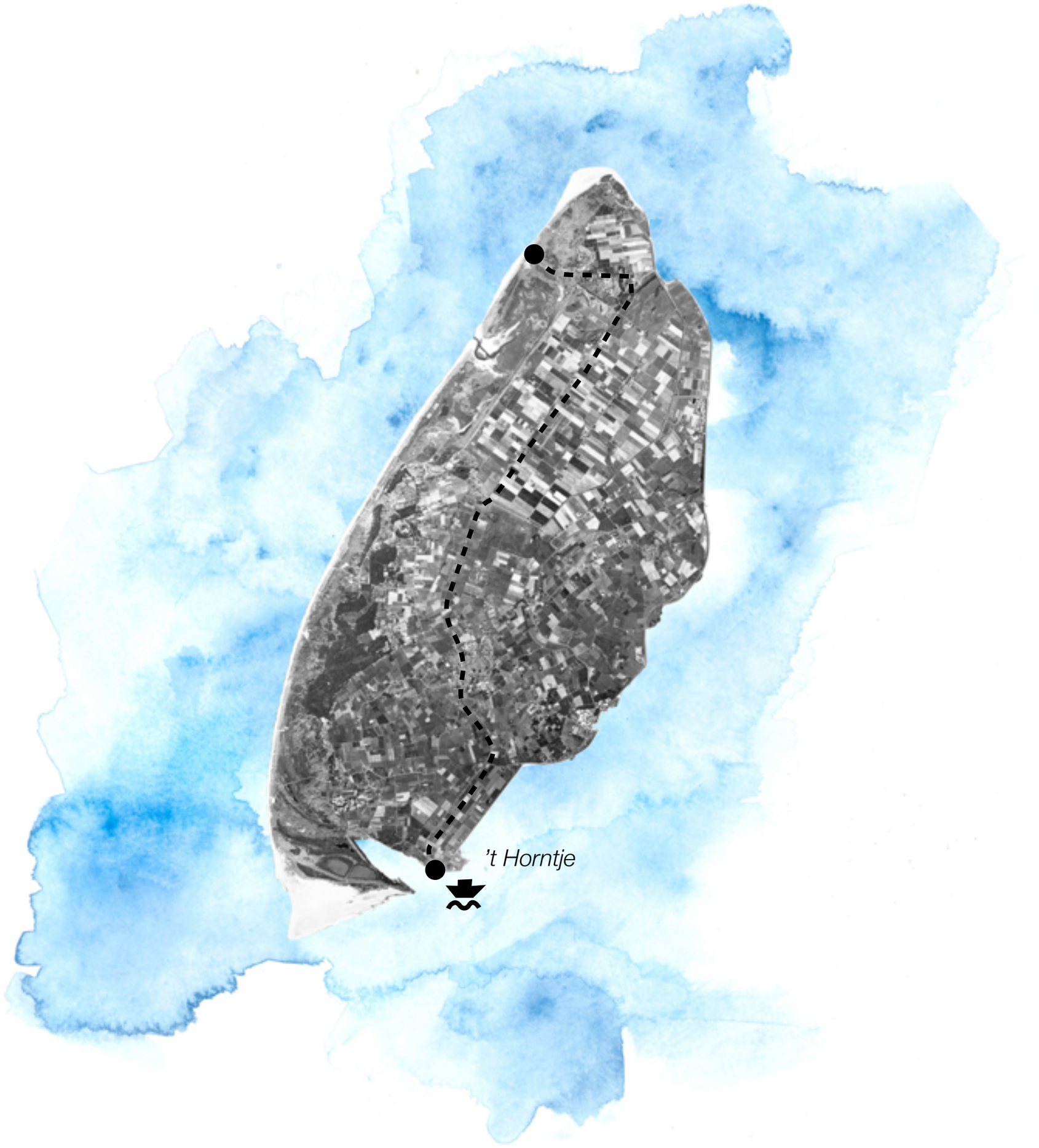
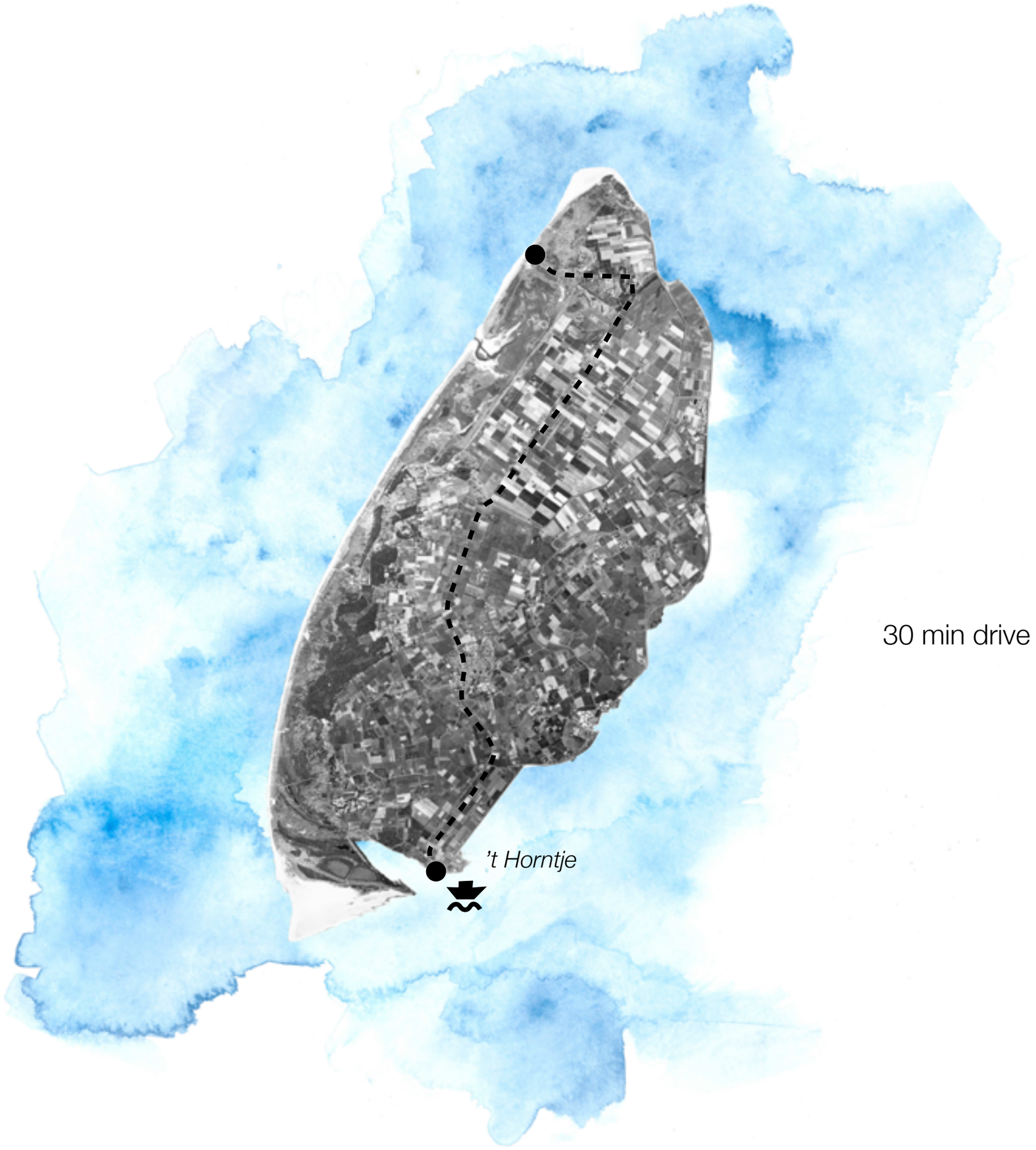
the Path

