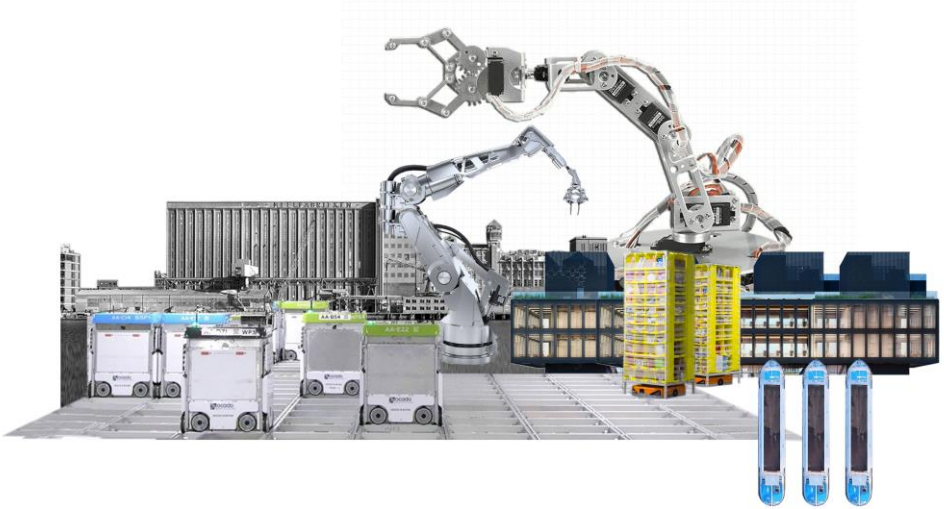
AMBIDEXTROUS PORT

CP

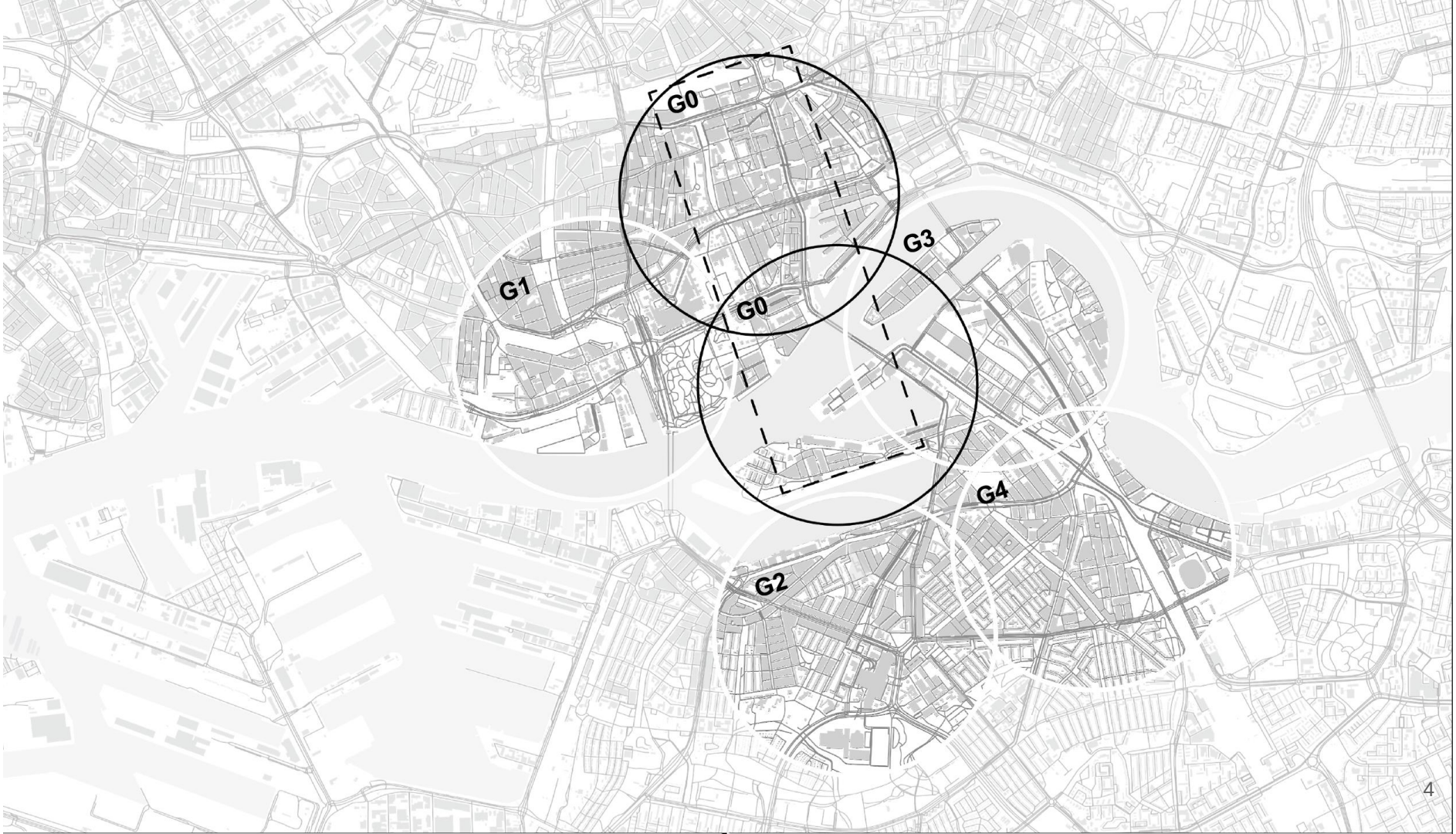
Arda Ertan Yildiz

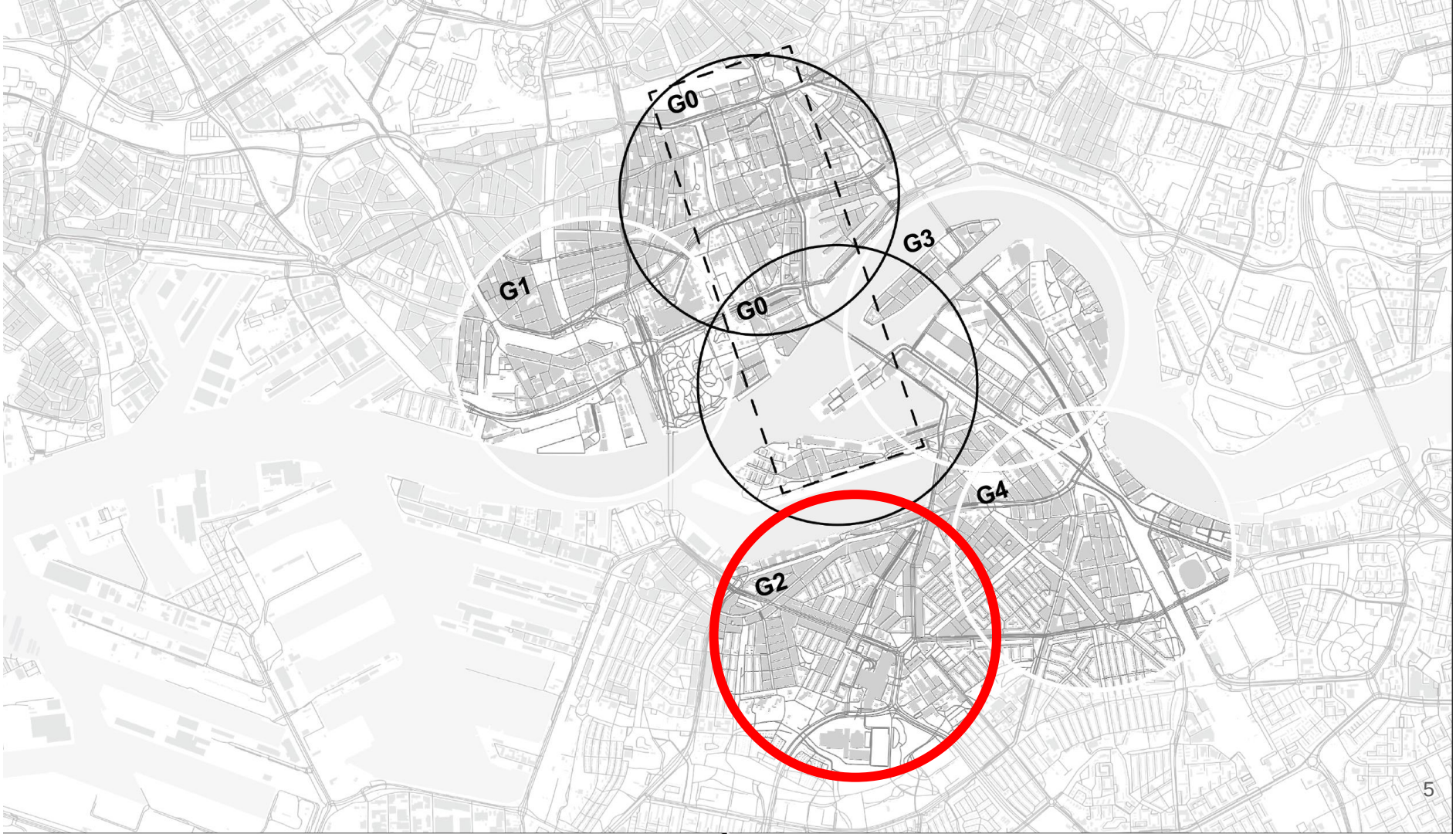


Logistics Hub for Goods and People

Warehouse, Distribution Center and Terminal

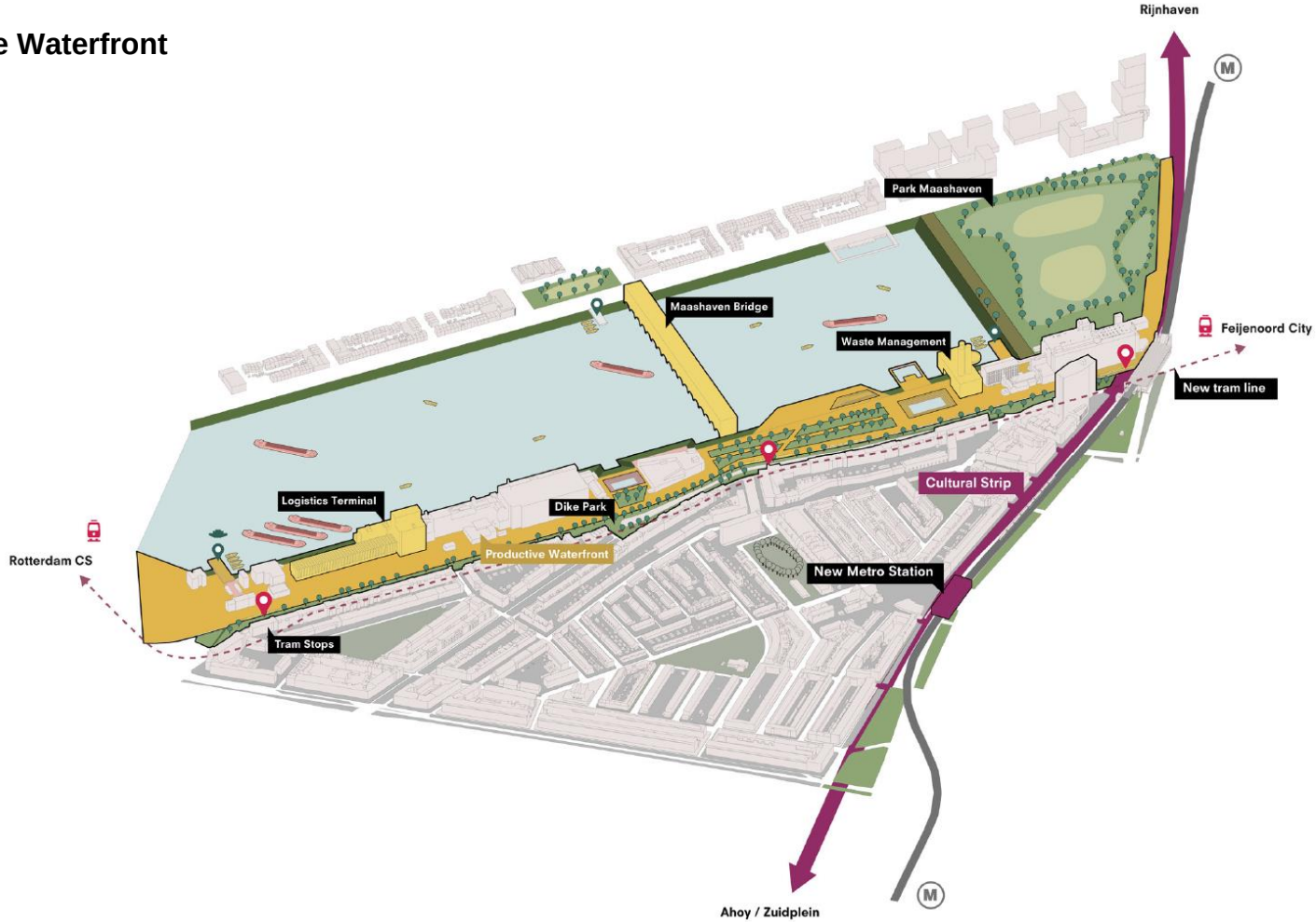
Utilizing inland waterways for efficient transportation

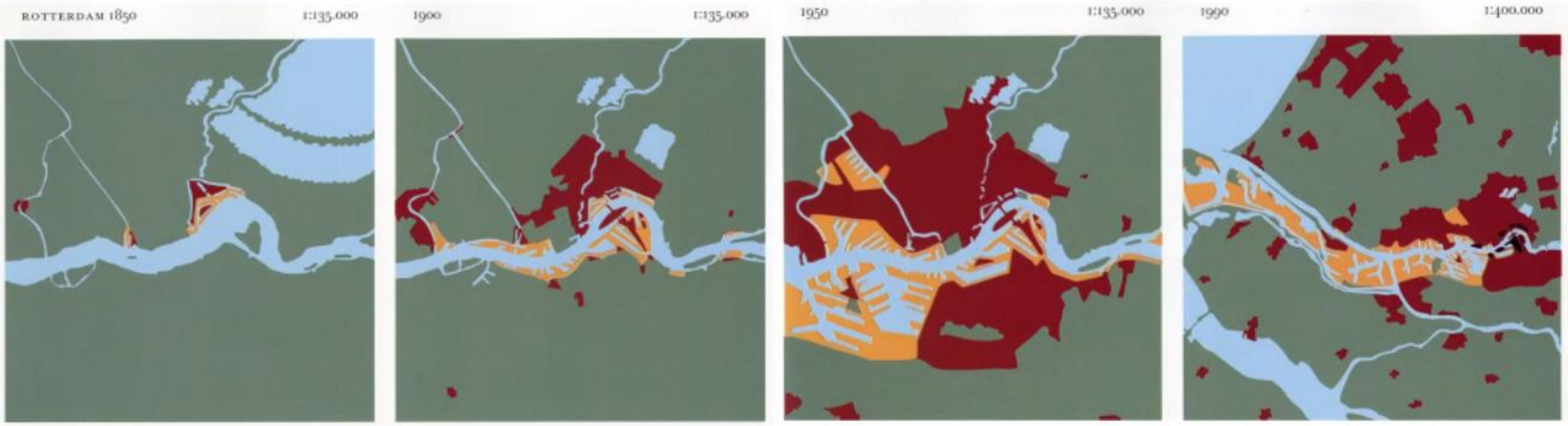

G0
G3
G1
G0
G4
G2


G0
G3
G1
G0
G4
G2

Group Site Plan

Productive Waterfront

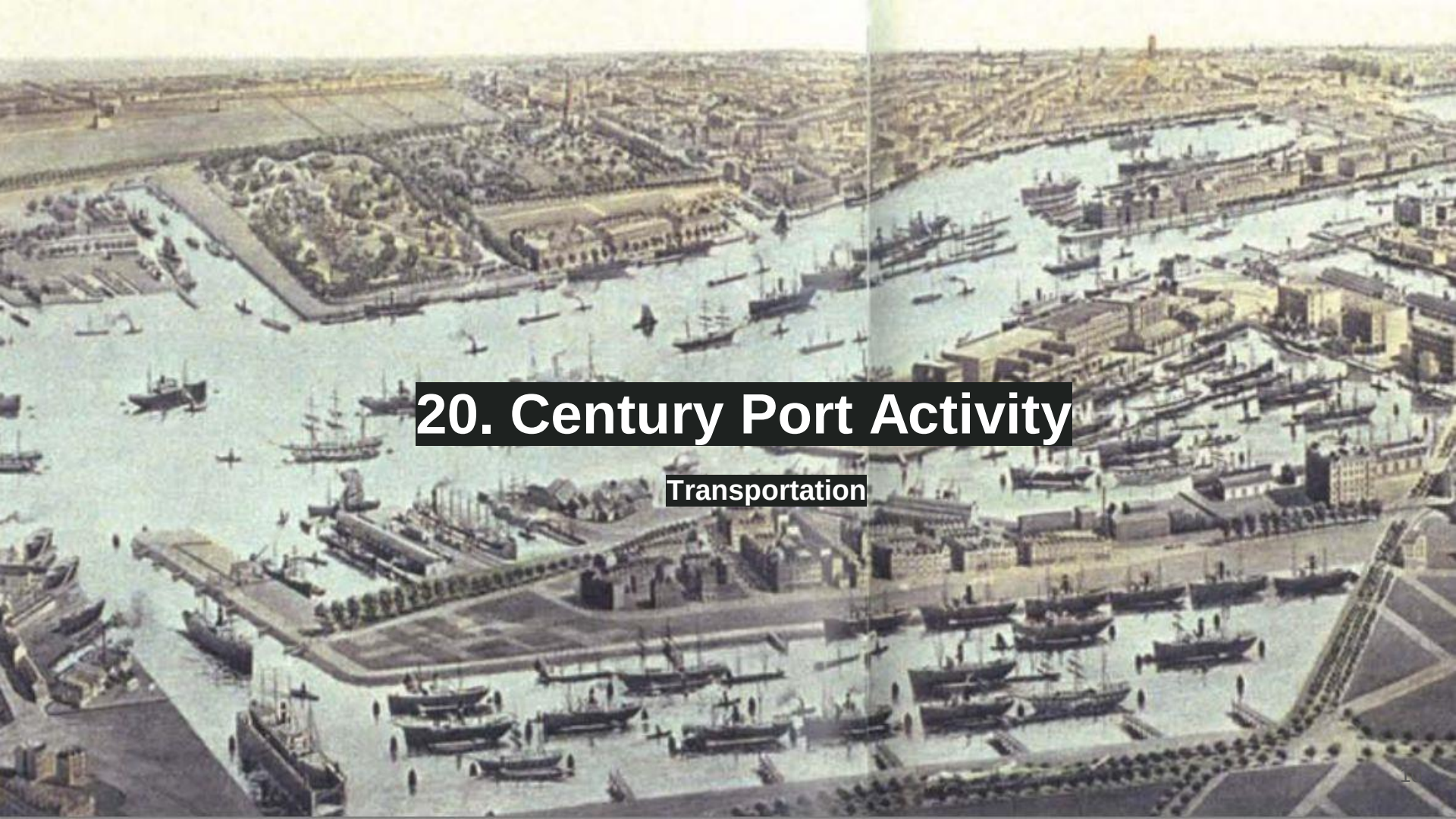




FROM 19TH TO 21ST CENTURY

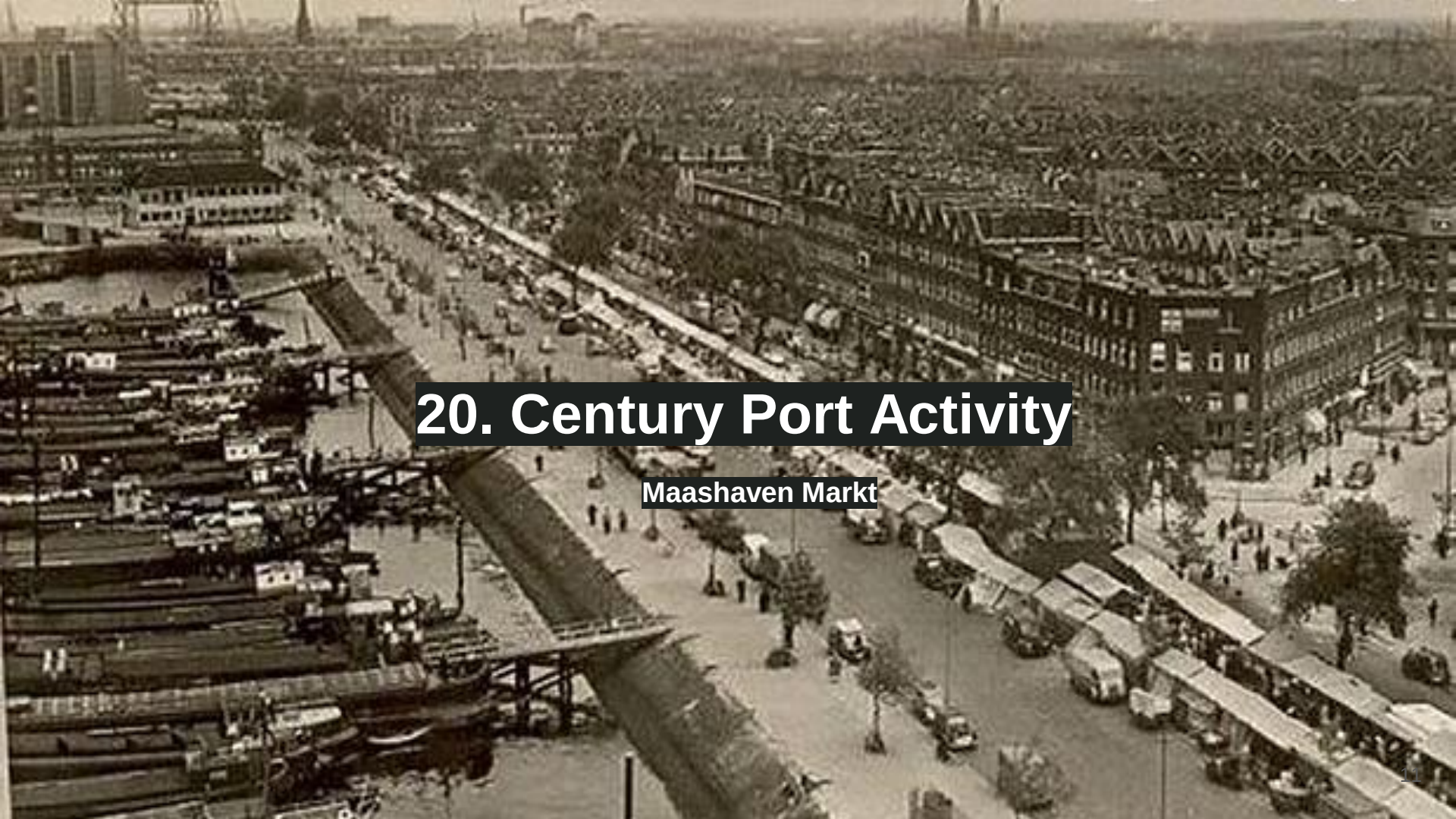
source: Han Meyer, City and Port (1999)

City Logistics & Mobility



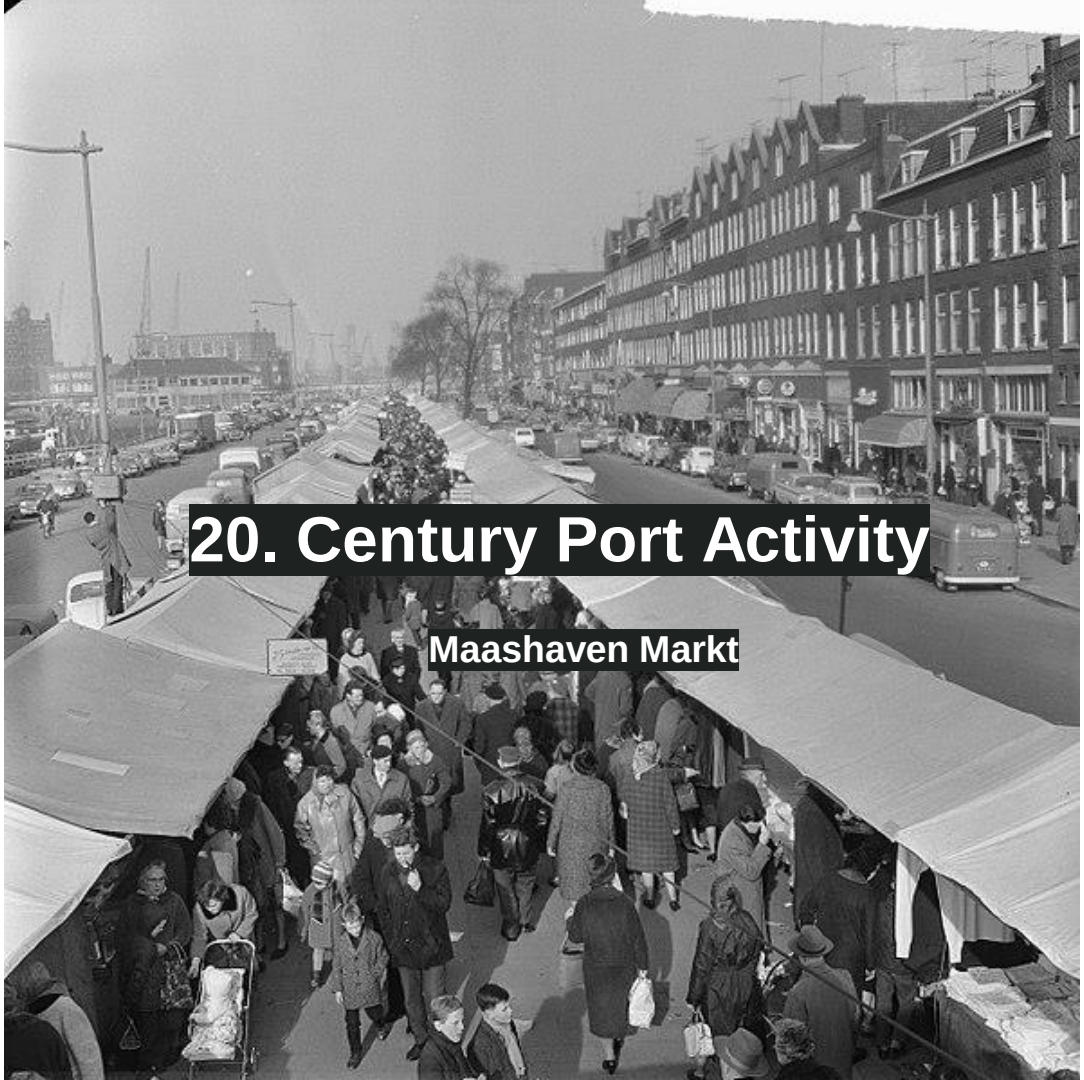
20. Century Port Activity

Transportation



20. Century Port Activity

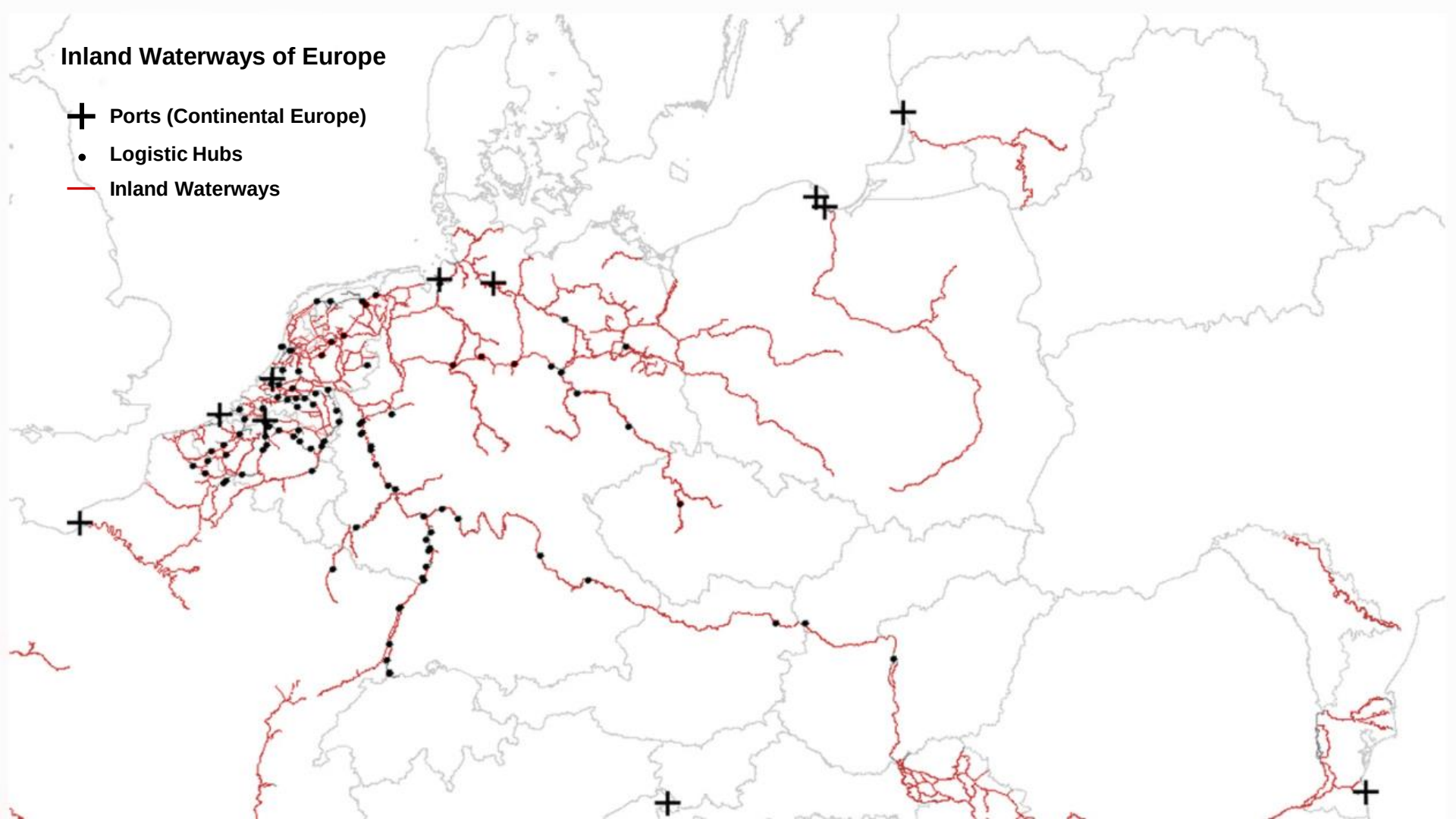
Maashaven Markt



20. Century Port Activity

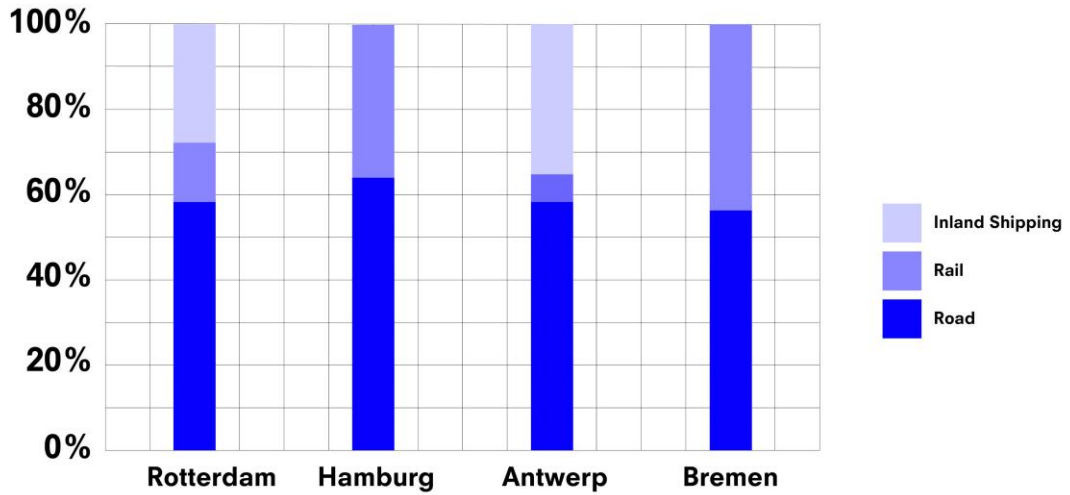
Maashaven Markt

NOW

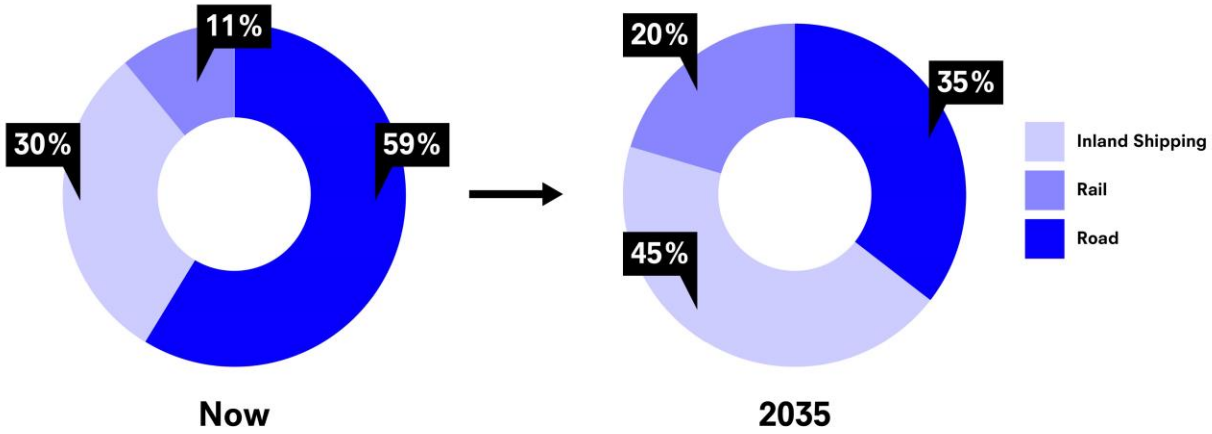

Inland Waterways of Europe
Ports (Continental Europe)
Logistic Hubs
Inland Waterways

Inland Waterways of Netherlands

Port of Rotterdam Modal Split



Port of Rotterdam 2035 Aim



Research Question

How can we revitalize obsolete waterfront areas to incorporate flows of inland shipping and inland public transportation to improve city logistics?

