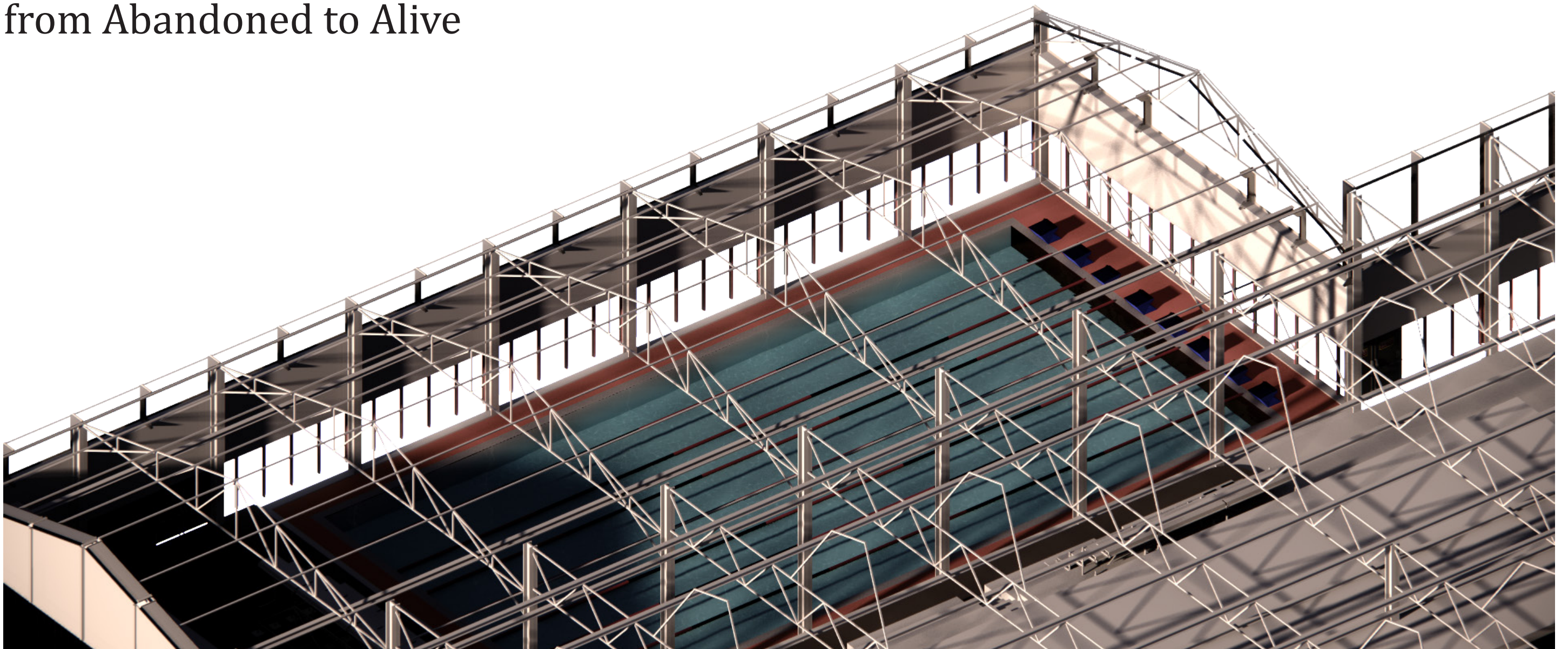
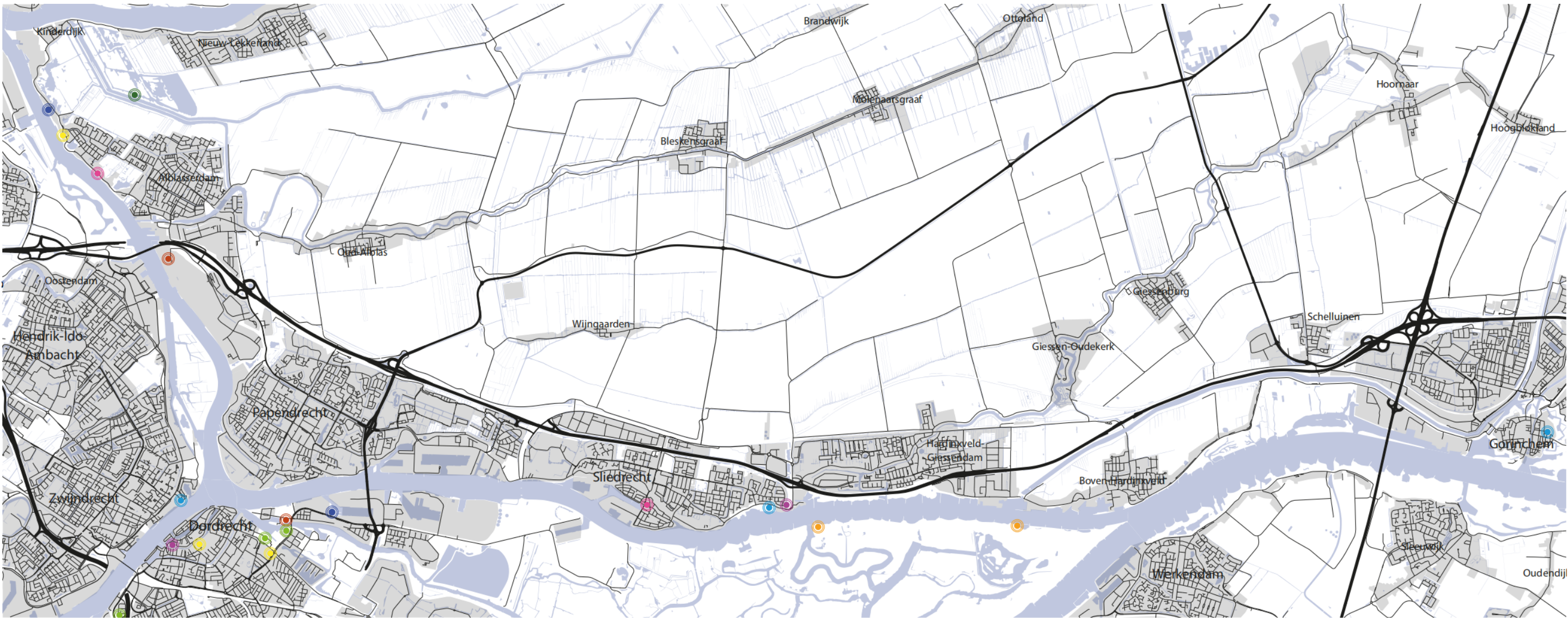


Regeneration of Value:
Journey of a Waterfront Industrial Heritage
from Abandoned to Alive



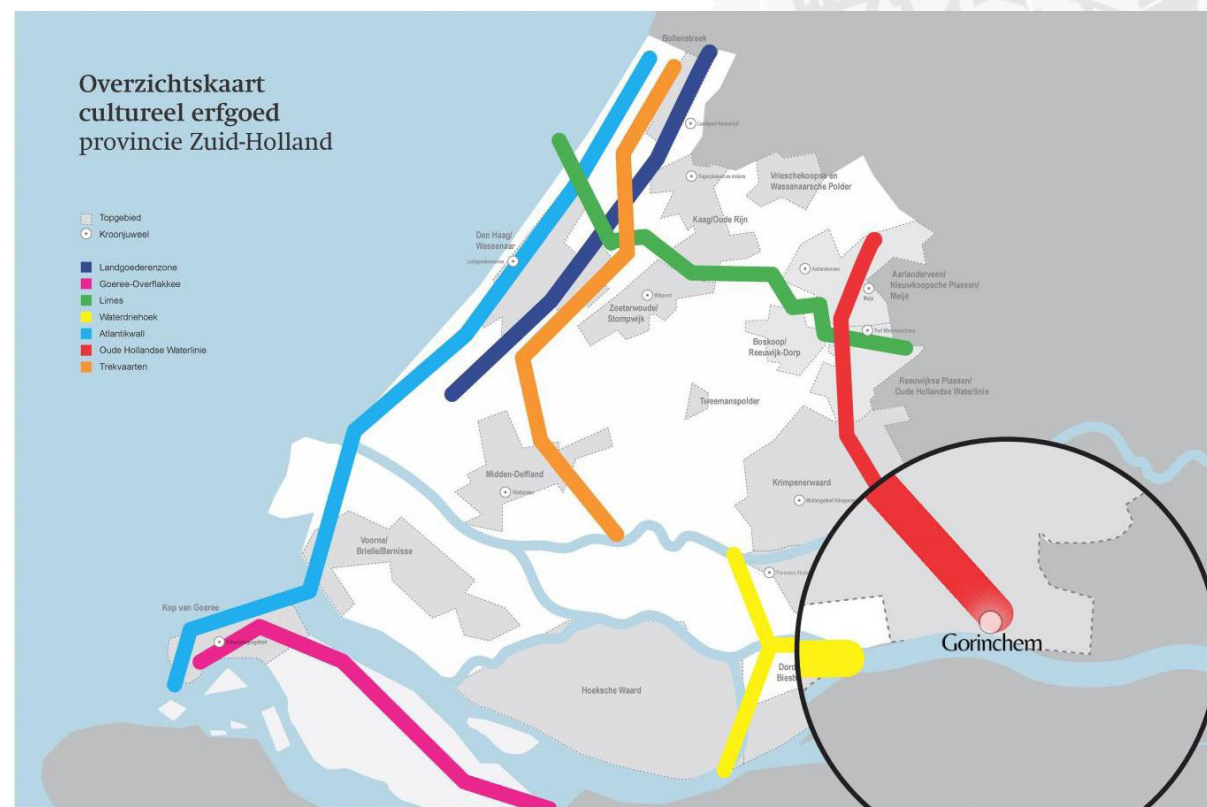
Water Sports Center Design in Gorinchem ©Xiaoling Wei (2025)

the "Waterdriehoek"



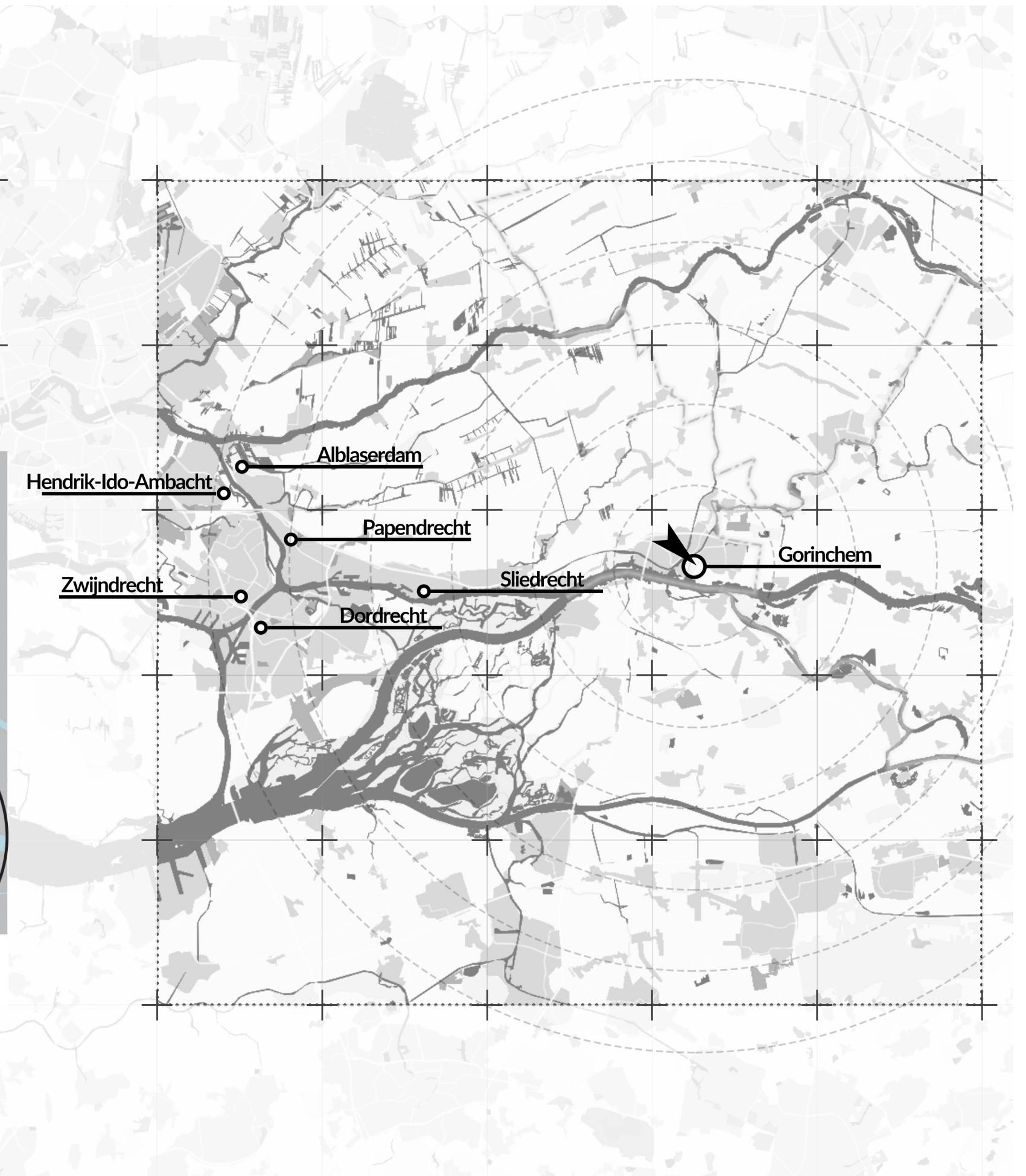
- dyke house
- barn
- factory
- offices
- religious building
- shipyard
- watertower
- energy house
- mill

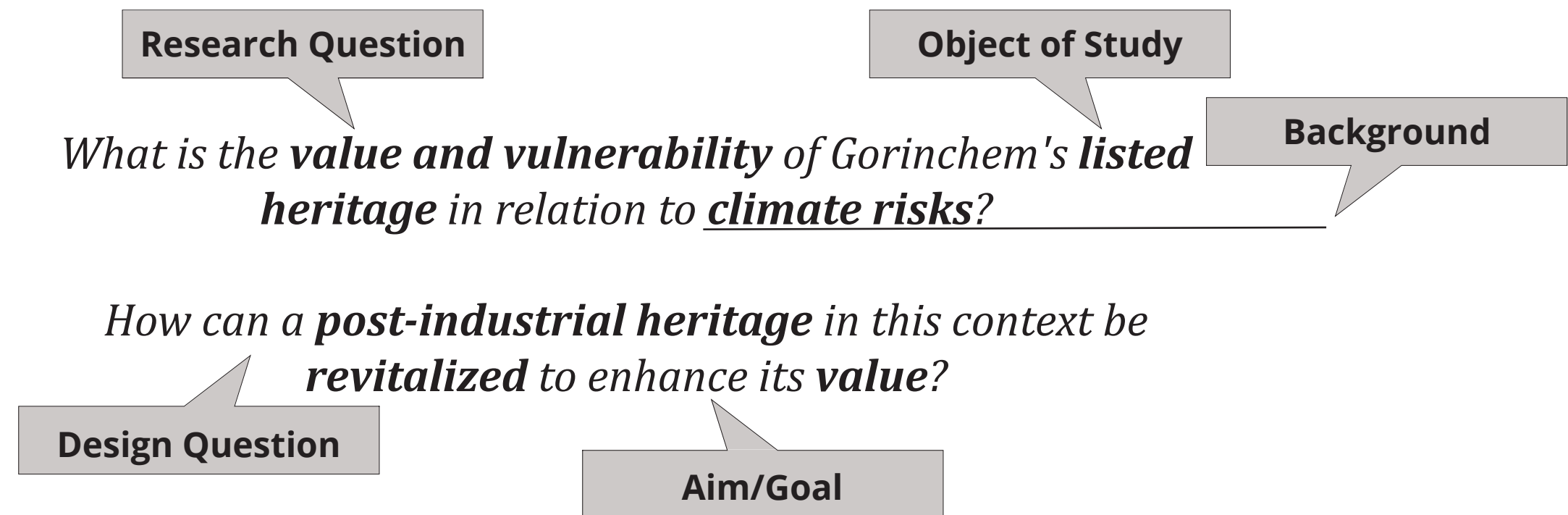
Waterdriehoek & Gorinchem



<https://www.cultureelerfgoed.nl/onderwerpen/praktijkvoorbeelden/overzicht-praktijkvoorbeelden/waterdriehoek-vergroot-bekendheid-en-bevordert-beleefbaarheid>

Oude Hollandse Waterlinie
Waterdriehoek





Method from Literature Review: Climate-vulnerability and Value Assessment

A Qualitative Approach - Method by Brokerhof et al. (2023)

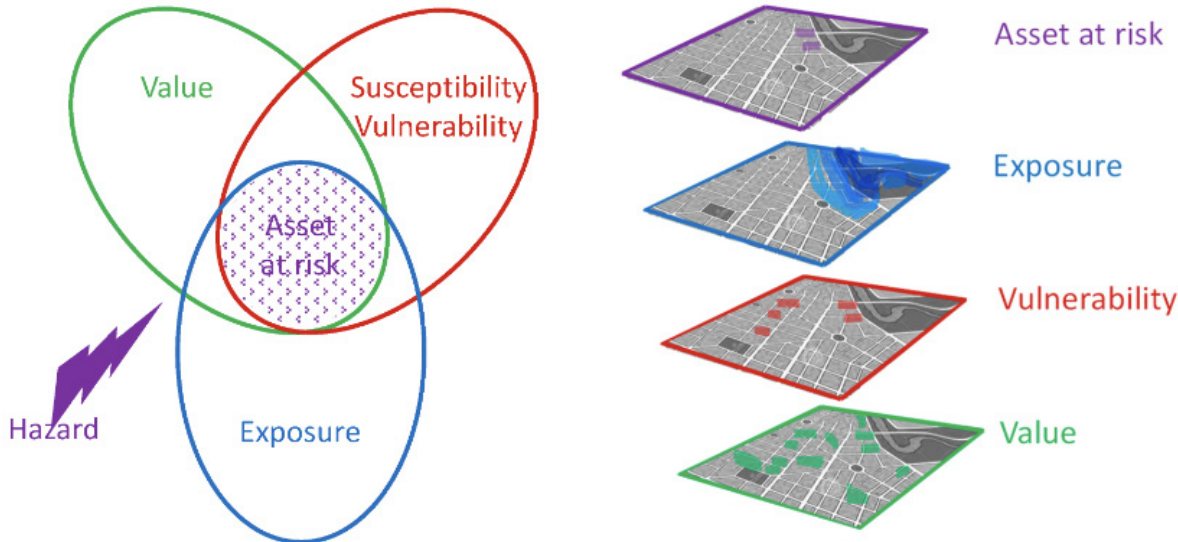


Fig. 2.1.1. Principle of the Quick Flood Risk Scan Method. ©Brokerhof et al.

VALUE DENSITY	SUSCEPTIBILITY - VULNERABILITY		
	LOW	MEDIUM	HIGH
LOW			
MEDIUM			
HIGH			

Fig. 2.1.2. Vulnerability-Value Matrix. ©Brokerhof et al.



Fig. 2.1.3. Mapping of Research Objects on Hazard Map. ©Brokerhof et al.

A Quantitative Approach - Method by Stephenson and D'Ayala (2022)

Descriptor	Response	VR
Age	Medieval/Tudor	100
	Jacobean	77.5
	Georgian	55
	Victorian	32.5
	Modern	10
Listed status	Grade I	100
	Grade II*	70
	Grade II	40
	Not listed	10
Storeys	4	100
	3	70
	2	40
	1	10
Construction	Earth	100
	Timber frame	70
	Brick masonry	40
	Stone masonry	10
Condition	Poor	100
	Good	55
	Excellent	10

Table. 2.2. Vulnerability Descriptor Ratings.
©V. Stephenson and D. D'Ayala

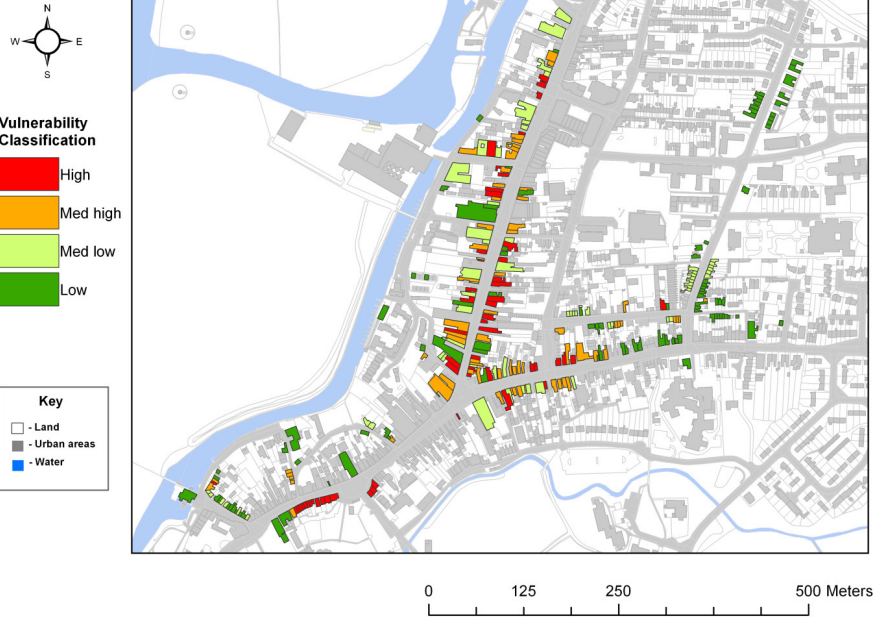


Fig. 2.2. Vulnerability Map of Tewkesbury. ©V. Stephenson and D. D'Ayala

Research Objects in Gorinchem

1. Service Building



2. Sugar Factory



3. Housing Complex



16. Power Station



17. Industrial Hall



18. Religious Building



4. Housing Complex



5. Religious Building



6. Religious Building



19. Residential



20. Hotel "Metropole"



21. Educational Building



7. Educational Building



8. Arsenal



9. Windmill "De Hoop"



22. Educational Building



23. Religious Building



24. Farm House



10. "Nooit volmaakt"



11. "Oostmolen"



12. "Westmolen"



25. Farm House



26. Office/Residential



27. Mix - Cigar Factory



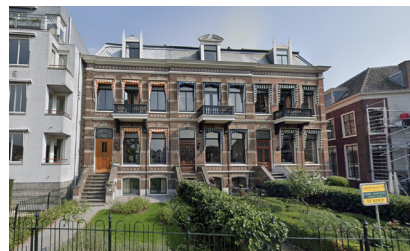
13. Healthcare Facility



14. Service/Residential



15. Residential Building



28. Residential Building

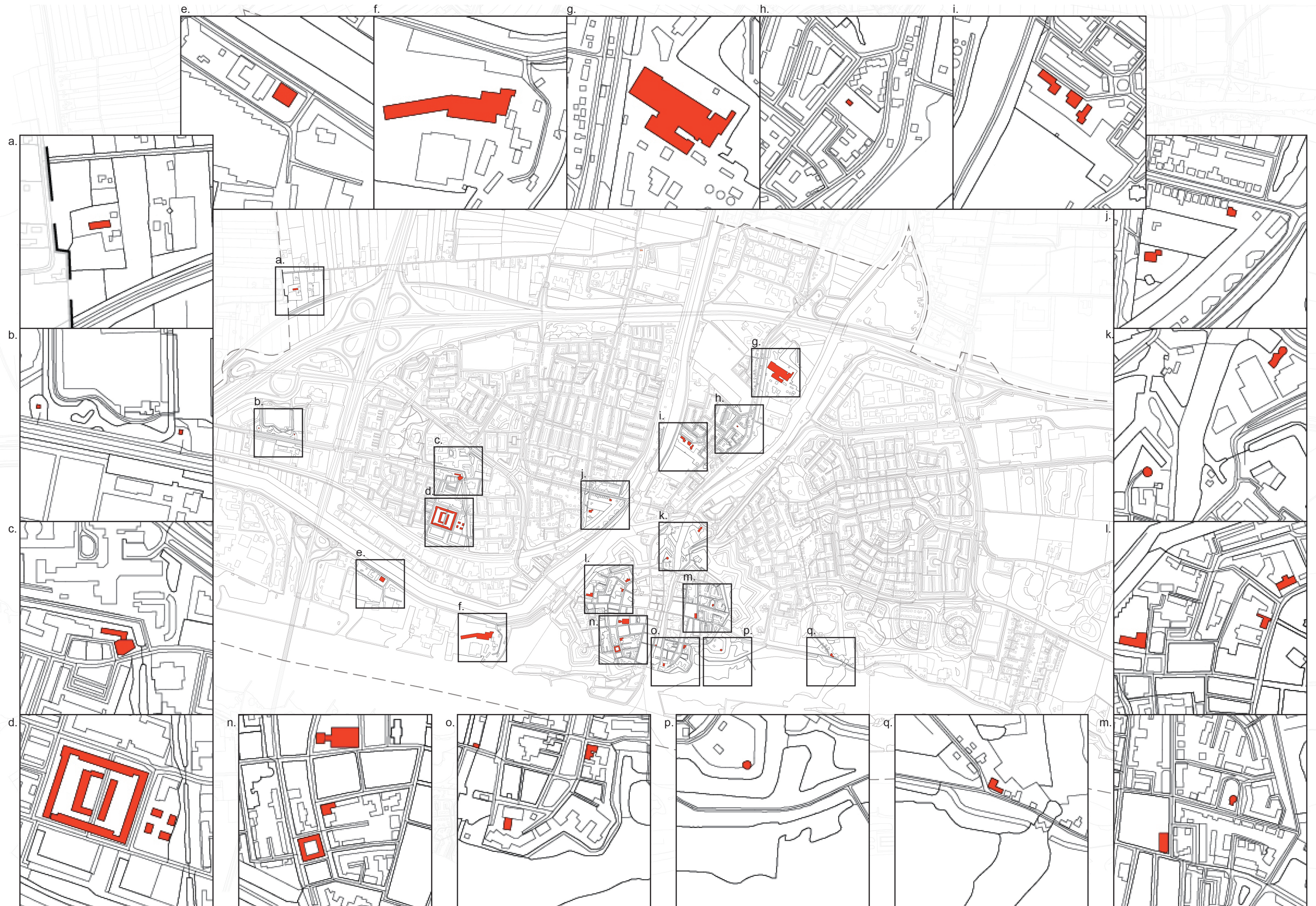


29. Mix - GP/Residential

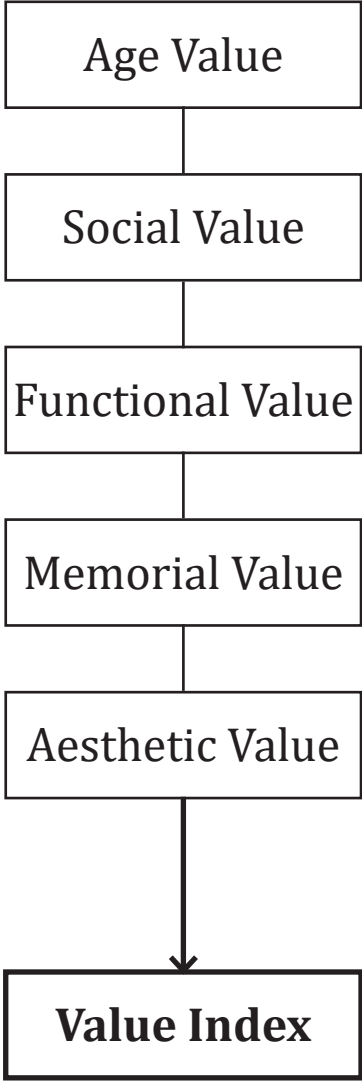


30. Rectory



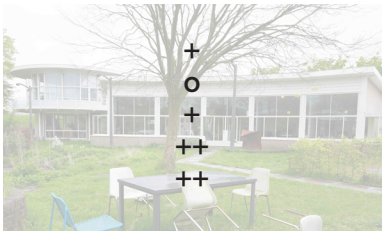


Value Assessment

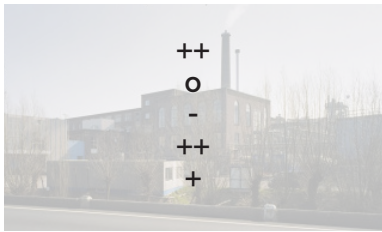


Reference Number	Value Assessment					Value Index (VI)
	Age Value	Social Value	Functional Value	Memorial Value	Aesthetic Value	
1	o	o	+	+	++	4
2	+	o	-	++	+	3
3	o	++	++	+	+	6
4	o	++	++	+	+	6
5	++	++	++	++	++	10
6	+	++	++	+	o	6
7	o	++	++	o	+	5
8	++	+	o	++	+	6
9	++	+	-	++	++	6
10	++	+	-	++	++	6
11	+	+	-	++	++	5
12	+	+	-	++	++	5
13	+	++	++	o	+	6
14	+	o	-	+	++	3
15	+	o	-	o	++	2
16	o	+	+	o	+	3
17	+	o	++	++	o	5
18	o	++	++	+	o	5
19	+	+	++	+	++	7
20	+	o	++	+	+	5
21	+	++	+	o	o	4
22	+	++	+	o	o	4
23	+	+	-	o	+	2
24	+	-	o	+	+	2
25	+	-	o	+	o	1
26	+	-	+	o	+	2
27	+	-	o	+	+	2
28	+	-	+	o	+	2
29	+	+	++	o	+	5
30	+	o	+	+	o	3