the sublime


't Horntje
5km
N


30 min drive
't Horntje
5km
N

Lighthouse
De Cocksdorp
De Slufter

Lighthouse
De Cocksdorp
De Slufter

De Slufter
N

130m
De Slufter
N

130m
70m
De Slufter
N

130m
70m
500 cars
De Slufter
N

130m
70m
500 cars
300 bicycles
De Slufter
N

R

130m

70m

500 cars

300 bicycles

De Slufter

N

R

130m

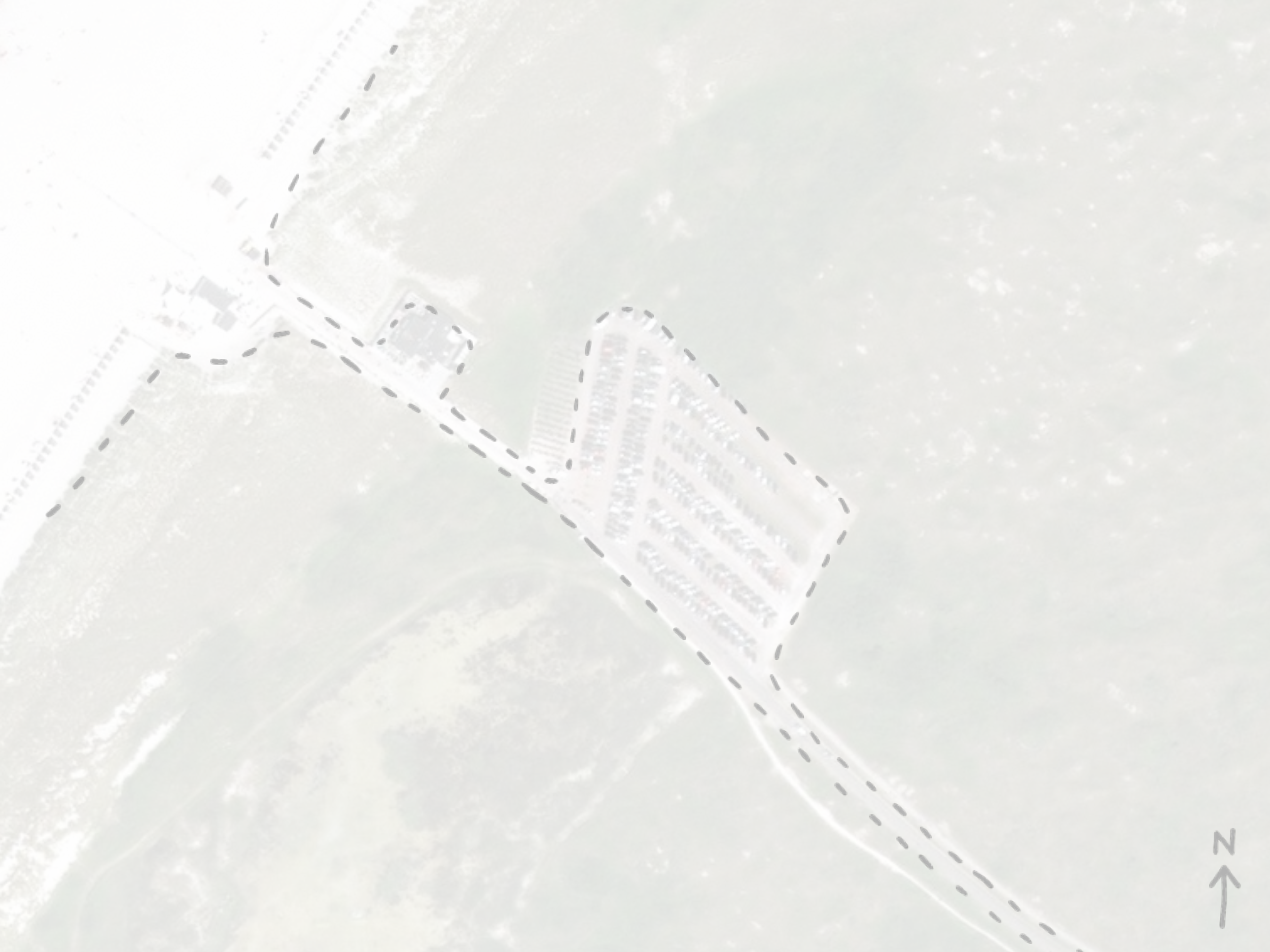
70m

500 cars

300 bicycles

De Slufter

