



# COMPLEX PROJECTS

## **Urban Takeoff** – water airport of health and play

BODIES & BUILDING BERLIN

Julia Chan

03/07/2024

# 1 INTRODUCTION

2 DESIGN BRIEF

3 DESIGN CONCEPT

4 IMPLEMENTATION

5 DEVELOPMENT

6 CONCLUSION




Introduction






# GOING TO LONDON ON 1 AUG



# Introduction

# TICKETS





## Select departure location

Cheapest flights

Direct flights

**Eindhoven**

Flights from

Direct

31 €

**Amsterdam**

Flights from

Direct


57 €

**Rotterdam**

Flights from

Direct

114 €



Delft

↔

London


Out

Th 1 Aug • 11:00 AM

+ Add a return


1 adult (26-59)

Add railcards



Train • €142.50

Bus

 Other days from €118.90 ^

Mon, Jul 29

Tue, Jul 30

Wed, Jul 31

**Thu, Aug 1**

Fri, Aug 2

Sat, Aug 3

Sun, Aug 4

from €118.90

from €129.90

^ Earlier

Thu, Aug 1, 2024

Standard

1st Class

10:31

2:57

Outbound

**€142.50**

Cheapest

1 Adult

Continue


to next step

>




# Introduction


## REMEMBERING...

[Home](#)[Onderwijs](#)[Begeleiding](#)[Administratie](#)[ICT](#)[Rechtspositie](#)[Voorzieningen](#)[Ondersteuning](#)

NL

EN





[TU Delft Studentenportal](#) > [Ondersteuning](#) > [Study Abroad](#) > [Green Travel](#)

[Study Abroad](#)[Outgoing Exchange Application Procedure](#)[University Exchange Partners & Networks](#)[Funding & Scholarships](#)[Diversity and Inclusion](#)[Safety, Insurance & Medical Services](#)[Green Travel](#)

## Green Travel

Are you also excited that it is possible to travel abroad again now Covid-19 restrictions are being relaxed? During the covid-19 pandemic, there was much less CO2 pollution, and the air quality was improved a great deal. Future travel plans will no doubt have an impact on this improvement, so it would be wonderful if we could preserve this improved air quality as much as possible.



**Let's make an effort together!**

**Did you know that many EU destinations can be reached by bus or train, saving lots of CO2 that you would have been responsible for emitting if you had travelled by plane?**

TU Delft would like to invite you to consider your travel options and encourage you to take a train or a bus to your destination. To travel green is to make a simple choice to lessen your negative impact on the environment, on a given destination and its local people. Individually you can make that change today to make a big difference tomorrow. **Let's make an effort together!**

The European Commission's programme Erasmus+ which supports students wishing to study abroad also sees the importance

# Introduction BY PLANE




Search: Netherlands - London • 1 Aug • 1 Adult

## Select departure location

**Cheapest flights** Direct flights

<b>Eindhoven</b> Flights from Direct <b>31 €</b>	<b>Amsterdam</b> Flights from Direct <b>57 €</b>	<b>Rotterdam</b> Flights from Direct <b>114 €</b>
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Delft ↔ London

Out: Th 1 Aug • 11:00 AM + Add a return

1 adult (26-59)  
Add railcards

Train • €142.50 Bus

Other days from €118.90 ^

Mon, Jul 29	Tue, Jul 30	Wed, Jul 31	Thu, Aug 1	Fri, Aug 2	Sat, Aug 3	Sun, Aug 4
Q	from €118.90	from €129.90		Q	Q	Q

^ Earlier

Thu, Aug 1, 2024 Standard 1st Class

10:21 2:57

Outbound  
**€142.50**  
Cheapest  
1 Adult

**Continue**  
to next step >



Introduction

# FEELING GUILTY?



# Introduction

## WHAT IF...?





Introduction

# GETTING TO THE AIRPORT



# TOO FAR AWAY & TOO NOISY?





# Introduction

## WHAT IF...?

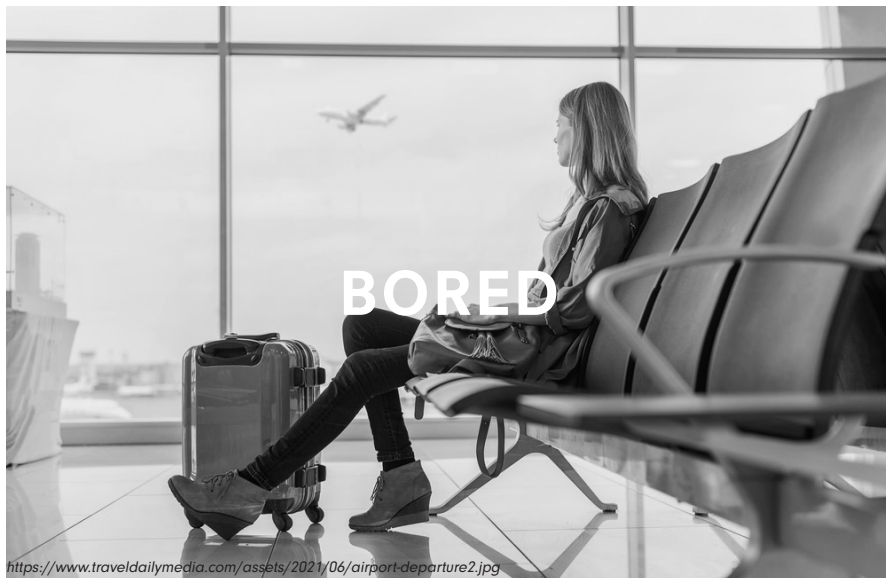




# WAITING FOR BOARDING



# TIRED OF THE LONG WAIT?





# Introduction

## WHAT IF...?







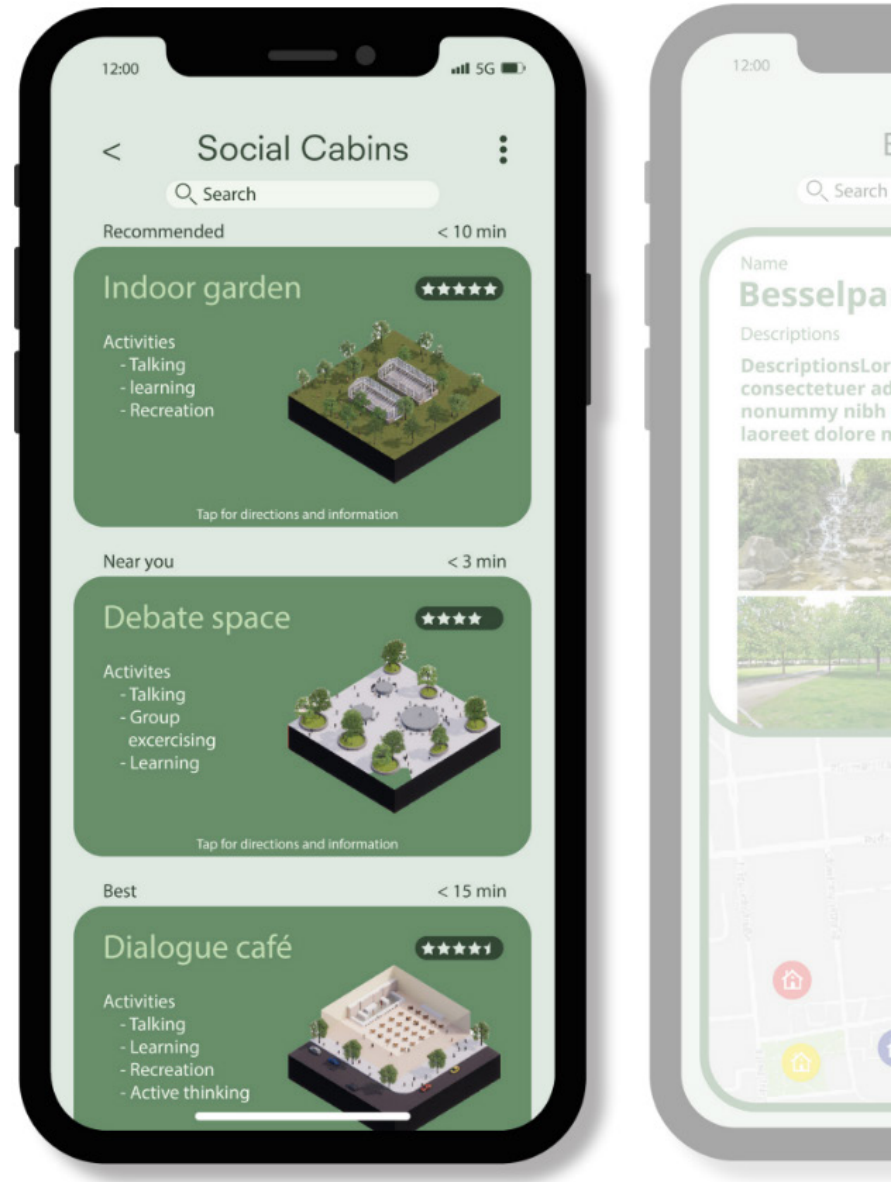
Introduction

# GROUP HEALTH

## COMPLEX PROJECTS

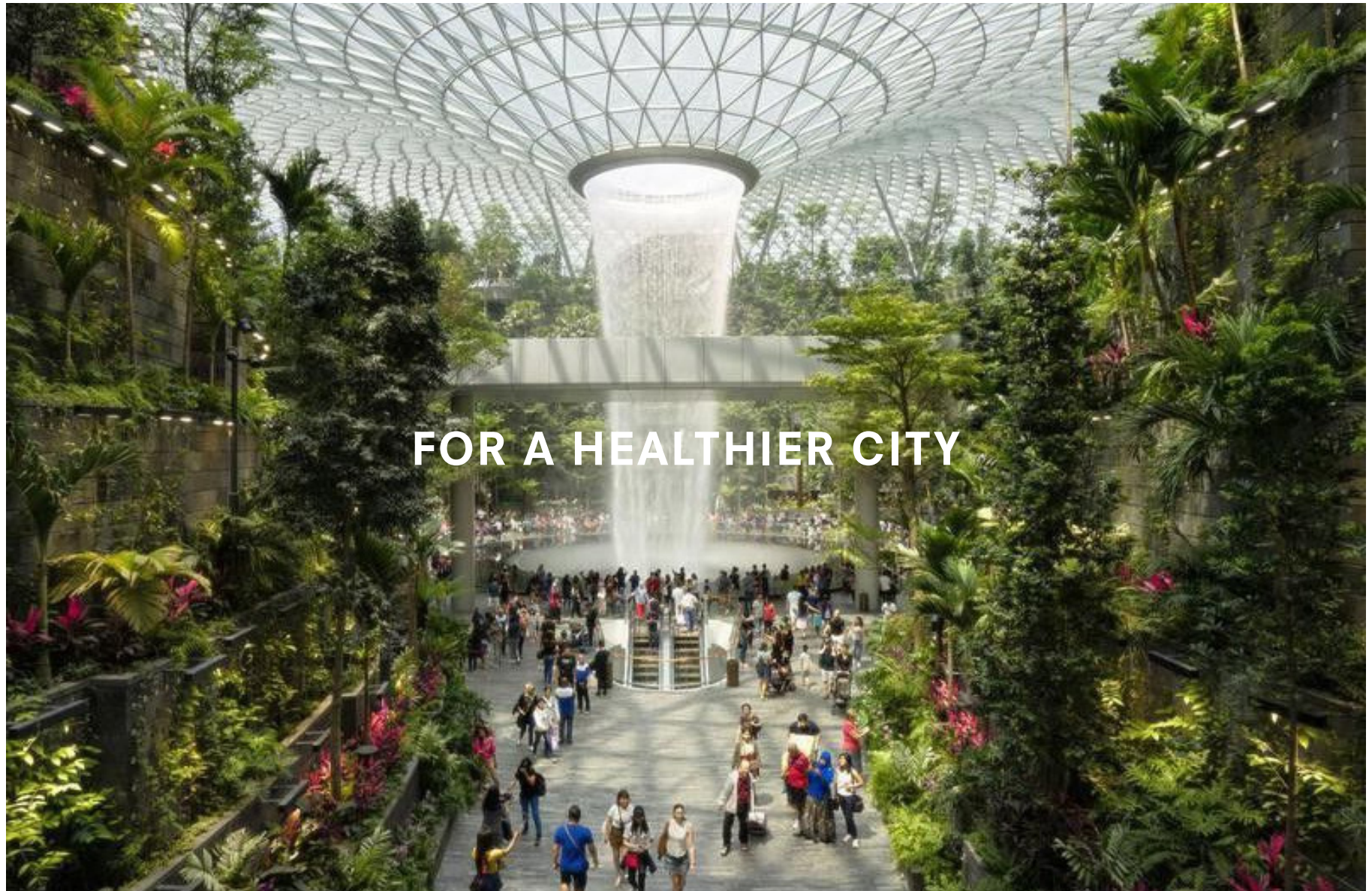
# HEALTH

BODIES & BUILDING BERLIN  
Group 7





# NEXT GENERATION AIRPORT



FOR A HEALTHIER CITY



# RESEARCH QUESTION



How to design an airport in the urban context which dedicates its **infrastructure** for a **healthier city**?

# ADDRESSING NEEDS OF...



<https://nenevalley.net/all-terrain-wheelchairs-arriving-soon-at-nene-park/>



<https://www.tha.org/author/joey/>



# ADDRESSING NEEDS OF...



<https://nenevalley.net/all-terrain-wheelchairs-arriving-soon-at-nene-park/>



<https://www.tha.org/author/joey/>



<https://visitidaho.org/trip-guides/take-hike-sawtooths-3-beautiful-trails-near-redfish-lake/>



<https://www.eft-berlin.de/2022/07/am-30-juli-grossen-stress-in-den-griff-bekommen/>

# ADDRESSING NEEDS OF...



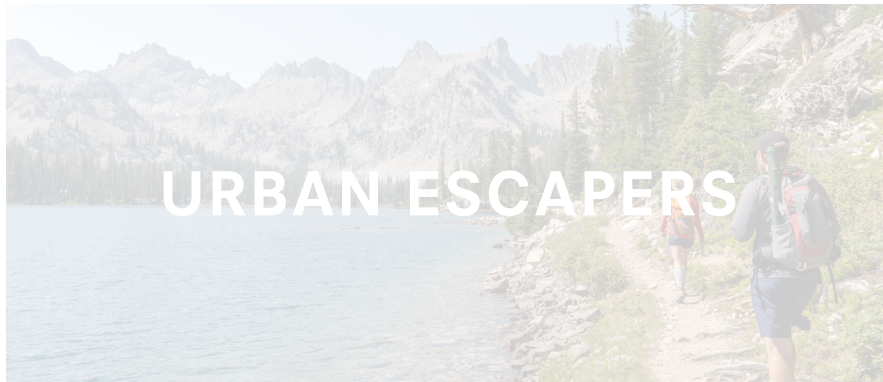
RURAL PATIENTS

<https://nenevalley.net/all-terrain-wheelchairs-arriving-soon-at-nene-park/>



HEALTHCARE

<https://www.tha.org/author/joey/>



URBAN ESCAPERS

<https://visitidaho.org/trip-guides/take-hike-sawtooths-3-beautiful-trails-near-redfish-lake/>



URBAN STRESS

<https://www.eft-berlin.de/2022/07/am-30-juli-grossen-stress-in-den-griff-bekommen/>



PUBLIC VISITORS

<https://blog.cheapism.com/amusement-parks-for-adults/>



FREETIME

<https://www.inc.com/jessica-stillman/exactly-how-much-free-time-you-need-each-day-to-maximize-happiness-according-to-a-new-study-of-35000-people.html>

Introduction

# PROPOSAL

**NEW TECHNOLOGY**  
**NEW ARCHITECTURE**



# PROPOSAL: NEW TECHNOLOGY



<https://www.vikingair.com/viking-news/media-centre/viking-floats-400s-seaplane-derivative-series-400-twin-otter>



# PROPOSAL: NEW TECHNOLOGY





# PROPOSAL: NEW ARCHITECTURE



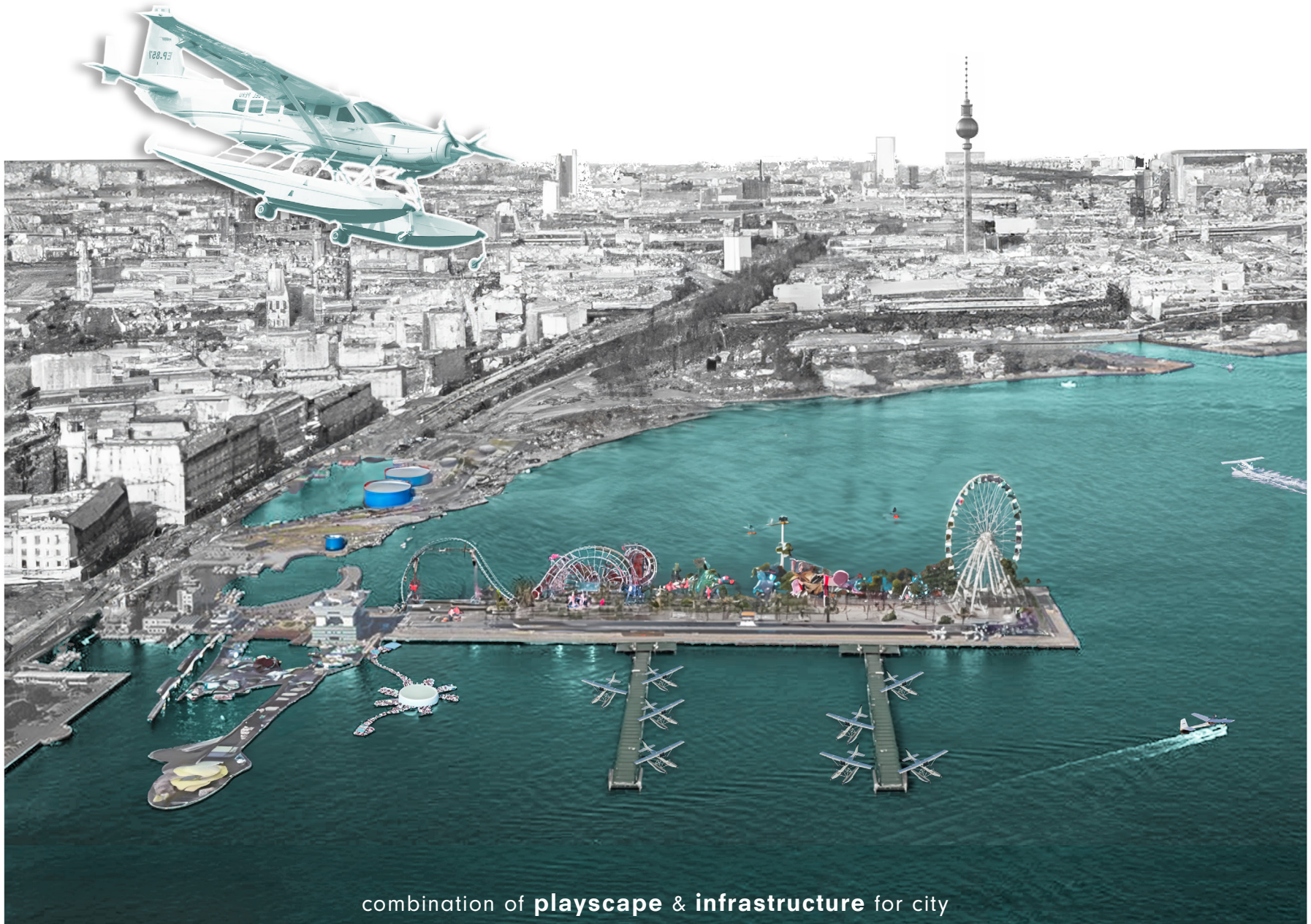


# PROPOSAL: NEW ARCHITECTURE





# HYDROGEN SEAPLANE AIRPORT, BERLIN



combination of **playscape** & **infrastructure** for city

1 INTRODUCTION

## 2 DESIGN BRIEF

3 DESIGN CONCEPT

4 IMPLEMENTATION

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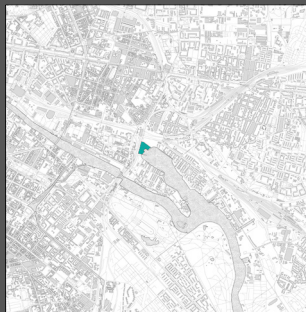
6 CONCLUSION



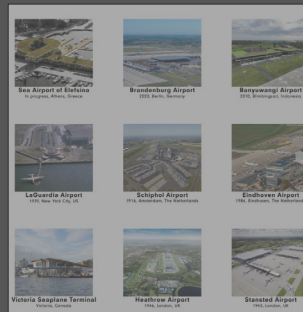
# Design Brief

## OVERVIEW

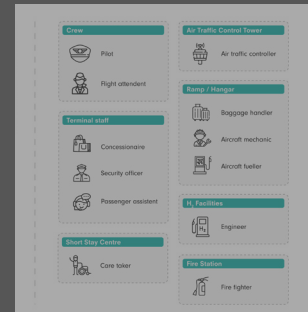
### SITE



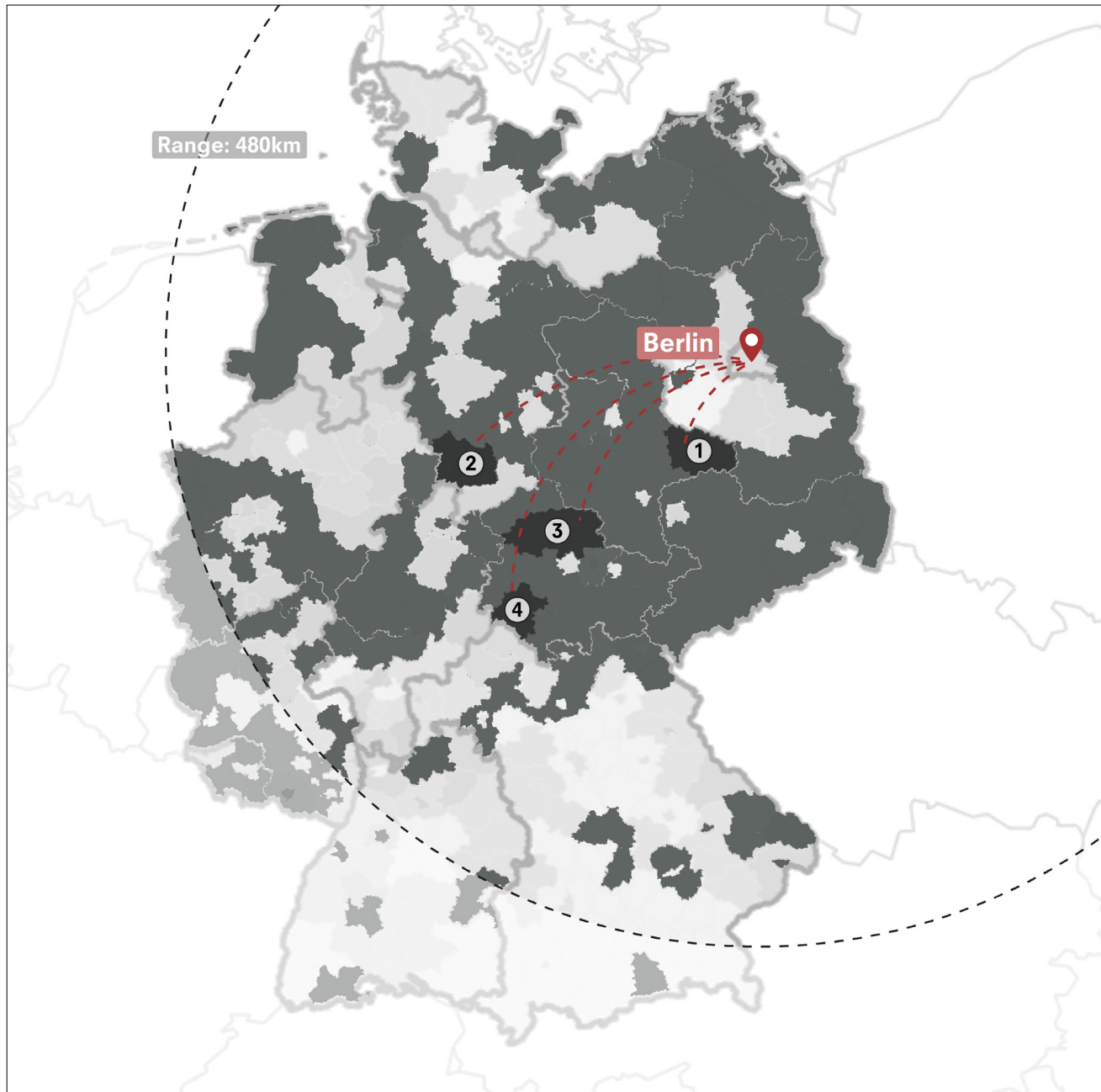
### PROGRAM





### CLIENT



# [XXL] MEDICAL ESCORT DESTINATIONS



## Legend

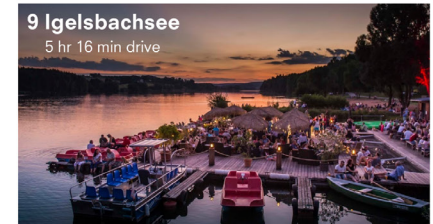
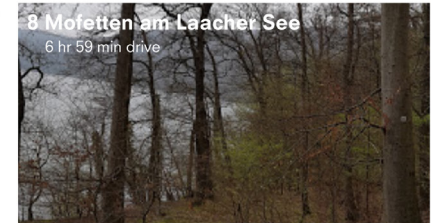
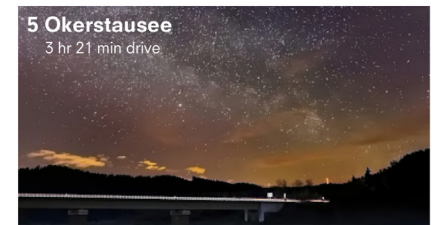
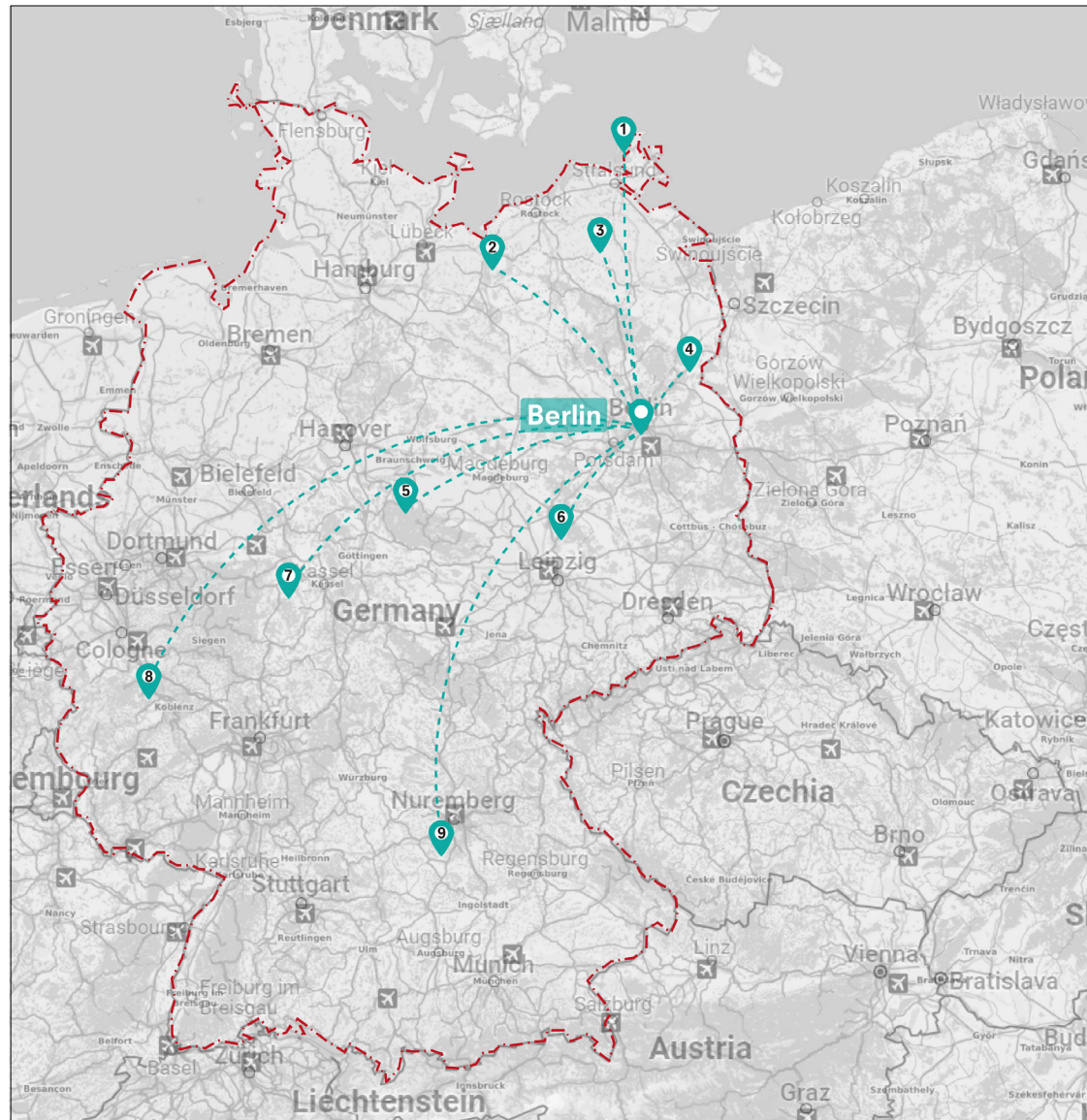
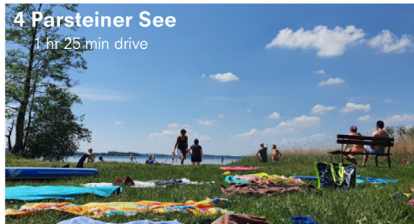
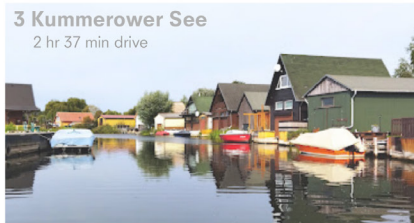
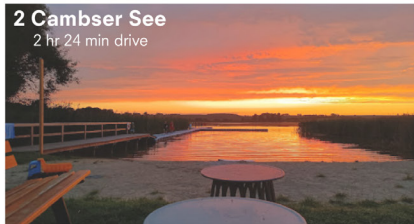
-  Cities with highest number in either one of the categories
-  Cities with highest number all of the categories

- ① Wittenberg
- ② Northeim
- ③ Kyffhauserkreis, Sommerda, Unstrut-Hainich district
- ④ Schmalkalden-Meiningen

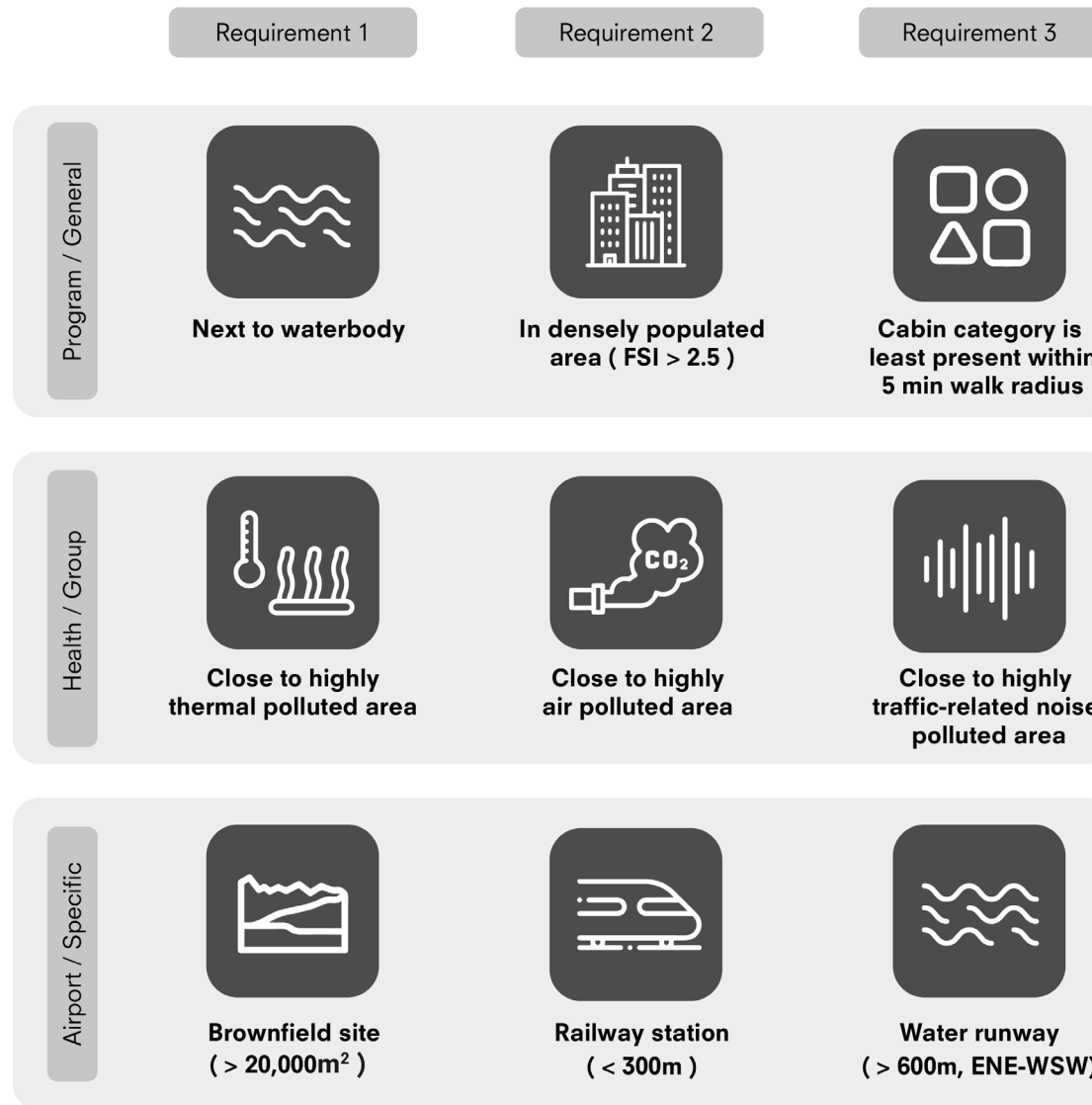


# [XXL] URBAN ESCAPERS: DESTINATIONS

## In Germany

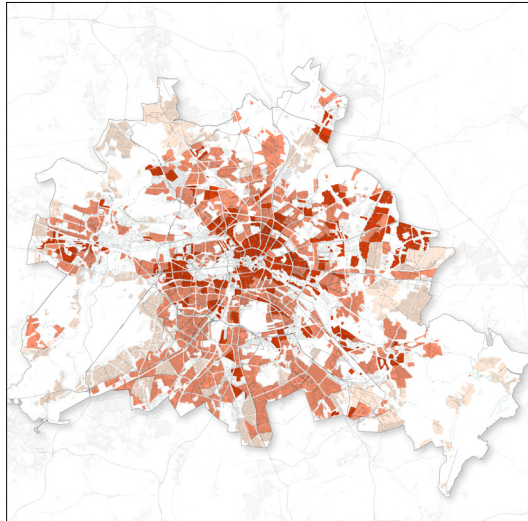


# [XL] SELECTION CRITERIA



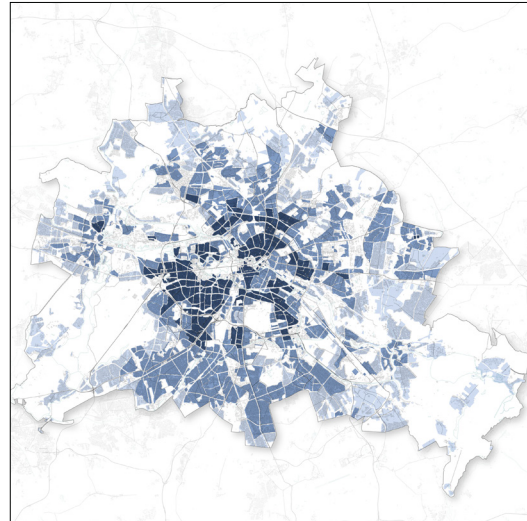
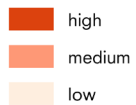