Value Assessment Results



Factory Reception Building



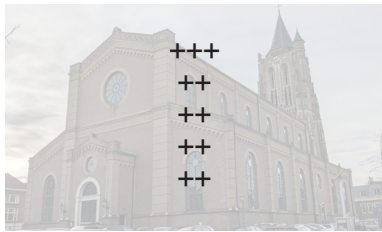
Sugar Factory



Housing Complex



Housing Complex



Religious Building



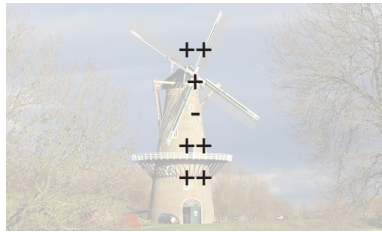
Religious Building



Educational Building



Military Warehouse



Windmill, "De Hoop"



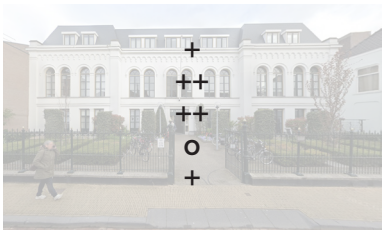
Windmill, "Nooit volmaakt"



Polder Mill, "Oostmolen"



Polder Mill, "Westmolen"



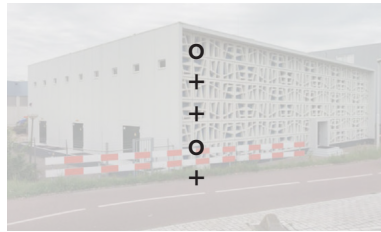
Hospital/Healthcare



Service/Residential Building



Residential Building



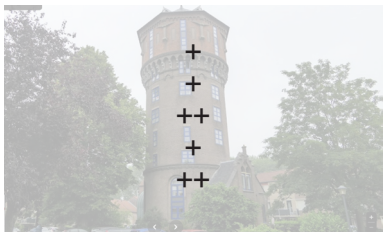
Electricity Distribute Station



Industrial Hall



Religious Building



Watertower - Residential



Hotel



Educational Building



Educational Building



Religious Building



Farm House



Farm House



Office/Residential Building



Cigar Factory/Residential



Residential Building



Residential Building - GP



Parsonage/Residential

Valuation Dimension

Historic Value	++/+/o/-
Social Value	++/+/o/-
Functional Value	++/+/o/-
Memorial Value	++/+/o/-
Aesthetic Value	++/+/o/-

Vulnerability Assessment

Major Climate Risks:

Flood

- 1. Risk of Flooding from the Sea, Lake or River
- 2. Maximum Water Depth in the Event of a Dike Breach

Drought

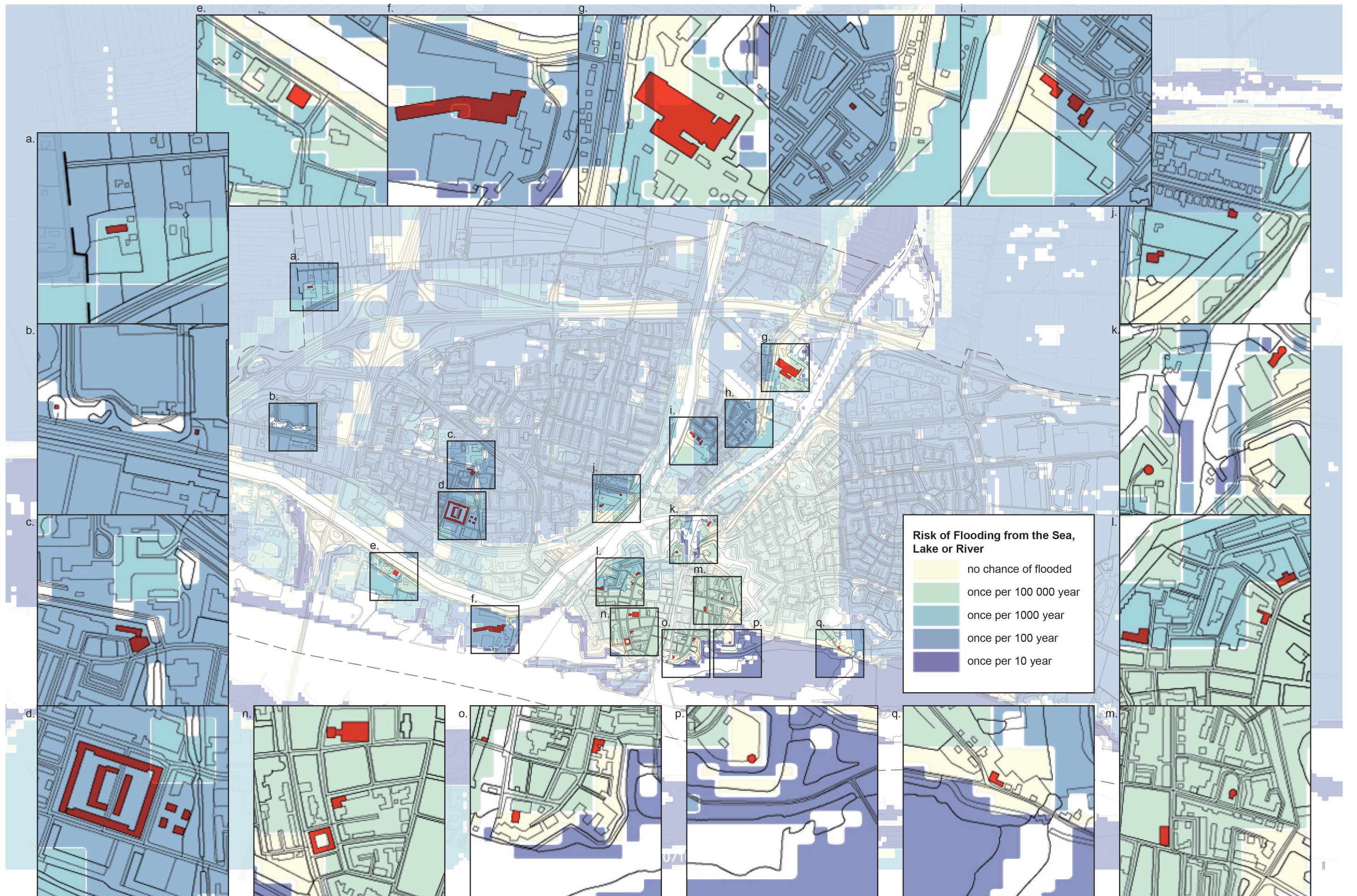
- 3. Areas with Vulnerable Foundations Due to Drought

Heat

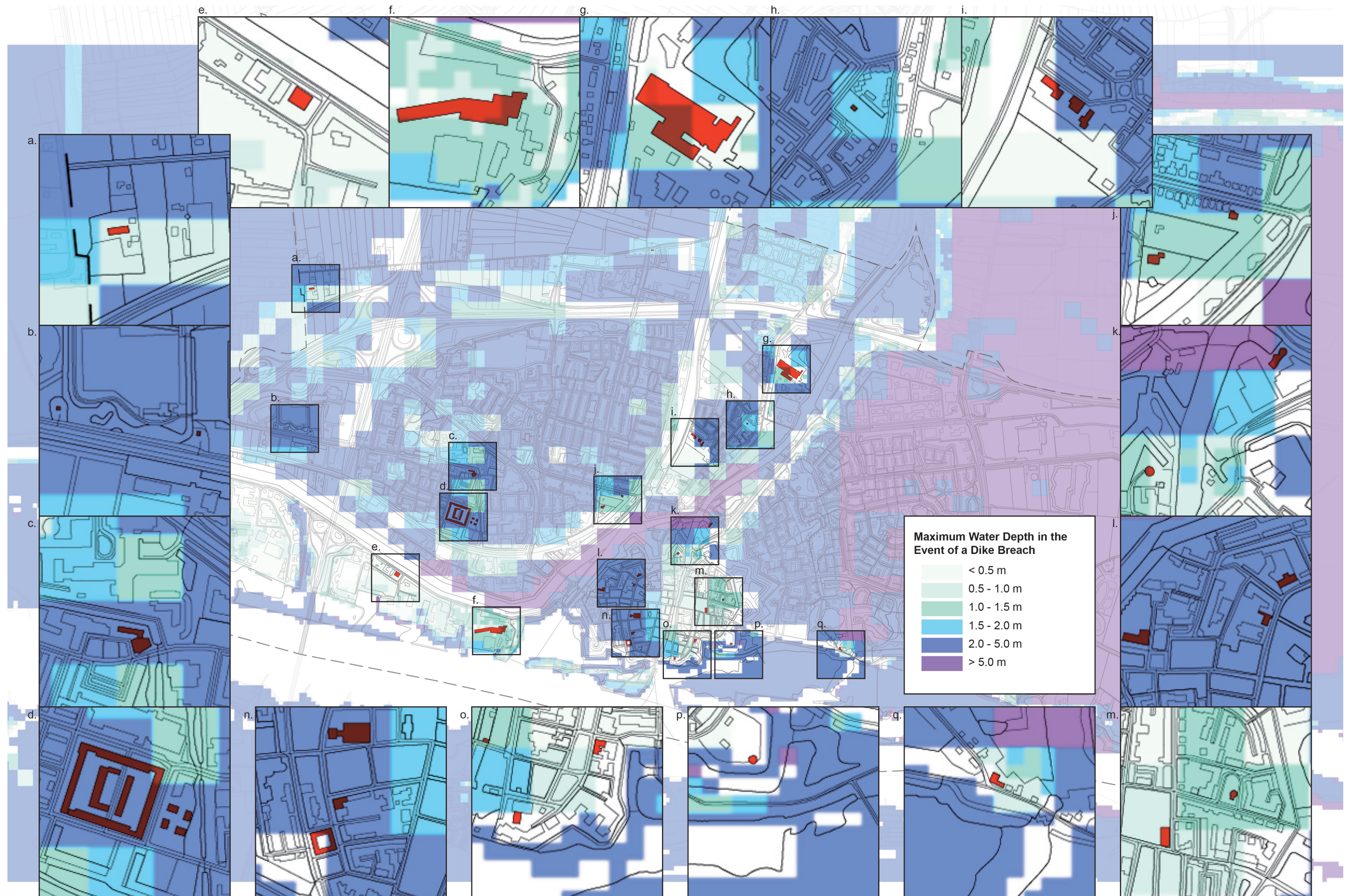
- 4. Urban Heat Island Effect Index (UHI)



Overall Vulnerability (OV)



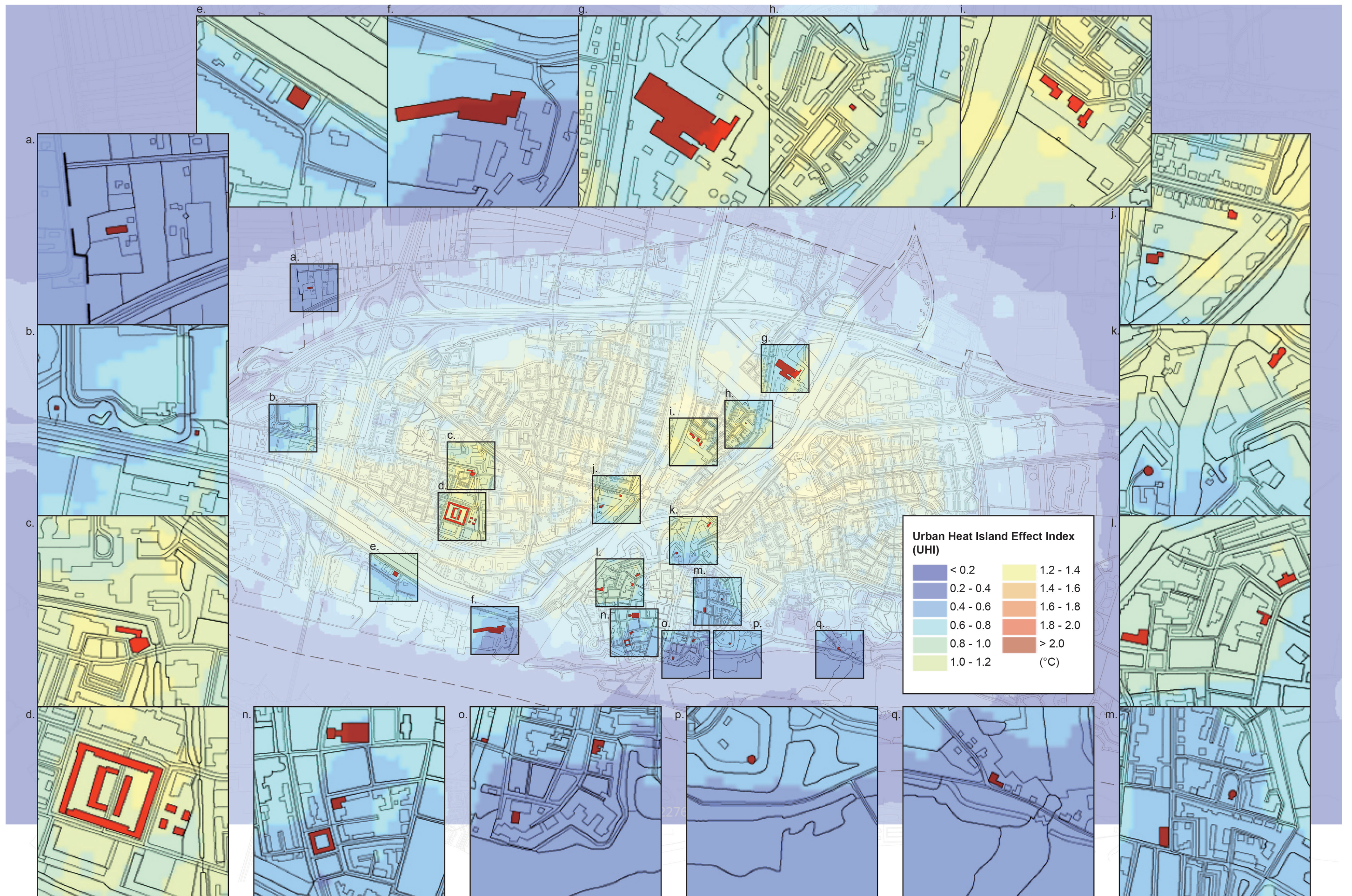
Source of Data: Atlas Leefomgeving | Atlas Leefomgeving. (n.d.). <https://www.atlasleefomgeving.nl/>



Source of Data: Atlas Leefomgeving | Atlas Leefomgeving. (n.d.). <https://www.atlasleefomgeving.nl/>



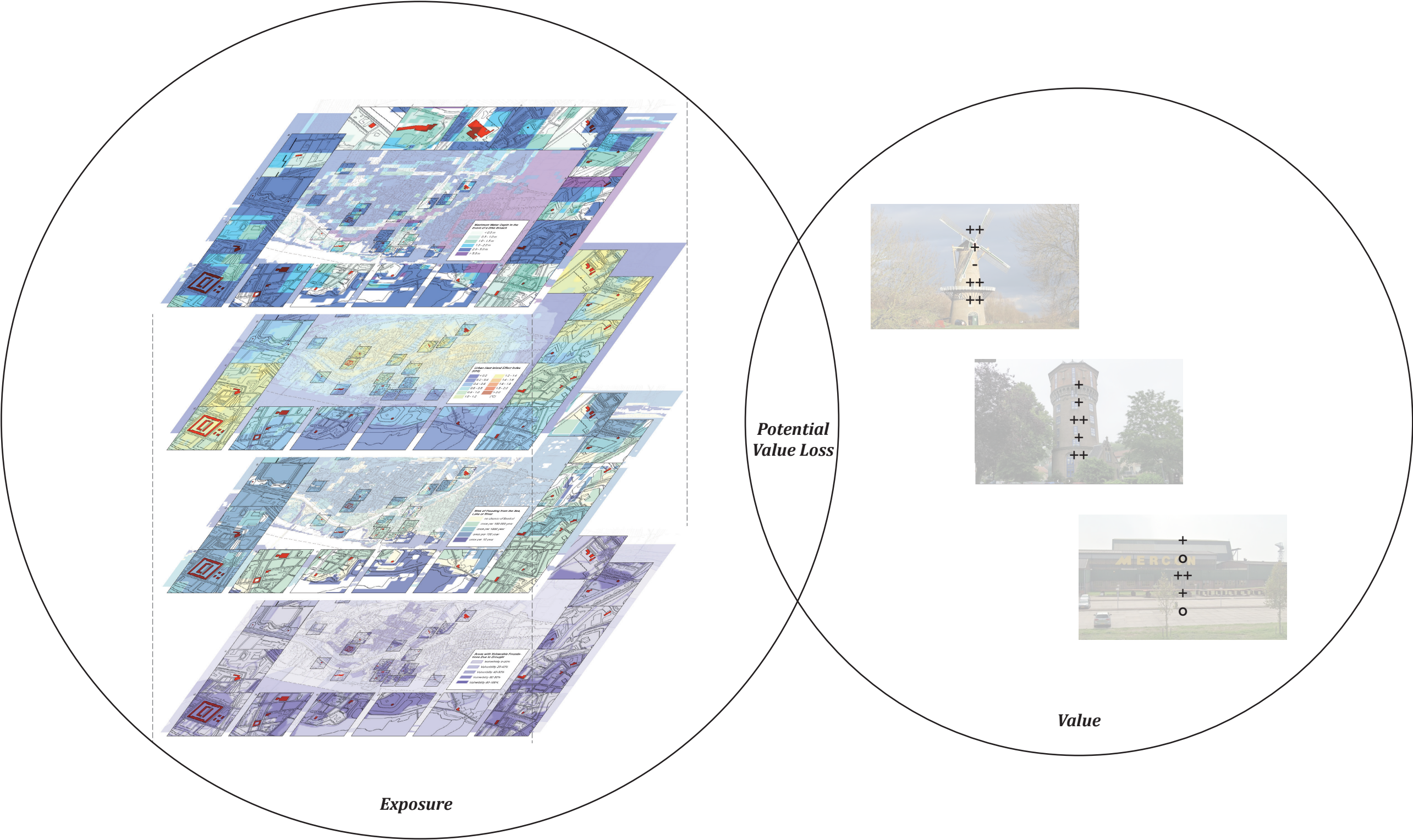
Source of Data: Atlas Leefomgeving | Atlas Leefomgeving. (n.d.). <https://www.atlasleefomgeving.nl/>



Source of Data: Atlas Leefomgeving | Atlas Leefomgeving. (n.d.). <https://www.atlasleefomgeving.nl/>

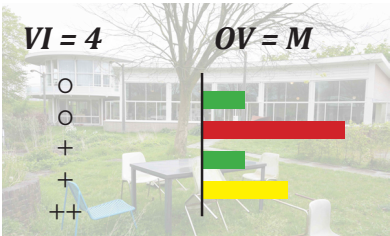
Vulnerability Assessment Results

Reference Number	Climate Vulnerability Assessment				Overall Vulnerability (OV)
	Flooding		Drought	Heat	
	1. Risk ... *	2. Maximum ... *	3. Areas ... *	4. ... UHI *	
1	low	high	low	medium	moderate
2	low	low	low	low	low
3	high	high	high	medium	high
4	low	high	medium	low	moderate
5	low	high	medium	low	moderate
6	low	low	low	low	low
7	low	high	high	low	high
8	low	high	medium	low	moderate
9	low	low	high	low	moderate
10	low	low	high	low	moderate
11	high	high	low	low	high
12	high	high	low	low	high
13	medium	high	medium	medium	moderate
14	low	medium	medium	low	moderate
15	low	medium	medium	low	moderate
16	low	low	low	low	low
17	medium	low	low	low	low
18	medium	high	low	high	high
19	low	medium	low	low	low
20	medium	high	low	medium	moderate
21	medium	high	low	high	high
22	medium	high	low	high	high
23	high	medium	low	high	high
24	low	low	low	low	low
25	high	medium	low	low	moderate
26	low	low	high	low	moderate
27	low	low	high	low	moderate
28	medium	medium	low	low	moderate
29	medium	medium	high	high	high
30	low	high	medium	medium	moderate

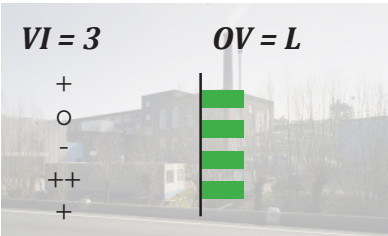


Results

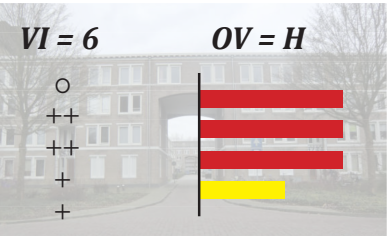
1. Service Building



2. Sugar Factory



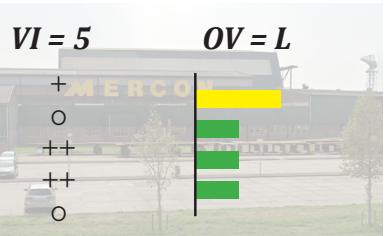
3. Housing Complex



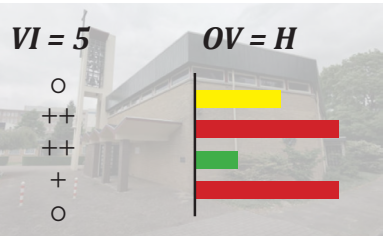
16. Power Station



17. Industrial Hall



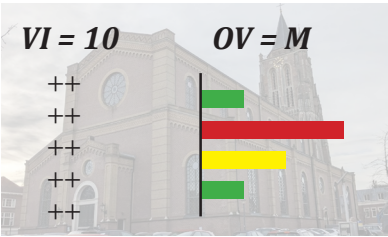
18. Religious Building



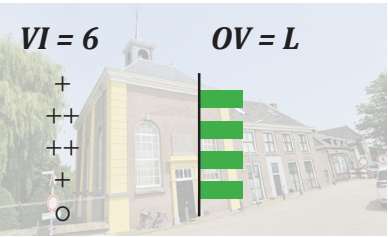
4. Housing Complex



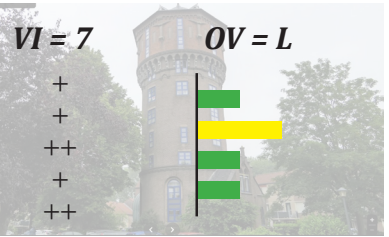
5. Religious Building



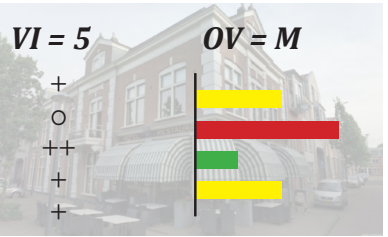
6. Religious Building



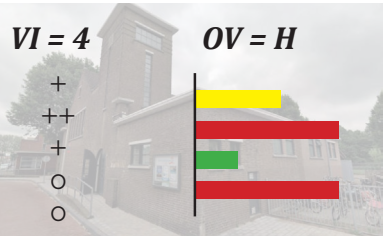
19. Residential



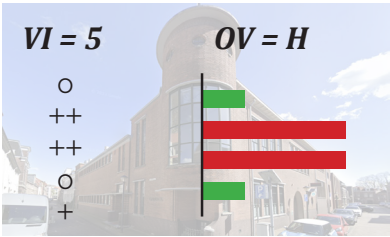
20. Hotel “Metropole”



21. Educational Building



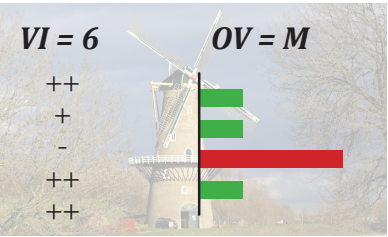
7. Educational Building



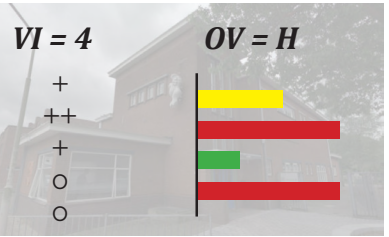
8. Arsenal



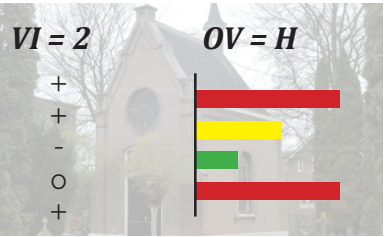
9. Windmill “De Hoop”



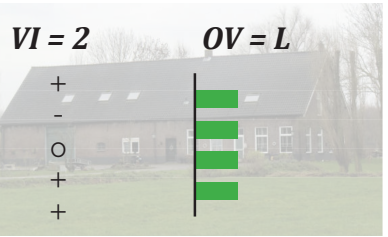
22. Educational Building



23. Religious Building



24. Farm House

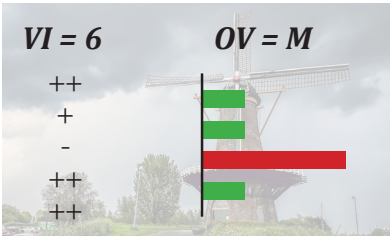


Value Index (VI)

Value Dimentions

Age Value	++/+/0/-
Social Value	++/+/0/-
Functional Value	++/+/0/-
Memorial Value	++/+/0/-
Aesthetic Value	++/+/0/-

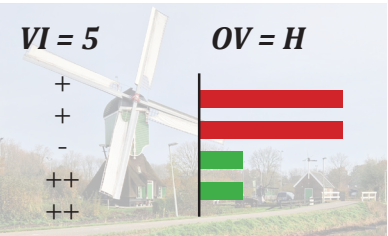
10. “Nooit volmaakt”



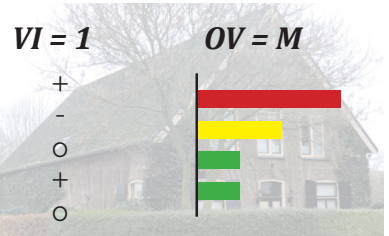
11. “Oostmolen”



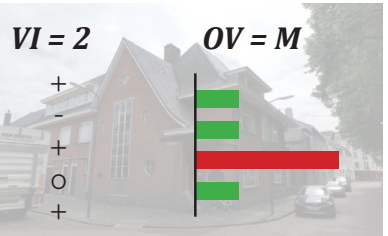
12. “Westmolen”



25. Farm House



26. Office/Residential



27. Mix - Cigar Factory



Overall Vulnerability (OV)

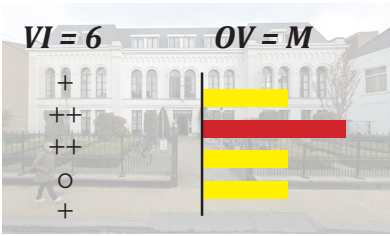
Risks

Flooding	-----
Water depth	-----
Drought	-----
UHI	-----

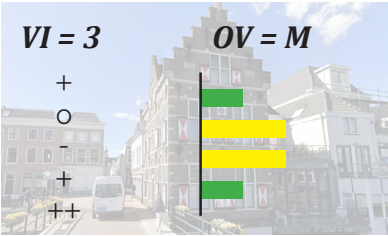
Rating

high	-----
middle	-----
low	-----

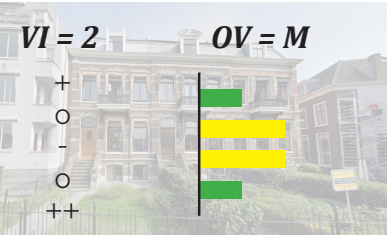
13. Healthcare Facility



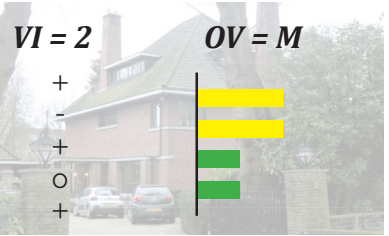
14. Service/Residential



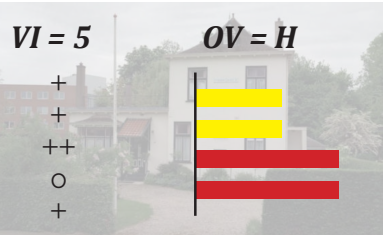
15. Residential Building



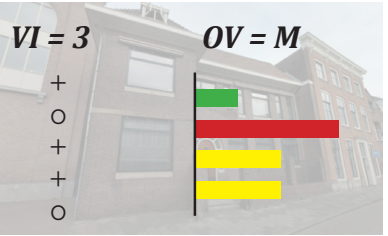
28. Residential Building



29. Mix - GP/Residential



30. Rectory



Results

1. Service Building



2. Sugar Factory



3. Housing Complex



16. Power Station



17. Industrial Hall



18. Religious Building



4. Housing Complex



5. Religious Building



6. Religious Building



19. Residential



20. Hotel "Metropole"



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27. Mix - Cigar Factory



13. Healthcare Facility



14. Service/Residential



15. Residential Building



28. Residential Building



29. Mix - GP/Residential



30. Rectory





1 of the 30 —



De Vries Robbé Building, De Ronde



De Vries Robbé & Co. N.V.