Logistics

Goods
Logistics
People

Programme

Programme

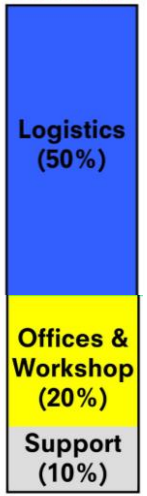
Zeeburgerbrug
INTERMEZZO
Inter-City
City

CHICAGO WATERTAXI
City

Programme

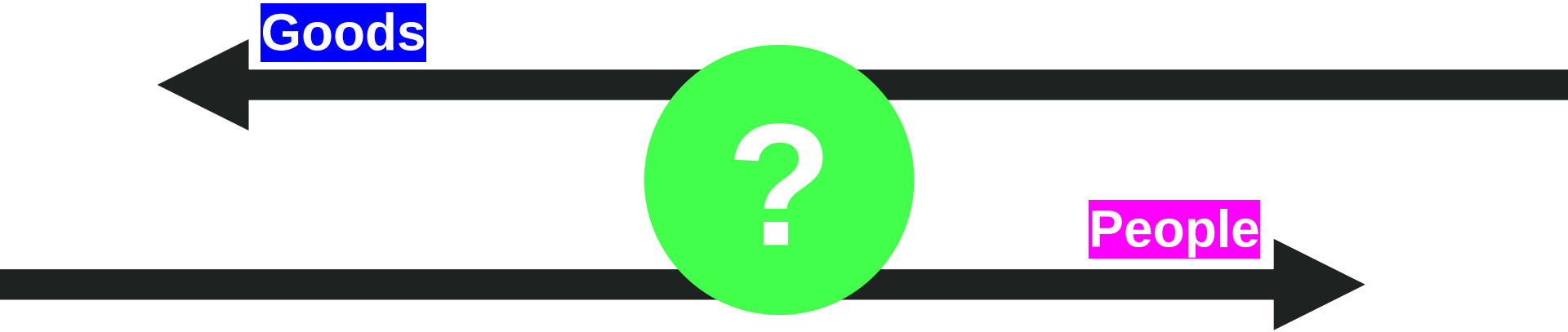
Logistics +

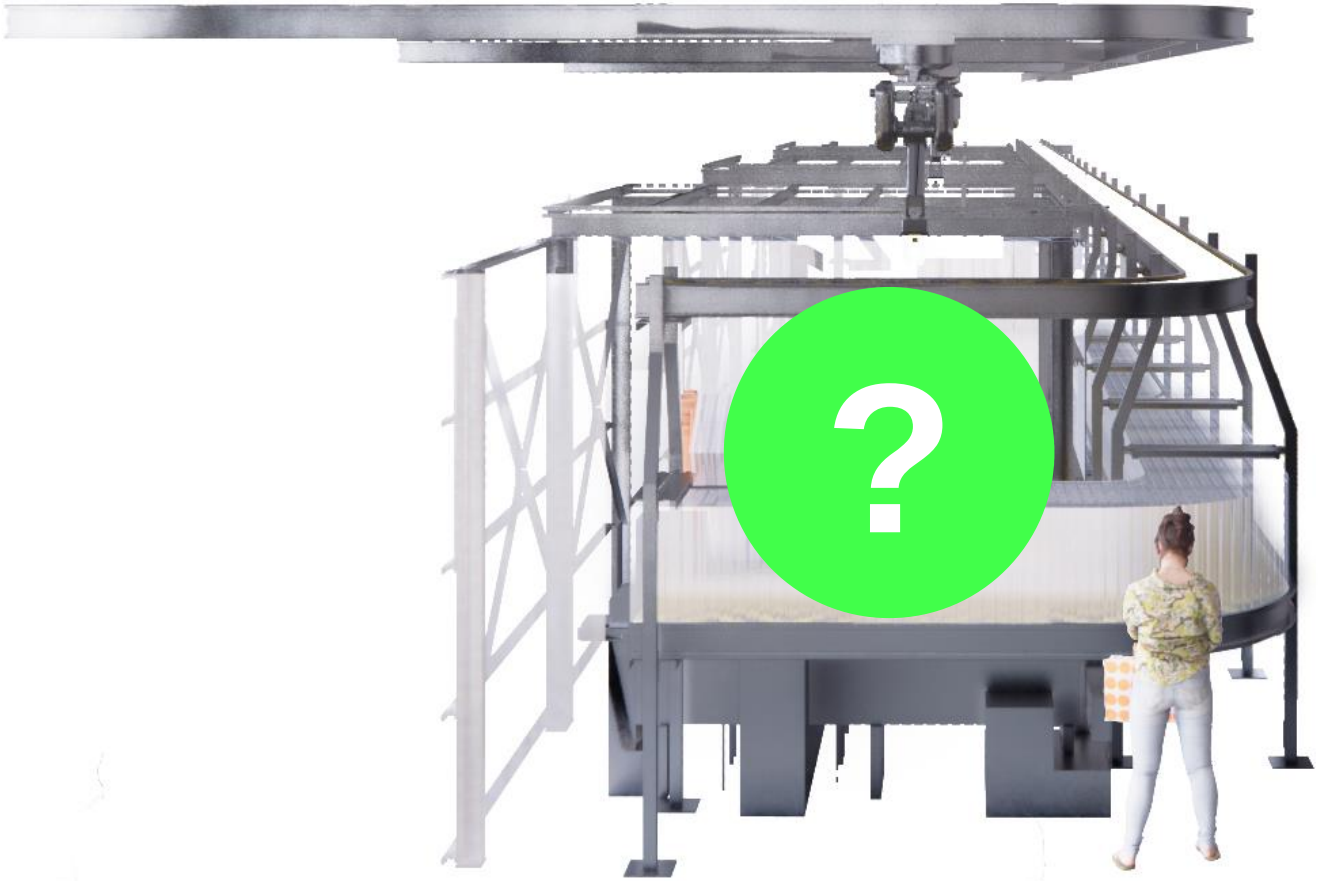
Programme



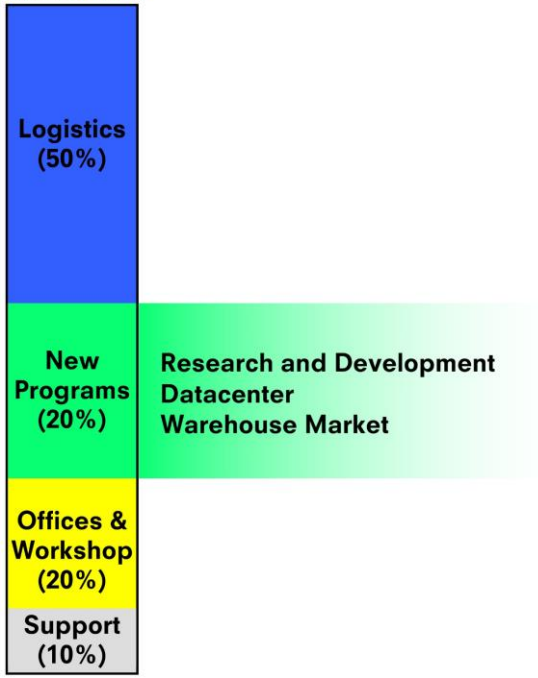
Logistics +
Workspaces +

Programme


Goods
?
People

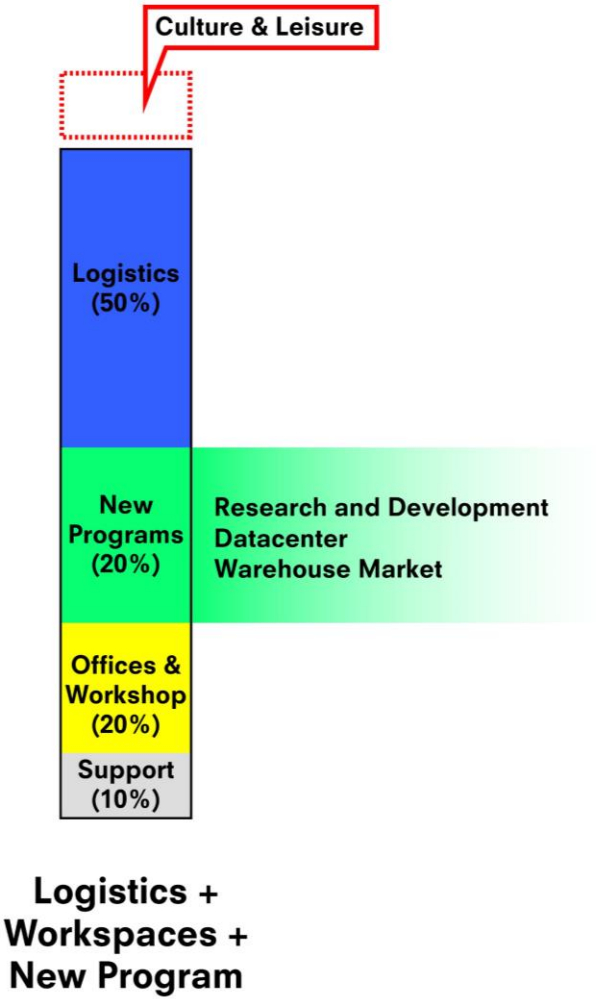


Programme



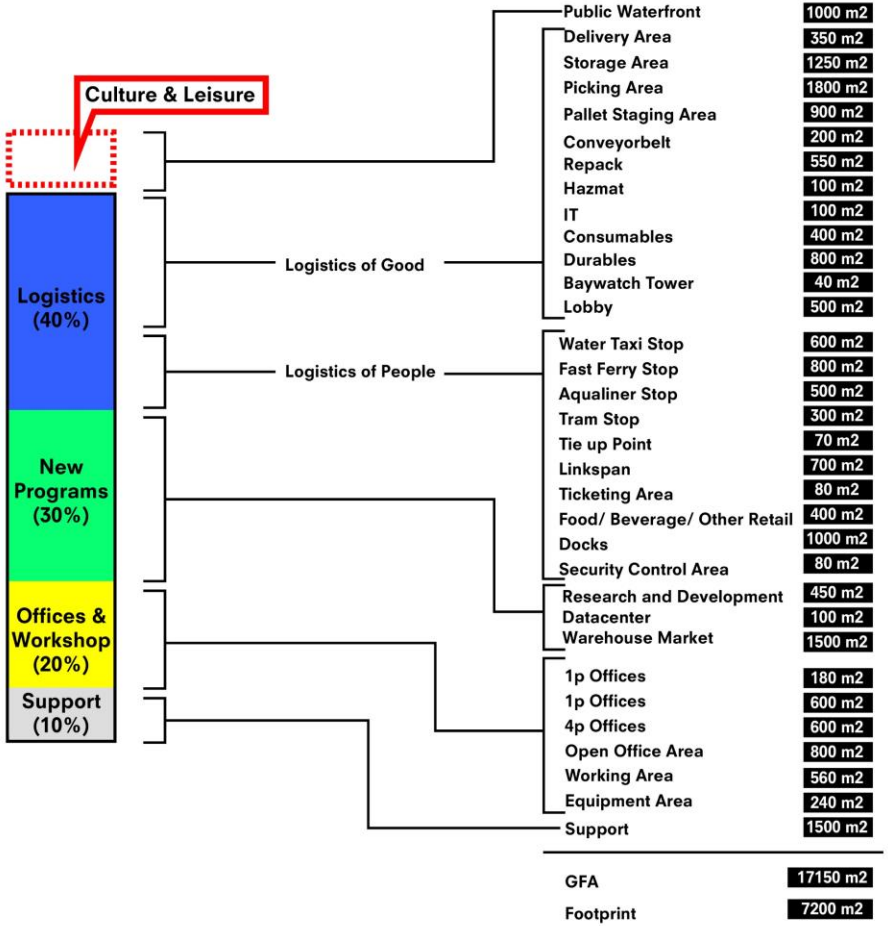
**Logistics +
Workspaces +
New Program**

Programme



Logistics +
Workspaces +
New Program

Programme


Culture & Leisure
Logistics (40%)
New Programs (30%)
Offices & Workshop (20%)
Support (10%)
Logistics of Good
Logistics of People
Public Waterfront 1000 m2
Delivery Area 350 m2
Storage Area 1250 m2
Picking Area 1800 m2
Pallet Staging Area 900 m2
Conveyorbelt 200 m2
Repack 550 m2
Hazmat 100 m2
IT 100 m2
Consumables 400 m2
Durables 800 m2
Baywatch Tower 40 m2
Lobby 500 m2
Water Taxi Stop 600 m2
Fast Ferry Stop 800 m2
Aqualiner Stop 500 m2
Tram Stop 300 m2
Tie up Point 70 m2
Linkspan 700 m2
Ticketing Area 80 m2
Food/ Beverage/ Other Retail 400 m2
Docks 1000 m2
Security Control Area 80 m2
Research and Development 450 m2
Datacenter 100 m2
Warehouse Market 1500 m2
1p Offices 180 m2
1p Offices 600 m2
4p Offices 600 m2
Open Office Area 800 m2
Working Area 560 m2
Equipment Area 240 m2
Support 1500 m2
GFA 17150 m2
Footprint 7200 m2

Transformation of Work

Conventional

Product movement is performed by people and mobile equipment.

Transformation of Work

Conventional

Product movement is performed by people and mobile equipment.

Mechanized

Product movement is assisted by mechanized conveyance and sortation systems.

Transformation of Work

Conventional

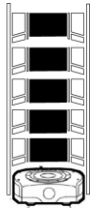
Product movement is performed by people and mobile equipment.

Mechanized

Product movement is assisted by mechanized conveyance and sortation systems.

Automated

Product movement is performed in partly or fully automated by equipment.



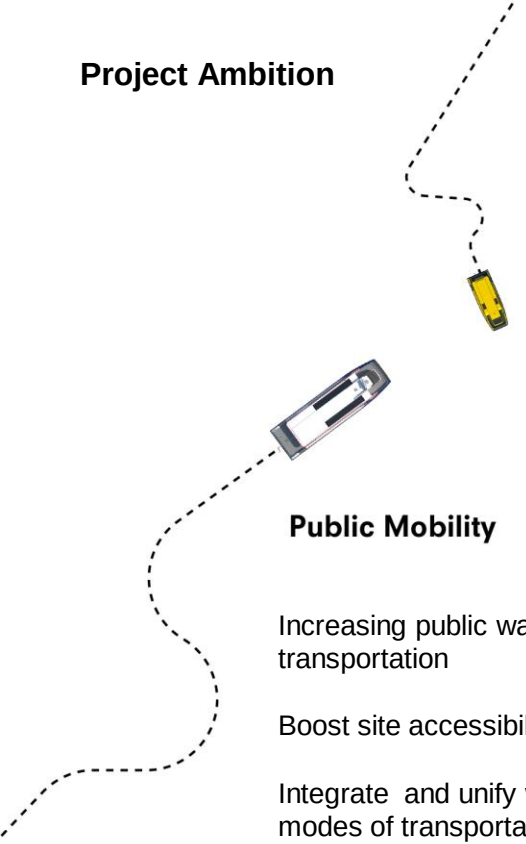
Static

Mobile
tscage805
Cottonelle
Pampers

Mobile

Static

Project Ambition



Public Mobility

Increasing public water transportation

Boost site accessibility

Integrate and unify with other modes of transportation

City Logistics

Improve inland water network In Netherlands and Europe

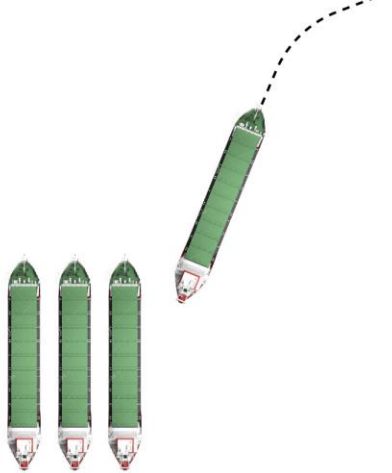
Decrease the emission of logistic flows

Economy

Create high skilled job opportunities

Contribute to economy of neighbourhood by directly And by raising the regional and international visitors

Project Ambition



City Logistics

Improve inland water network
In Netherlands and Europe

Decrease the emission of
logistic flows

Project Ambition

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City Logistics

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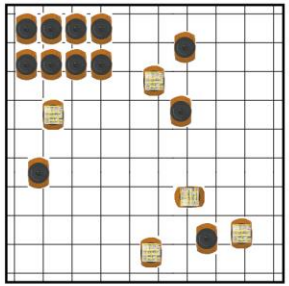


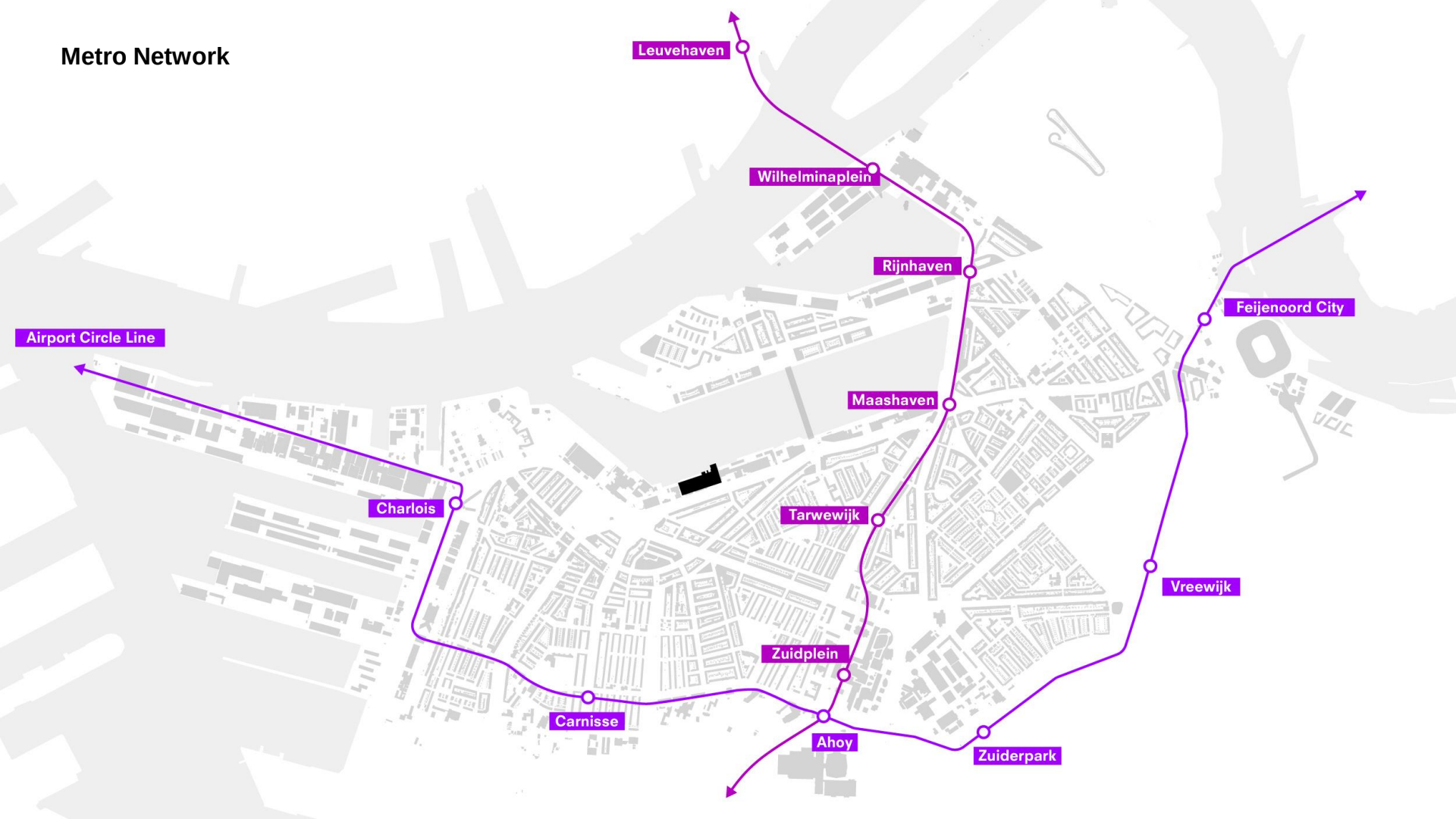
Economy

Create high skilled job opportunities

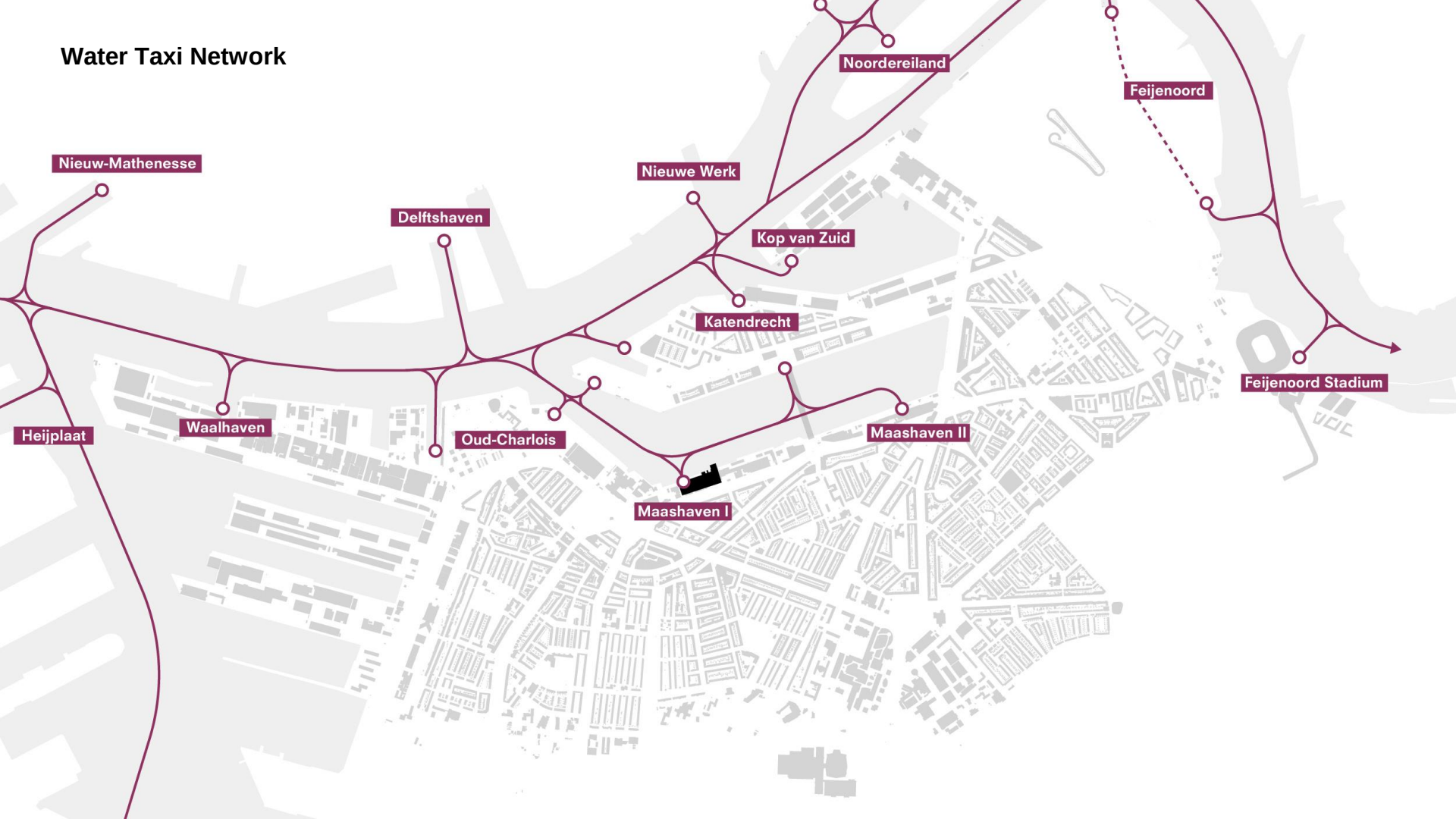
Contribute to economy of neighbourhood by directly And by raising the regional and international visitors

Site

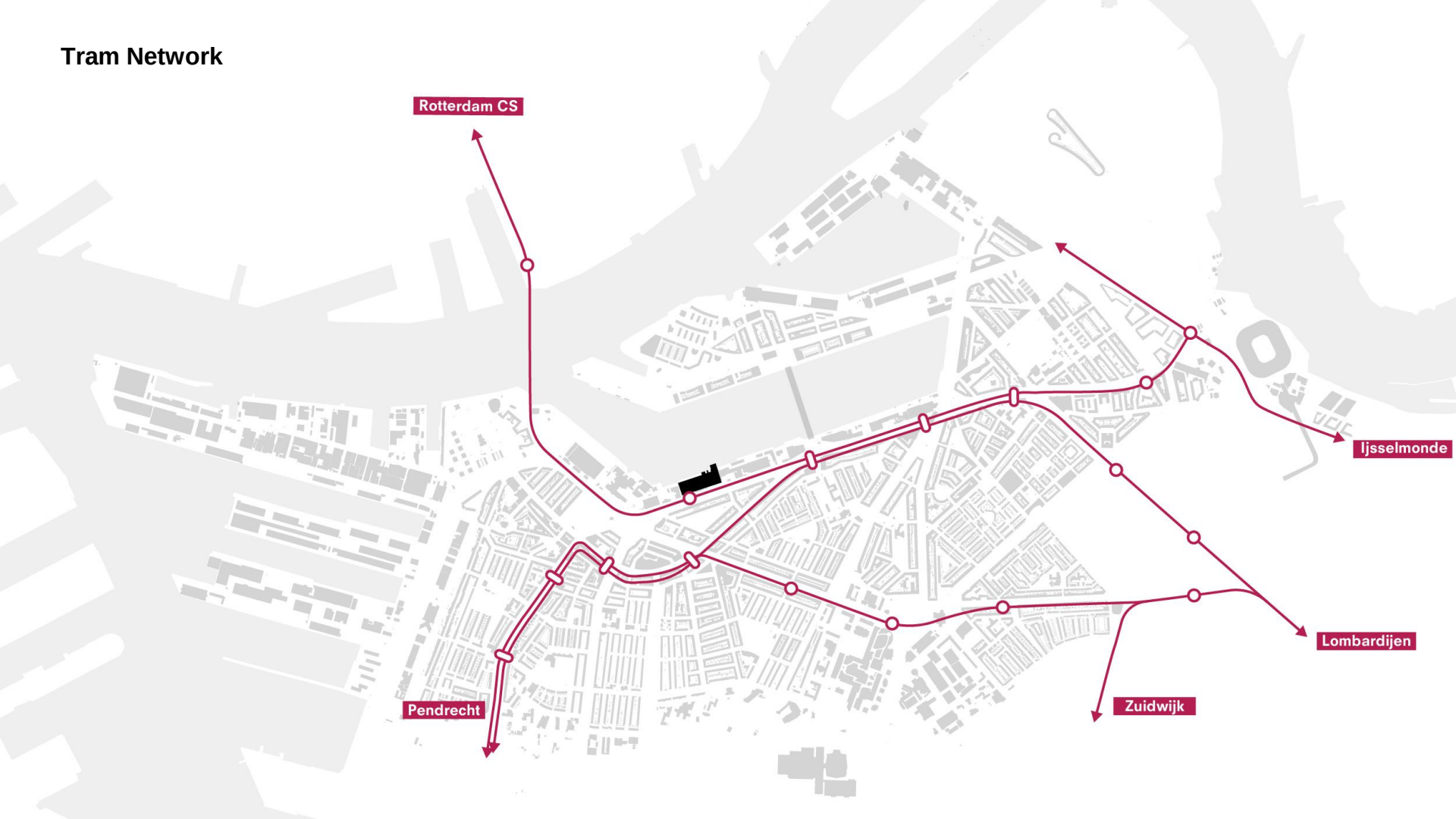
Metro Network



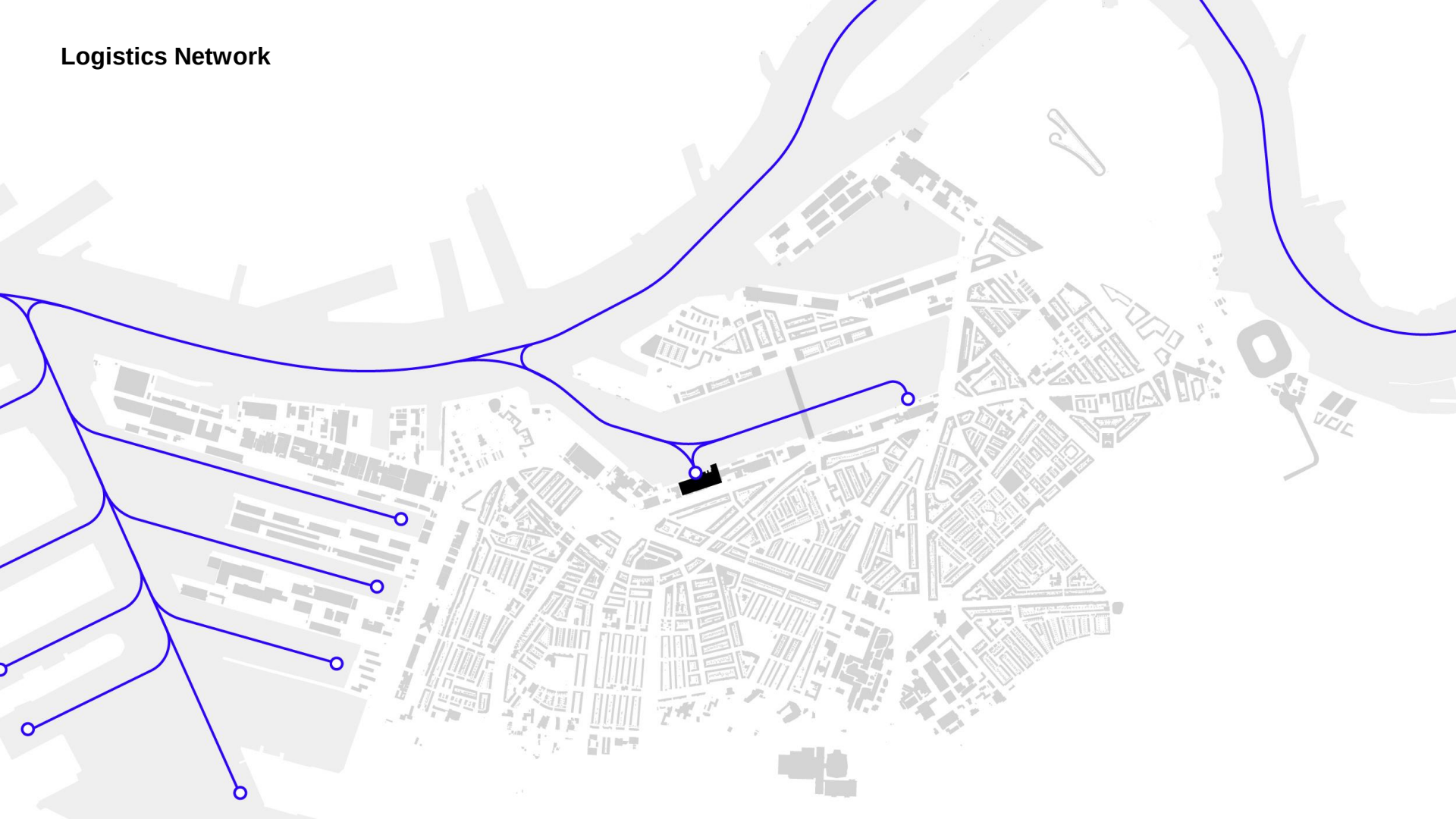
Water Taxi Network



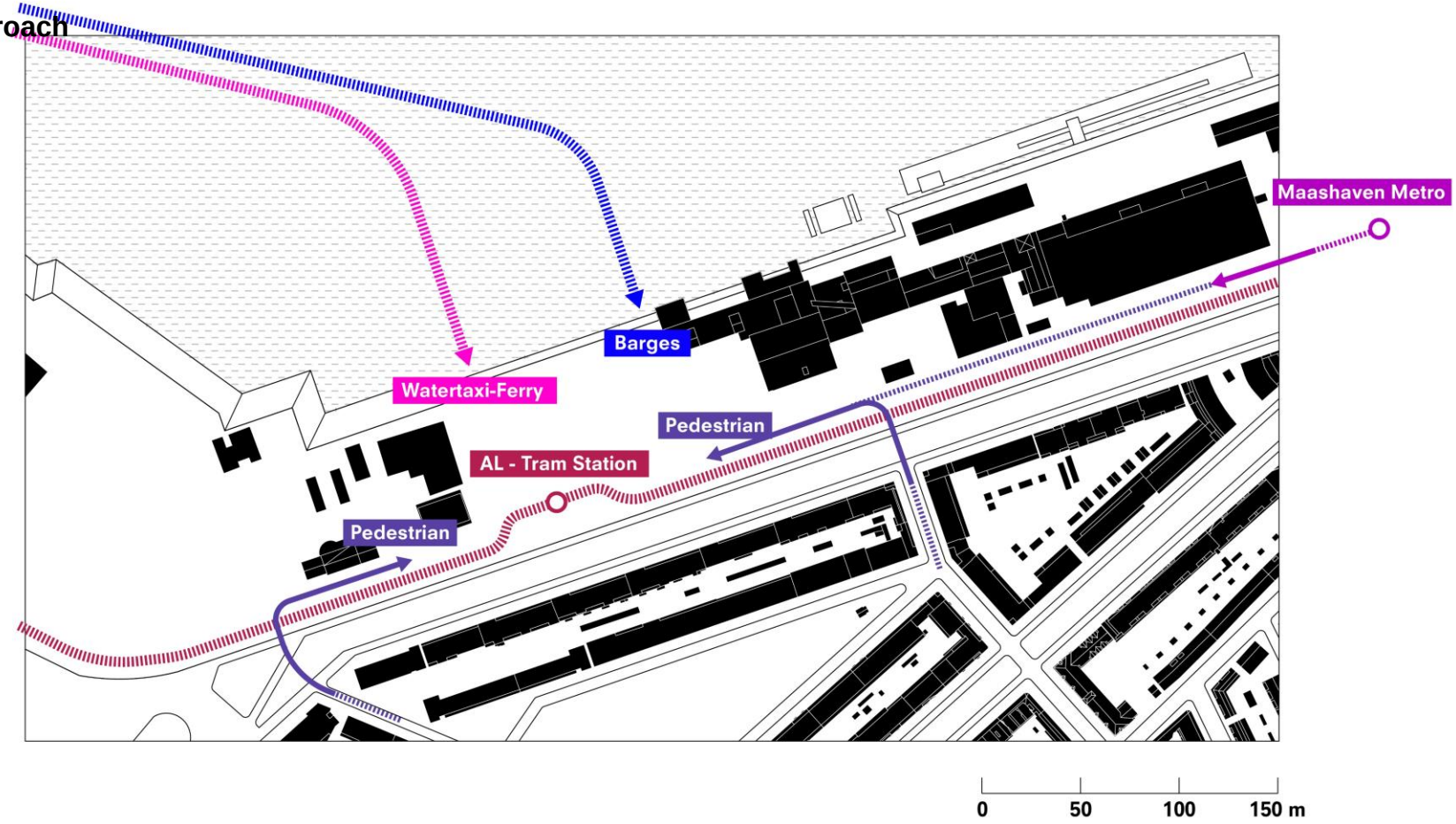
Tram Network



Logistics Network



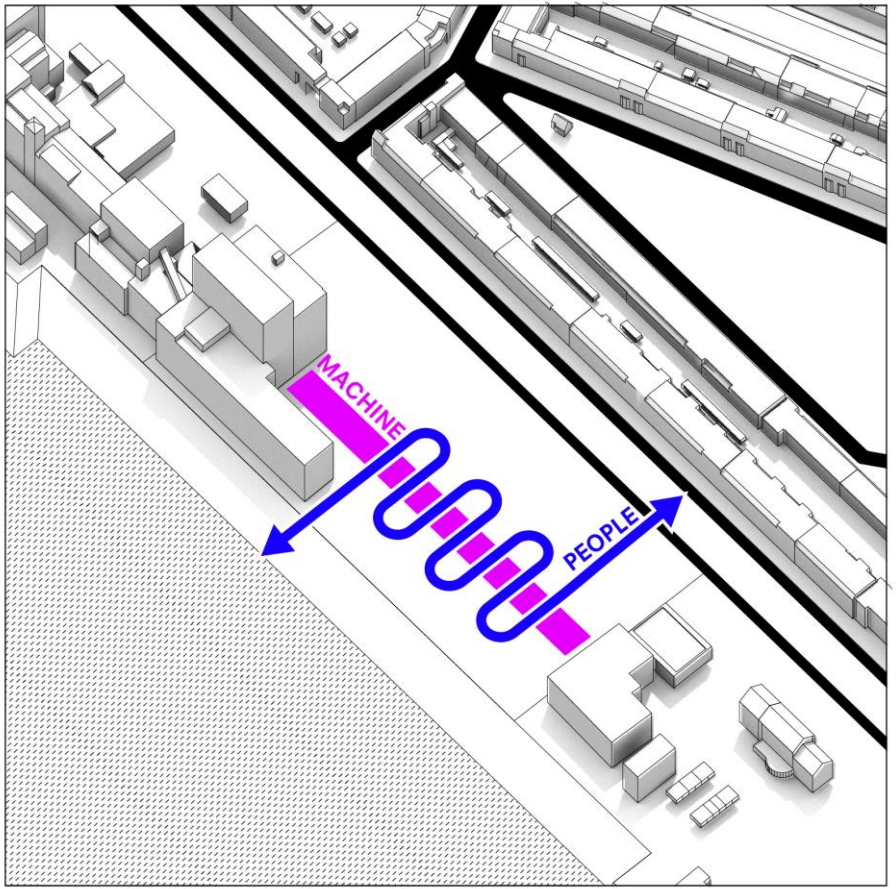
Approach


Maashaven Metro
Barges
Watertaxi-Ferry
Pedestrian
AL - Tram Station
Pedestrian
0
50
100
150 m