N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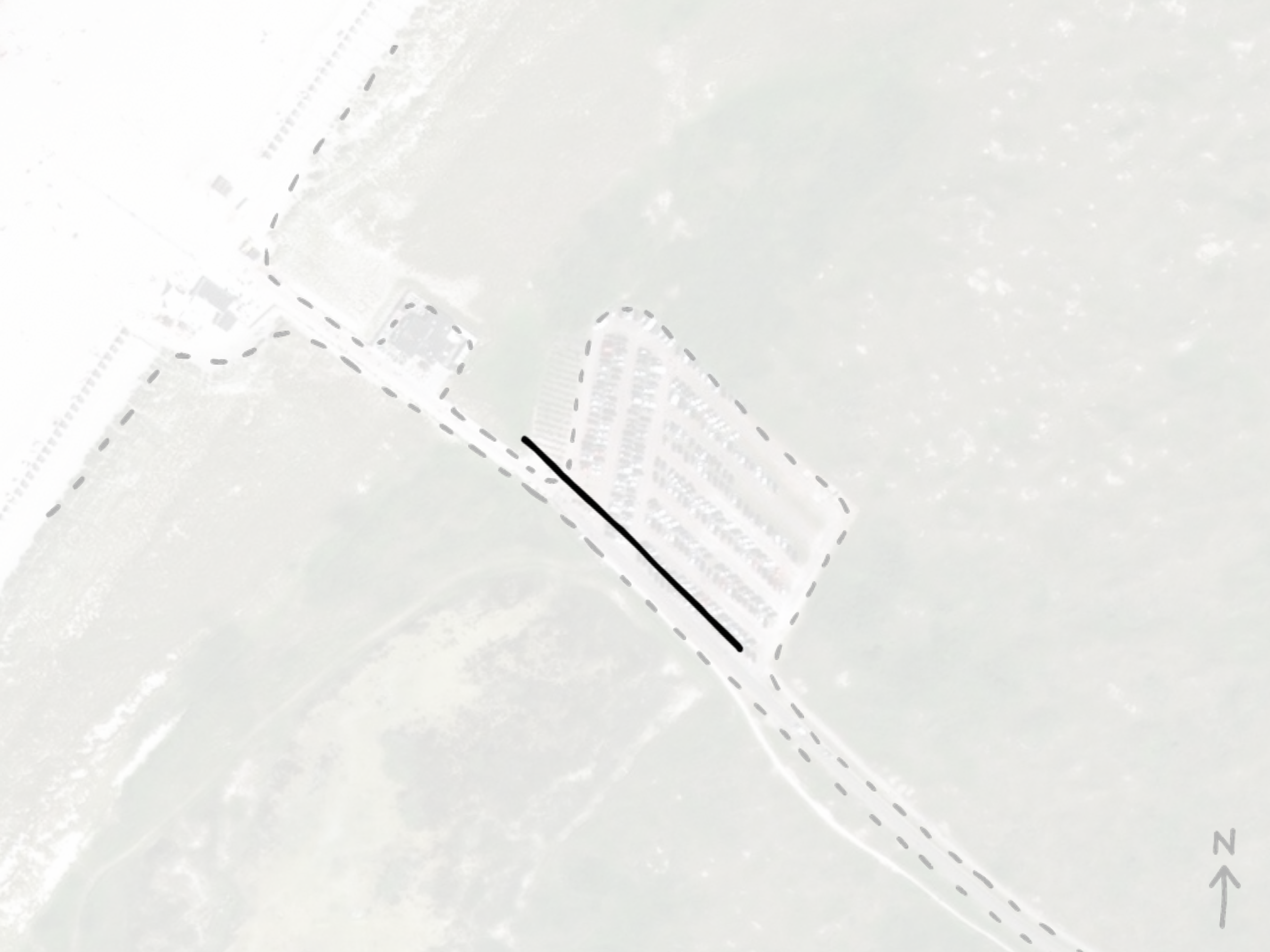
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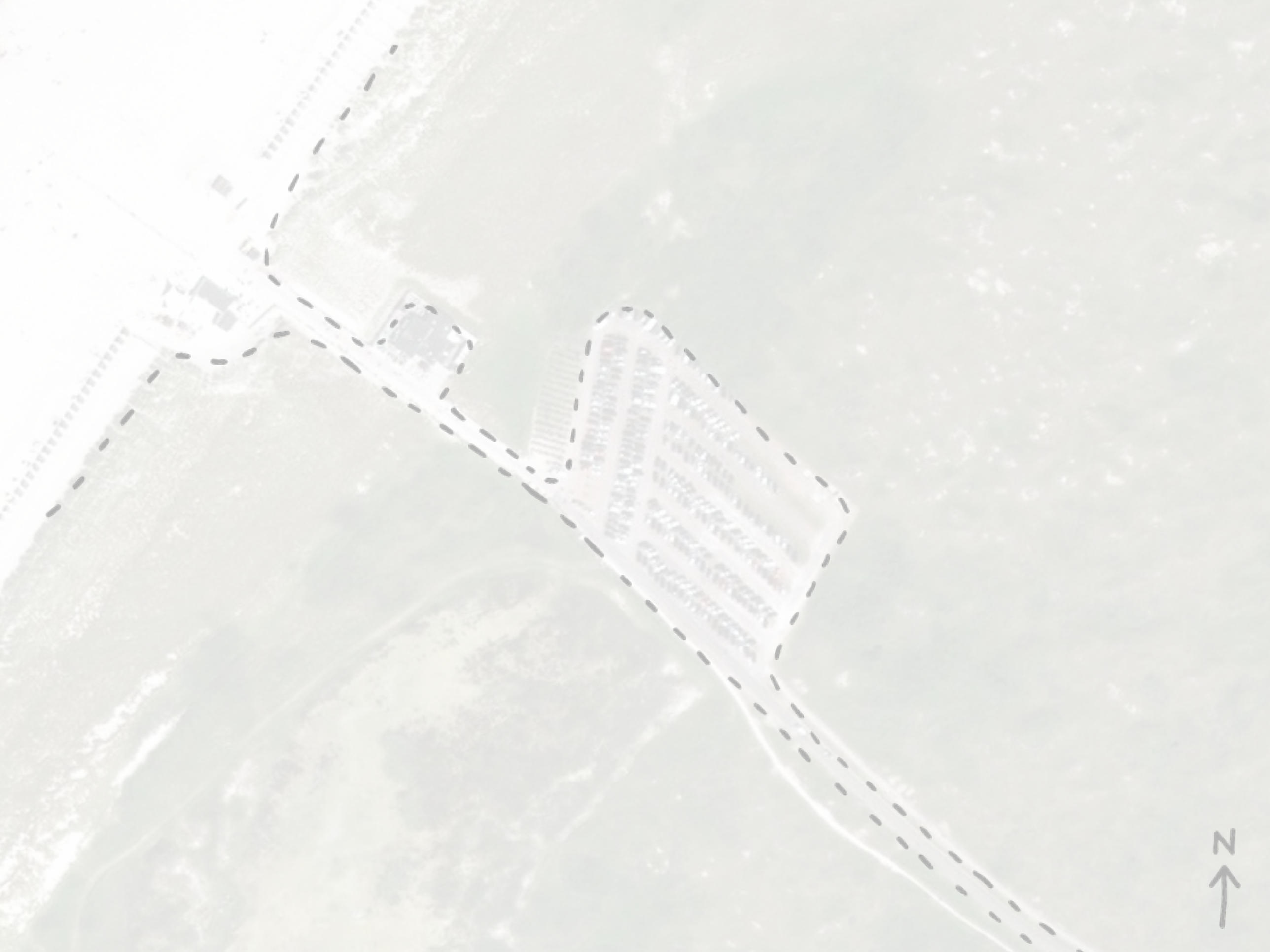
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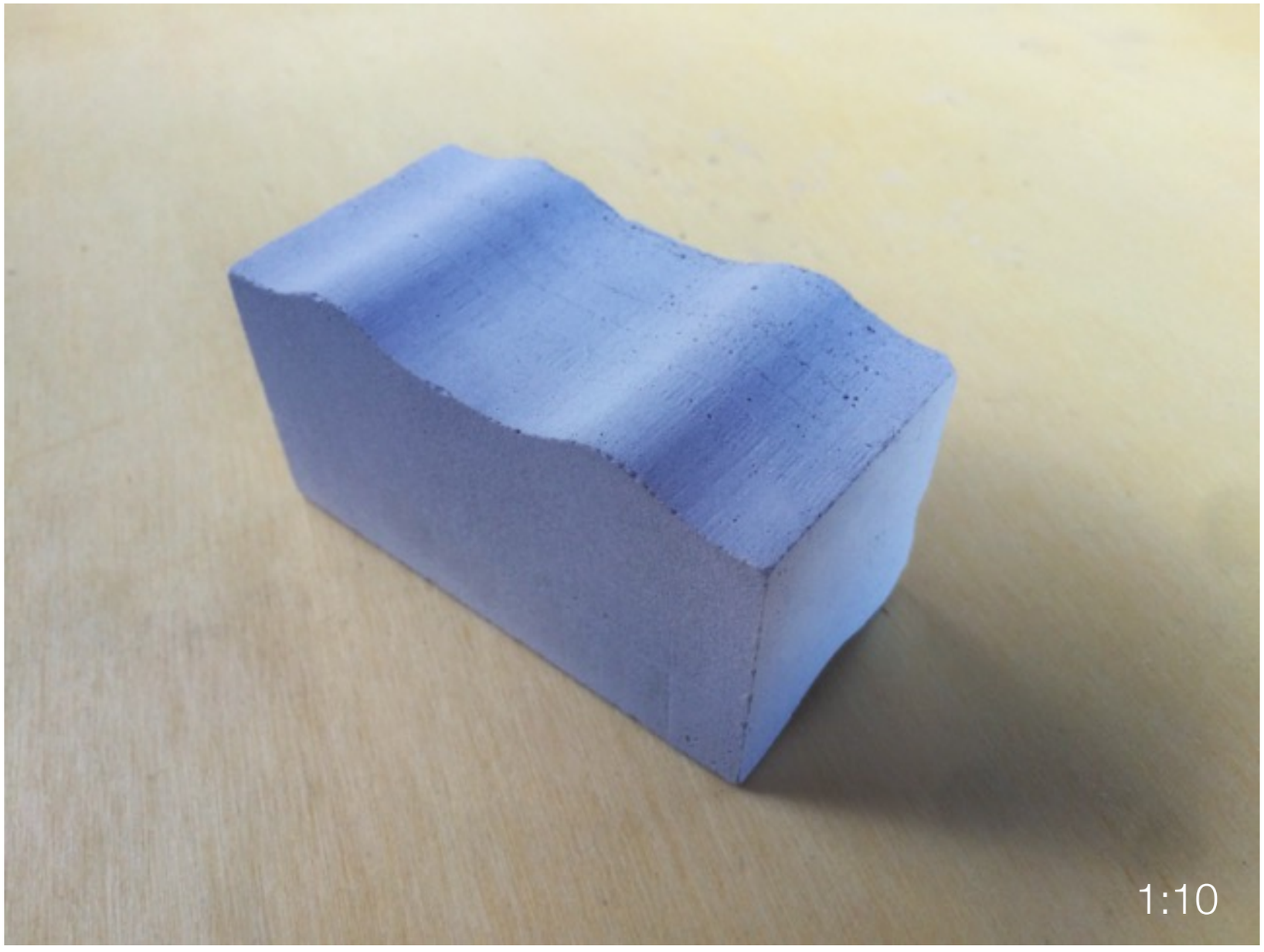
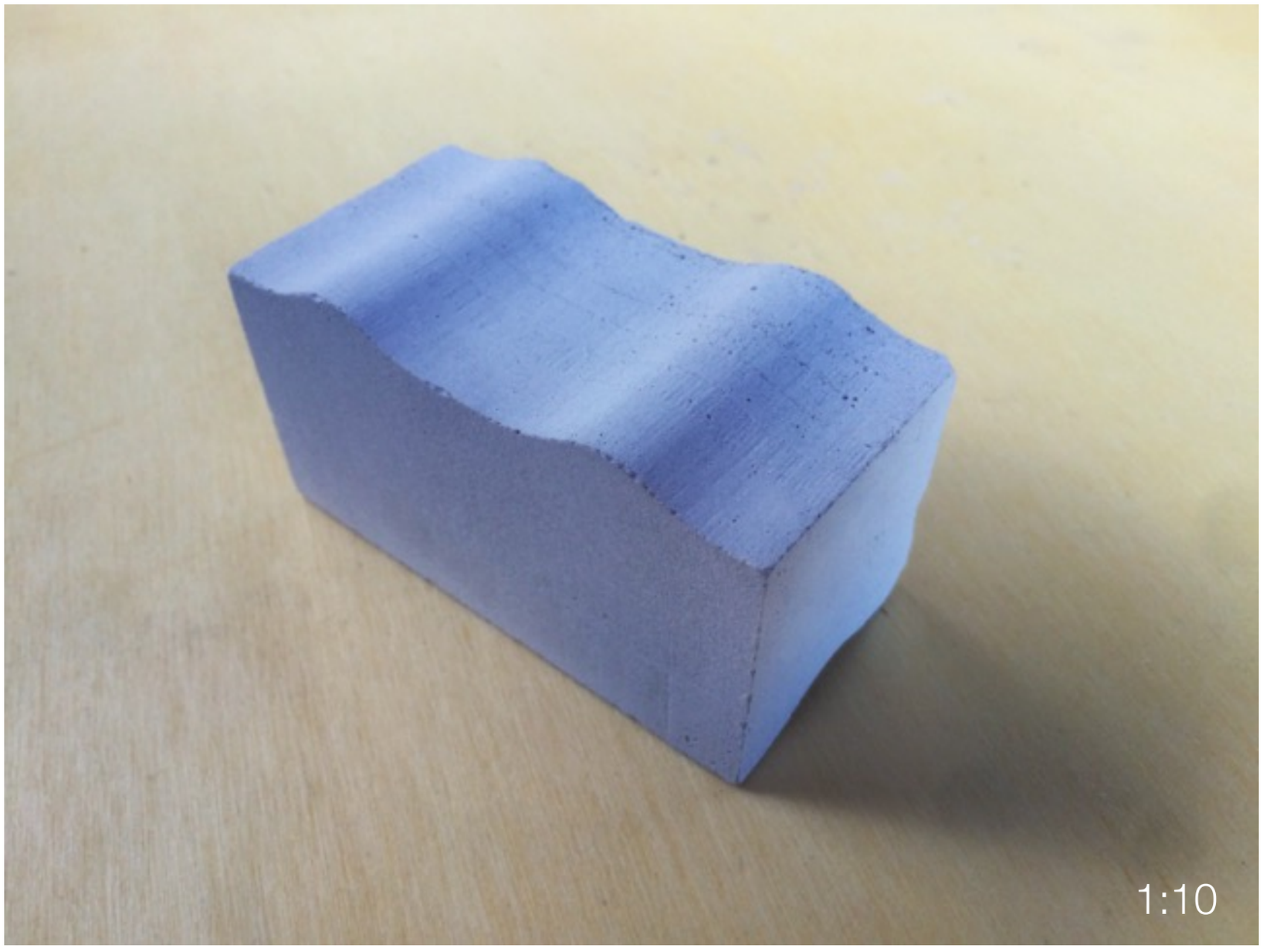
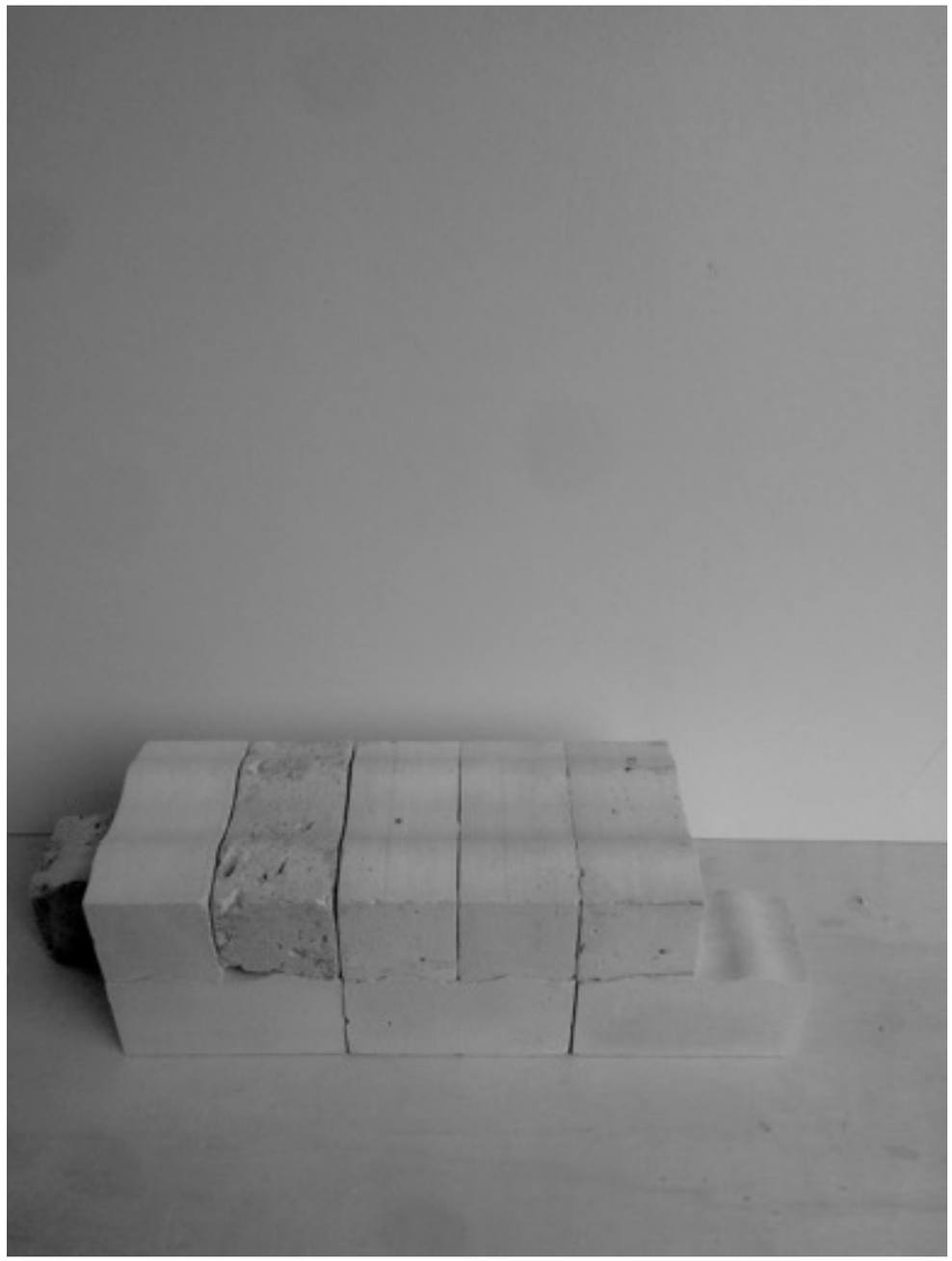
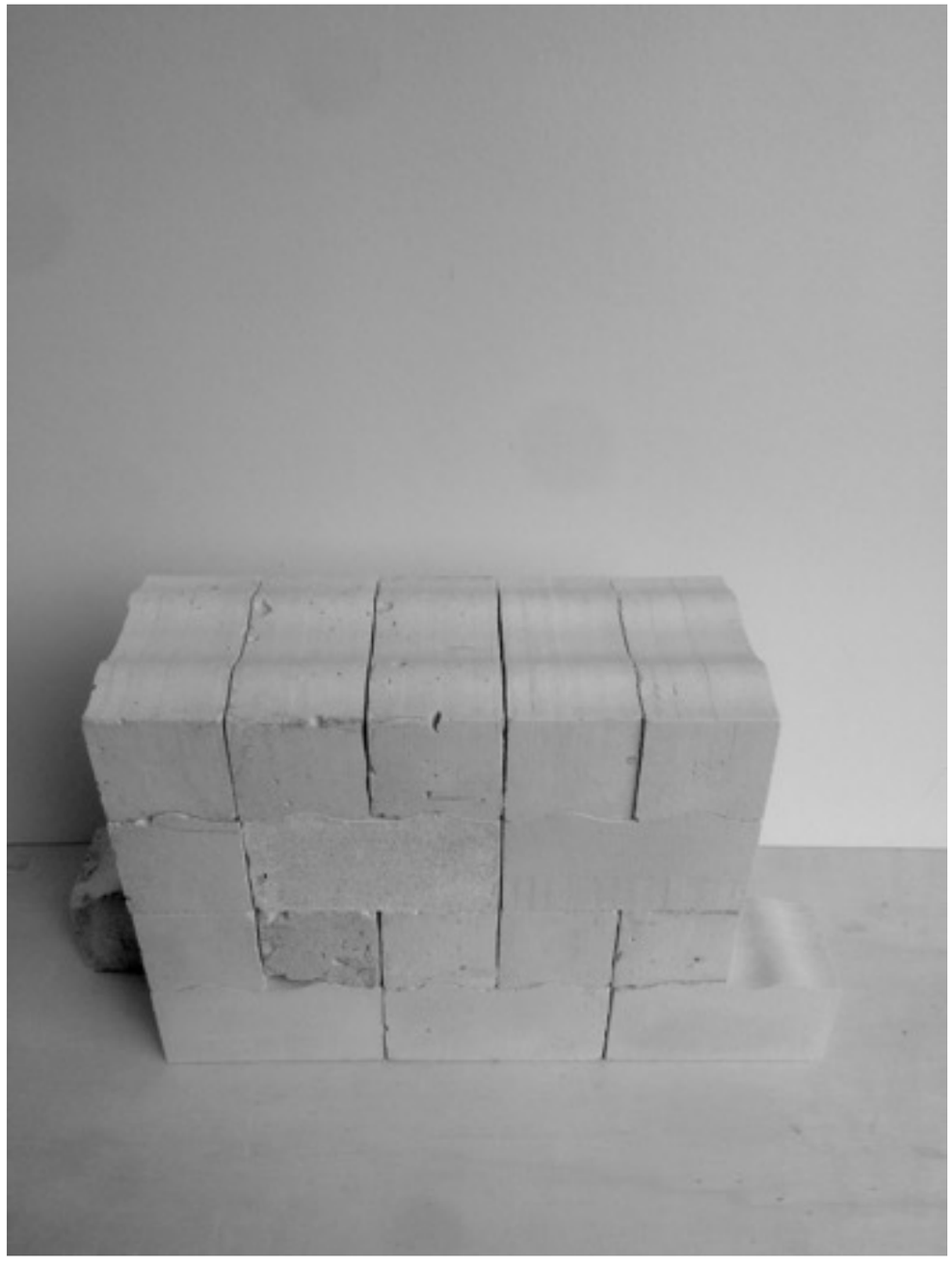
sand & shells