Spijksedijk 8, 4207 GN

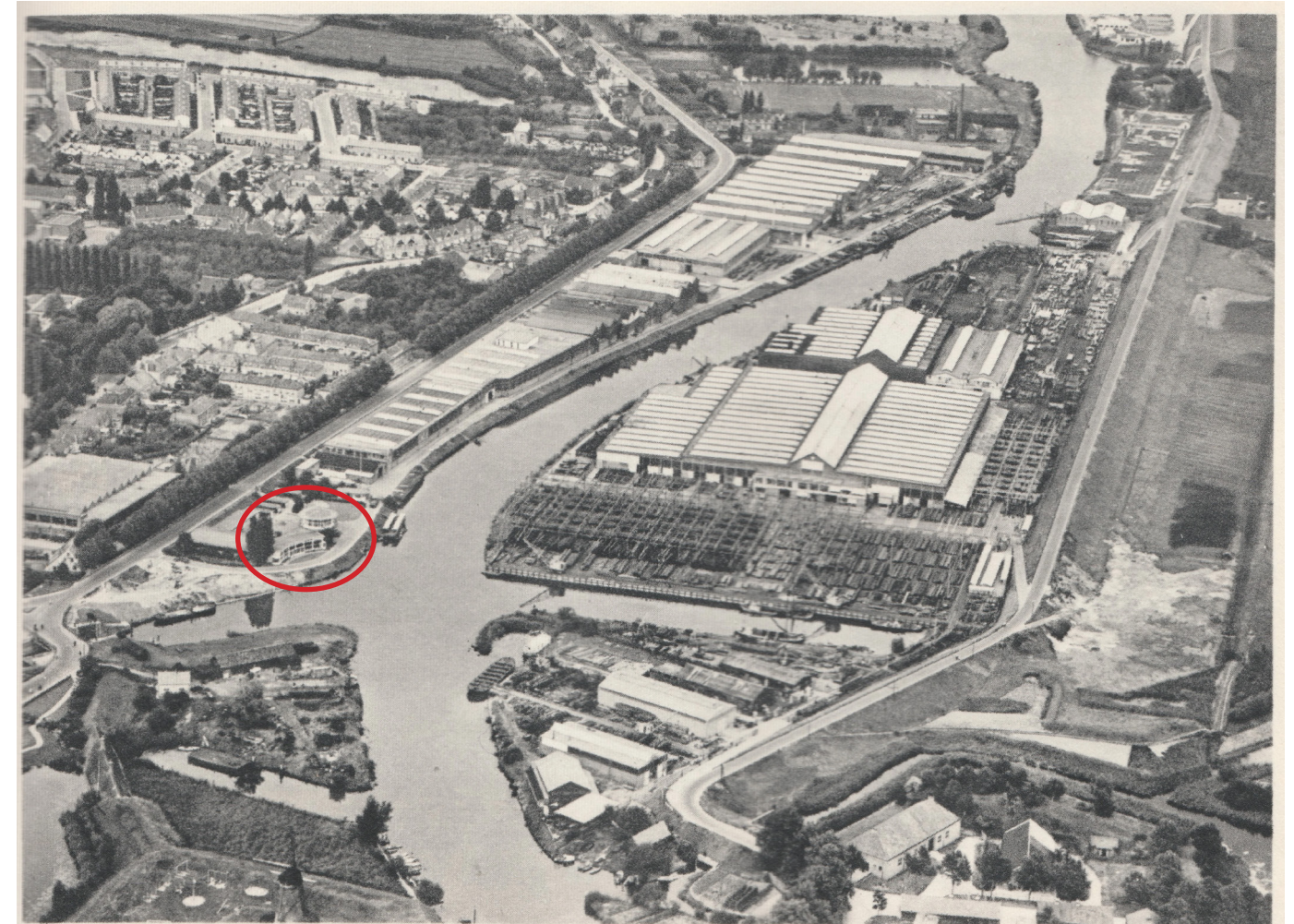
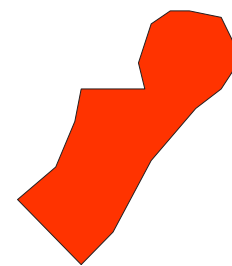
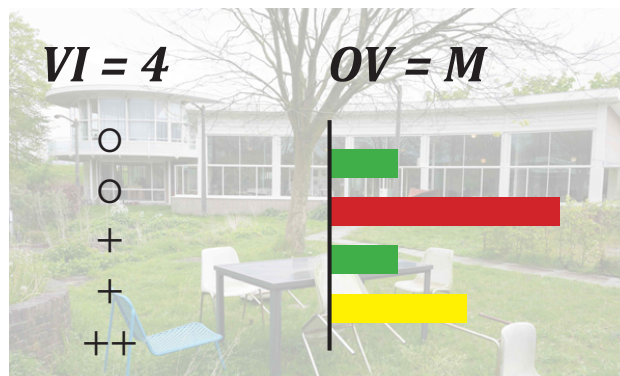
Construction Year: 1940

Original Function: Factory Reception

Year of Important Intervention: 1996, moved to and reconstructed in mirrored way on the other side of the Linge River

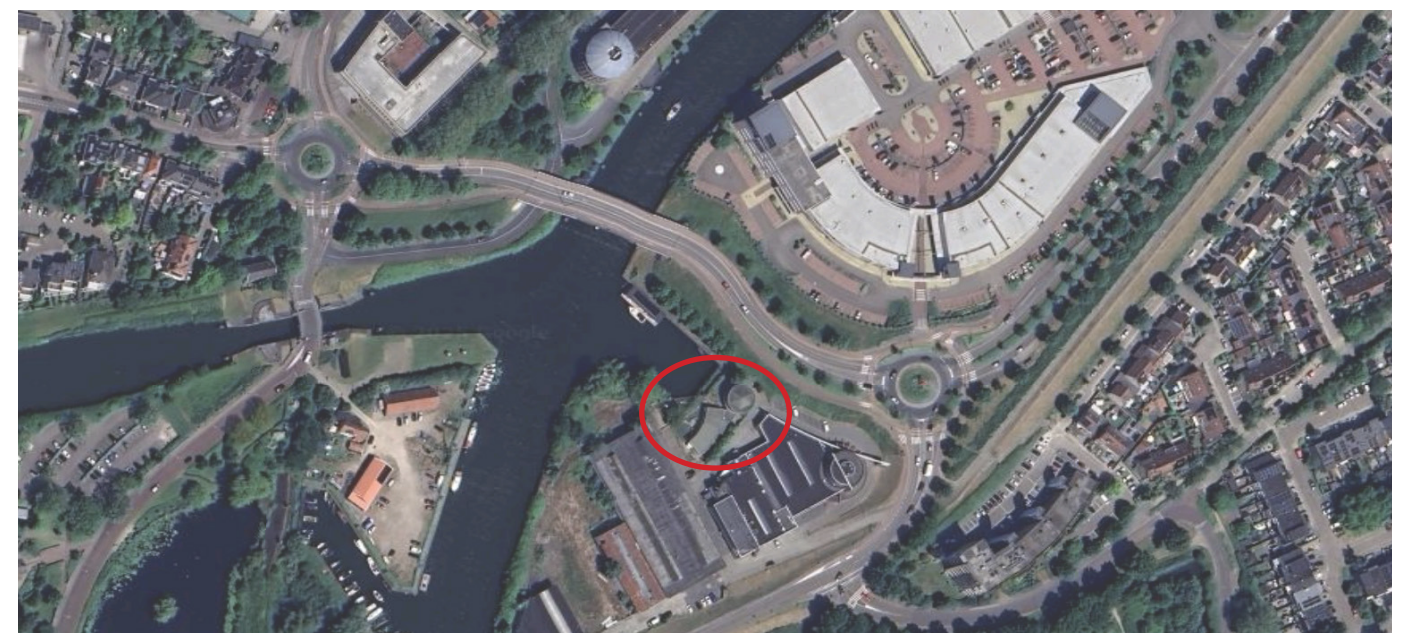
Current Position: Gallery, Office

Status: National Monument



De Vries Robbé & Co Gorinchem 1952 (luchtfoto K.L.M.)

©K.L.M. (1952)



©Google Maps (2025)

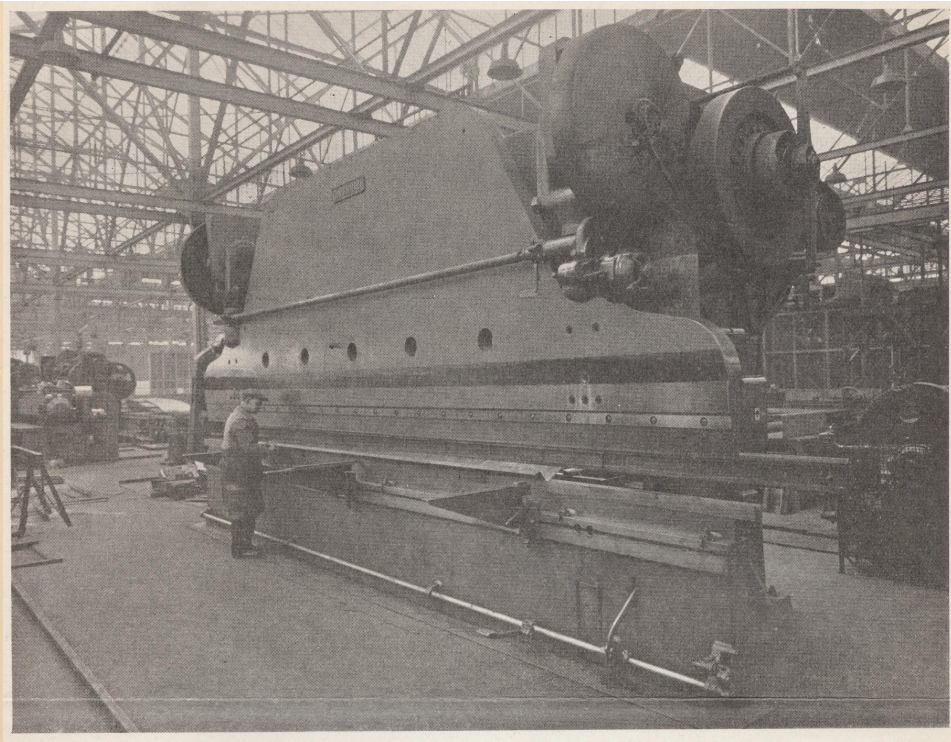
History of De Vries Robbé & Co. N.V.



Willem de Vries Robbé responded to this advertisement for a commercial property on the Arkelsedijk.
©De Vries Robbé & Co. N.V. (1881)



©De Vries Robbé & Co. N.V. (1939)



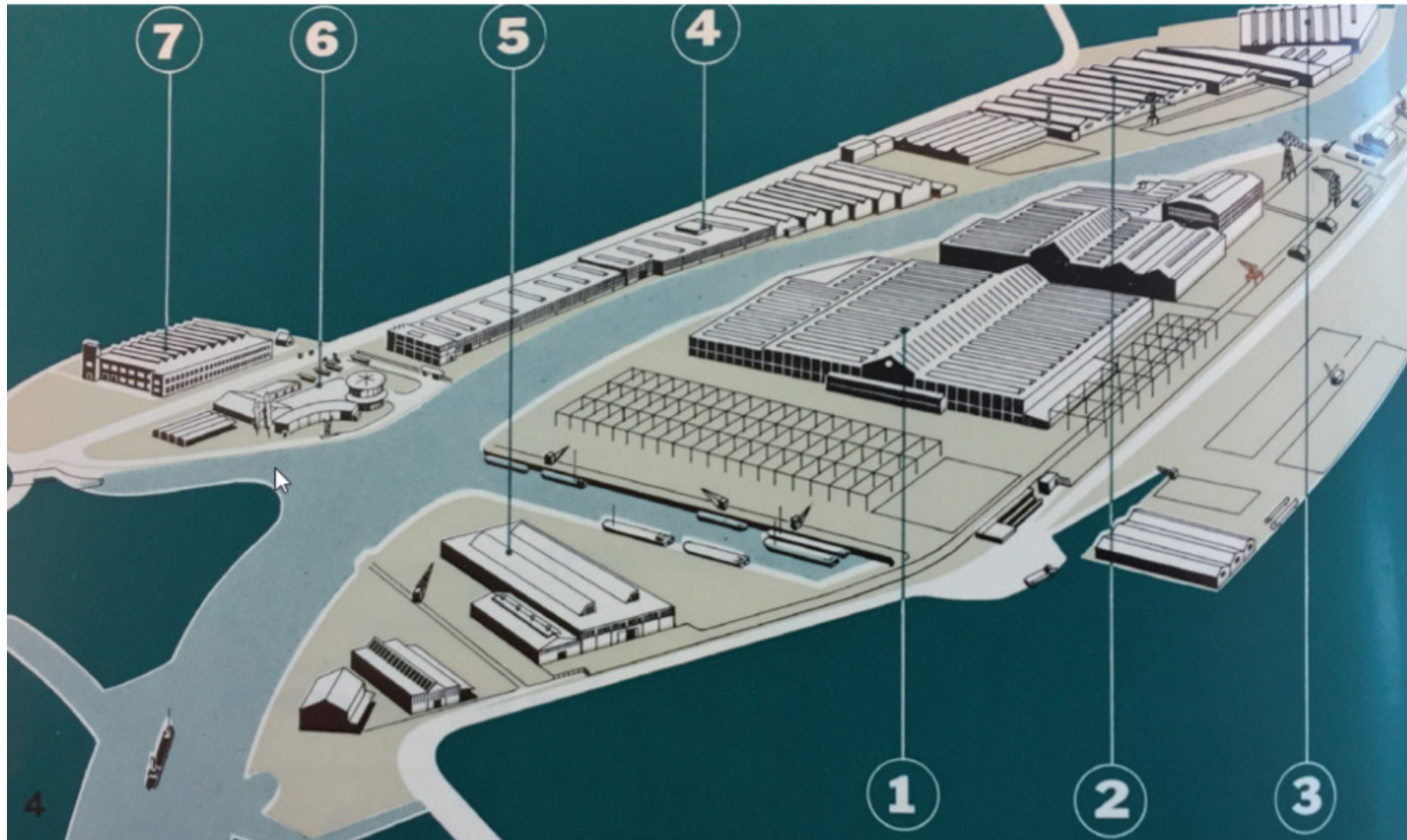
©De Vries Robbé & Co. N.V. (1939)



©Eddy Posthuma de Boer from the series 'Unemployment in the Netherlands' (1977)

De Vries Robbé Buildings

Map of De Vries Robbé site at its peak



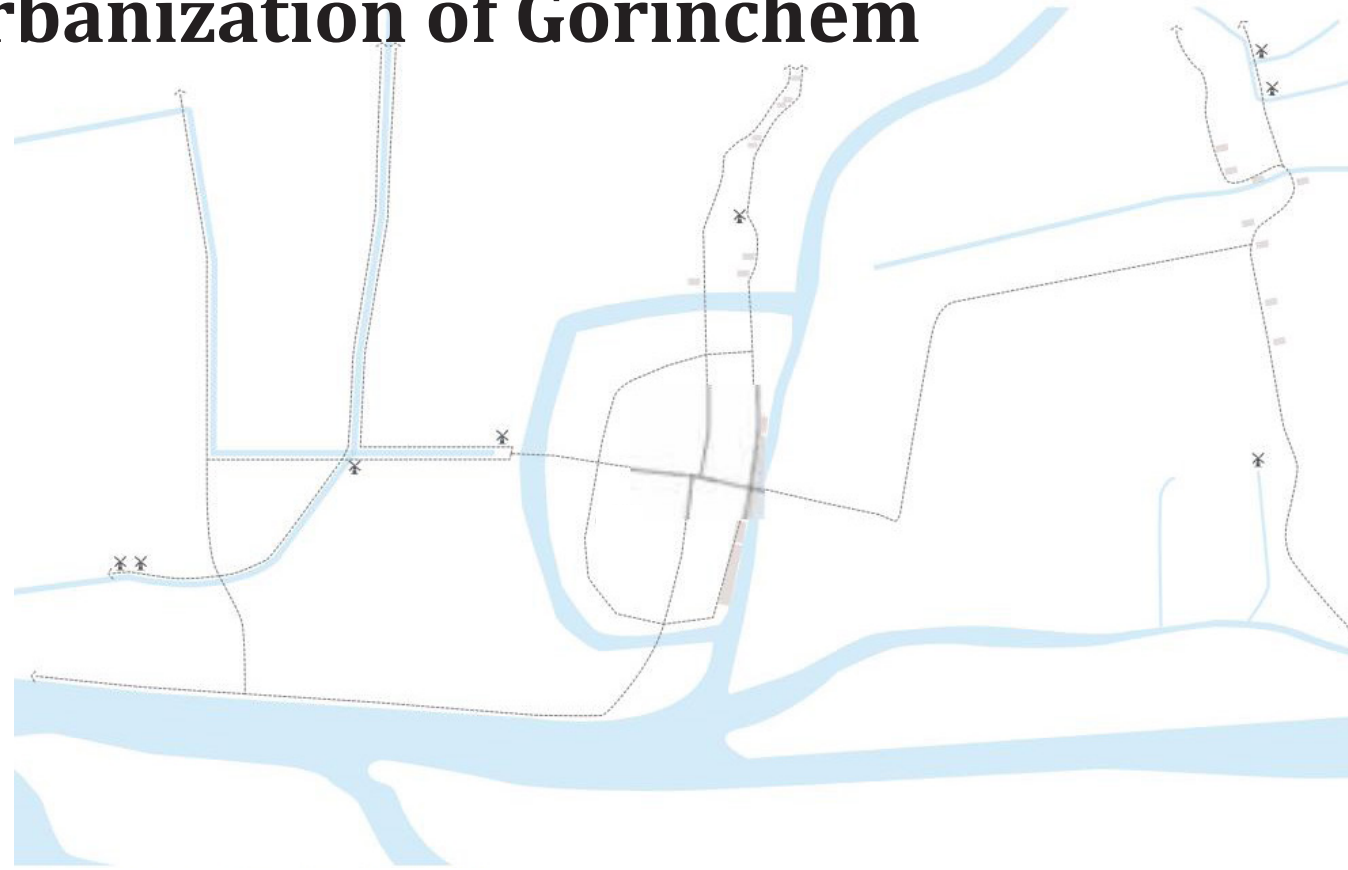
©De Vries Robbé & Co N.V. Gorinchem

- 1) Construction workshops, welding shop and assembly site. → already demolished
- 2) Steel window and door factory. → Plan Arkelsedijk, will disappear
- 3) Aluminum window and door factory. → Plan Arkelsedijk, will disappear
- 4) Radiator factory. → Plan Arkelsedijk, will disappear
- 5) Central warehouse. → can still be saved!**
- 6) Reception building (De Rotonde) and canteen. → Moved to the other side of the Linge (national monument)
- 7) Head office (1928) De Vries Robbé → already demolished

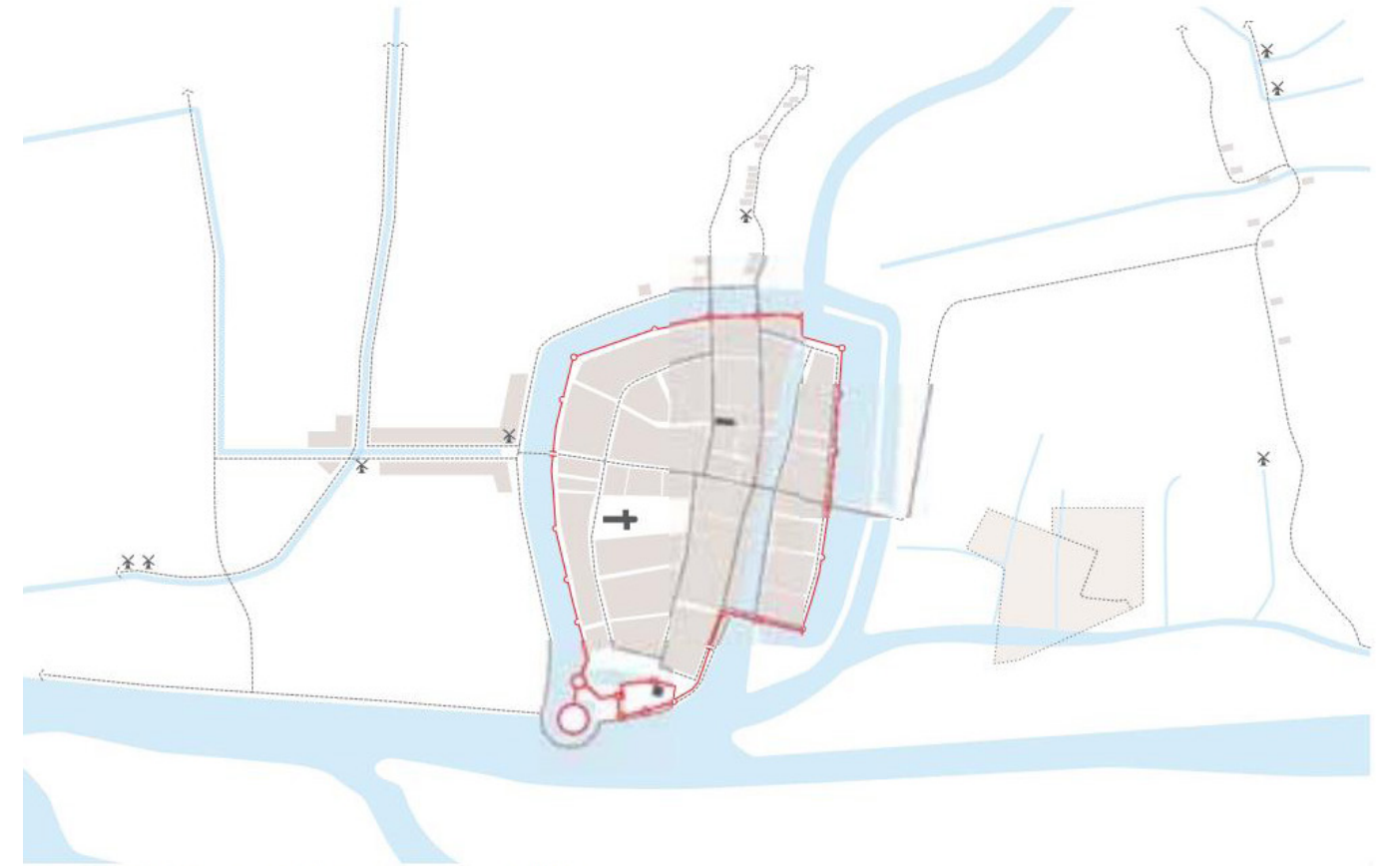
A Site for De Vries Robbé

A Site for Gorinchem

Urbanization of Gorinchem



1000



1400



1600



1600-1800



1800-1885



1885-1950

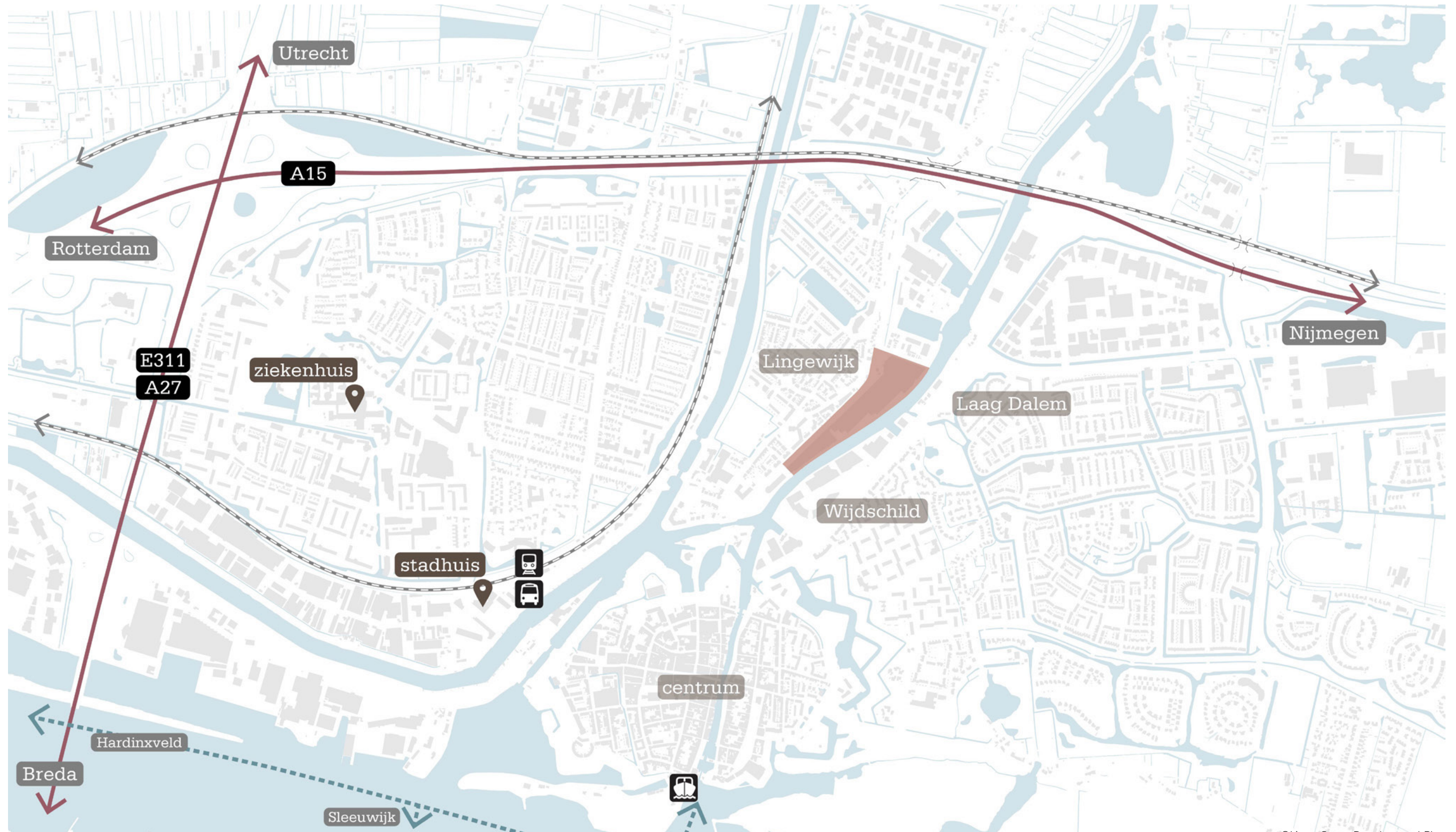


1950-1980



1980-2017

Future - Linge Oever Development Plan, Lingewijk



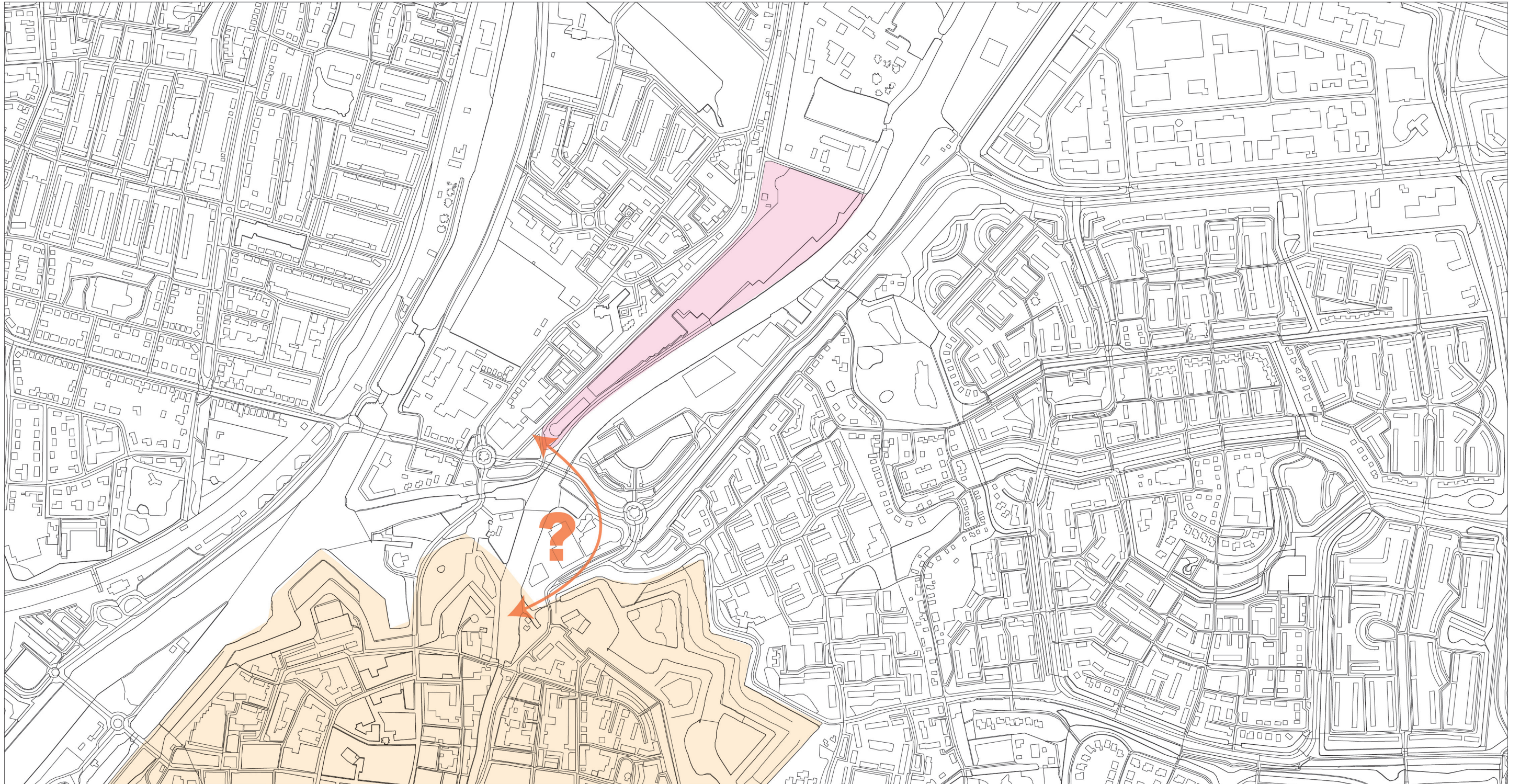


©Linge Oever Development Plan



©Google Maps (2024)