Location – Meneba Factory

Location – Meneba Factory

Design Ambitions

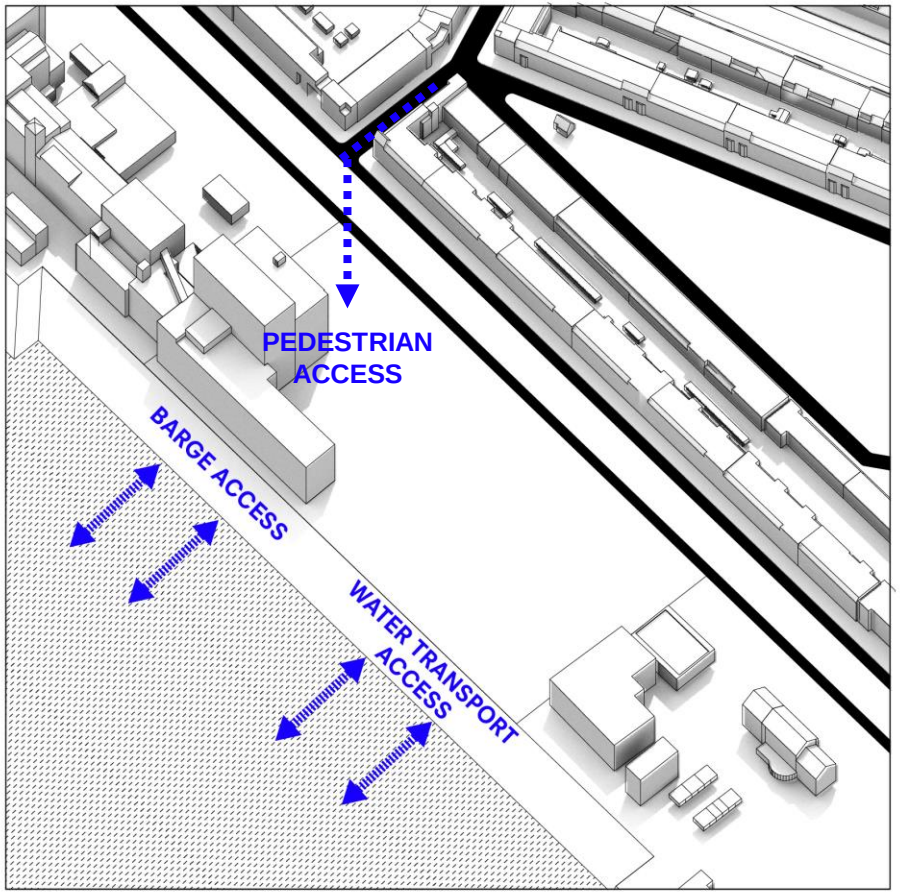


Human-Machine Interaction

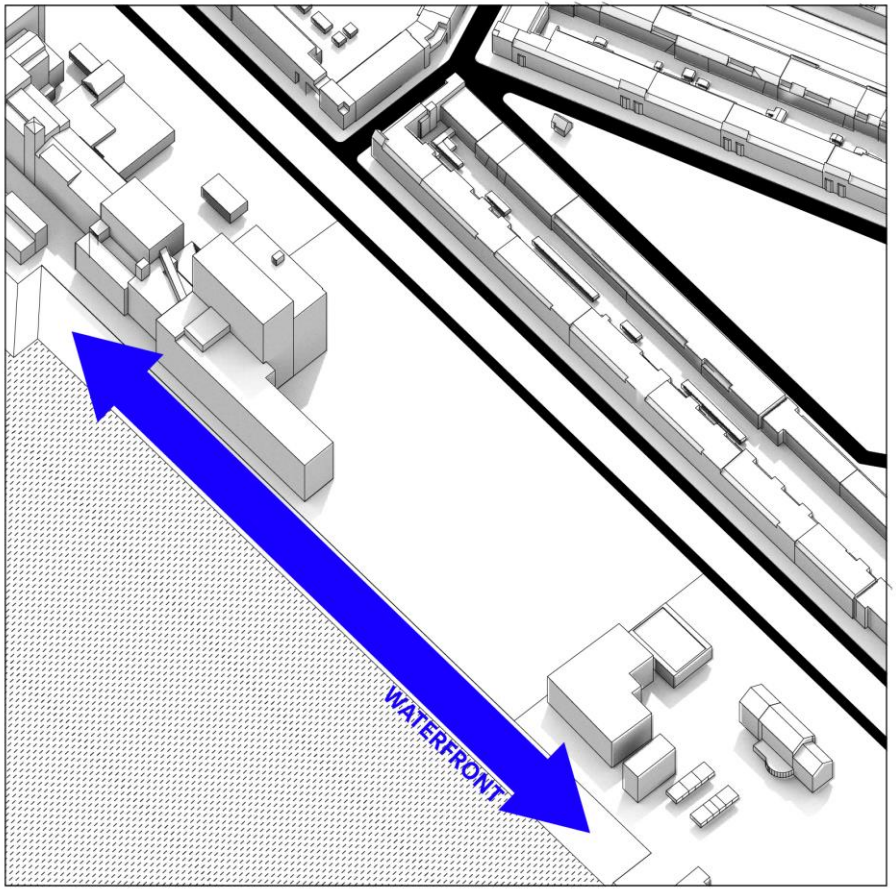
-Linking people to machine space

-Integrating white collar and blue collar workers

Design Ambitions

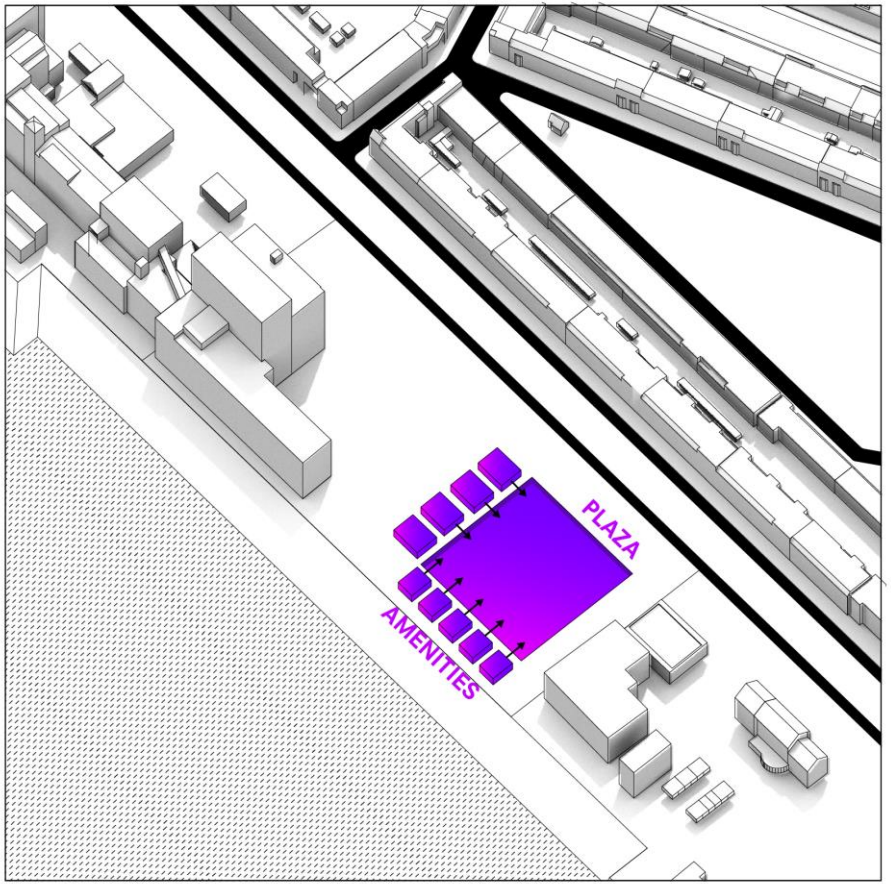


Design Ambitions



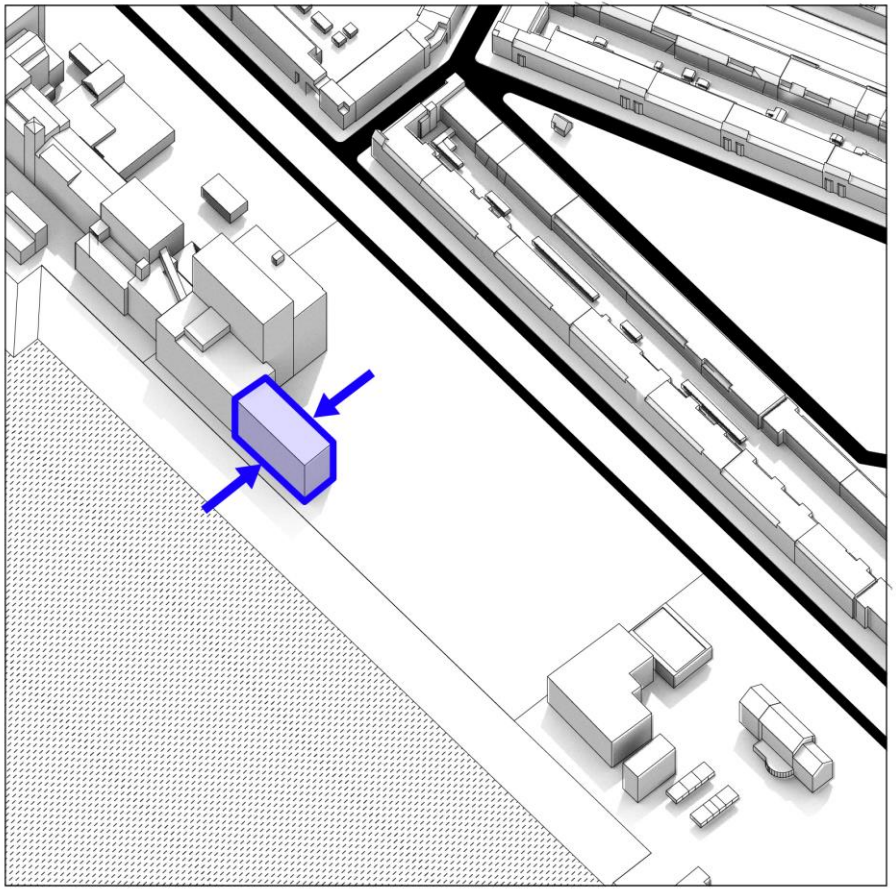
Public Waterfront

Design Ambitions



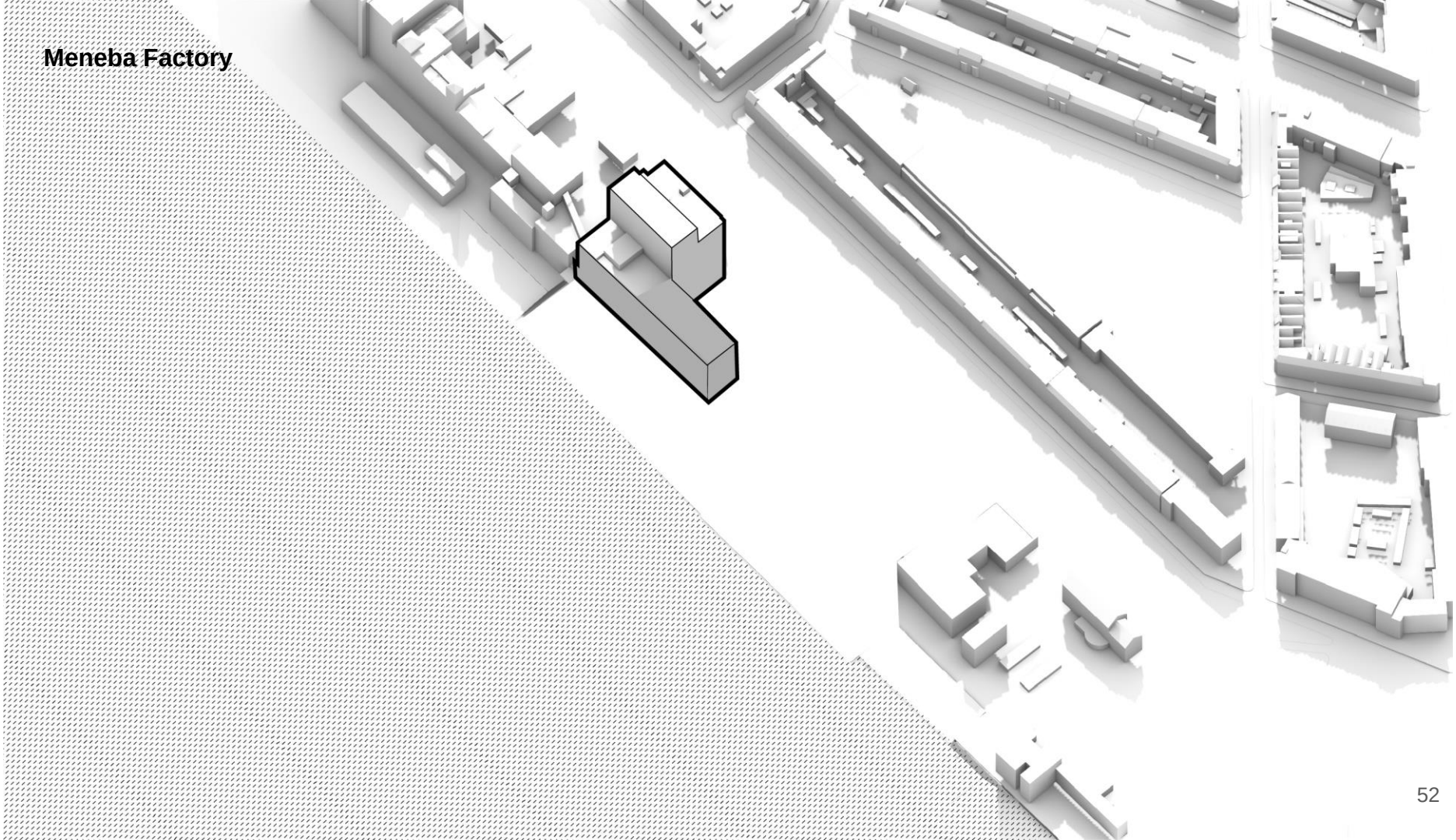
Creating Public Plaza with Amenities

Design Ambitions

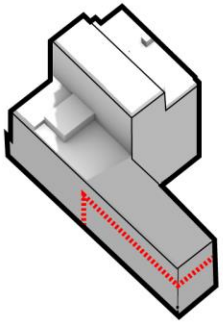


Intervene existing building
Logistic function – Staging Area
& Workshop

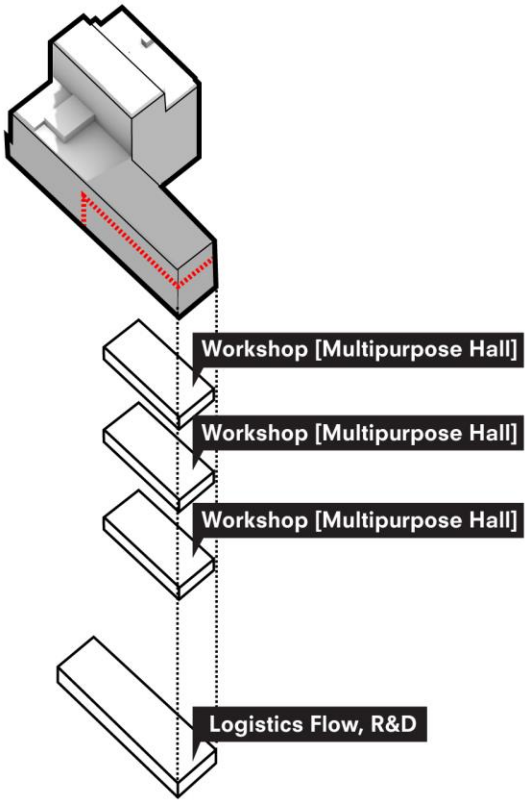
Meneba Factory



Meneba Factory

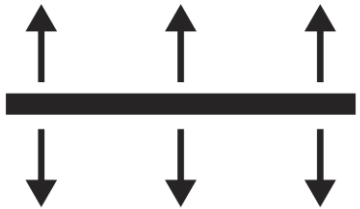


Meneba Factory



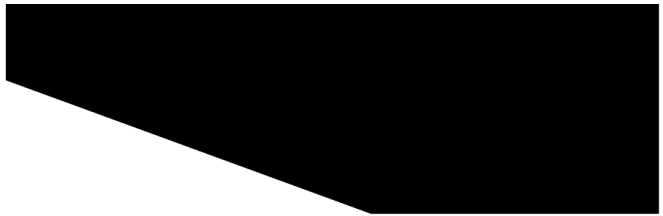
Organization

Organization

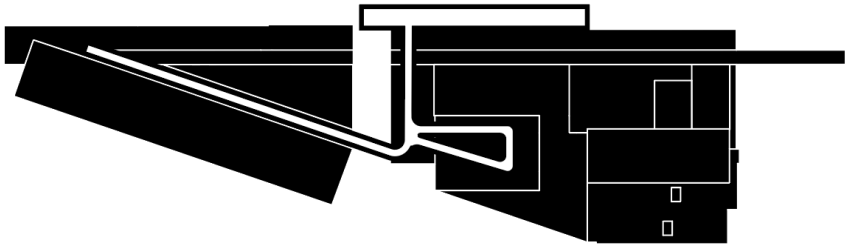


EXTRAVERTED

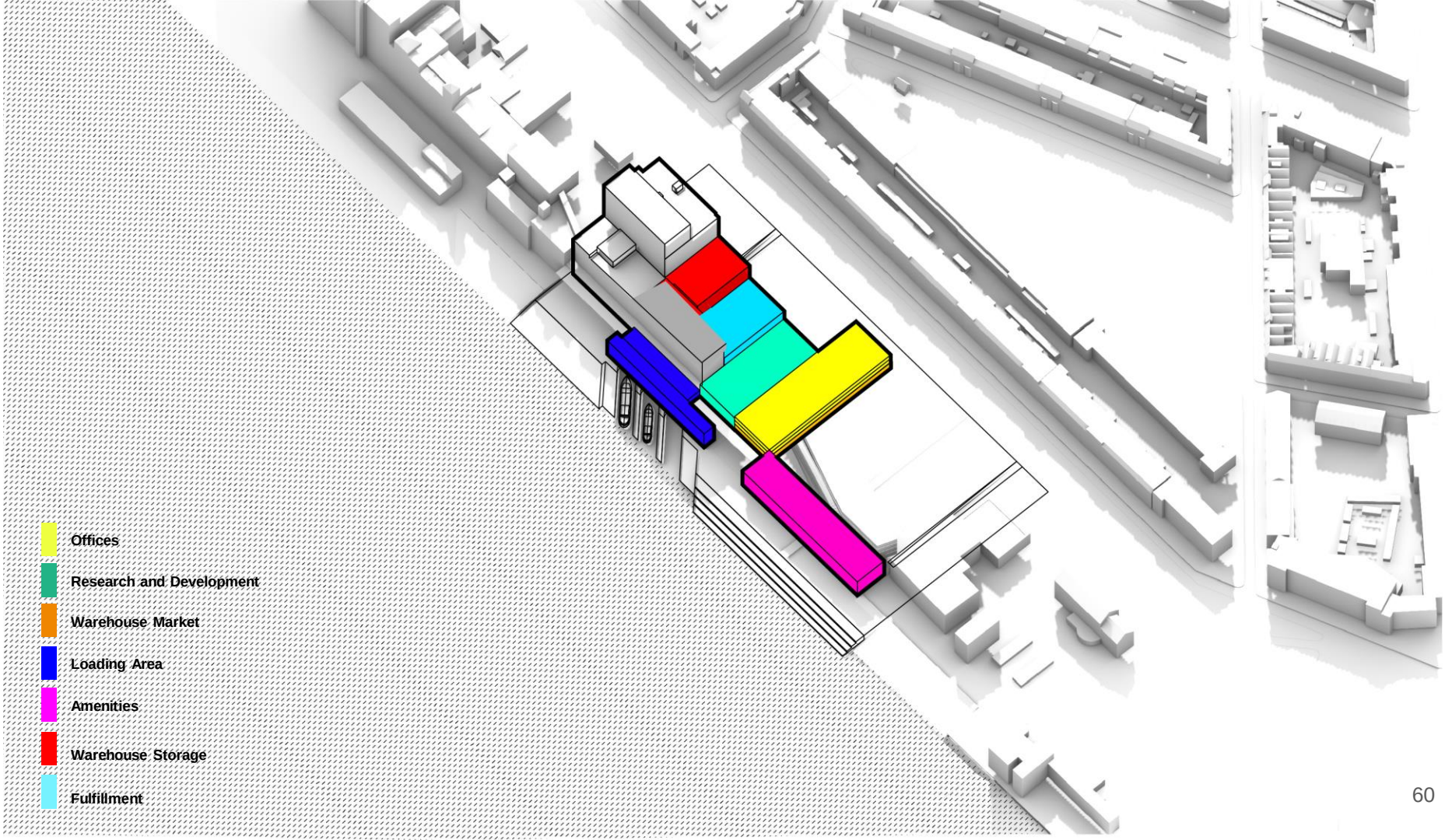
Volume

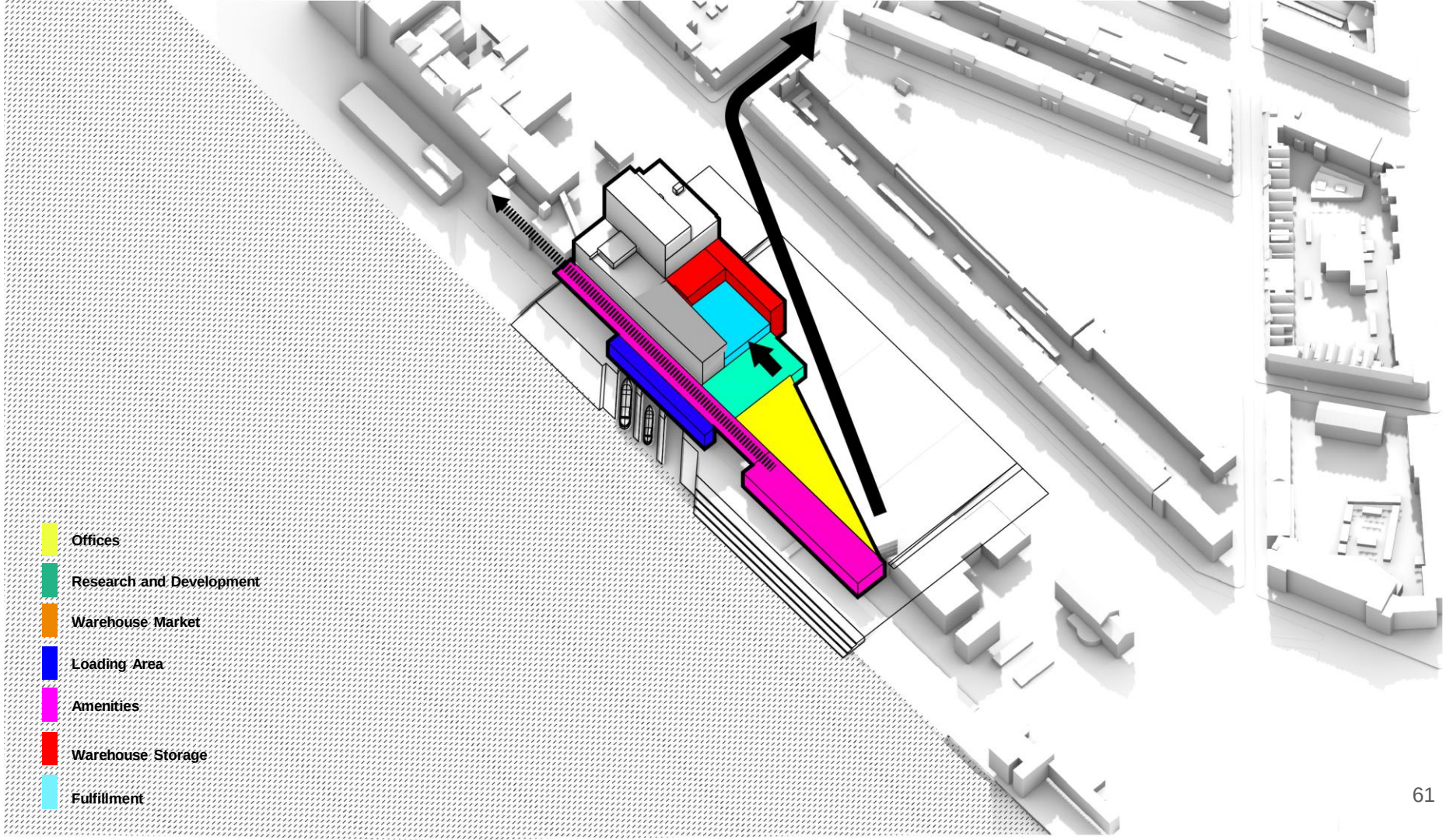


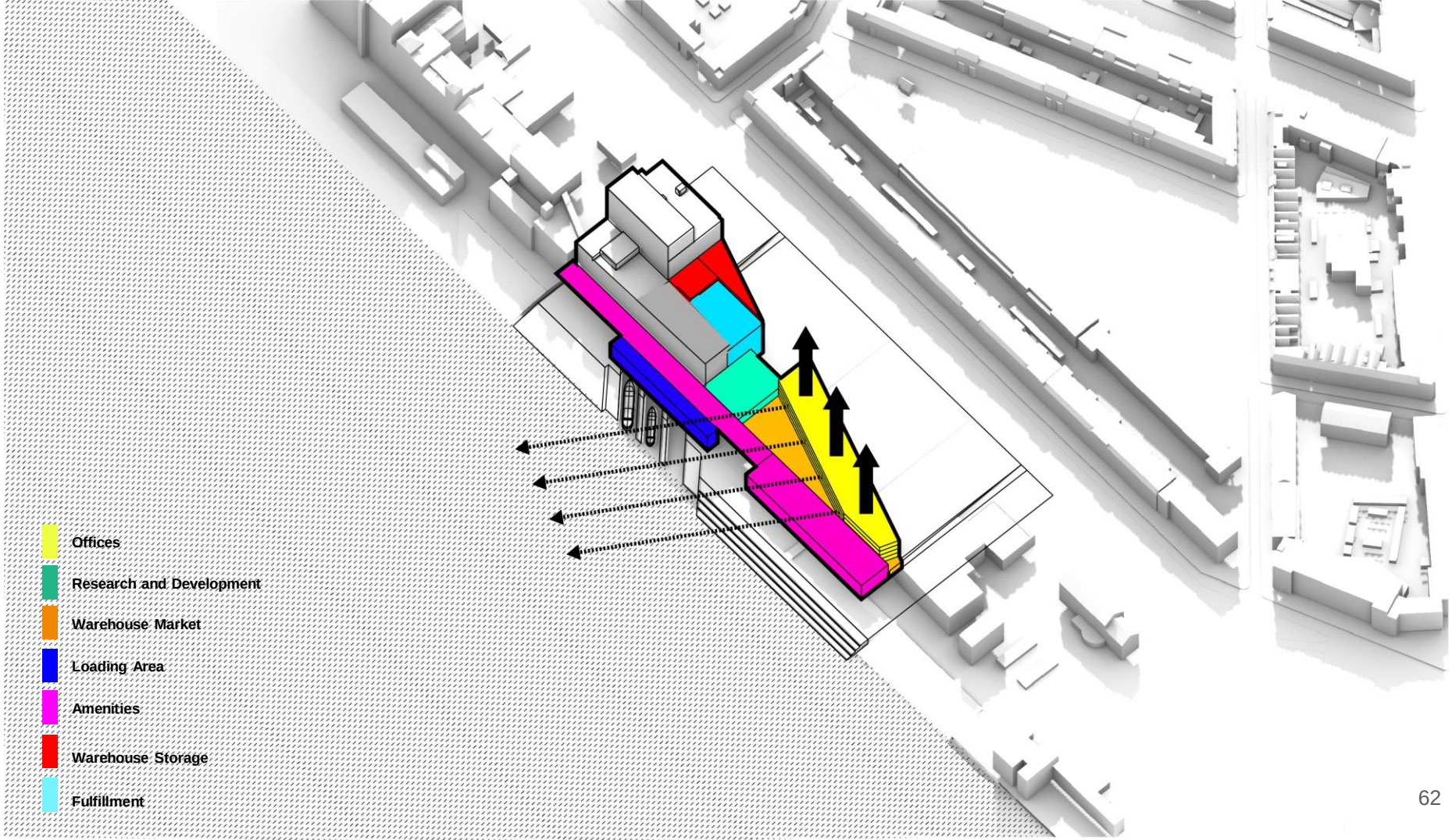
Volume

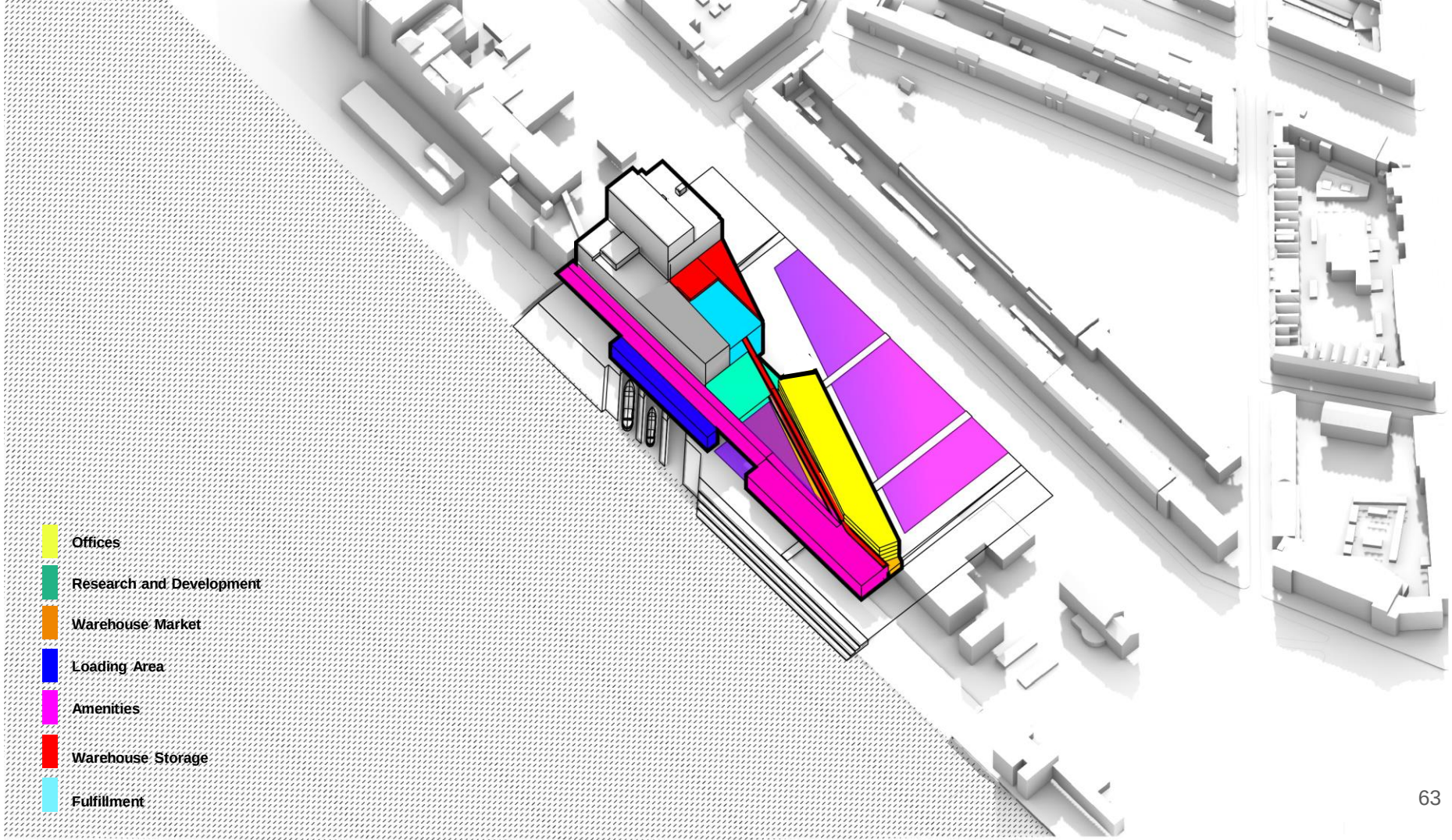


FRAGMENTED

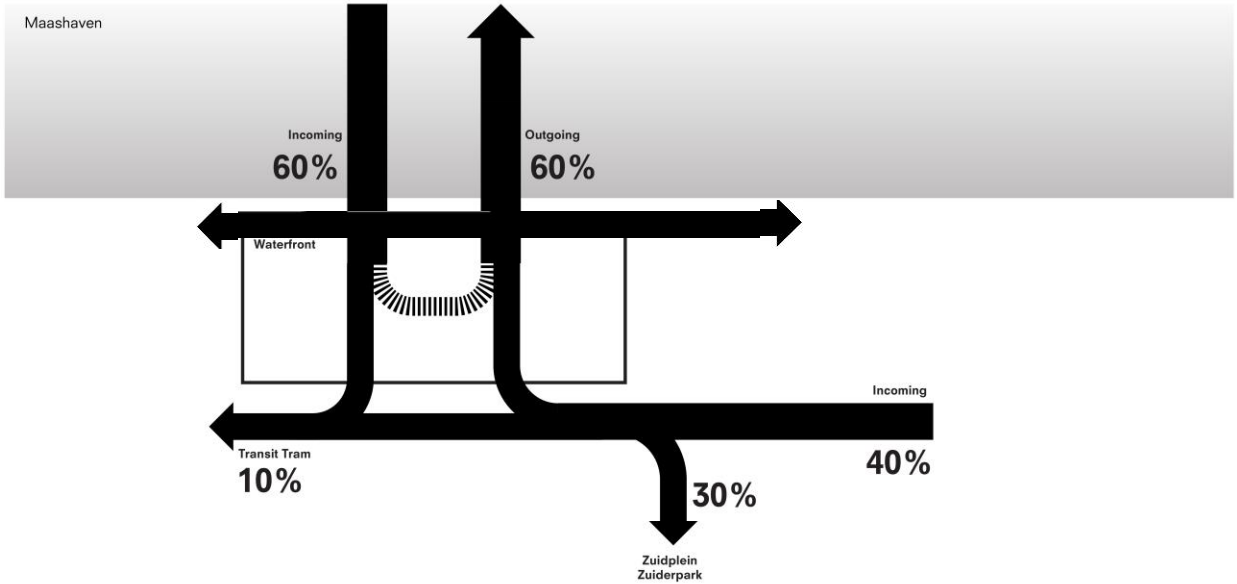

Offices
Research and Development
Warehouse Market
Loading Area
Amenities
Warehouse Storage
Fulfillment


Offices
Research and Development
Warehouse Market
Loading Area
Amenities
Warehouse Storage
Fulfillment

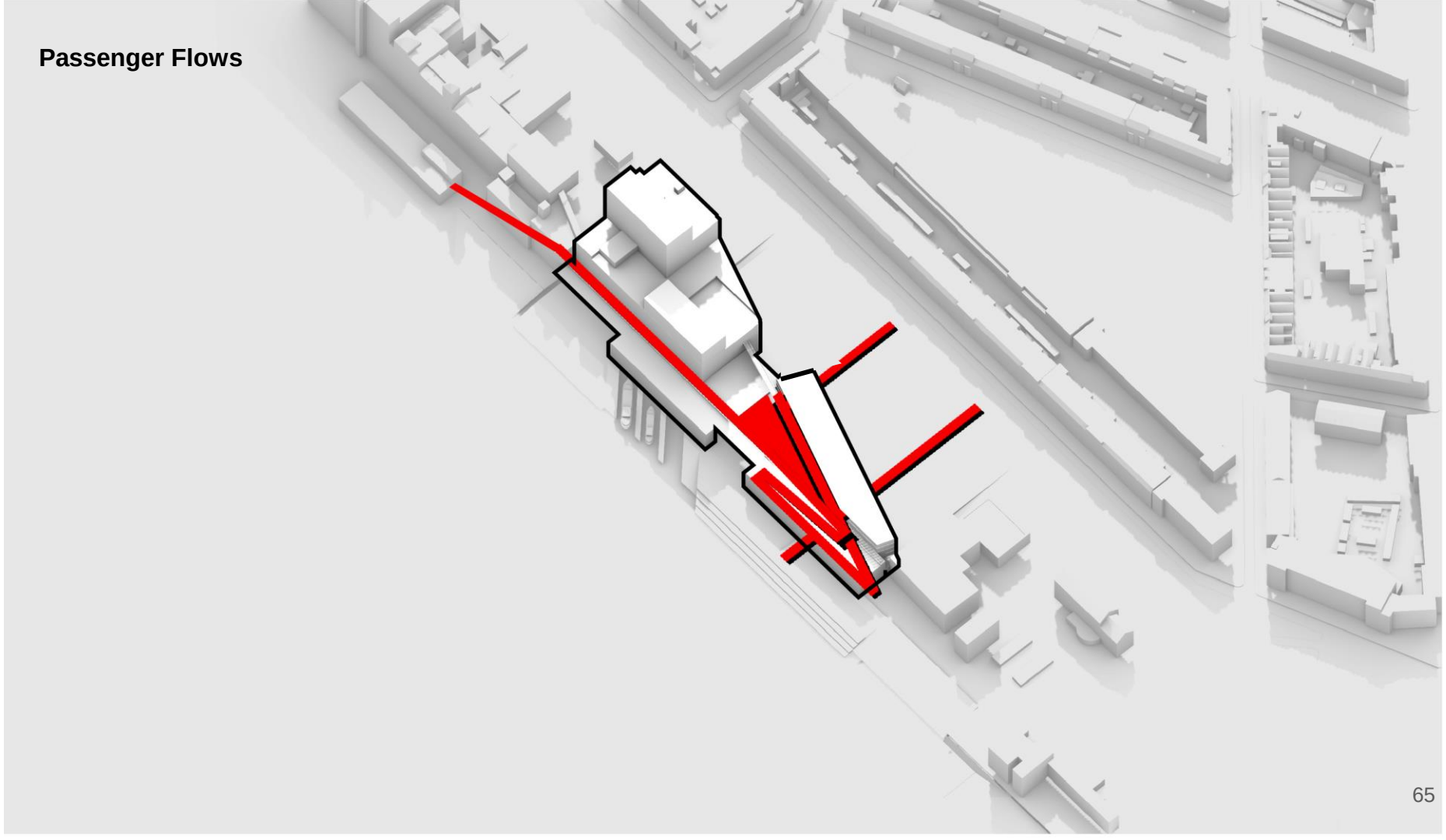

Offices
Research and Development
Warehouse Market
Loading Area
Amenities
Warehouse Storage
Fulfillment


Offices
Research and Development
Warehouse Market
Loading Area
Amenities
Warehouse Storage
Fulfillment

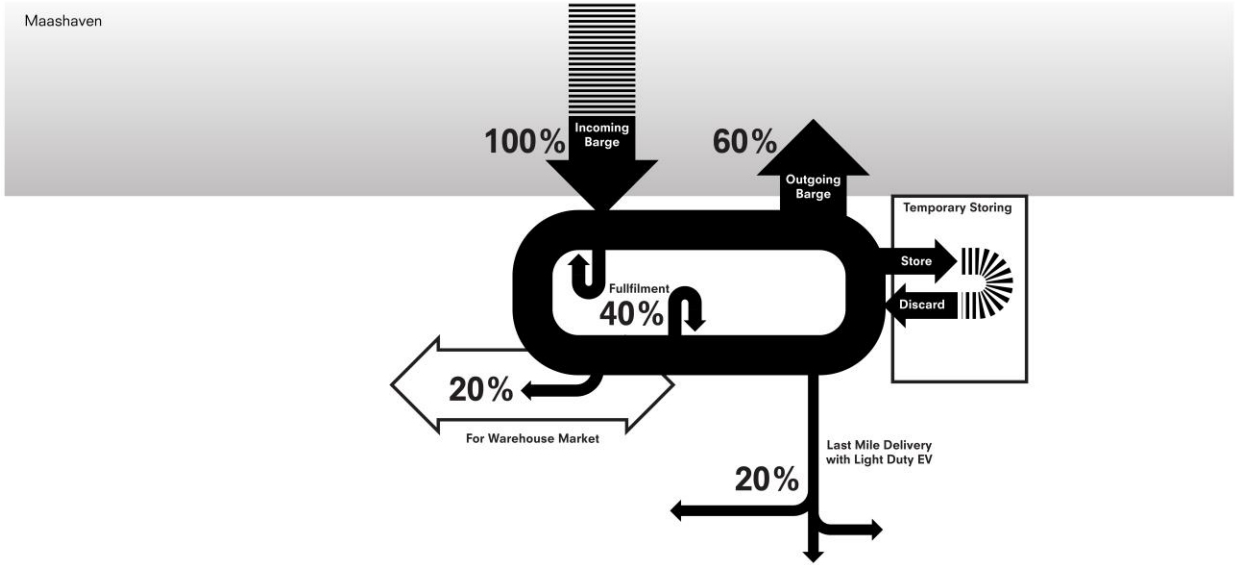
Passenger Flows



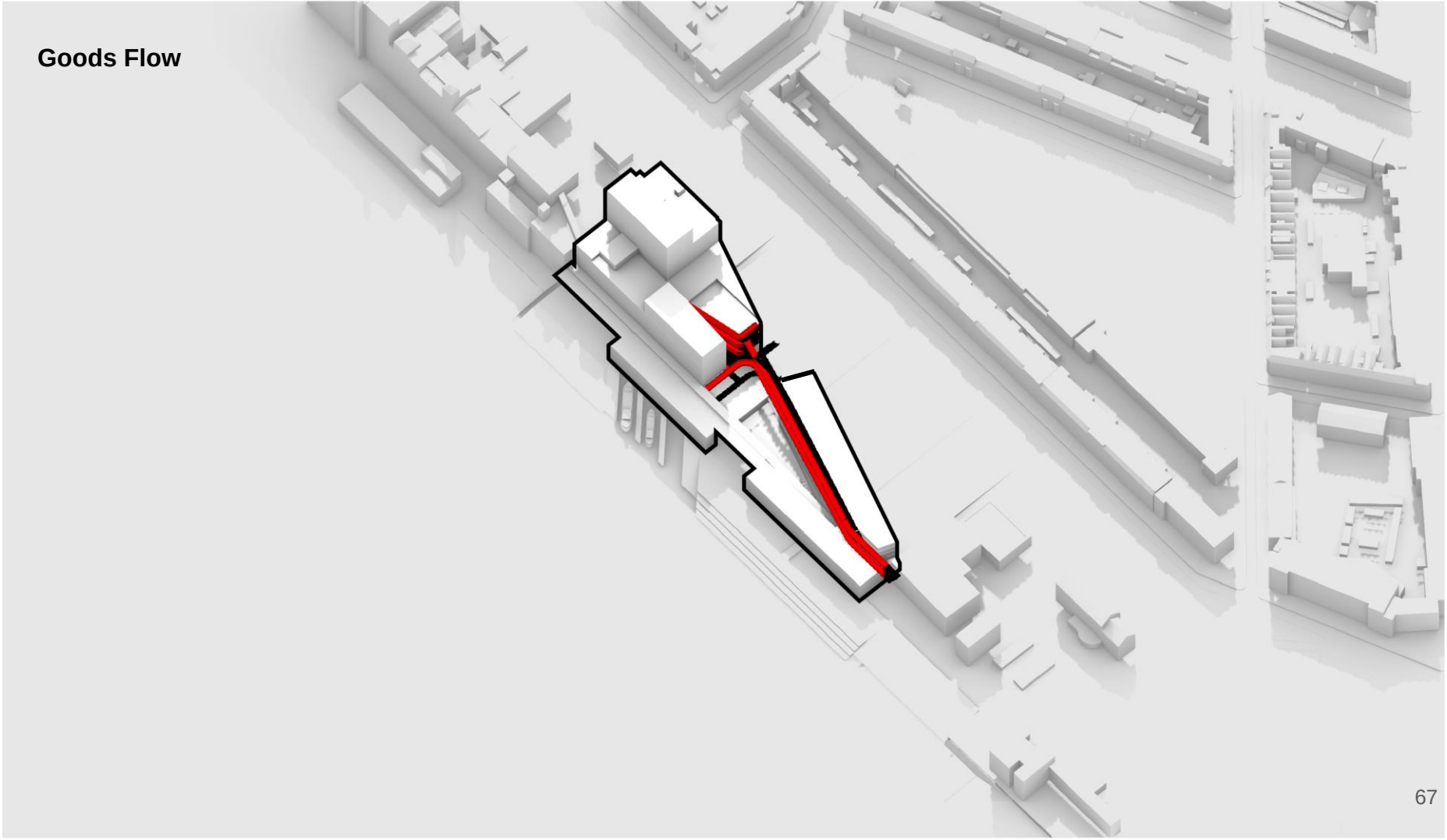
Passenger Flows



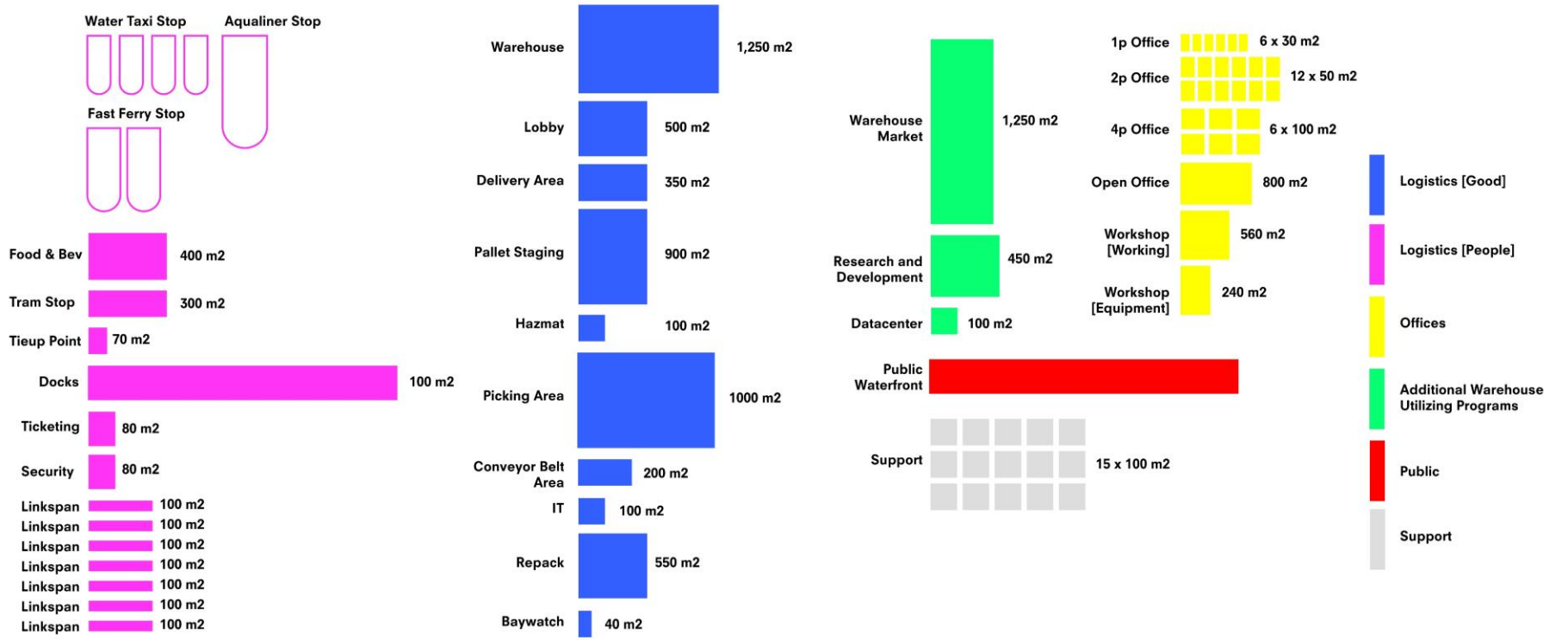
Goods Flow

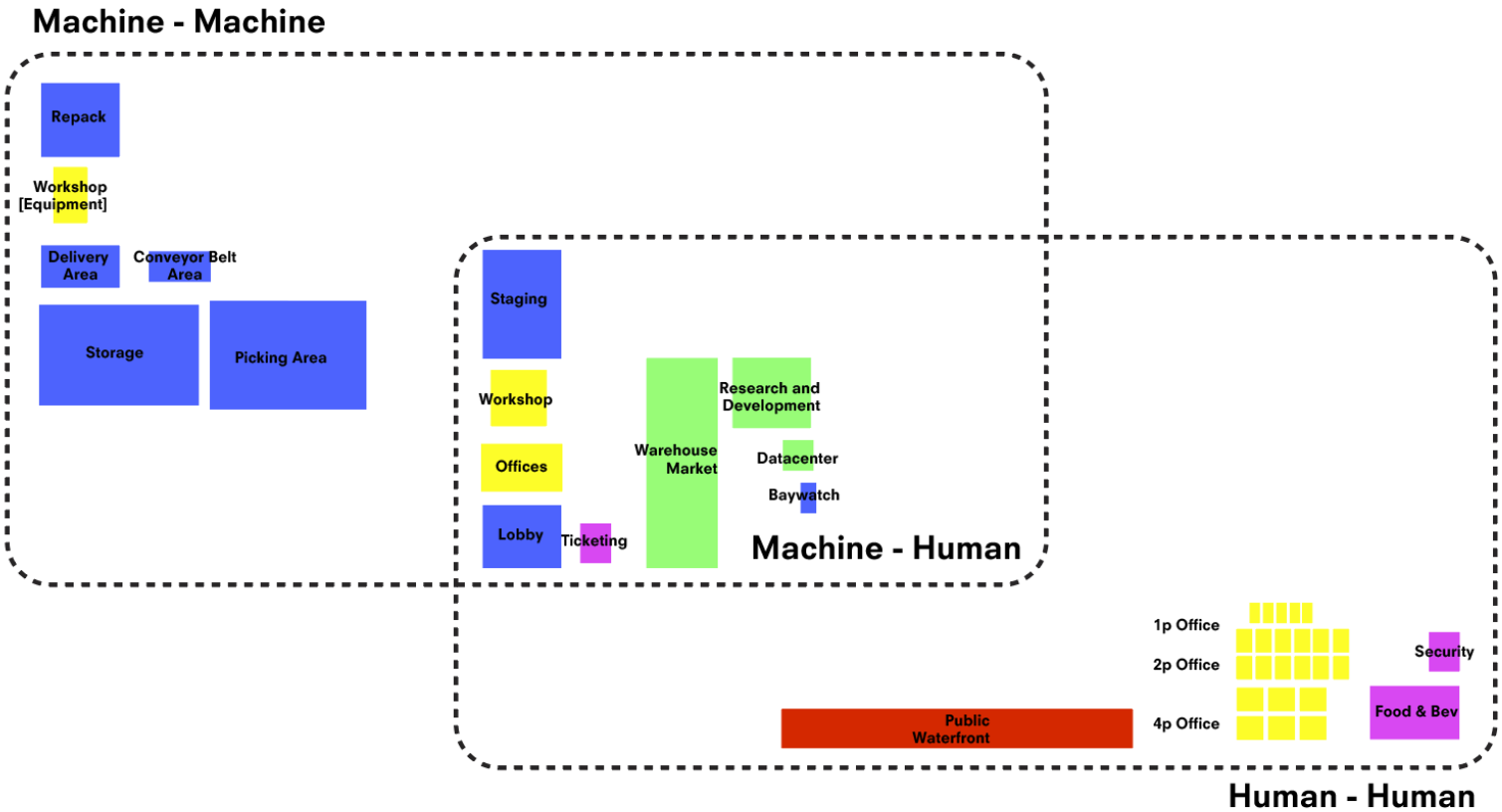

Maashaven
100%
Incoming Barge
60%
Outgoing Barge
Temporary Storing
Store
Discard
Fullfilment
40%
20%
For Warehouse Market
Last Mile Delivery with Light Duty EV
20%