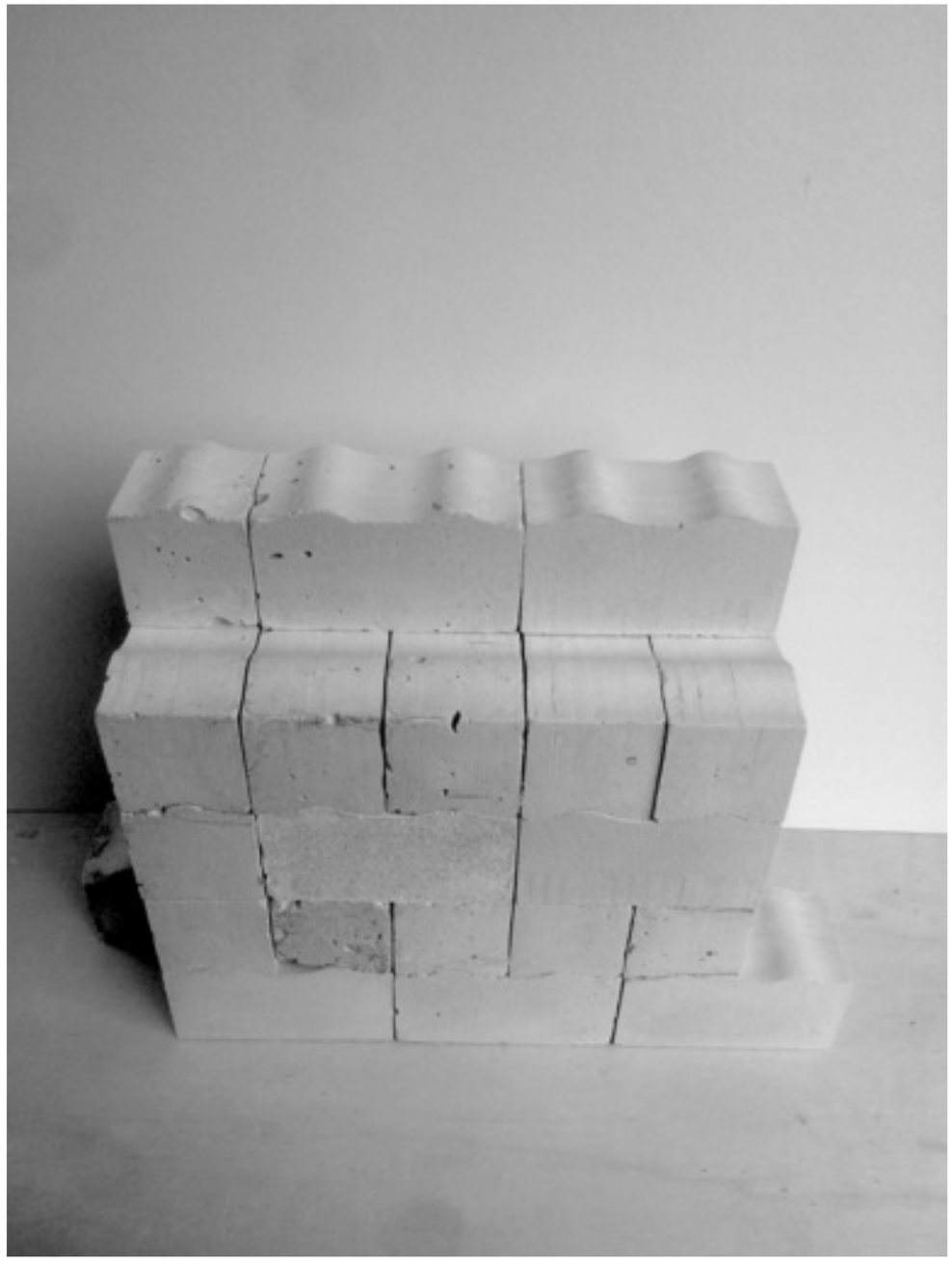

1:10



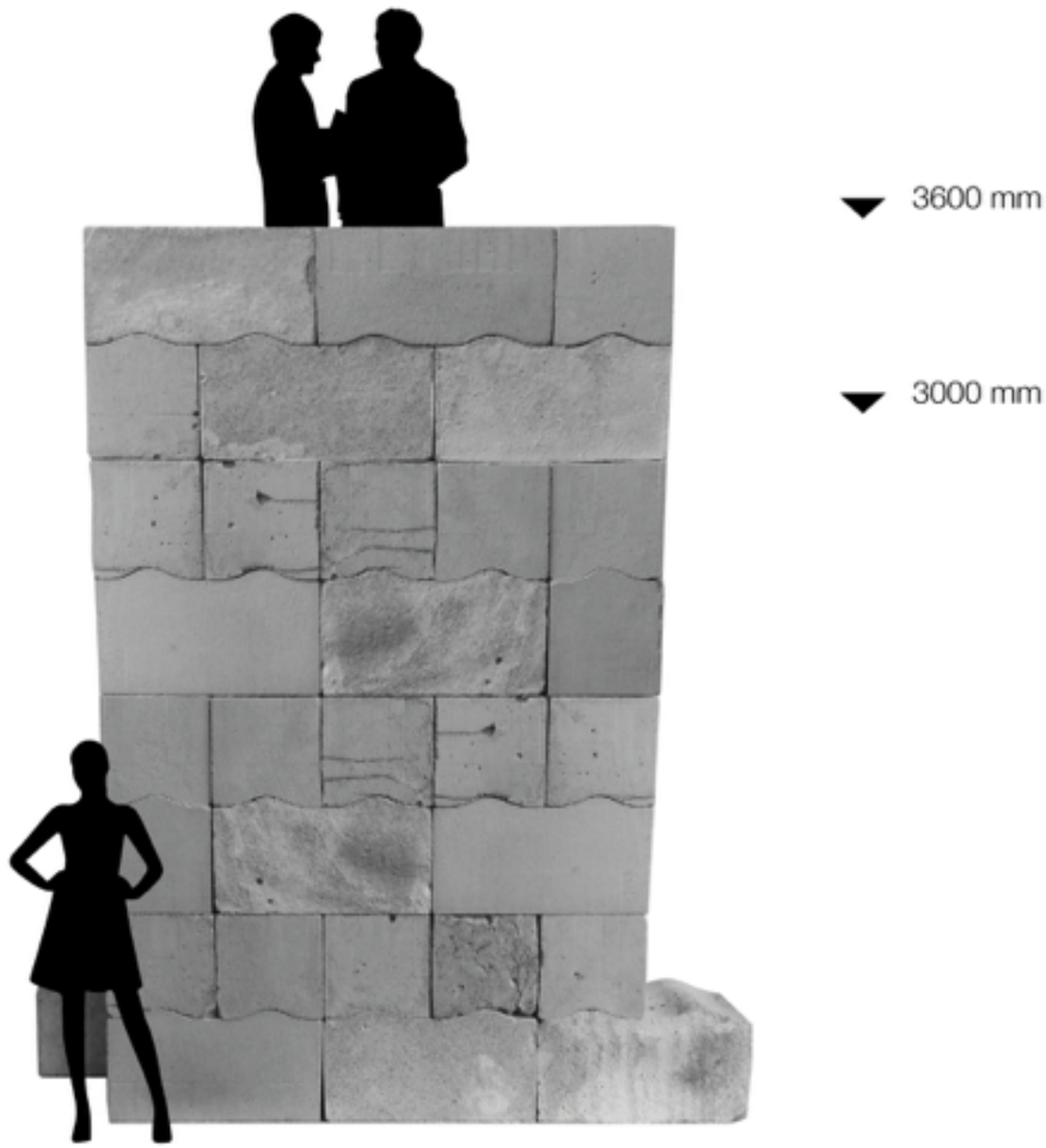
90 x 45 x 45 cm





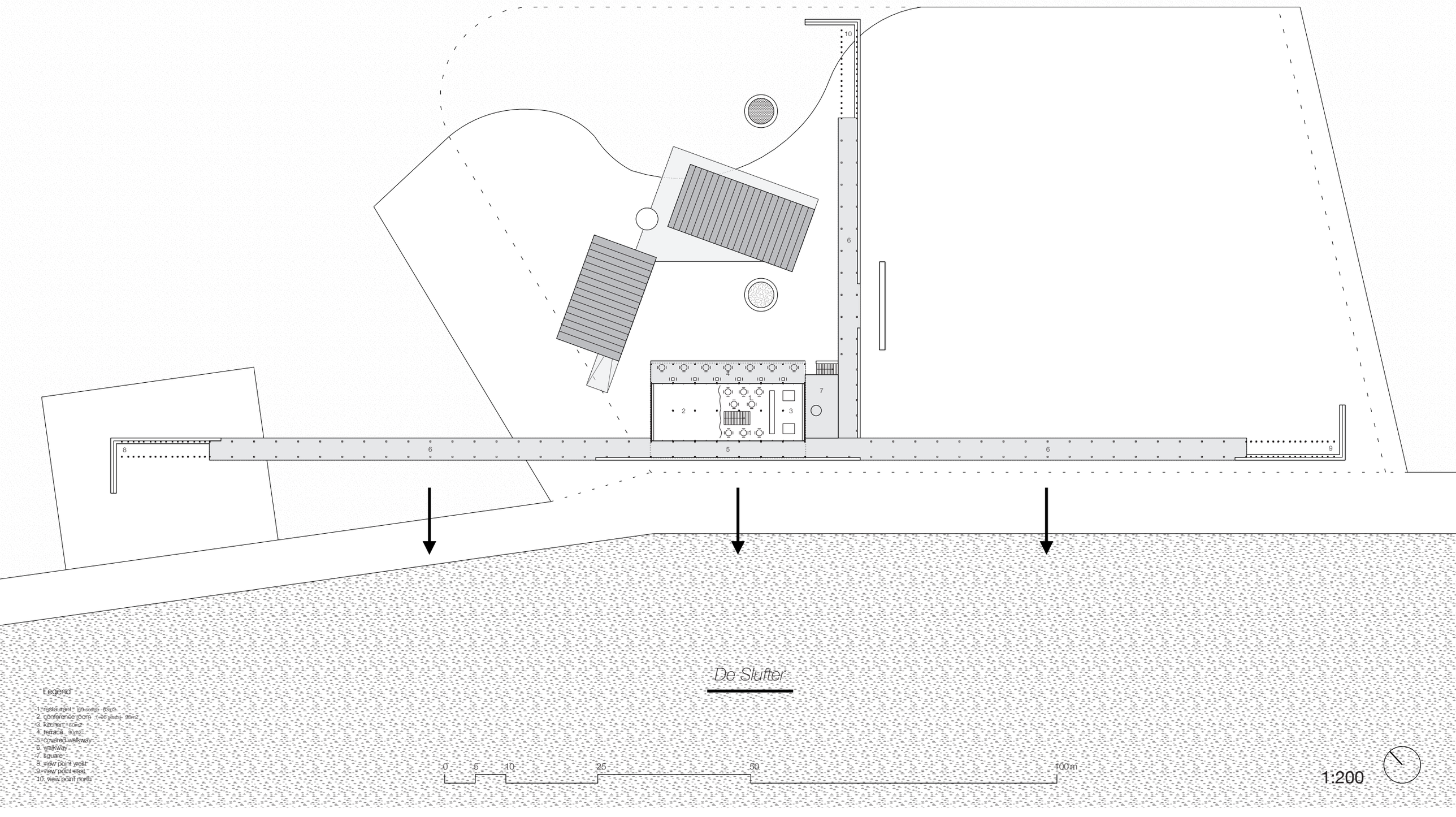


3600 mm

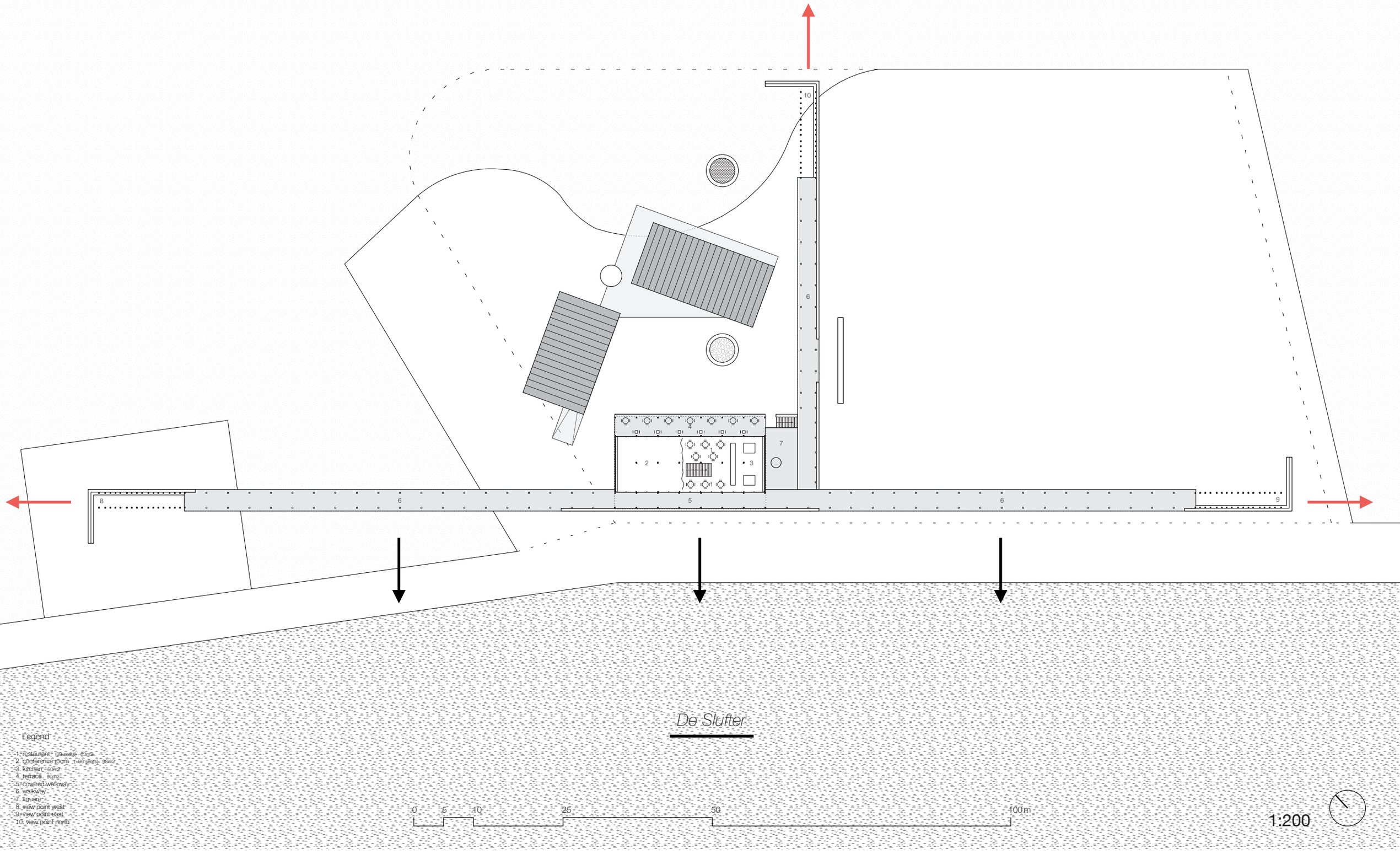

3600 mm
3000 mm

Plan +1

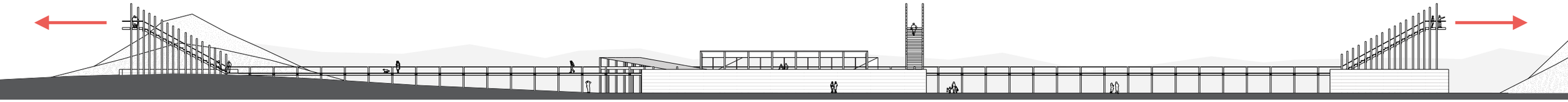
Nationaal Park Duinen van Texel



Plan +1


Nationaal Park Duinen van Texel
De Slufter
Legend
1. restaurant (69 seats) 63m2
2. conference room (+96 seats) 98m2
3. kitchen 60m2
4. terrace 90m2
5. covered walkway
6. walkway
7. square
8. view point west
9. view point east
10. view point north
0
5
10
25
50
100 m
1:200

South-West Elevation



North Sea
Lighthouse
Dunes
Beach
De Cocksdorp
De Slufter
Wet dune valley
Village
Polder