# [XL] HEALTH GROUP INVESTIGATIONS



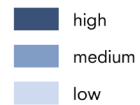
**Thermal Pollution**

**Legend**



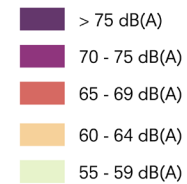
**Air Pollution**

**Legend**

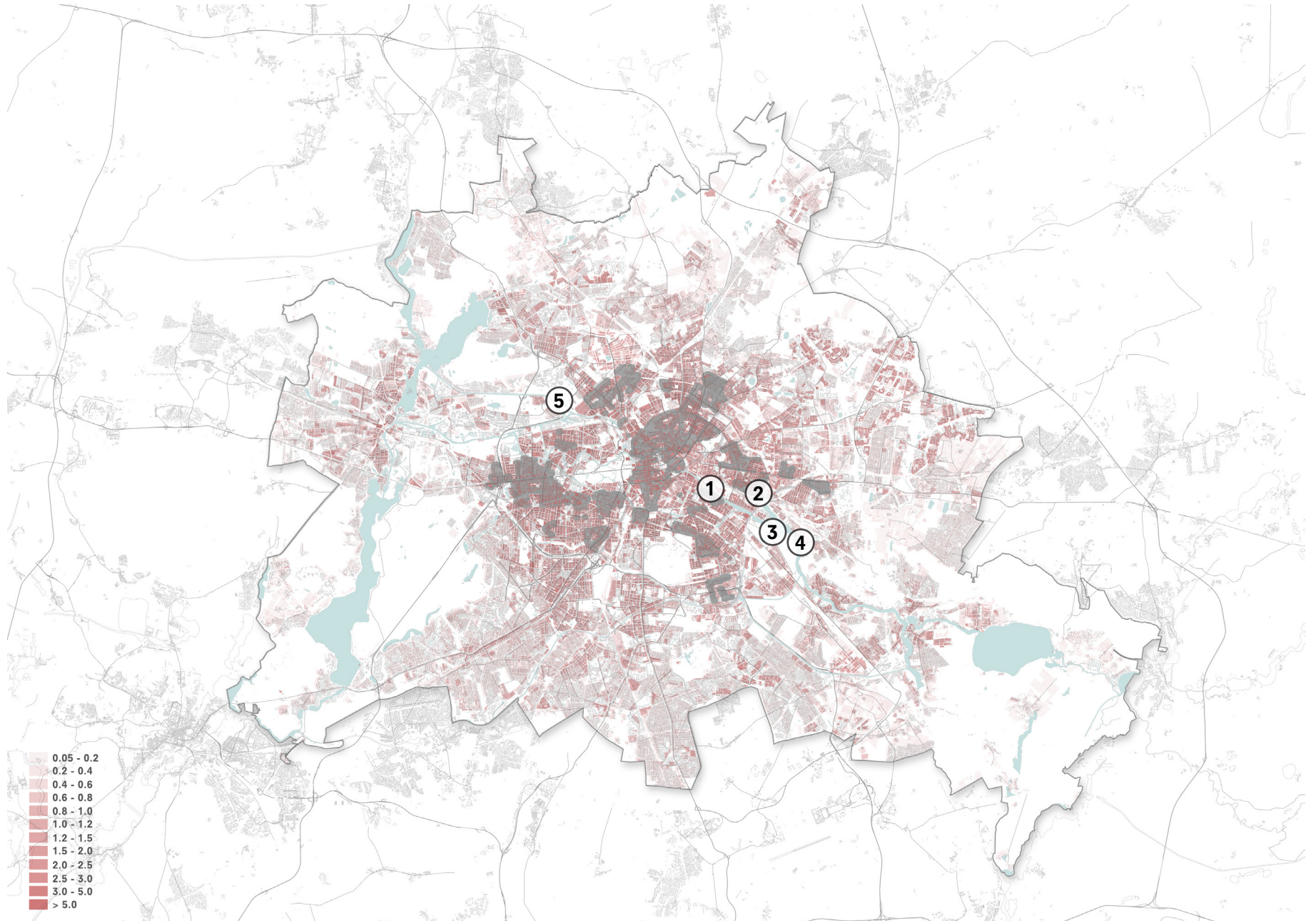


**Traffic-related Noise Pollution**

**Legend**



# [XL] 5 POSSIBLE SITES

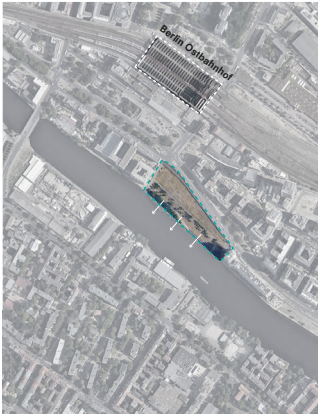




# Design Brief: Site

## 5 POSSIBLE SITES

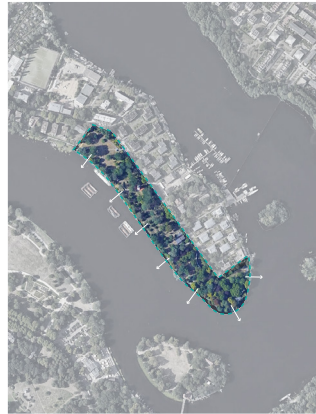
Park an der Spree



Rummelsburger Bucht



Regattaufier



Köpenicker



Goethe Park



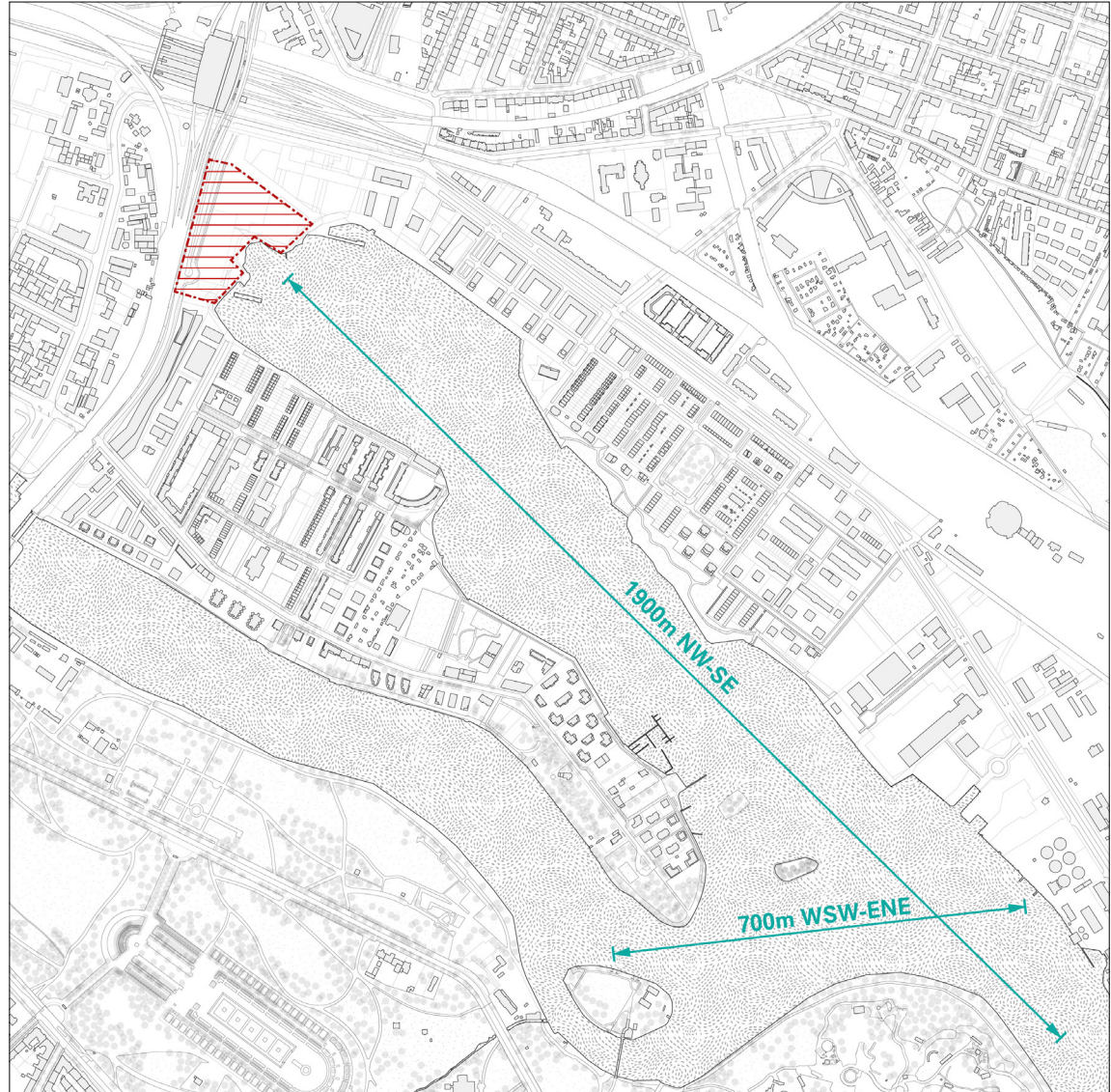


# [XL] FURTHER INVESTIGATIONS

## Rail transport linkage

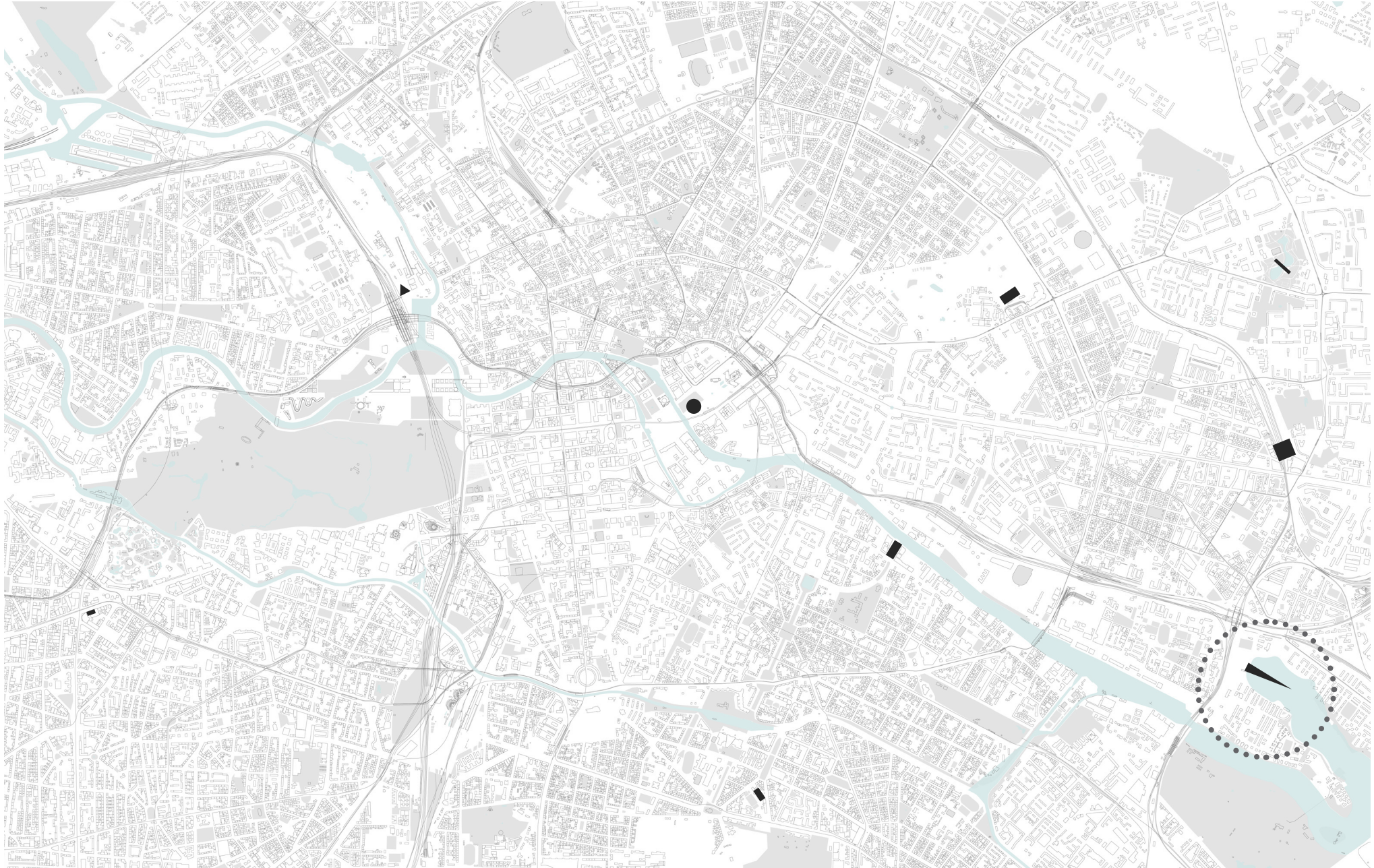


## Water runway availability



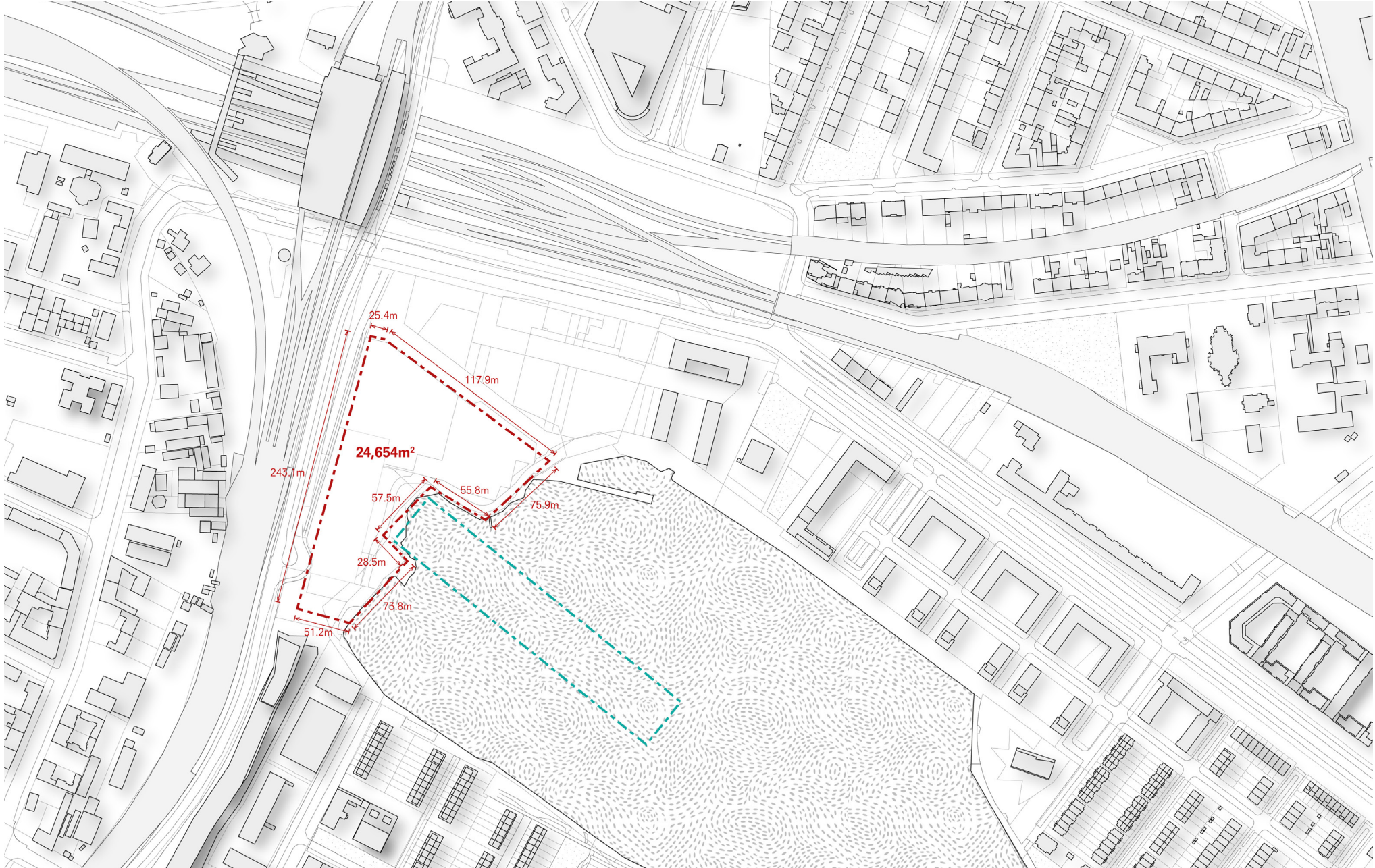


# CHOSEN SITE: RUMMELSBURGER BUCHT





# CHOSEN SITE: RUMMELSBURGER BUCHT





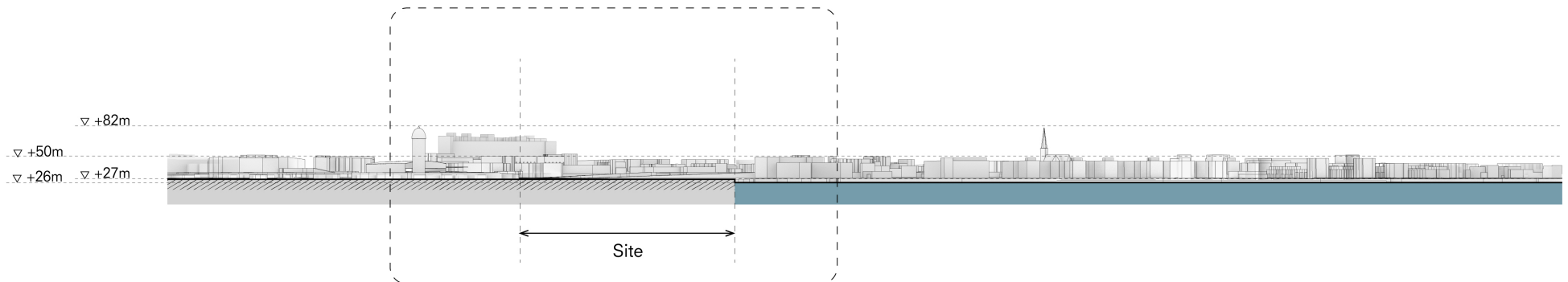
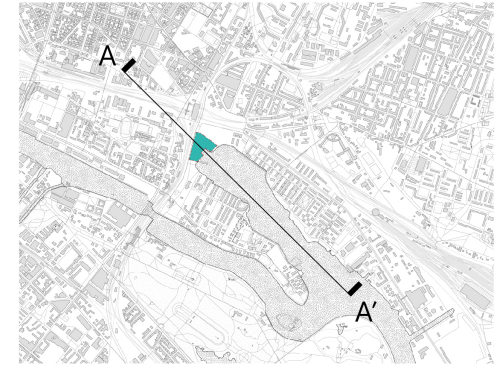
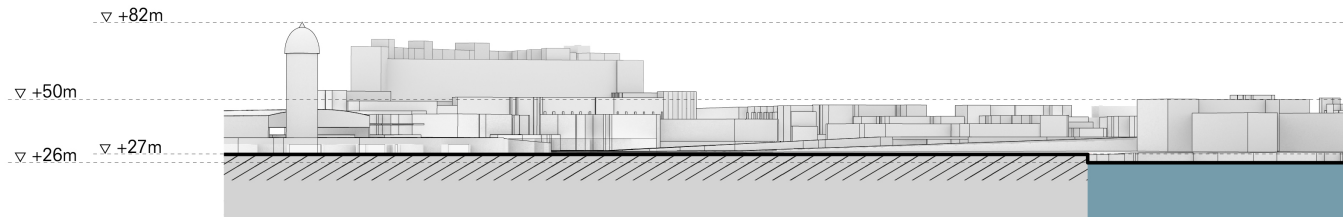
# CHOSEN SITE: RUMMELSBURGER BUCHT





# Design Brief: Site

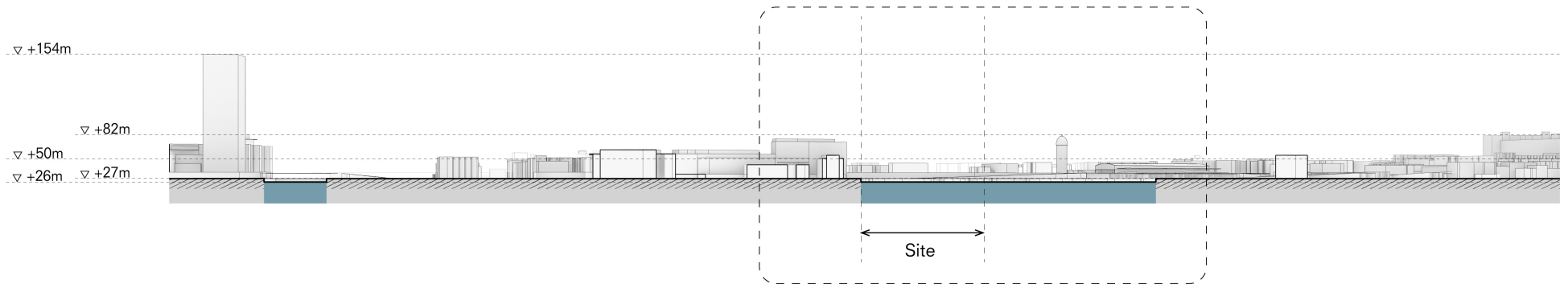
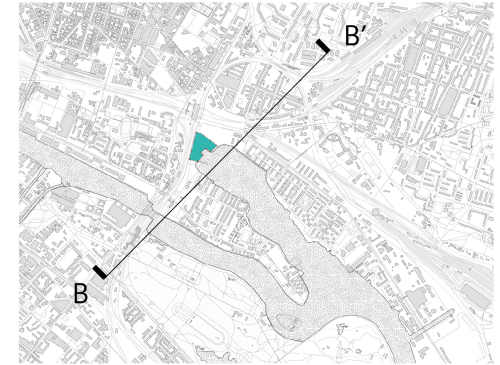
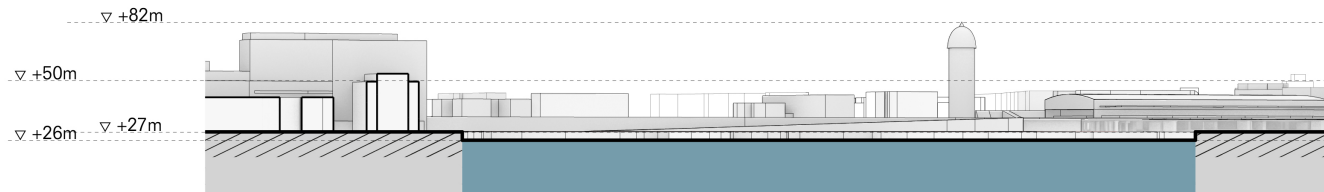
## [L] ELEVATION





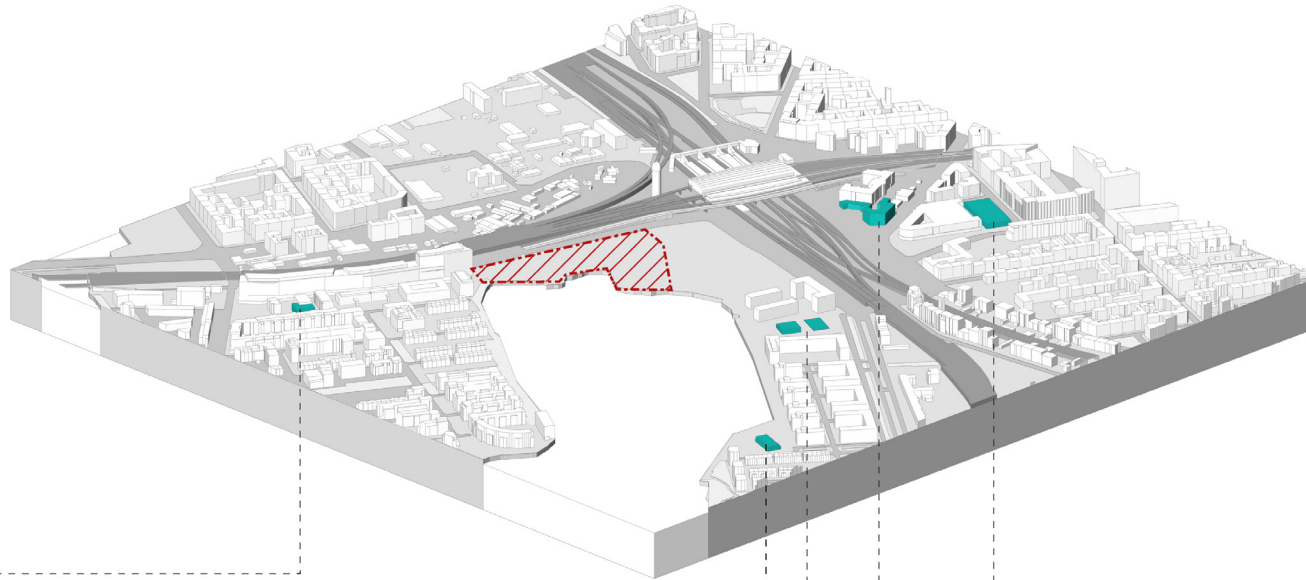
# Design Brief: Site

## [L] ELEVATION



# [S] SITE SURROUNDINGS

## Communal Uses



Kindergarten



Kindergarten



Skate Park



Education Centre for Youth



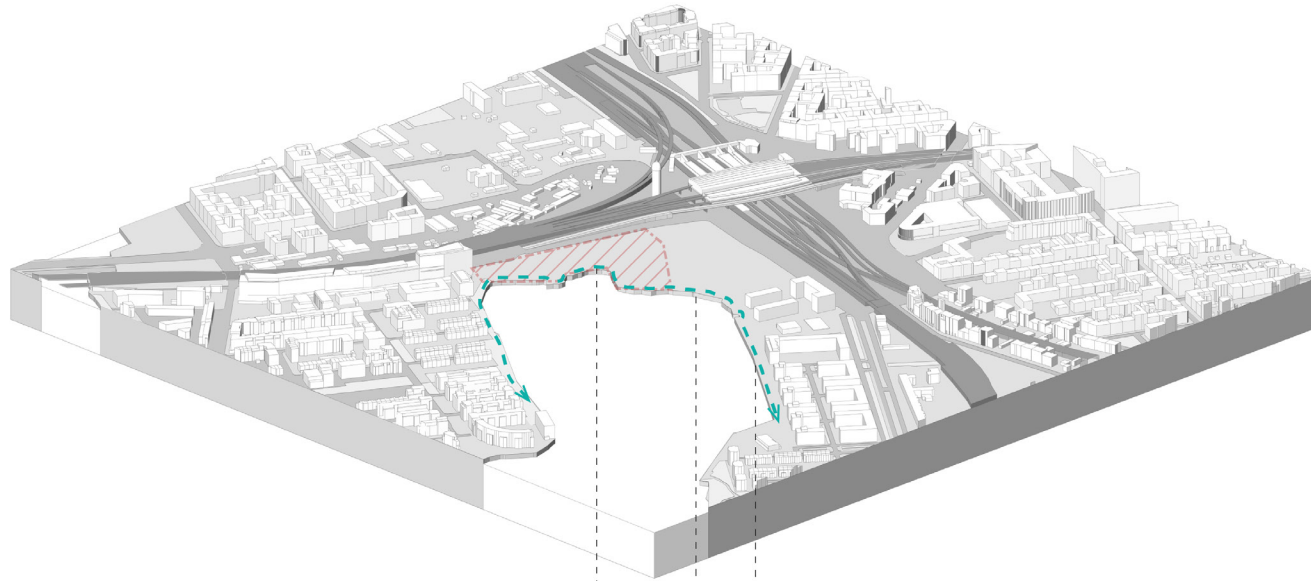
Fitness Centre





# [S] SITE SURROUNDINGS

## Promenade Activities



**Cycling**



**Jogging**



**Viewing**



**Walking**

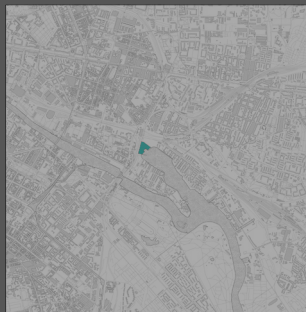


**Walking / Boat touring**



# Design Brief OVERVIEW

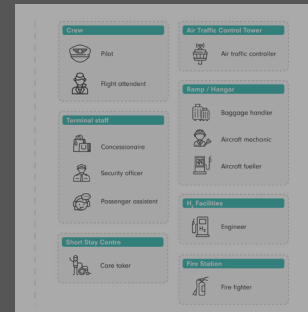
## SITE



## PROGRAM



## CLIENT





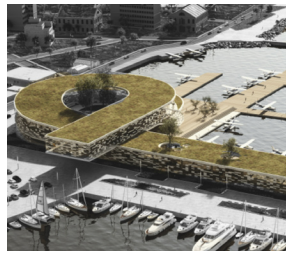
# ANALYSIS: PROGRAM ORGANISATION

## City Airports



**London City Airport**  
1987, London, UK

## Seaplane Bases



**Sea Airport of Elefsina**  
In progress, Athens, Greece

## Large-scale Airports



**Brandenburg Airport**  
2020, Berlin, Germany

## Small-scale Airports

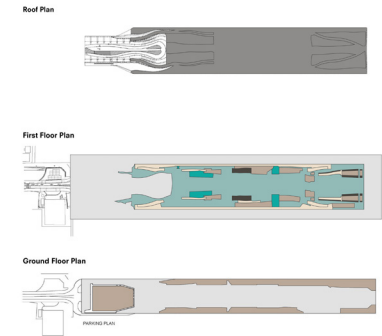
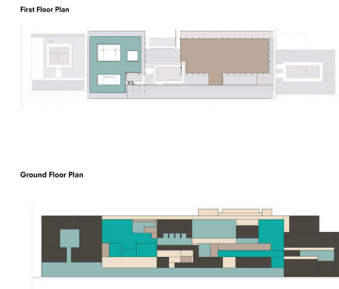
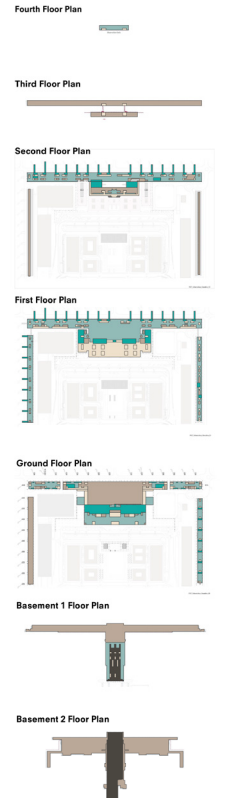
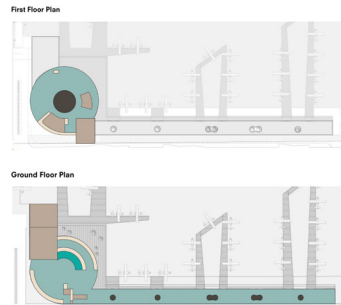
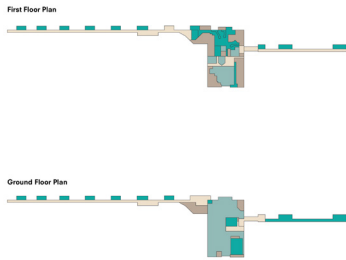


**Banyuwangi Airport**  
2010, Blimbingsari, Indonesia

## Cruise Terminals



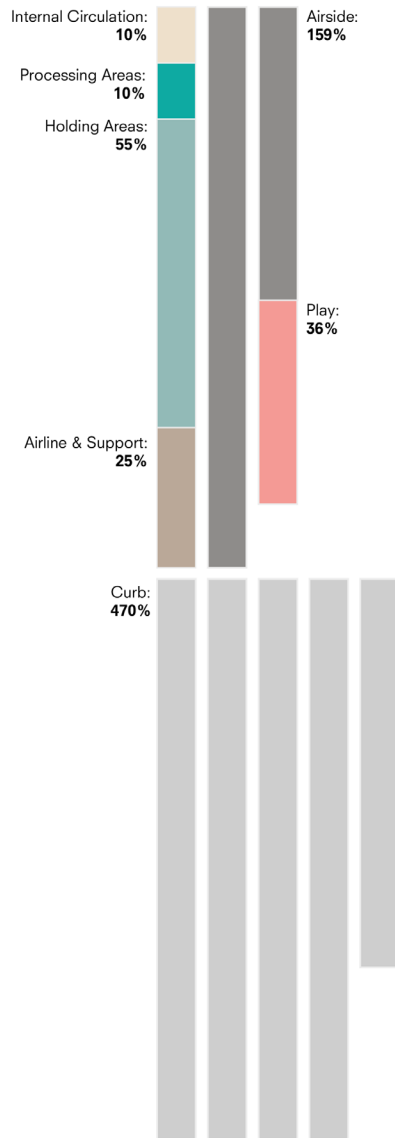
**Yokohama Terminal**  
2002, Yokohama, Japan



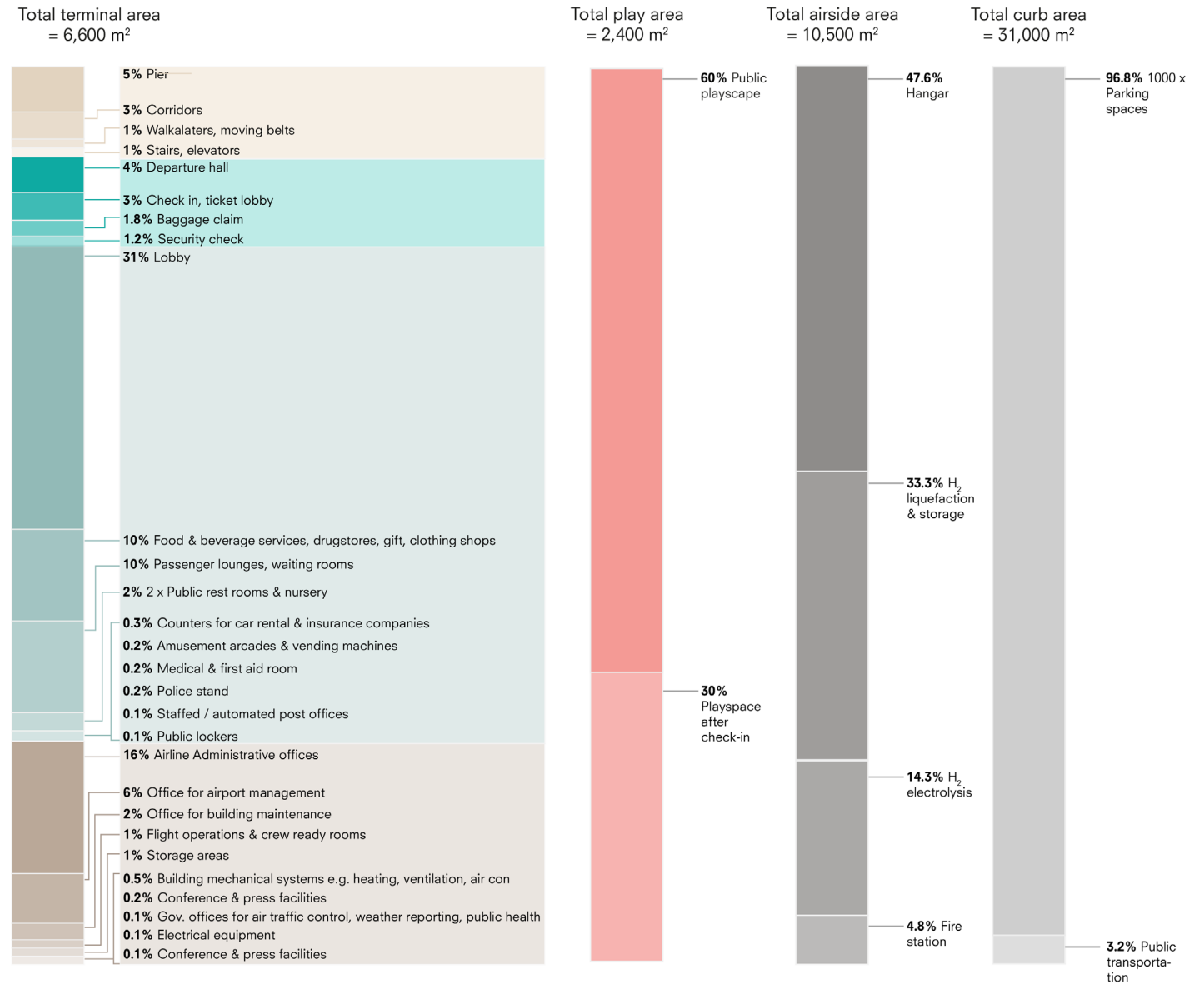
# Design Brief: Program

## PROGRAM BAR

### Airport as a whole



### Program breakdown





# Design Brief: Program

## AIRCRAFT SPECIFICATIONS



### Seaplane Model

Twin Otter  
Series 300 / 400

(currently powered by jet fuel used by e.g., Harbour Air  
Canada, Viking Air)