Goods Flow



Programme Distribution




Machine - Machine
Repack
Workshop [Equipment]
Delivery Area
Conveyor Belt Area
Storage
Picking Area
Staging
Workshop
Offices
Lobby
Ticketing
Warehouse Market
Research and Development
Datacenter
Baywatch
Machine - Human
1p Office
2p Office
4p Office
Security
Food & Bev
Public Waterfront
Human - Human

Robotic Loop Interactions

Machine-Machine

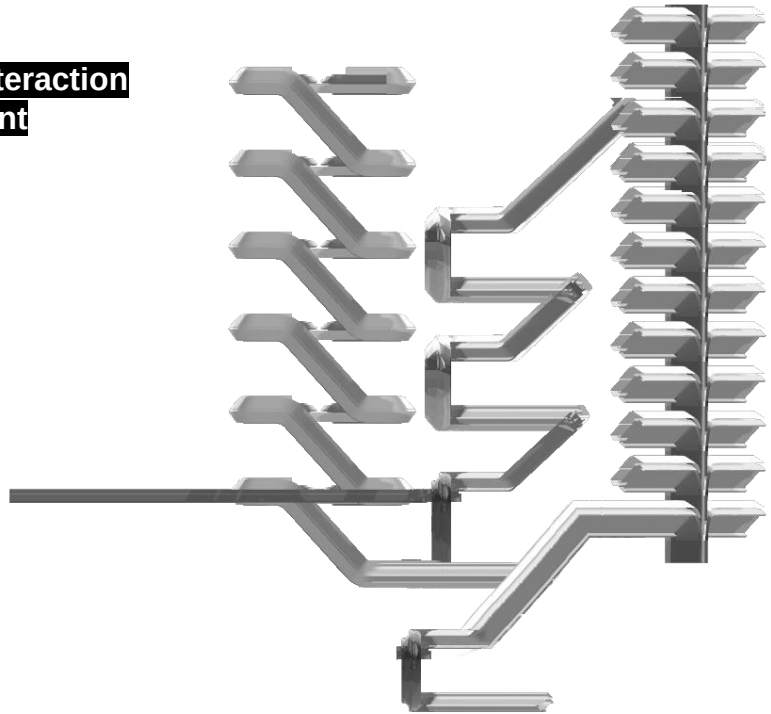
Machine-Human

?

Human-Human

Robotic Loop Interactions

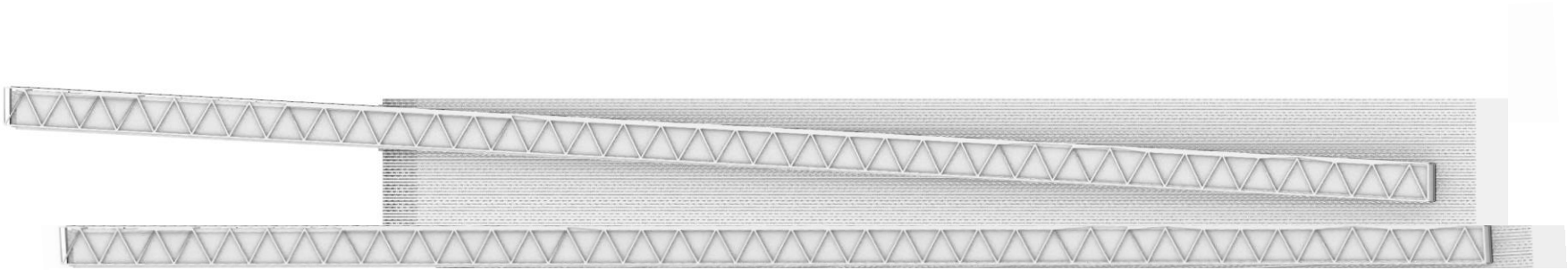
Machine-Machine Interaction
Automated Fullfilment



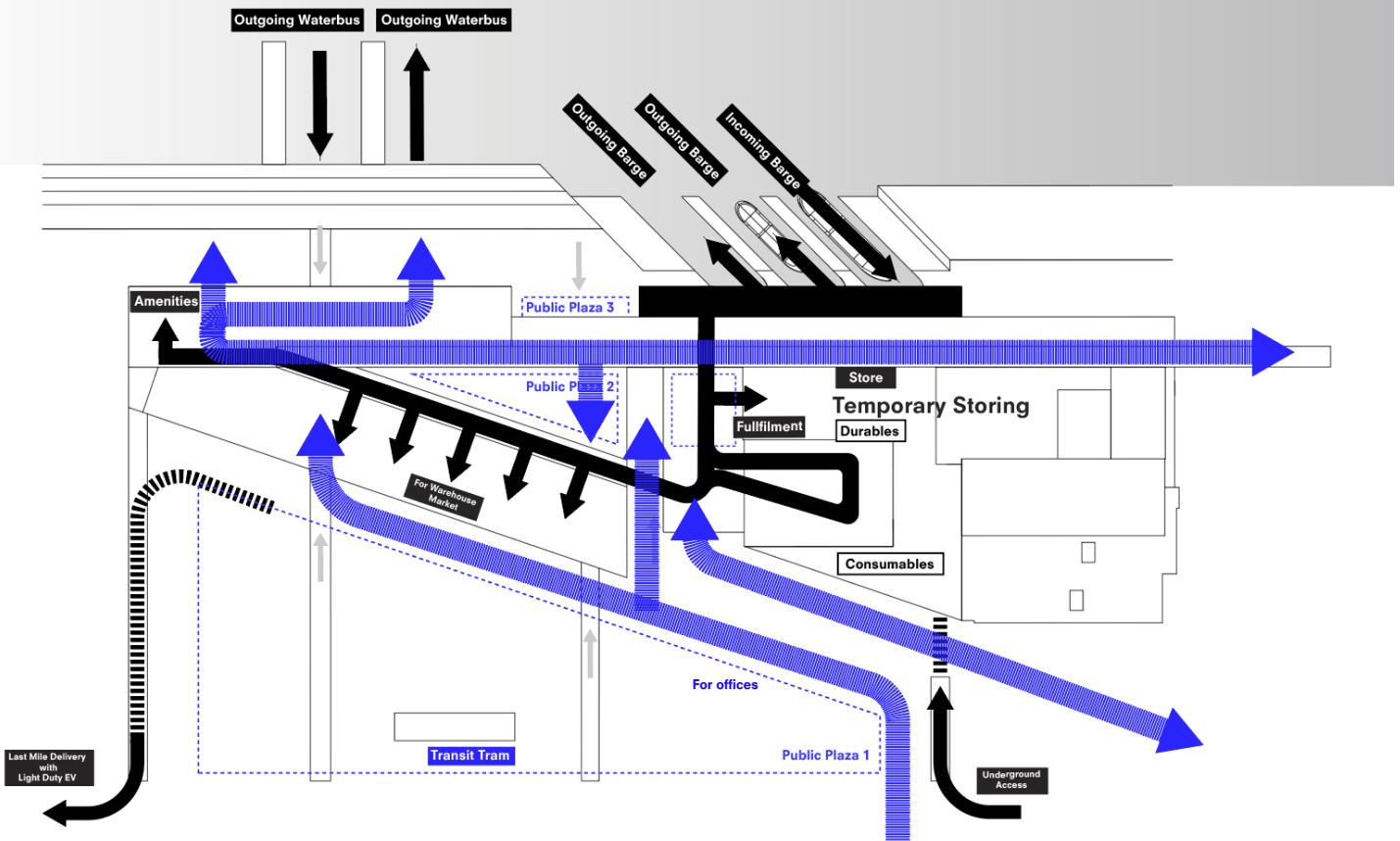
Machine-Human Interaction
Steady Shopping Experience

Robotic Loop Interactions

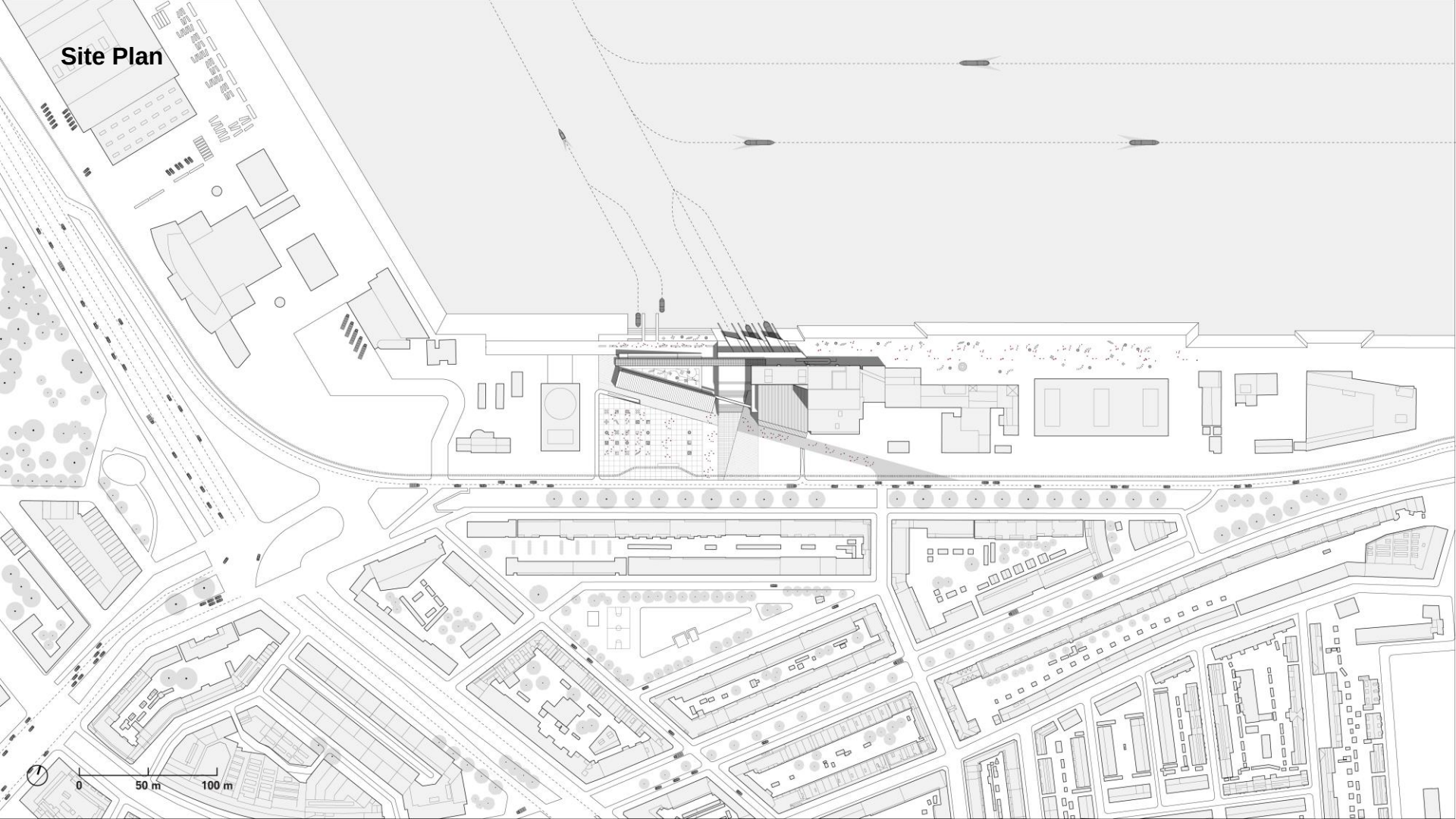
Human-Human Interaction
Visual Interaction

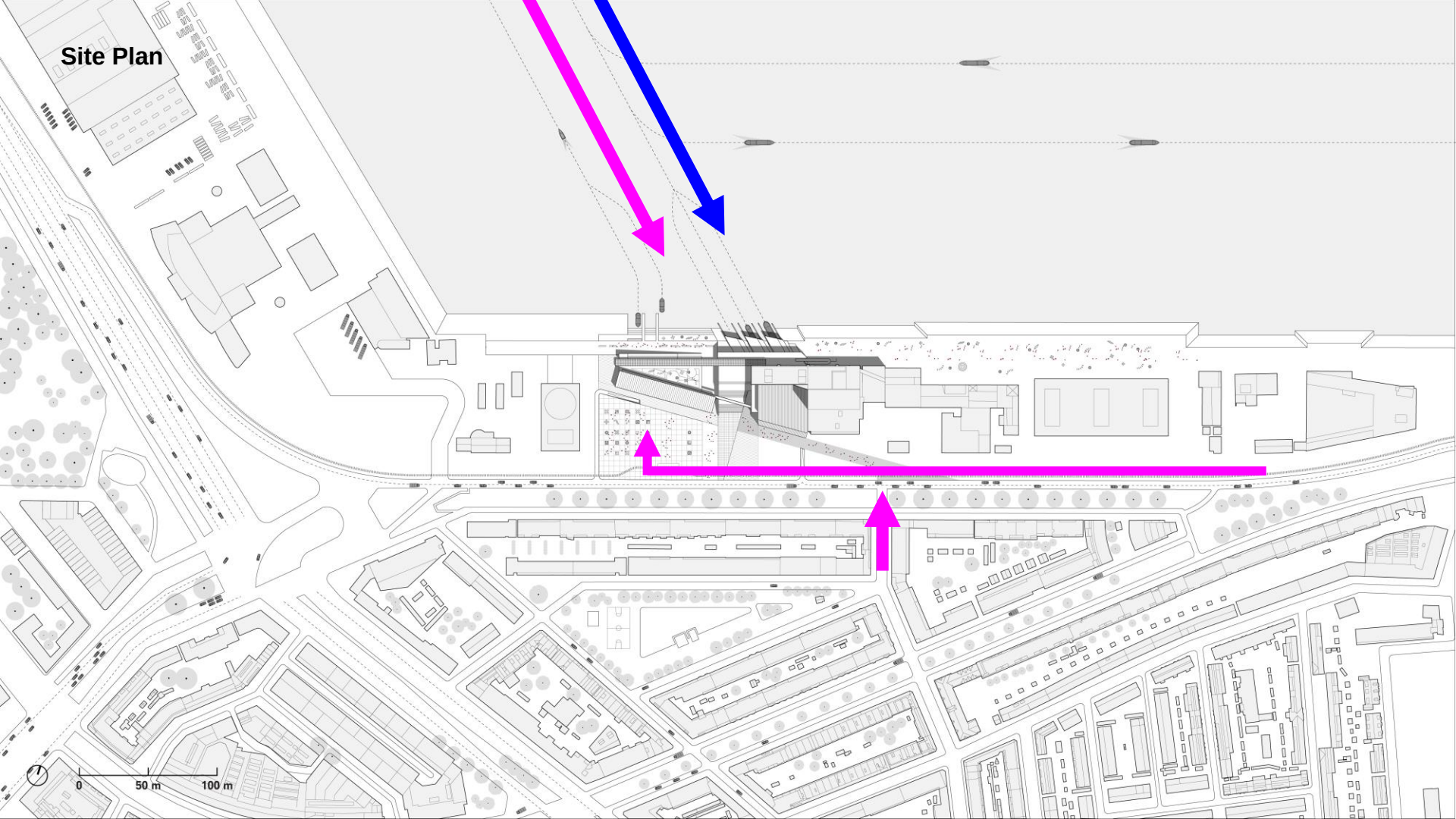


Maashaven


Outgoing Waterbus
Outgoing Waterbus
Outgoing Barge
Outgoing Barge
Incoming Barge
Amenities
Public Plaza 3
Public Plaza 2
Store
Temporary Storing
Fullfilment
Durables
For Warehouse Market
Consumables
For offices
Transit Tram
Public Plaza 1
Last Mile Delivery with Light Duty EV
Underground Access

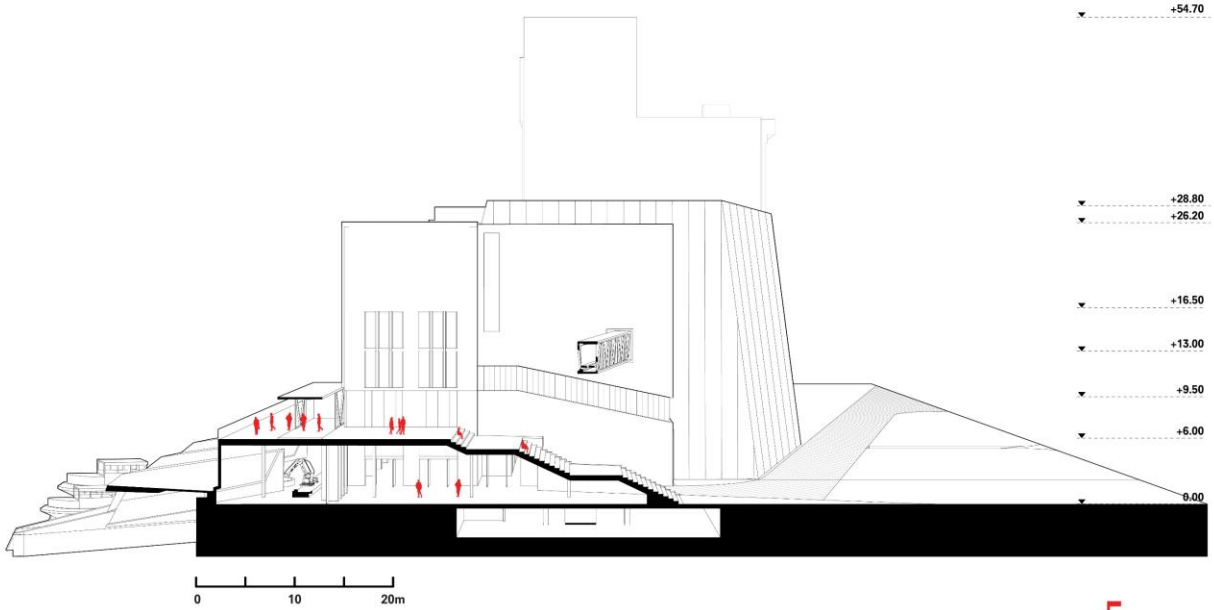
Site Plan




Site Plan
0
50 m
100 m

Approach from Water Transportation

Approach from Tram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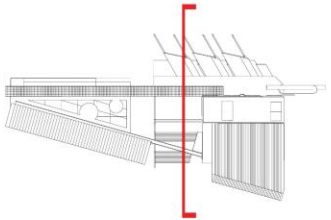
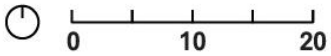
+28.80
+26.20
+16.50
+13.00
+9.50
+6.00
0.00
0
10
20m

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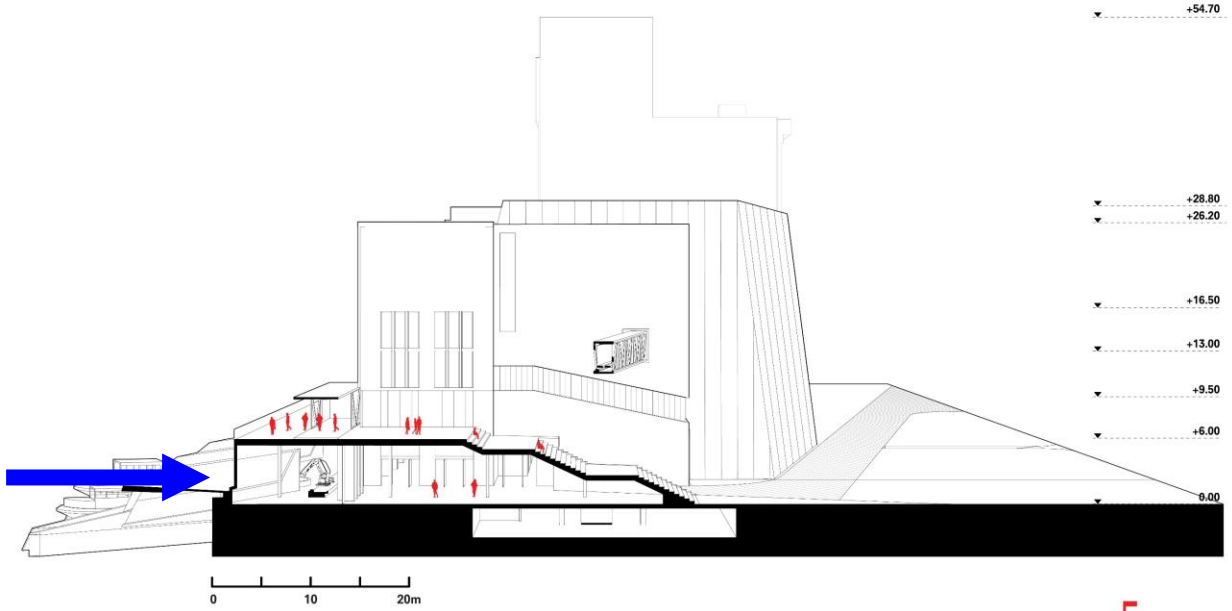
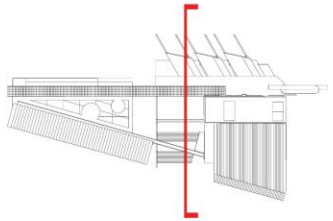
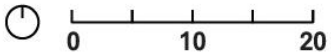
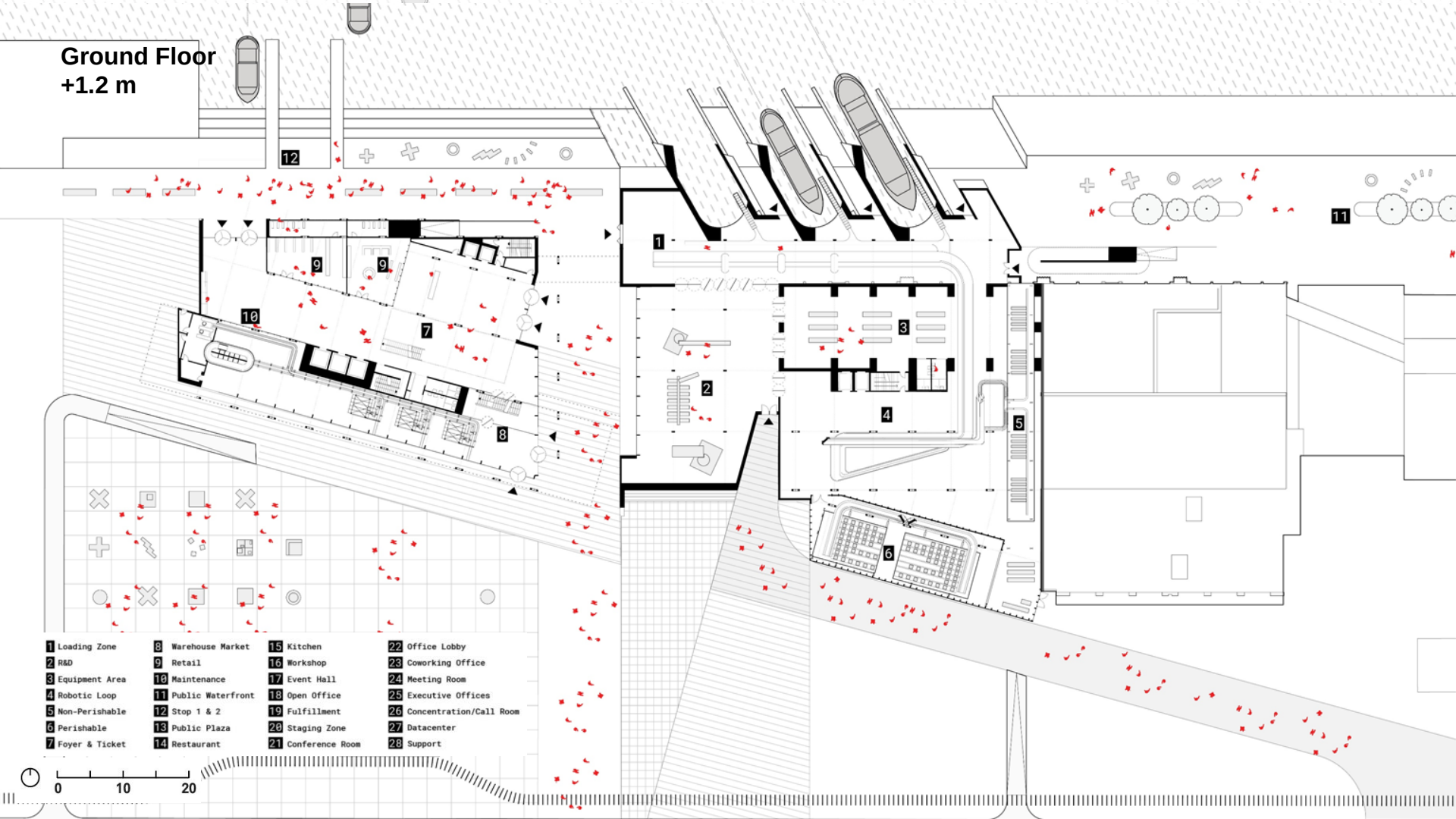

+54.70
+28.80
+26.20
+16.50
+13.00
+9.50
+6.00
0.00
0
10
20m

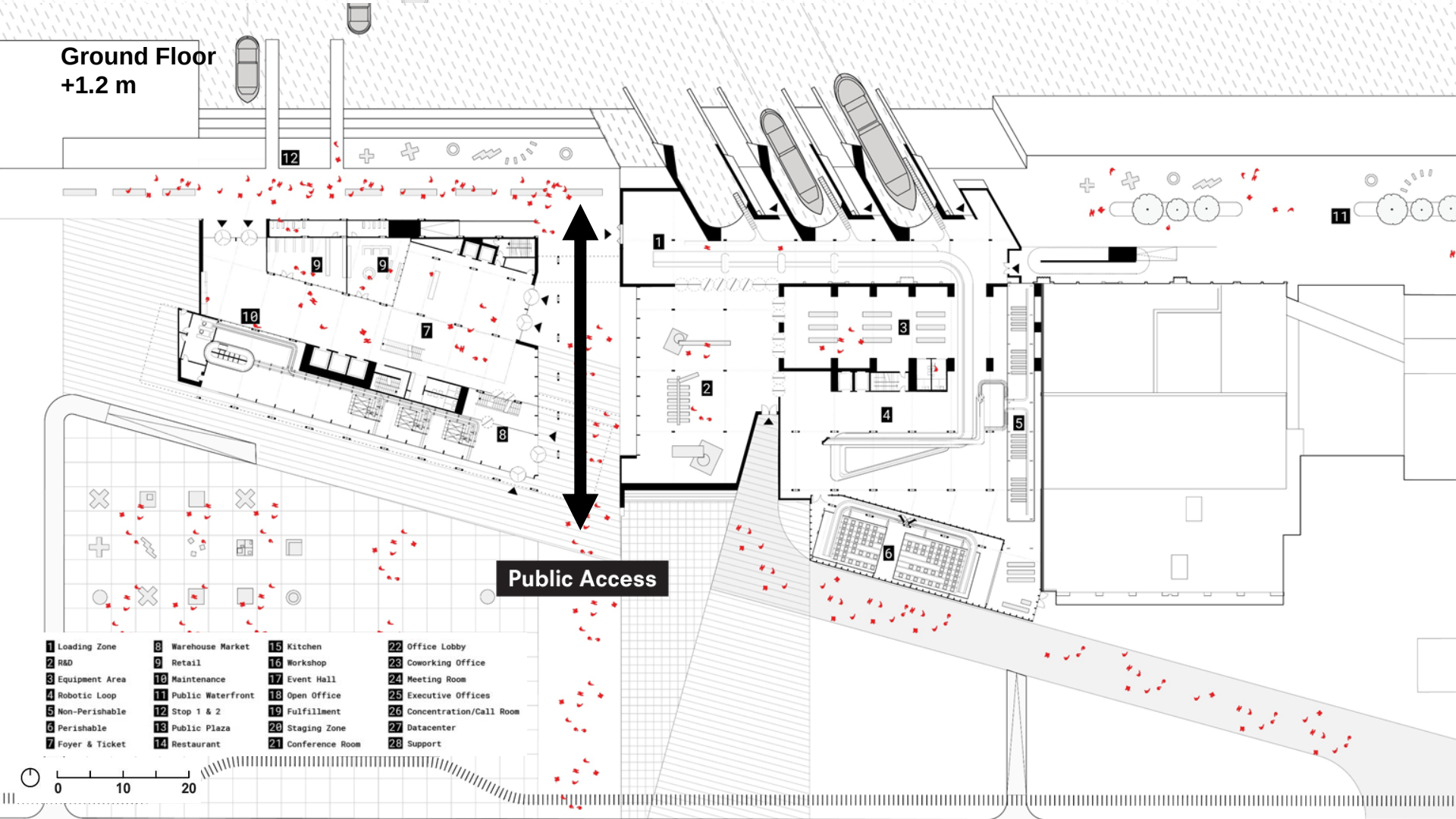


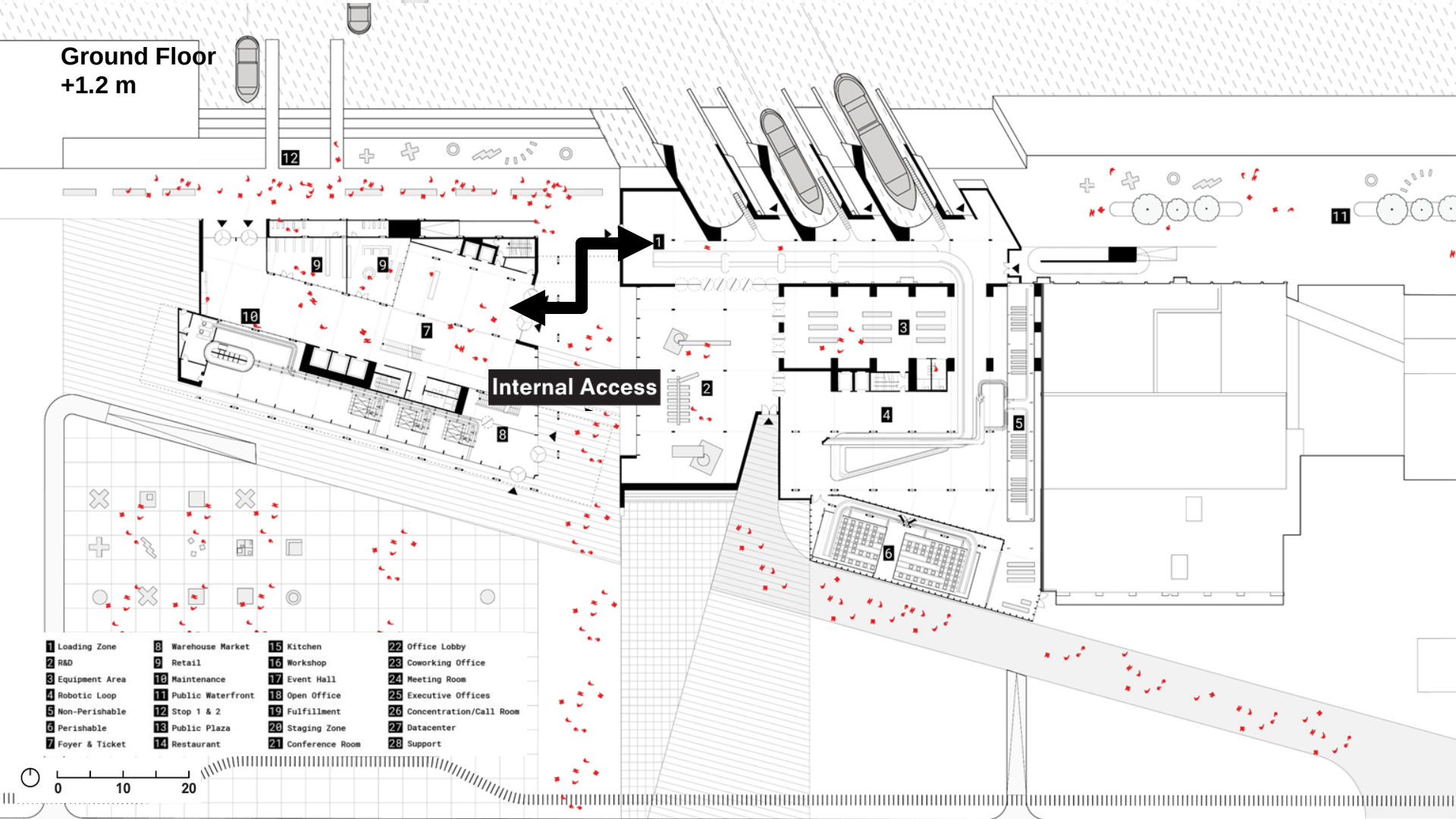

0
10
20

Workshop & Maintenance

Ground Floor
+1.2 m




Ground Floor
+1.2 m
Public Access
1 Loading Zone
2 R&D
3 Equipment Area
4 Robotic Loop
5 Non-Perishable
6 Perishable
7 Foyer & Ticket
8 Warehouse Market
9 Retail
10 Maintenance
11 Public Waterfront
12 Stop 1 & 2
13 Public Plaza
14 Restaurant
15 Kitchen
16 Workshop
17 Event Hall
18 Open Office
19 Fulfillment
20 Staging Zone
21 Conference Room
22 Office Lobby
23 Coworking Office
24 Meeting Room
25 Executive Offices
26 Concentration/Call Room
27 Datacenter
28 Support
0
10
20


Ground Floor
+1.2 m
Internal Access
1 Loading Zone
2 R&D
3 Equipment Area
4 Robotic Loop
5 Non-Perishable
6 Perishable
7 Foyer & Ticket
8 Warehouse Market
9 Retail
10 Maintenance
11 Public Waterfront
12 Stop 1 & 2
13 Public Plaza
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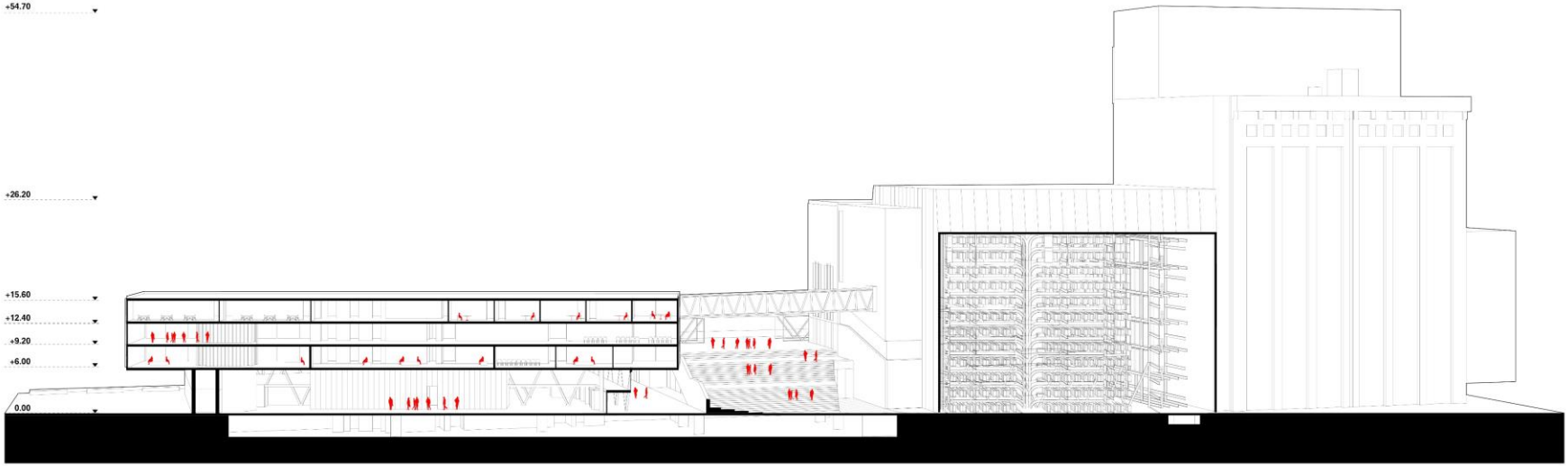
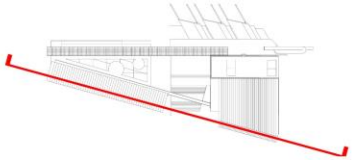
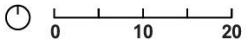
15 Kitchen
16 Workshop
17 Event Hall
18 Open Office
19 Fulfillment
20 Staging Zone
21 Conference Room
22 Office Lobby
23 Coworking Office
24 Meeting Room
25 Executive Offices
26 Concentration/Call Room
27 Datacenter
28 Support
0
10
20