North Sea
Lighthouse
Dunes
Beach
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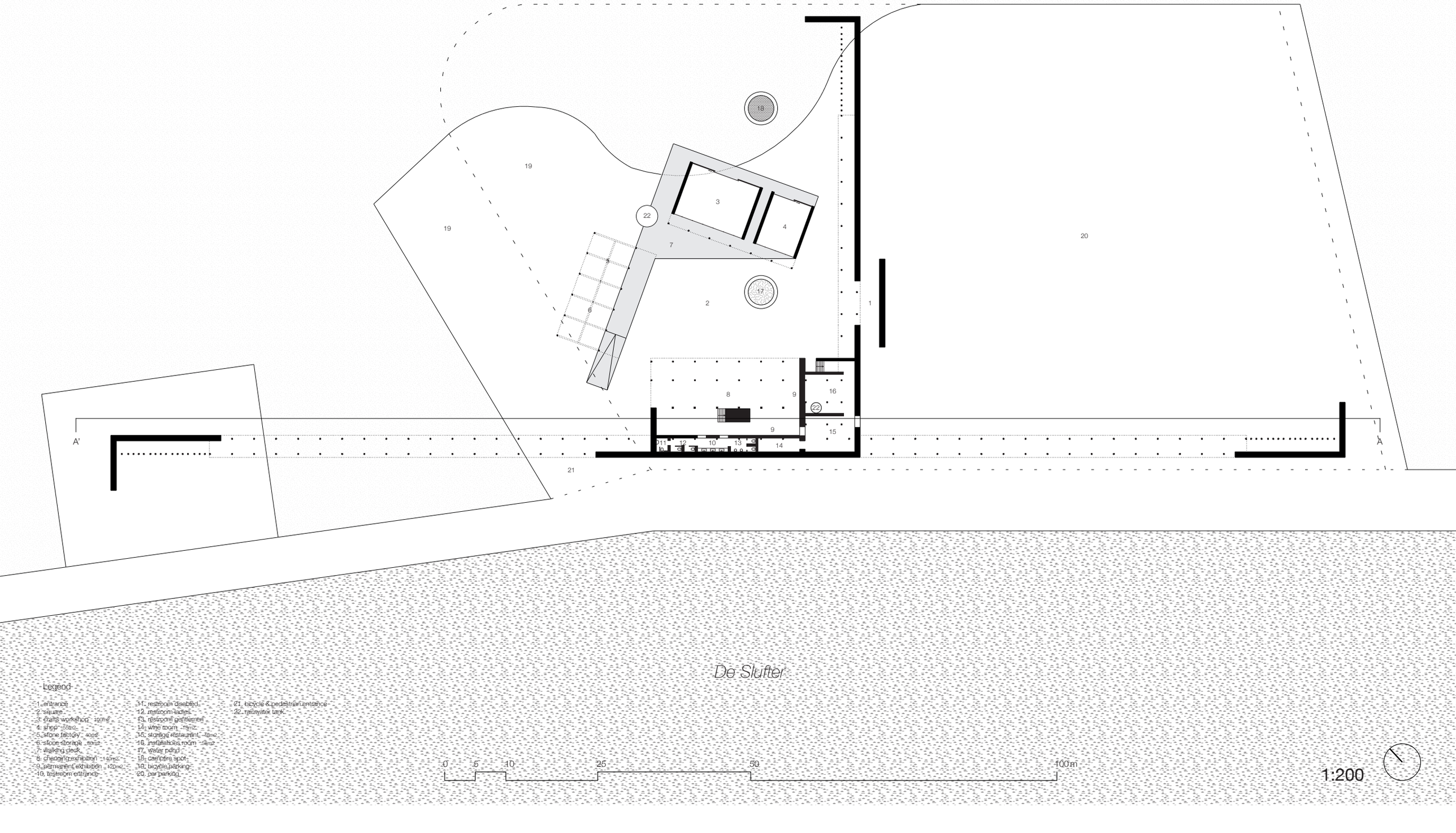
Polder

Plan +0

Nationaal Park Duinen van Texel



De Slufter

Legend

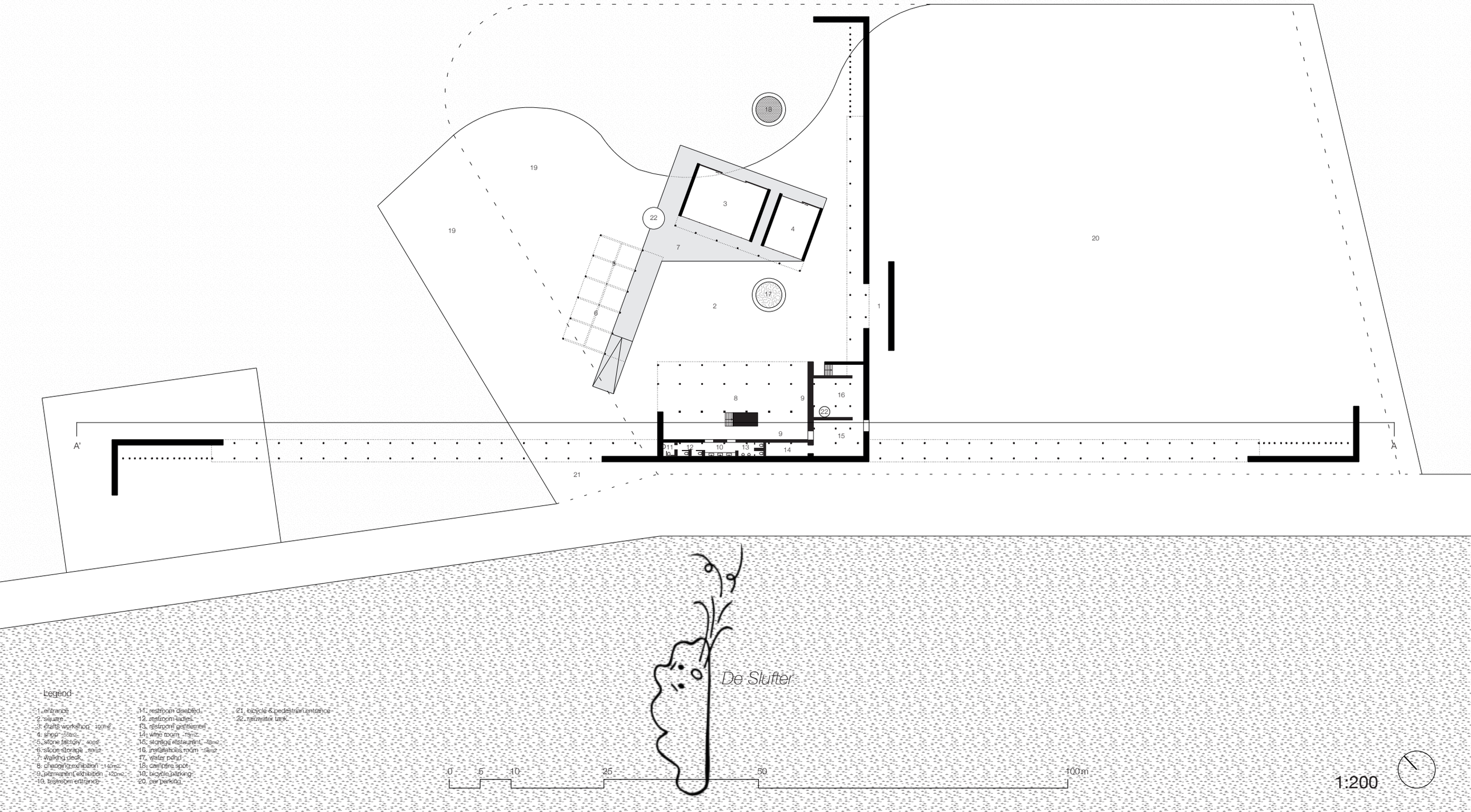
1. entrance
2. square
3. crafts workshop 100m2
4. shop 55m2
5. stone factory 40m2
6. stone storage 80m2
7. walking deck
8. changing exhibition 140m2
9. permanent exhibition 120m2
10. restroom entrance
11. restroom disabled
12. restroom ladies
13. restroom gentlemen
14. wine room 15m2
15. storage restaurant 48m2
16. installations room 48m2
17. water pond
18. campfire spot
19. bicycle parking
20. car parking
21. bicycle & pedestrian entrance
22. rainwater tank