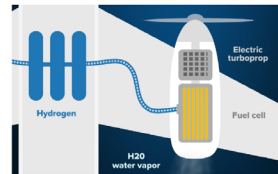
### New Fuel / Engine

Hydrogen combustion

Battery electric

Hydrogen-electric - ZA600

(H - Highest energy by mass,  
zero emissions ~ combustion NOx,  
more efficient / lighter than electric)



<https://www.youtube.com/watch?v=IMb5Frr-520>

### Engine Provider

Universal Hydrogen

ZeroAvia

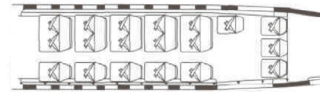


**ZEROAVIA**

<https://www.impala.ventures/post/impala-ventures-portfolio-company-zero-avia-and-the-future-of-hydrogen-powered-aviation>

### Occupancy

19 - 20 seats



<https://www.airlines-inform.com/commercial-aircraft/twin-otter.html>

### Range

Jet fueled, long range tanks  
1542 km

Hydrogen-electric fueled  
482 km

### Performance

Takeoff field length  
598.8 m

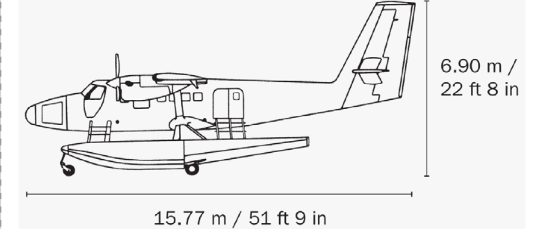
Landing field length  
564.2 m

Normal cruise speed  
175 kts (324 km/h)

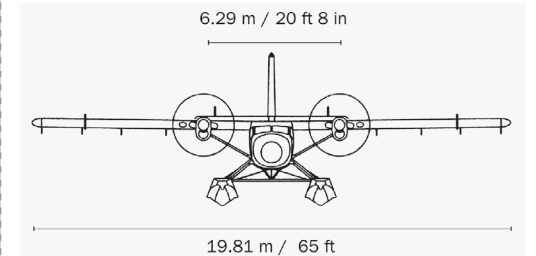
### Dimensions

Overall Height 6.90 m

Overall Length 15.77 m



Wing Span 19.81 m



<https://rabinaviati.com/twin-otter-dhc6-400/>  
[https://dehavillandfield.com/wp-content/uploads/2022/08/Twin\\_Otter\\_FLOAT\\_Spec\\_Sheet\\_web.pdf](https://dehavillandfield.com/wp-content/uploads/2022/08/Twin_Otter_FLOAT_Spec_Sheet_web.pdf)

# Design Brief: Program

## IMPACTS ON AIRPORT INFRASTRUCTURE

### Hydrogen generation & usage in airport



Electrolysis



Pipeline



Liquefaction



Storage



Capsule / Bowser



Fuelling



<https://www.renewablepress.com/energy/press-release-6373-green-hydrogen-for-coal-region-lusatia-enertrag-successful-with-proposed-concept>



<https://www.processensing.com/en-us/blog/moisture-measurement-hydrogen-natural-gas-blending.htm>



[https://absolut-hydrogen.com/en/hydrogen-mobility\\_liquid-hydrogen-liquefaction/](https://absolut-hydrogen.com/en/hydrogen-mobility_liquid-hydrogen-liquefaction/)



<https://www.rawstory.com/how-japan-s-big-plans-for-a-hydrogen-society-fell-flat/>



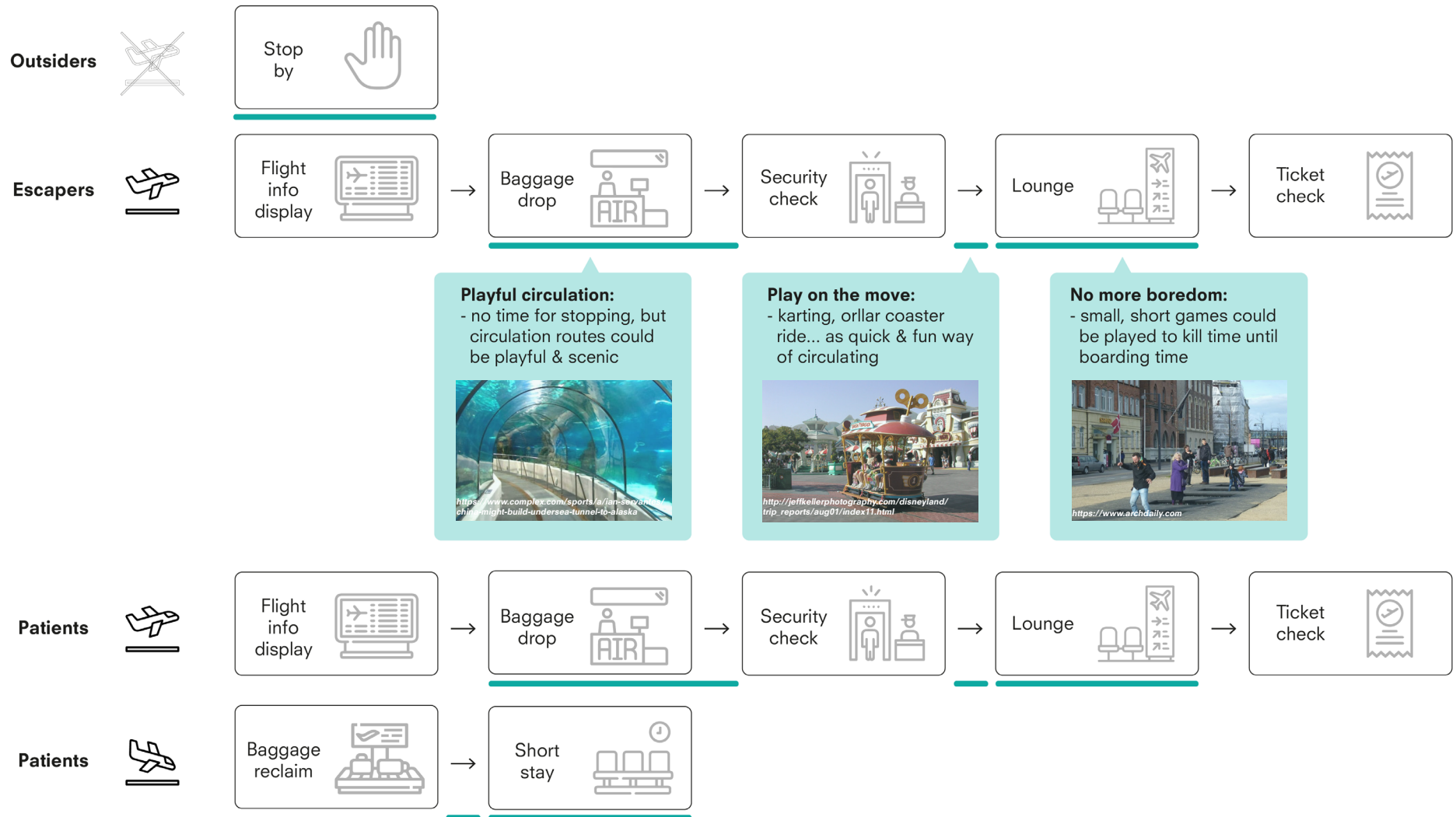
<https://www.pinterest.com/pin/universal-hydrogen-the-nespresso-capsule-of-hydrogen-mentour-pilot-in-2022-533324780884322595/>  
[https://issuu.com/indianchemicalnews.com/docs/compendium\\_2022\\_icn/s/15511910](https://issuu.com/indianchemicalnews.com/docs/compendium_2022_icn/s/15511910)



<https://www.bloomberg.com>  
<https://asapenergyinc.com/aviation-fuel/>



# PLAY IN PASSENGER FLOWS



# Design Brief: Program

## SIZE REQUIREMENTS

### Required airside area:

**Aircraft fuel**  
5,000 m<sup>2</sup>  
for liquid H<sub>2</sub>  
electrolysis,  
storage, liquefaction

**Maintenance**  
5,000 m<sup>2</sup>  
for hangar  
for 25 seaplanes

**Others**  
500 m<sup>2</sup>  
for fire station

Minimum area required on airside:

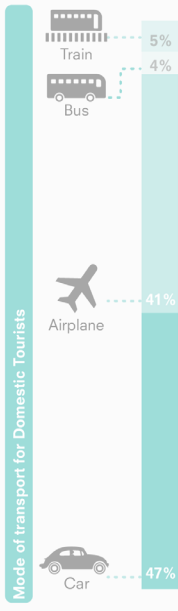
**10,500 m<sup>2</sup>**

### Required (landside) terminal area:

**Population**  
84.08 million  
total population  
18.70 million  
rural population

**Healthcare**  
19.9%  
registered patients per  
total population  
3.86 million  
estimated rural patients

**Tourism**  
18.57 million  
yearly domestic trips  
5.01 million  
yearly trips to rural areas



#### Assumption:

**5%**  
of total rural tourists  
travels to & from Berlin  
by seaplanes

**2%**  
of total rural patients  
receives medical  
treatments in Berlin

If all passengers travel to and from Berlin,  
Total number of passengers in a year:

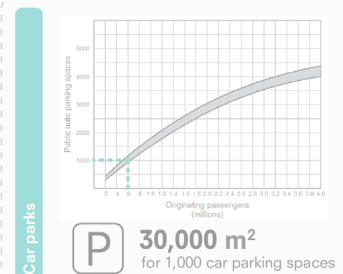
**660,000**

"Rule of thumb for the provision of terminal space ...  
is to supply 10000 m<sup>2</sup> of floor space per 1 million  
passengers per annum (mpps)."

Minimum area required in the terminal:

**6,600 m<sup>2</sup>**

### Required (landside) curb area:



**Others**  
1,000 m<sup>2</sup>  
for public transport access

Minimum area required on landside curb:

**31,000 m<sup>2</sup>**

### Indoors play area:

**Banyuwangi**  
30%  
landscaping of total  
terminal area

**Jewel Changi**  
10.86 m<sup>2</sup>  
leisure area per visitor  
135,700 m<sup>2</sup>  
total area  
12,500  
visitor per hour

**Disneyland HK**  
8.09 m<sup>2</sup>  
leisure area per visitor  
275,000 m<sup>2</sup>  
total area  
34,000  
visitor per day

**Assumption:**  
250  
visitors per hour

**Indoors play area required:**  
**2,400 m<sup>2</sup>**

Total functional area required:

**48,100 m<sup>2</sup>**

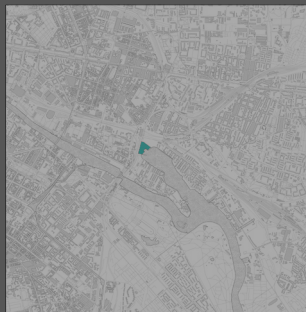
**Total airport area required: 50,500 m<sup>2</sup>**



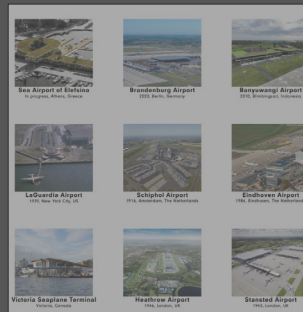
# Design Brief

## OVERVIEW

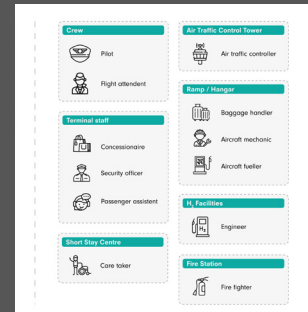
### SITE



### PROGRAM

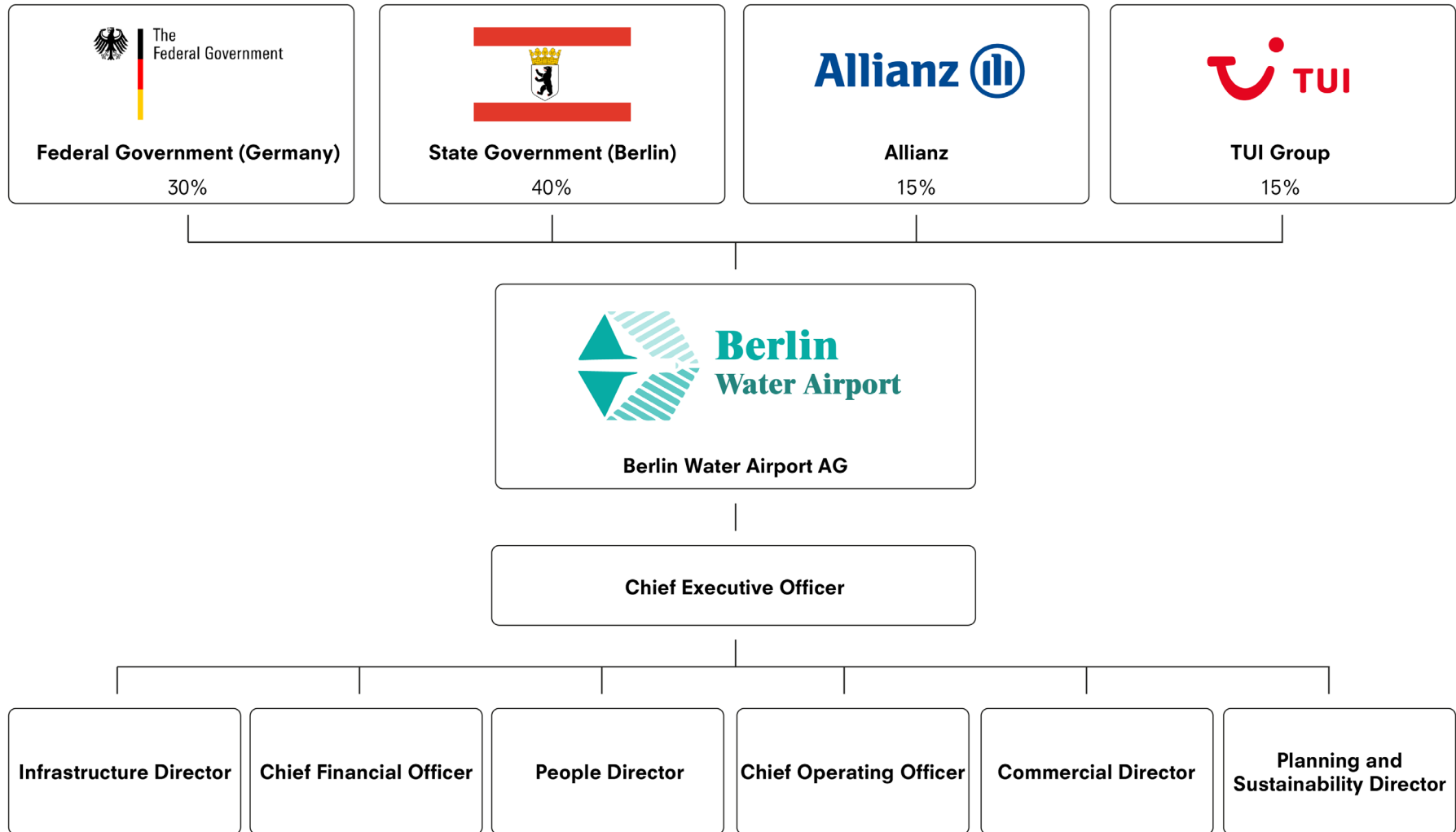


### CLIENT



# Design Brief: Clients

## MAIN CLIENTS





# Design Brief: Clients

## SIMILAR ENGAGEMENTS

### 1 Main Investor

Allianz 



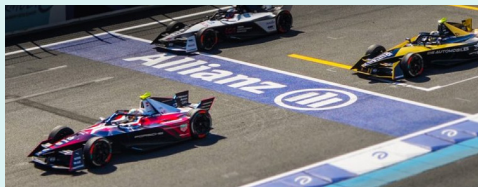
FC Bayern München



Stadiums



Golf



Formula E

<https://www.allianz.com/en/about-us/brand/partnerships.html>

### 2 Operator

 TUI



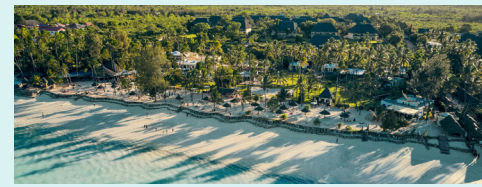
Airlines



Cruises



Travel Agencies



Hotels & Resorts

<https://www.tuigroup.com/en-en/about-us/about-tui-group>

1 INTRODUCTION

2 DESIGN BRIEF

## 3 DESIGN CONCEPT

4 IMPLEMENTATION

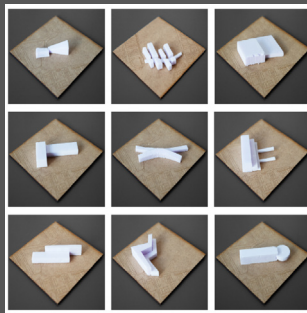
5 DEVELOPMENT

6 CONCLUSION



# Design Concept OVERVIEW

## MASSING



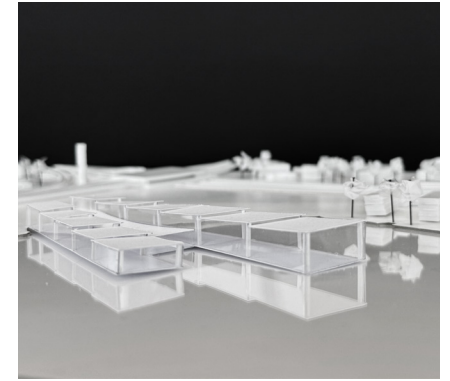
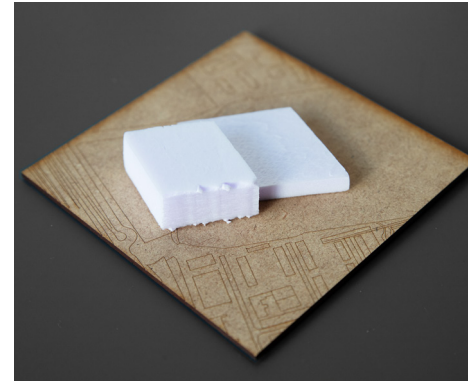
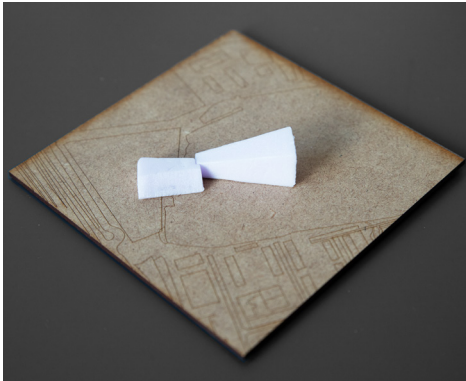
## CONCEPT



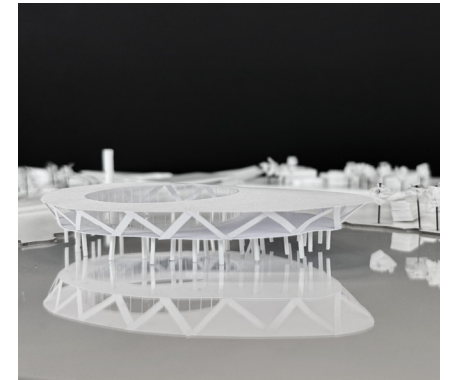
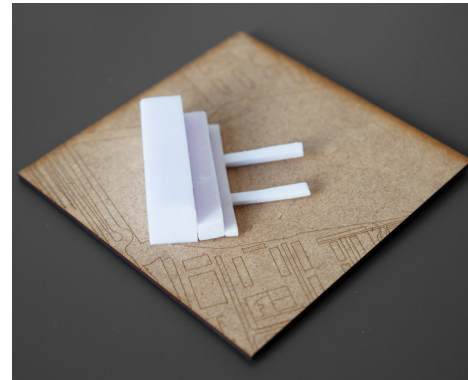
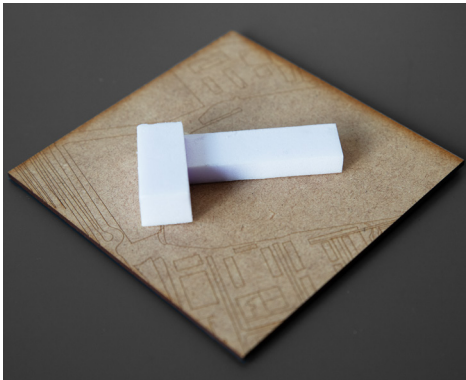
# Massing Studies

## 1:5000 / 1:1500 MODELS

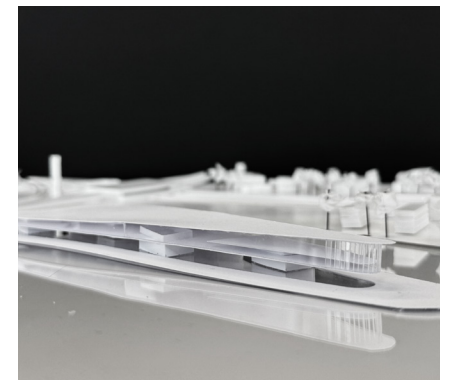
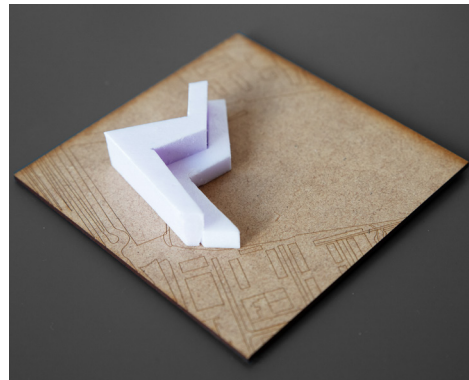
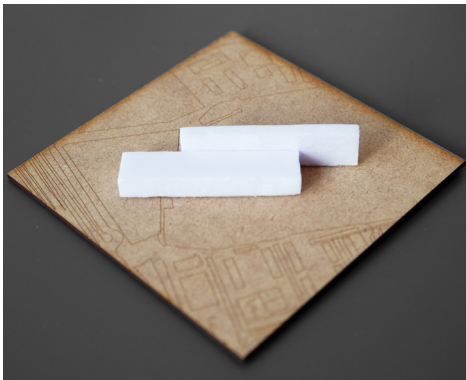
Site-driven