+54.70
+26.20
+15.60
+12.40
+9.20
+6.00
0.00

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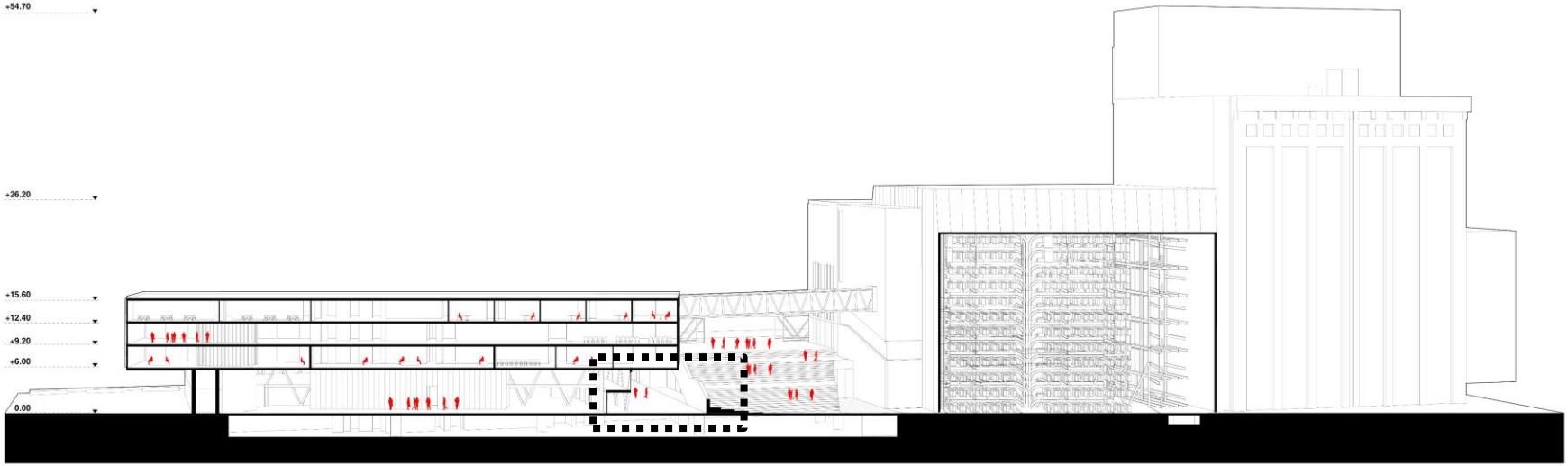
+54.70
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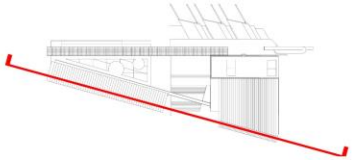
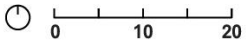
+6.00
0.00



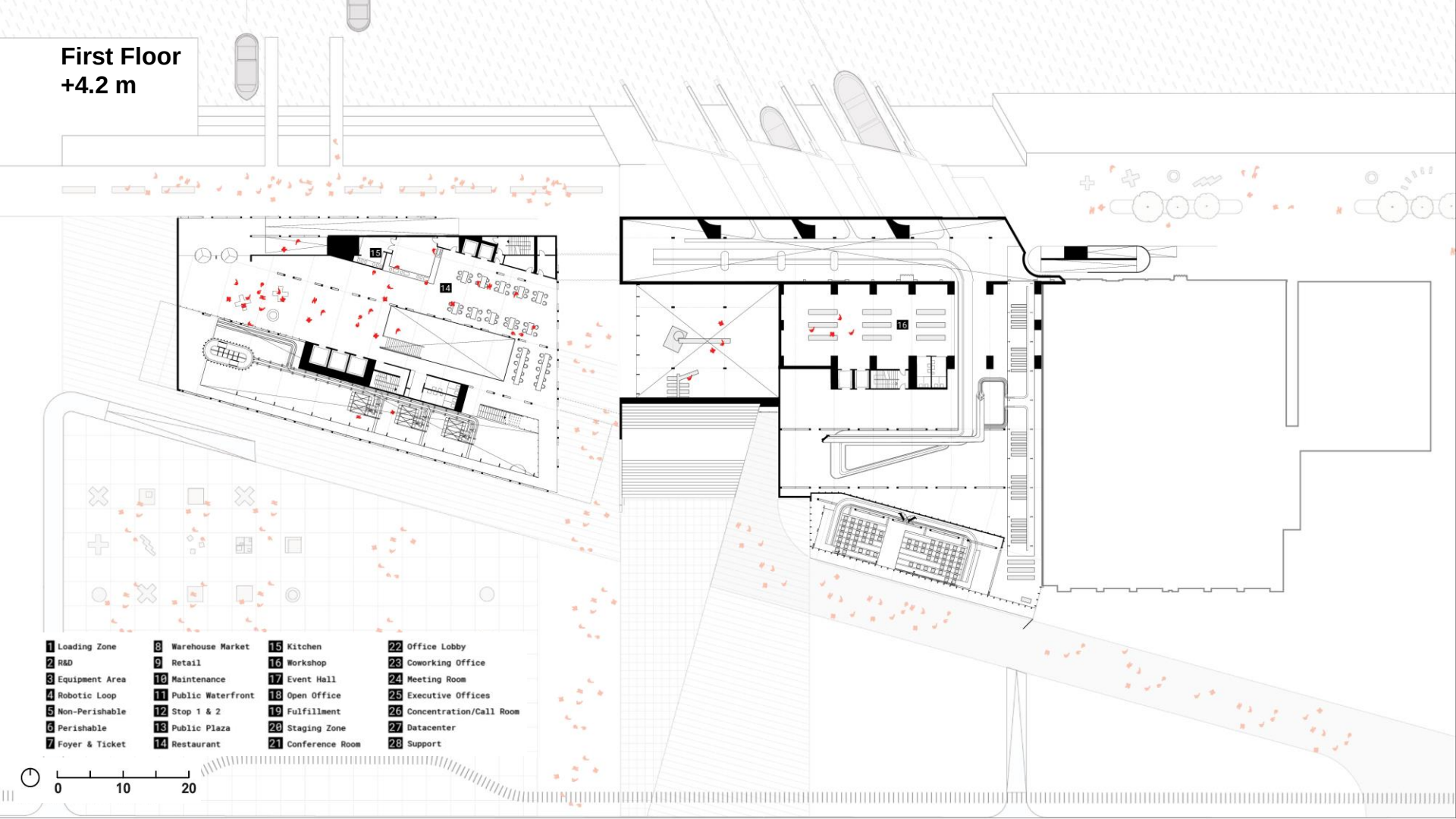

0
10
20

Approaching

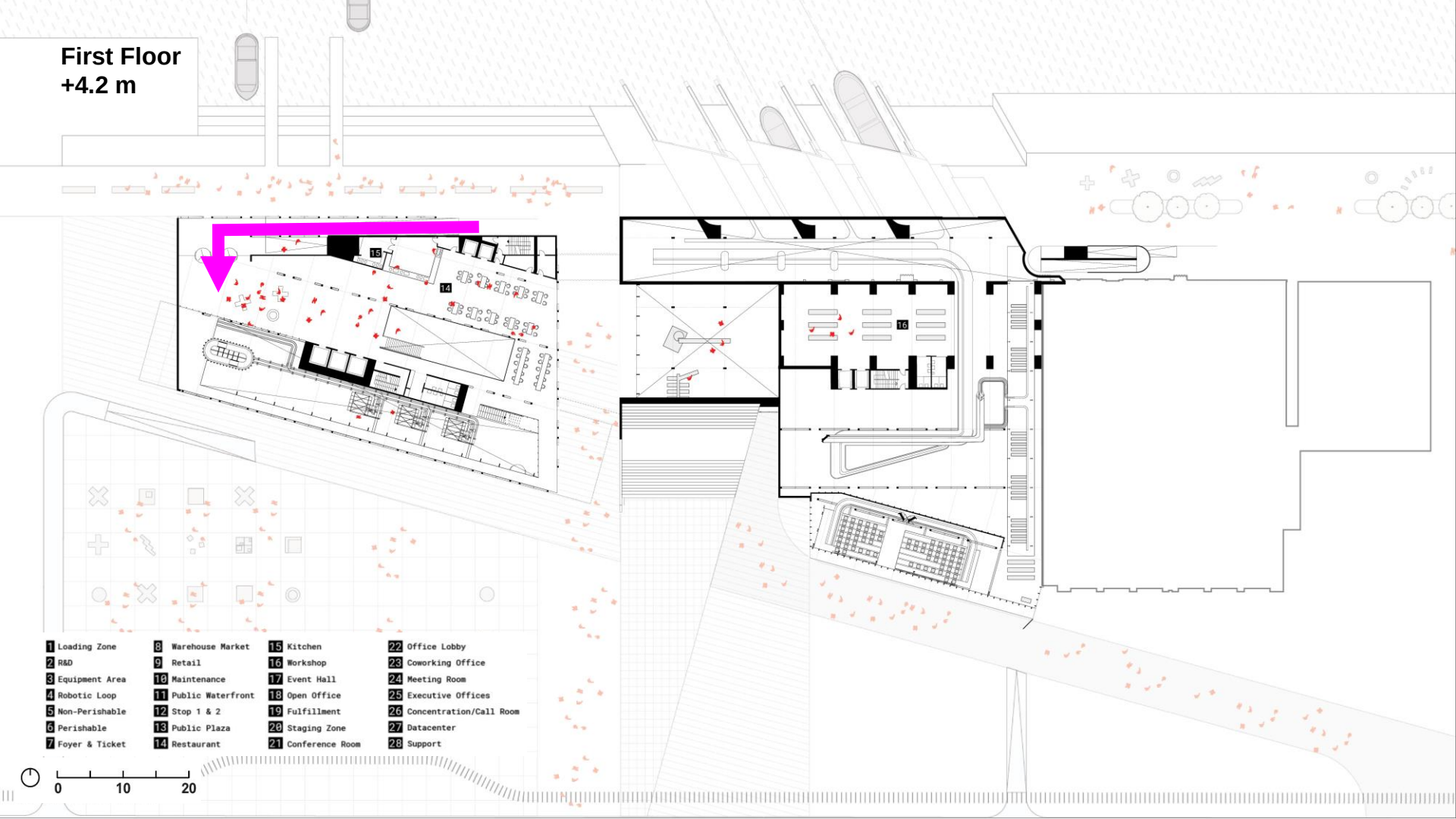
Foyer & Tickets

Foyer & Tickets

First Floor
+4.2 m



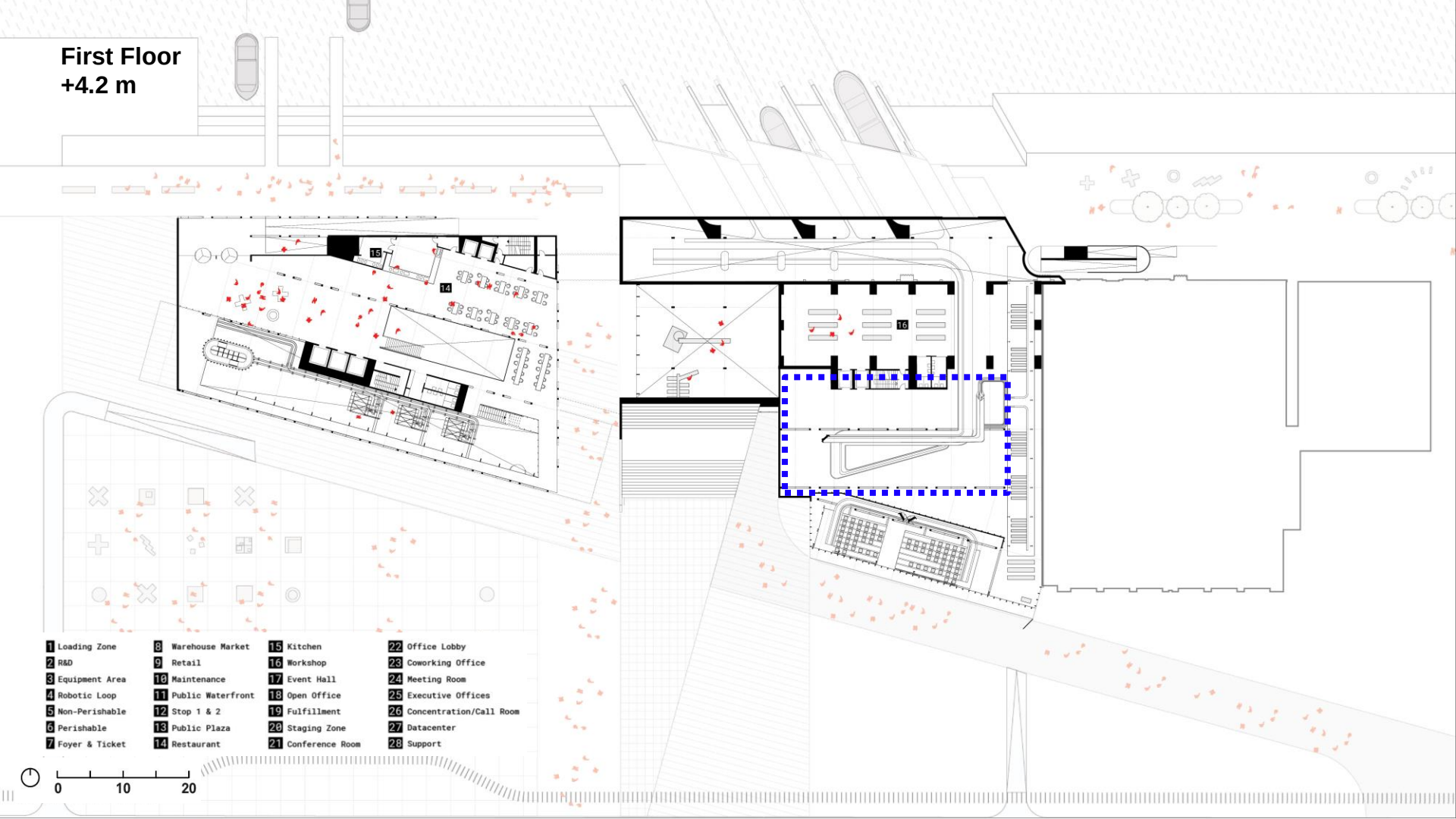
First Floor
+4.2 m



Ramp

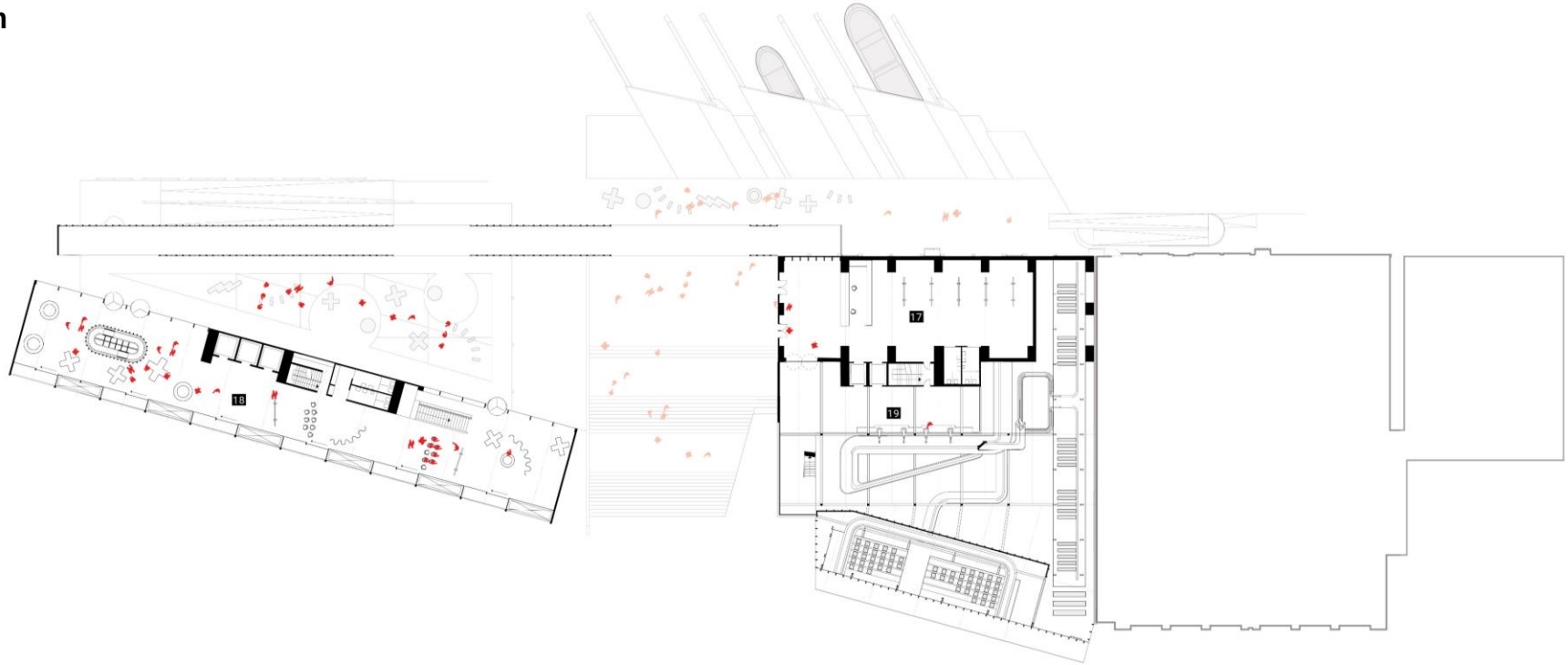
Restaurant

First Floor
+4.2 m



Warehouse Storage - Robotic Loop

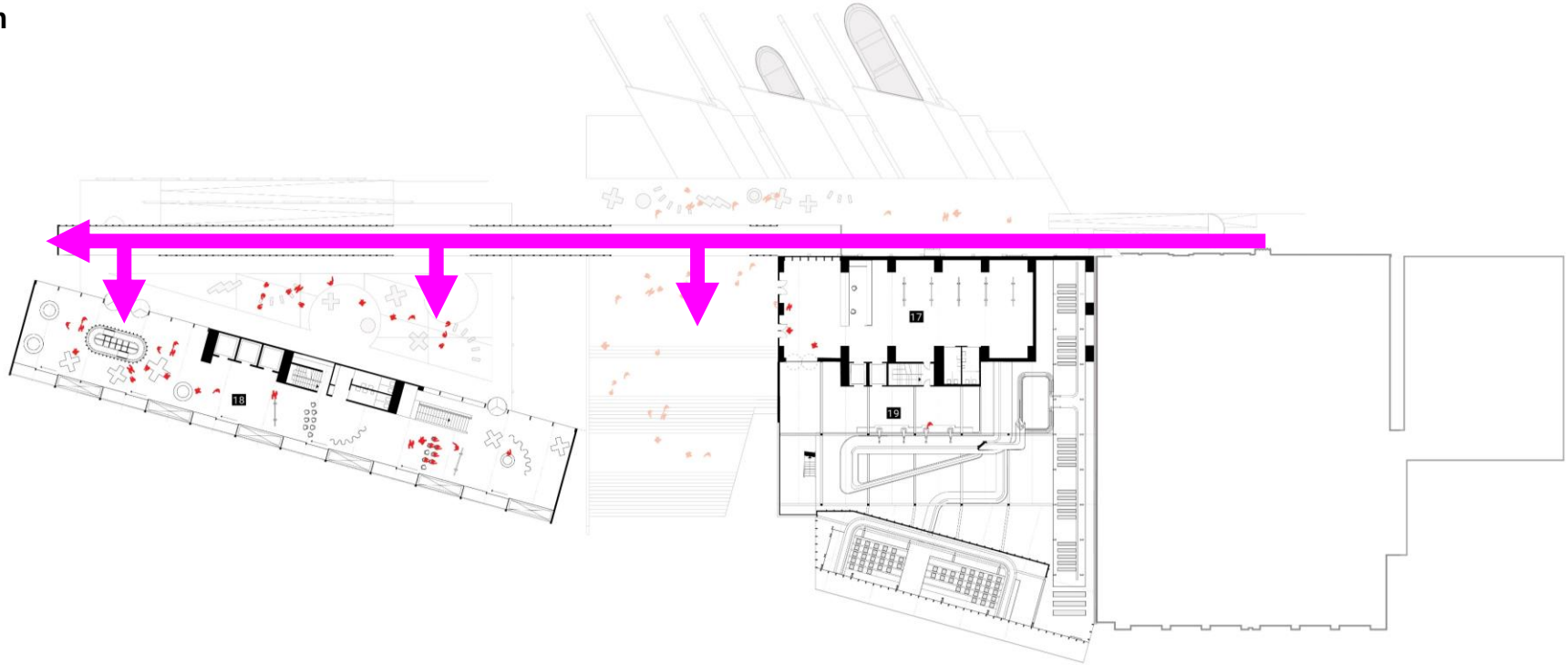
Second Floor
+7.2 m



1 Loading Zone
2 R&D
3 Equipment Area
4 Robotic Loop
5 Non-Perishable
6 Perishable
7 Foyer & Ticket
8 Warehouse Market
9 Retail
10 Maintenance
11 Public Waterfront
12 Stop 1 & 2
13 Public Plaza
14 Restaurant
15 Kitchen
16 Workshop
17 Event Hall
18 Open Office
19 Fulfillment
20 Staging Zone
21 Conference Room
22 Office Lobby
23 Coworking Office
24 Meeting Room
25 Executive Offices
26 Concentration/Call Room
27 Datacenter
28 Support

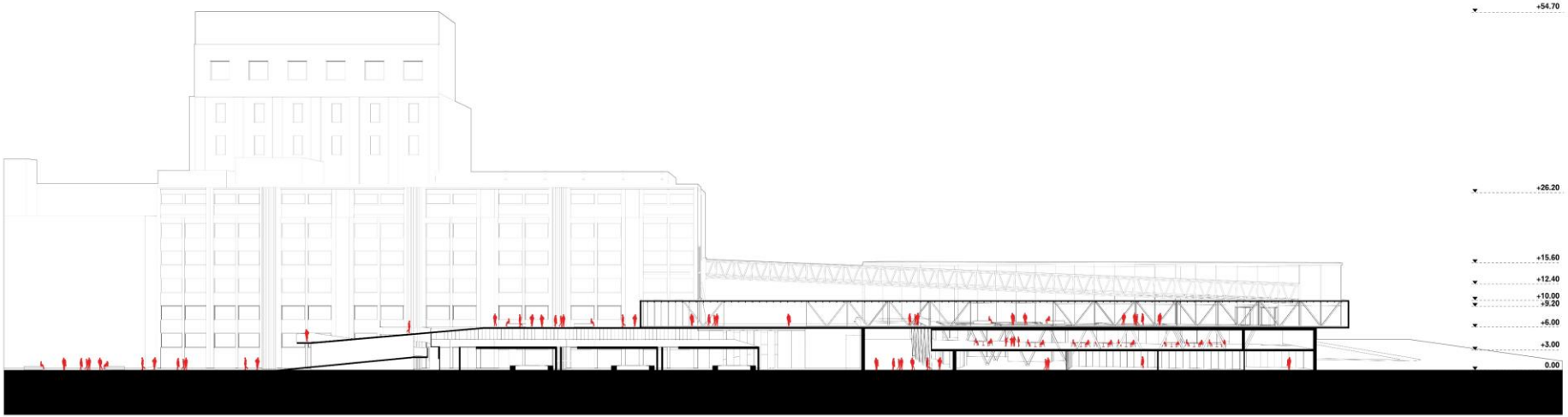
0 10 20

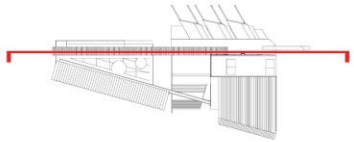
Second Floor
+7.2 m



1 Loading Zone	8 Warehouse Market	15 Kitchen	22 Office Lobby
2 R&D	9 Retail	16 Workshop	23 Coworking Office
3 Equipment Area	10 Maintenance	17 Event Hall	24 Meeting Room
4 Robotic Loop	11 Public Waterfront	18 Open Office	25 Executive Offices
5 Non-Perishable	12 Stop 1 & 2	19 Fulfillment	26 Concentration/Call Room
6 Perishable	13 Public Plaza	20 Staging Zone	27 Datacenter
7 Foyer & Ticket	14 Restaurant	21 Conference Room	28 Support

0 10 20





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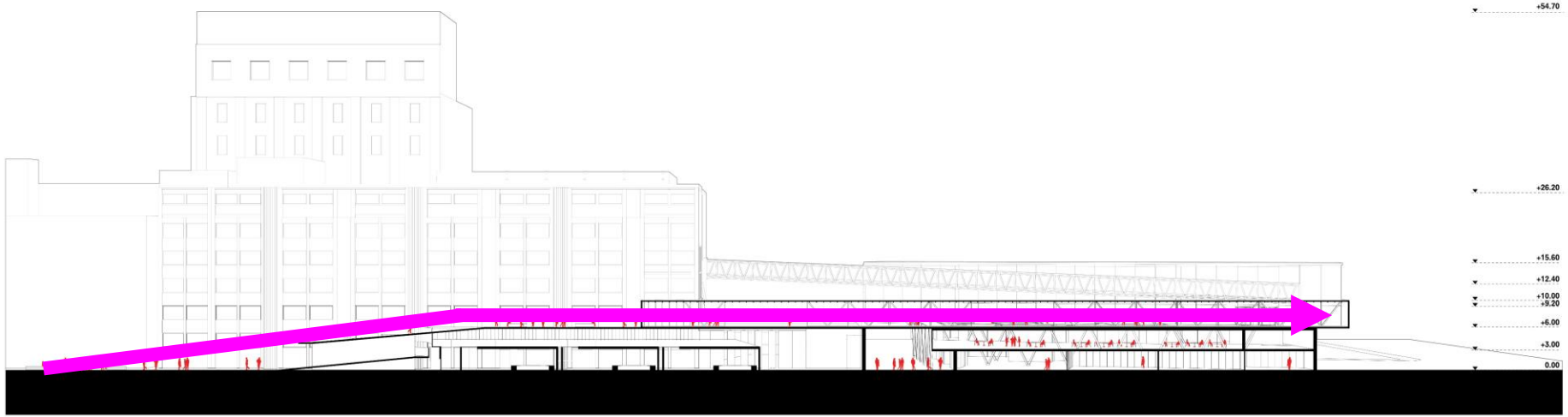
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+26.20
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+9.20
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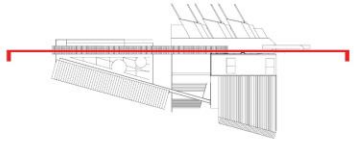
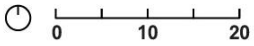
+3.00
0.00




0
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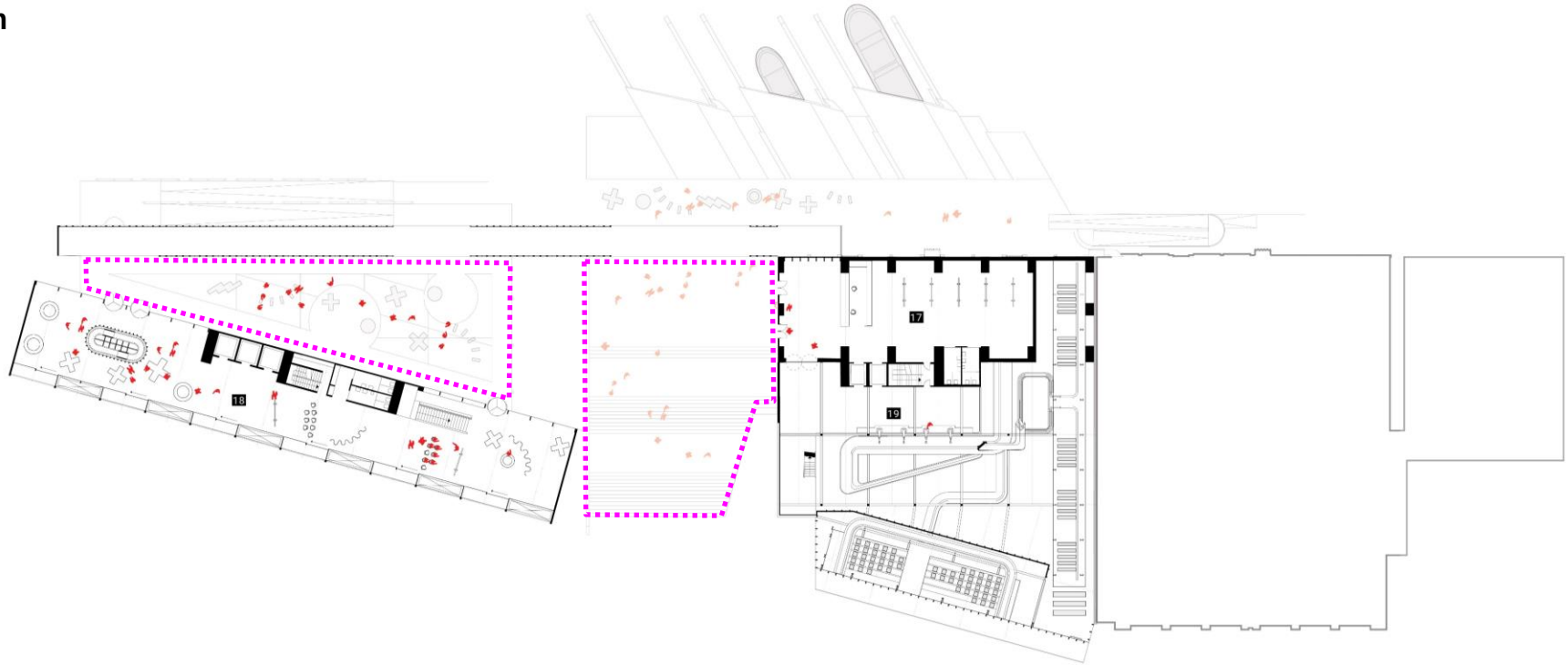
20

Elevated Public Path

Second Floor
+7.2 m



1 Loading Zone
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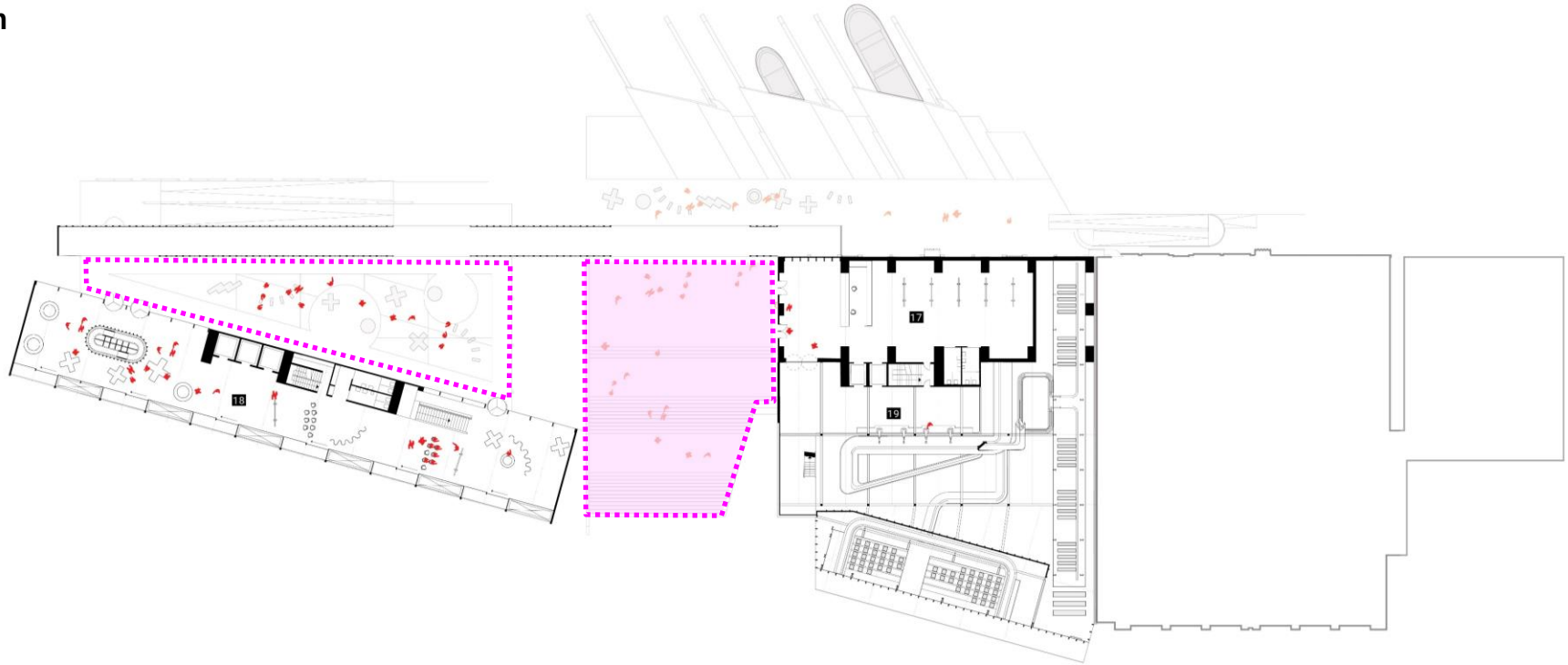
22 Office Lobby
23 Coworking Office
24 Meeting Room
25 Executive Offices
26 Concentration/Call Room
27 Datacenter
28 Support

0 10 20

Second Floor
+7.2 m



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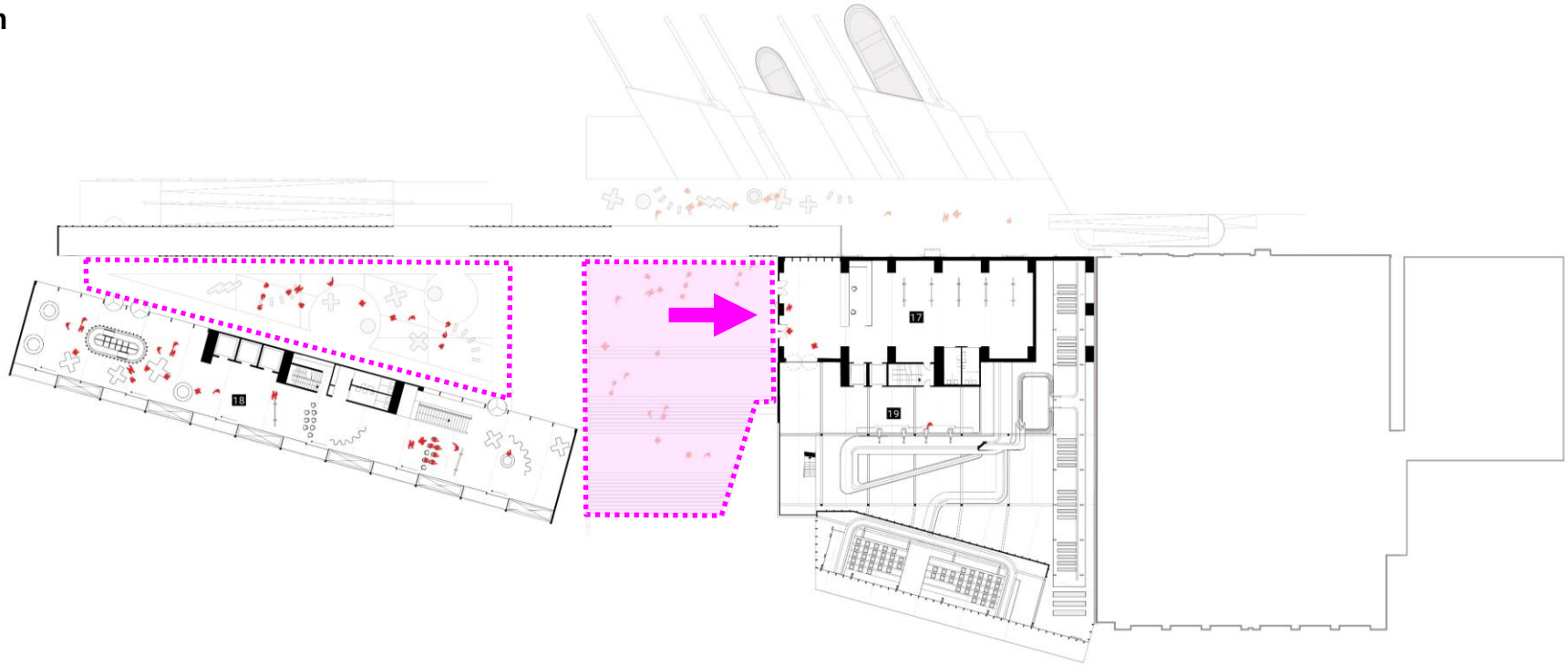
22 Office Lobby
23 Coworking Office
24 Meeting Room
25 Executive Offices
26 Concentration/Call Room
27 Datacenter
28 Support