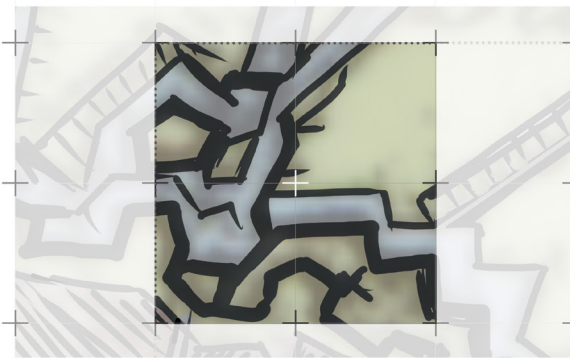
In Between History & Future



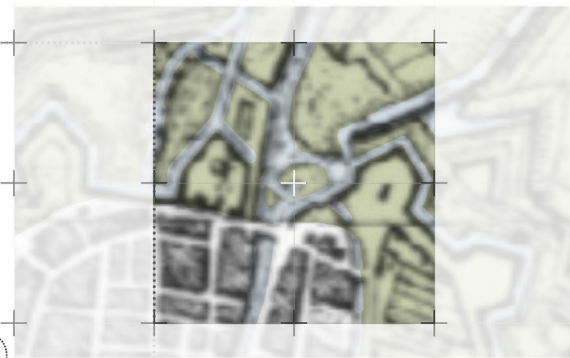
The Site Location



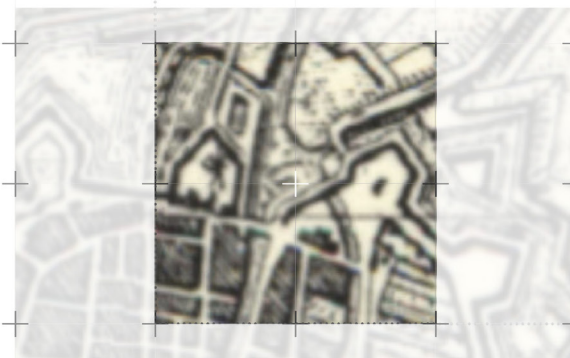
History of the Site



1815



1850



1858



1881



1890



1902



1907



1910



1915



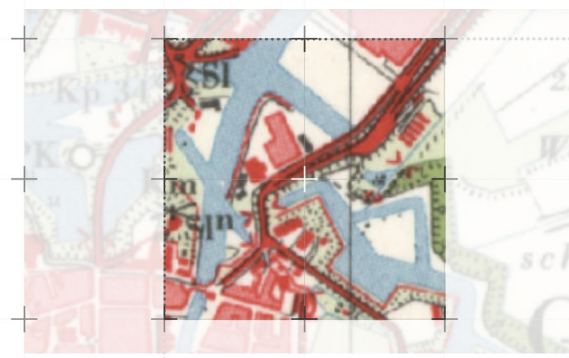
1925



1936



1946



1959



1969



1981



1989

Source: Topotijdreis: 200 jaar topografische kaarten. (n.d.). Topotijdreis. <https://www.topotijdreis.nl/>



1998



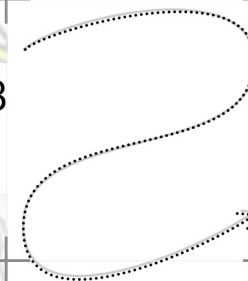
2004



2009



2017

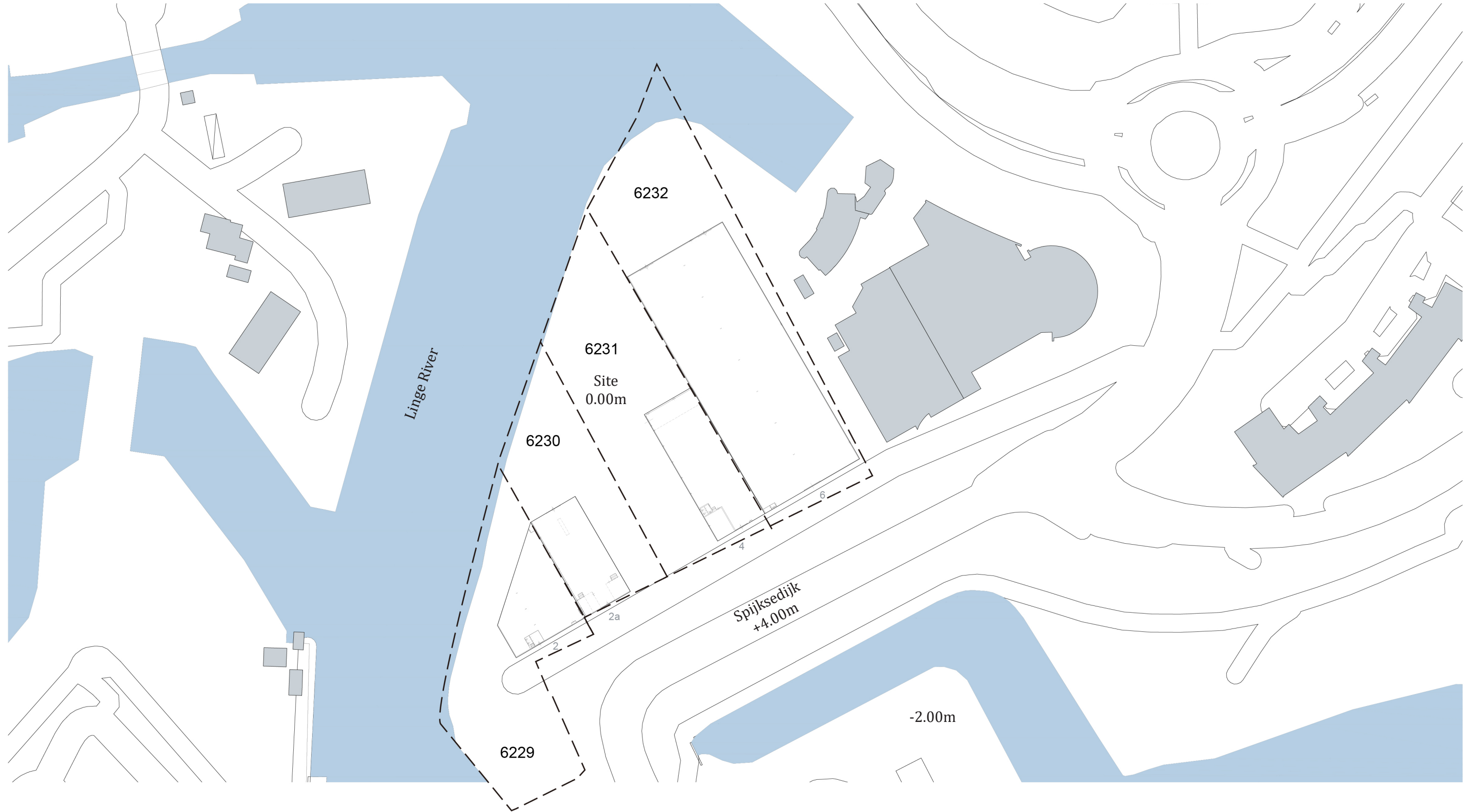


Source: Topotijdreis: 200 jaar topografische kaarten. (n.d.). Topotijdreis. <https://www.topotijdreis.nl/>

Urban Transportation



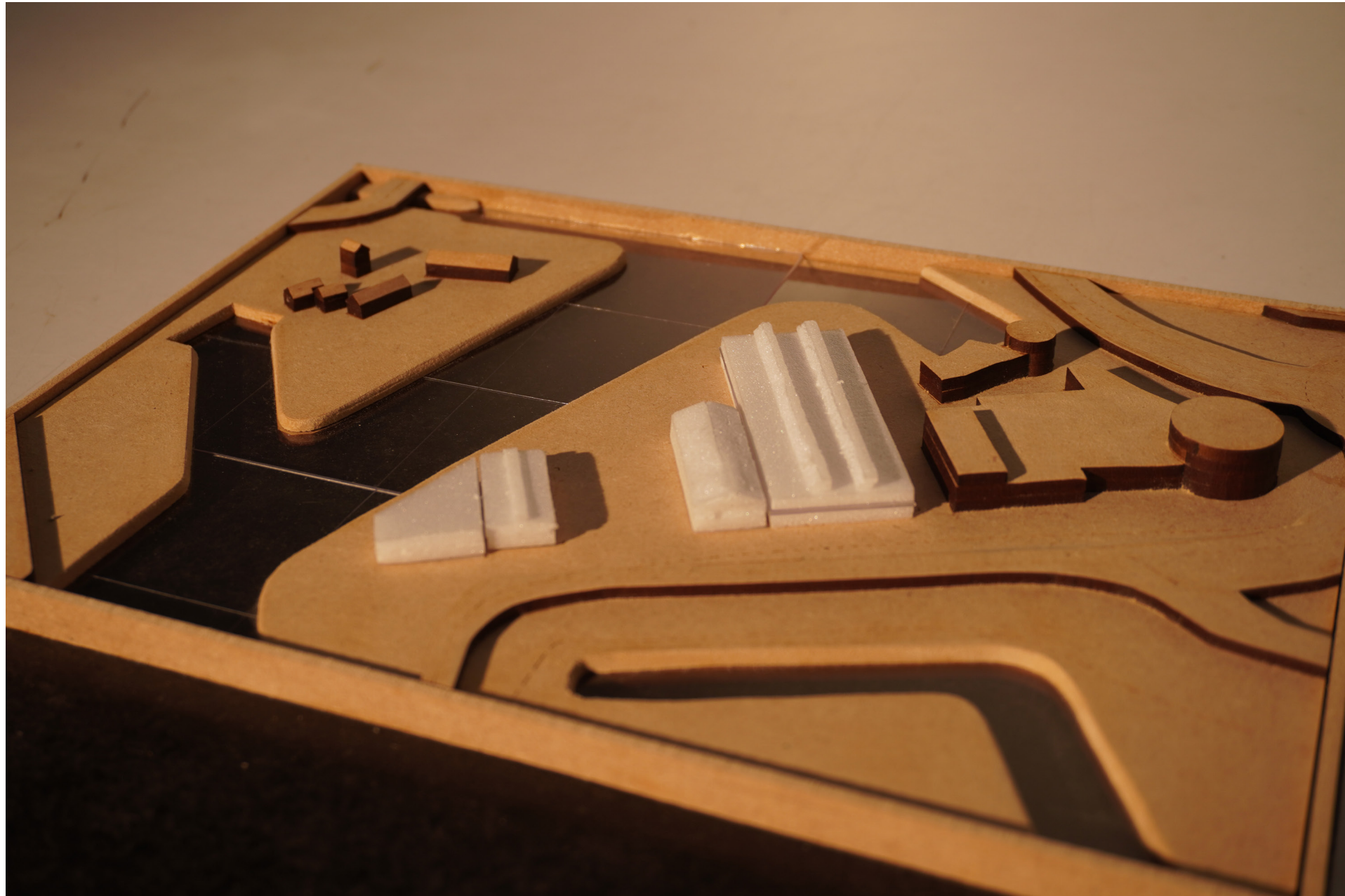
Cadastral Information



0 10 20 30 40 50m

Cadastral Information:

n.6229 (2,170 m²); n.6230 (1,640 m²); n.6231(2,705 m²); n.6232(3,670 m²). Total Area = 10,185m²



Spijksedijk 2



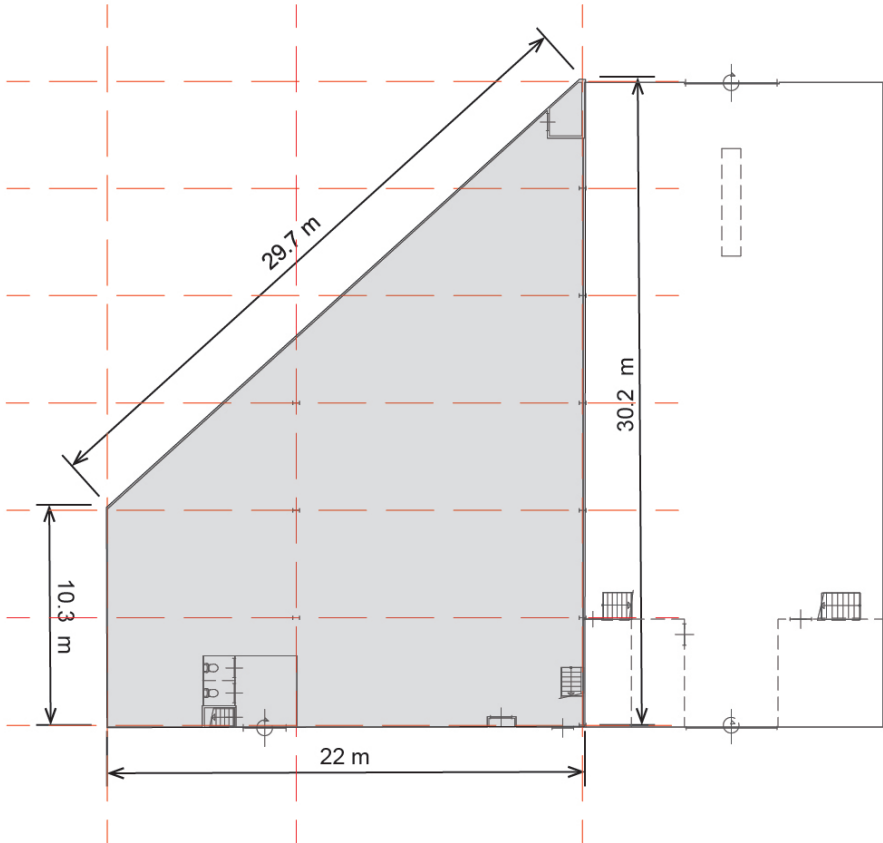
Information
Built Year: 1928-05 (First Constructed), 1966-03 (Renewed)
Dimension: 10.3 m, 22 m, 29.7 m, 30.2 m (trapezoid plan)
Height: 6.7 m, 2 floors
Gross floor area (GFA): 910.52 m²
Original Function: De Vries Robbé & Co. N.V. Factory Storage



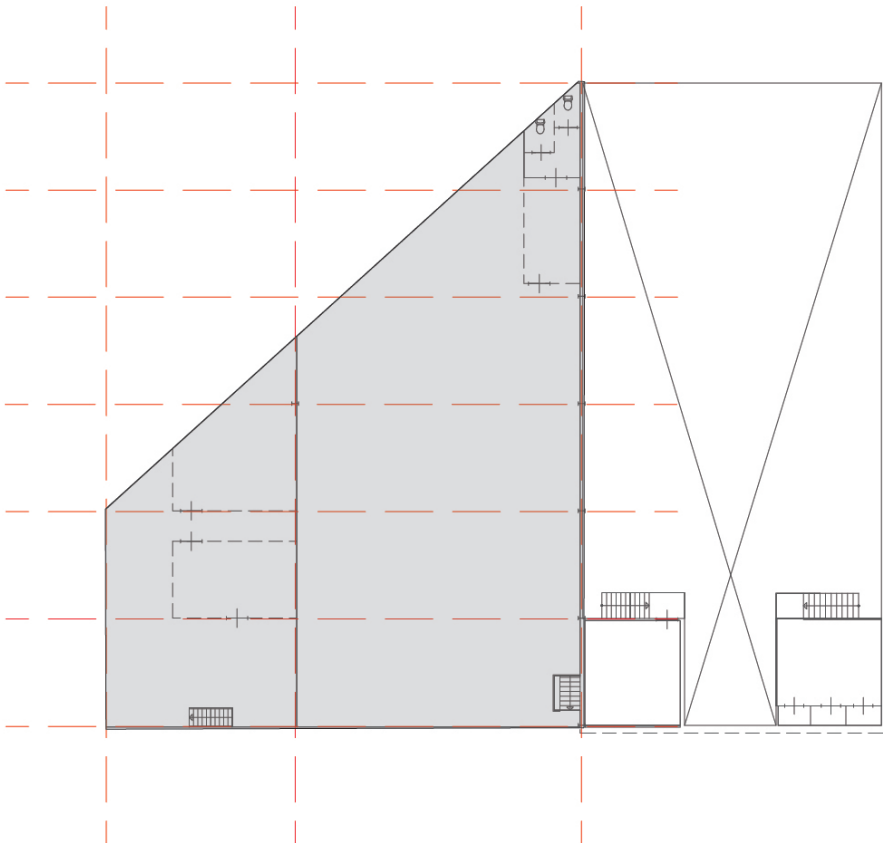
Facade

Material Scheme

- Perforated Metal Sheet
- Brick
- Metal Roller Shutter



Ground Floor Plan



First Floor Plan

Spijksedijk 2a



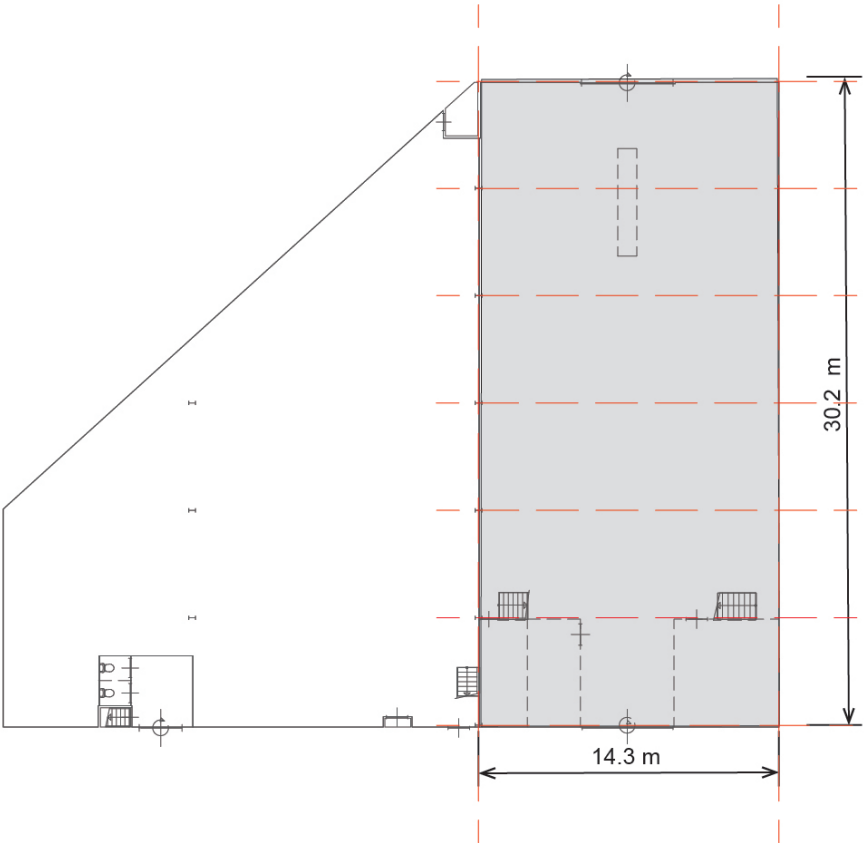
Information
Built Year: 1928-05 (First Constructed), 1966-03 (Renewed)
Dimension: 14.3 m * 30.2 m
Height: 6.7 m (flat roof); 8.4 m (skylight), 1 floor with 2 mezzanines
Gross floor area (GFA): 489.22 m²
Original Function: De Vries Robbé & Co. N.V. Factory Storage



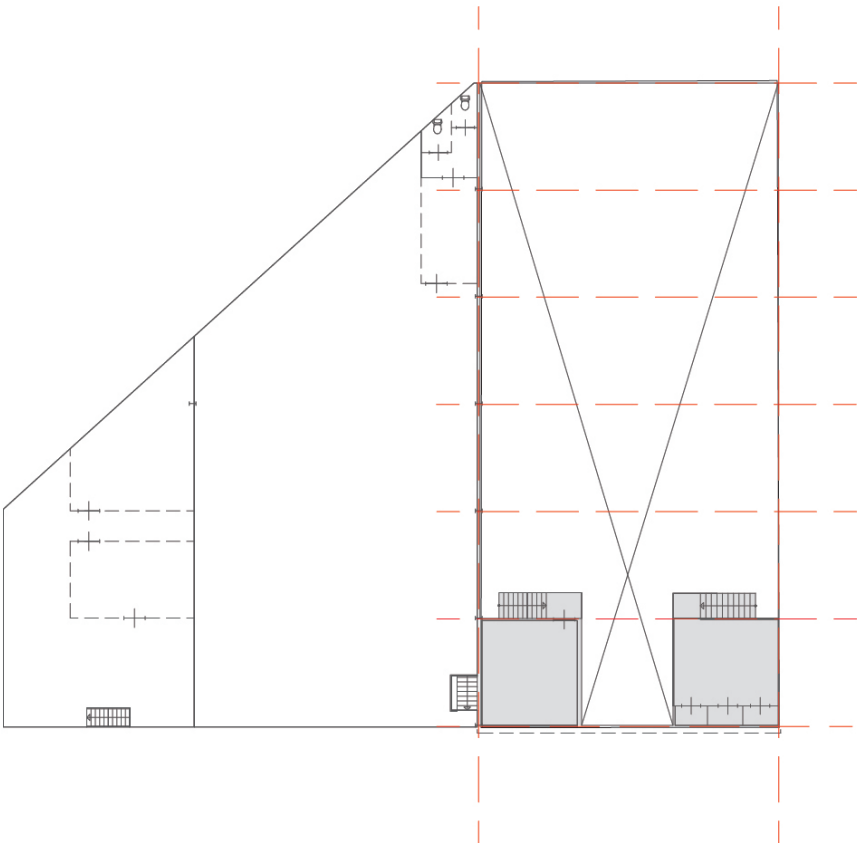
Facade

Material Scheme

-  Glass
-  Corrugated Metal Sheet
-  Green Metal Sheet
-  Brick



Ground Floor Plan



First Floor Plan



Spijksedijk 4



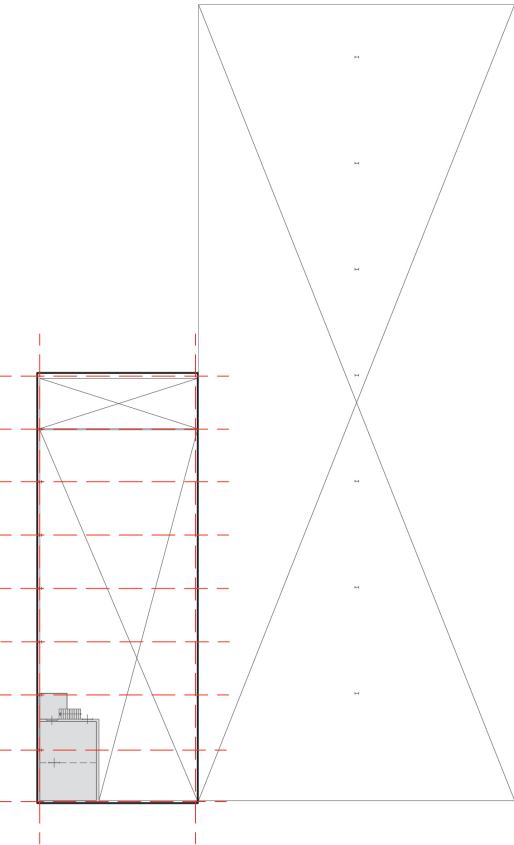
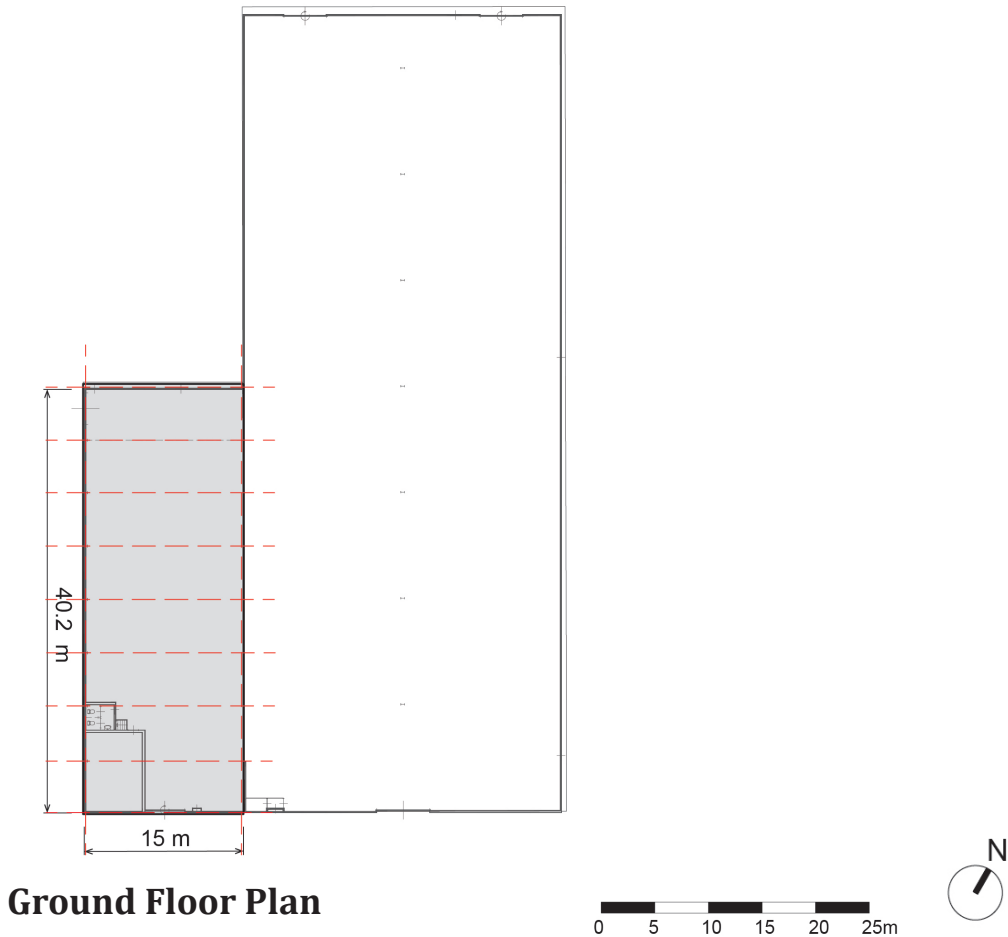
Information
Built Year: 1950-01 (First Constructed), 1983-04 (Renewed)
Dimension: 15 m * 40.2 m
Height: 8 m ,1 floor with 1 mezzanine
Gross floor area (GFA): 659.71 m²
Original Function: De Vries Robbé & Co. N.V. Factory Storage



Facade

Material Scheme

- Brick
- Corrugated Metal Sheet



Spijksedijk 6


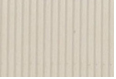



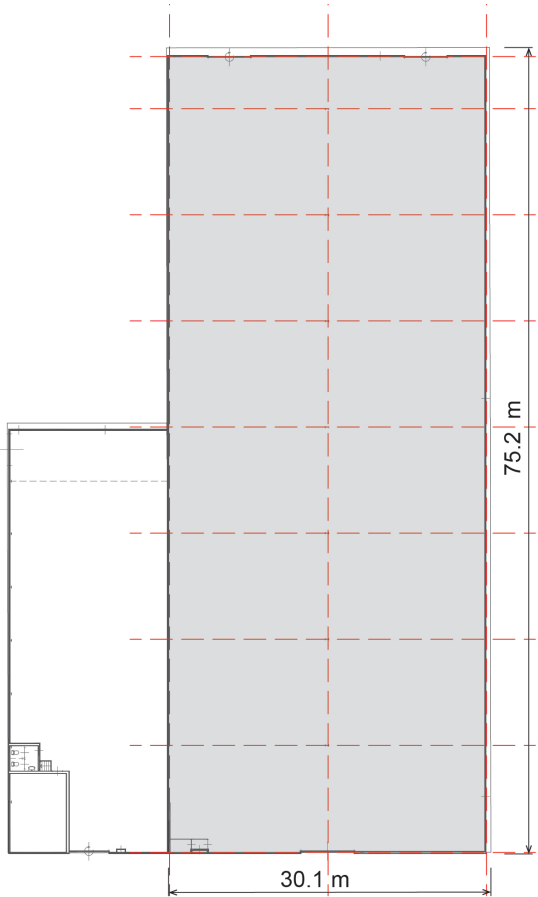
Information
Built Year: 1950-12 (First Constructed), 1995-03 (Renewed)
Dimension: 30.1 m * 75.2 m
Height: 7.7 m (flat roof); 10.7 m (skylight)
Gross floor area (GFA): 2,271.86 m²
Original Function: De Vries Robbé & Co. N.V. Factory Storage



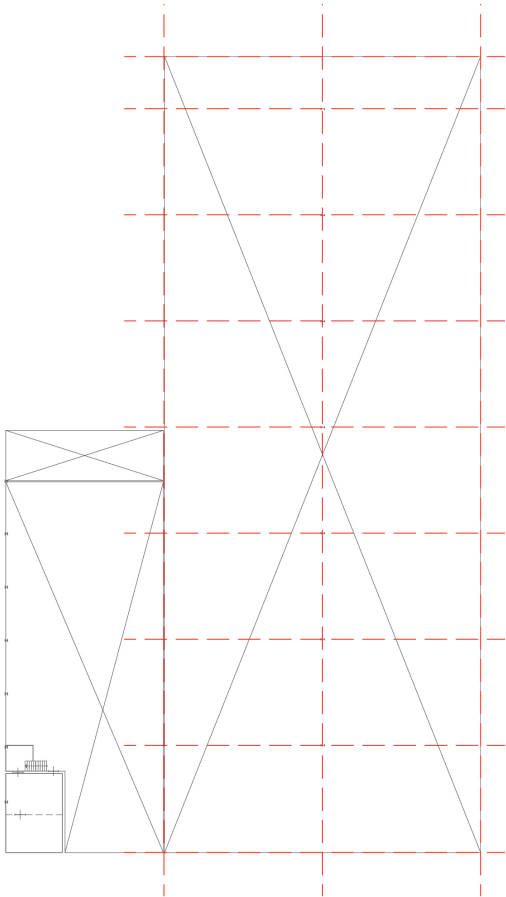
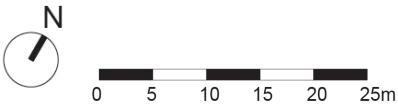
Facade

Material Scheme

-  Glass
-  Corrugated Metal Sheet
-  Perforated Metal Sheet



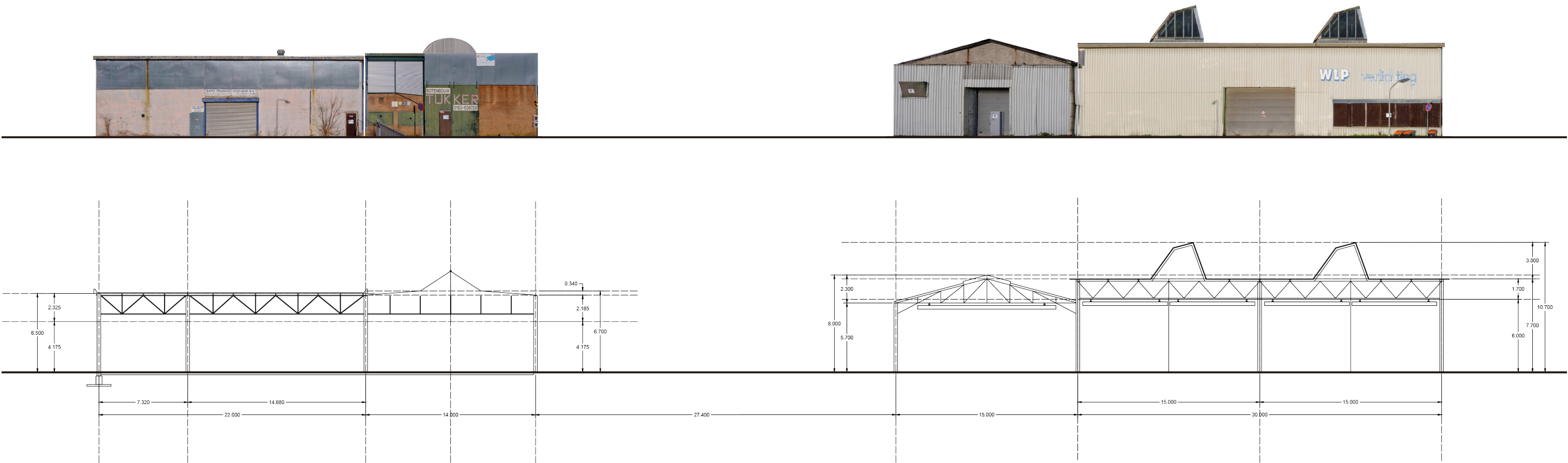
Ground Floor Plan



not accessible



Current Facades and Section



Value Assessment



- age value, social value, functional value →
- + memorial value
- o aesthetic value

Negative: Low value, abandoned and decayed.