Program-driven

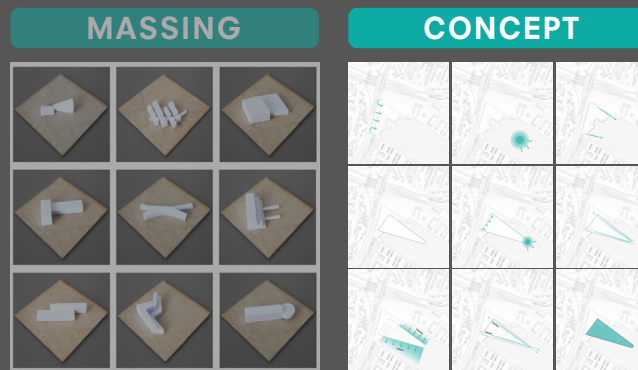


Client-driven



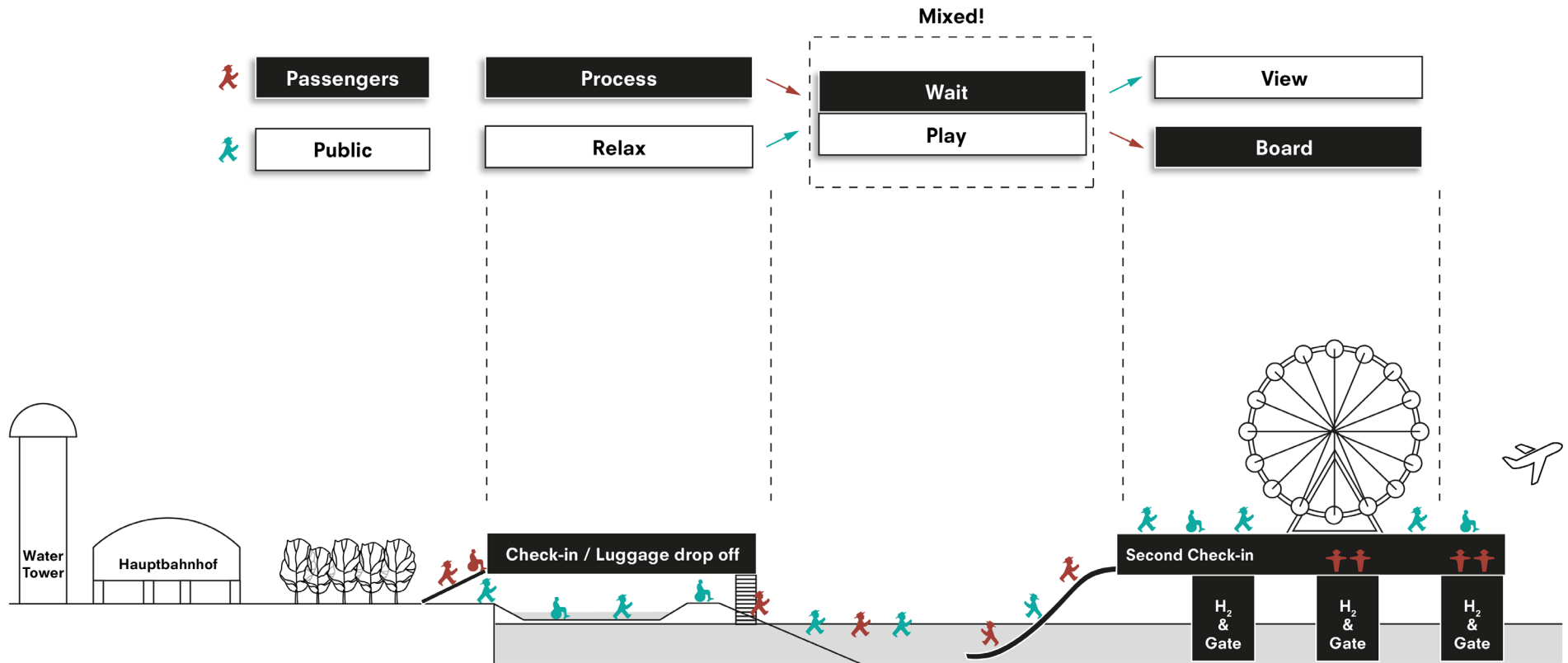


# Design Concept OVERVIEW



# Design Concept

## TWO FLOWS IN SECTION

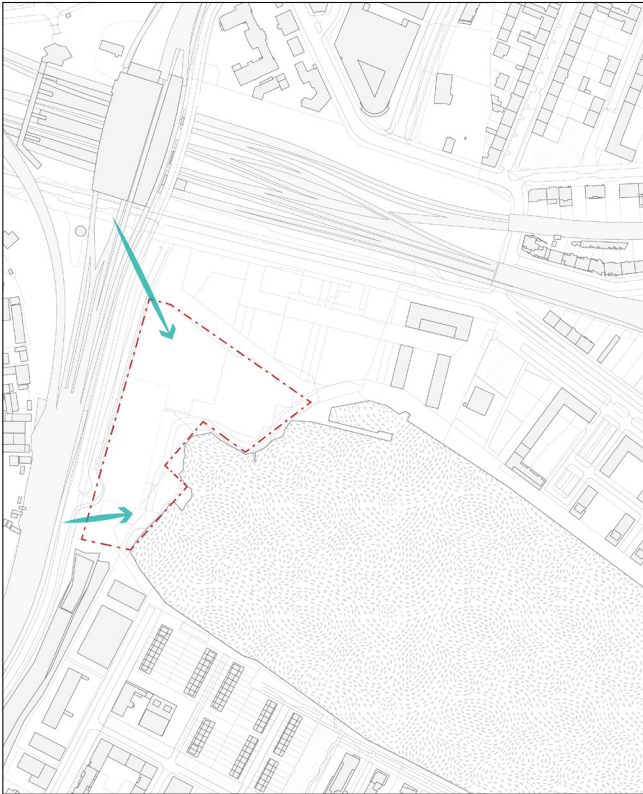




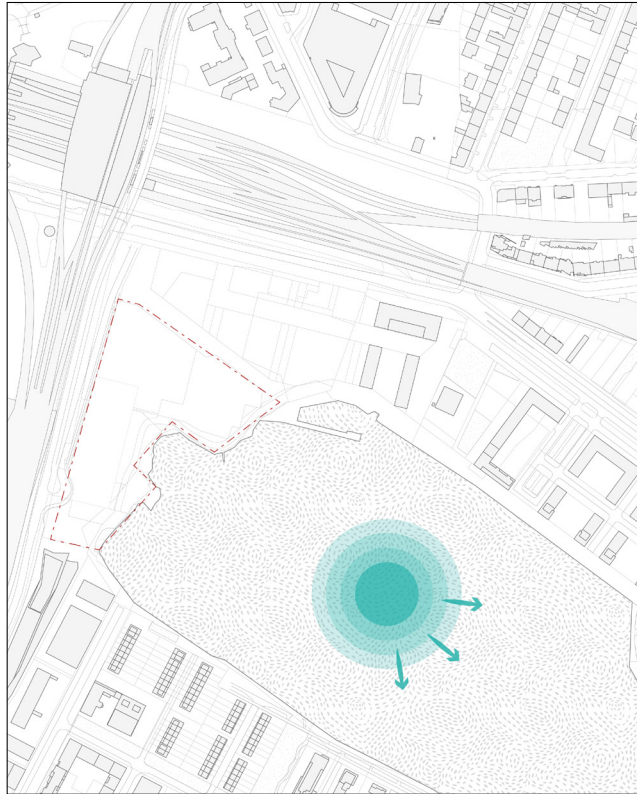
Design Concept

# TWO FLOWS ON PLAN

**Two entrances**



**One point of vista**



**Converging focal point**



# Design Concept SUMMARY

## FLOWS



Passengers // efficiency



Public // leisure



# Design Concept SUMMARY

## FLOWS



Passengers // efficiency



Public // leisure

## PLAN



# Design Concept SUMMARY

## FLOWS



Passengers // efficiency



Public // leisure

## PLAN



## SECTION





# Design Concept SUMMARY

## FLOWS



Passengers // efficiency



Public // leisure

## PLAN



## SECTION



## ZONES

**Zone A:**  
horizontal relation

**Zone B:**  
mixed

**Zone C:**  
vertical relation

1 INTRODUCTION

2 DESIGN BRIEF

3 DESIGN CONCEPT

## 4 IMPLEMENTATION

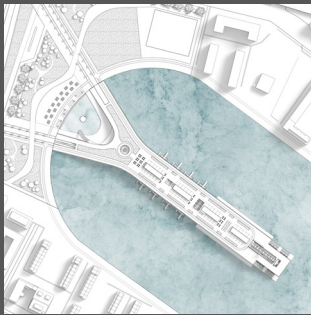
5 DEVELOPMENT

6 CONCLUSION

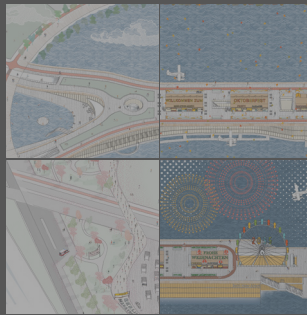


# Implementation OVERVIEW

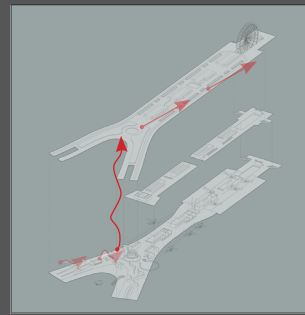
## BUILDING



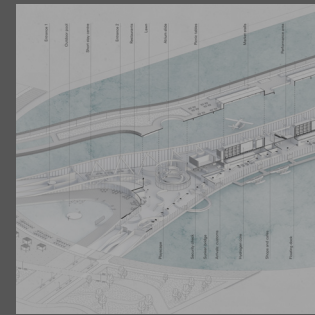
## ACTIVITIES



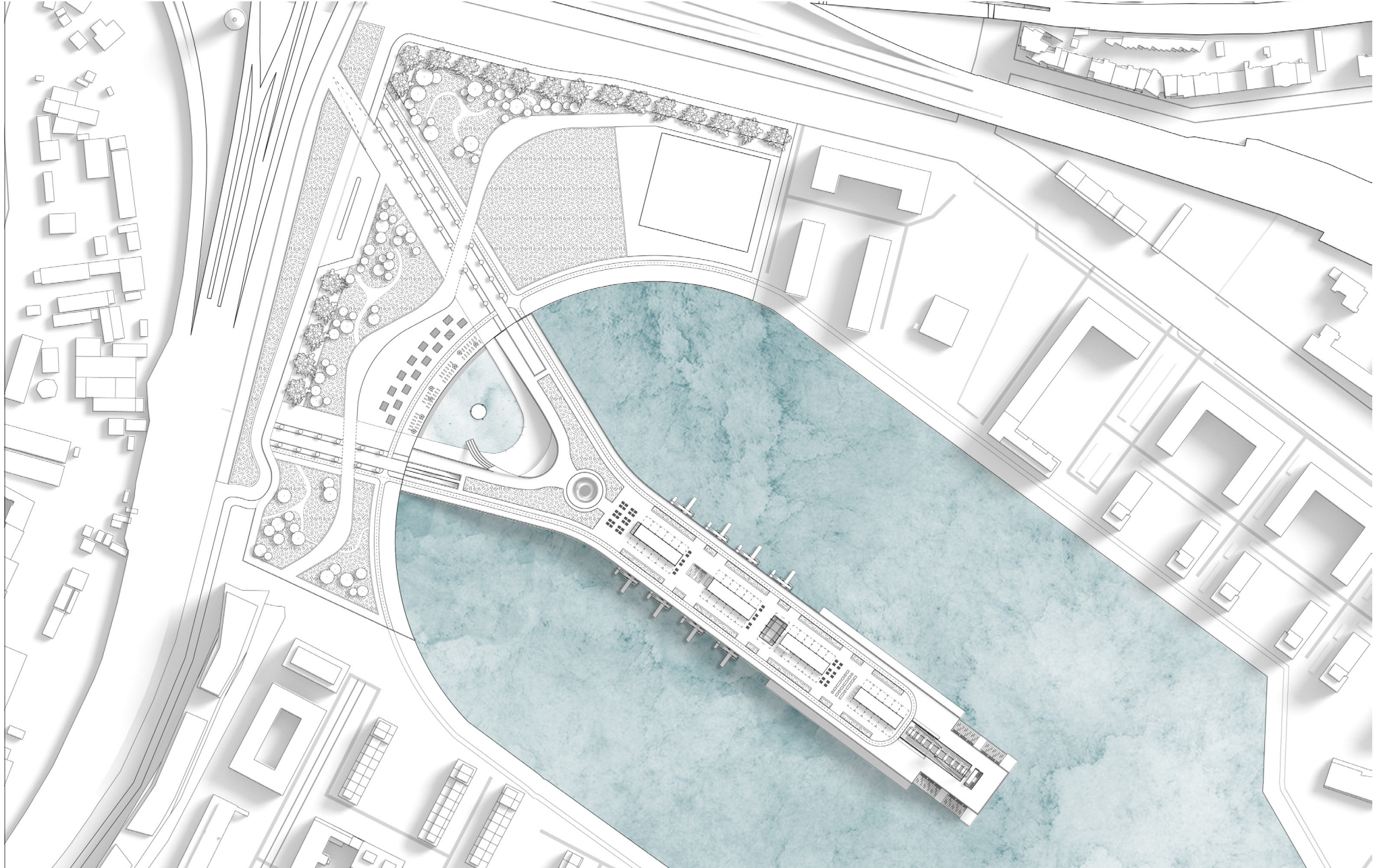
## CIRCULATION



## ENCOUNTER

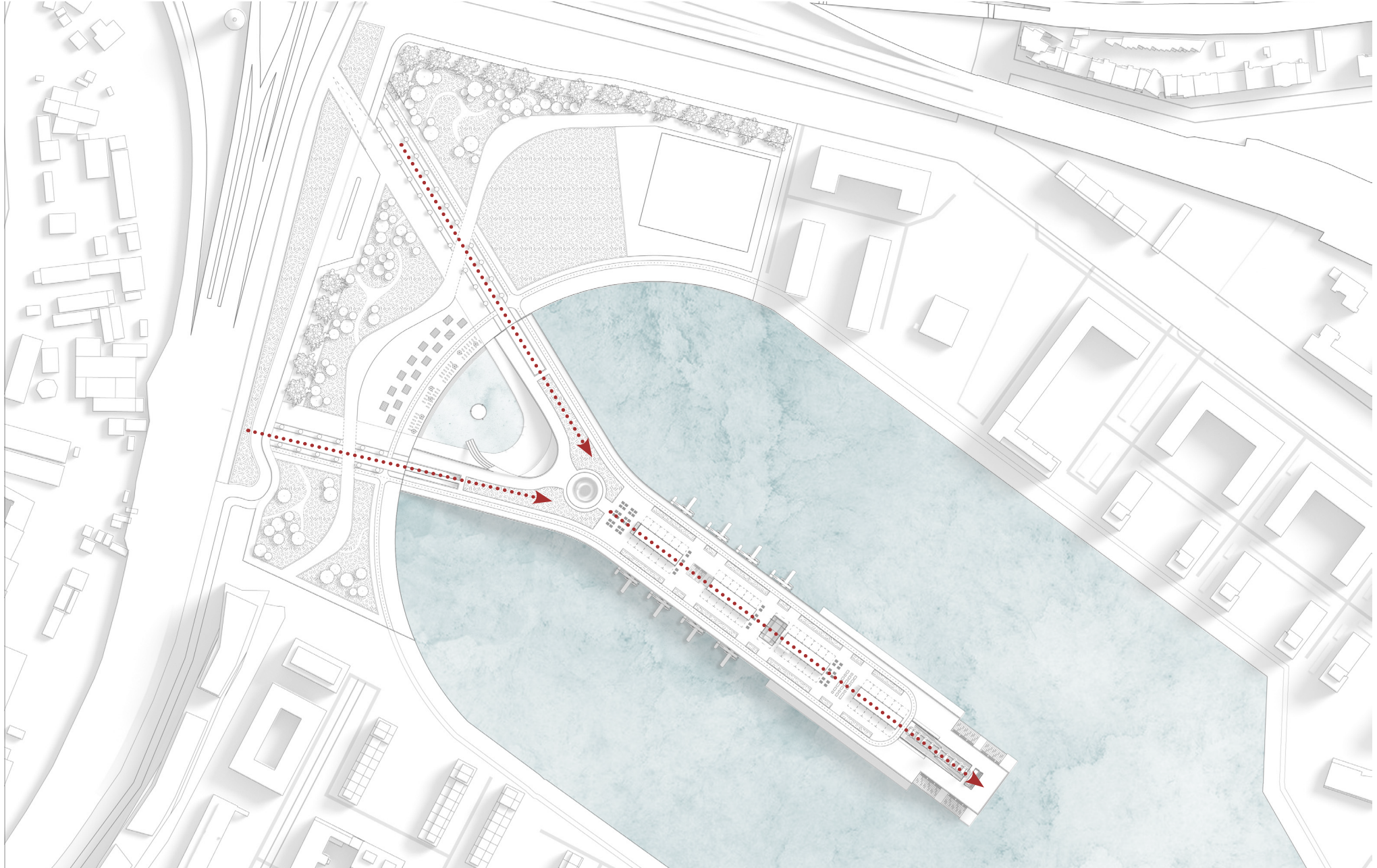


# Implementation **SITE PLAN**





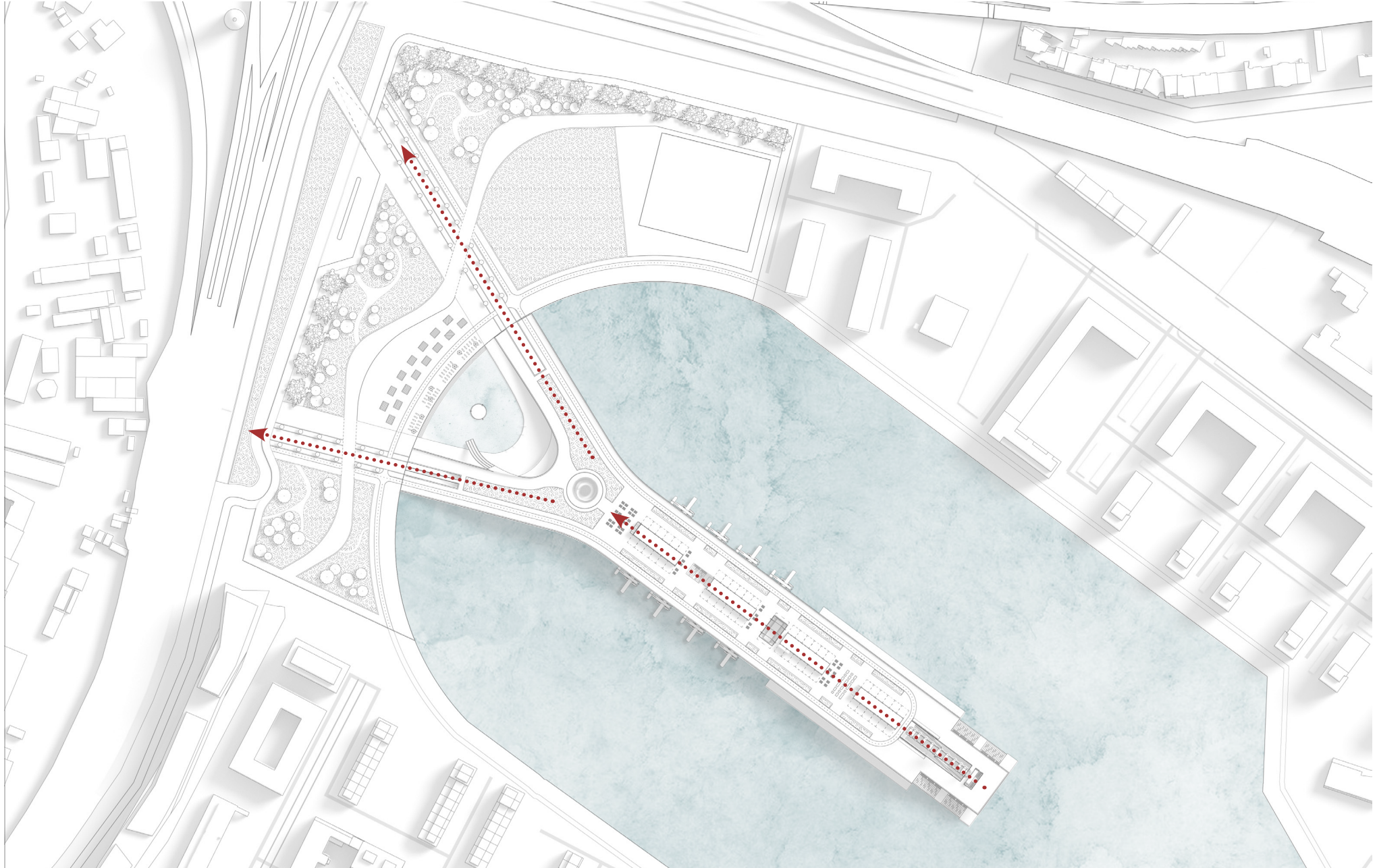
# Implementation **ENTERING BUILDING**





# Implementation

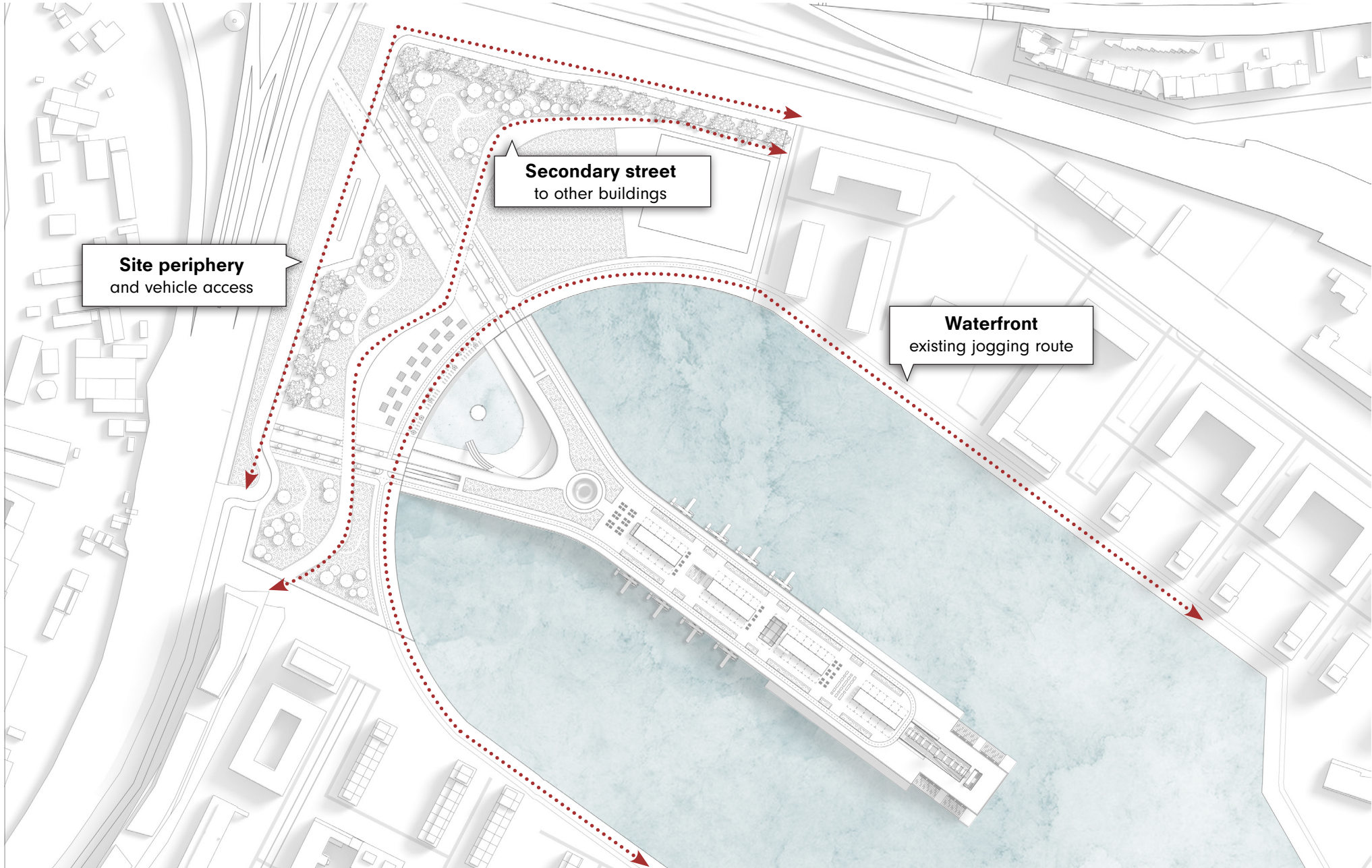
## LEAVING BUILDING





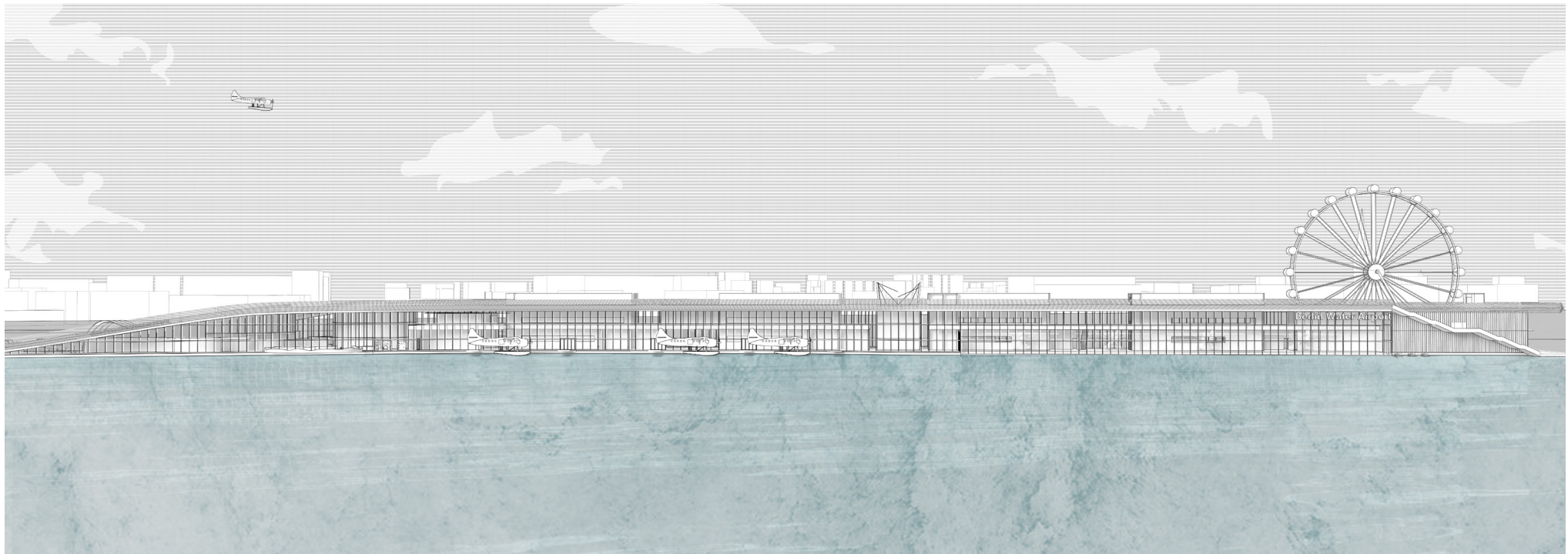
# Implementation

## SITE ADAPTATIONS



# Implementation

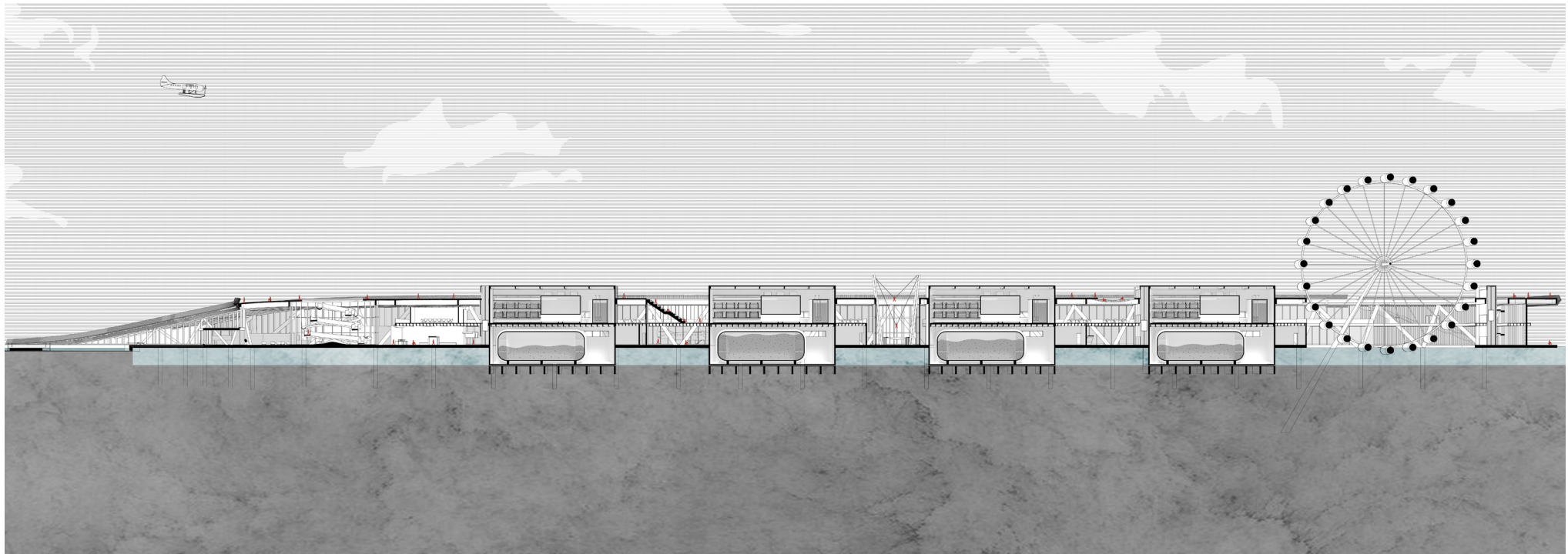
## SIDE ELEVATION





Implementation

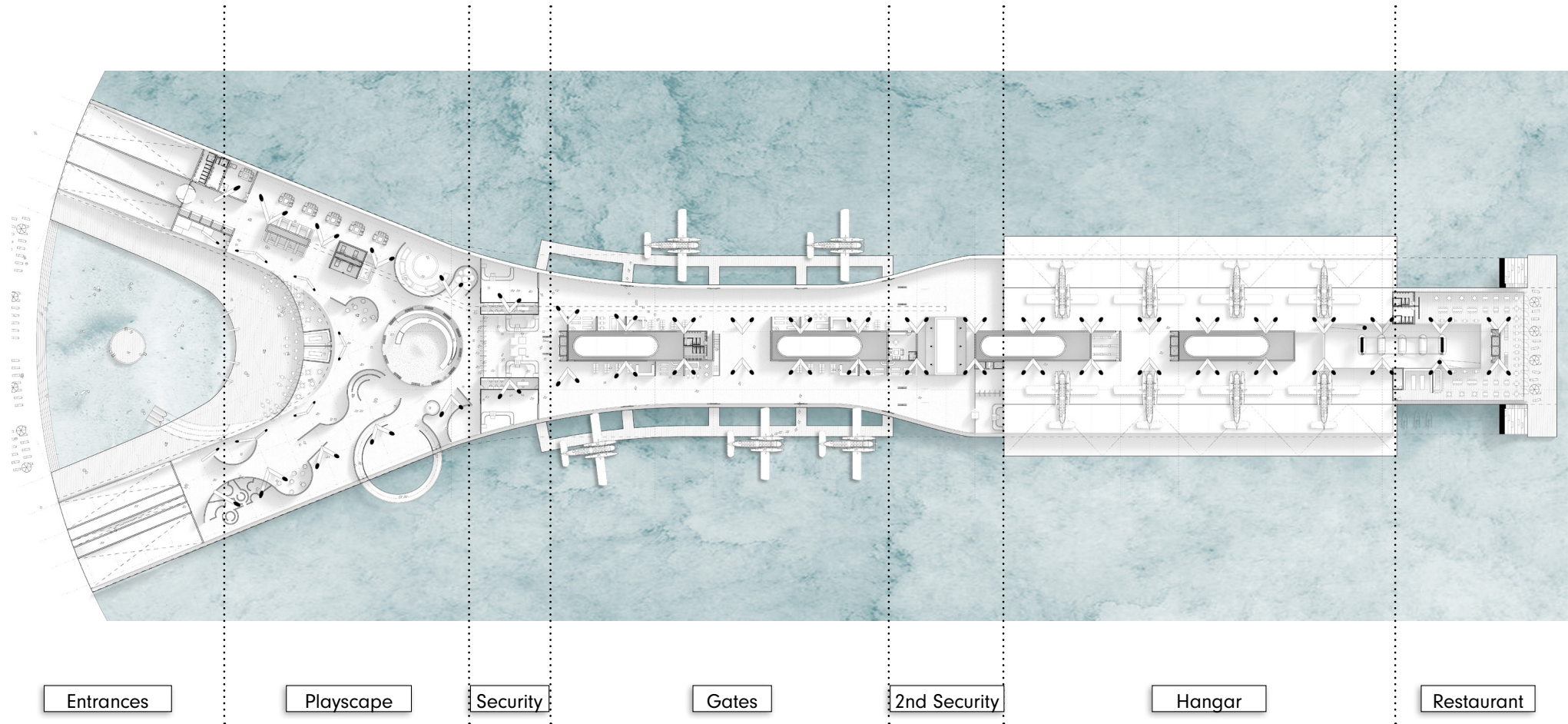
# LONGITUDINAL SECTION



# Implementation

## PROGRAMMATIC ORGANISATION

Ground Floor Plan

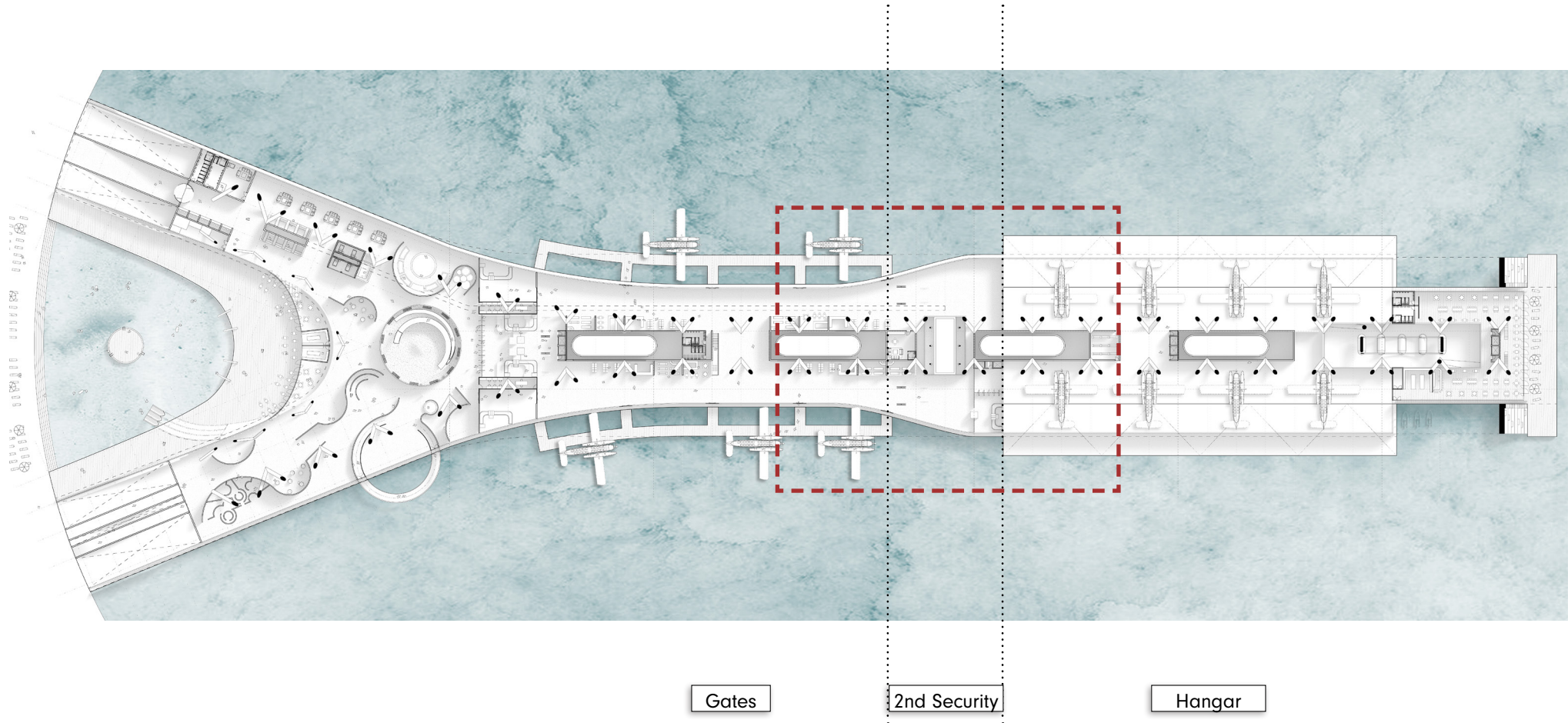




# Implementation

## PROGRAMMATIC ORGANISATION

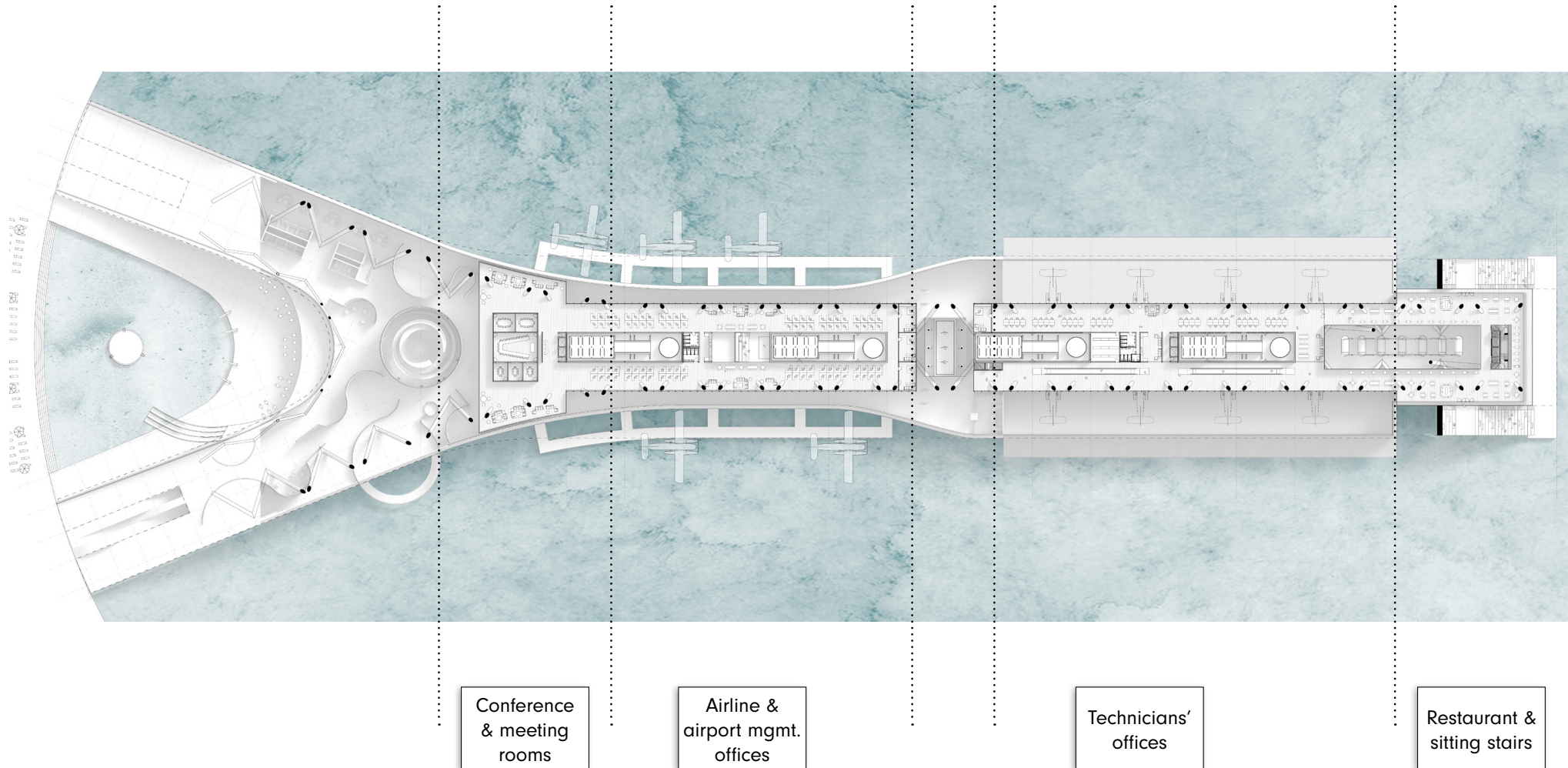
Ground Floor Plan



# Implementation

## PROGRAMMATIC ORGANISATION

### Mezzanine Floor Plan

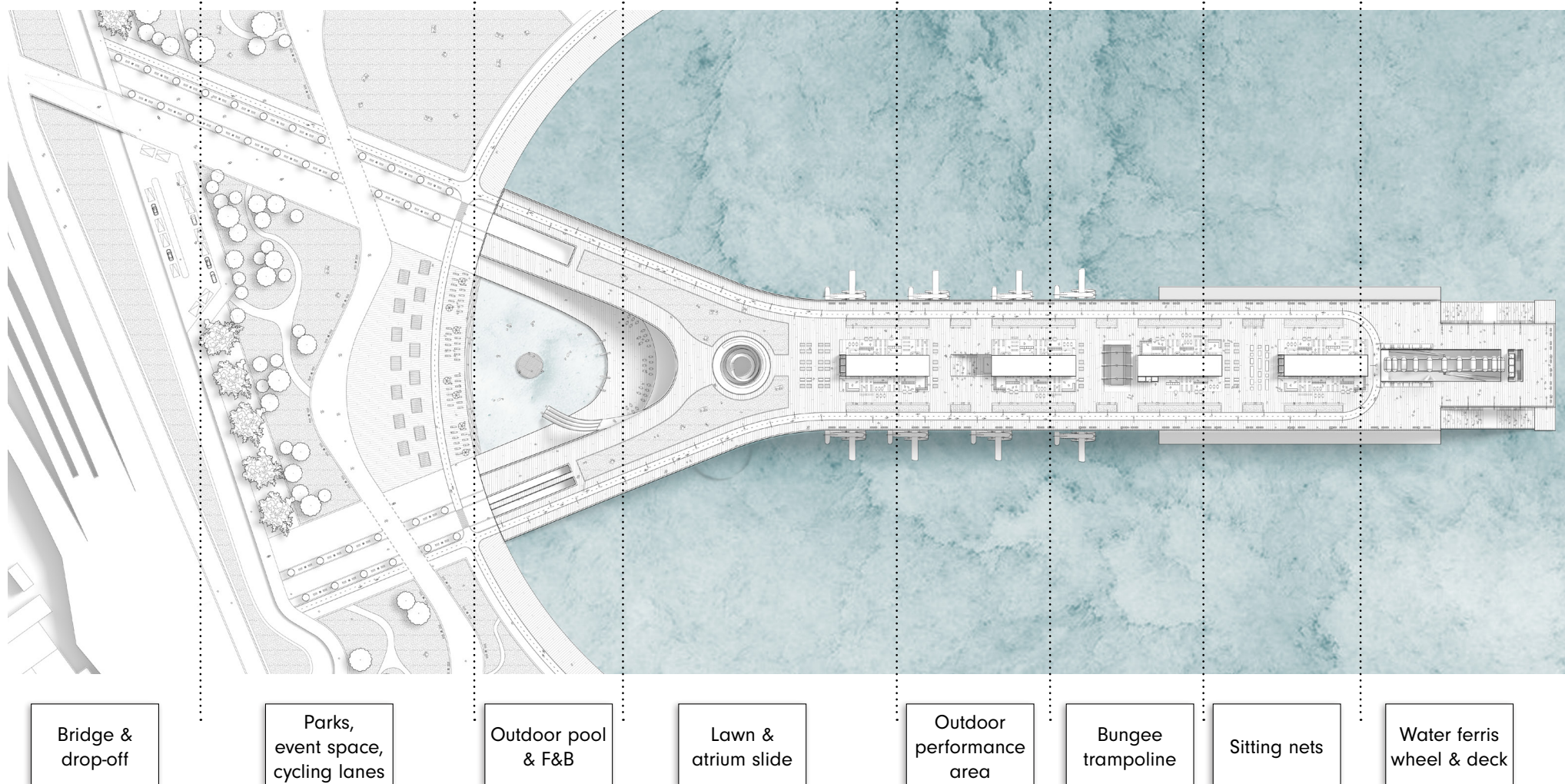




# Implementation

## PROGRAMMATIC ORGANISATION

### Roof Plan



Implementation

# TRAFFIC CONTROL TOWER

## OSTKREUZ WATER TOWER

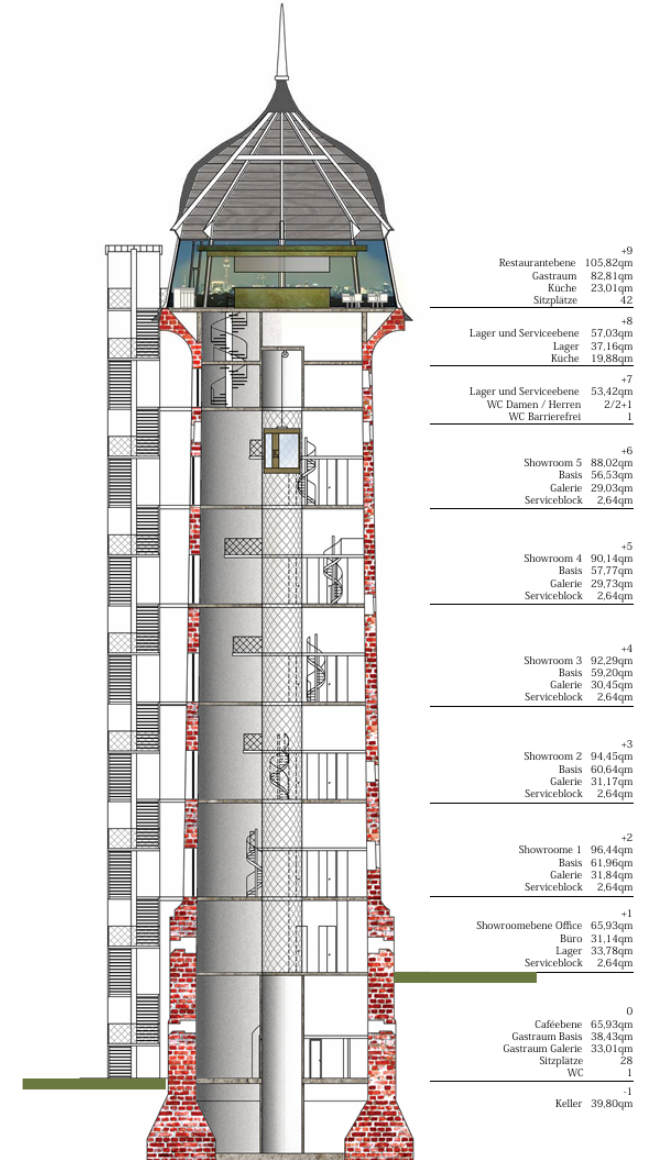
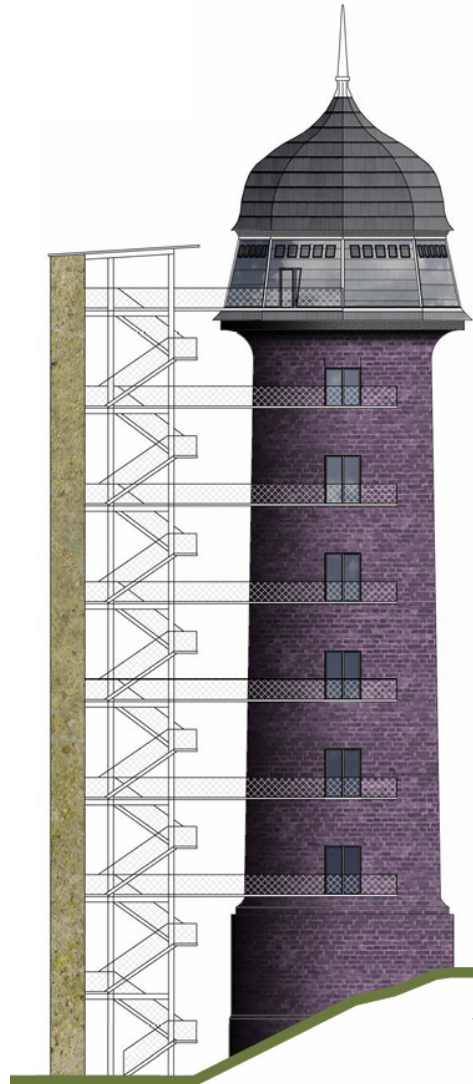
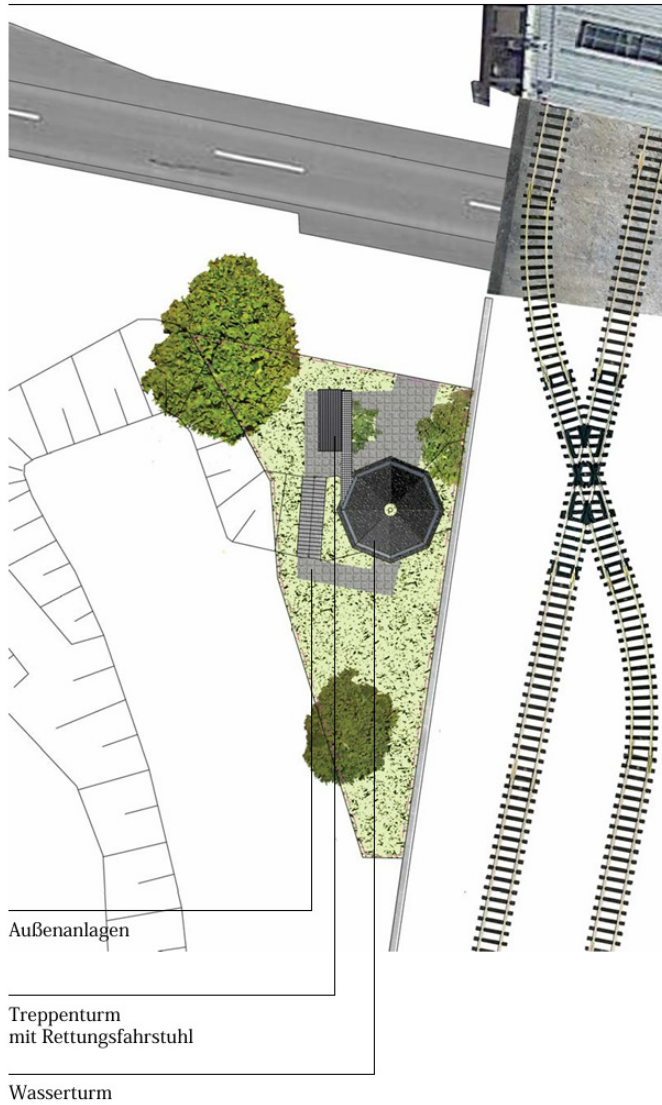