0 5 10 25 50 100 m

1:200

Plan +0

Nationaal Park Duinen van Texel



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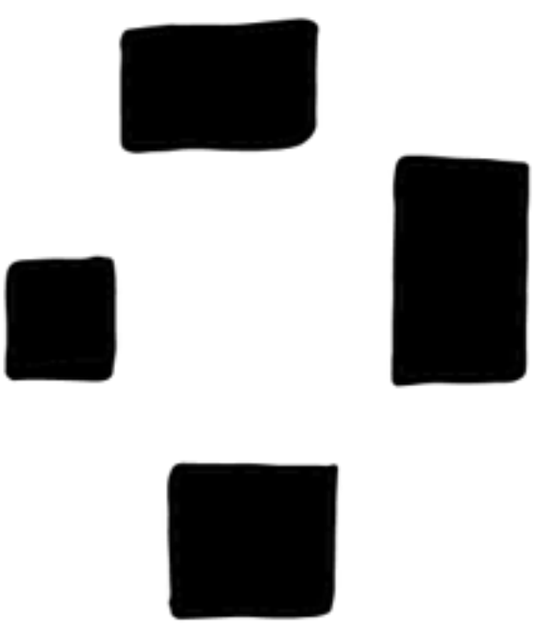
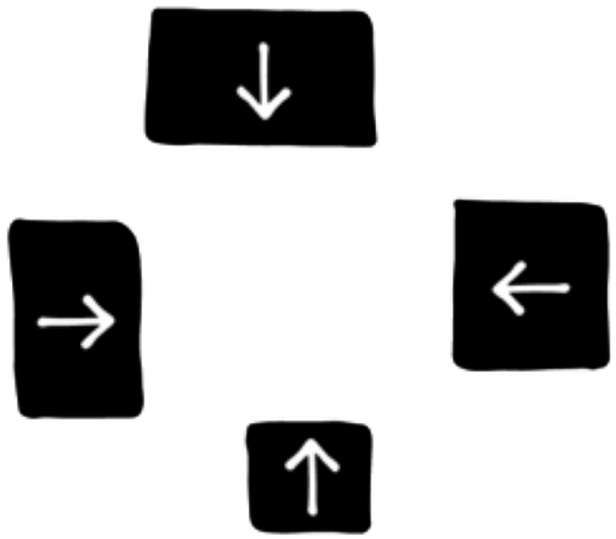
the Settlement

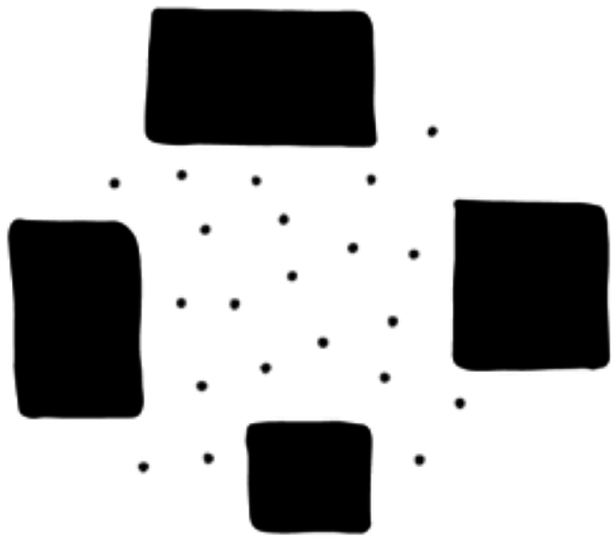
the intimate

the Settlement

the Settlement







Xingu village, Brasil

Wae village, Indonesia

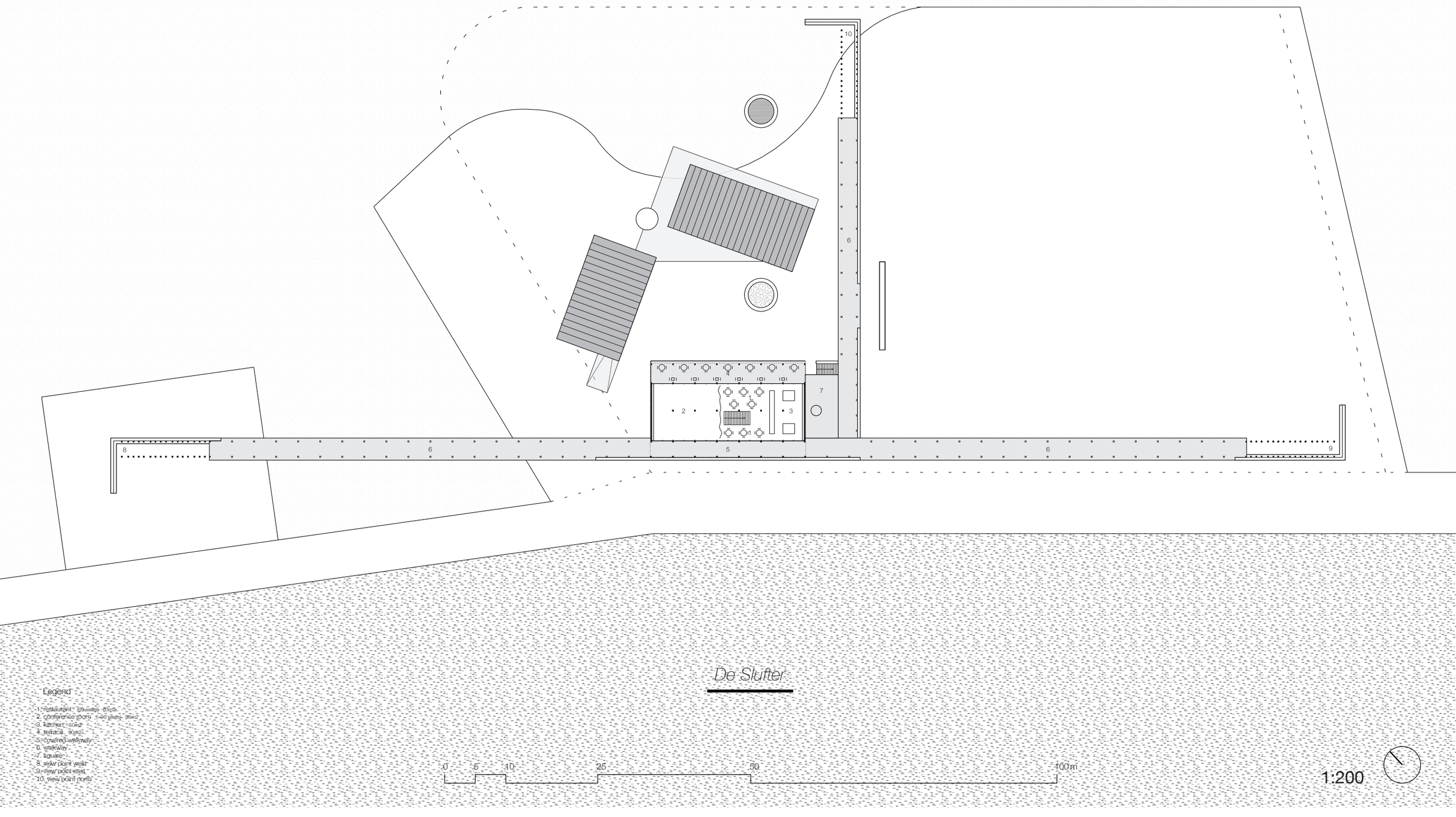
Hoeve, Limburg

N

N

Plan +1

Nationaal Park Duinen van Texel



De Slufter

Legend

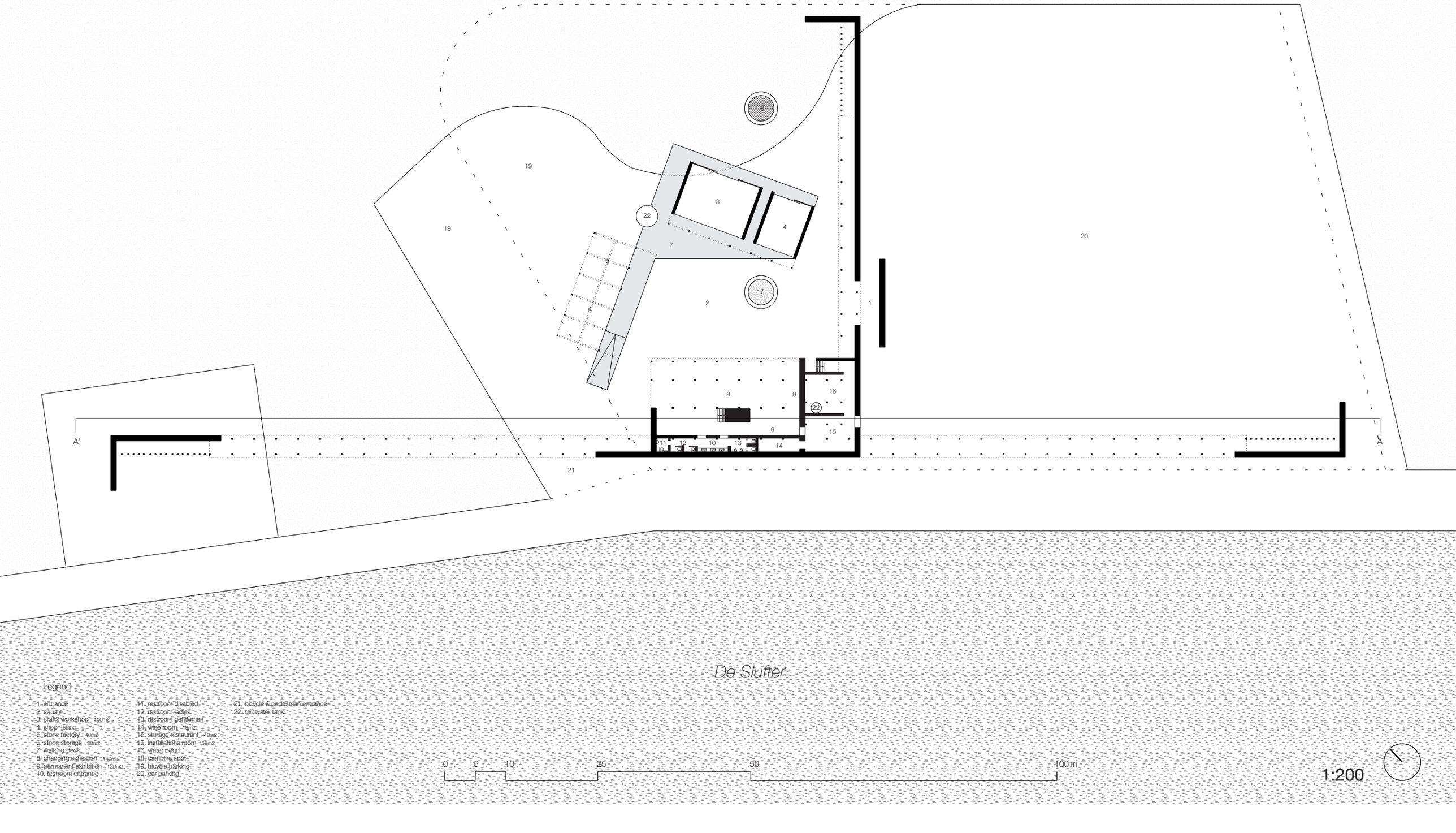
1. restaurant - (99 seats) - 83m2
2. conference room - (+96 seats) - 96m2
3. kitchen - 60m2
4. terrace - 90m2
5. covered walkway
6. walkway
7. square
8. view point west
9. view point east
10. view point north