Positive: Industrial relic - reminder of city memories

Value Index (VI)

Value Dimensions

Age Value ++/+/0/-

<i>Social Value</i>	++/+/0/-
---------------------	----------

Functional Value ++/+/0/-

Memorial Value ++/+/0/-

Aesthetic Value ++/+/0/-

Value Assessment



- o age value, social value
- + functional value, memorial value
- ++ aesthetic value



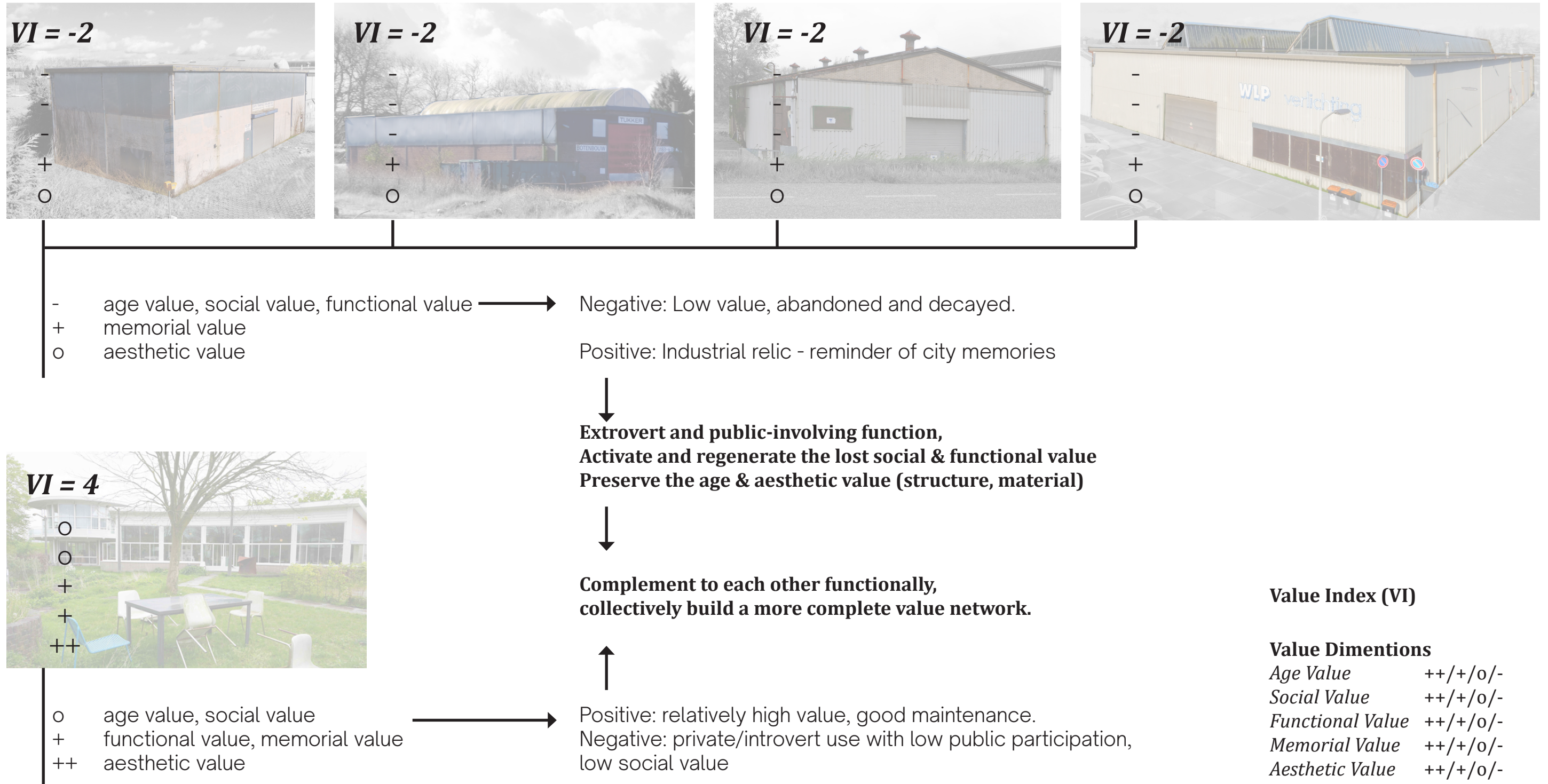
Positive: relatively high value, good maintenance.
Negative: private/introvert use with low public participation, low social value

Value Index (VI)

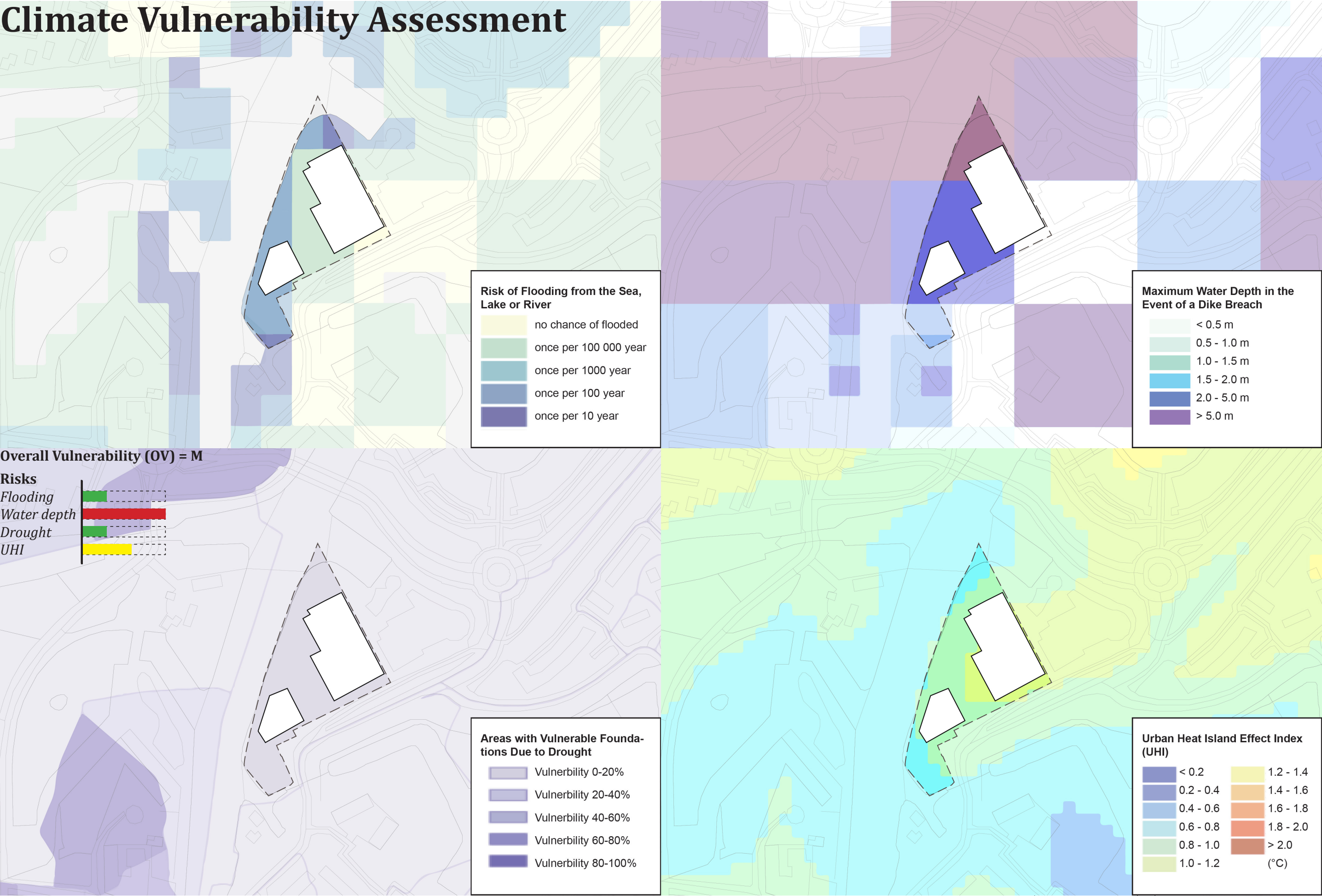
Value Dimentions

<i>Age Value</i>	++/+/o/-
<i>Social Value</i>	++/+/o/-
<i>Functional Value</i>	++/+/o/-
<i>Memorial Value</i>	++/+/o/-
<i>Aesthetic Value</i>	++/+/o/-

Value Assessment



Climate Vulnerability Assessment



Source of Data: Atlas Leefomgeving | Atlas Leefomgeving. (n.d.). <https://www.atlasleefomgeving.nl/>

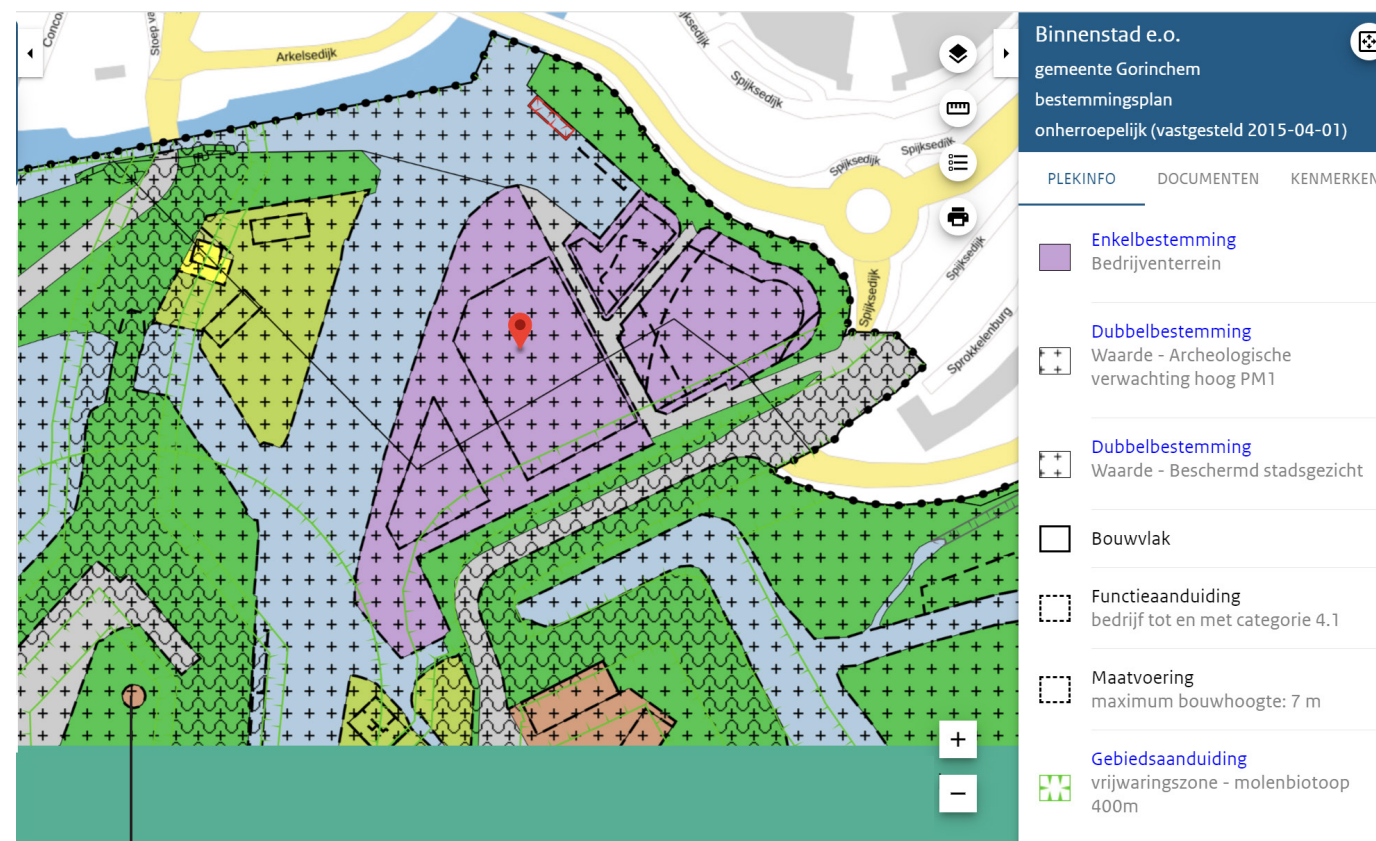
Hight Limits - local policy

Municipality Zoning Plan

This plot of land is single-destination for business use, featuring high archaeological significance, a protected cityscape, and it is within a 400m safeguarded mill biotope. The zoning allowances for industrial activities is up to category 4.1.

- Single Destination: Business Park
- Dual Destination Value: High archaeological potential (PM 1)
- Dual Destination Value: Protected Cityscape
- Function Designation: Company operations permitted up to and including Category 4.1
- Regional Designated Conservation Area: Mill Biome 400m, the building height should be 1/50 of the distance between the building and the height of the lowest point of the vertical mill wing.

Check Appendices for details on regulations & policies.



information: <https://www.ruimtelijkeplannen.nl/view>



Windmill 'Nooit Volmaakt'

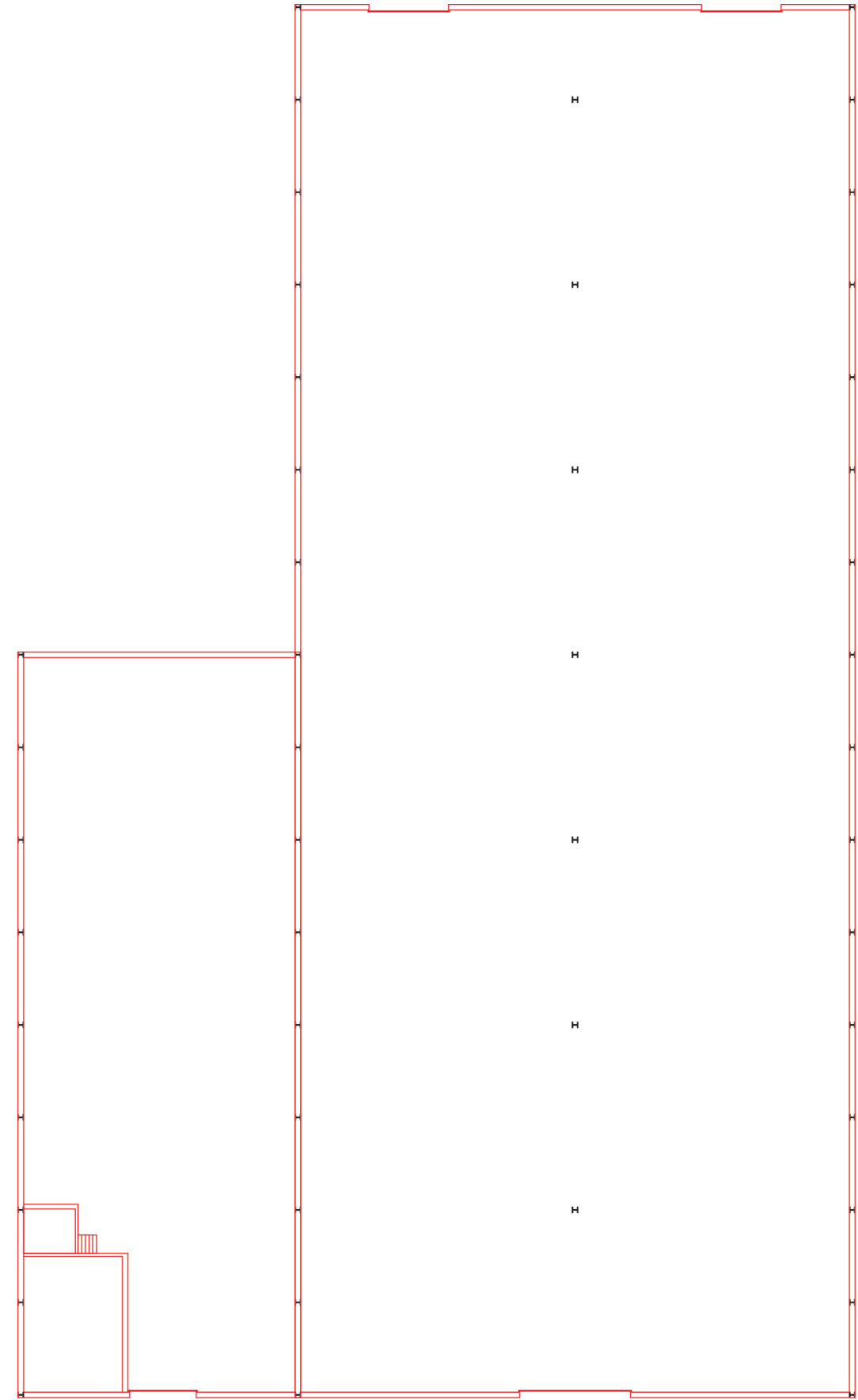
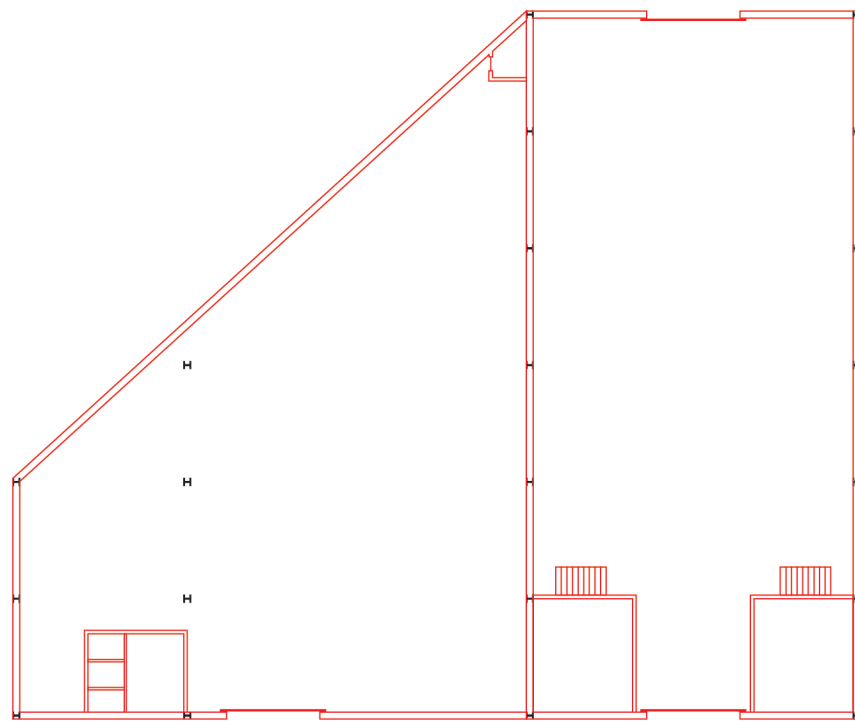
Location: Bagijnenwal 38
Construction Year: 1718
Original Function: Flour Mill
Current Use: Retail & Tourism
Status: National Monument



Minimum Intervention Strategy

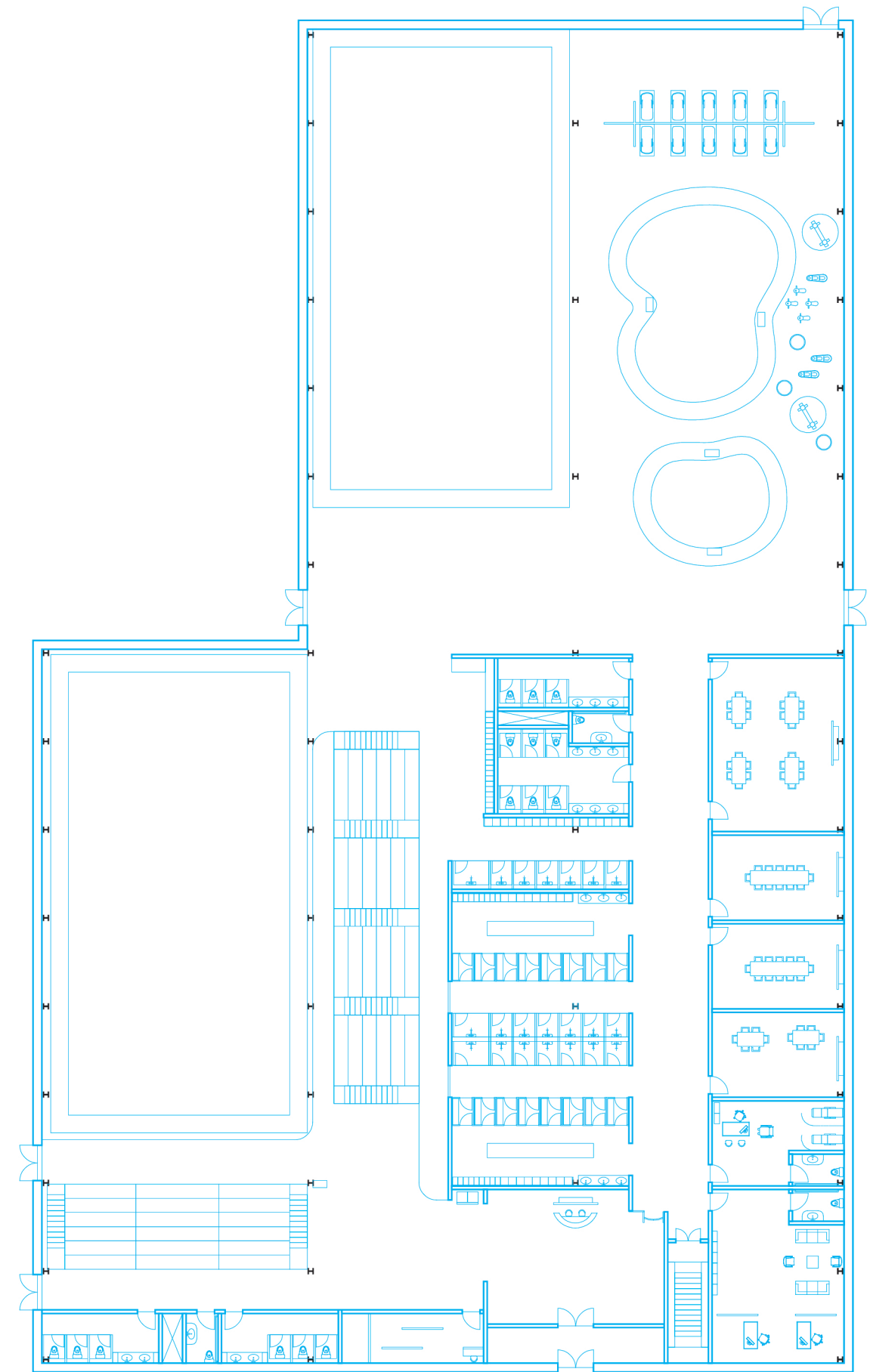
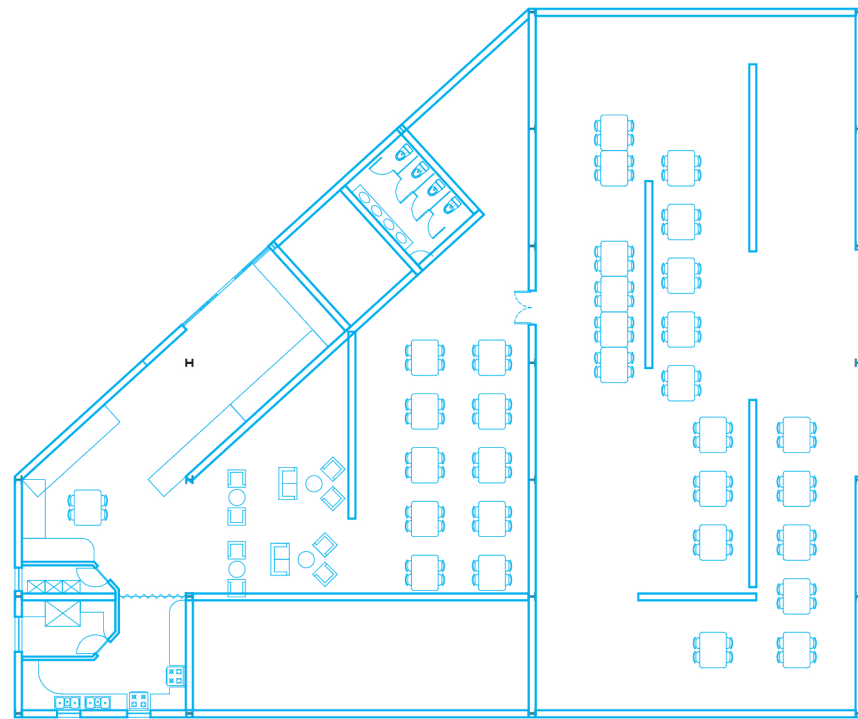
Intervention - Demolish, Keep, Add