**1909-1912:** Construction - steam locomotive  
**2015:** Sold to private investor - mixed commercial use  
**2024:** Conversion has not yet begun



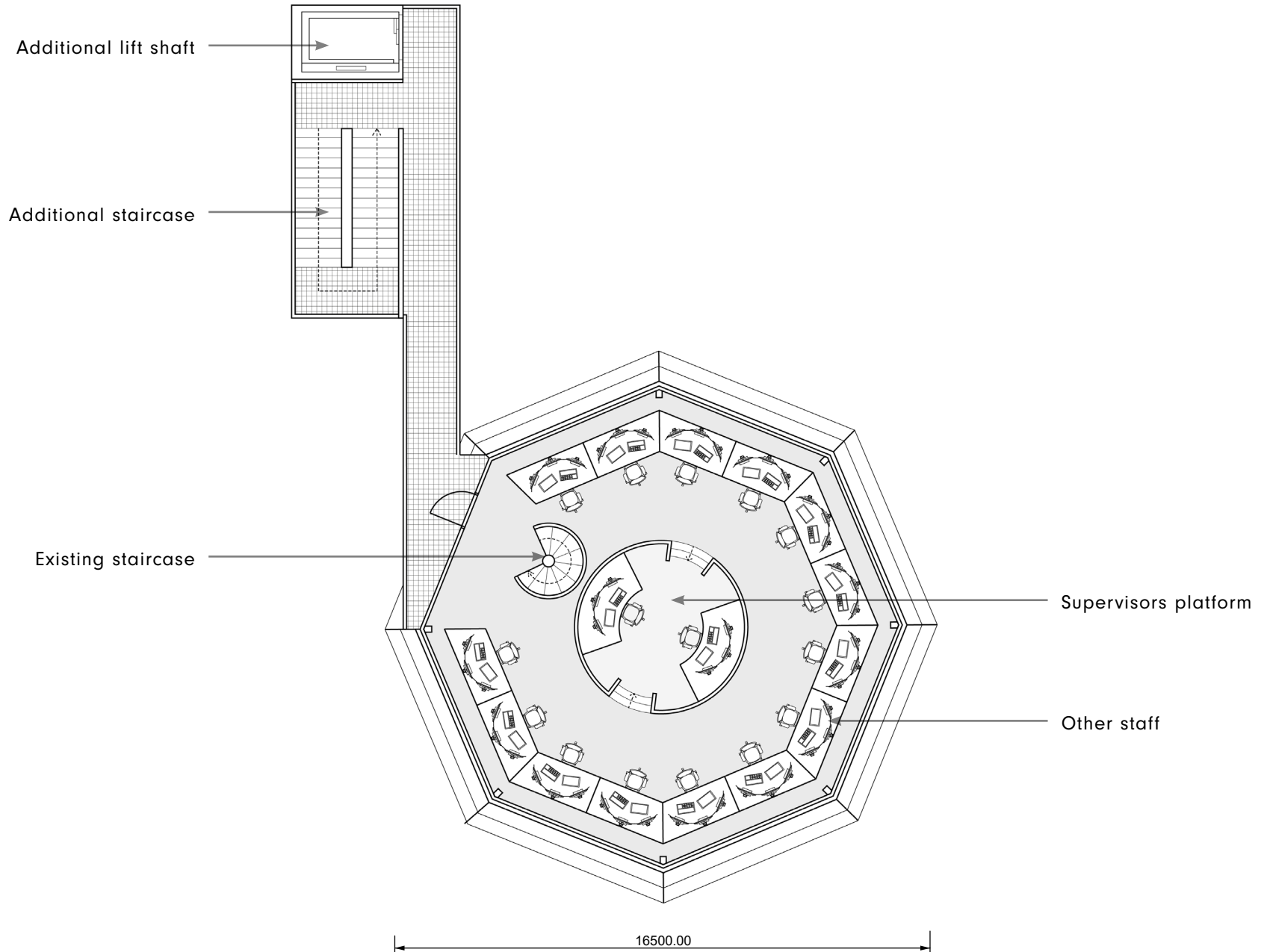
# Implementation

## PLANS FOR RENOVATION



# Traffic Control Tower

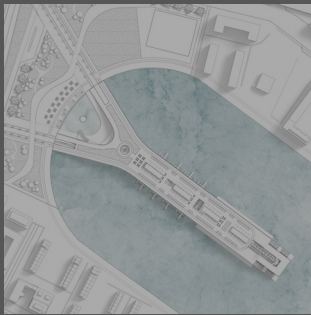
## 9TH FLOOR PLAN



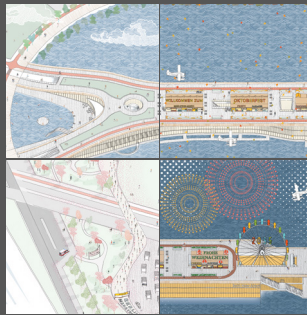


# Implementation OVERVIEW

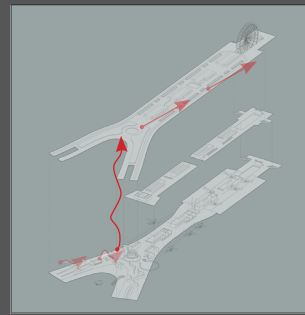
## BUILDING



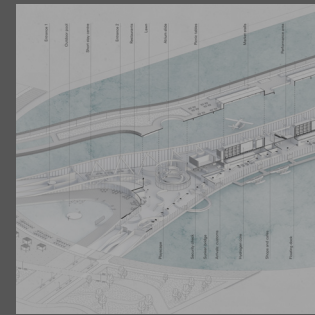
## ACTIVITIES



## CIRCULATION



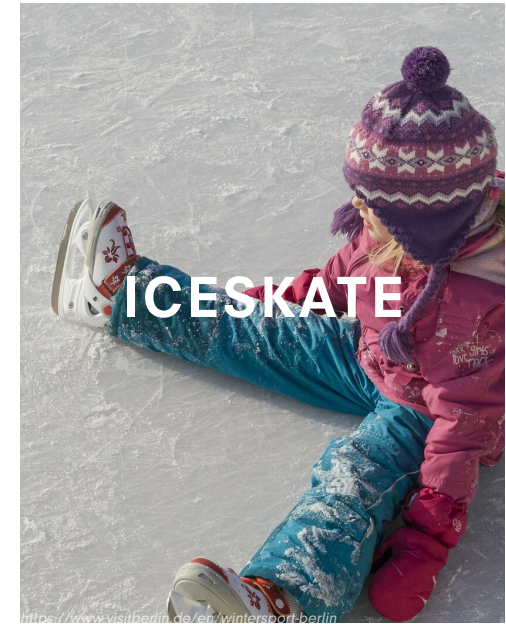
## ENCOUNTER





Implementation

# POSSIBLE EVENTS



Spring



Summer



Autumn

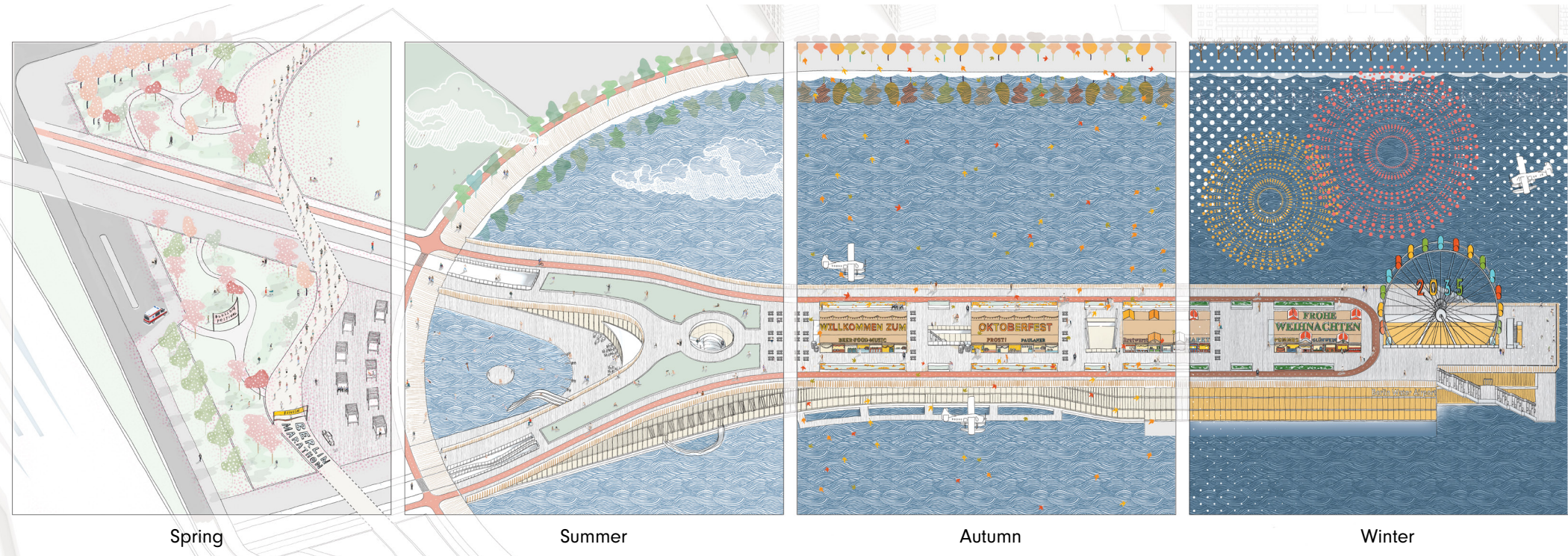


Winter



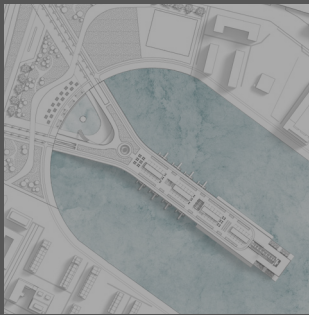
Implementation

# EVENTS ALL YEAR ROUND

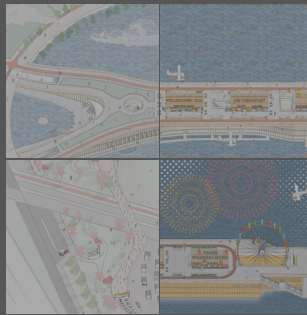


# Implementation OVERVIEW

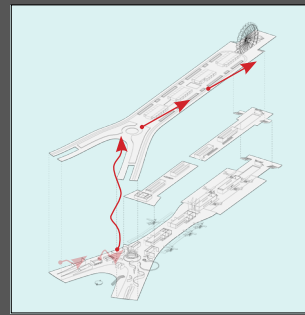
## BUILDING



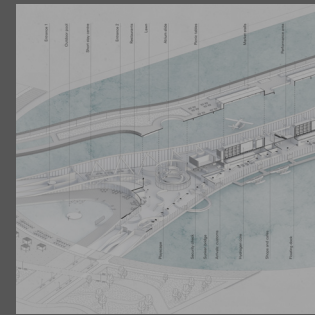
## ACTIVITIES



## CIRCULATION



## ENCOUNTER





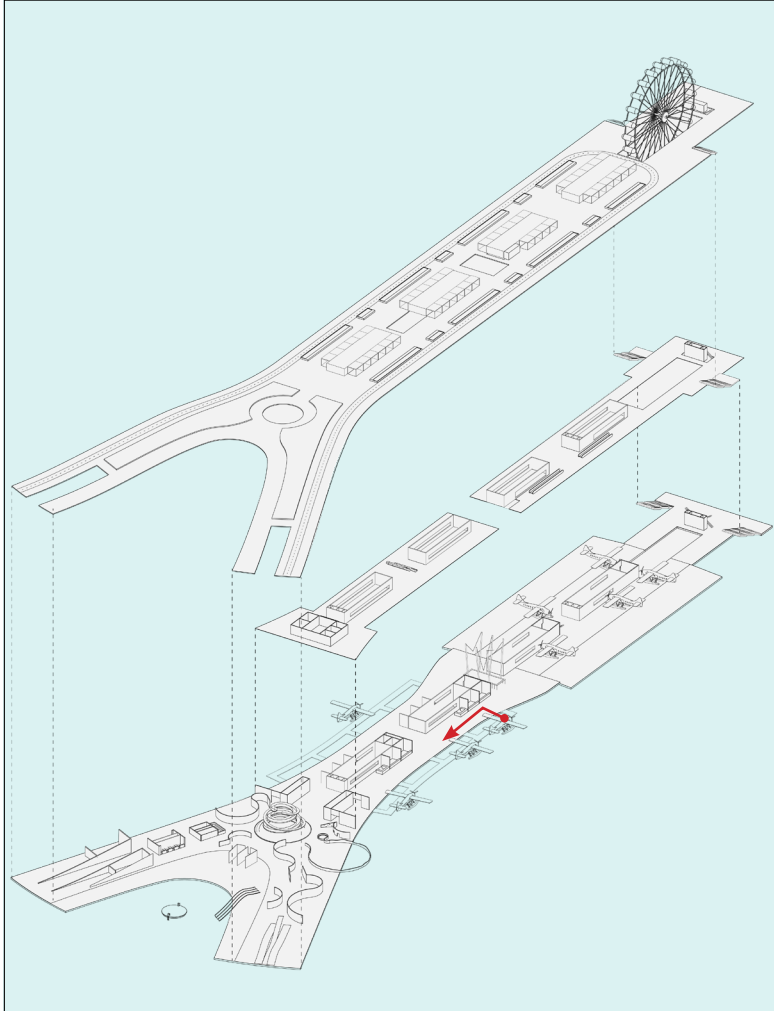
Implementation

# USERS' FLOWS



Implementation

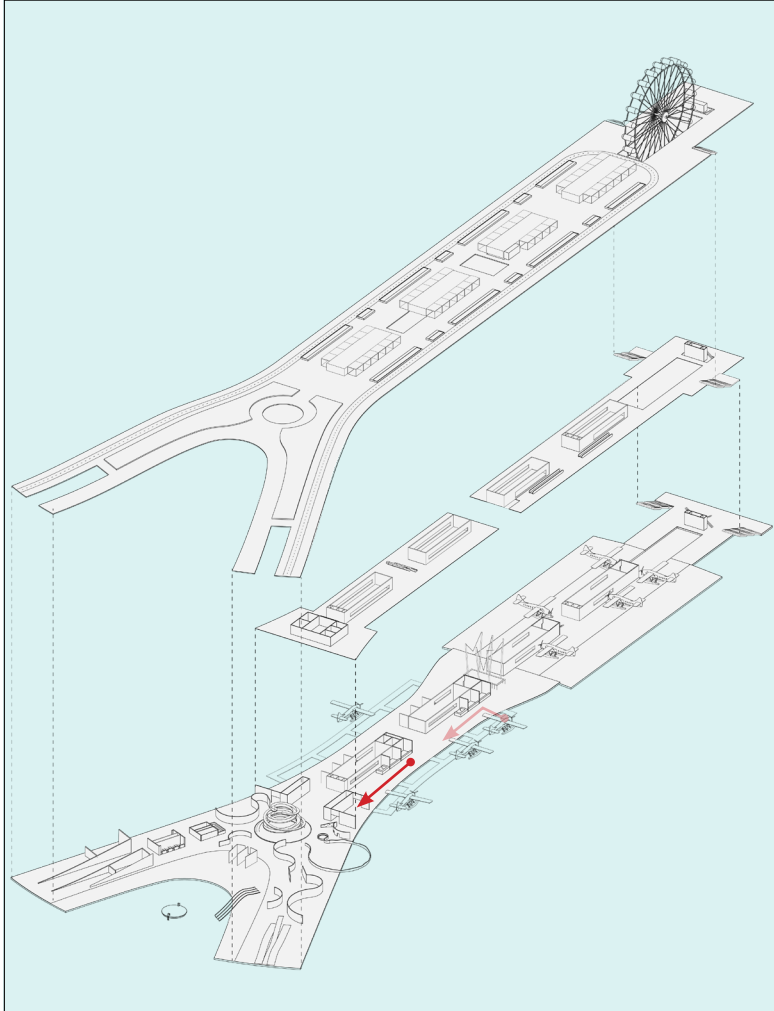
# RURAL PATIENTS' FLOWS





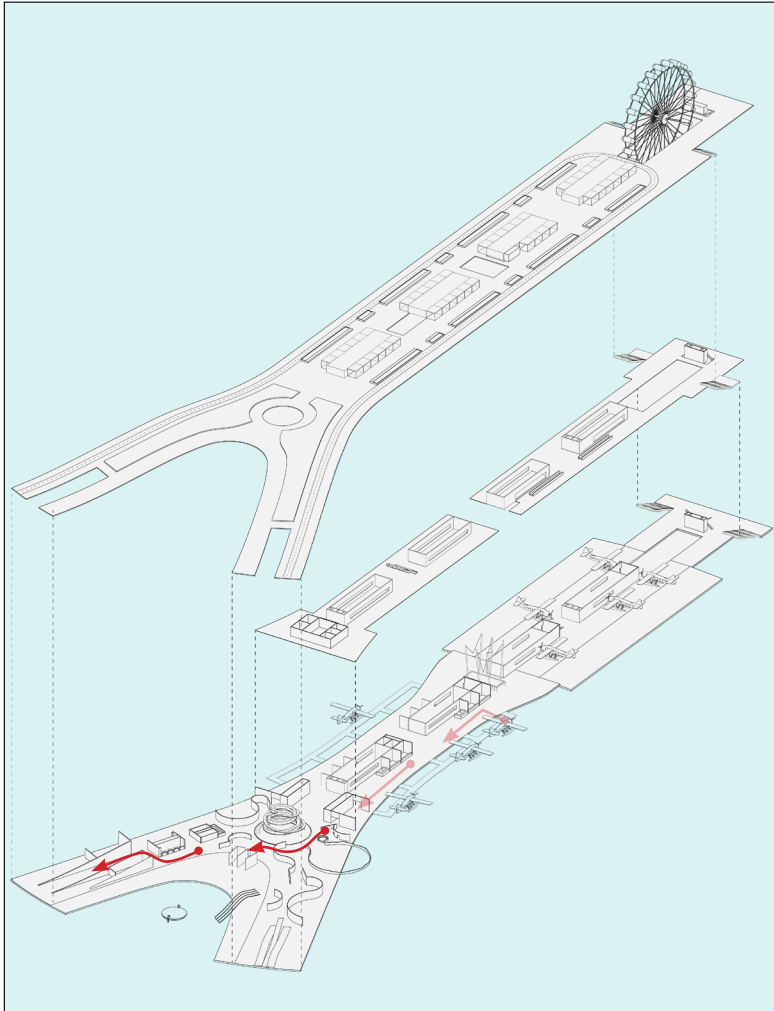
# Implementation

## RURAL PATIENTS' FLOWS



# Implementation

## RURAL PATIENTS' FLOWS





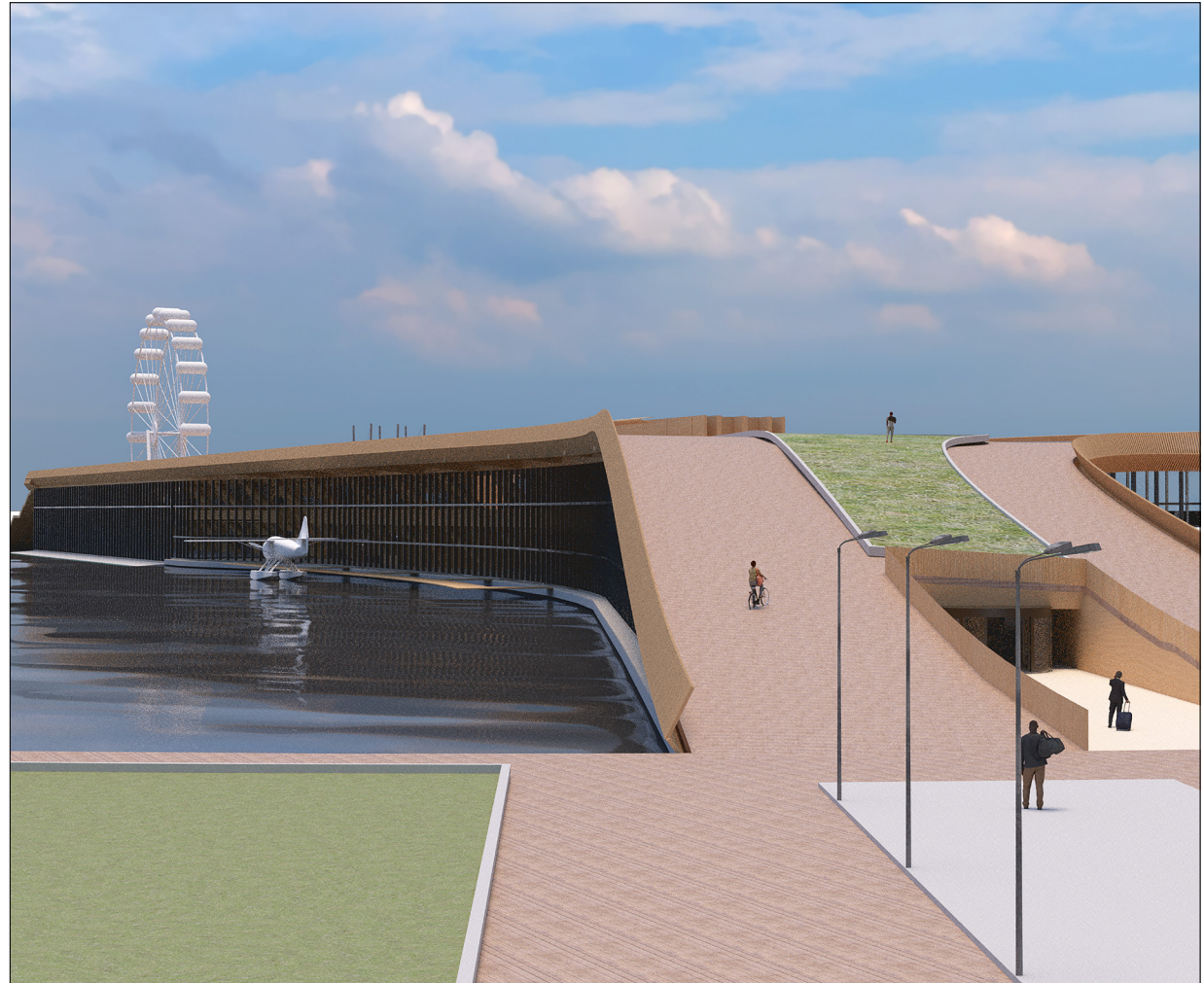
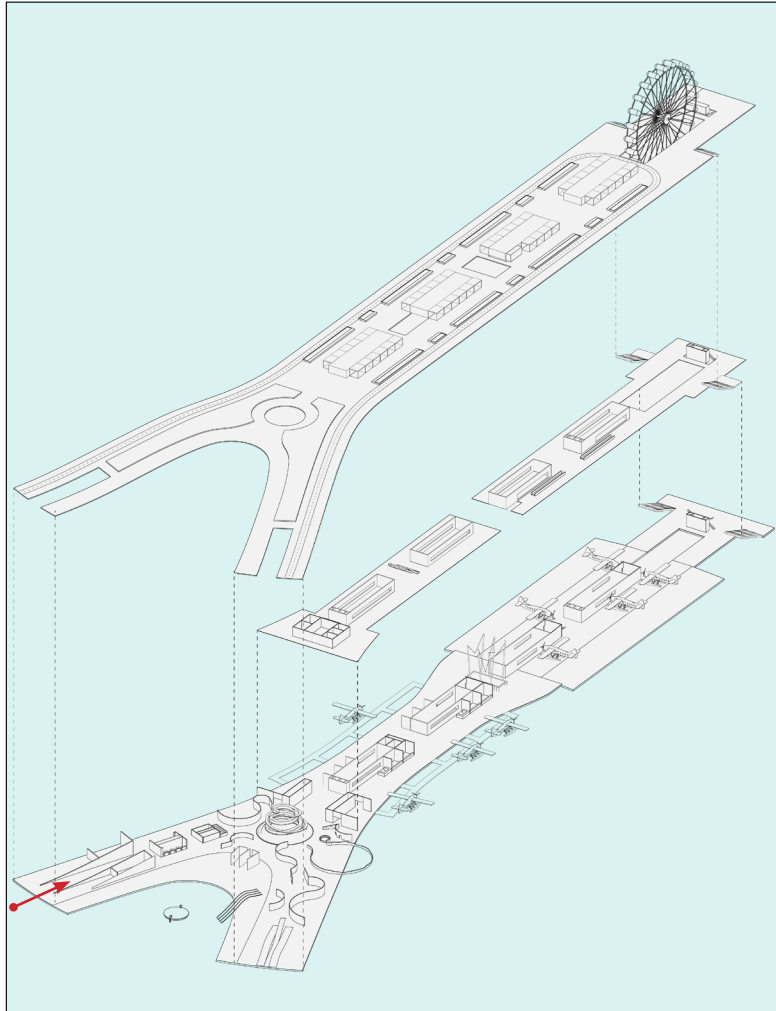
Implementation

# USERS' FLOWS



# Implementation

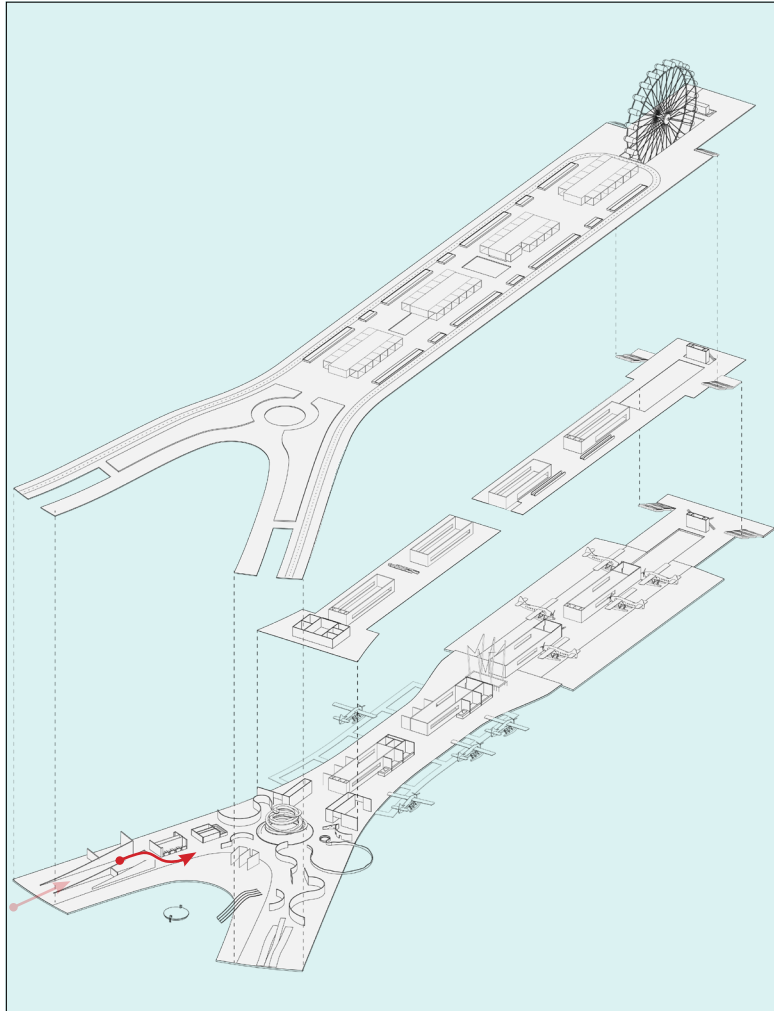
## URBAN ESCAPERS' FLOWS





# Implementation

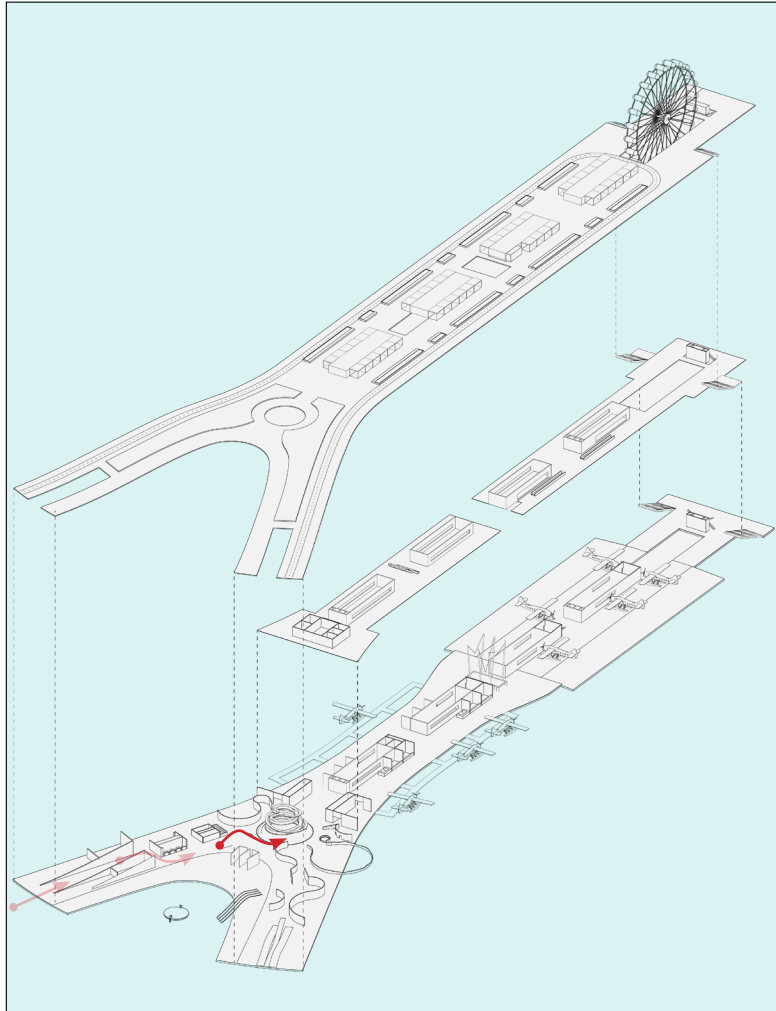
## URBAN ESCAPERS' FLOWS





Implementation

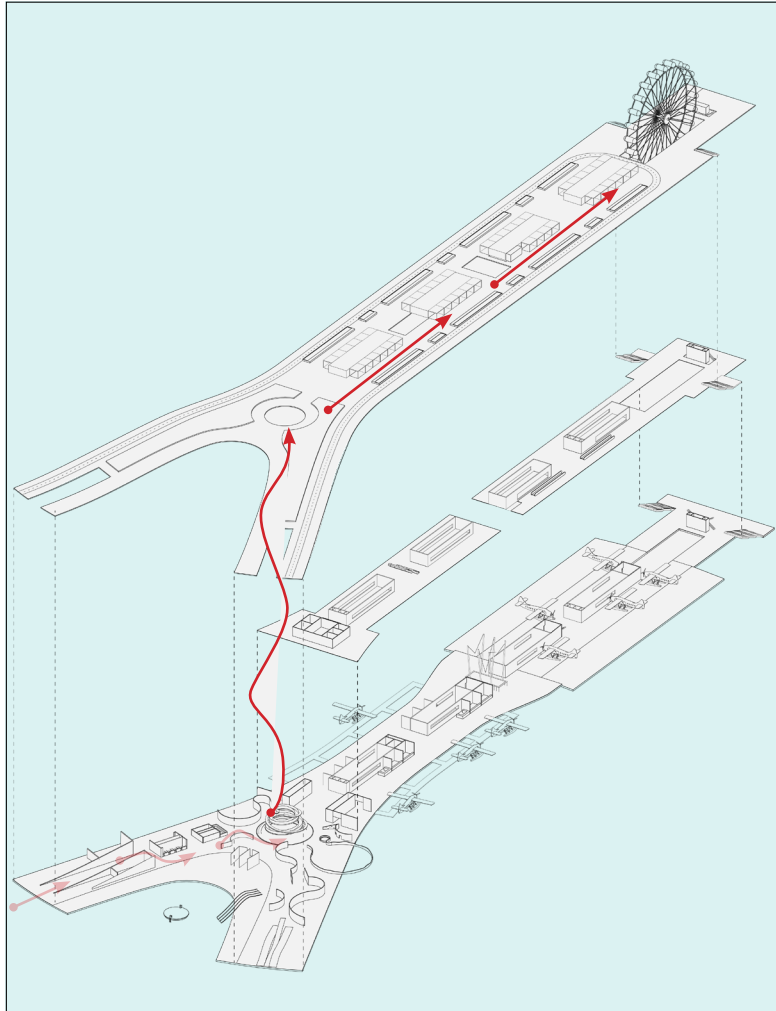
# URBAN ESCAPERS' FLOWS





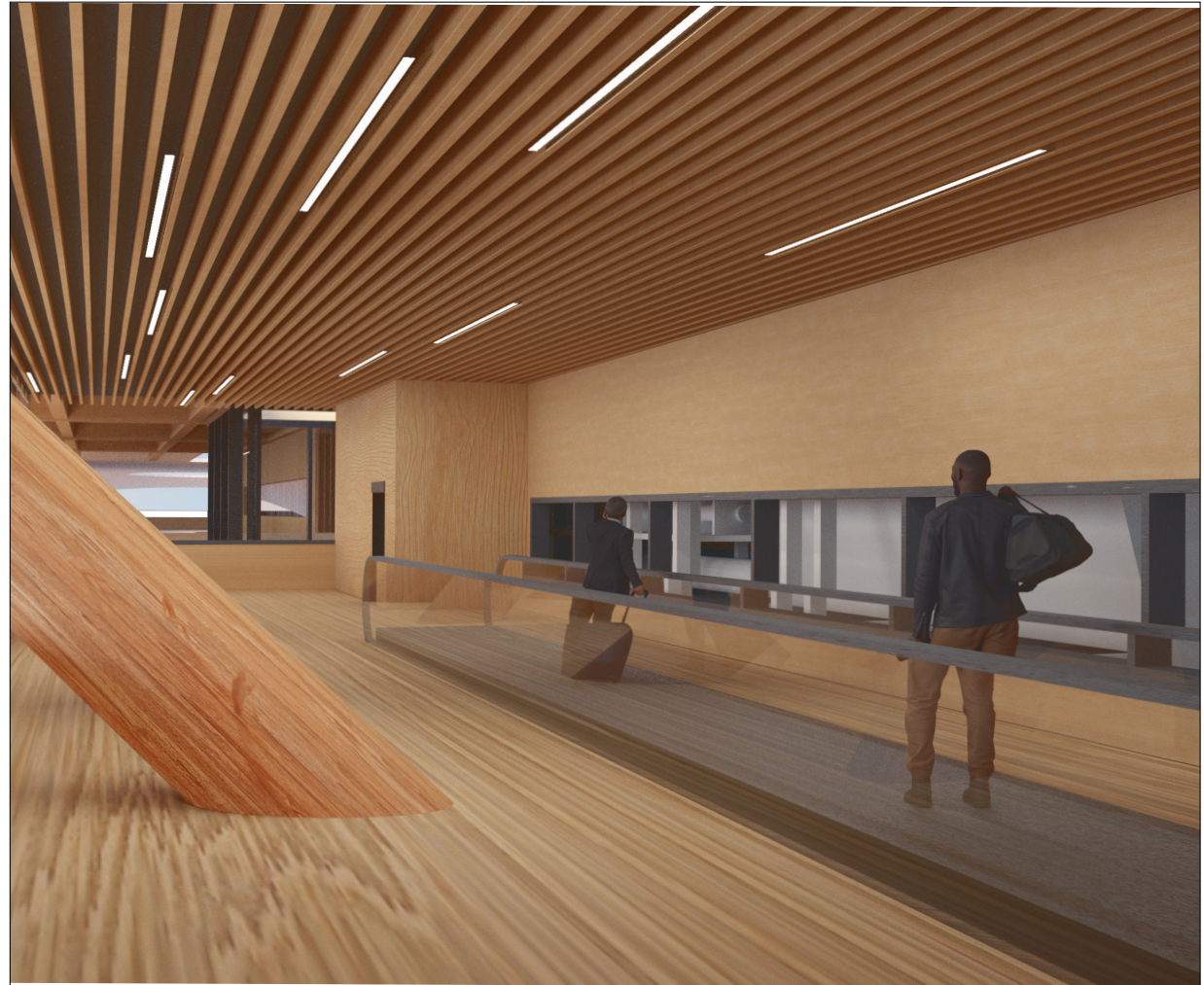
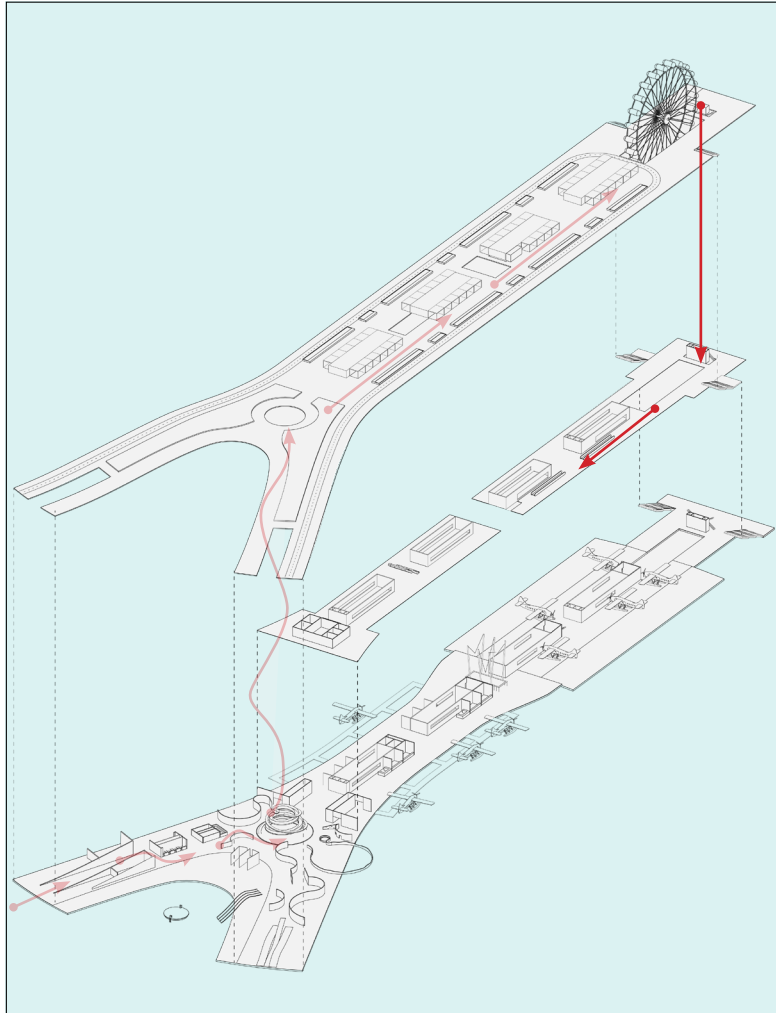
Implementation