0 5 10 25 50 100m

1:200

Plan +0

Nationaal Park Duinen van Texel



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0 5 10 25 50 100 m

1:200

de Kasteleín

the intimate

the intimate

- bla bla

towards the P5

P4 > P5

P4 > P5

- Work on 1:5 details; improve existing & determine details to be made (Mauro)

P4 > P5

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- Consider fire prevention / fire safety in design

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- Work on continuity & completeness in story and presentation

P4 > P5

- Work on 1:5 details; improve existing & determine details to be made (Mauro)

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- Work on continuity & completeness in story and presentation

- Finish models and experiments

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- Create impressions of key moments / scenes of the building

- Work on continuity & completeness in story and presentation

- Finish models and experiments

- Enjoy the last chapter of my studies :)

thank you

2 Fascination

2 Climate

“Old buildings”

“Old buildings”

How they work

“Old buildings”

How they work

≠ Representative architecture

Opera, Paris

“Old buildings”

How they work

≠ Representative architecture

= Vernacular architecture / local building culture

Opera, Paris

Minka house, Japan

“Old buildings”

How they work

≠ Representative architecture

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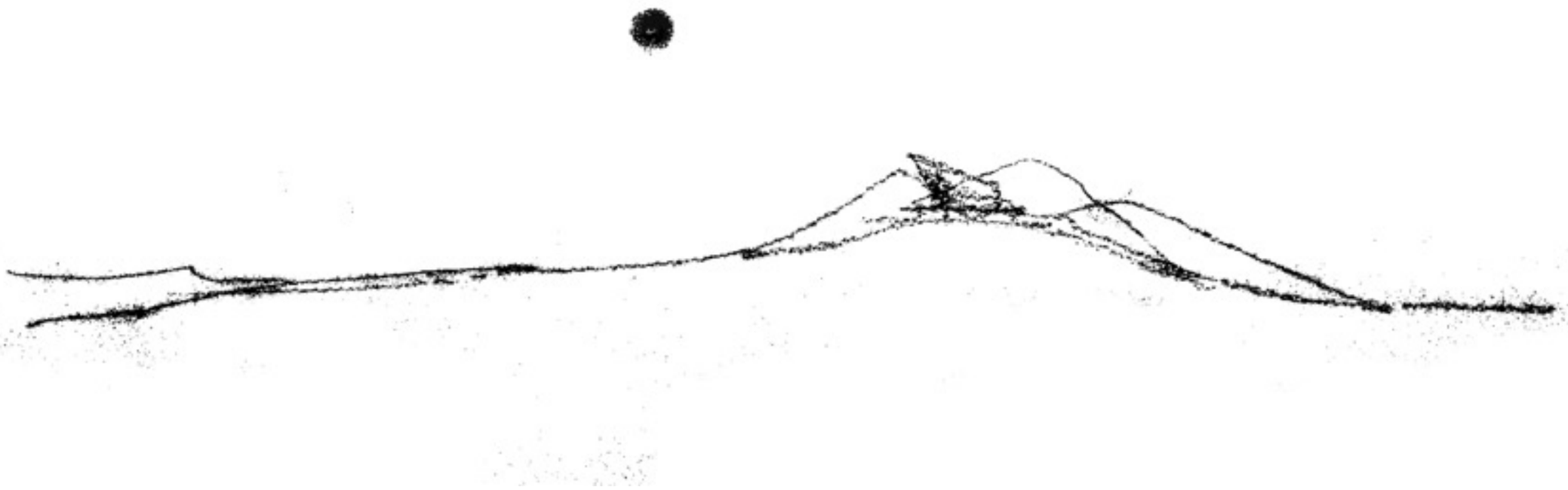
Opera, Paris

Iglo, North Pole

Planet Texel …

Planet Texel …



Planet Texel …

Planet Texel …

What kind of architecture suits the project's vision?

Planet Texel …

What kind of architecture suits the project's vision?

Where in Texel's dune landscape should it be?

Massive exterior wall - Spain - Passive airco

captures night temperatures to keep spaces cool during hot day

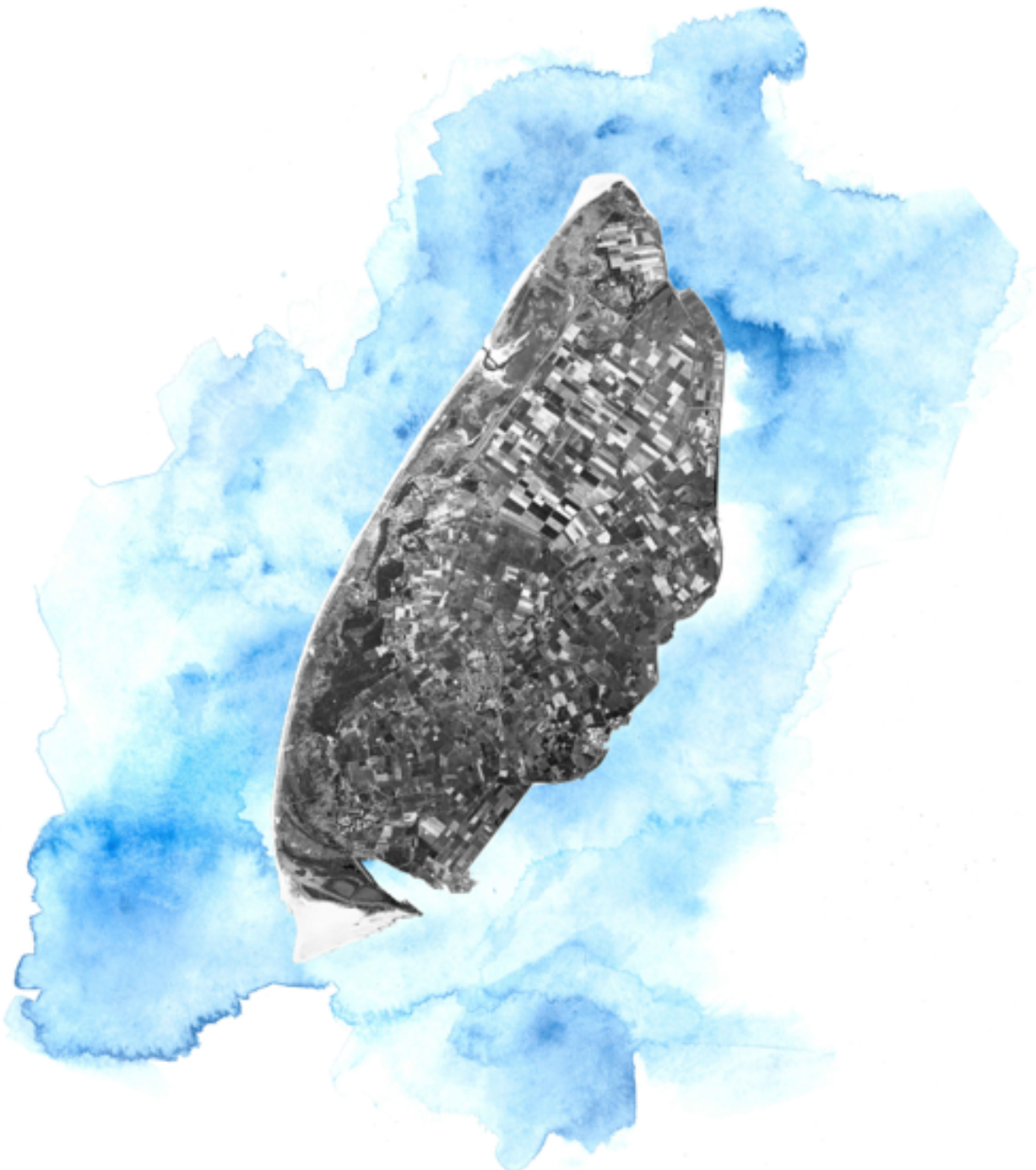
Low pitched roofs - the Alps - Thermal insulation

Gentle slope collects layer of snow which insulates the house

Willow lane - Holland - Adaptive sun screen & wind protection

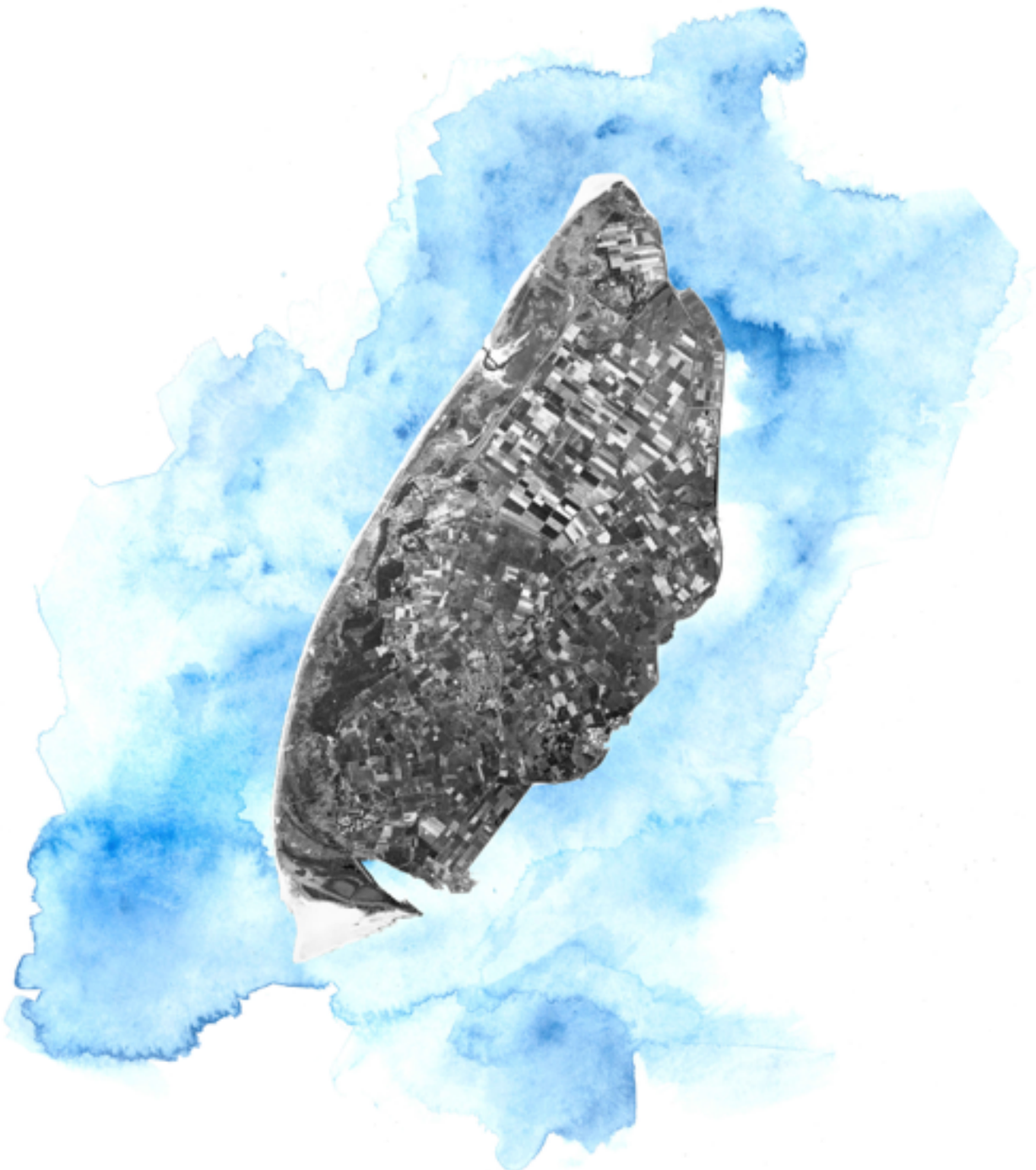
Trees provide shade in summer and let light into the house in winter + block wind