0 10 20

Second Floor
+7.2 m



1 Loading Zone
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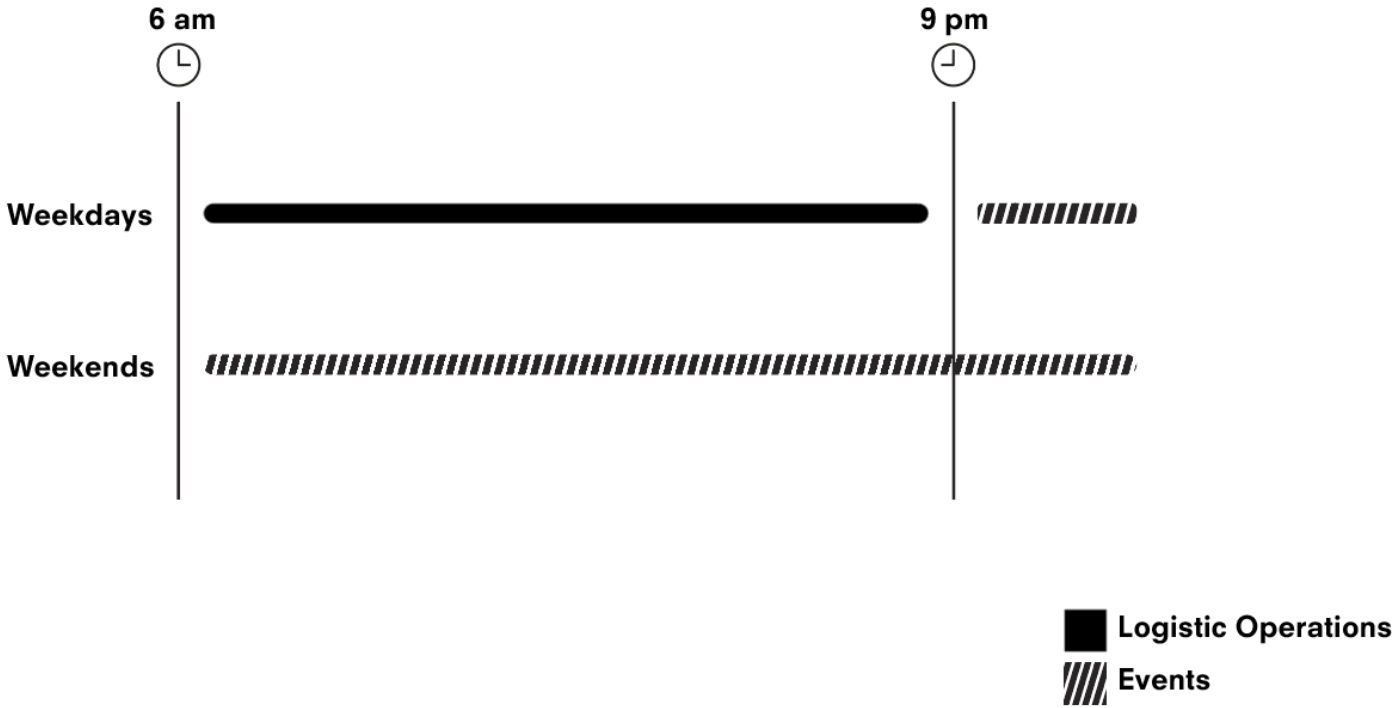
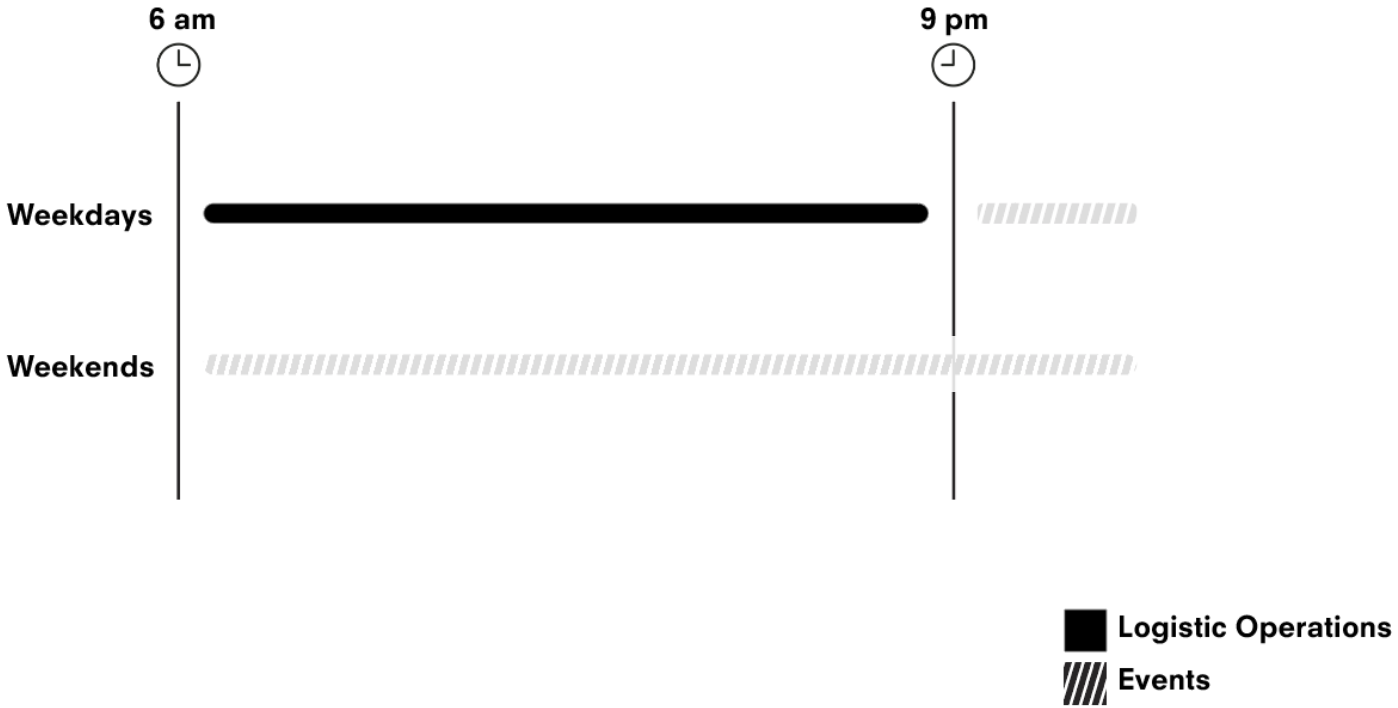
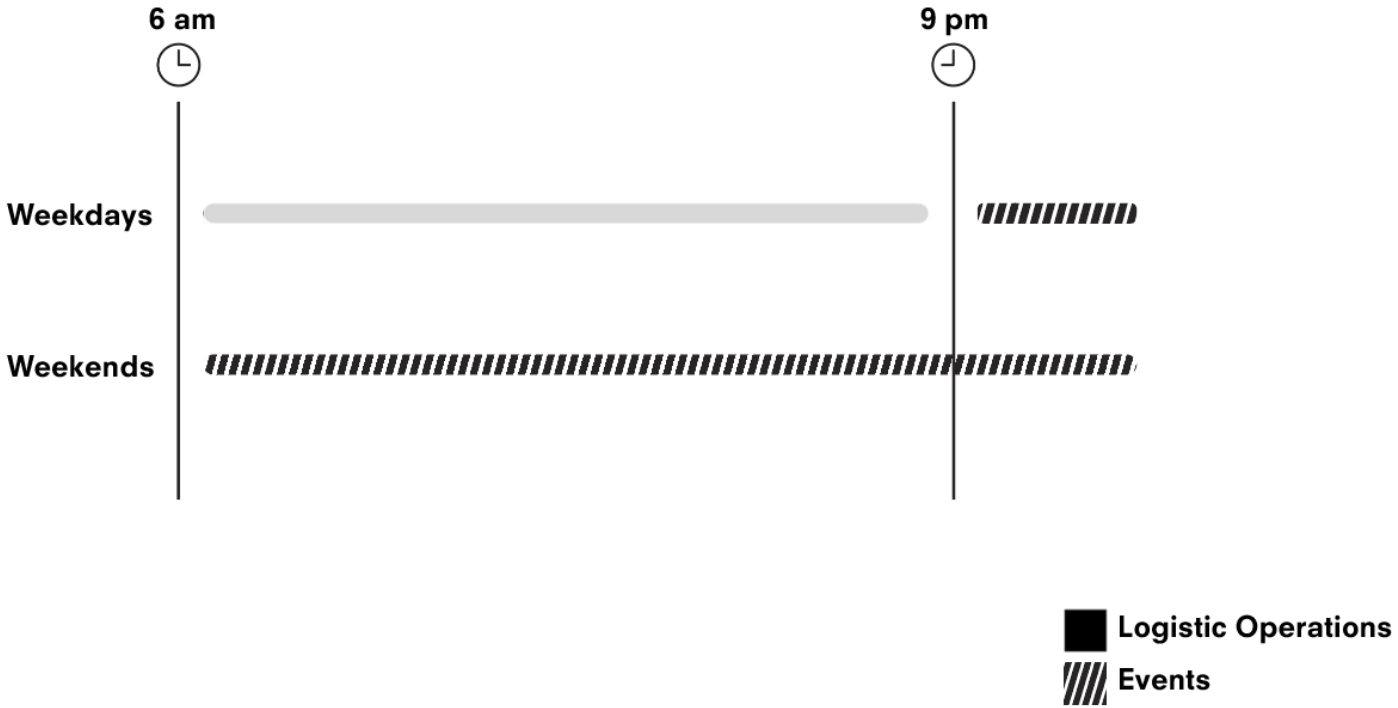
0 10 20


6 am
9 pm
Weekdays
Weekends
Logistic Operations
Events


6 am
9 pm
Weekdays
Weekends
Logistic Operations
Events

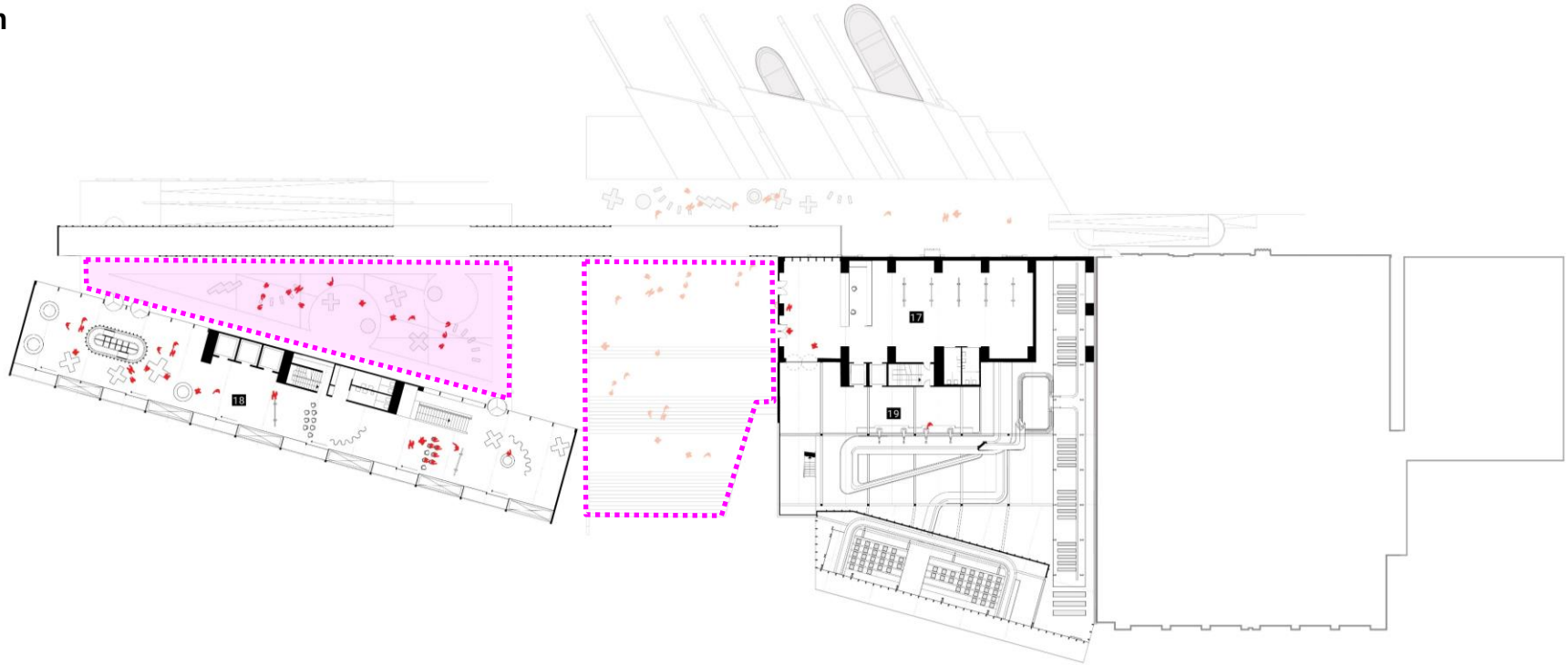
Public Terrace I - Day


6 am
9 pm
Weekdays
Weekends
Logistic Operations
Events

Public Terrace I - Night

Event Hall

Second Floor
+7.2 m



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24 Meeting Room
25 Executive Offices
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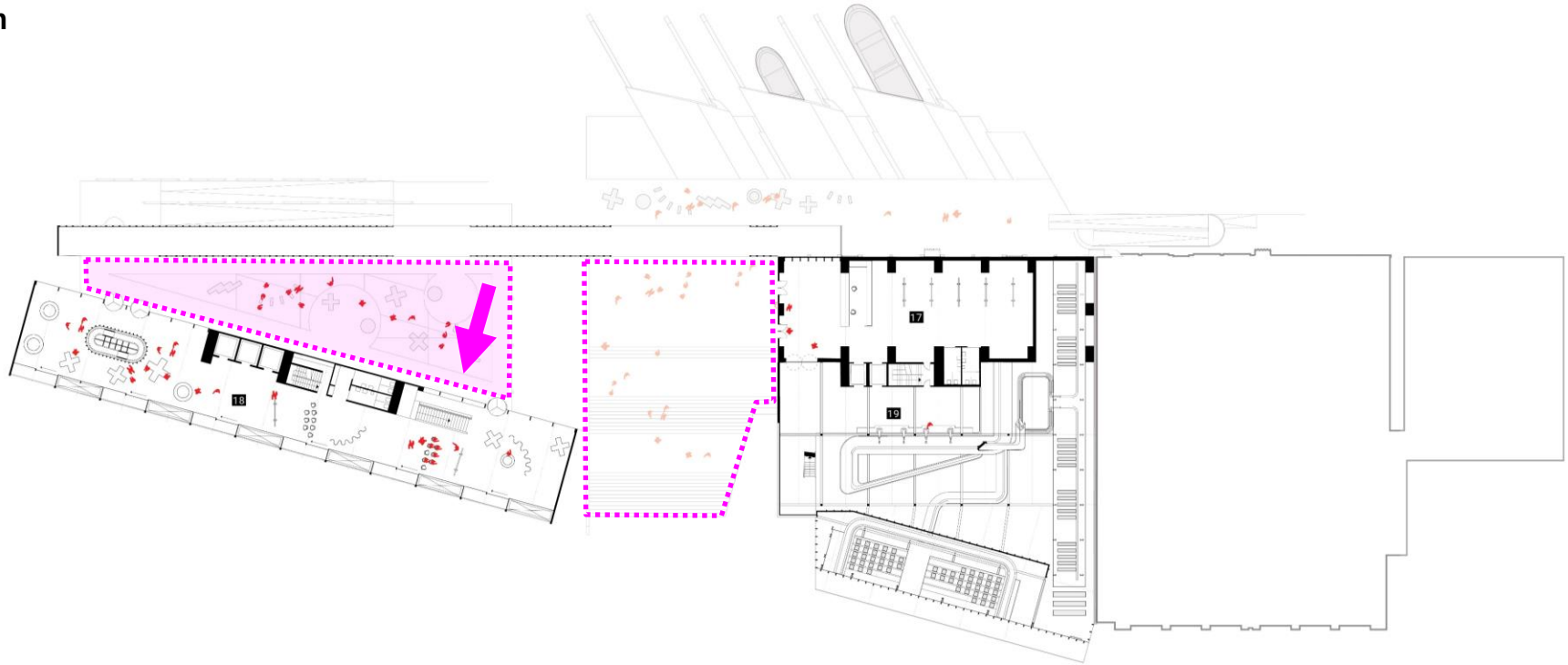
27 Datacenter
28 Support

0 10 20

Public Terrace II

Second Floor
+7.2 m



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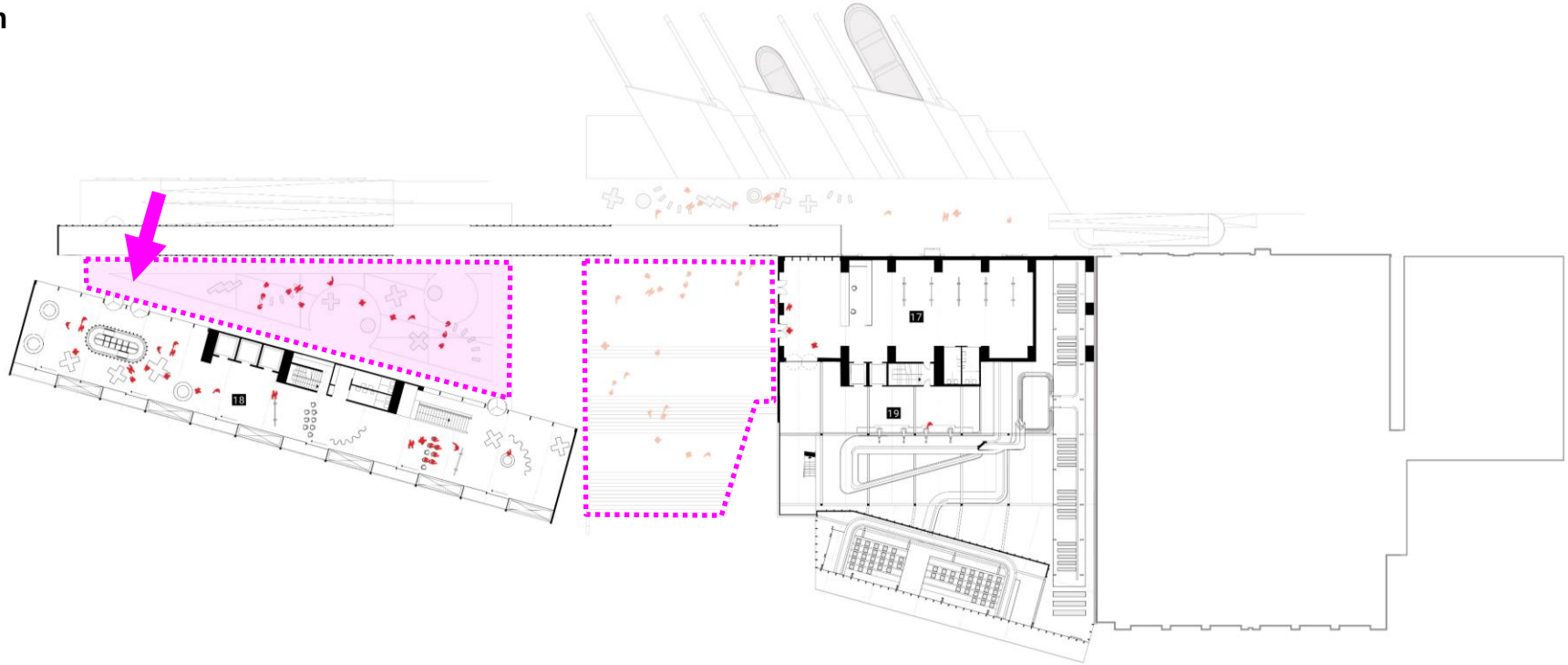
23 Coworking Office
24 Meeting Room
25 Executive Offices
26 Concentration/Call Room
27 Datacenter
28 Support

0 10 20

Public Terrace II
takeaway

Second Floor
+7.2 m



1 Loading Zone
2 R&D
3 Equipment Area
4 Robotic Loop
5 Non-Perishable
6 Perishable
7 Foyer & Ticket
8 Warehouse Market
9 Retail
10 Maintenance
11 Public Waterfront
12 Stop 1 & 2
13 Public Plaza
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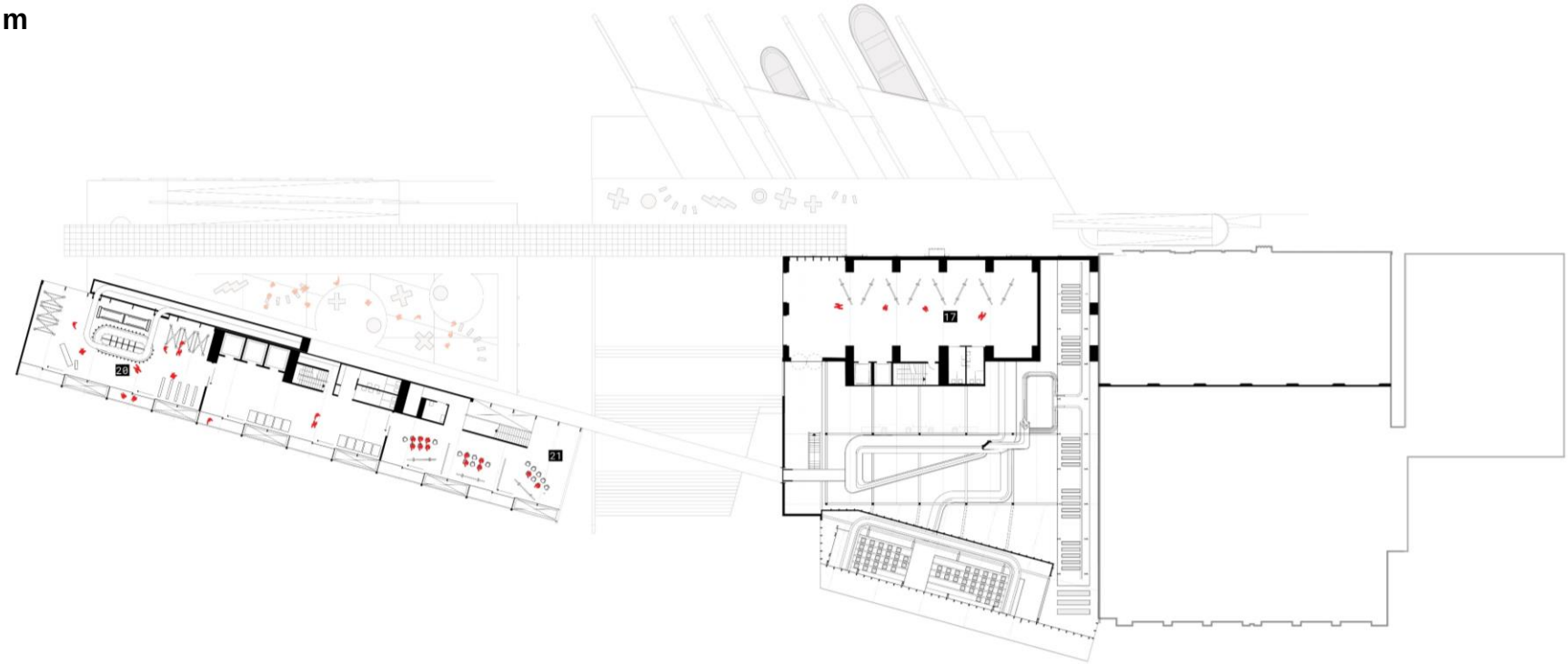
15 Kitchen
16 Workshop
17 Event Hall
18 Open Office
19 Fulfillment
20 Staging Zone
21 Conference Room
22 Office Lobby
23 Coworking Office
24 Meeting Room
25 Executive Offices
26 Concentration/Call Room
27 Datacenter
28 Support

0 10 20

Coworking Space

Third Floor
+10.4 m



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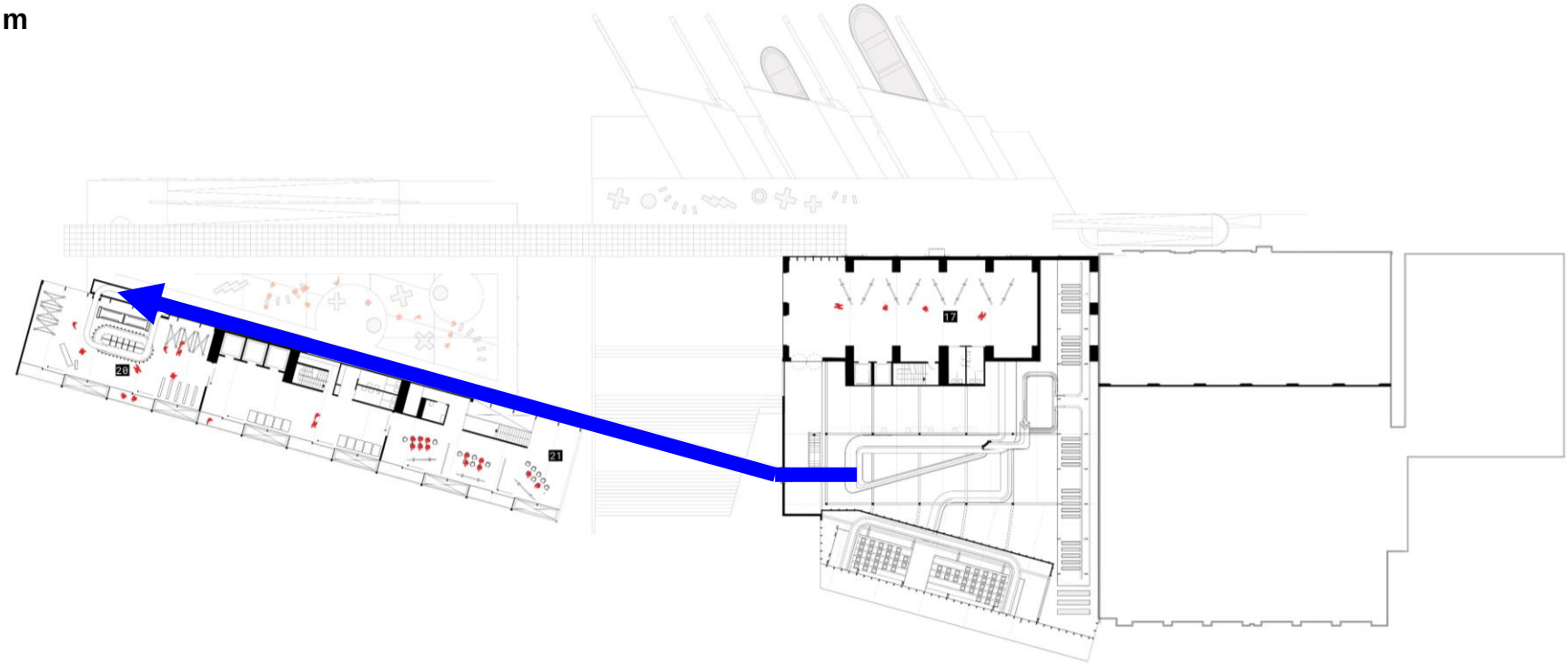
0 10 20

Third Floor
+10.4 m



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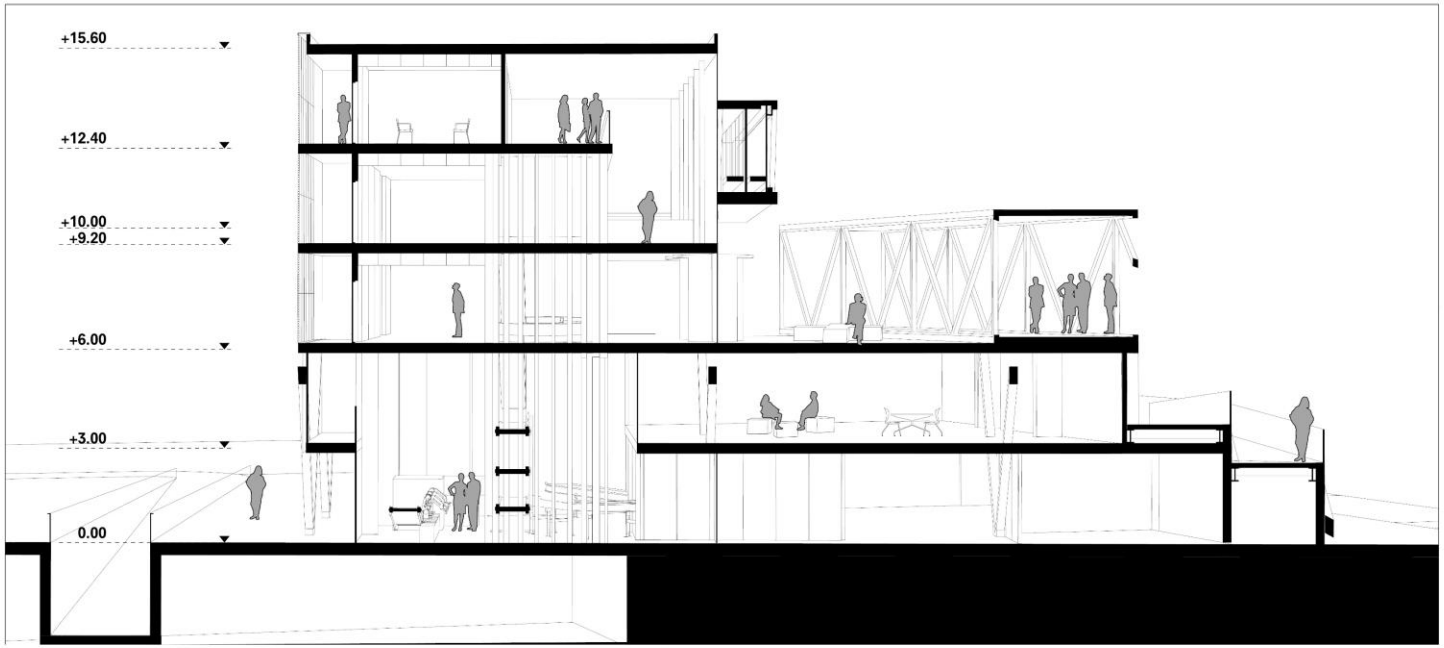
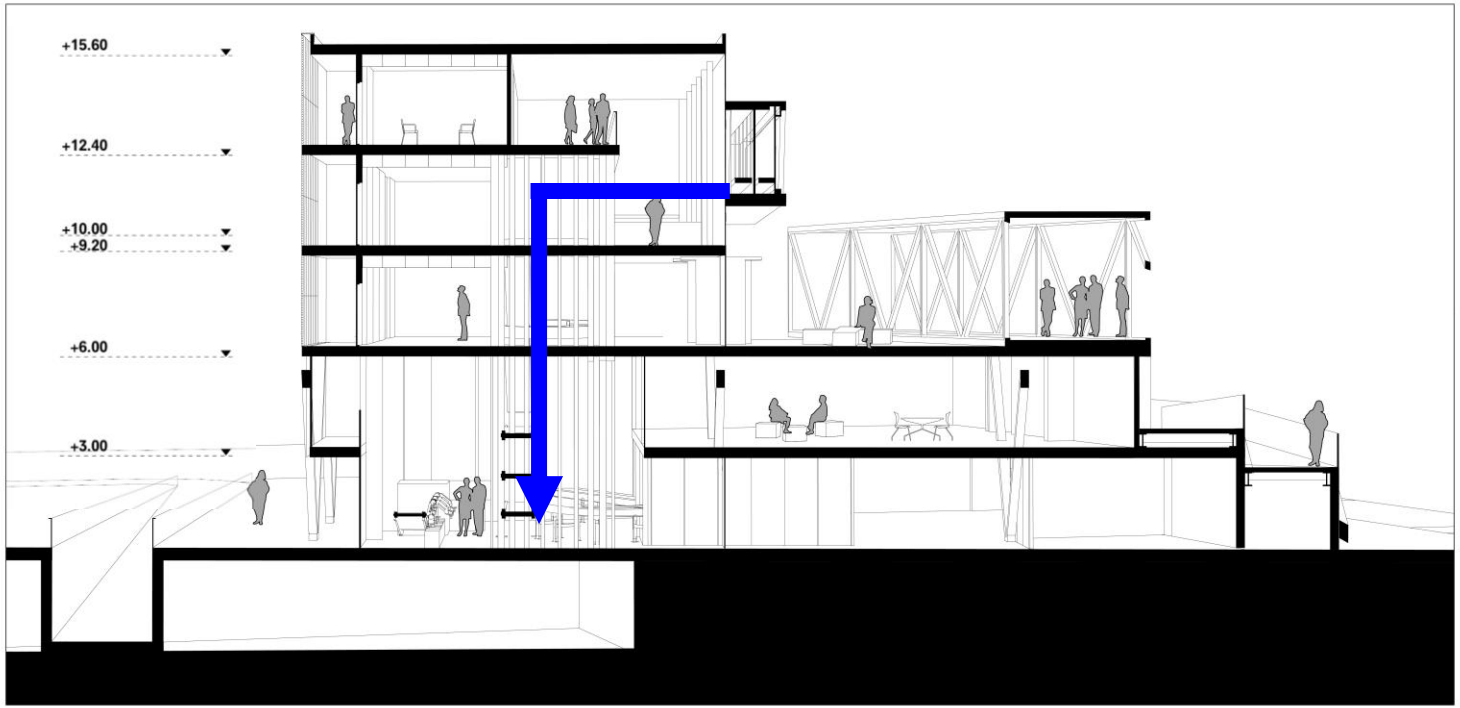
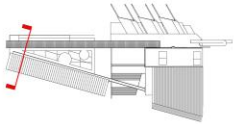
0 10 20


+15.60
+12.40
+10.00
+9.20
+6.00
+3.00
0.00



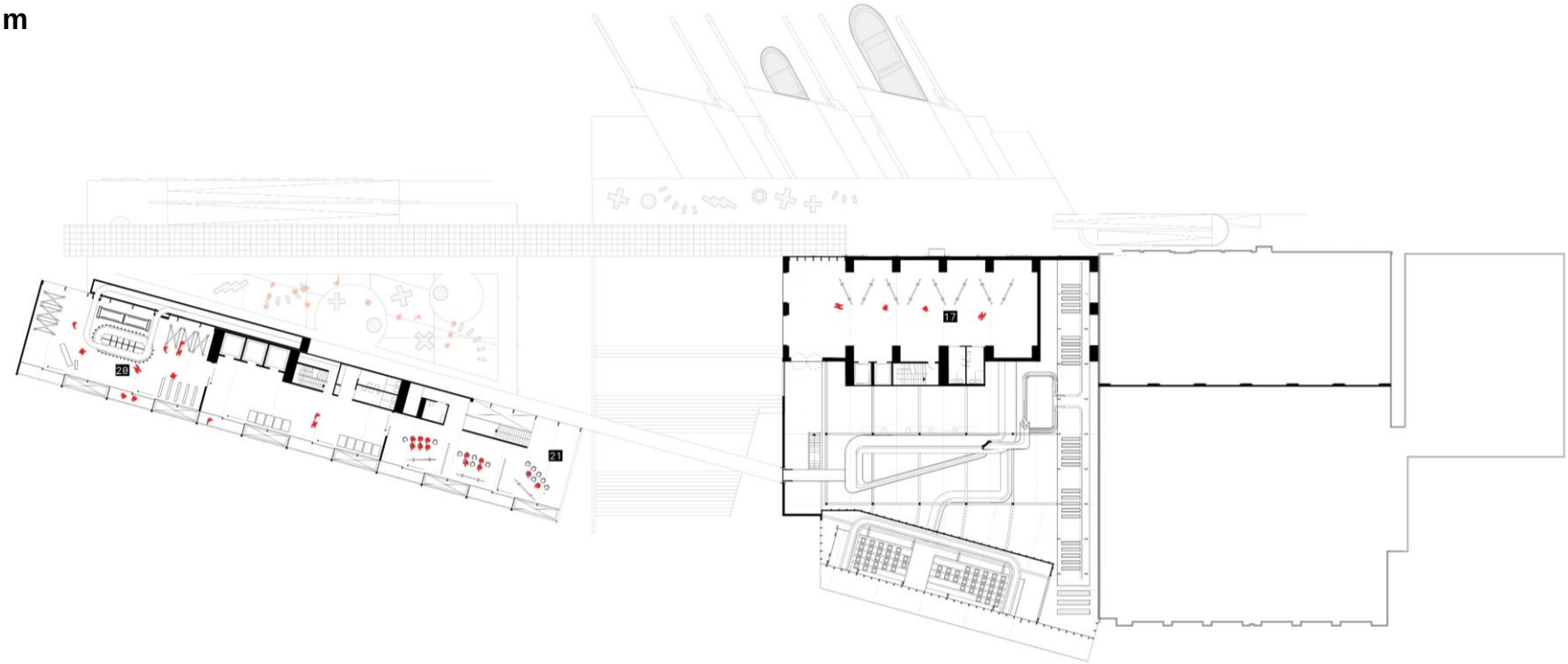
0 5 10 m



Warehouse Market

Shopping Unit

Third Floor
+10.4 m



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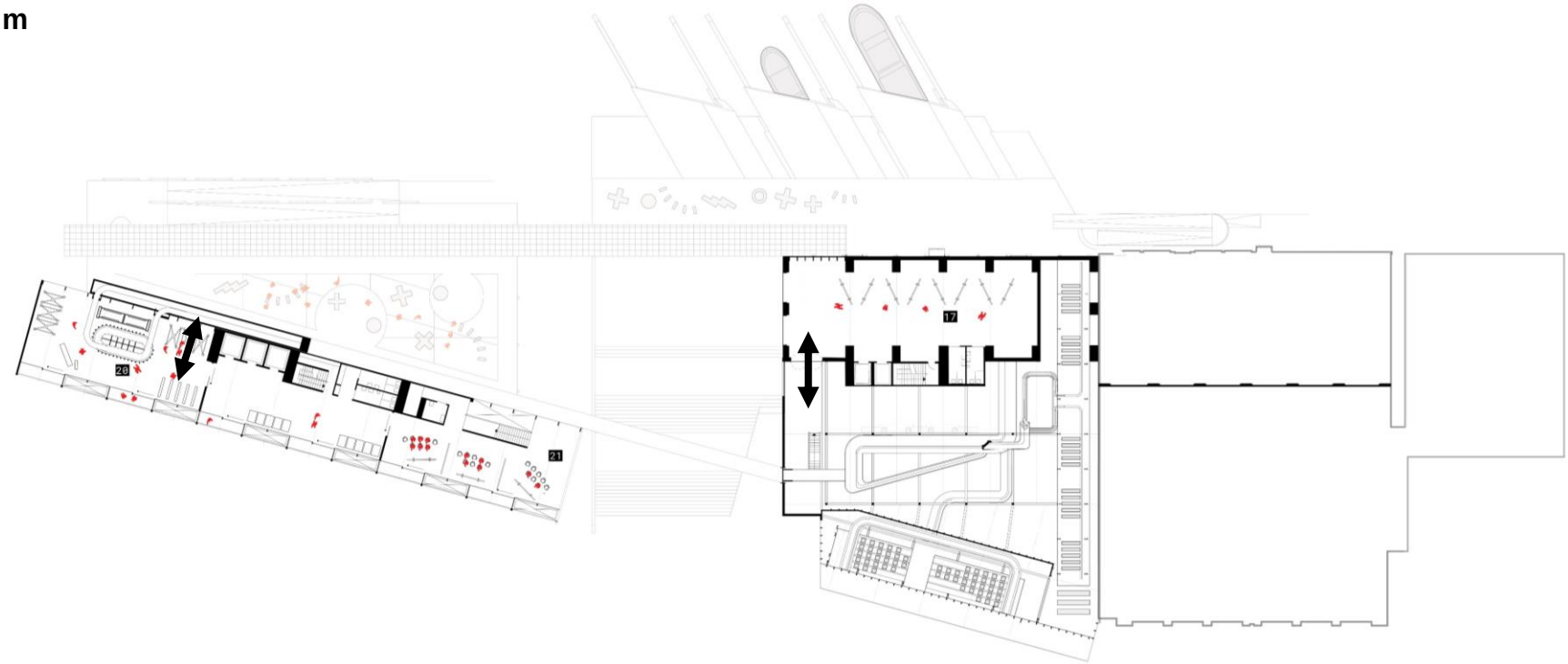
28 Support

0 10 20

Third Floor
+10.4 m



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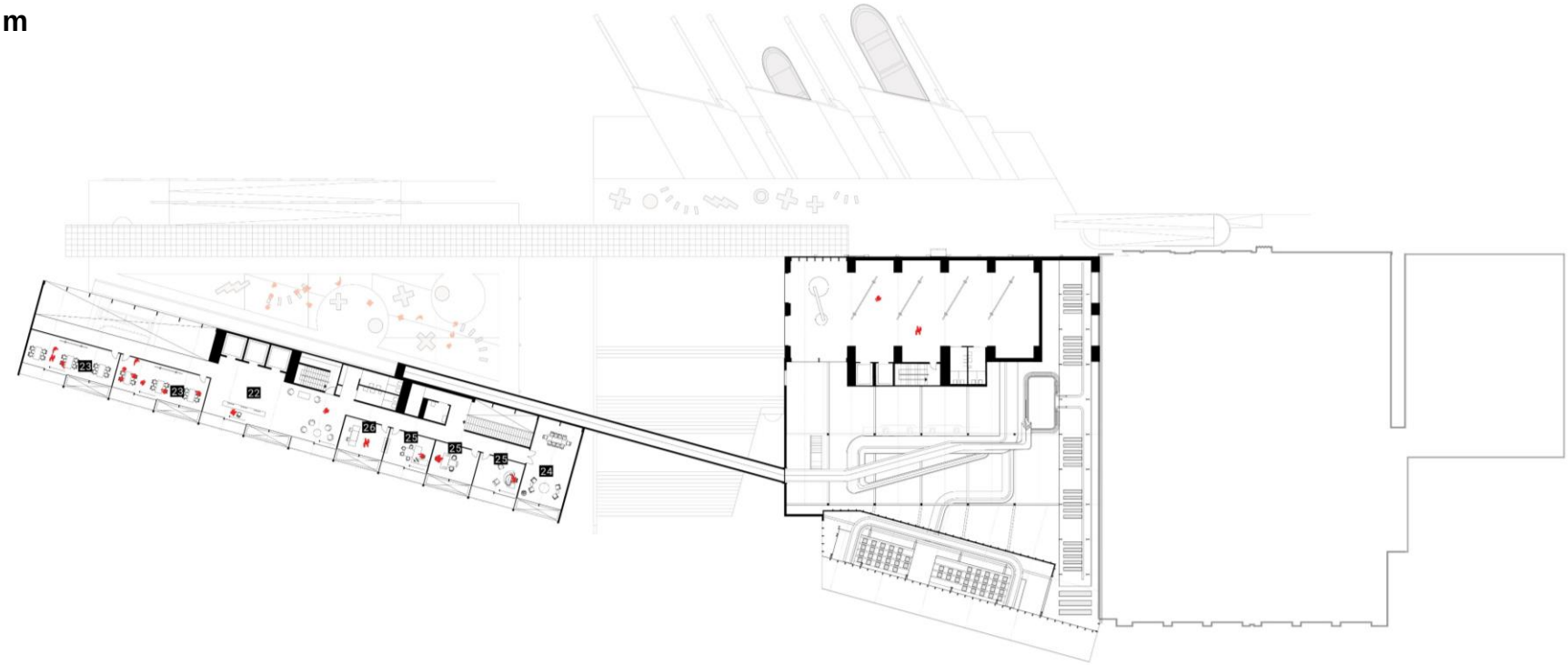
27 Datacenter
28 Support