# URBAN ESCAPERS' FLOWS



# Implementation

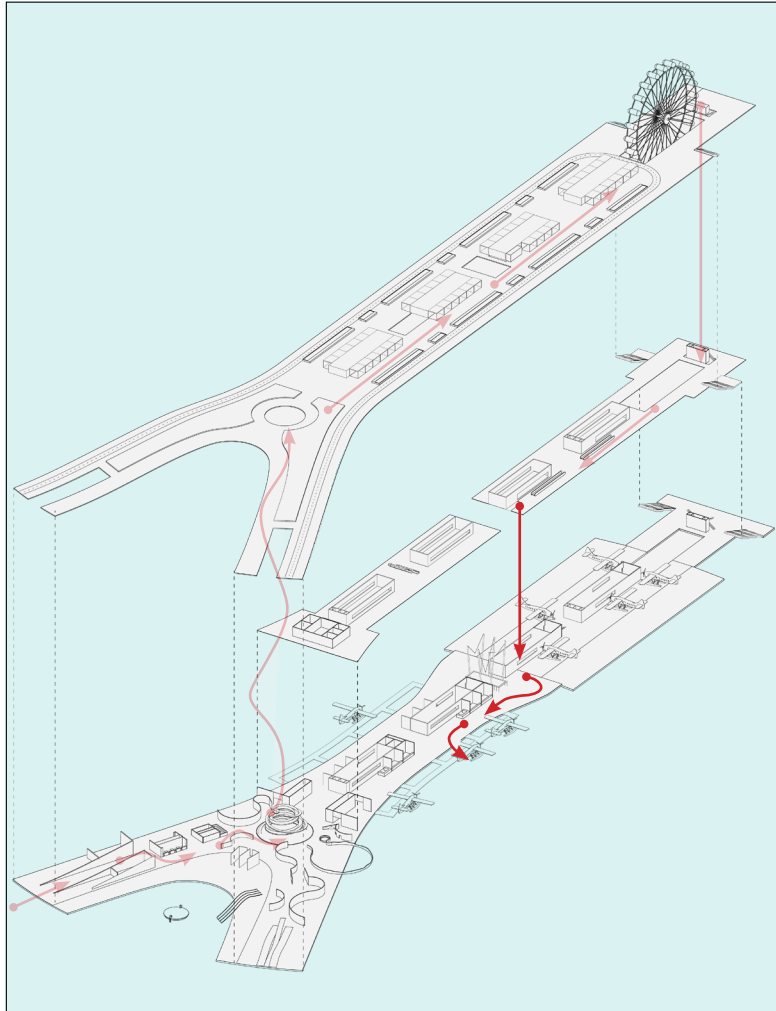
## URBAN ESCAPERS' FLOWS





# Implementation

## URBAN ESCAPERS' FLOWS



Implementation

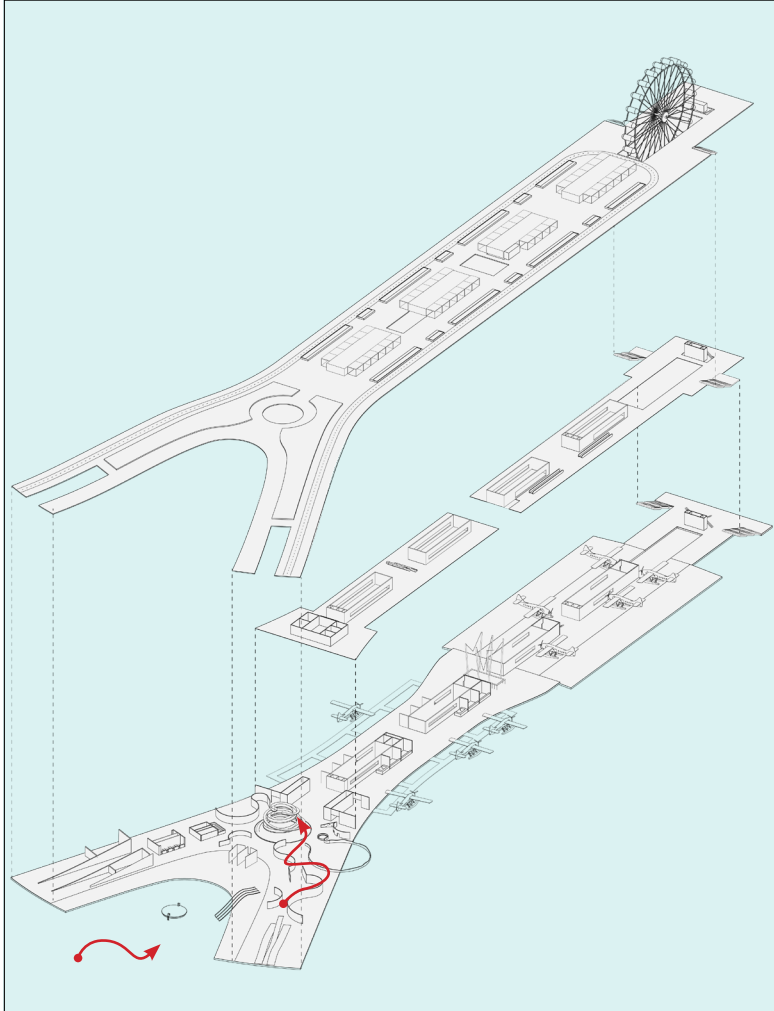
# USERS' FLOWS





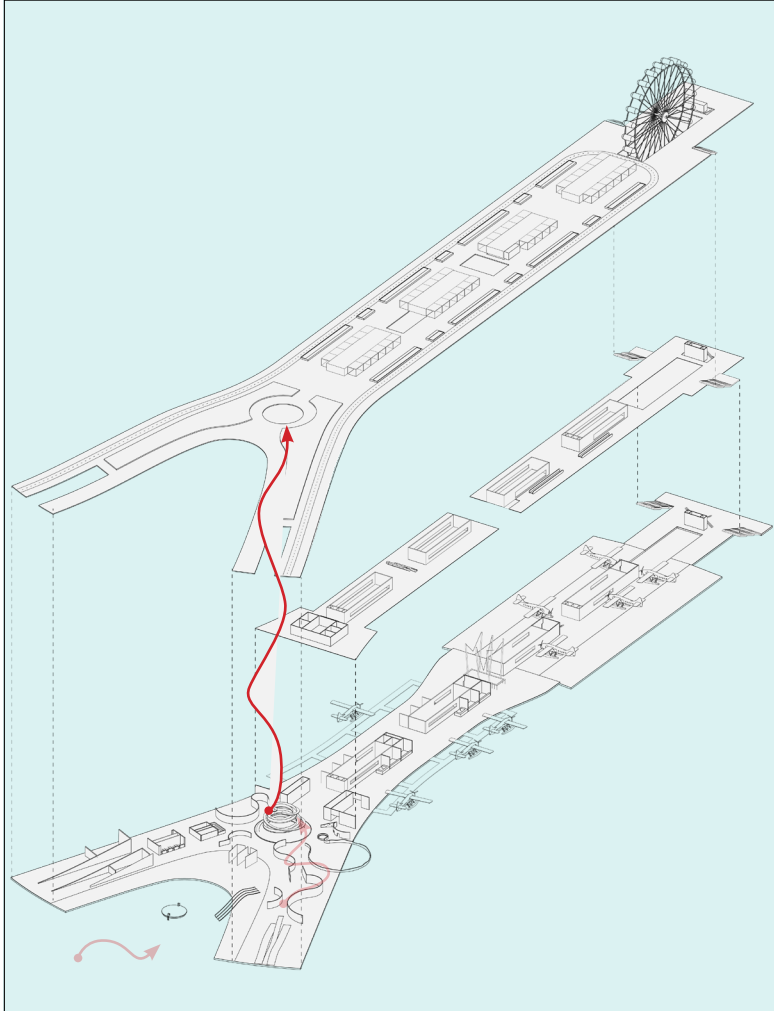
Implementation

# PUBLIC VISITORS' FLOWS



# Implementation

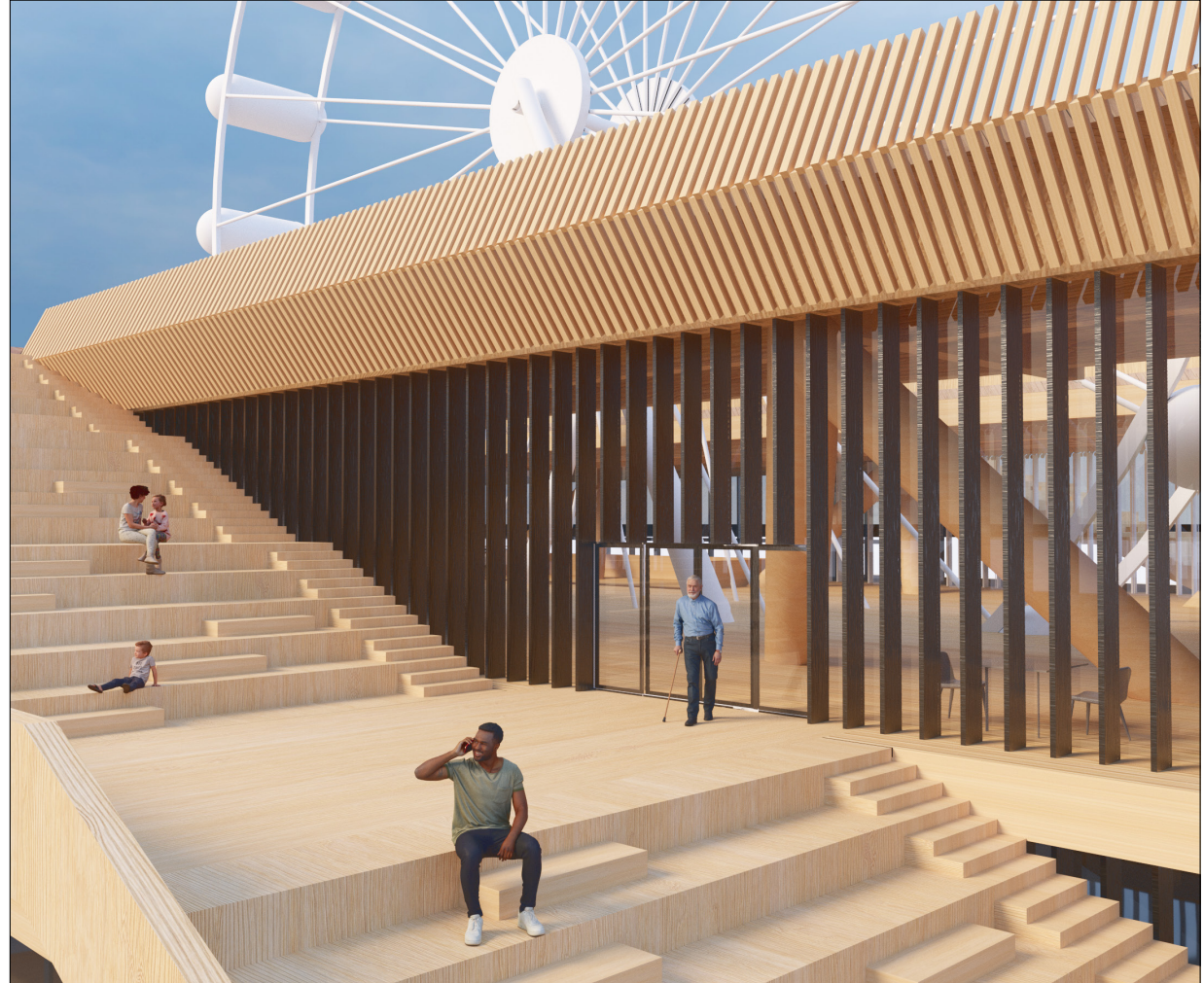
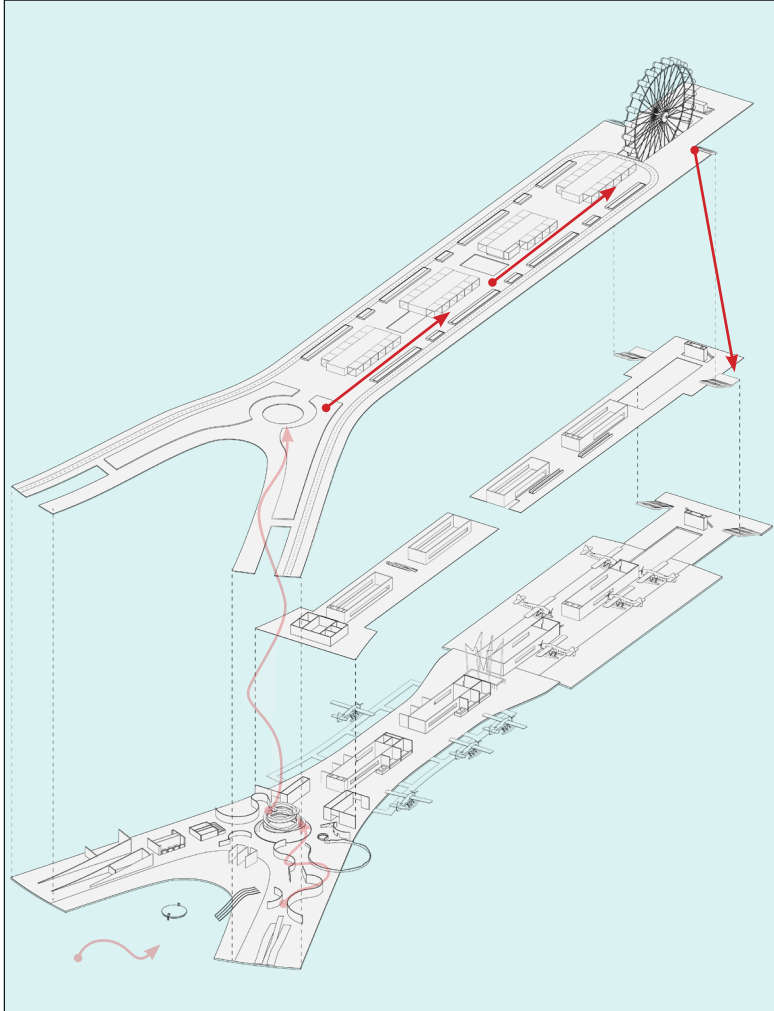
## PUBLIC VISITORS' FLOWS