Texel’s 2020 Vision



Texel's 2020 Vision

- Self-sufficient by 2020



Texel's 2020 Vision

- *Self-sufficient by 2020*
- *Laboratory for sustainable experiments*

Texel's 2020 Vision

- *Self-sufficient by 2020*
- *Laboratory for sustainable experiments*

Realized

Texel's 2020 Vision

- *Self-sufficient by 2020*
- *Laboratory for sustainable experiments*

Realized

- A cooperative energy company for renewables, *TexelEnergie* (2007)

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- All public lighting to LED (2016)
- A *plan* to construct wind turbines around the island

100km

100km

Samsø

Samsø

- Until 1997: Oil & coals for electricity + heating

Samsø

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- 1997 Government competition: model renewable energy community

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- since 2004, 100% energy self-sufficient & 100% CO2 neutral

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- 11 onshore wind turbines (1.0 MW)

Samsø

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Samsø

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Samsø

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- 11 onshore wind turbines (1.0 MW)

- 10 offshore wind turbines (2.3MW)

- 3 straw heating plants

- 1 solar and wood chip heating plant

Samsø

Prof. Søren Hermansen

Samsø

Prof. Søren Hermansen

Samsø

- Community behind the plan

Prof. Søren Hermansen

Samsø

- Community behind the plan

Prof. Søren Hermansen

Samsø

- Community behind the plan

Søren Hermansen
+ Tor Nørretranders

commonities

= com-
mons
+
commu-
nities

Samsø Energiakademi

Prof. Søren Hermansen

Samsø

- Community behind the plan

1. Why? to build *Commonities*
   > become independent

Søren Hermansen
+ Tor Nørretranders

commonities

=
com-
mons
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commu-
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Samsø Energiakademi

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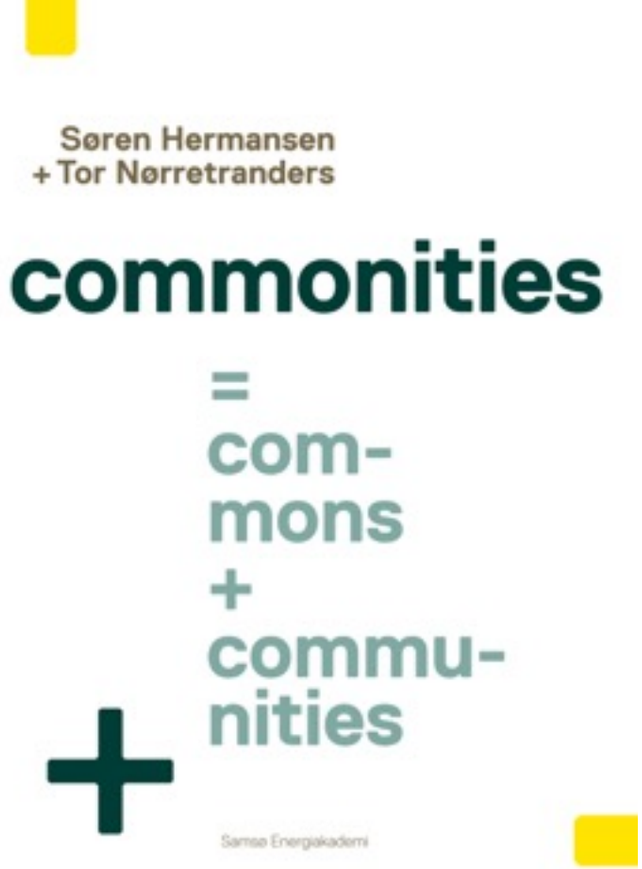

Samsø

- Community behind the plan

1. Why? to build *Commonities*
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2. How? Good conversations
   > the *Campfire*

Prof. Søren Hermansen

Samsø

- Community behind the plan

1. Why? to build *Commonities*
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Texel

Samsø

Texel

Similarities

Samsø

Texel

Similarities

- Both are islands

Samsø

Texel

Similarities

Samsø

- Both are islands

    * clearly defined community

Texel

Similarities

- Both are islands

    * clearly defined community

    * small scale > achievable

Samsø

Texel

Similarities

Samsø

- Both are islands

    * clearly defined community

    * small scale > achievable

    * islanders mentality

Texel

Similarities

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Differences

Samsø

Texel

14k

Similarities

- Both are islands

    * clearly defined community

    * small scale > achievable

    * islanders mentality

Differences

- Population

Samsø

4k

Texel

14k

800k

Similarities

- Both are islands

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Differences

- Population

- Visitors

Samsø

4k

170k

Texel

14k

800k

Similarities

- Both are islands

    * clearly defined community

    * small scale > achievable

    * islanders mentality

Differences

- Population

- Visitors

- Inspirator & Vision

Samsø

4k

170k

Texel

Texel

Texel’s vision > Reality

Texel

Texel’s vision > Reality

Design a building

Texel

Texel's vision > Reality

Design a building

- *Campfire*
  discuss & develop vision

Texel

Texel's vision > Reality

Design a building

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- *Spread the word*
  showcase projects, inspire visitors

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Planet Texel

Planet
Texel

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  tell Texels story & inspire visitors

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  community build, owned & operated

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(Samsø lessons)

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- *Vernacular Approach*

(Samsø lessons)

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(Samsø lessons) and i add...

Texel's vision > Reality

Assignment: design a building

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  discuss & develop vision

- *Commonity*
  community build, owned & operated

- *Spread the word*
  tell Texels story & inspire visitors

- *Vernacular Approach*

(Samsø lessons) and i add...

- *Vernacular Approach*

How?

Sand & Shells

Sand & Shells

Wood

Sand & Shells

Wood

Wool

Sand & Shells

Wood

Wool

Plastic
washed ashore

17
Bewaakt strand
ECOMARE
16
Bleekers-vallei
MONNIKENWEG
RANDWEG
PLOEGPLANDERWEG
GRENSWEG
15
Bewaakt strand
46
WESTERSLAG
DE DENNEN
ROZENDIJK
14
15/8 - 1/3
Kampeersnol
trimbaan
BAKKENWEG
WESTERWEG
Wester-duinen
NATTEVLAKWEG
FONTEINSWEG
De Westen
KOOIWEG
Nattevlak
13
Noord-vlak
JAN AYESLAG
JAN AYEWEG
05
Bewaakt strand
Pieter Rozenvlak
12
Bollekamer
OUDE WEG
11
70

3 Design

3 Design

3 Design

Structure

1 Context

2 Fascination

3 Problem statement

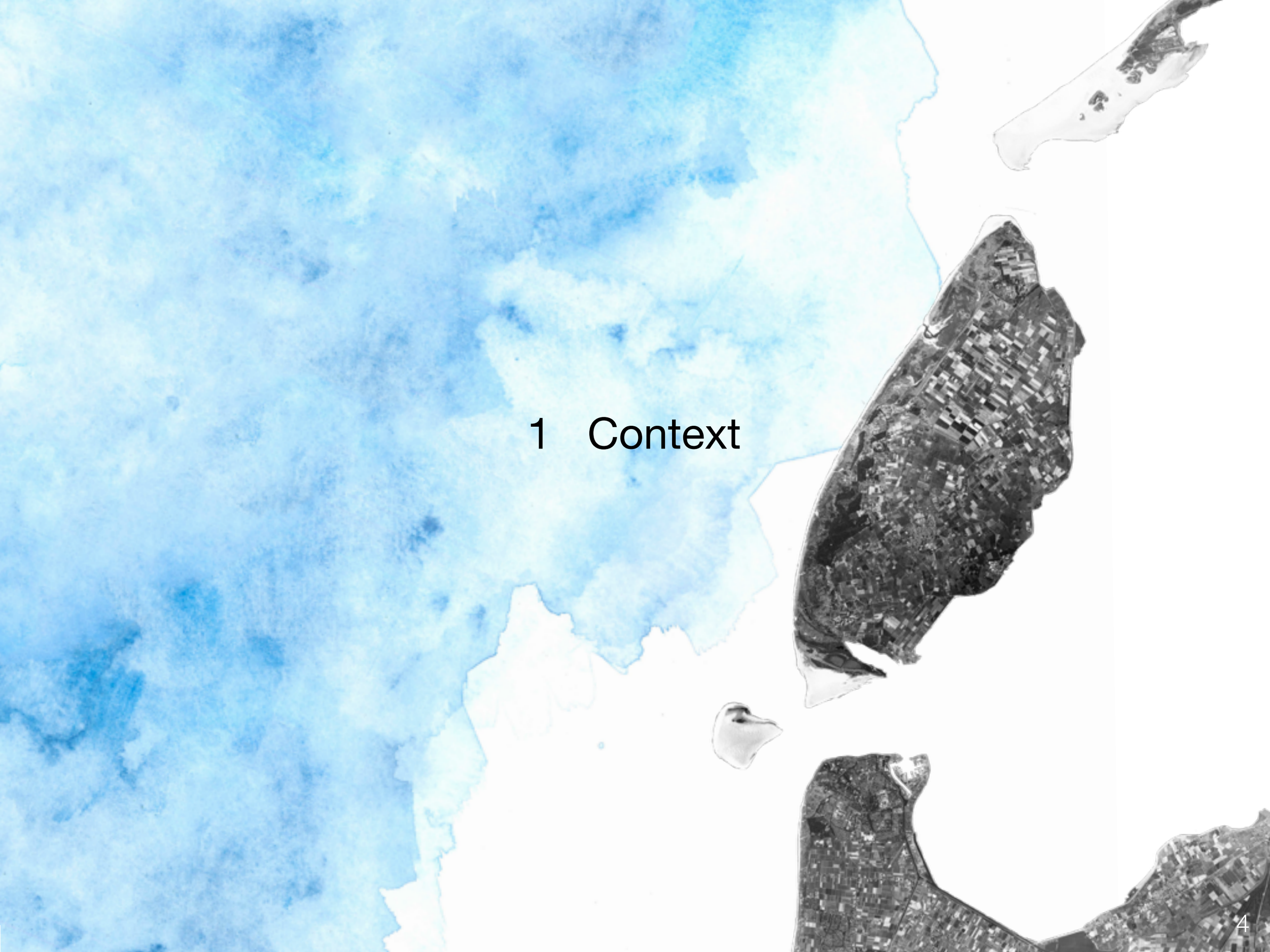
4 Research

5 Design

Graduation presentation

Max van den Berg

tutors

Roel van de Pas	*Architecture*
Mauro Parravicini	*Building Technology*
Carolin Bellstedt	*Research*
Roberto Cavallo	*University Board*

1 Context