0 10 20

Fourth Floor
+13.6 m



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24 Meeting Room
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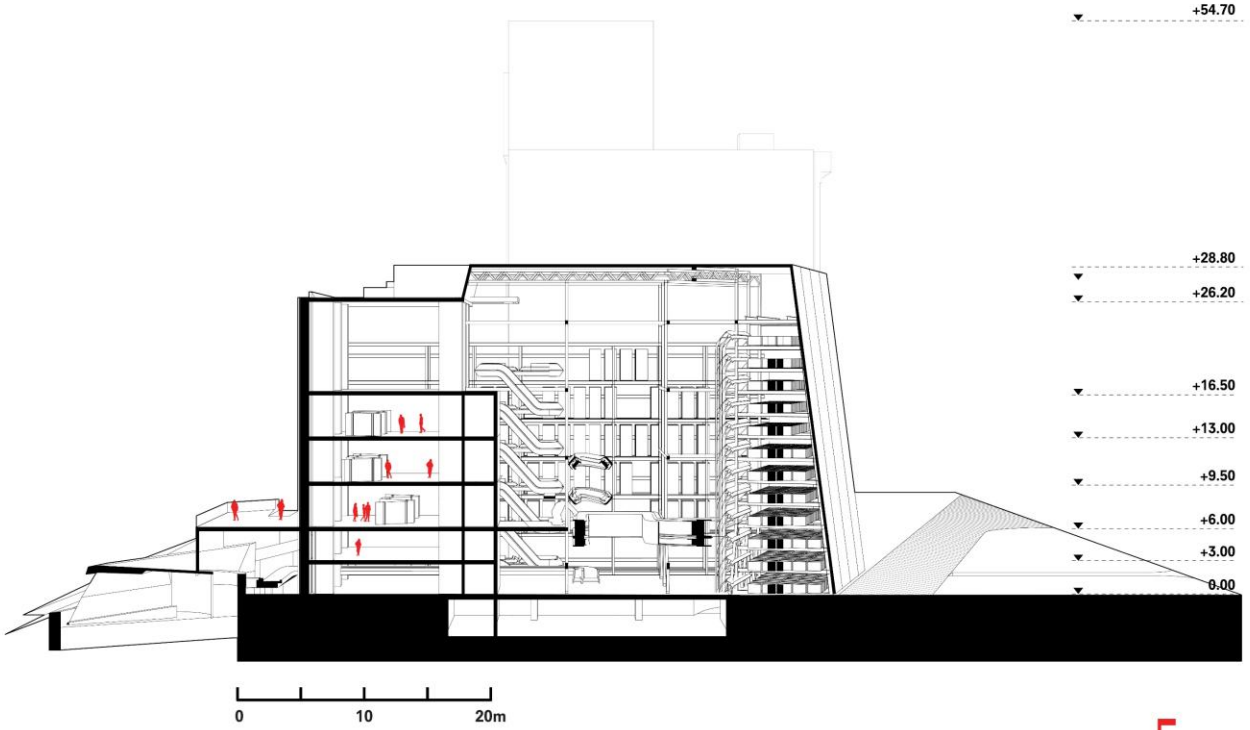
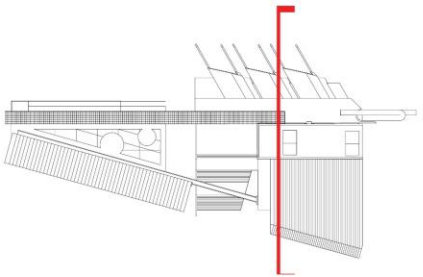
27 Datacenter
28 Support

0 10 20

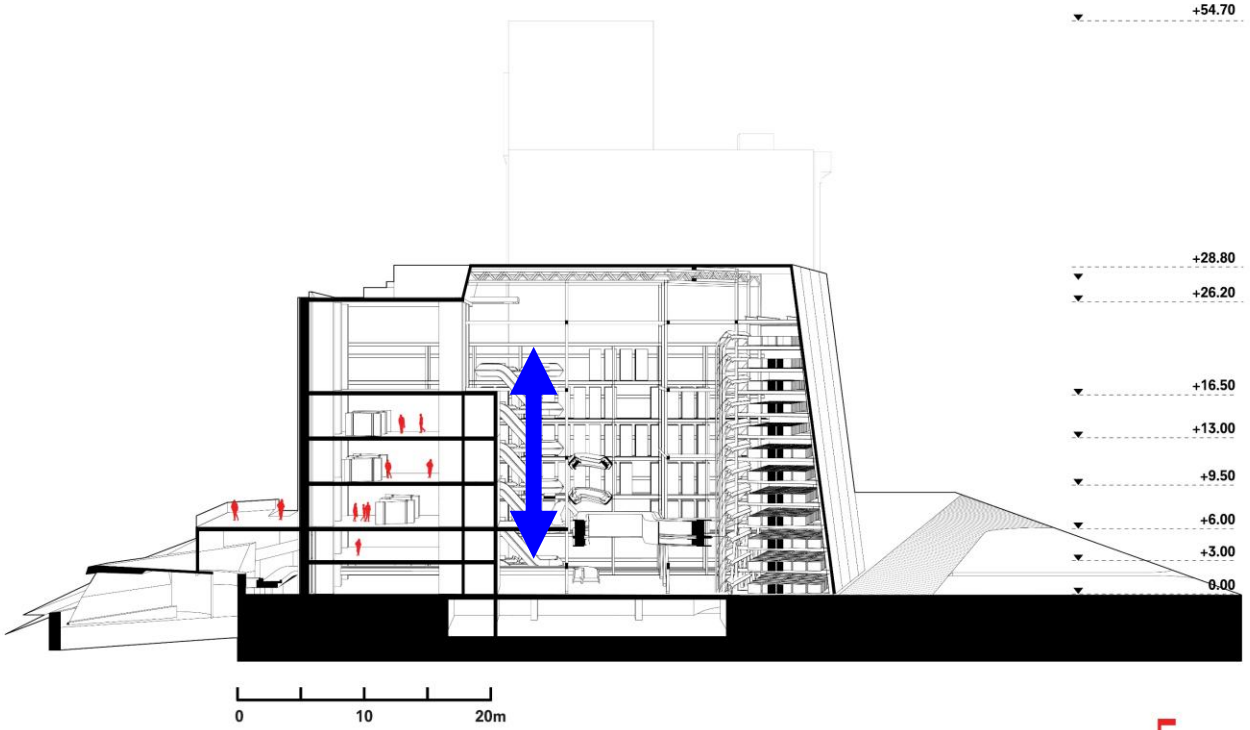
Offices

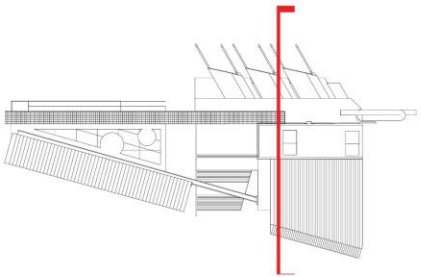
East Section



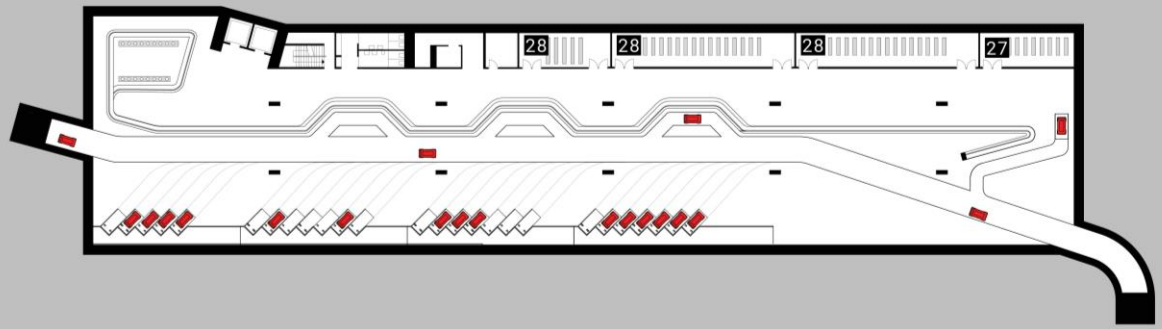


East Section





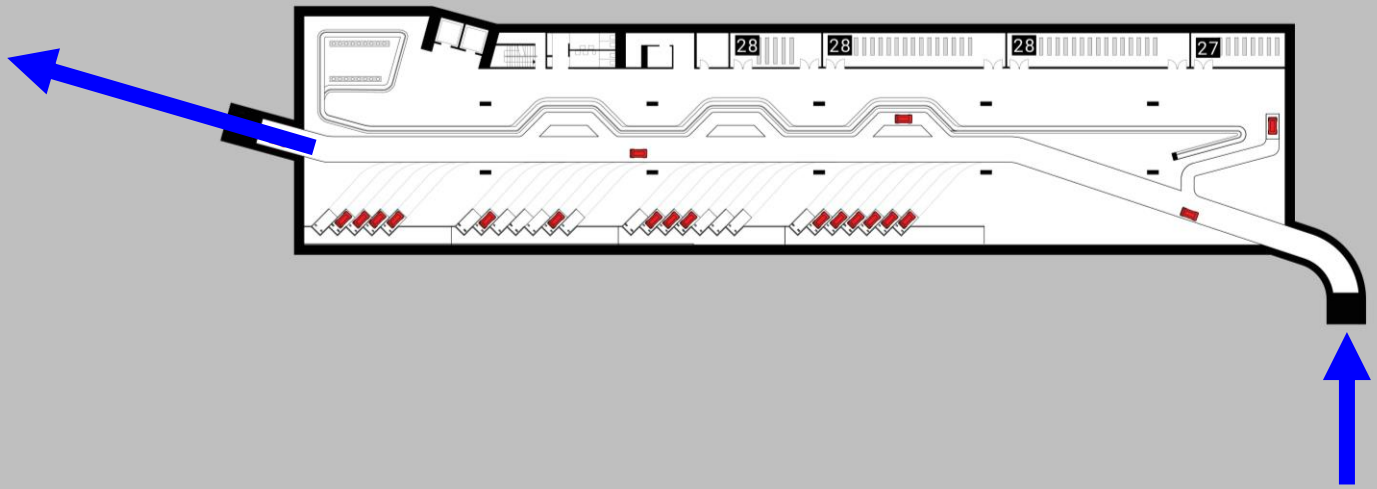
Fourth Floor
+13.6 m



0 10 20m

27 Datacenter
28 Support

Fourth Floor
+13.6 m



0 10 20m

27 Datacenter
28 Support

Last Mile Delivery

Materiality

Materiality

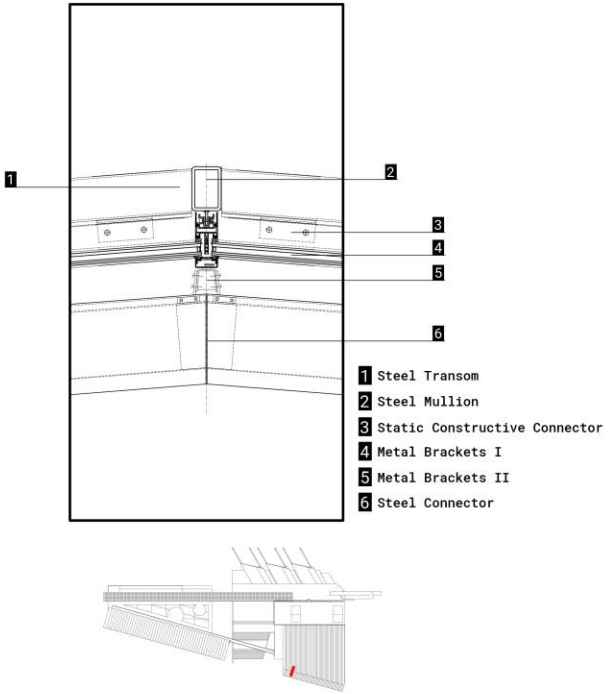
Existing Materials

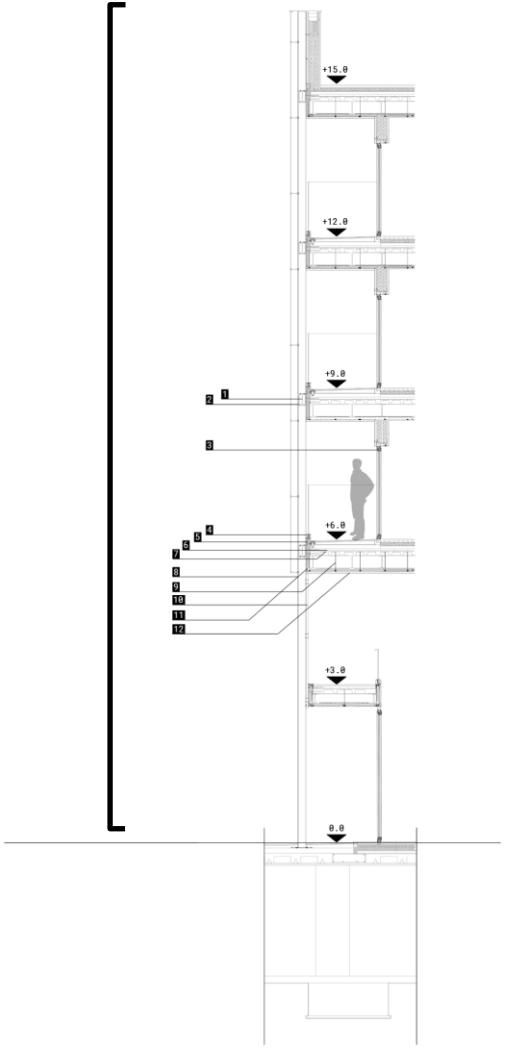
+

Materiality

Detail A1

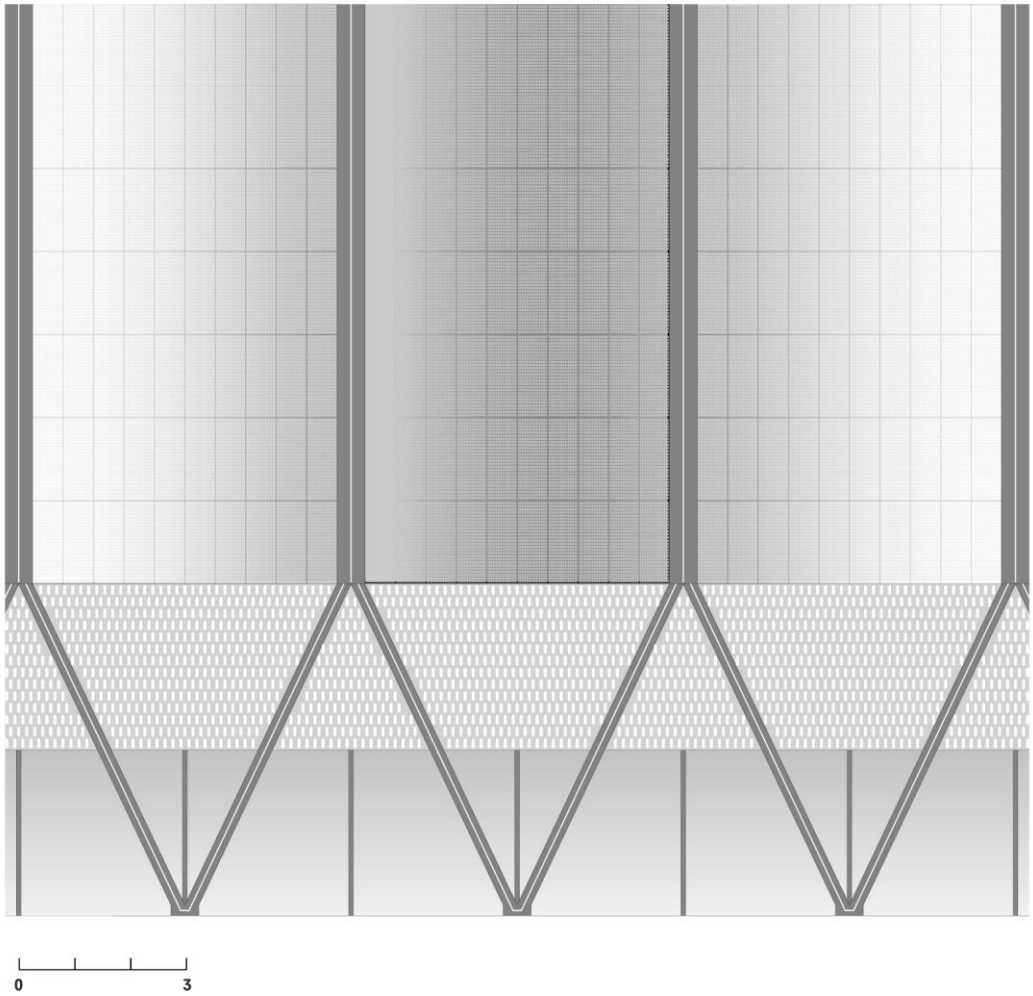
Detail A1


1
2
3
4
5
6
1 Steel Transom
2 Steel Mullion
3 Static Constructive Connector
4 Metal Brackets I
5 Metal Brackets II
6 Steel Connector

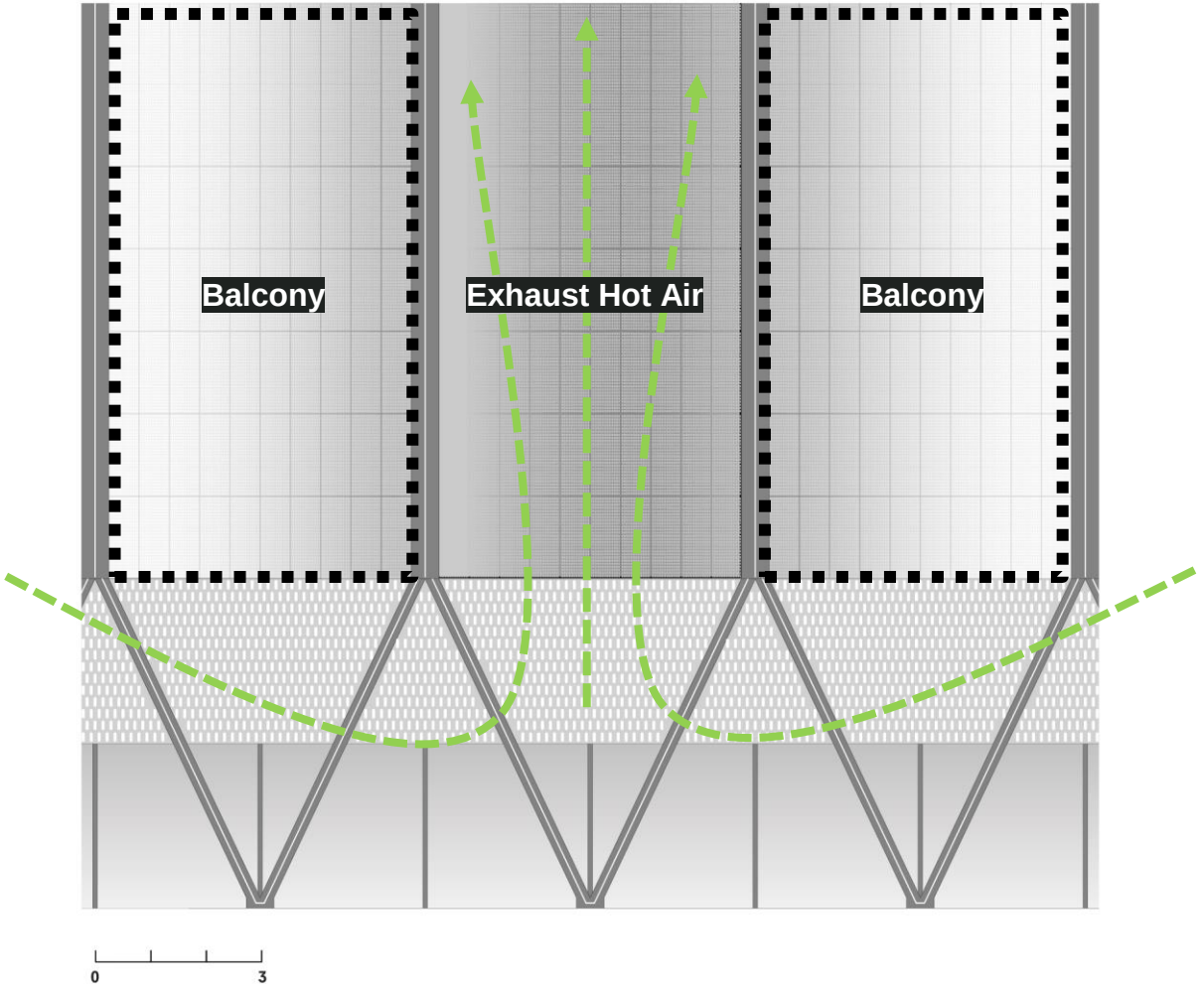


1 I Beam [HEA 240]
2 Steel Profile
3 Aluminum Mullion
4 Glass Railing
5 Insulation Rock Wool
6 Concrete Slab
7 Metal Decking
8 I Beam [IPE 180]
9 Ceiling Hanging
10 Perforated Steel Plate
11 U Profile
12 Ceiling Board Dekton

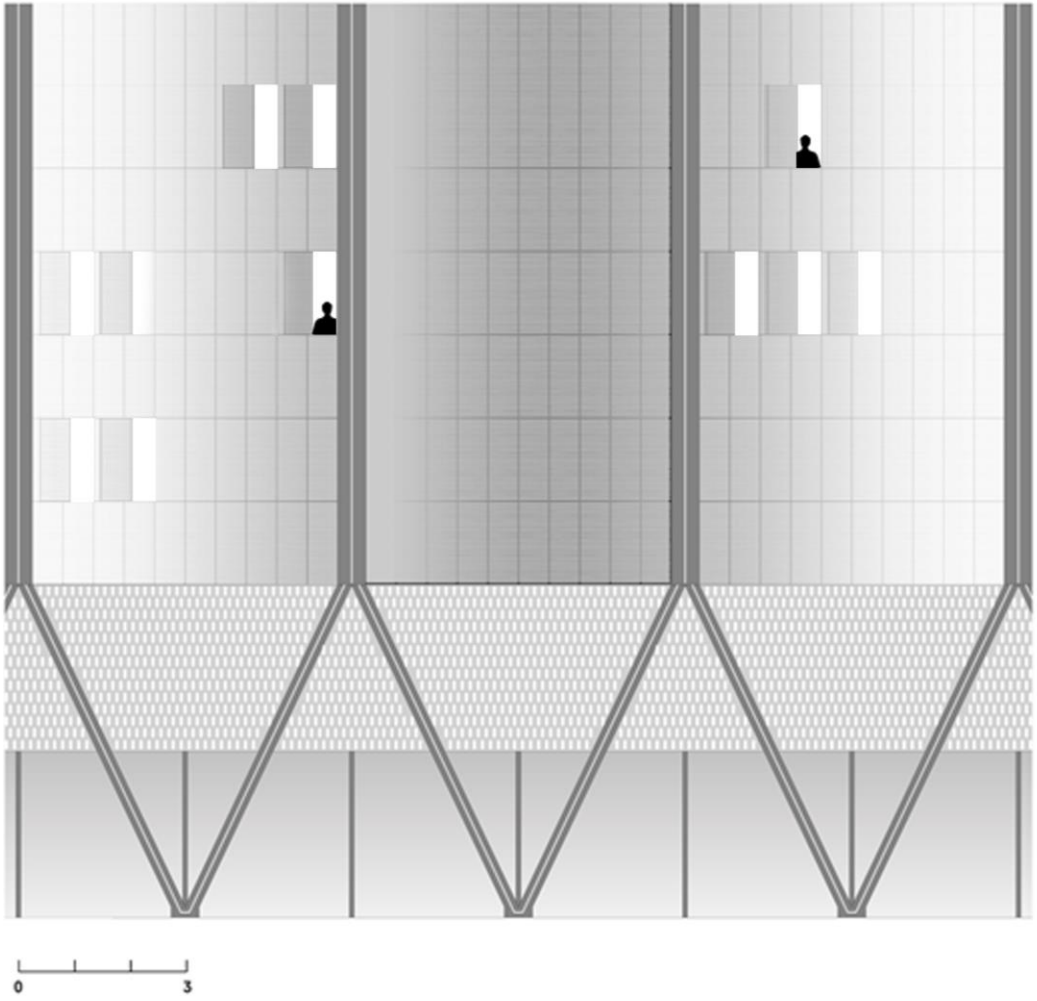
Facade



Facade



Facade



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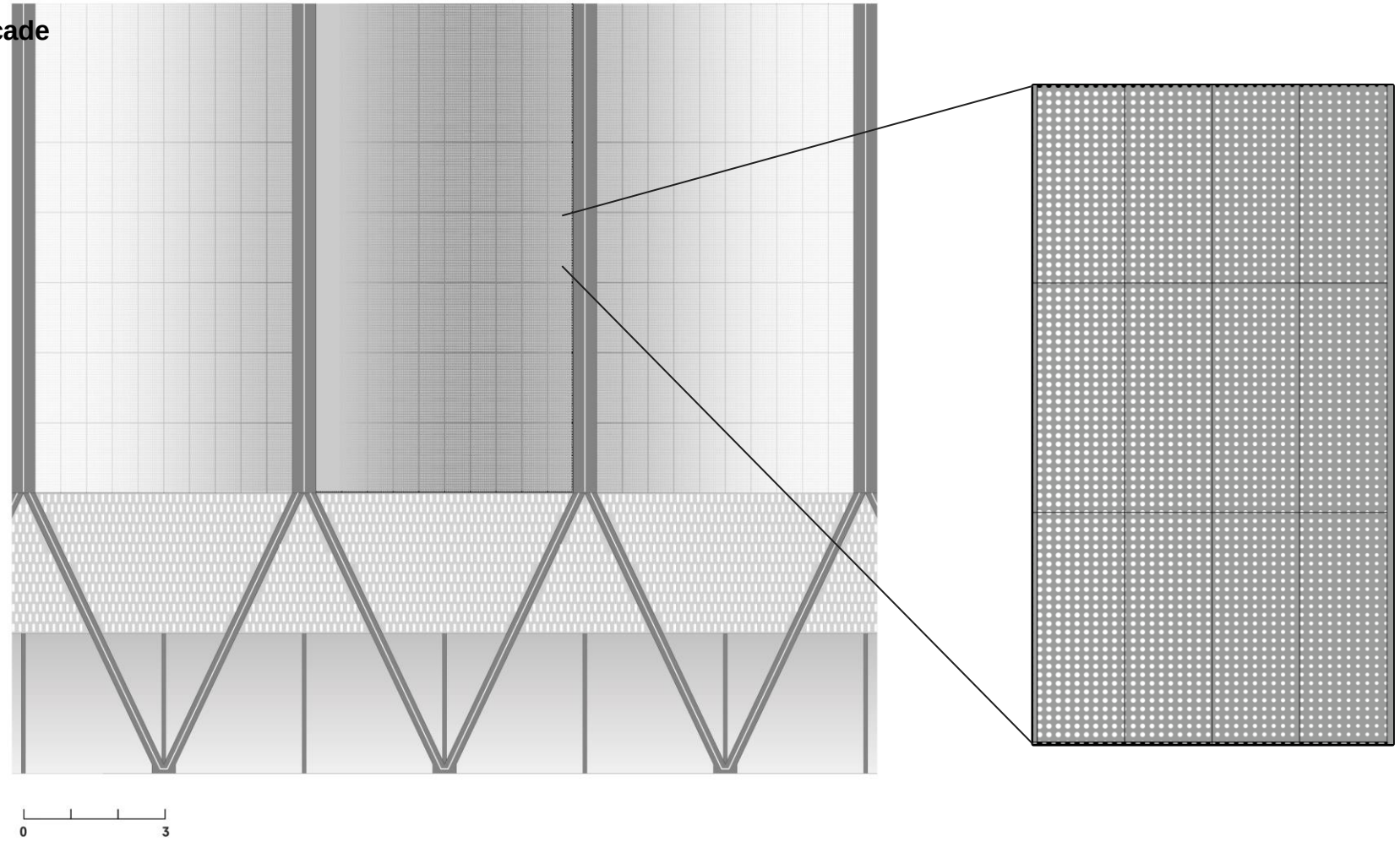
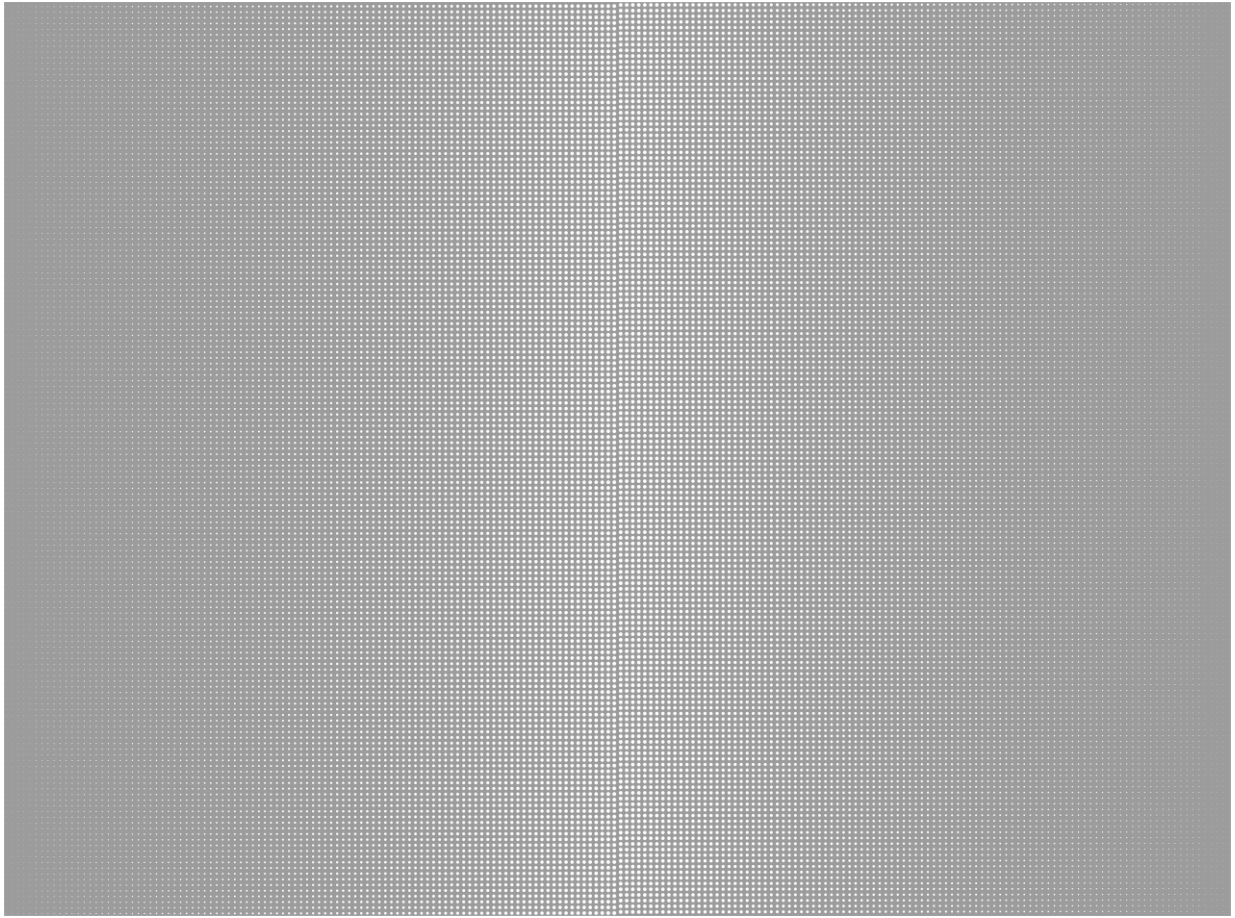
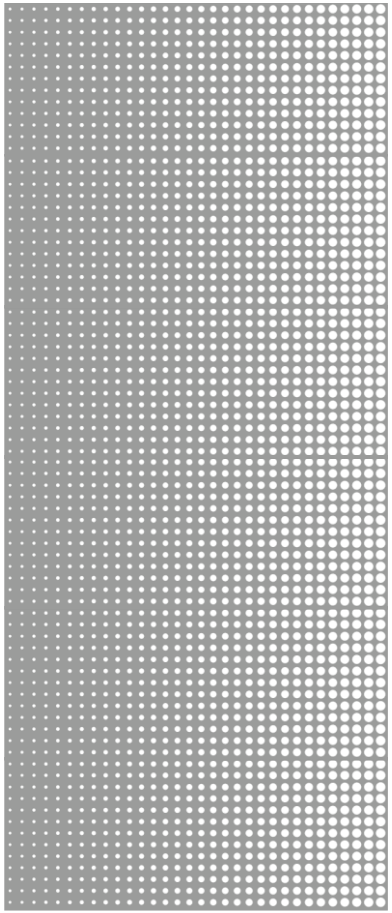


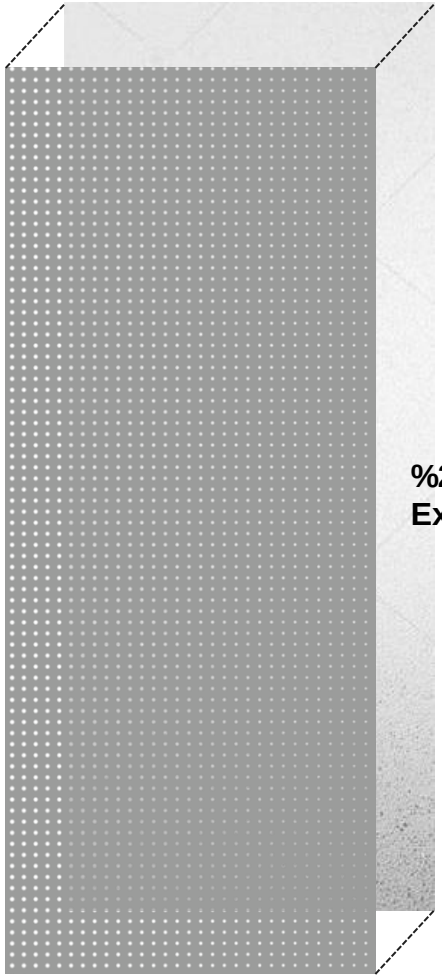
Panels



Panels

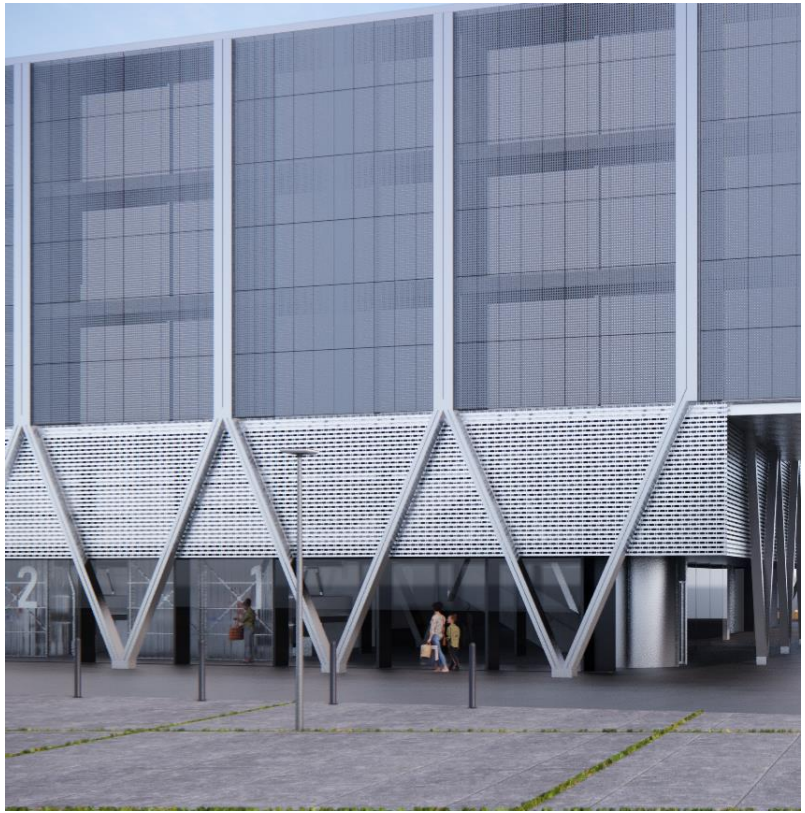


%60 Permeability
Offices

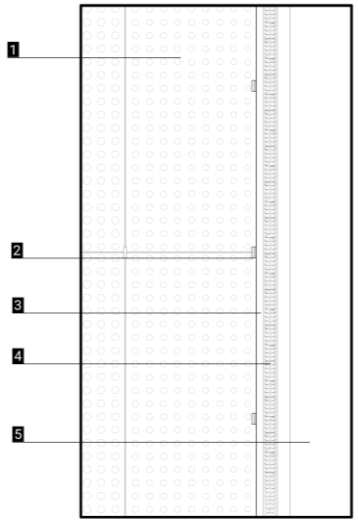


%20 Permeability
Exhaust Air

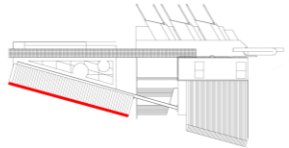
Detail A2



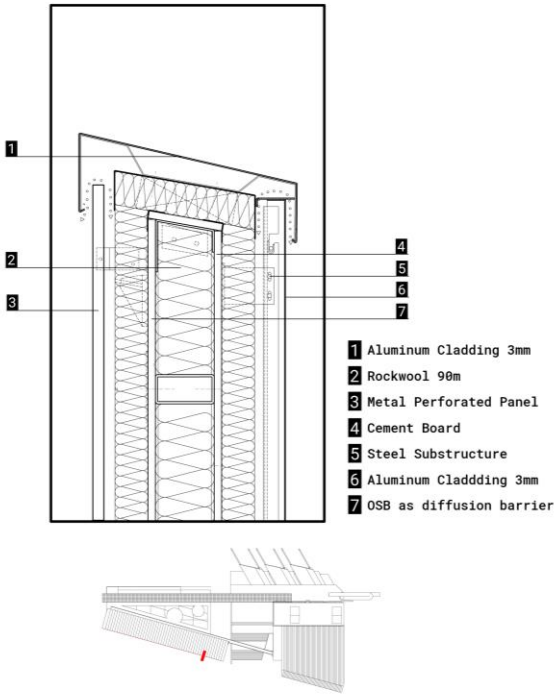
Detail A2



1 Gradient Perforated Steel Panels with PV Spray on
2 Steel Brackets
3 Aluminum Cladding 3mm
4 Fire Resistant Coating
5 Structural Steel