# Implementation

## PUBLIC VISITORS' FLOWS



Implementation

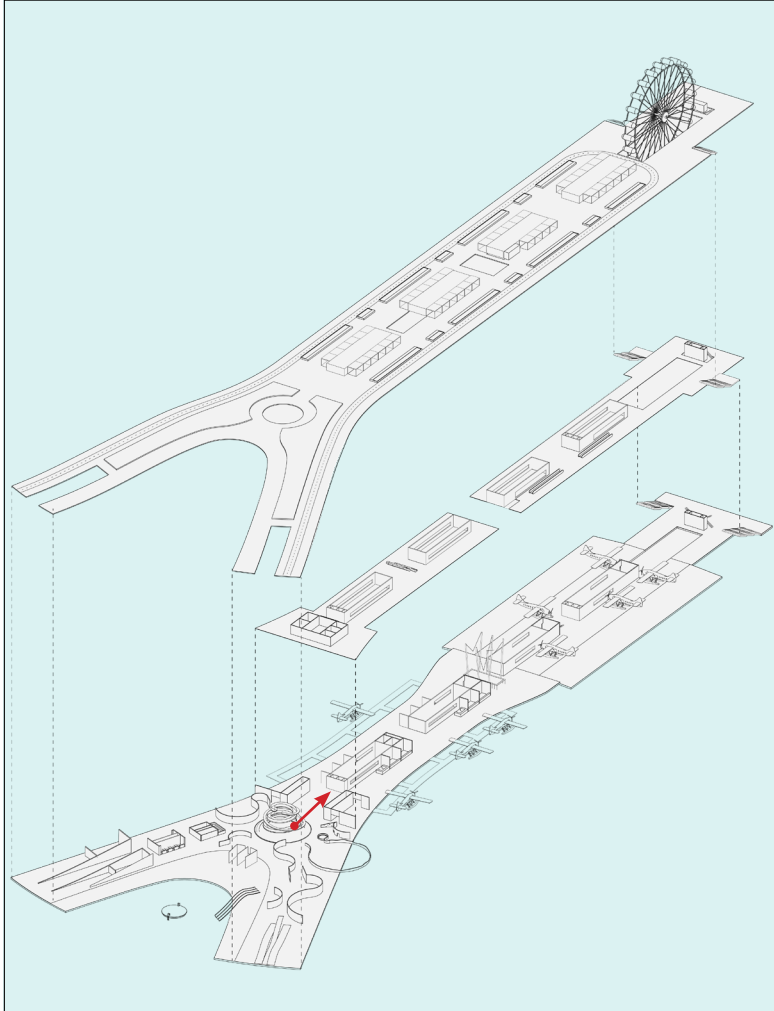
# USERS' FLOWS





Implementation

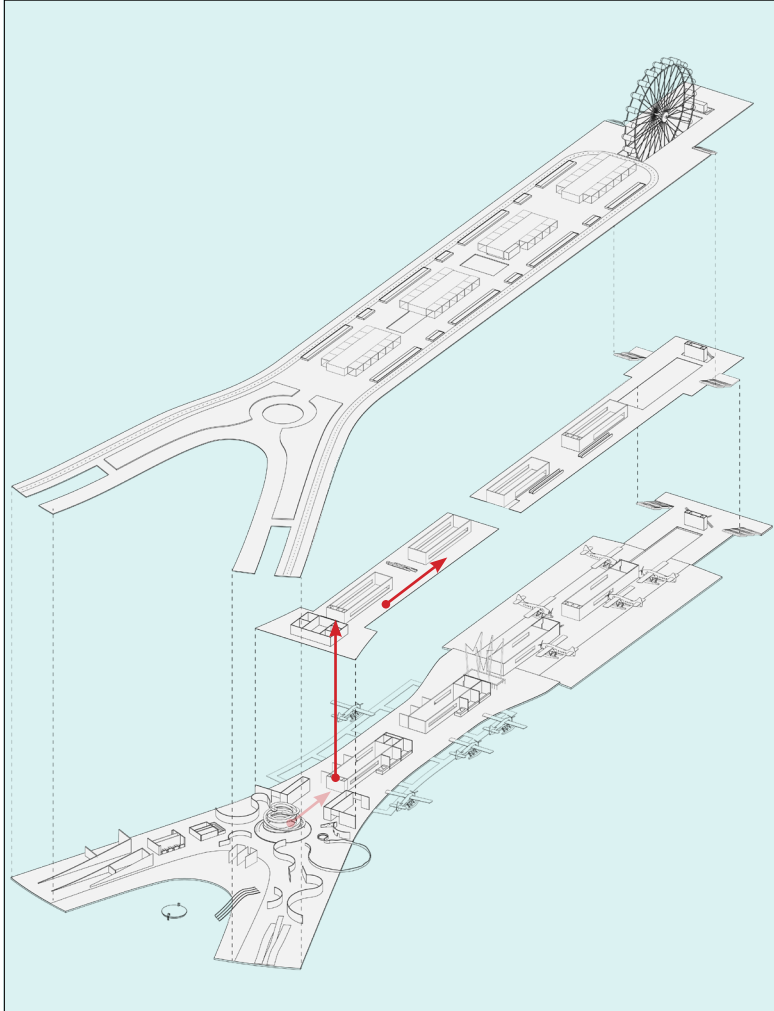
# STAFF MEMBERS' FLOWS





# Implementation

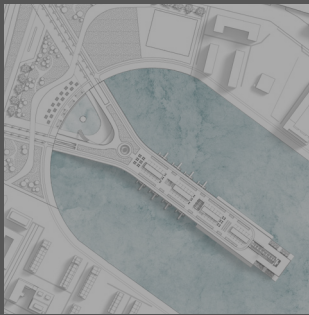
## STAFF MEMBERS' FLOWS



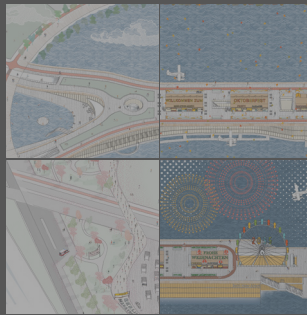


# Implementation OVERVIEW

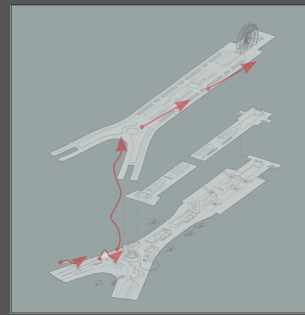
## BUILDING



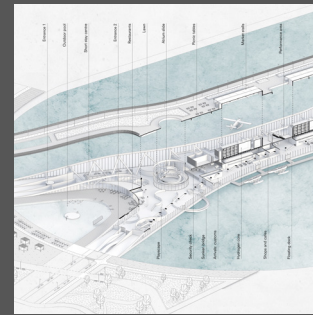
## ACTIVITIES



## CIRCULATION

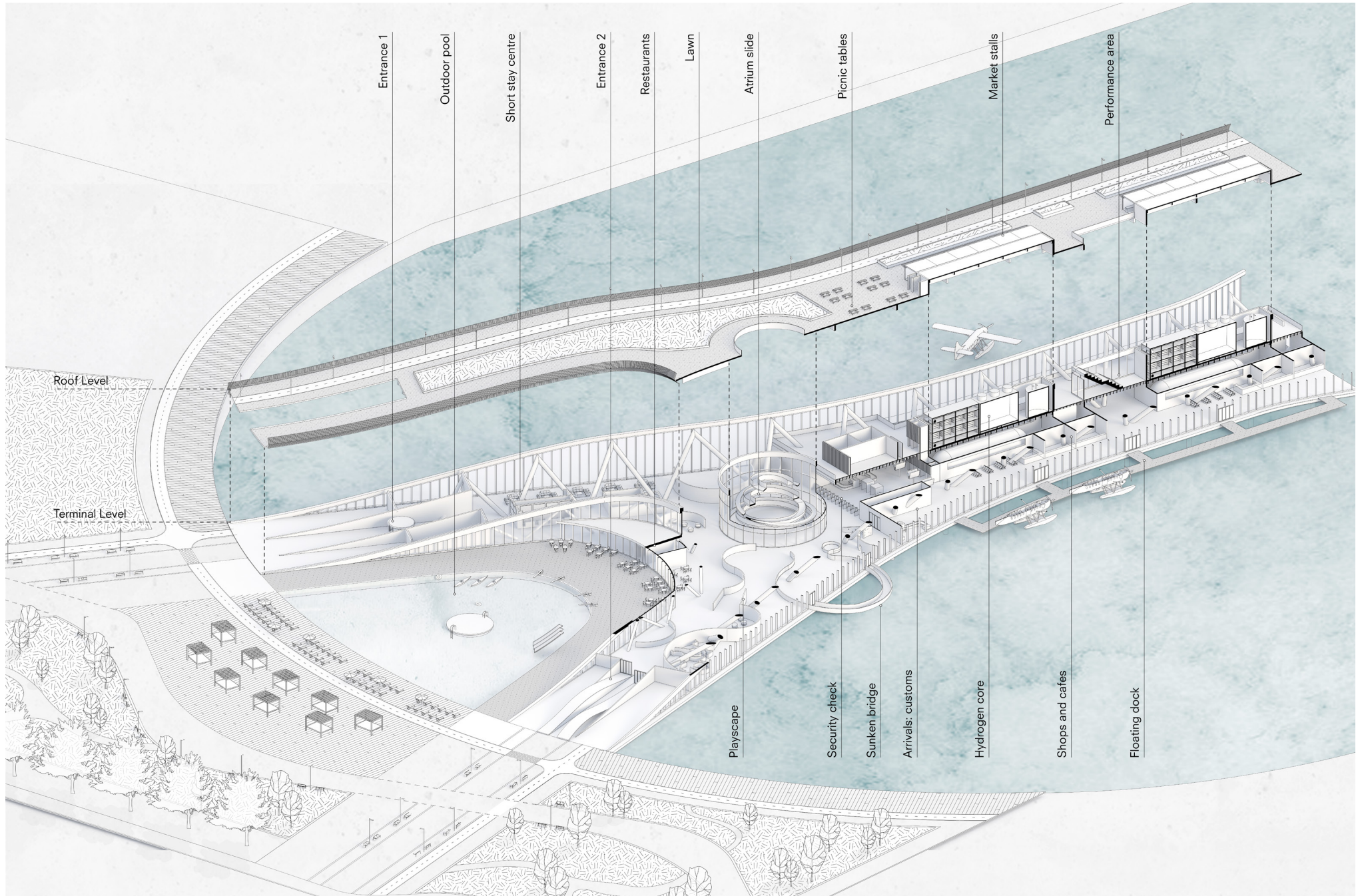


## ENCOUNTER



# Implementation

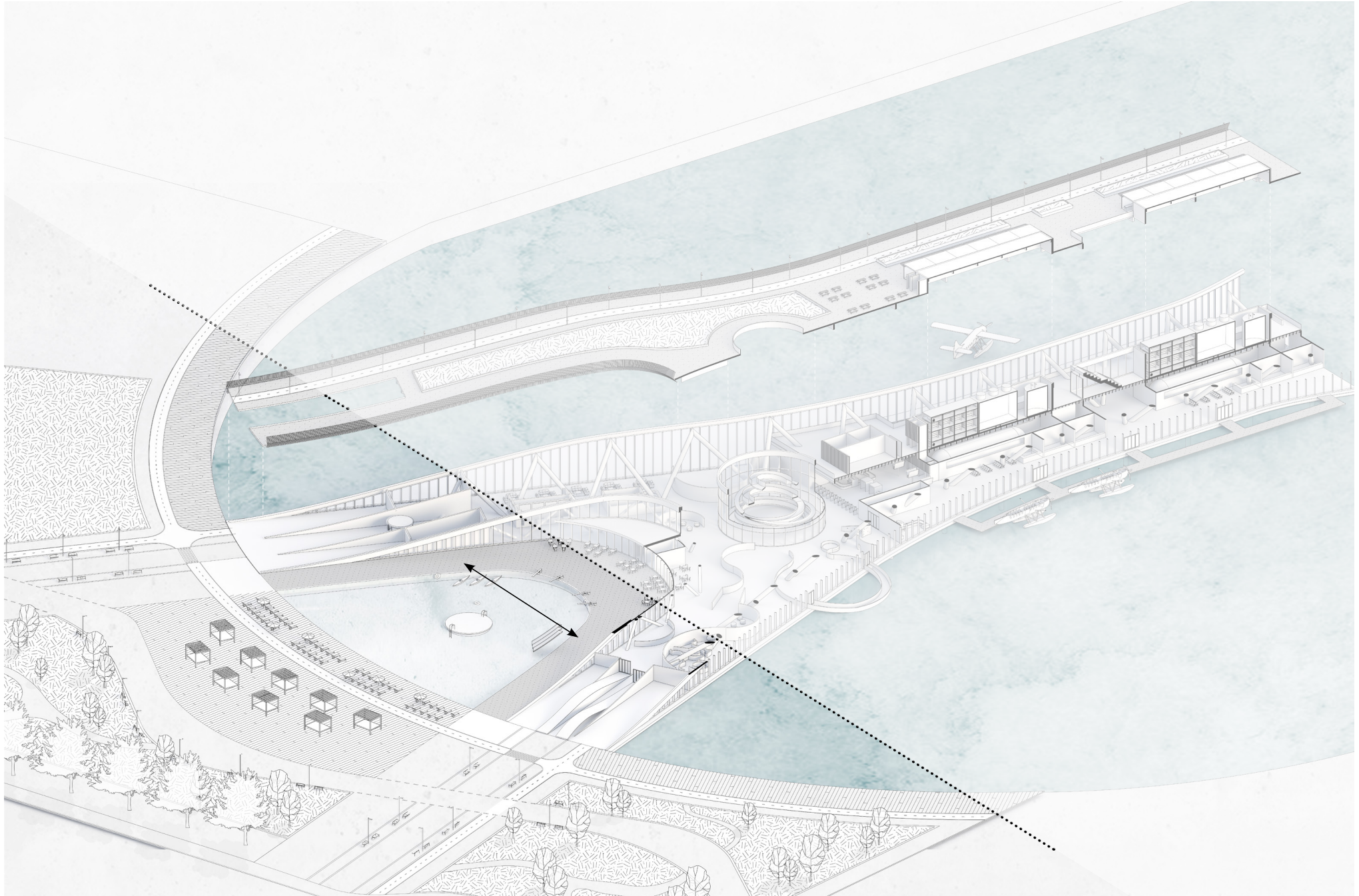
## BUILDING OVERVIEW





# Implementation

## ZONE A





Implementation  
**IMPRESSION**





# Implementation

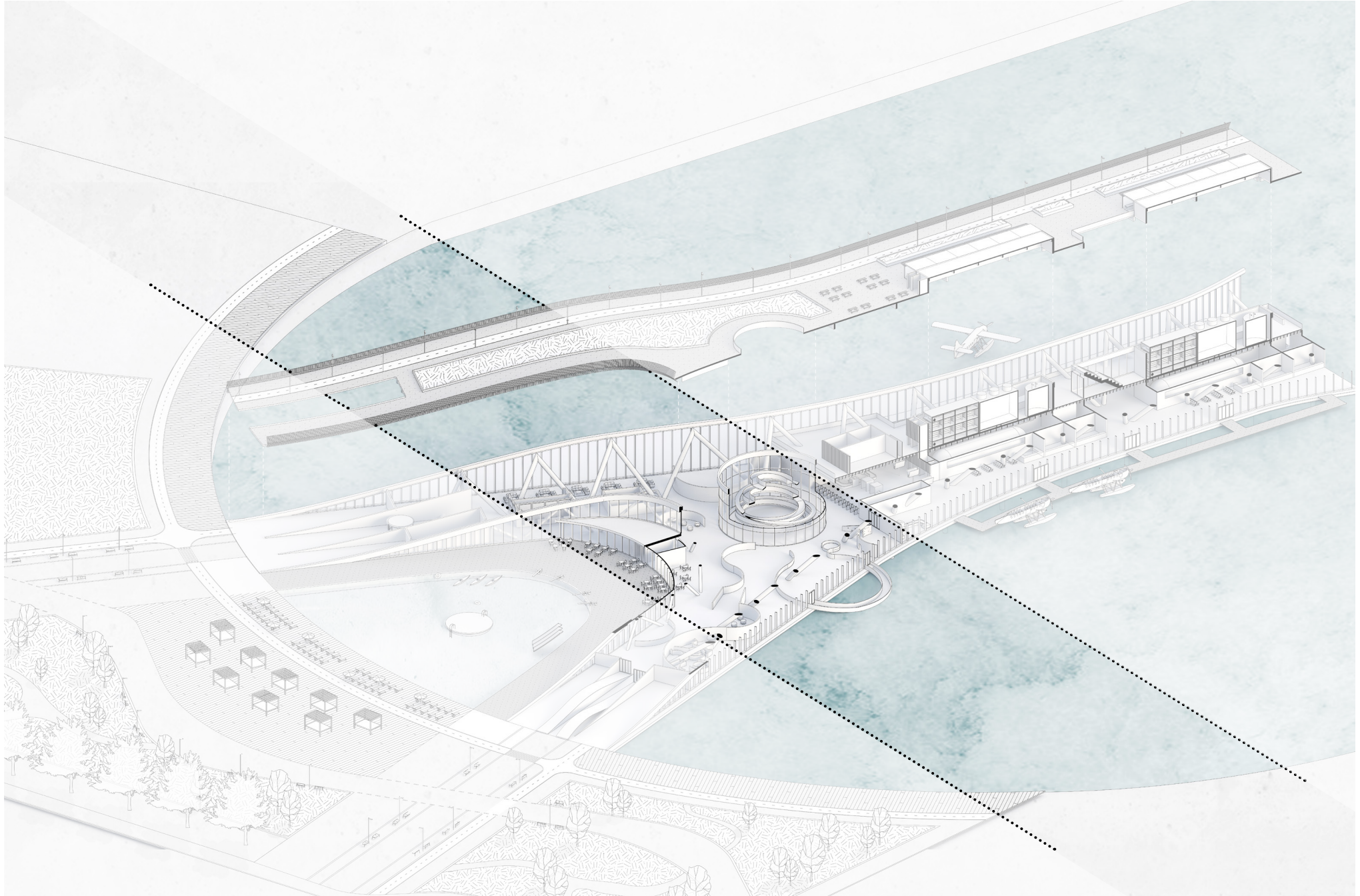
## IMPRESSION





# Implementation

## ZONE B





Implementation  
**IMPRESSION**





# Implementation

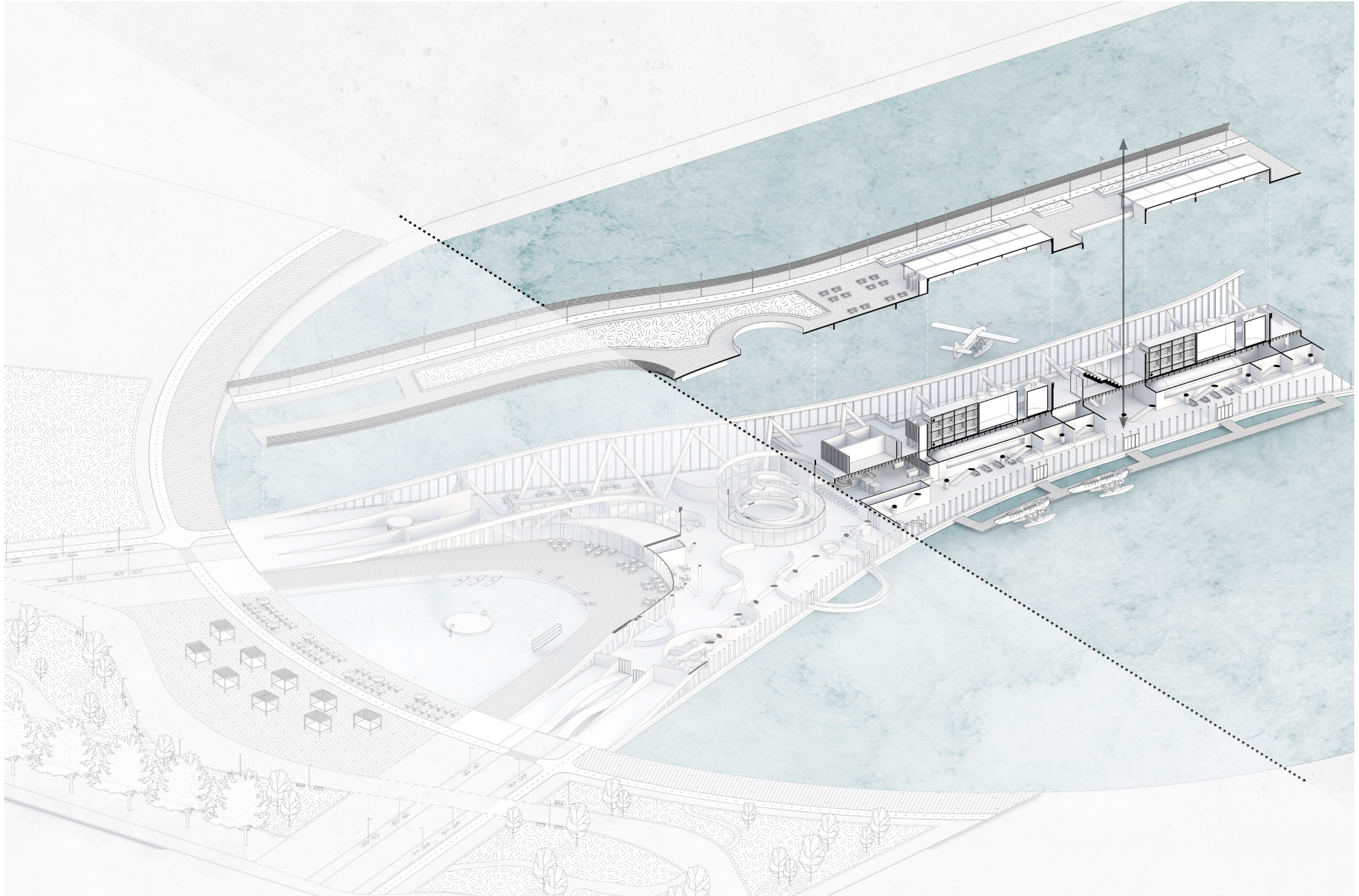
## IMPRESSION





# Implementation

## ZONE C





# Implementation

## IMPRESSION





# Implementation

## IMPRESSION



1 INTRODUCTION

2 DESIGN BRIEF

3 DESIGN CONCEPT

4 IMPLEMENTATION

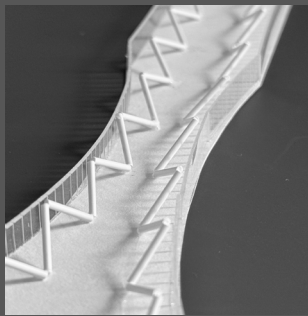
**5 DEVELOPMENT**

6 CONCLUSION



# Development OVERVIEW

## FORM



## COMPOSITION

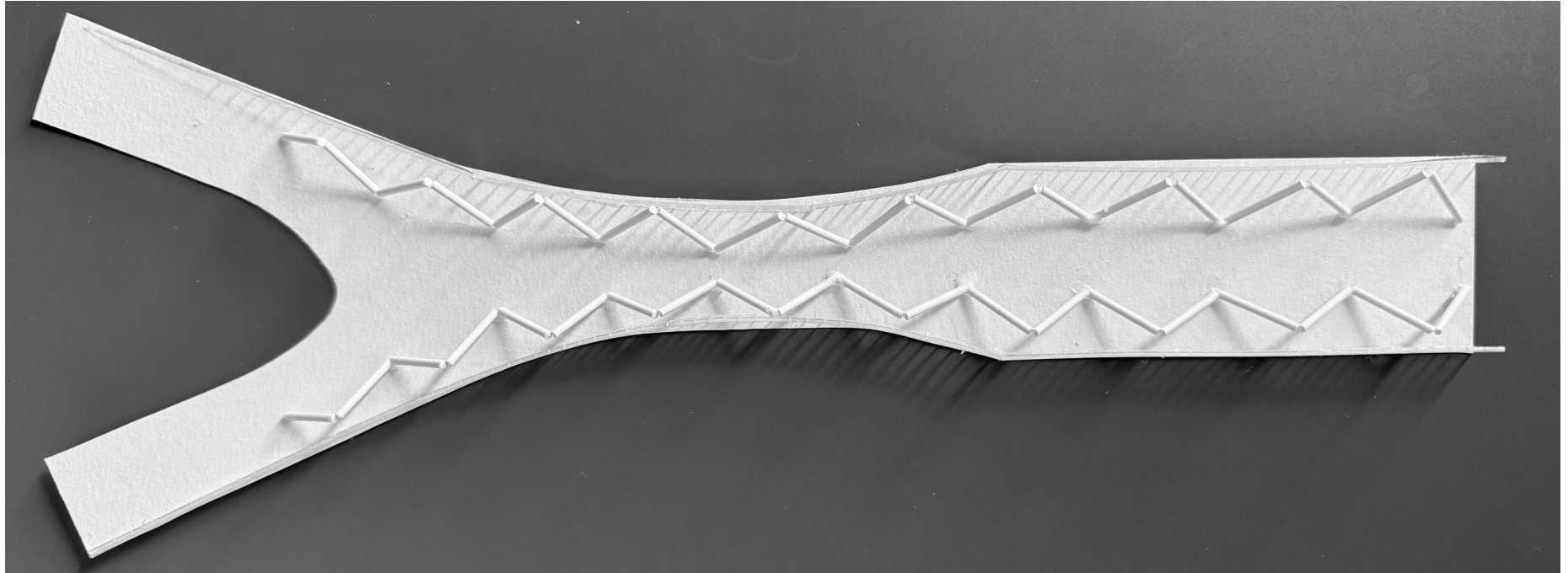


## CLIMATE



Development

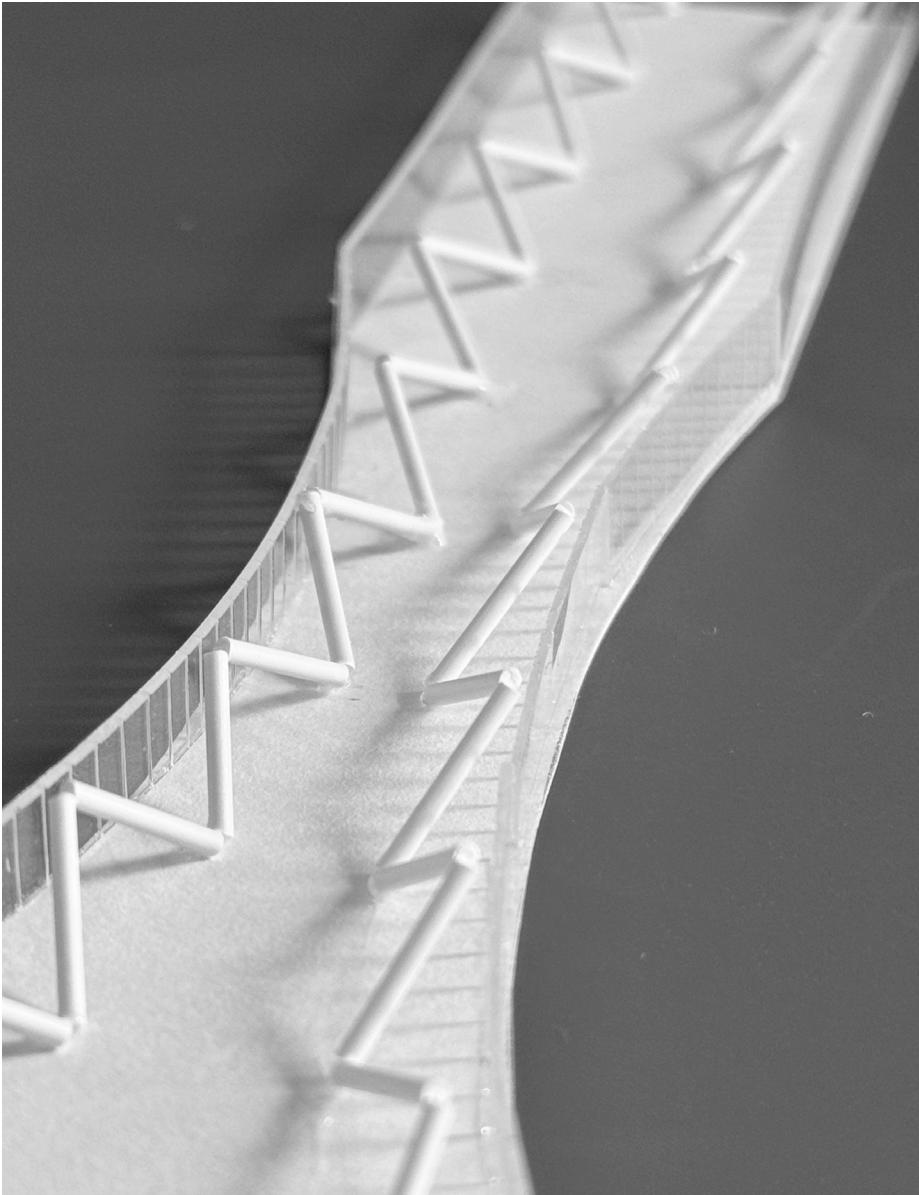
# BUILDING FORM





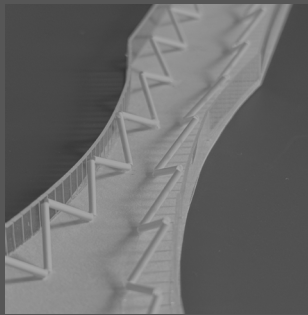
Development

# STRUCTURAL CONCEPT

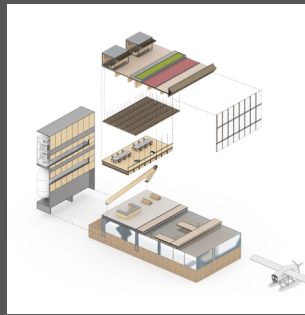


# Development OVERVIEW

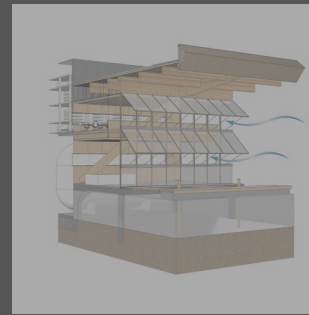
## FORM



## COMPOSITION



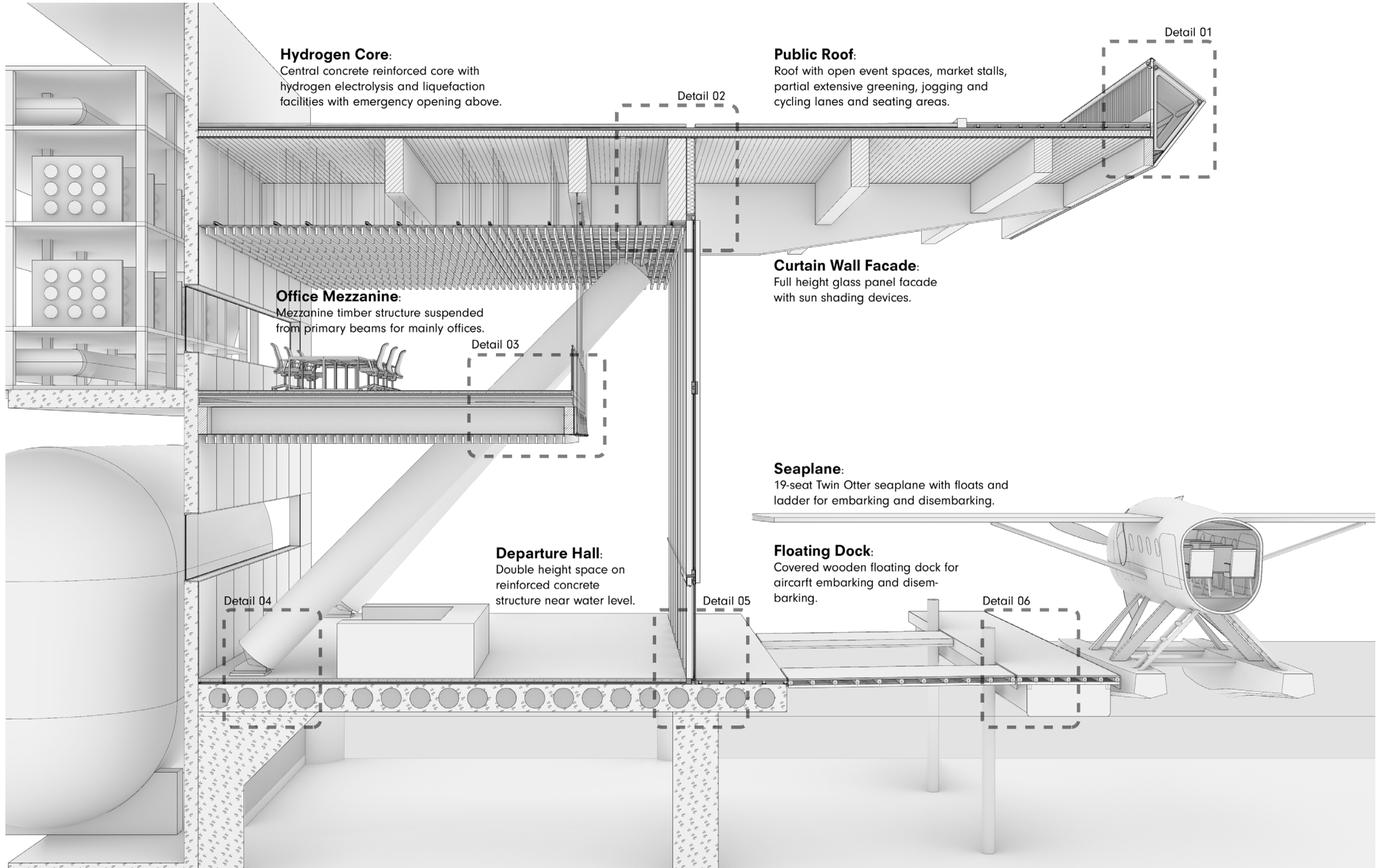
## CLIMATE



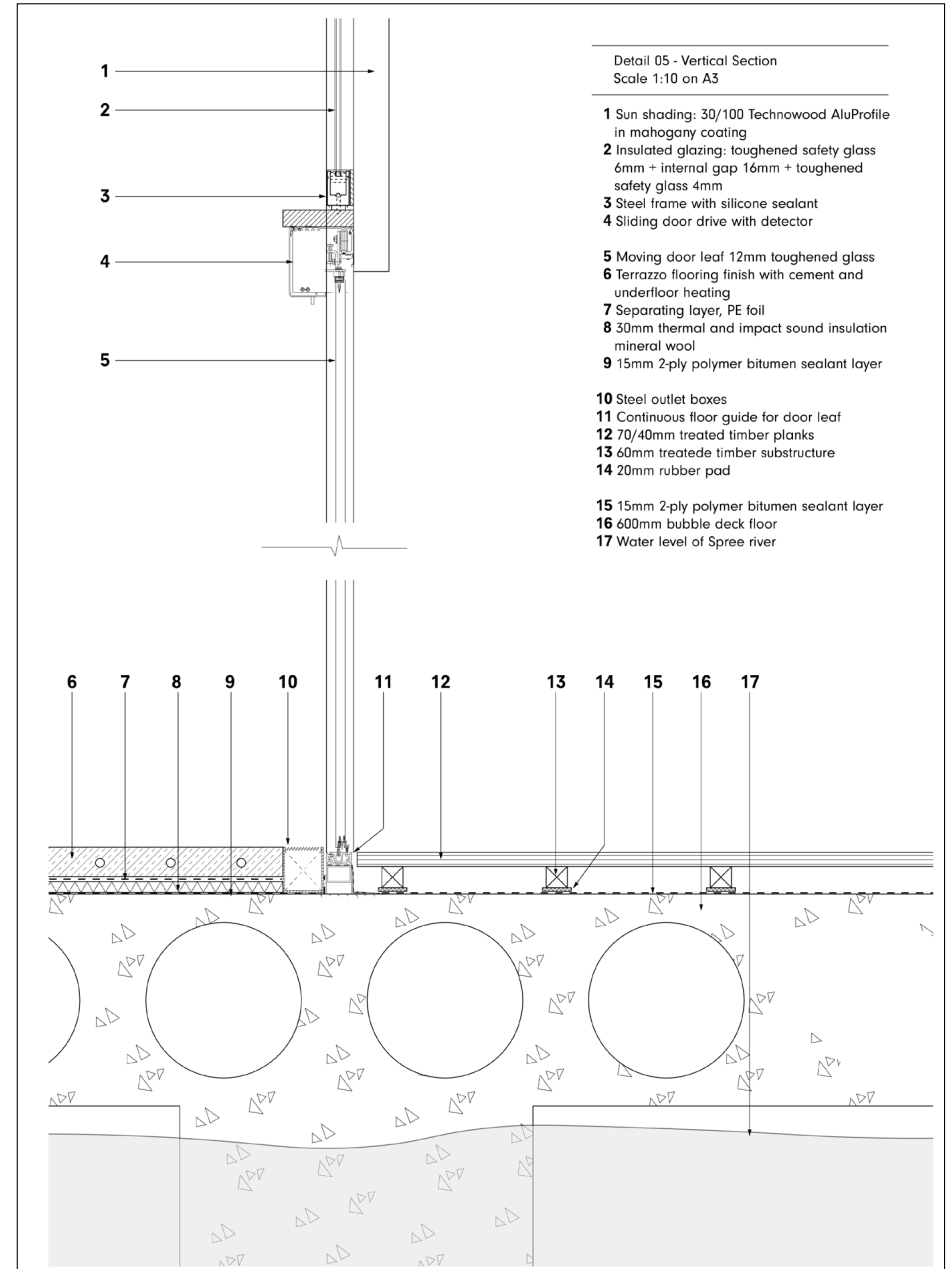
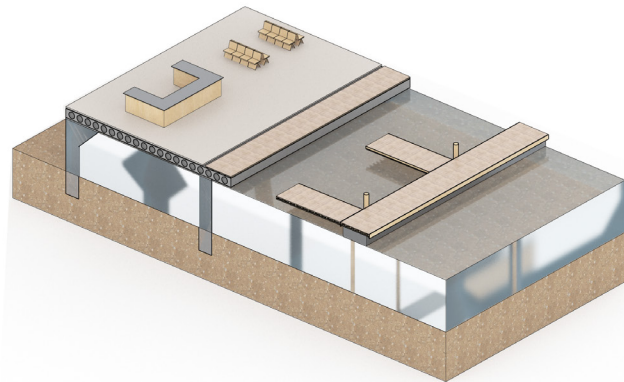
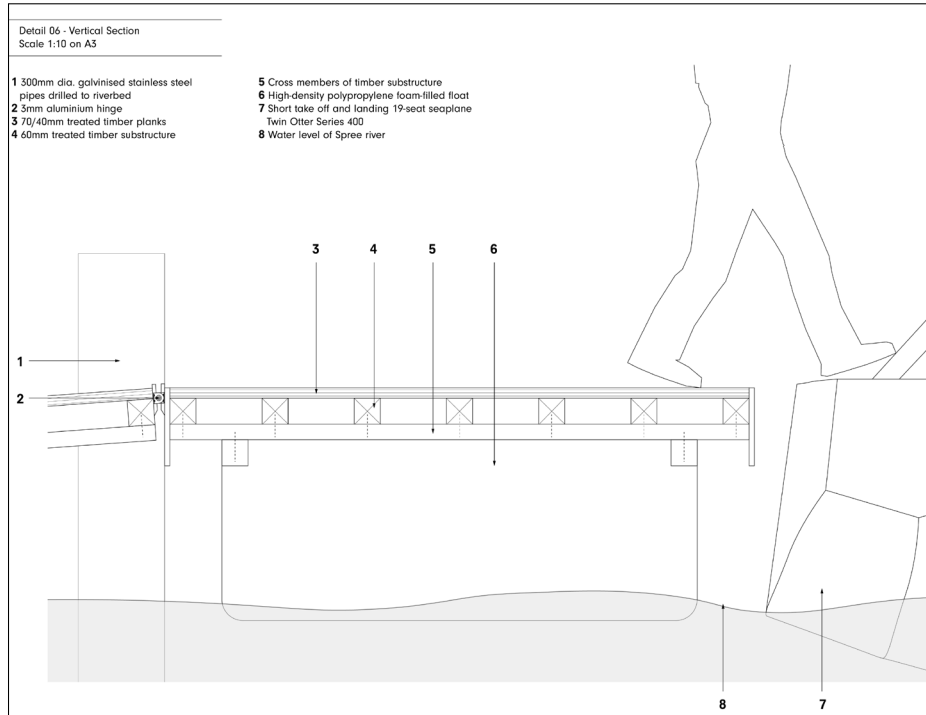


# Development

## CROSS SECTION

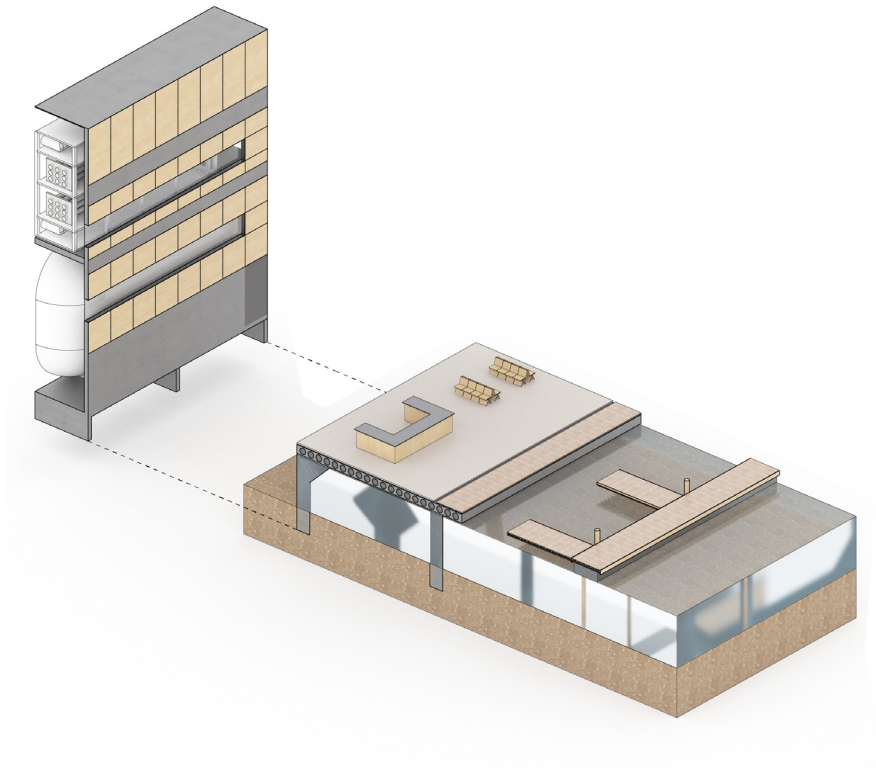


# Development COMPOSITION

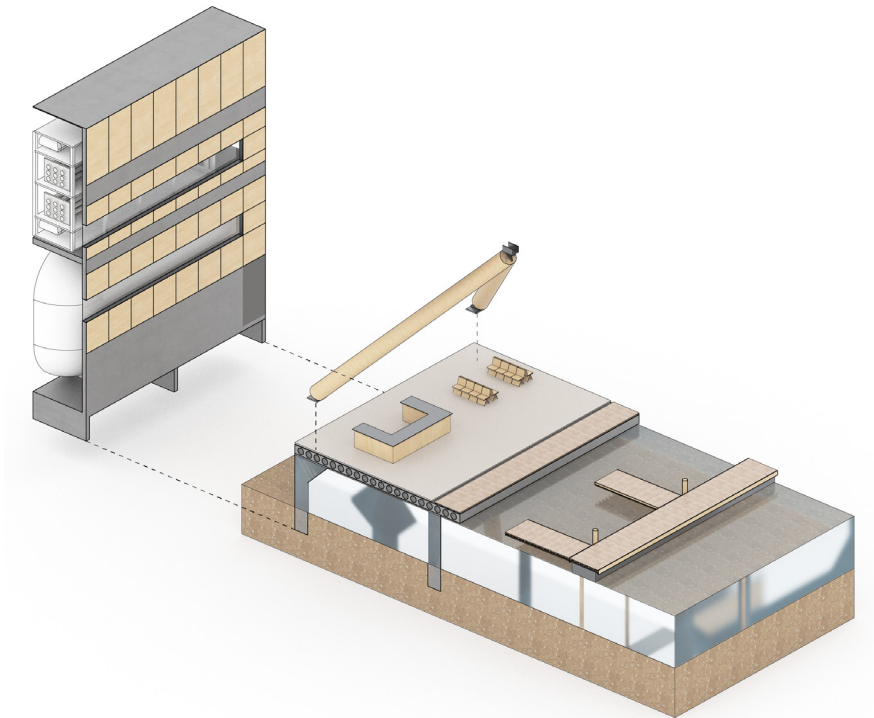




# Development **COMPOSITION**

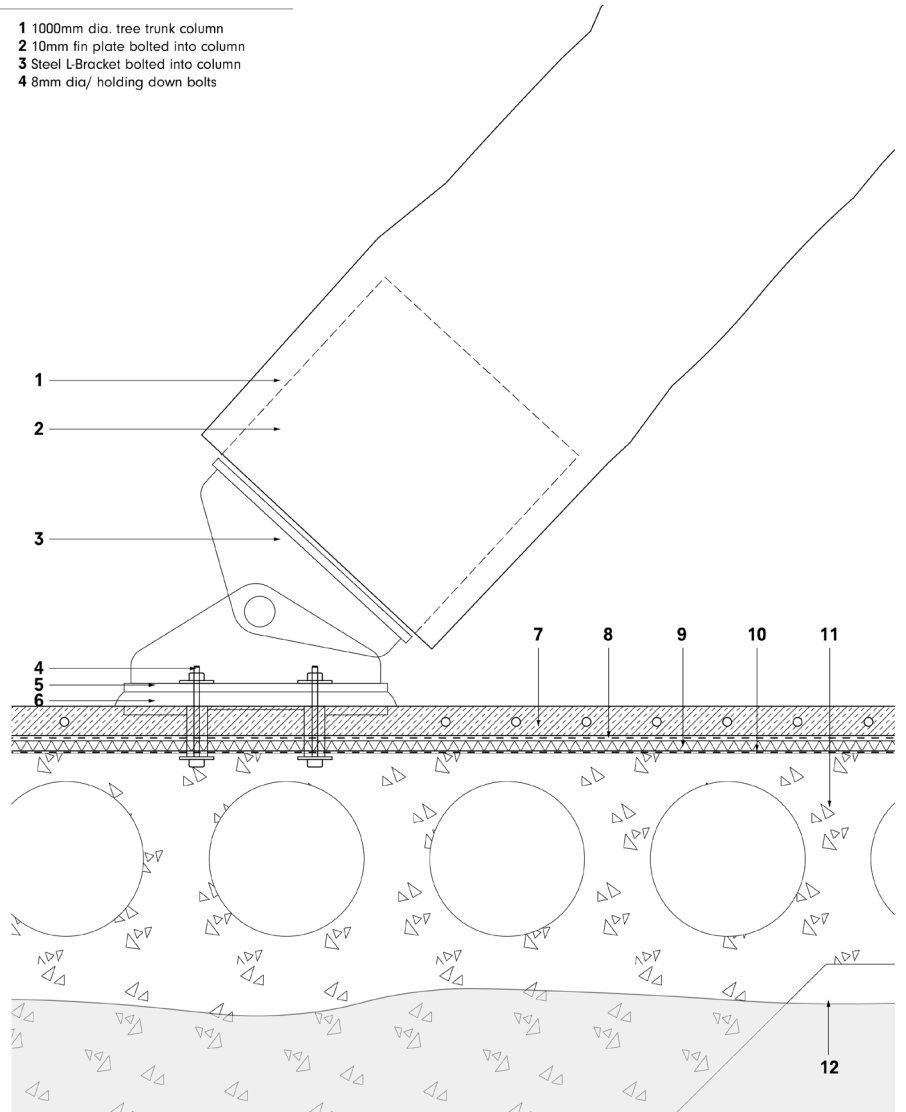


# Development COMPOSITION



Detail 04 - Vertical Section  
Scale 1:10 on A3

- 1 1000mm dia. tree trunk column
- 2 10mm fin plate bolted into column
- 3 Steel L-Bracket bolted into column
- 4 8mm dia/ holding down bolts



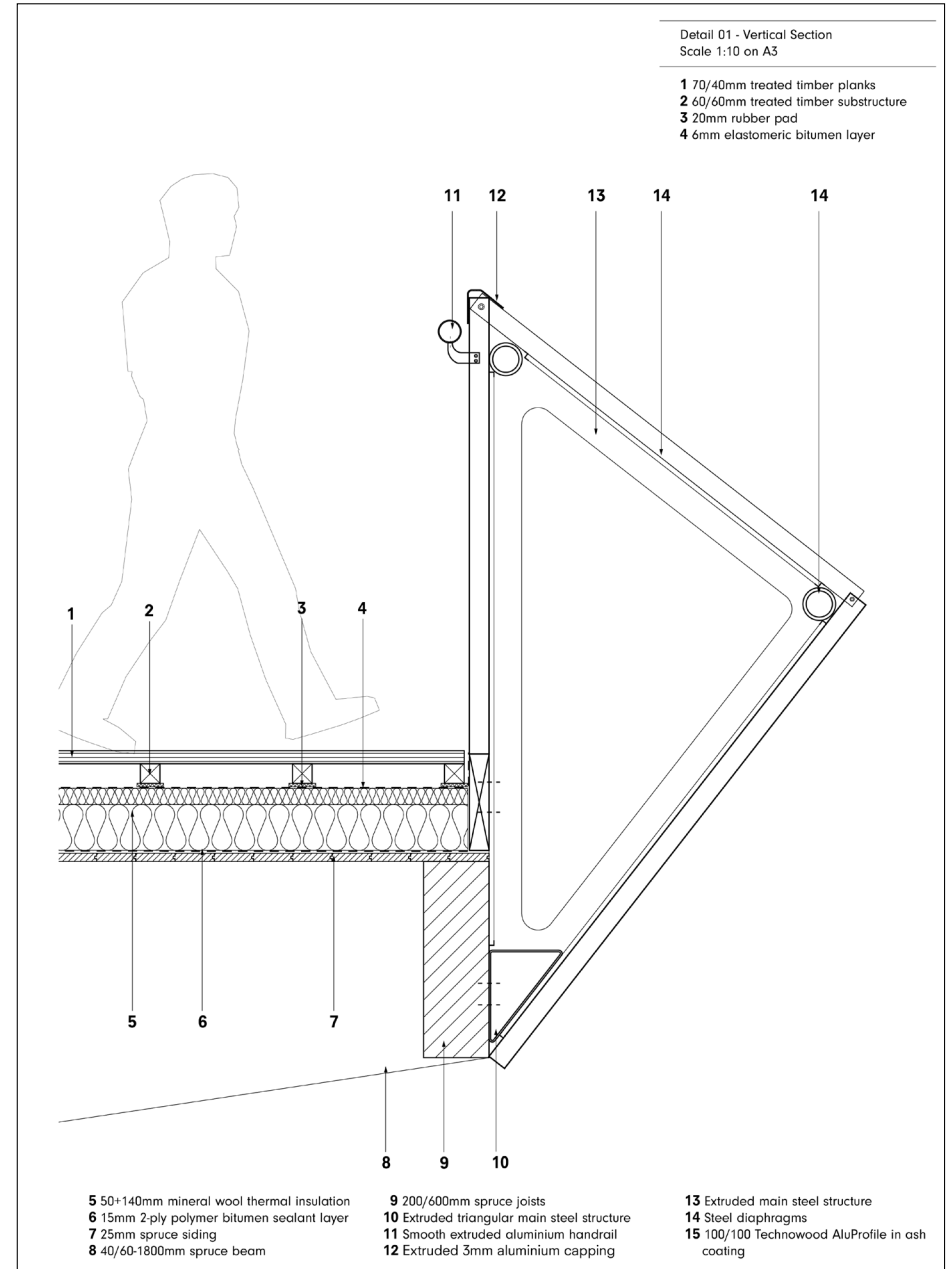
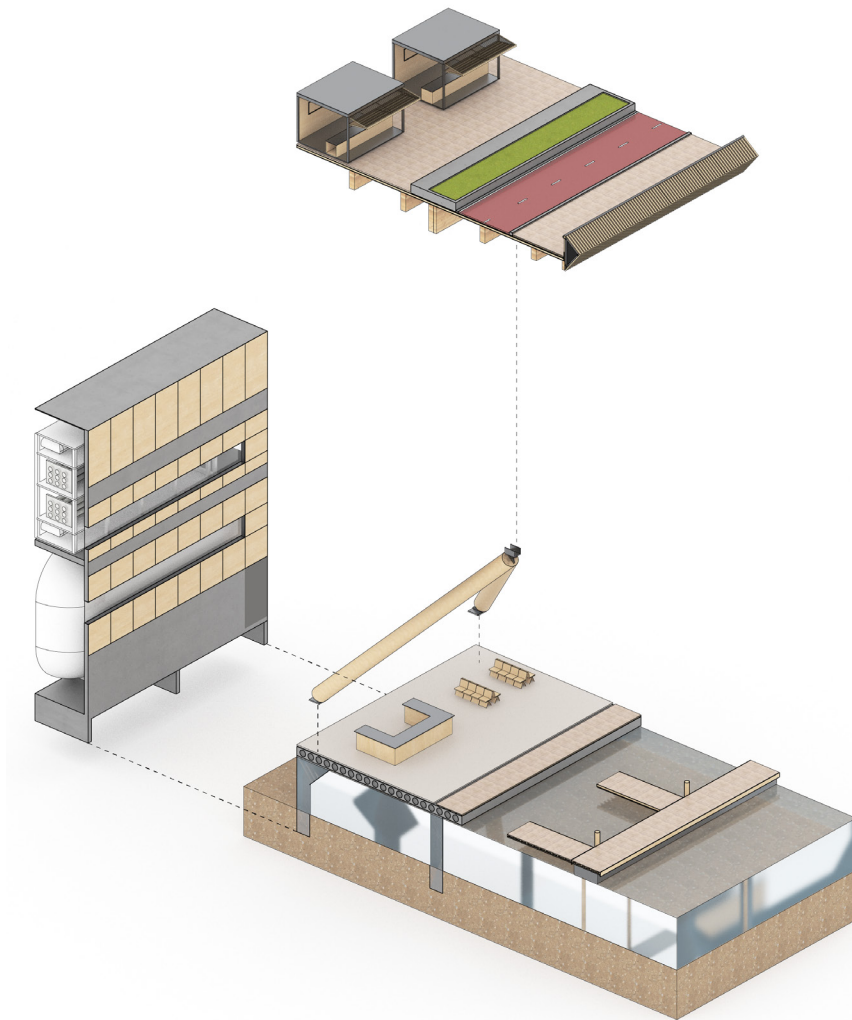
- 5 15mm base plate
- 6 50mm bedding space
- 7 Terrazzo flooring finish with cement and underfloor heating