— Keep
— Add
— Demolish



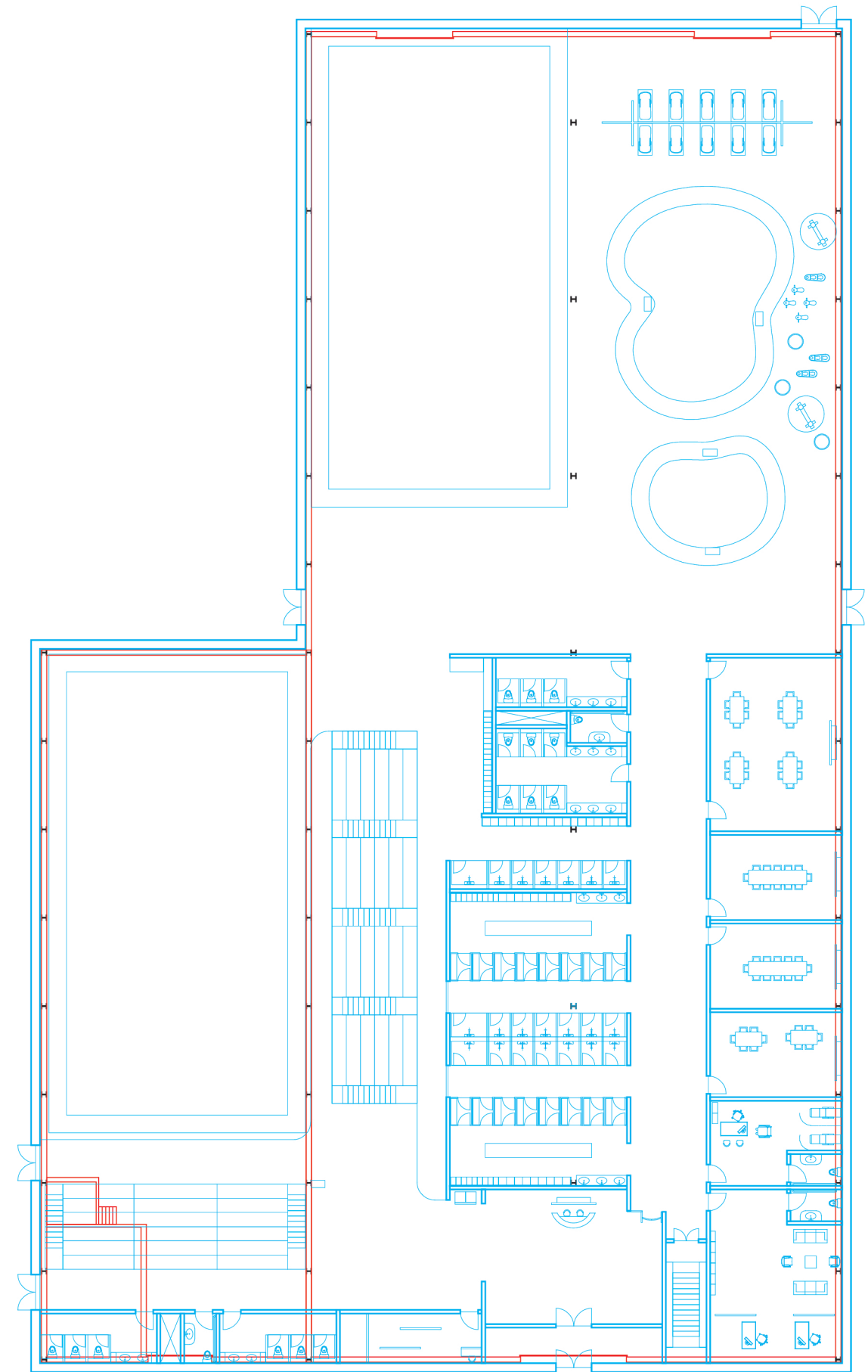
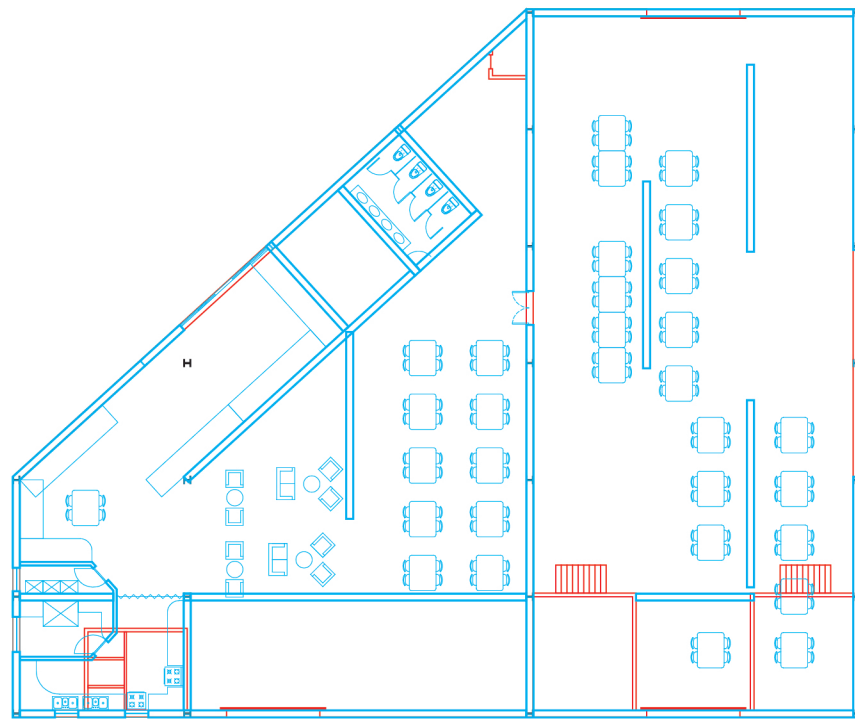
Intervention - Demolish, Keep, Add

— Keep
— Add
— Demolish

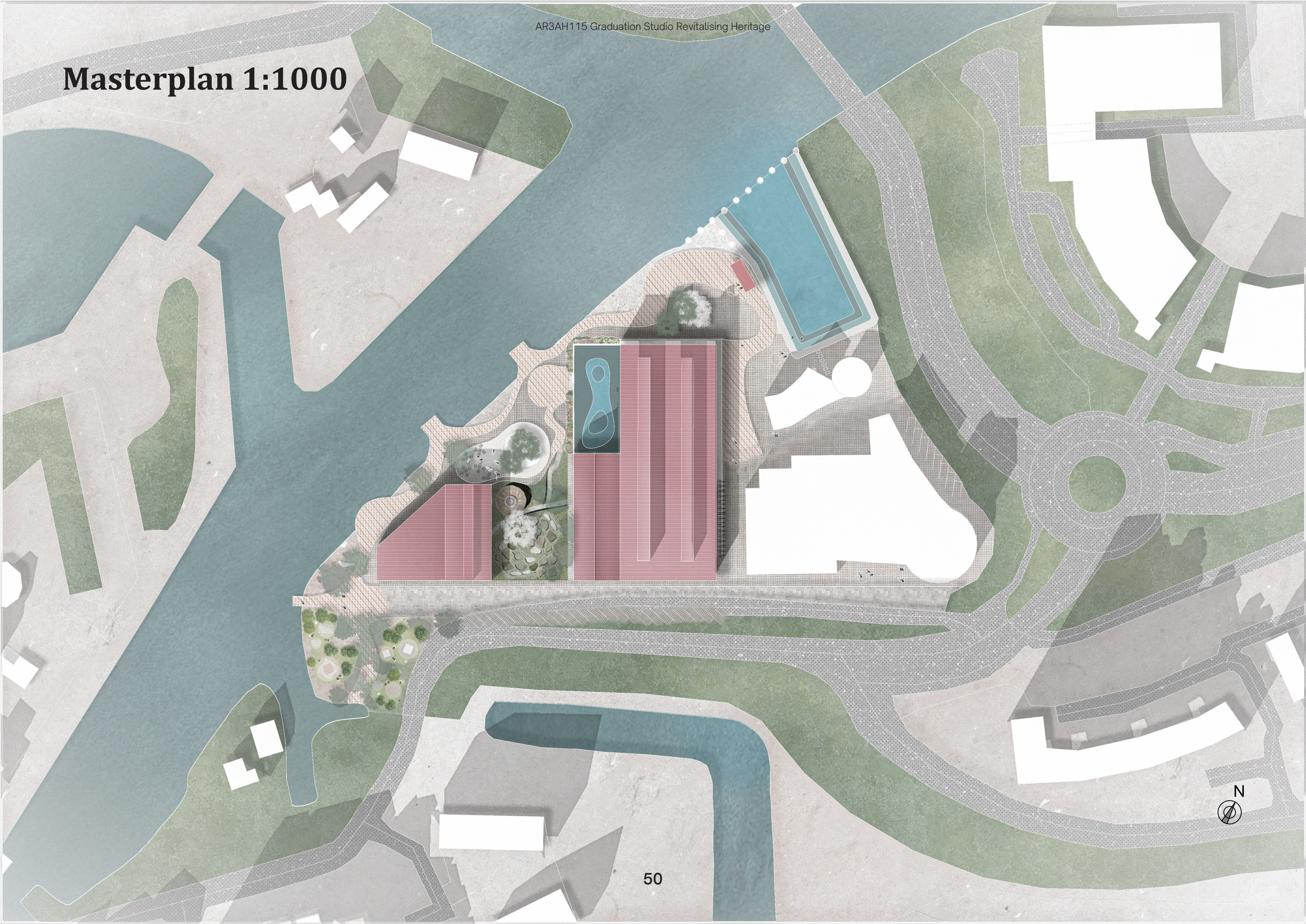


Intervention - Demolish, Keep, Add

— Keep
 — Add
 — Demolish



Masterplan 1:1000



Ground Floor Plan 1:500

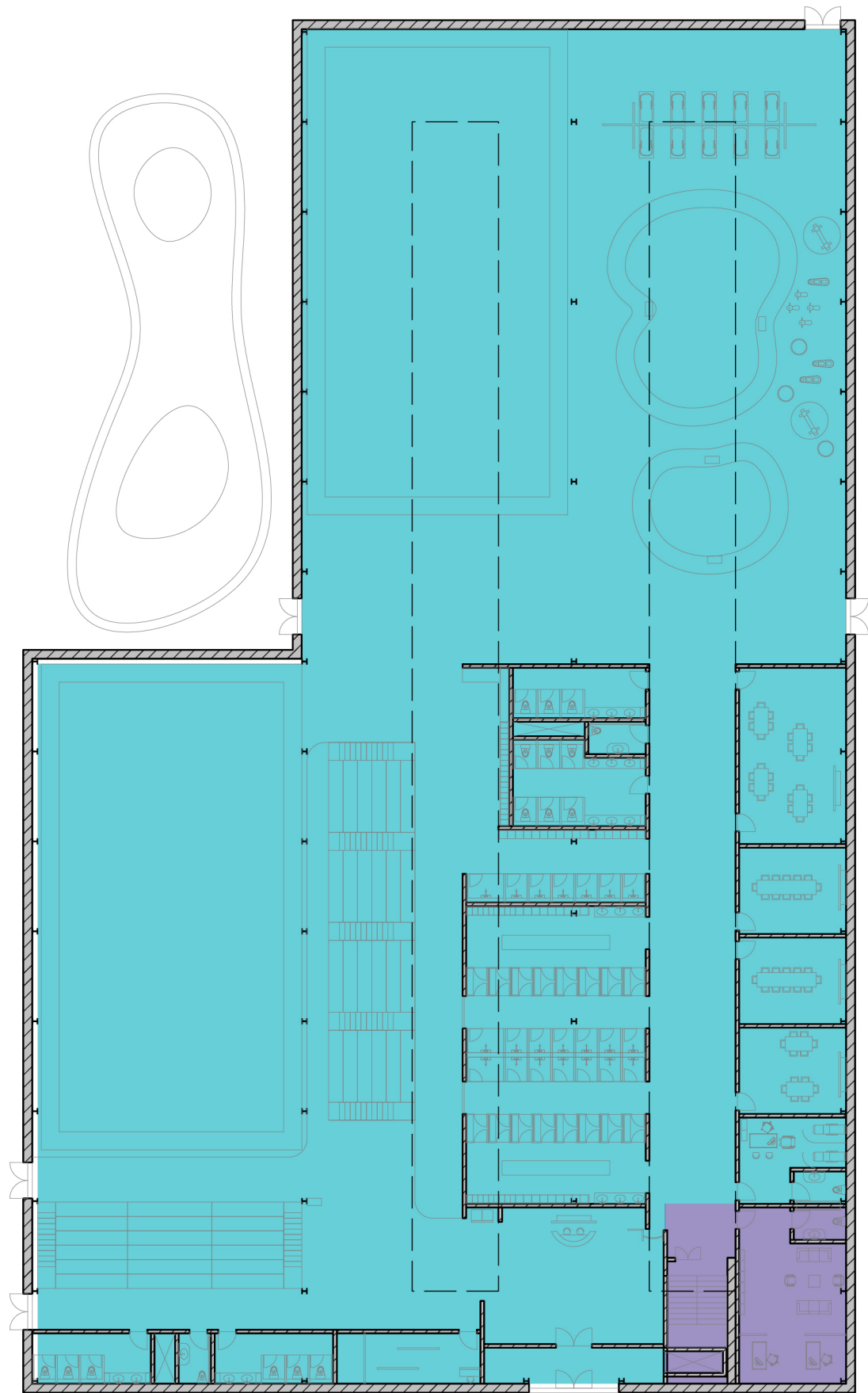
1. Main Entrance (Passengers & Bicycles)
2. Reception
3. Change Room & Bathroom
4. Family / Gender Neutral Change Room
5. Children's Area
6. Sauna / SPA / Water Therapy Area
7. Indoor Leisure Pool (0.9m)
8. Children's Pool (0.3m)
9. Change Room & Shower
10. Outdoor Leisure Pool (0.3m - 1.2m)
11. Indoor Sports Pool (0.9m - 1.8m)
12. Audience Seats
13. Rest / Waiting Area
14. Administration Office
15. Medical Room
16. Stairs to basement
17. Courtyard
18. Pavilion
19. Playing & Sitting Area
20. Waterfront Platform
21. External Change Room & Shower
22. Natural Public Pool (Linge River)
23. Dining Restaurant
24. Café
25. Outdoor Seats of the Restaurant & Café
26. Biophilic Land (installations: Bee's Nest, Insects Hotel, Worm Hotel, Birds Hotel, etc.)
27. Parking Area
28. Spijksdijk
29. Gallery & City Architect Office (National Monument)
30. Clinic & Vehicle Repairing Center
31. Linge River





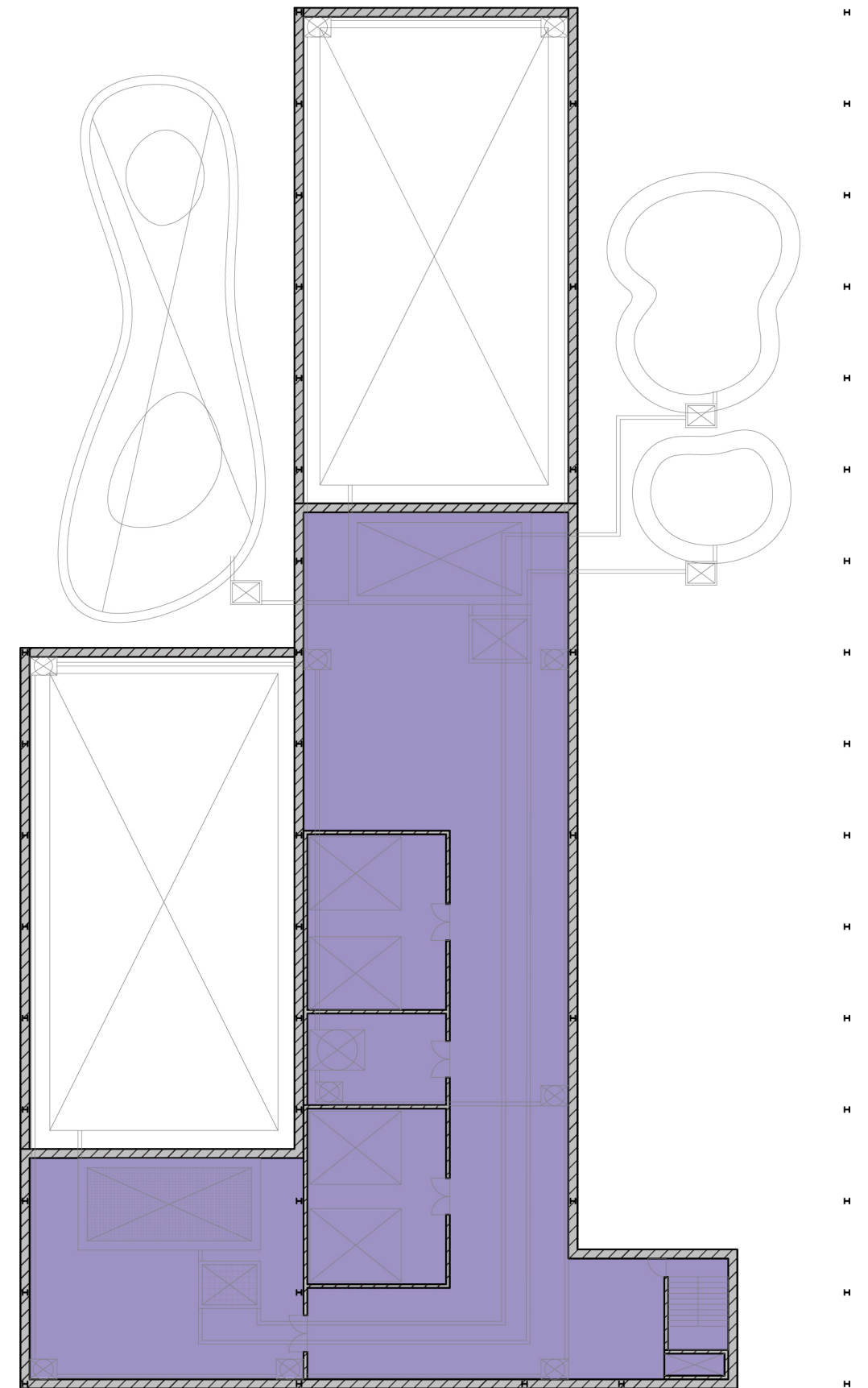
Ground Floor Plan 1:100



Ground Floor & Basement Plan 1:100



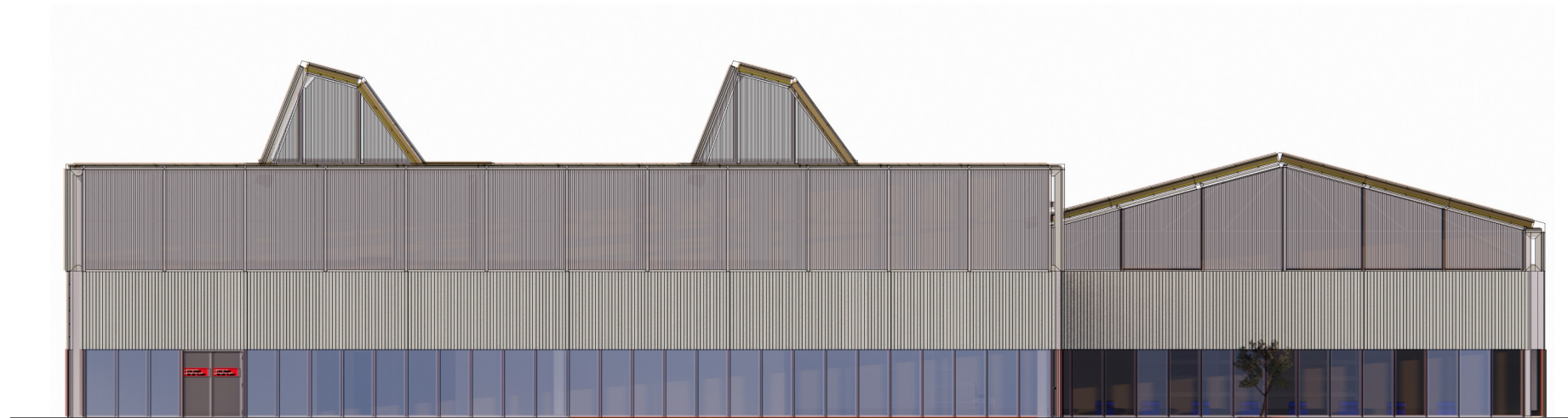
 User Area
 Service Area



Elevation S/N



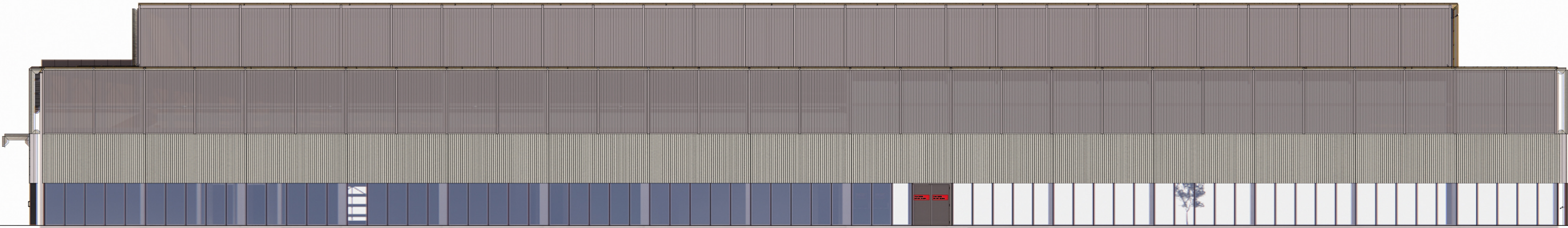
South Facade



North Facade



Elevation E/W



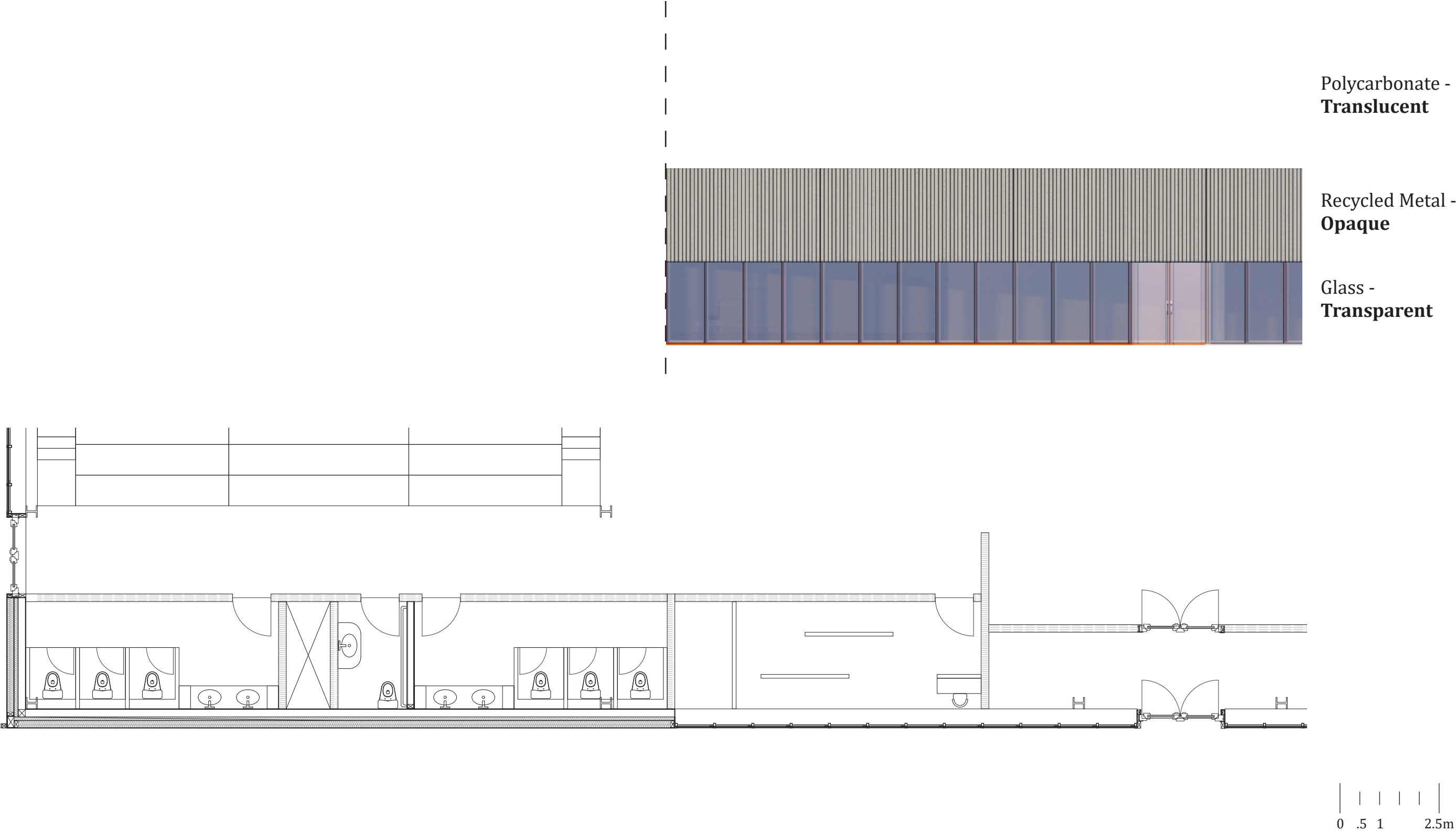
East Facade



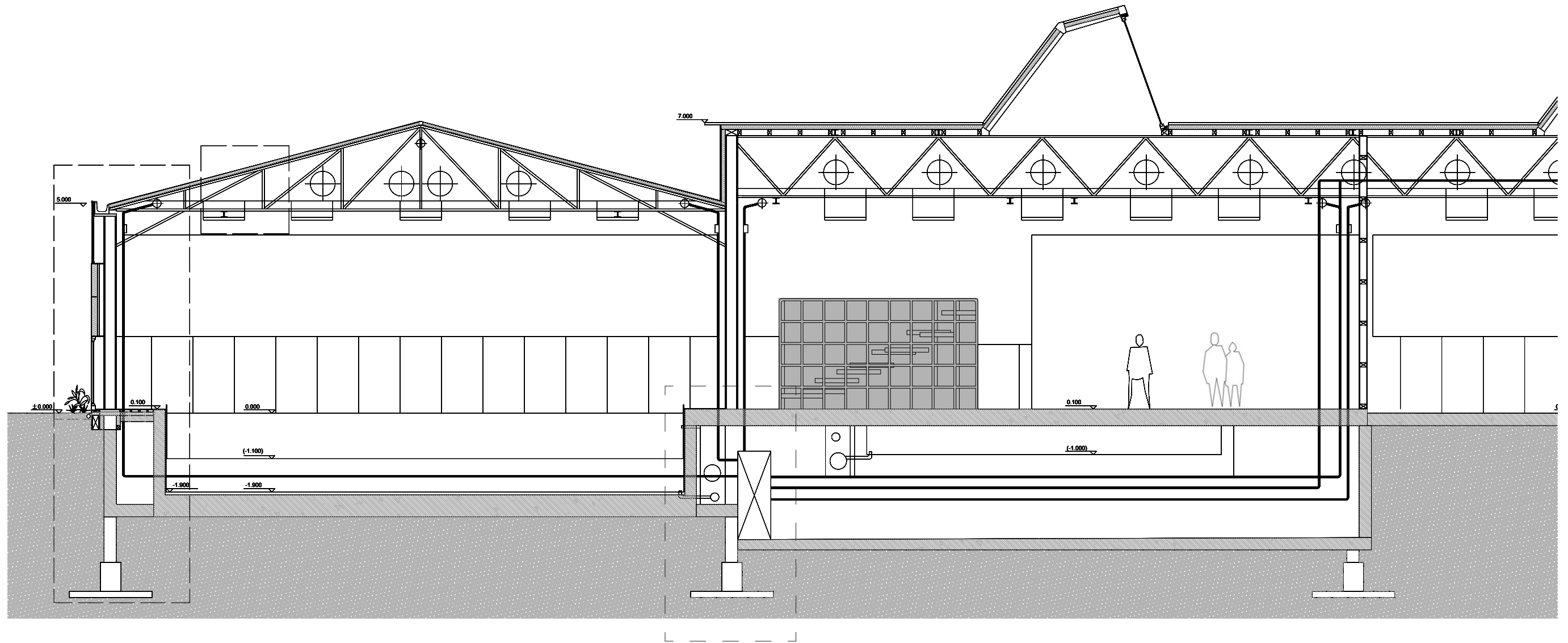
West Facade



Facade Horizontal Section 1:50

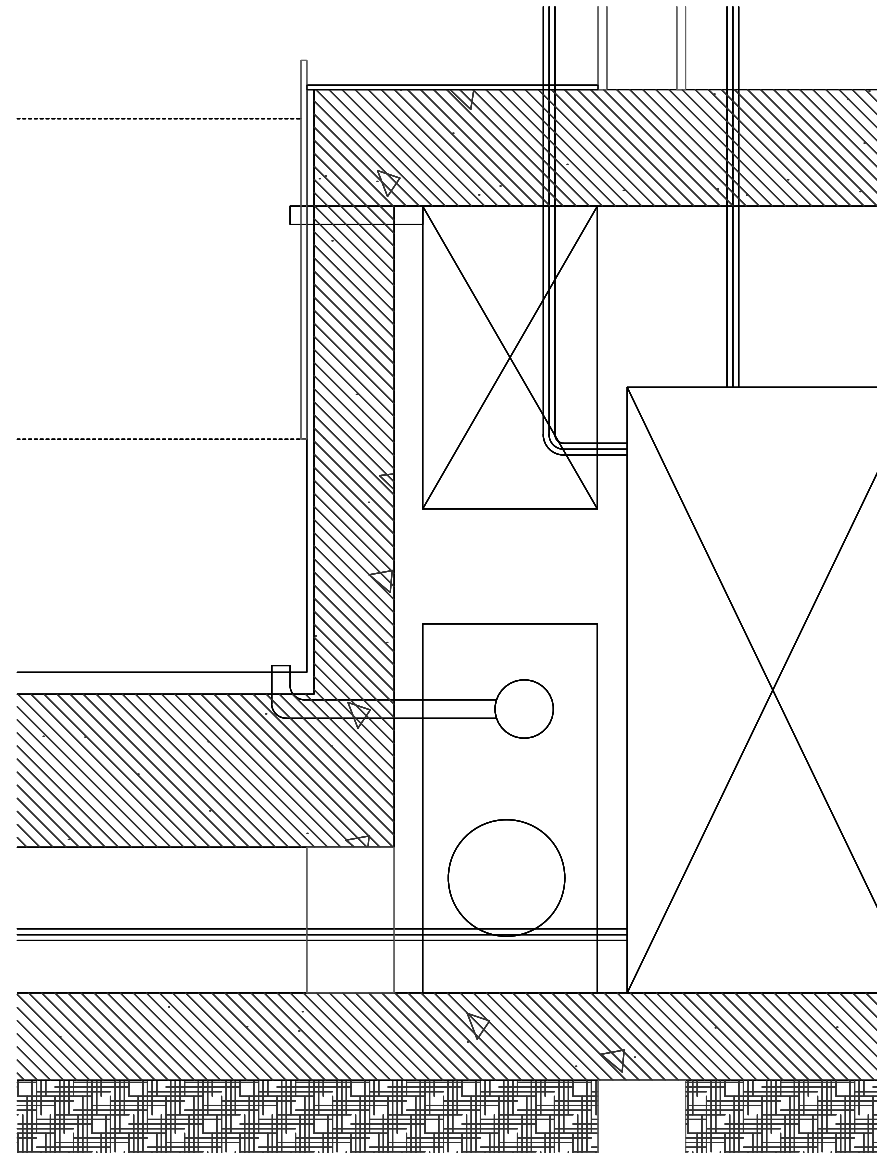


Vertical Section 1:50

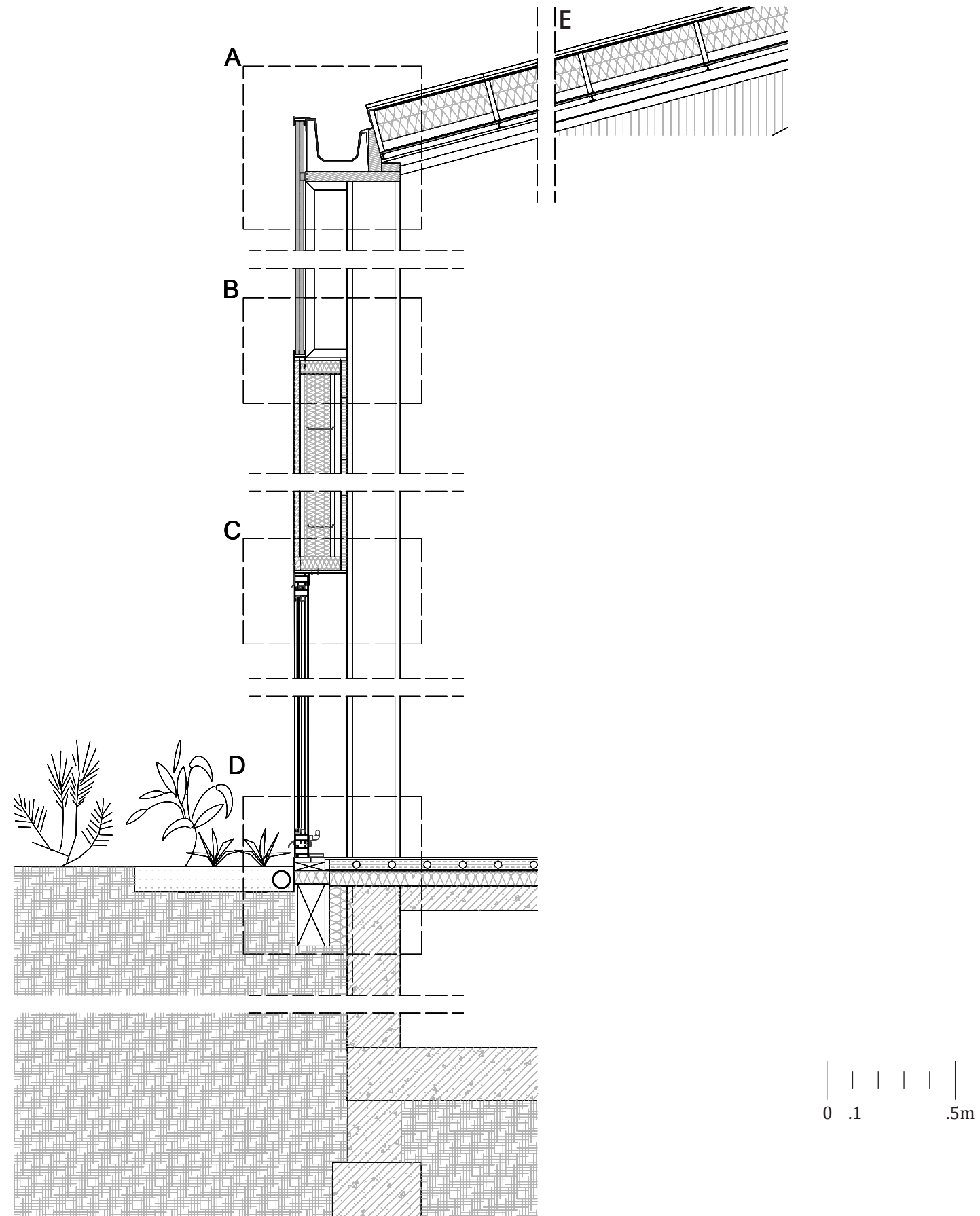


Equipment Space Detail 1:10

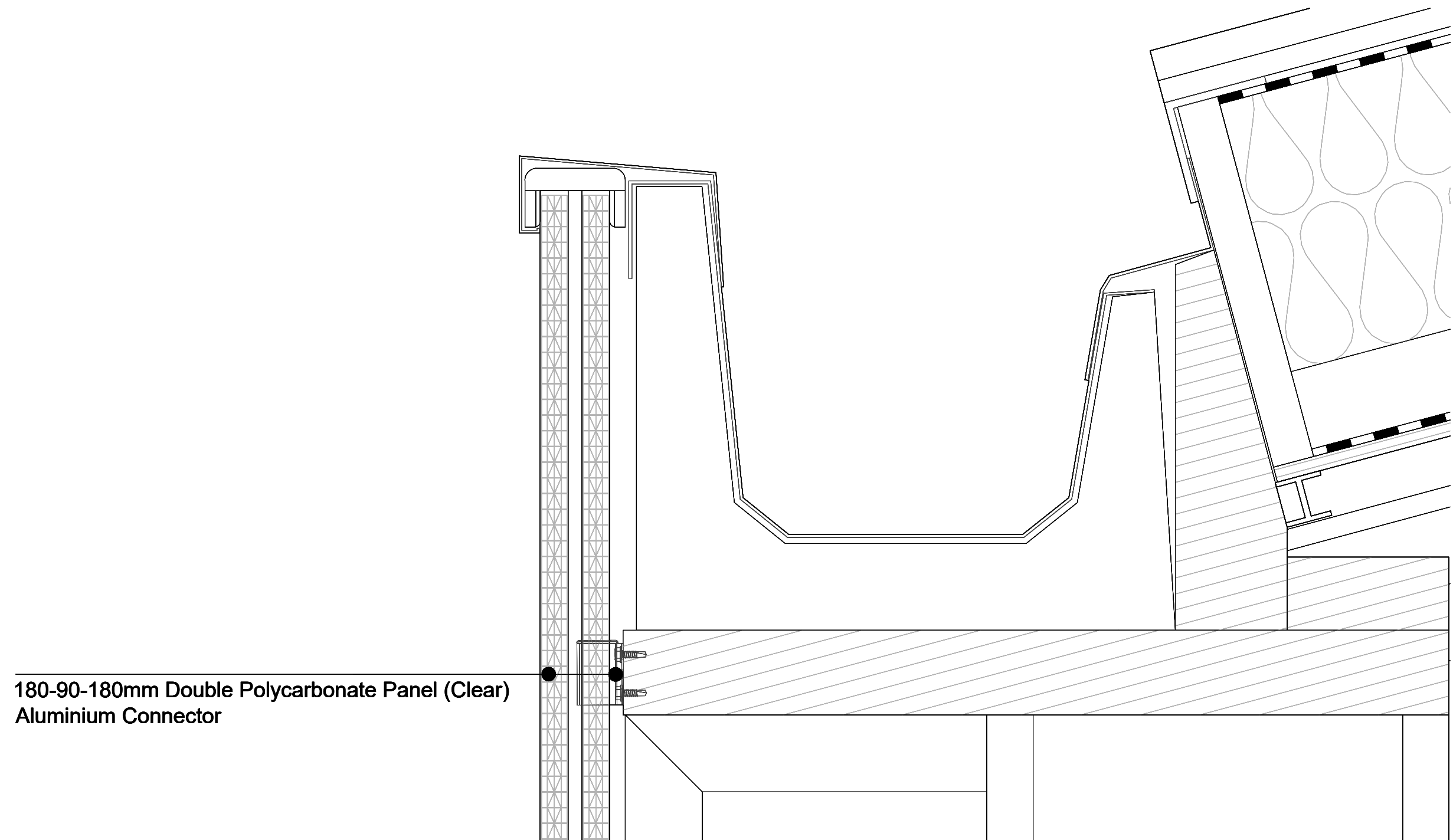
Mechanical Ventilation, Water Pumping and Heating System



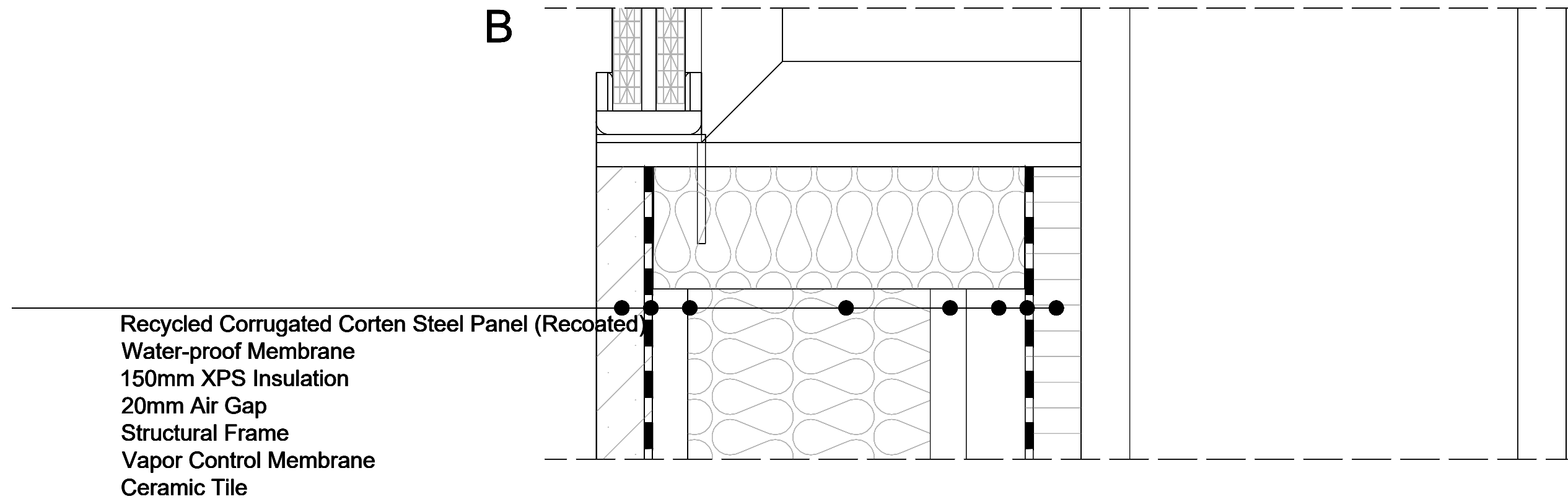
Facade Fragment Vertical Section 1:10



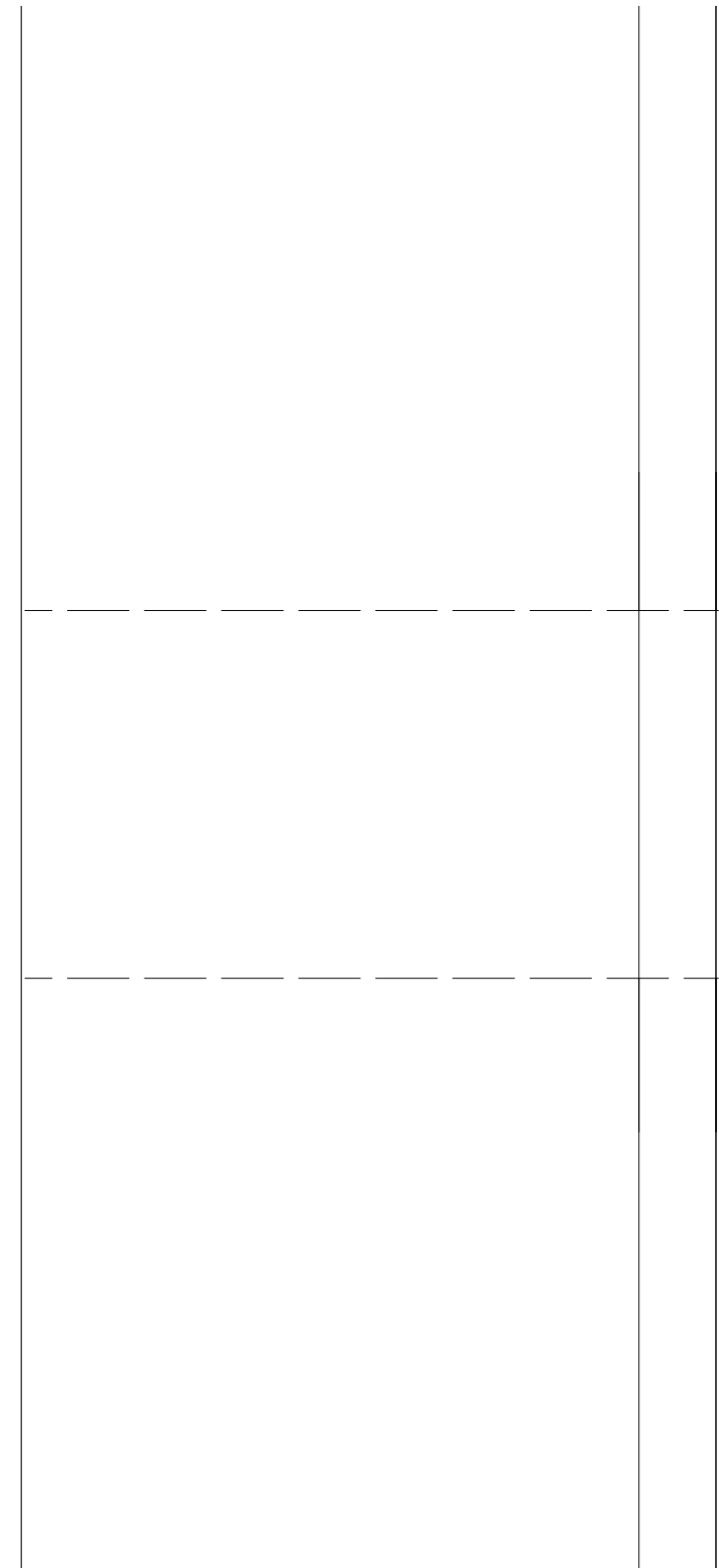
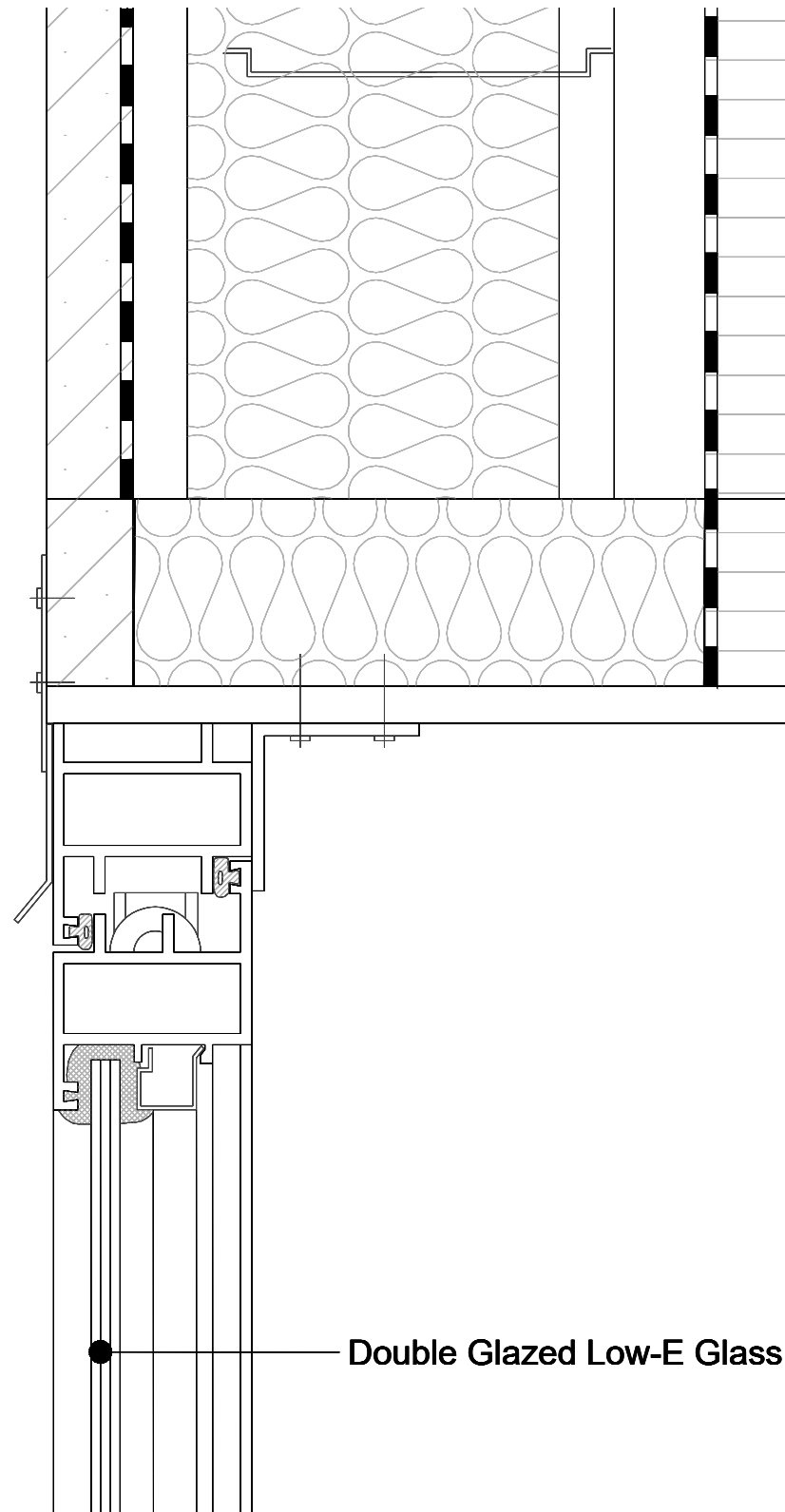
Construction Detail A 1:5