- 8 Separating layer, PE foil
- 9 30mm thermal and impact sound insulation mineral wool
- 10 15mm 2-ply polymer bitumen sealant layer

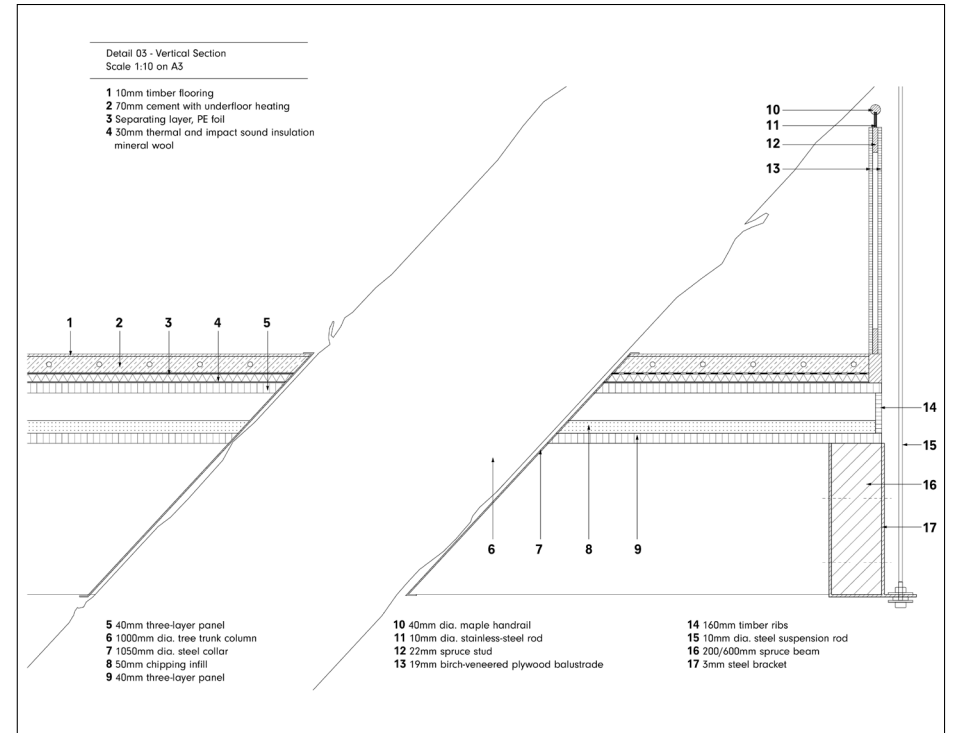
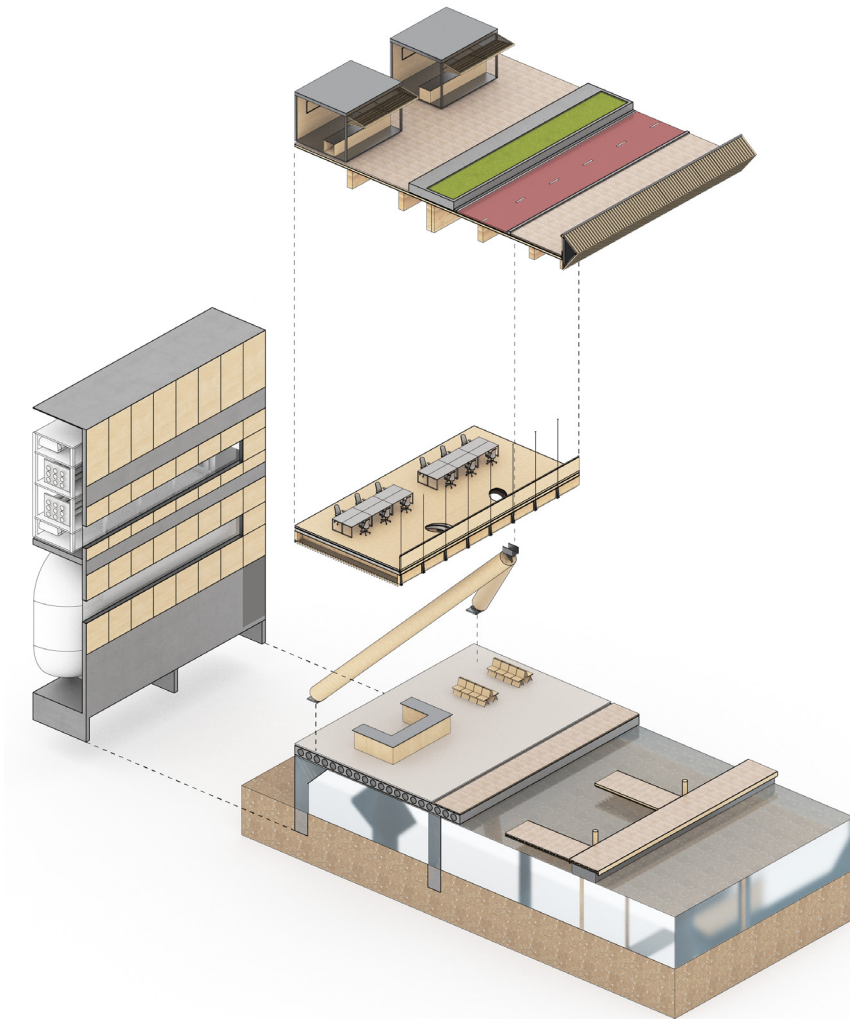
- 11 600mm bubble deck floor
- 12 Water level of Spree river



# Development COMPOSITION

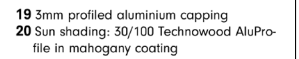
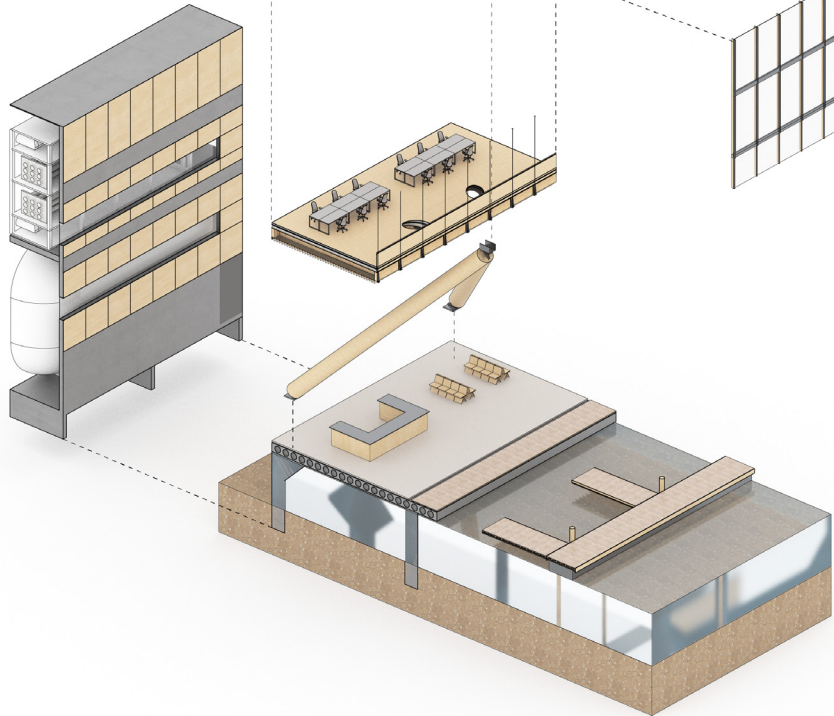


# Development COMPOSITION

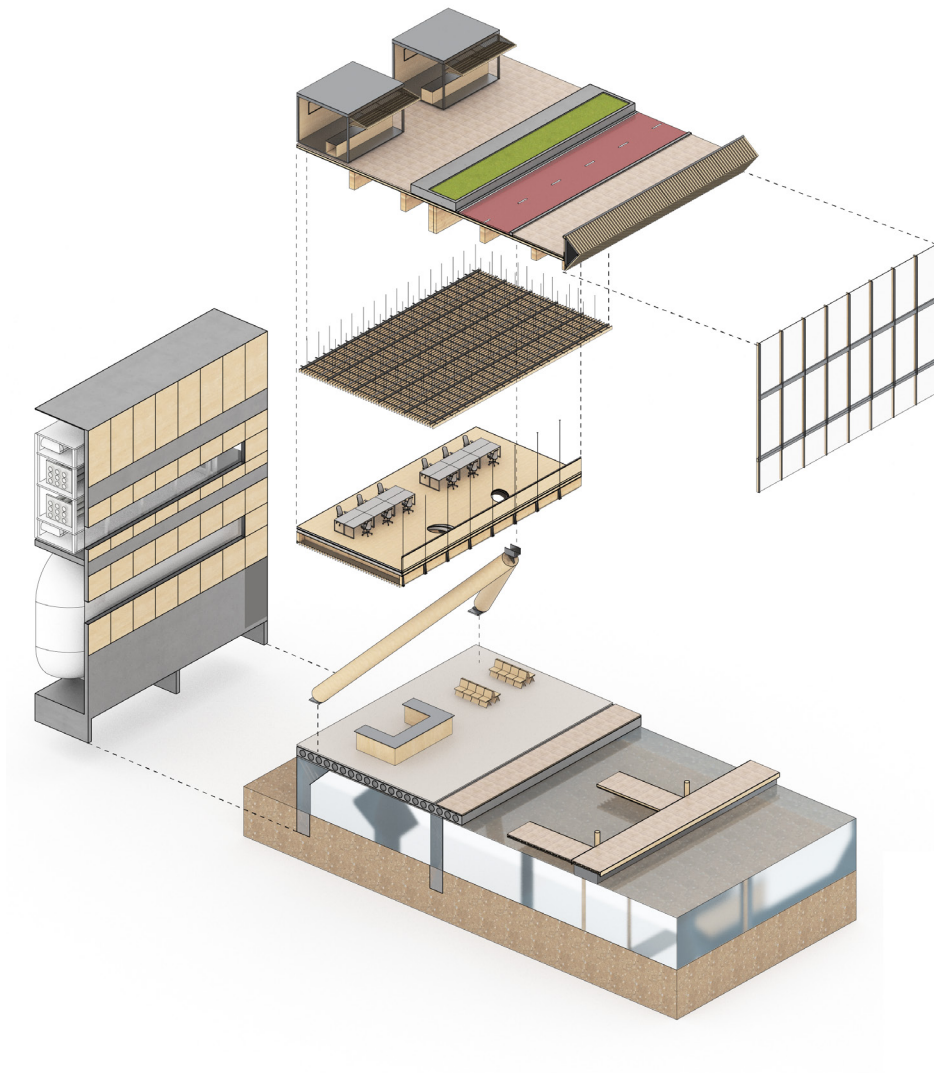




## Development

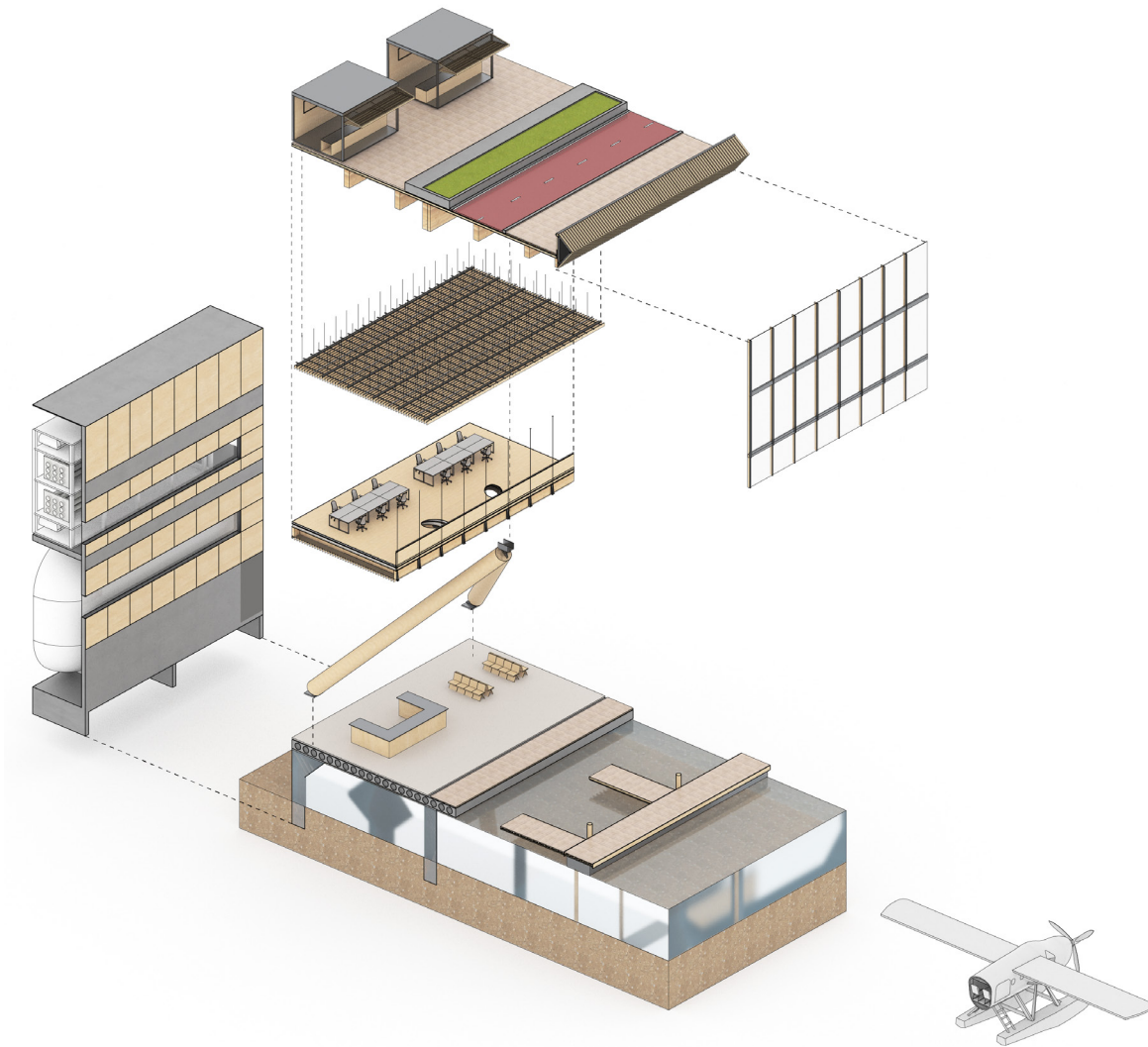


# Development **COMPOSITION**

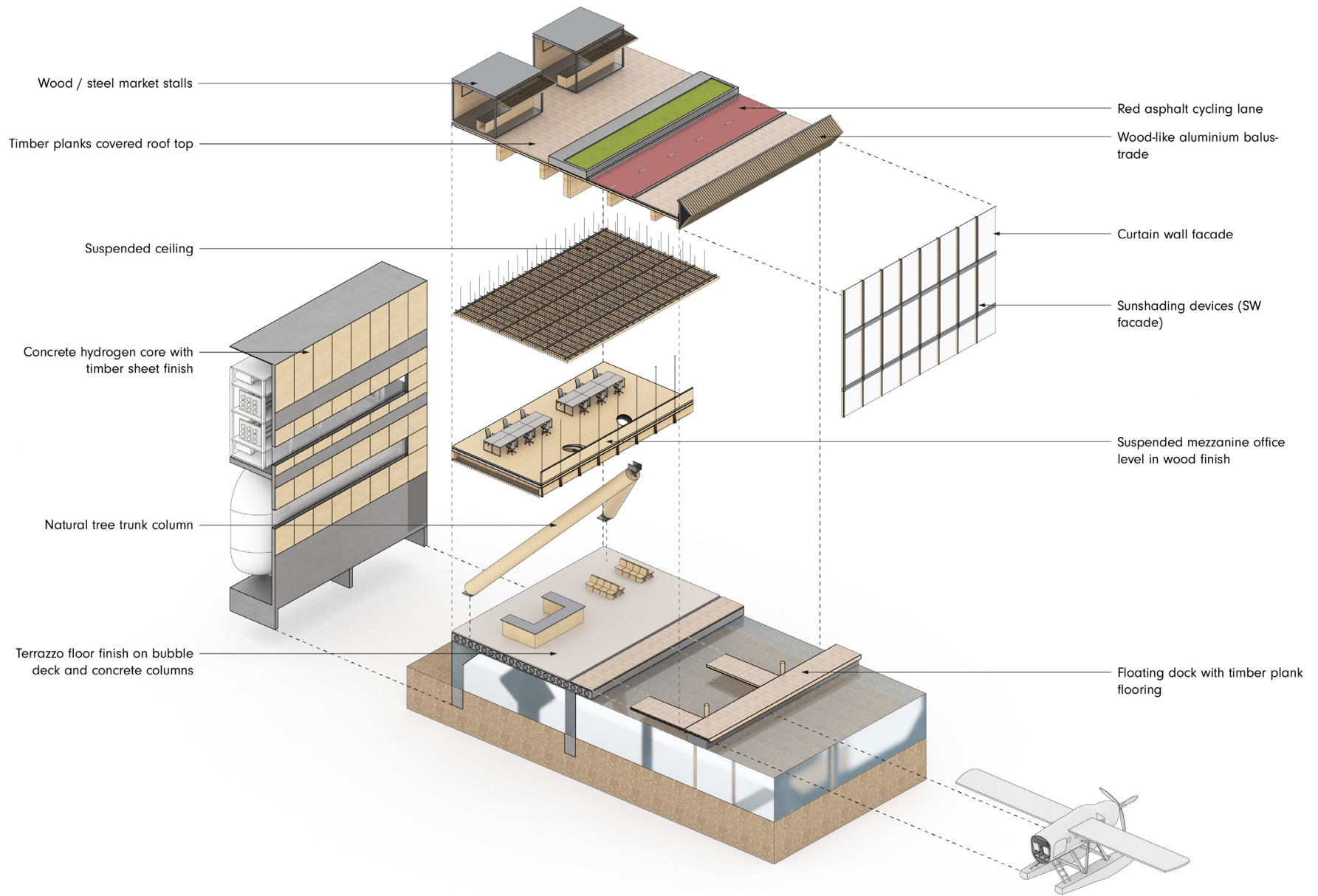




# Development **COMPOSITION**



# Development COMPOSITION





# Development FACADE

## Roof Balustrade:

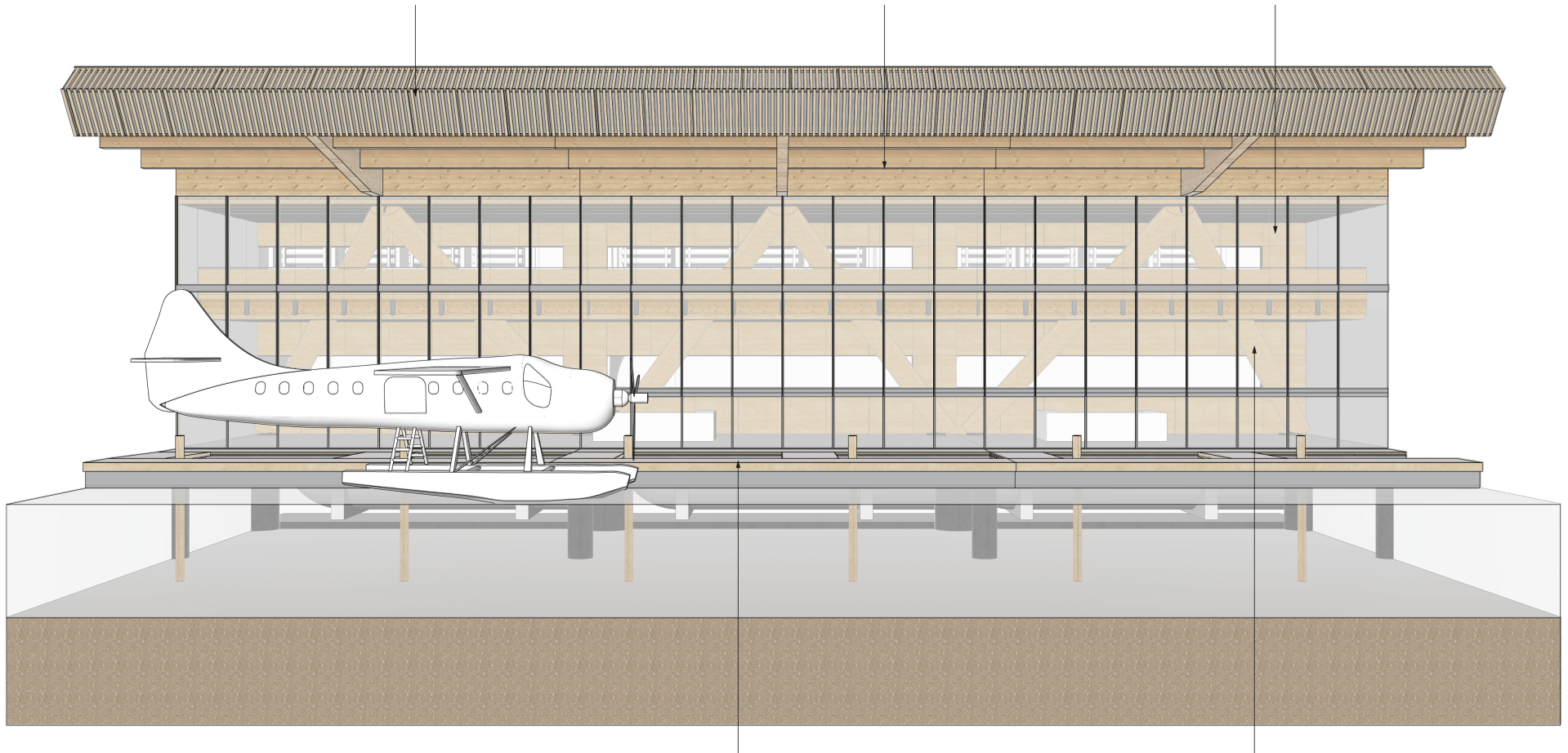
Balustrade with steel main structure and Technowood AluProfile in ash coating, profiled to emphasize the continuous flowing roof line.

## Roof Overhang:

Roof overhang to cover passengers on floating dock.

## Curtain Wall:

Full height glass panel facade with gradient sun shading devices.



## Floating Dock:

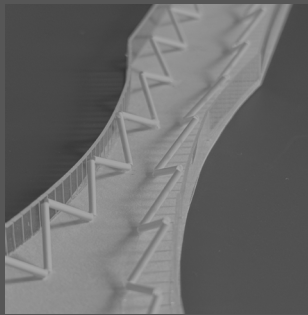
Wooden floating dock for aircraft embarking and disembarking, with hinges to adapt to water level differences.

## Tree Trunk Column:

Natural tree trunk columns continued along facade as main representation of structural language.

# Development OVERVIEW

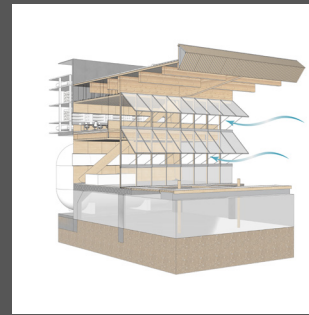
## FORM



## COMPOSITION

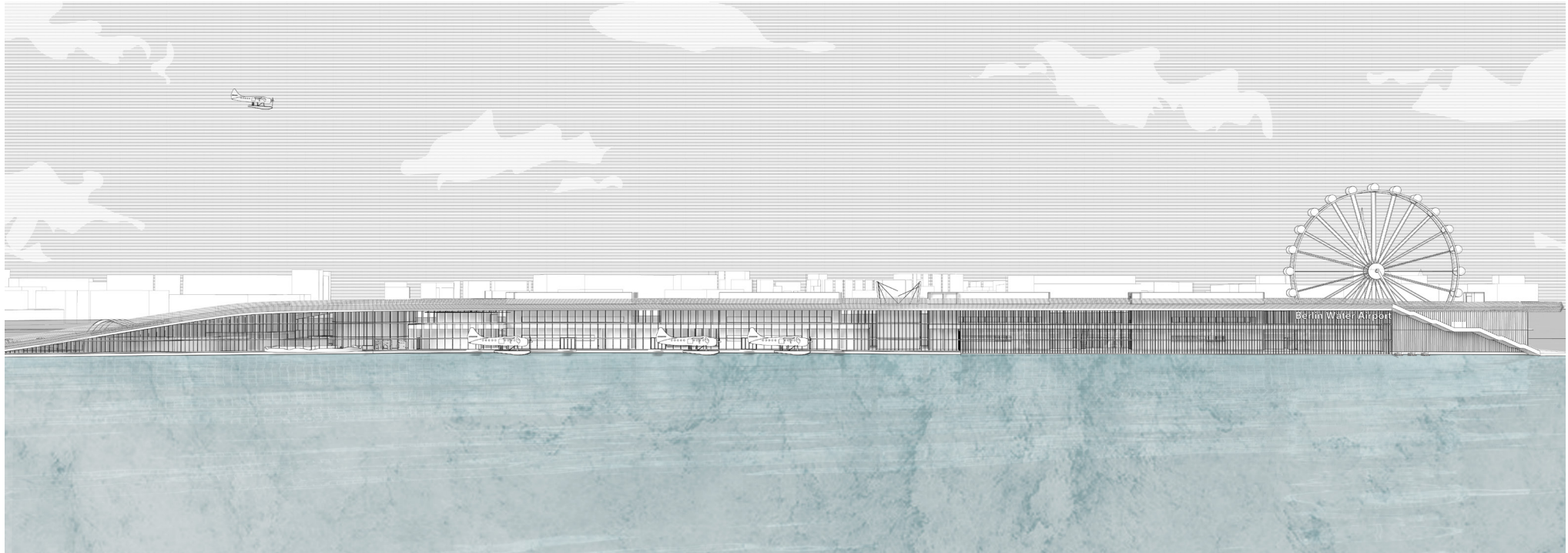


## CLIMATE





# CLIMATE STRATEGIES: SUMMER DAYS



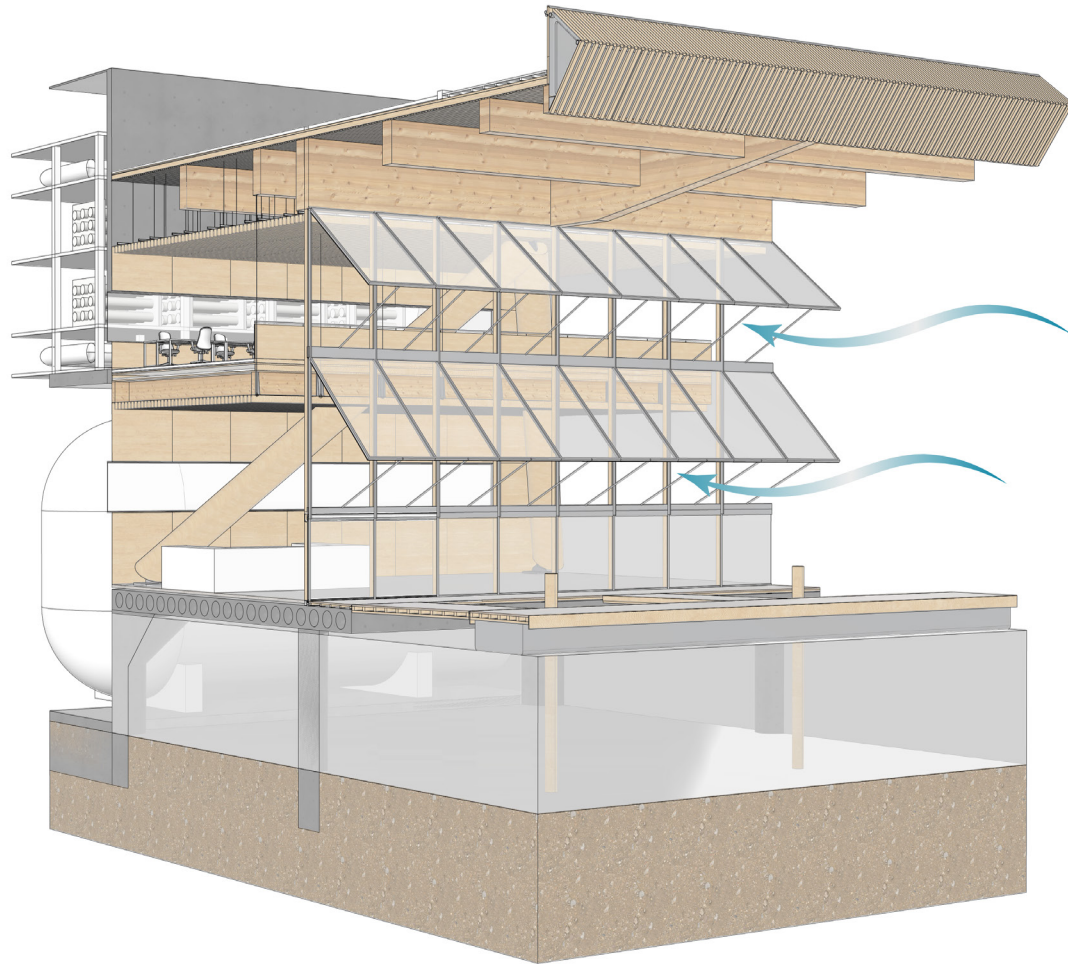
✂ Louvre distance: 0.6 - 1m ✂ Louvre distance: 2m ✂ Louvre distance: 0.6 - 1m ✂

# CLIMATE STRATEGIES: SUMMER DAYS





# CLIMATE STRATEGIES: SUMMER NIGHTS

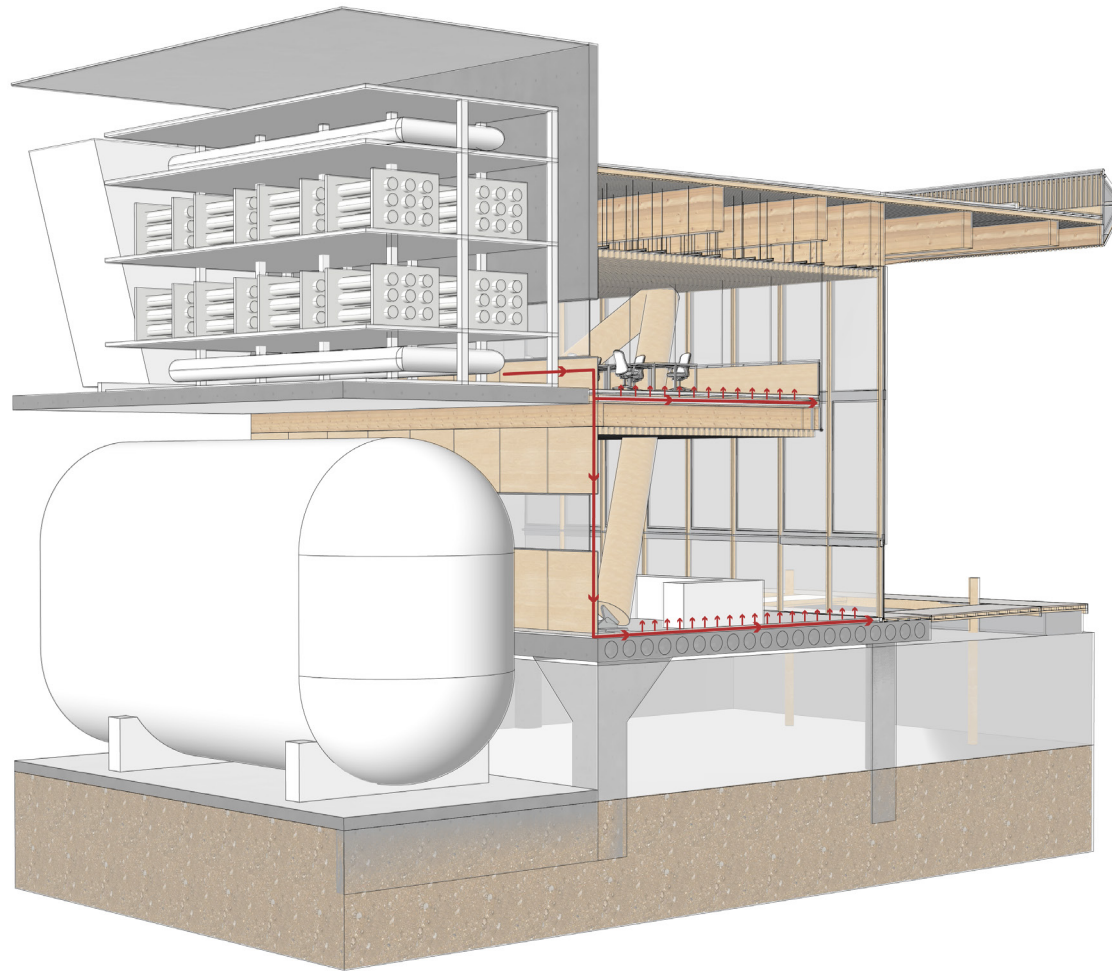


## Night cooling

Operable windows allowing natural ventilation from river.

Development

# CLIMATE STRATEGIES: WINTER



## Heat exchange

Heat released from exothermic hydrogen liquefaction directed to underfloor heating system.



1 INTRODUCTION

2 DESIGN BRIEF

3 DESIGN CONCEPT

4 IMPLEMENTATION

5 DEVELOPMENT

**6 CONCLUSION**

# RESEARCH QUESTION



How to design an airport in the urban context which dedicates its **infrastructure** for a **healthier city**?



Conclusion

# RESPONDING TO USERS



**Rural Patients**



**Urban Escapers**



**Public Visitors**

Conclusion

# SEAPLANES



**Rural Patients**



**Urban Escapers**



**Public Visitors**





Conclusion

# SEAPLANES



Treatments in Berlin

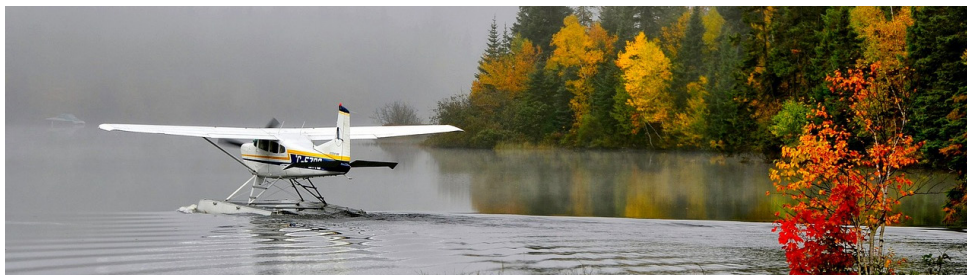
**Rural Patients**



**Urban Escapers**



**Public Visitors**



Conclusion

# SEAPLANES



**Rural Patients**



**Urban Escapers**



**Public Visitors**





# NEXT GENERATION SEAPLANES



**Rural Patients**



**Urban Escapers**



**Public Visitors**



# NEXT GENERATION SEAPLANES



**Rural Patients**



**Urban Escapers**



**Public Visitors**





# PLAY



**Rural Patients**



**Urban Escapers**



**Public Visitors**



# PLAY



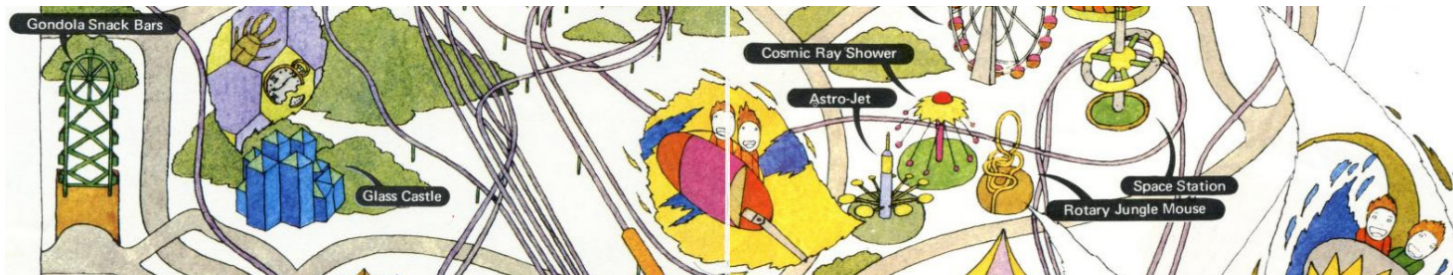
**Rural Patients**



**Urban Escapers**



**Public Visitors**





Conclusion

# BERLIN WATER AIRPORT



**THANK YOU!**