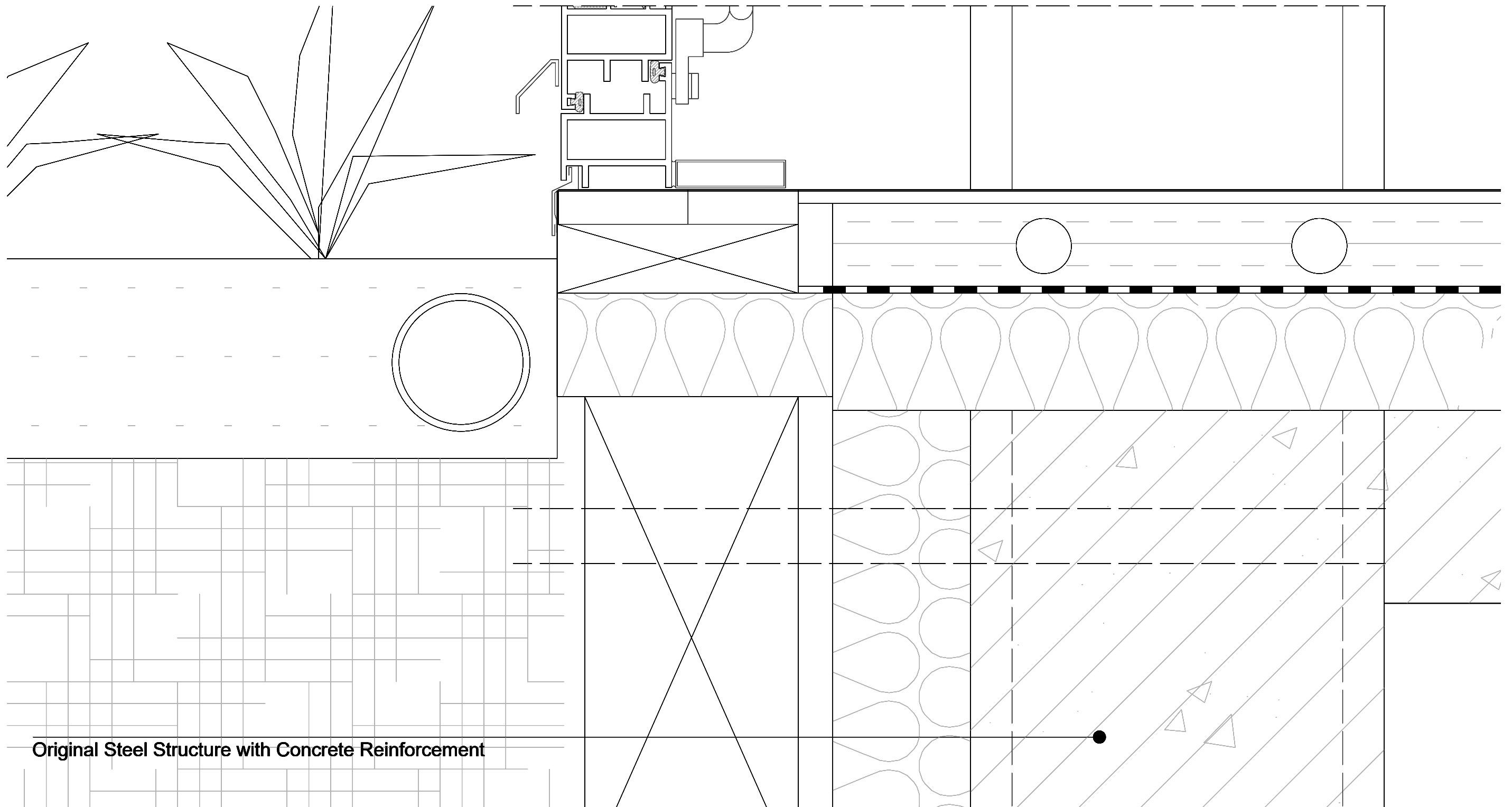
Construction Detail B 1:5



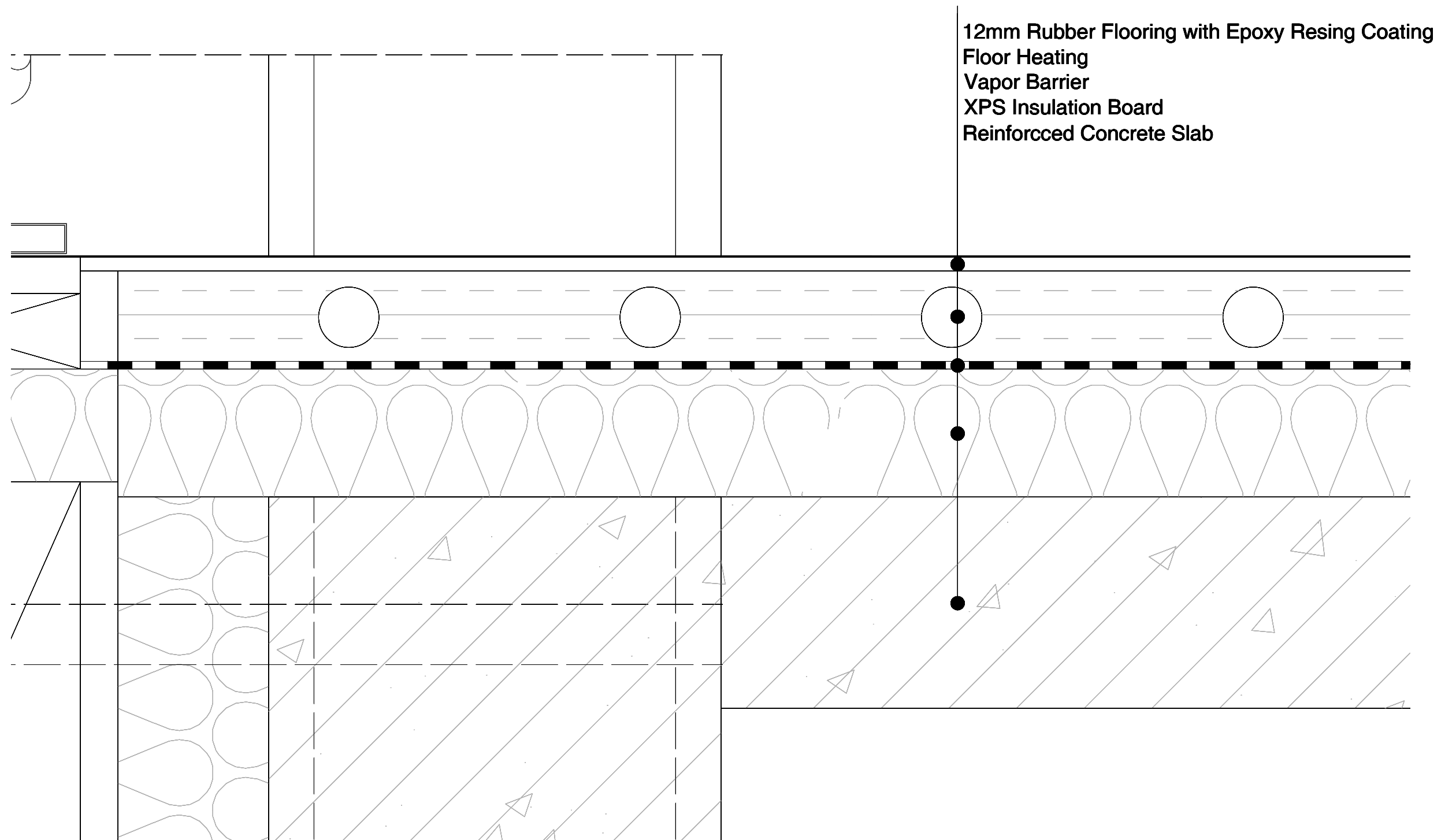
Construction Detail C 1:5



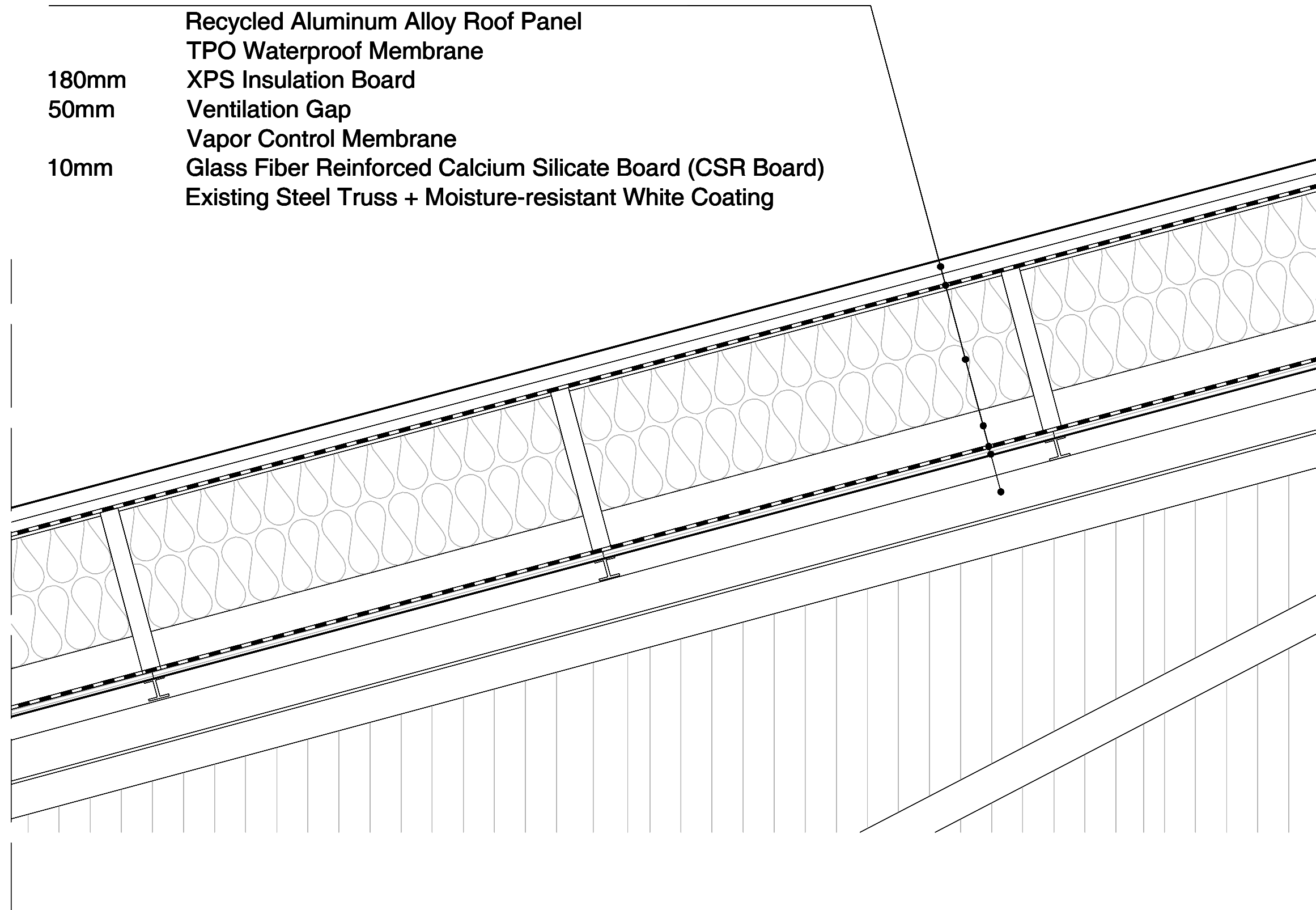
Construction Detail D1 1:5



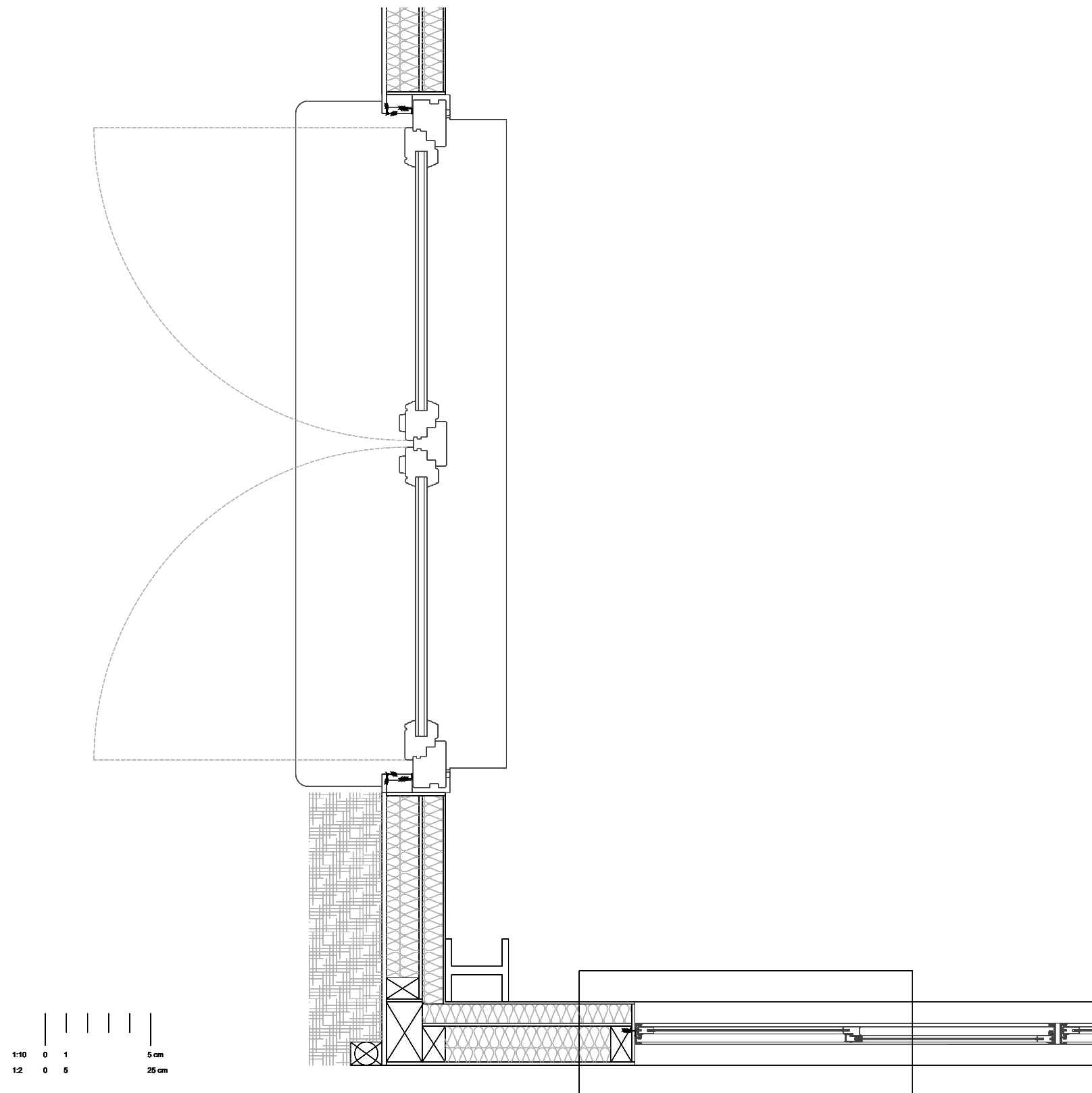
Construction Detail D2 1:5



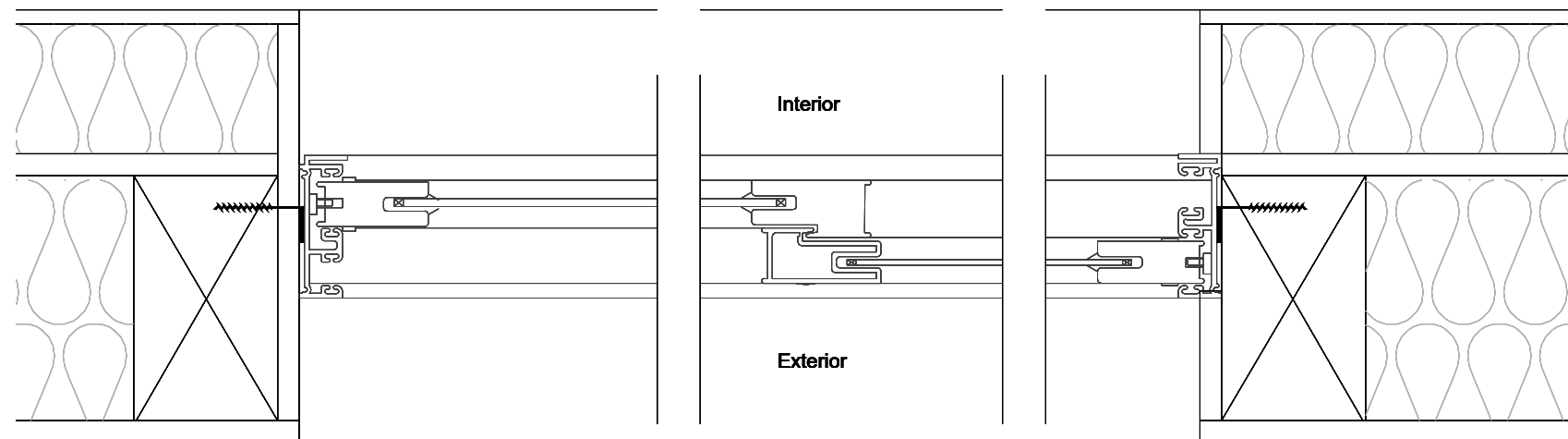
Construction Detail E 1:5



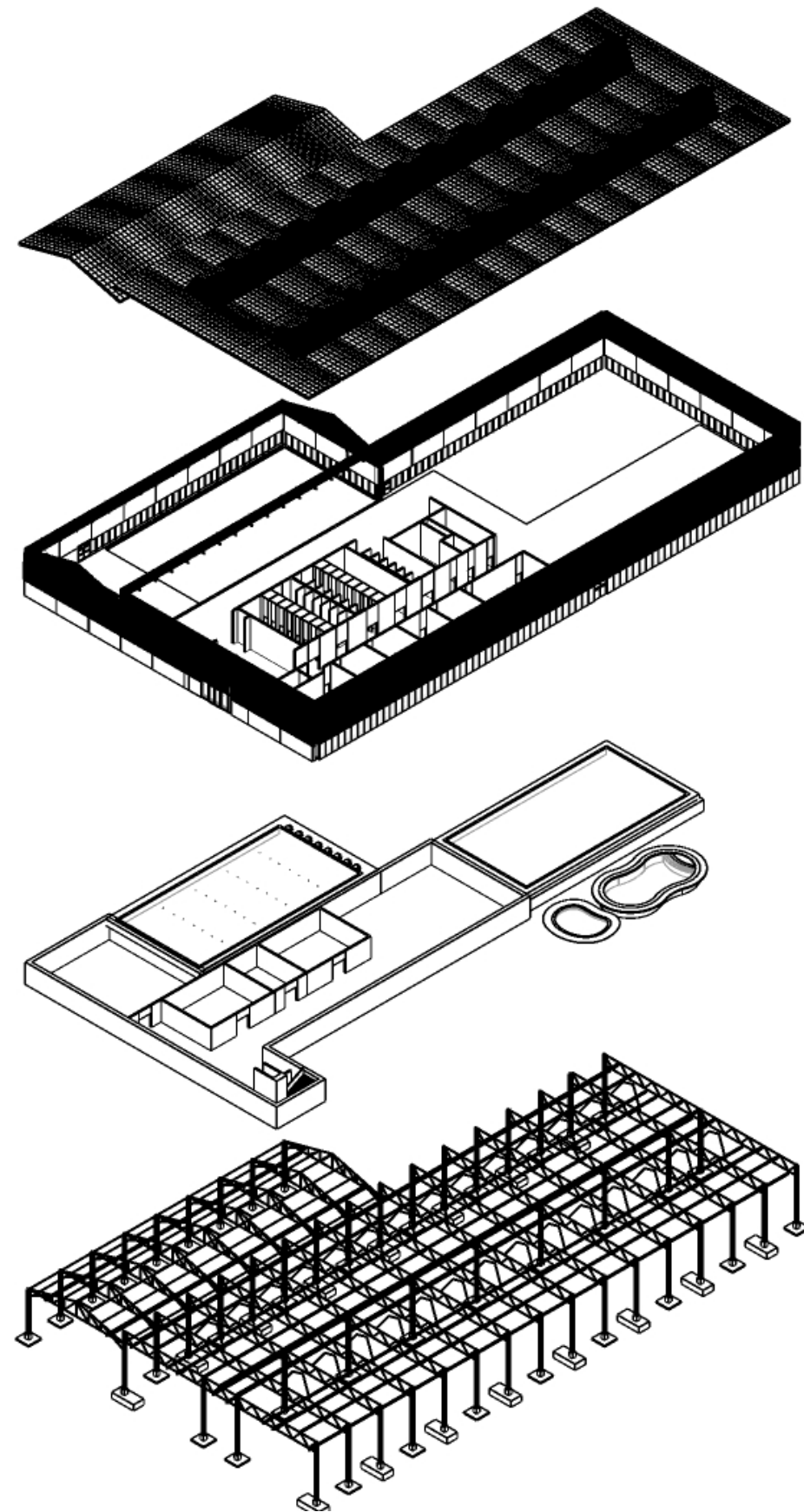
Facade Fragment Horizontal Section 1:10



Facade Fragment Detail 1:2



Exploded Axonometry



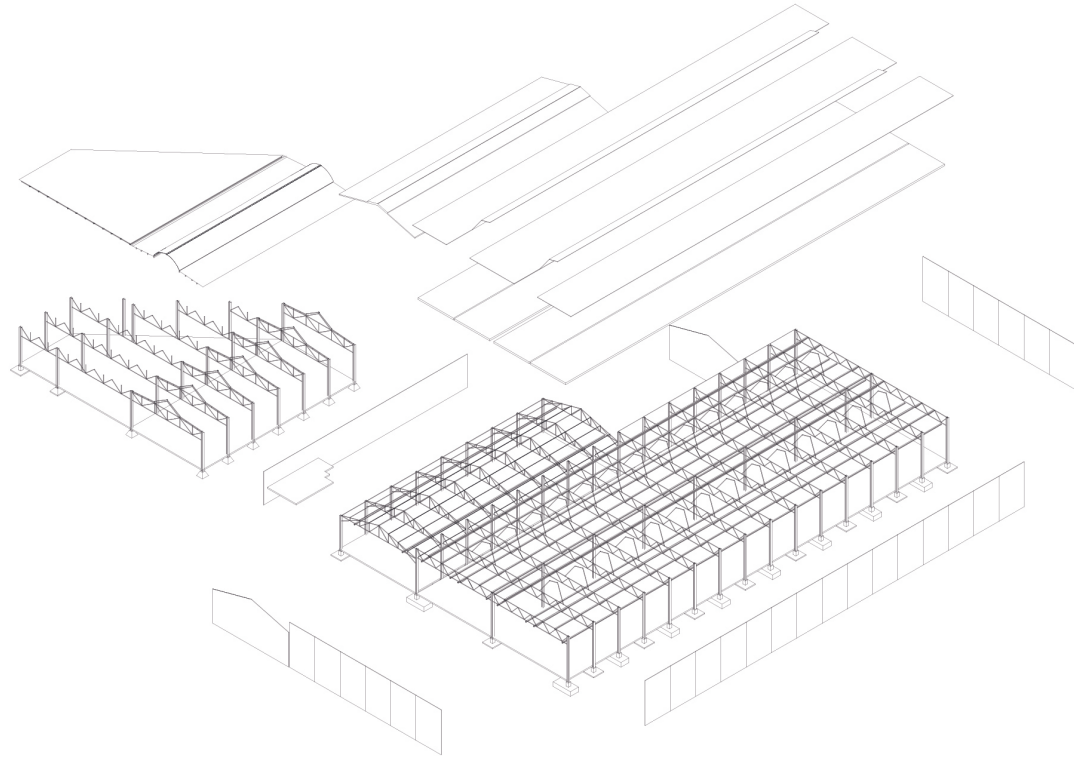
Roof

Skin

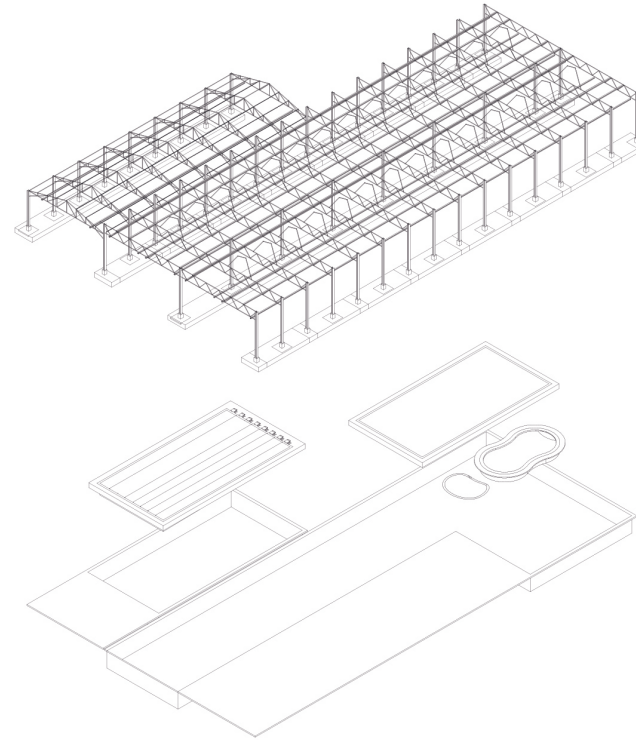
Space

Structure

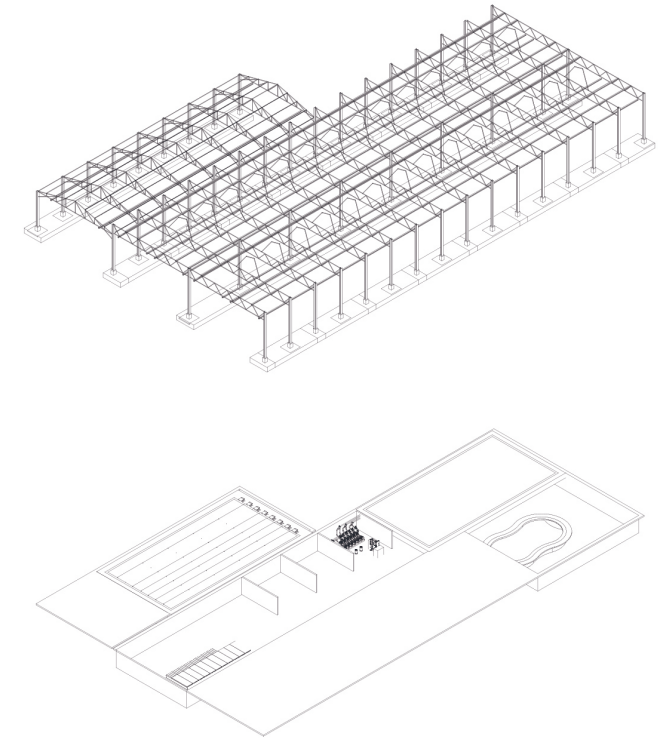
Construction Process



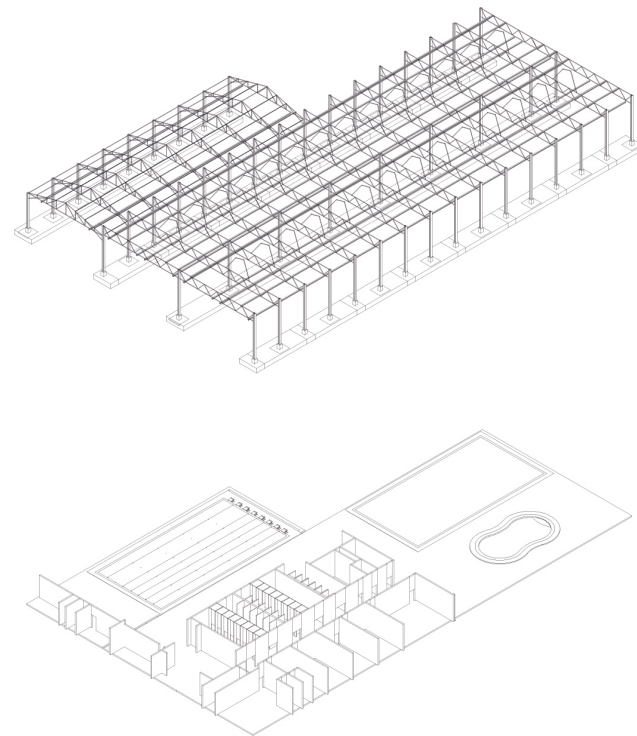
1. Removal of the existing skin, collect the taken down metal panels, repaint and prepare for reuse.



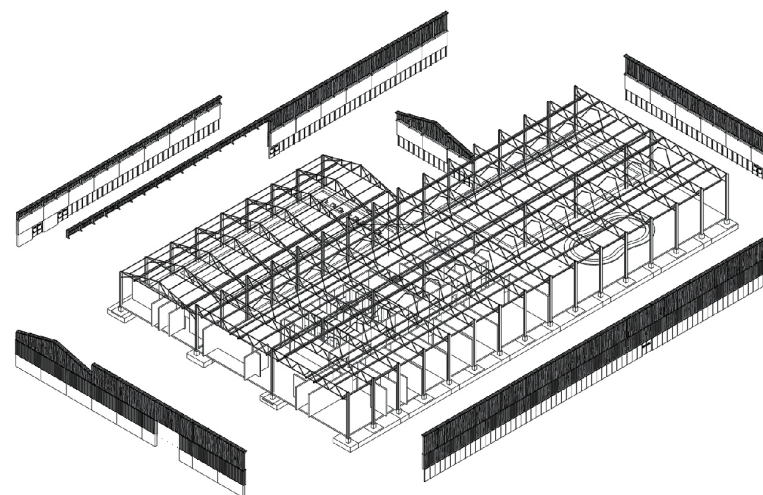
2. Dig in the earth to make space for the pools, and reinforce the foundation.



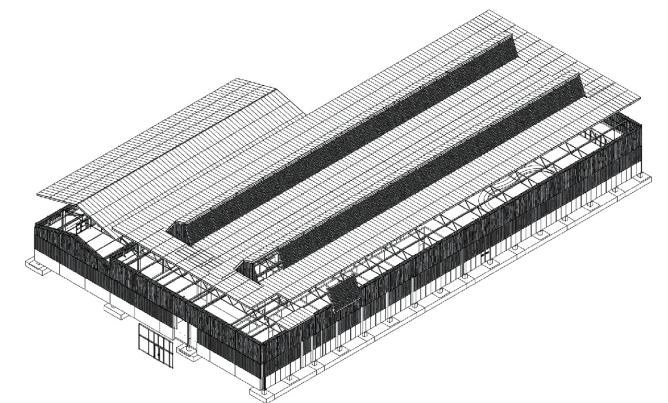
3. Set the machines in the underground equipment space, then construct the floor with prefabricated concrete slab. Build in heating pipes.



4. Construct the internal walls with prefabricated wall panels.

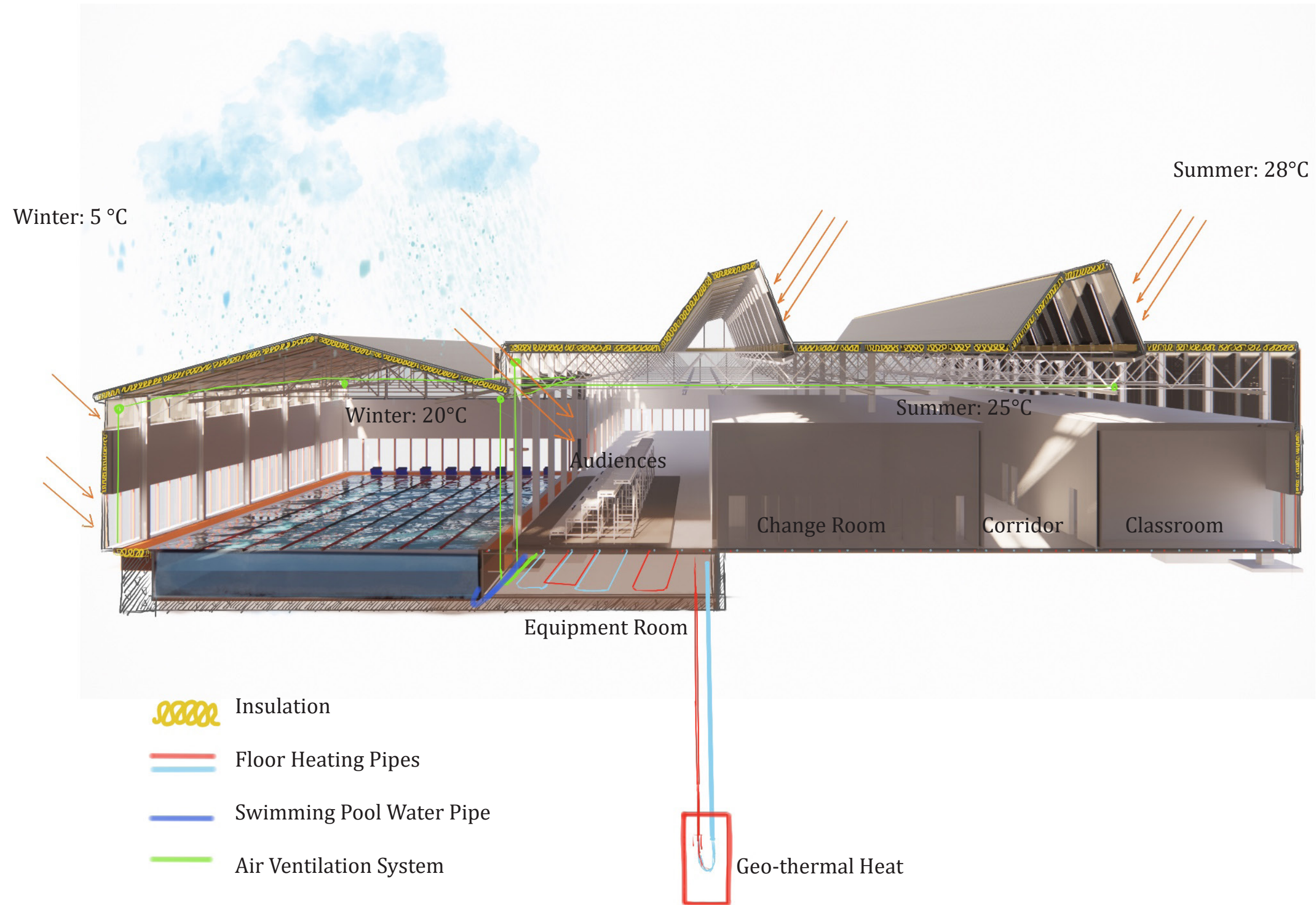


5. connect the external wall to the structure.

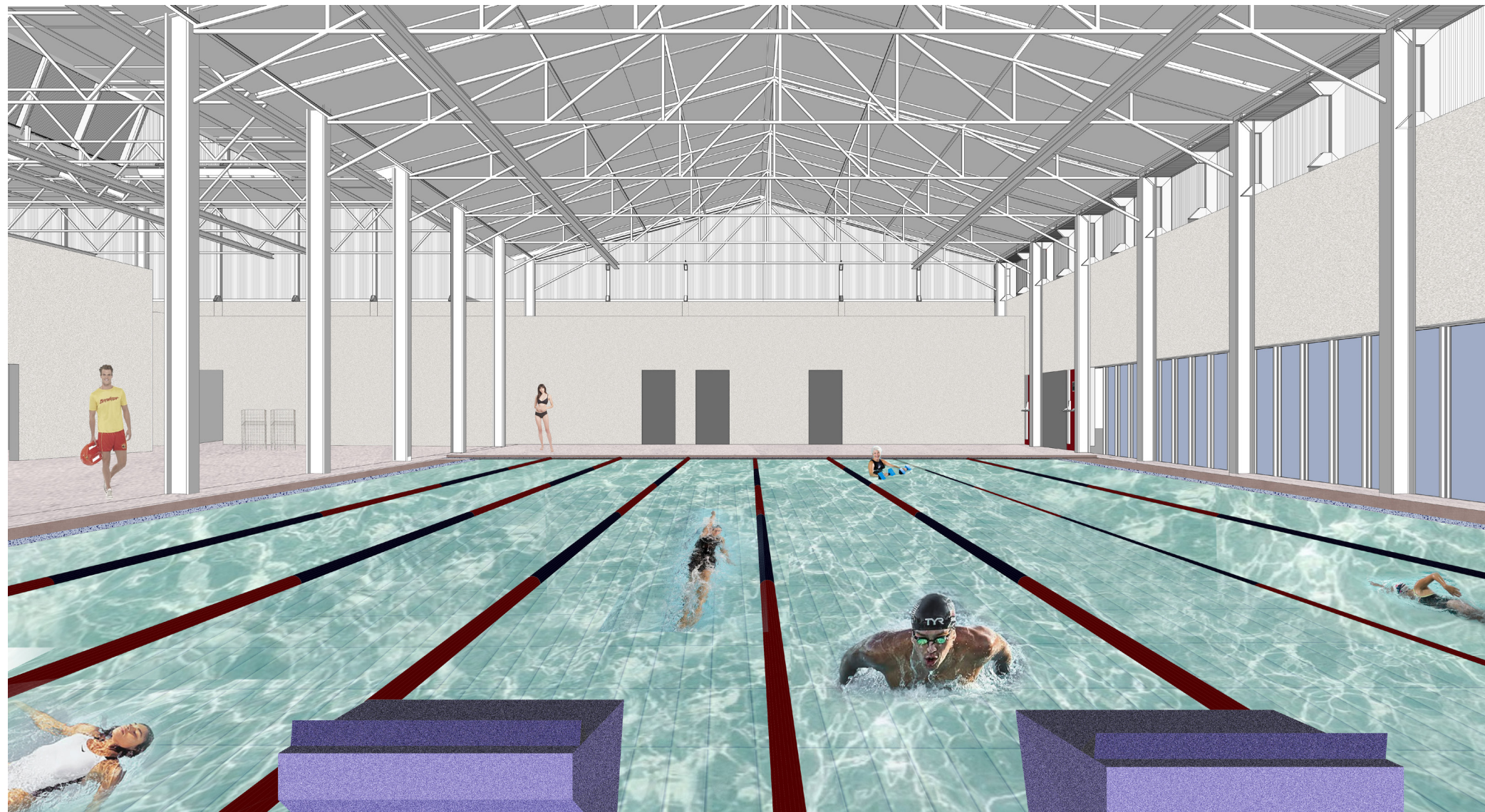


6. connect the roof panels (laminated timber panels & PC panels) to the trusses.

Climate Scheme



Scene 1: Swimming Pool



Scene 2: Corridor



Scene 3: Preparation Area



Scene 4: Public Space



Regeneration of Value?



- age value, social value, functional value
- + memorial value
- o aesthetic value

VI = 5



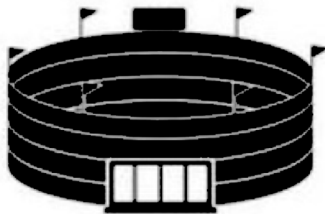
Social Value

- → ++



Functional Value

- → ++



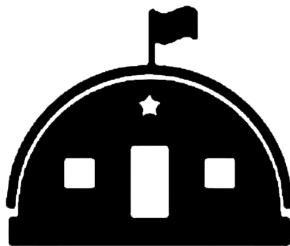
Memorial Value

+



Aesthetic Value

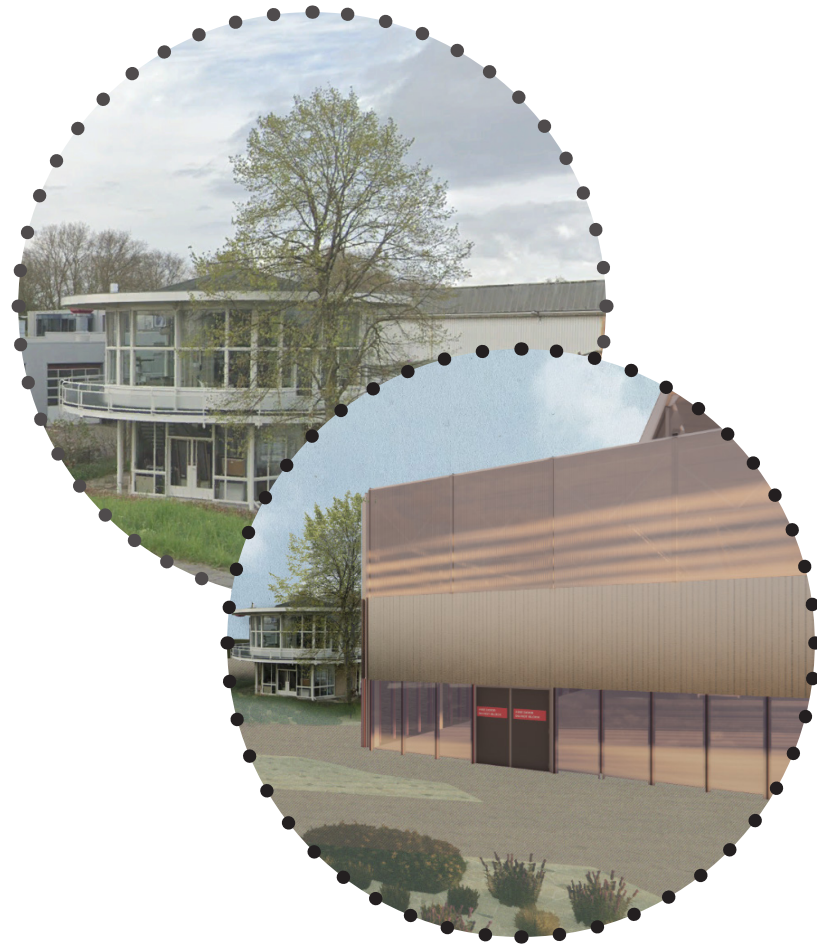
0 → +



Age Value

-





+ Symbiotic Value

Definition: a mutually beneficial relationship between the buildings, where their combined presence enhances the overall architectural value.



+ Regenerative Value

Definition: How the building revitalizes the area, bringing new energy, people, and economic activity.

Xiaoling Wei
P5 Presentation
06 Mar 2025

Regeneration of Value: Journey of a Waterfront Industrial Heritage from Abandoned to Alive



©Xiaoling Wei, Aerial Photo, De Vries Robbé warehouse between Linge River and Spijksedijk, Gorinchem (2024)