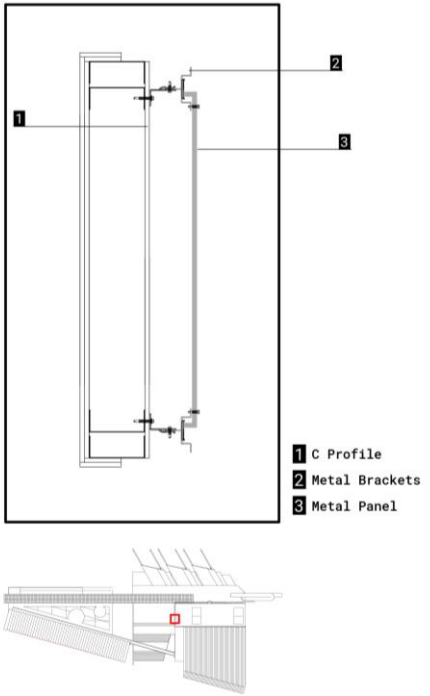


Detail A3

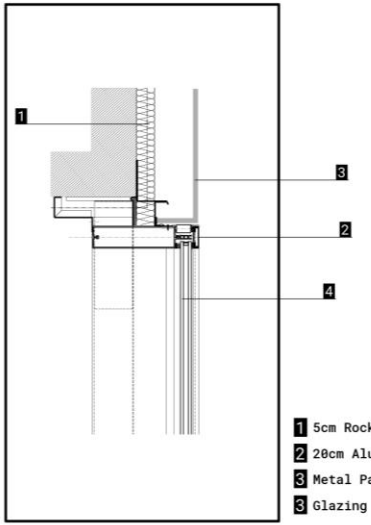

1
2
3
4
5
6
7
1 Aluminum Cladding 3mm
2 Rockwool 90m
3 Metal Perforated Panel
4 Cement Board
5 Steel Substructure
6 Aluminum Claddding 3mm
7 OSB as diffusion barrier

Detail A4

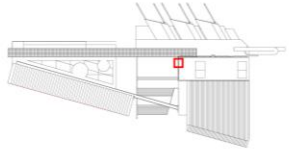
Detail A4



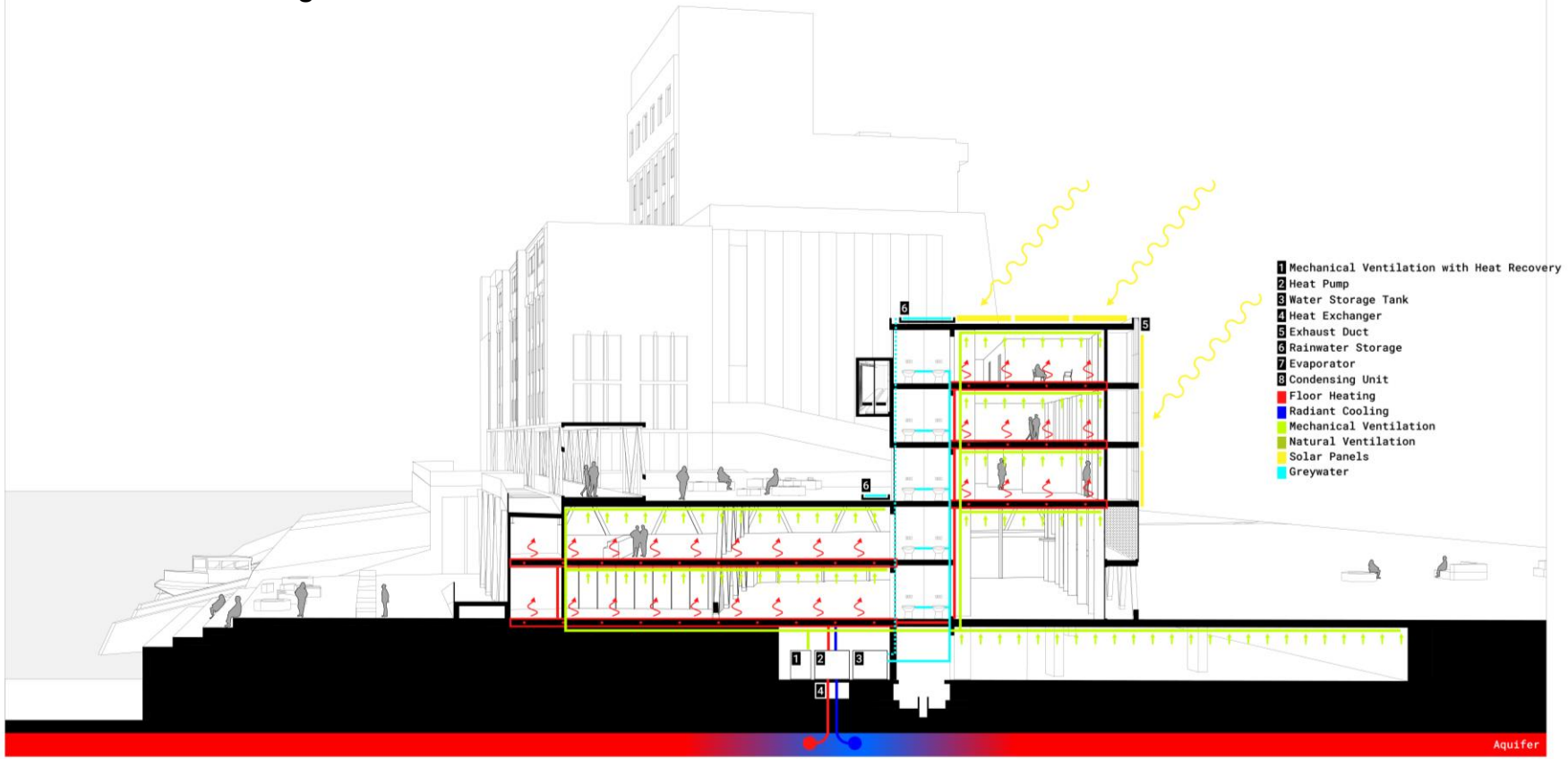
Detail A5



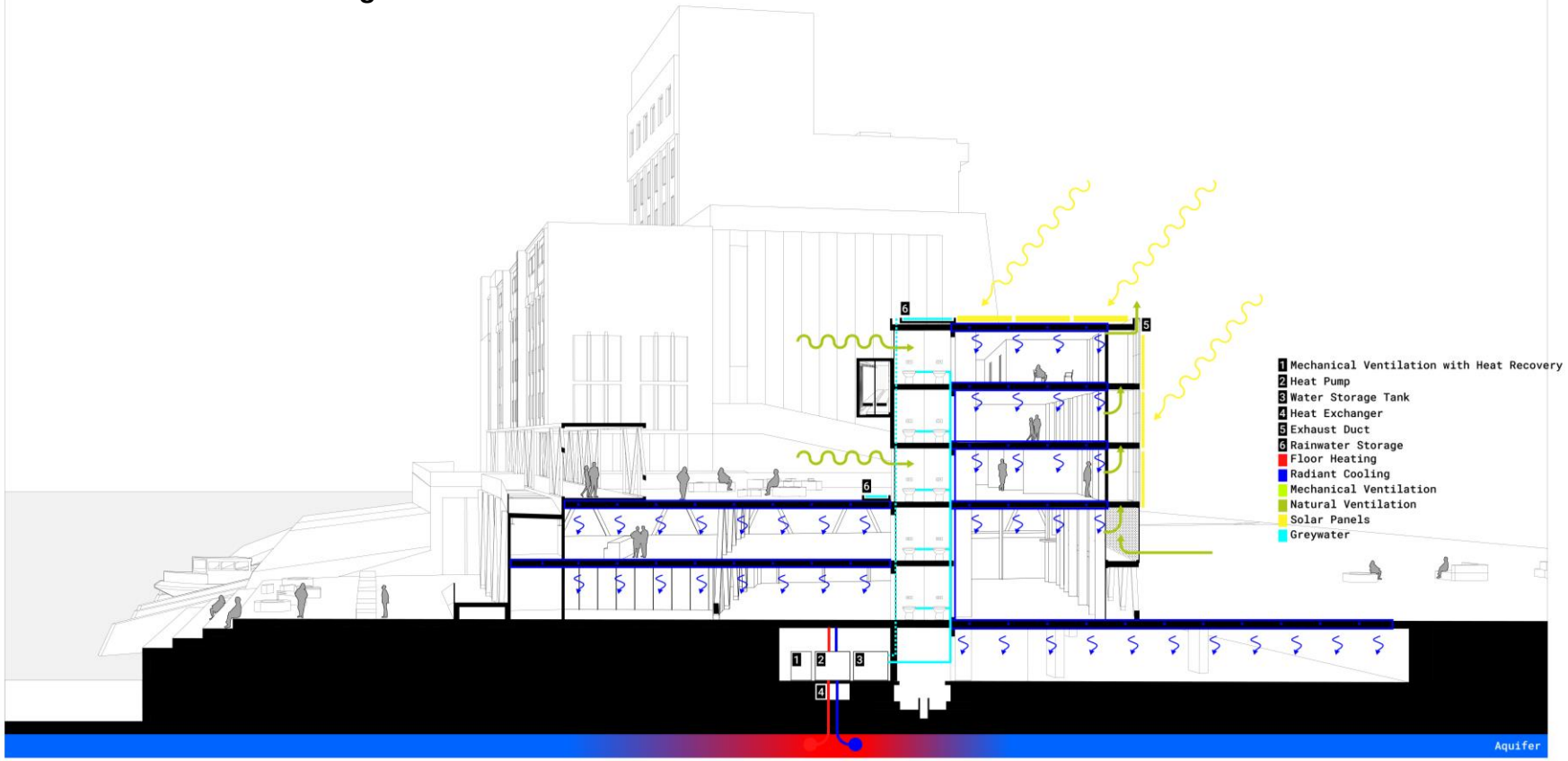
1 5cm Rockwool
2 20cm Aluminum Mullion Painted Silver
3 Metal Panel
3 Glazing



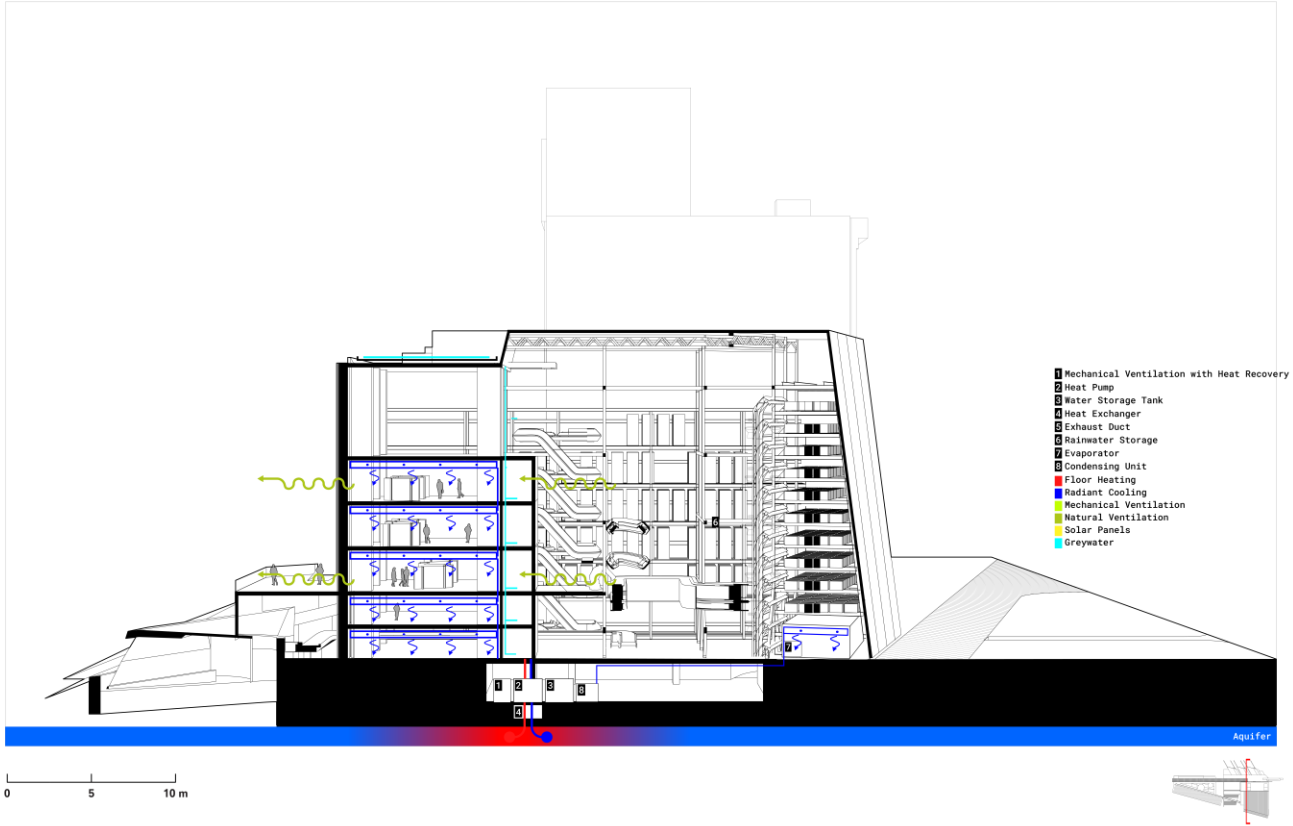
Winter - Floor Heating



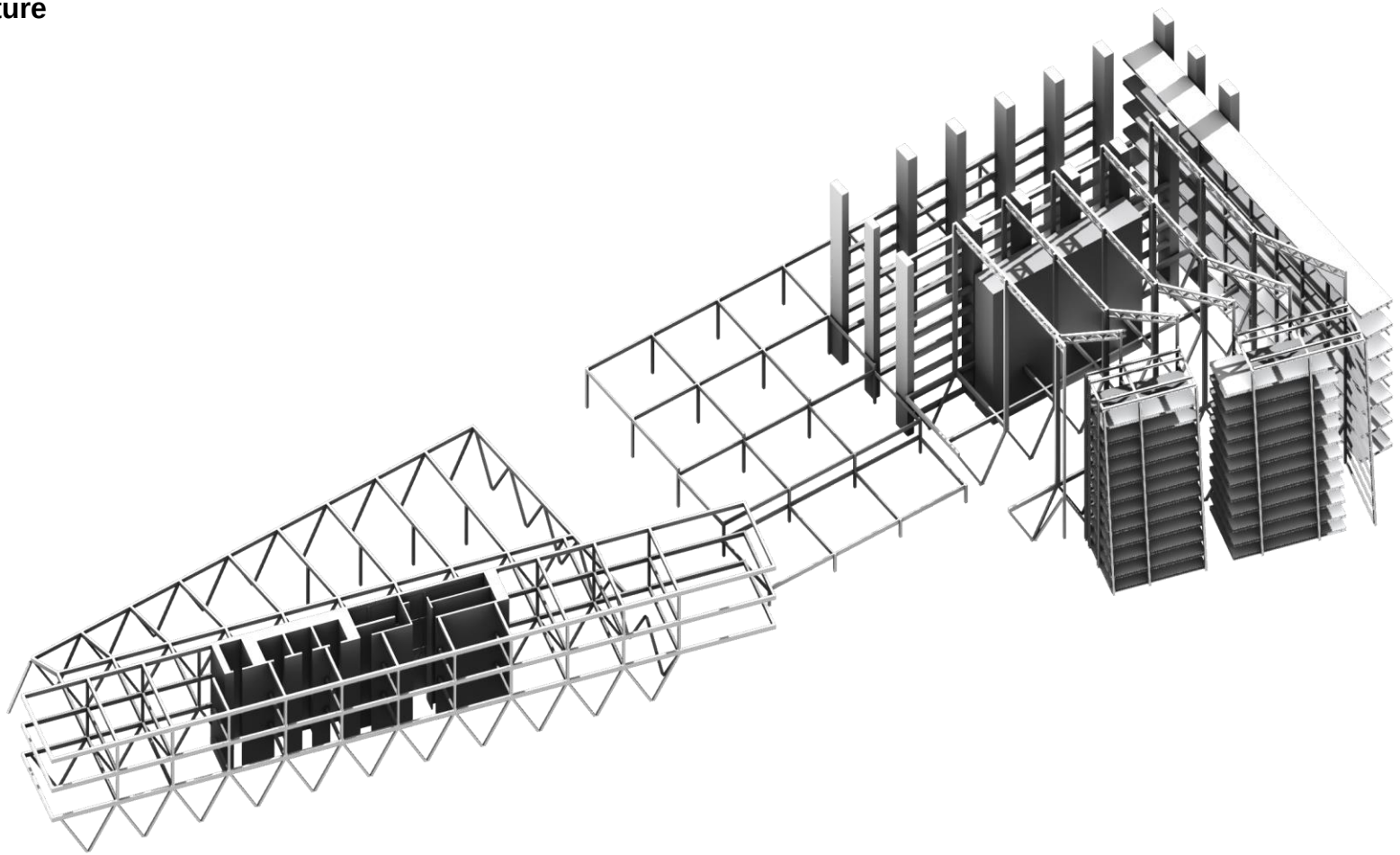
Summer - Radiant Cooling



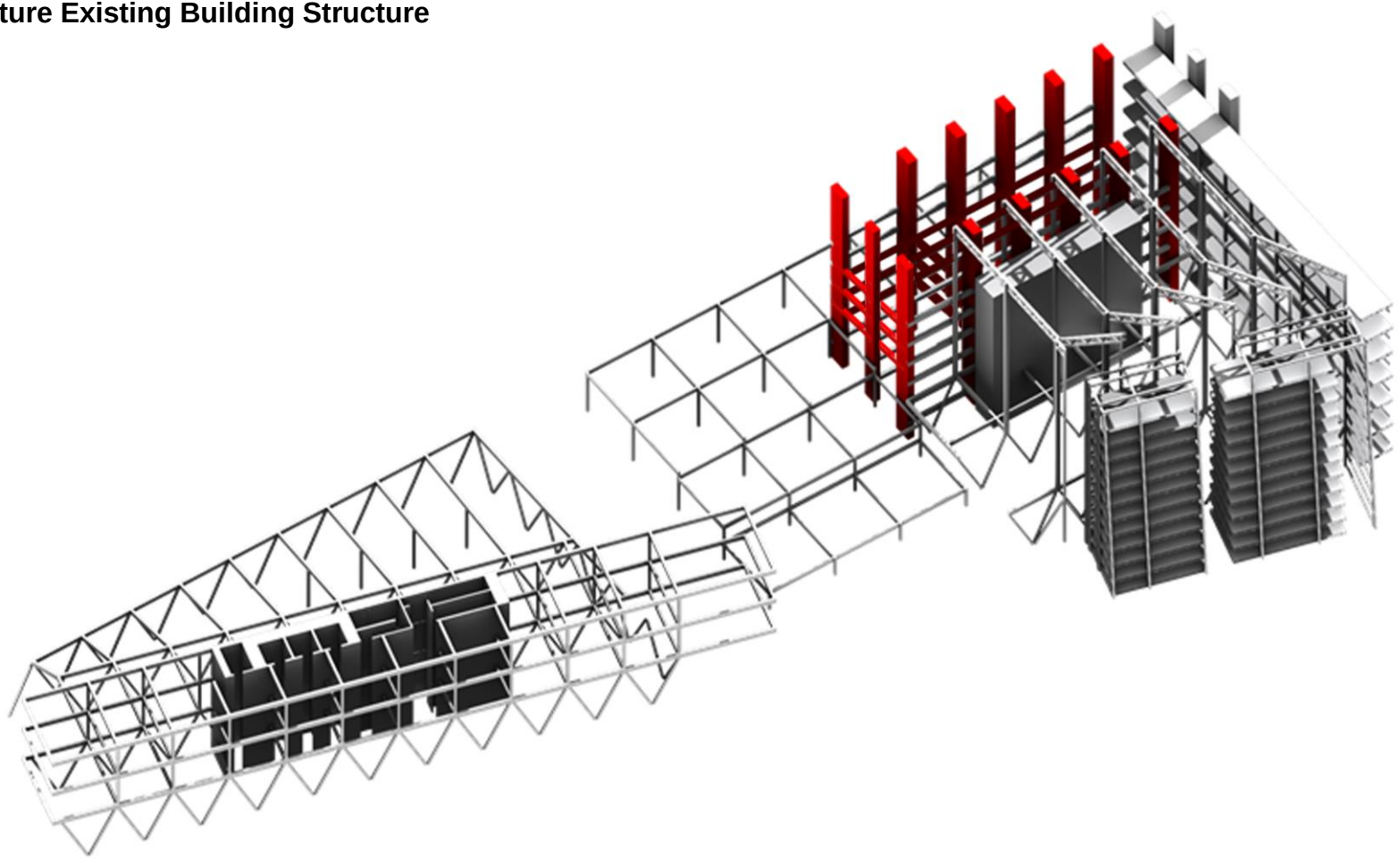
Summer – Cold Storage



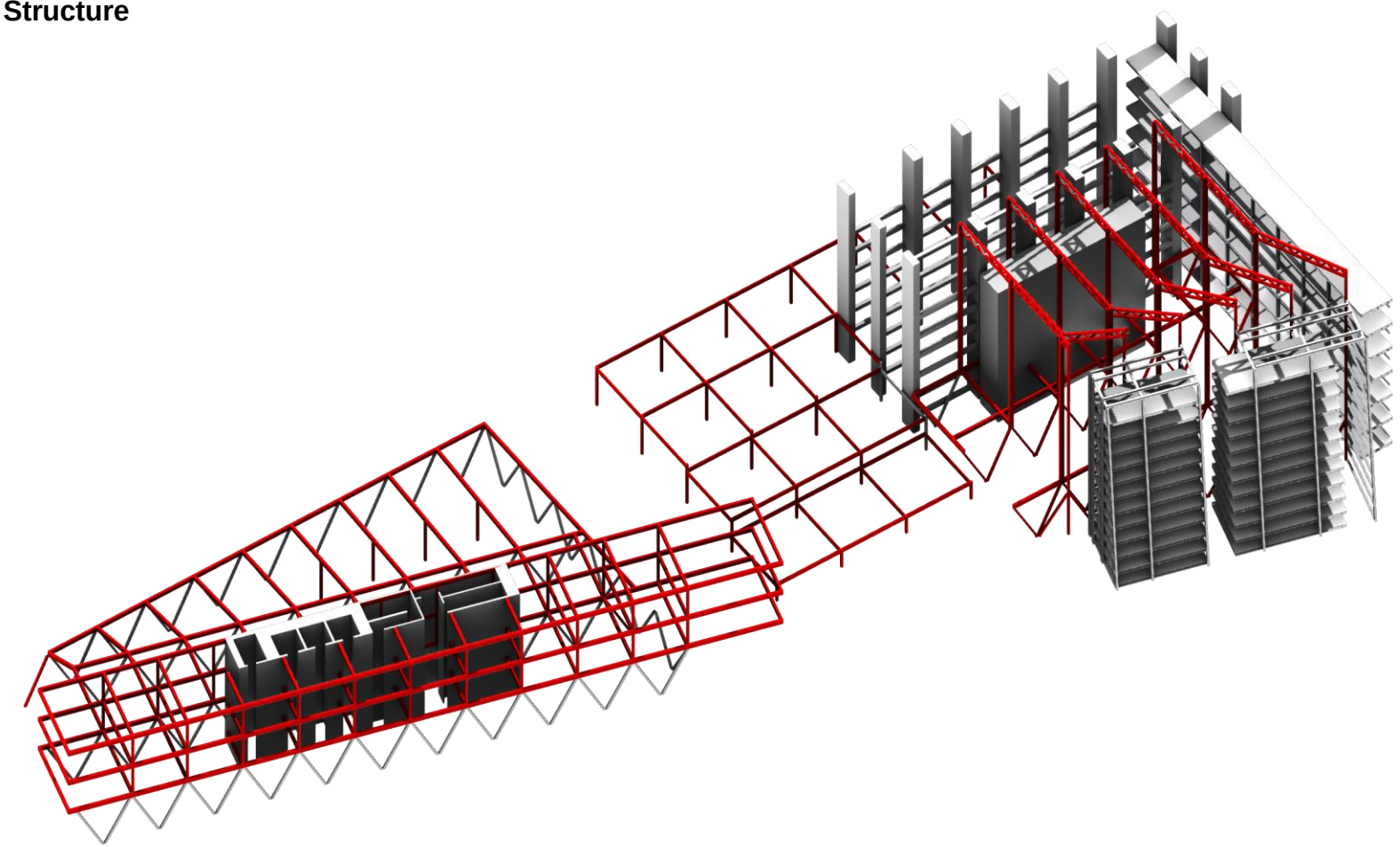
Structure



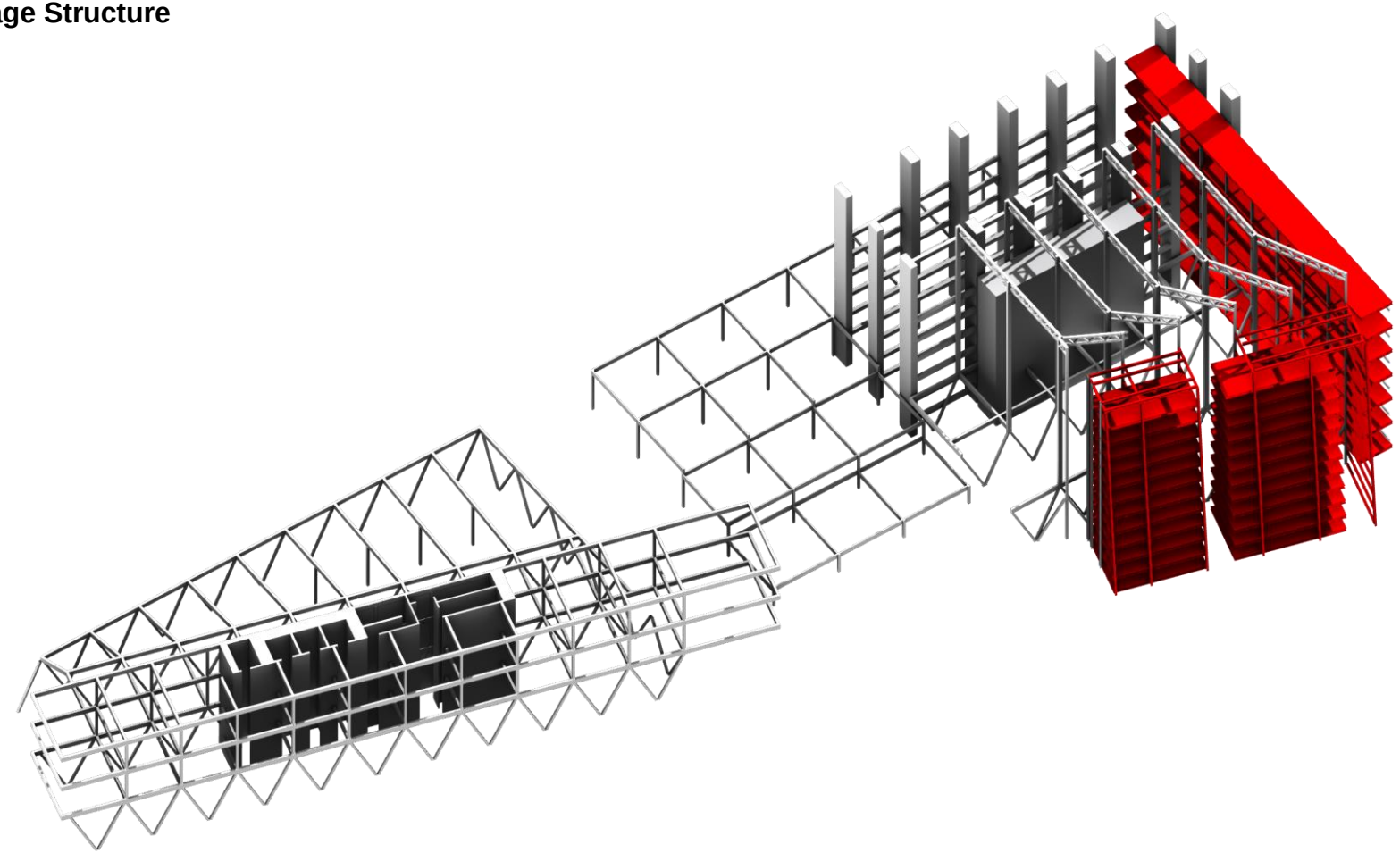
Structure Existing Building Structure



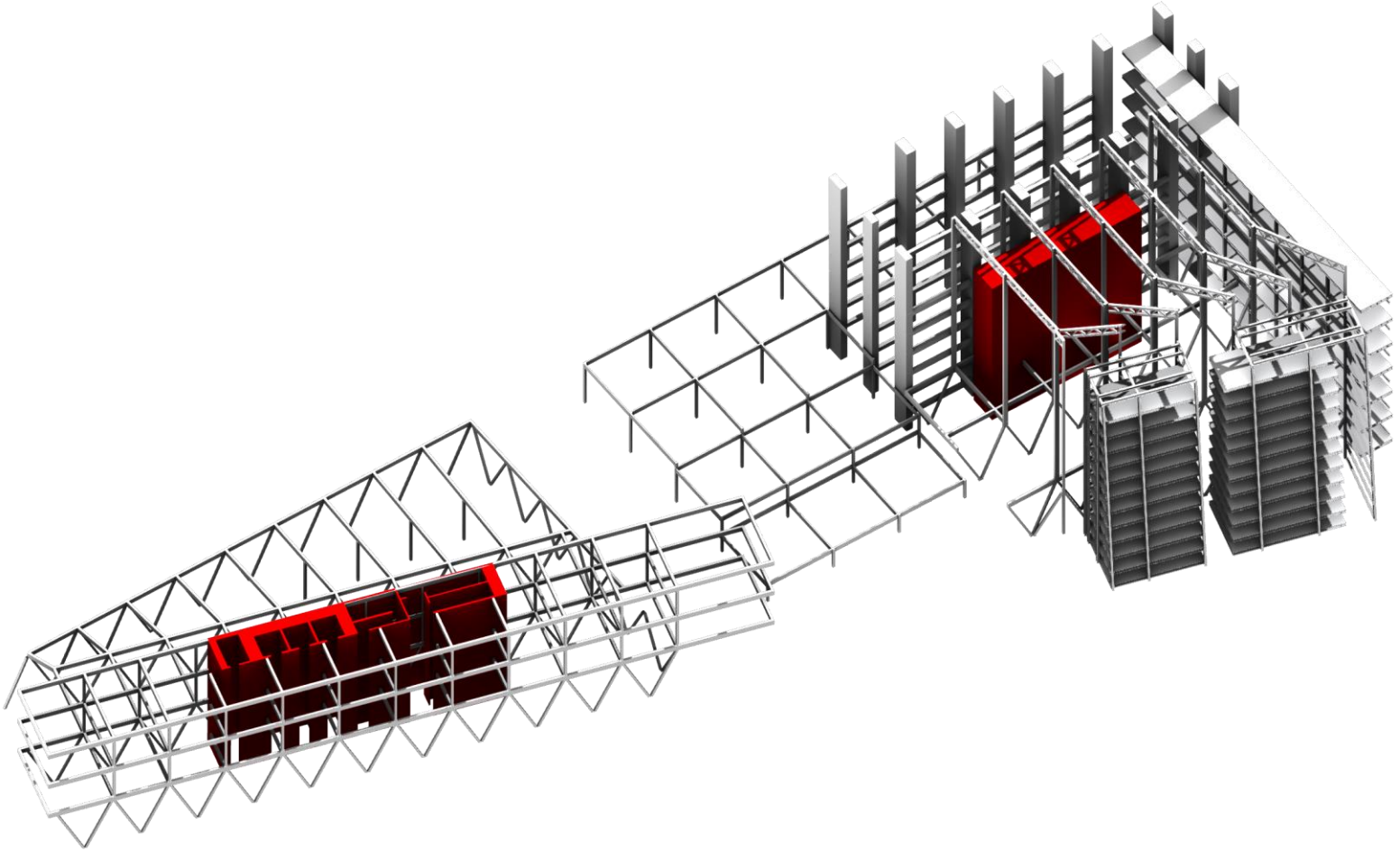
New Structure



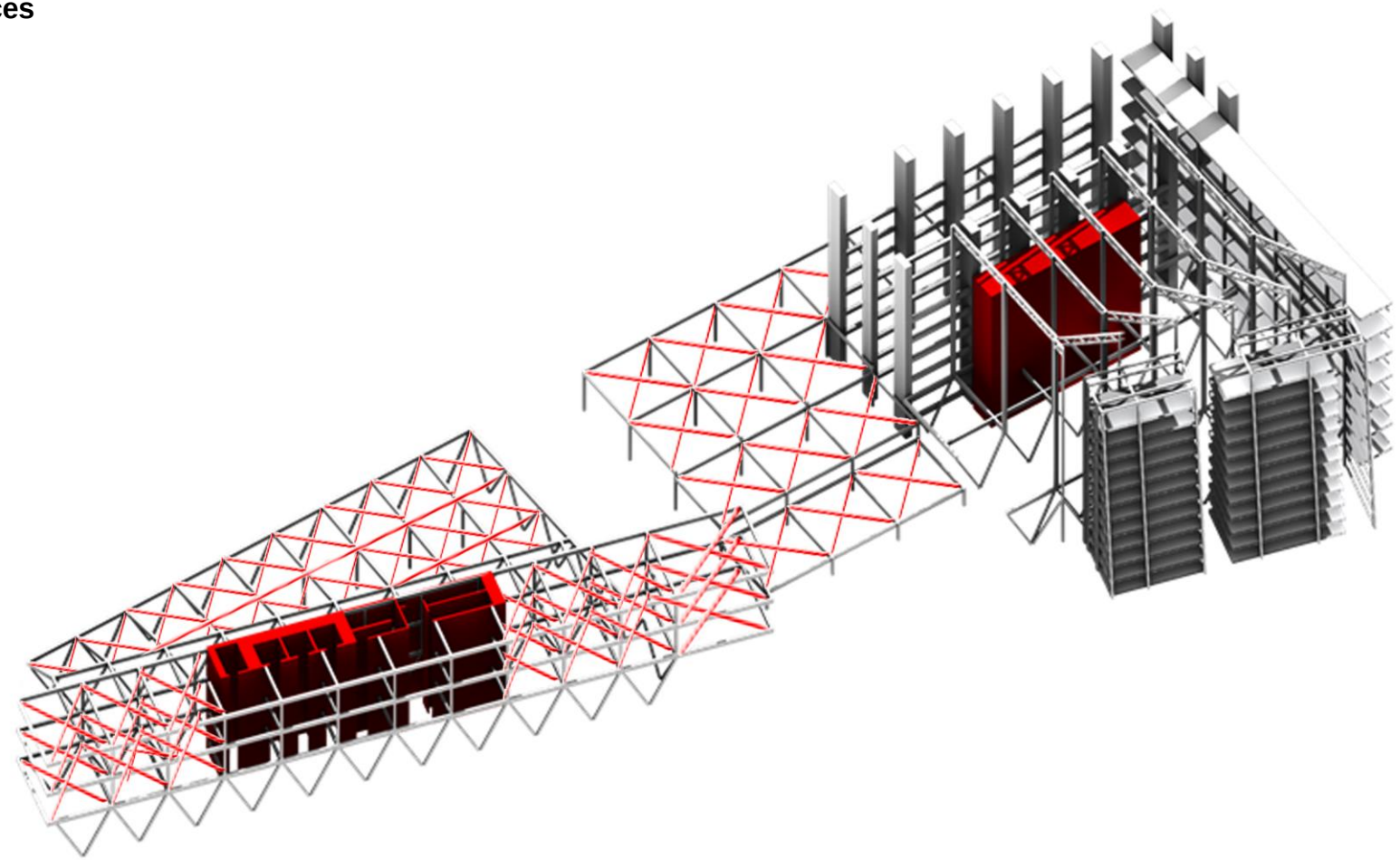
Storage Structure



Cores



X Braces

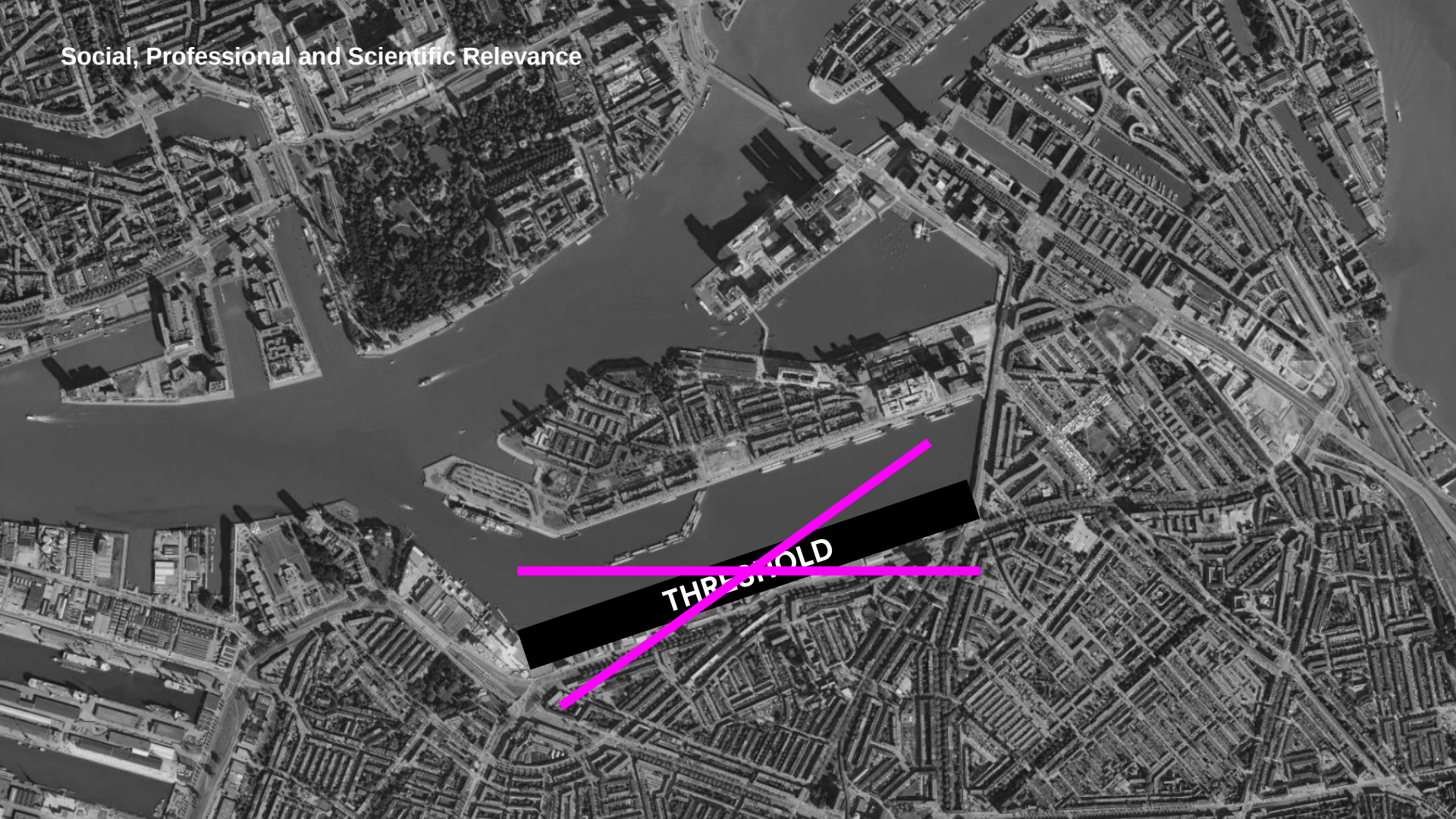


Reflection

How can we revitalize obsolete waterfront areas to incorporate flows of inland shipping and public transportation to improve city logistics?

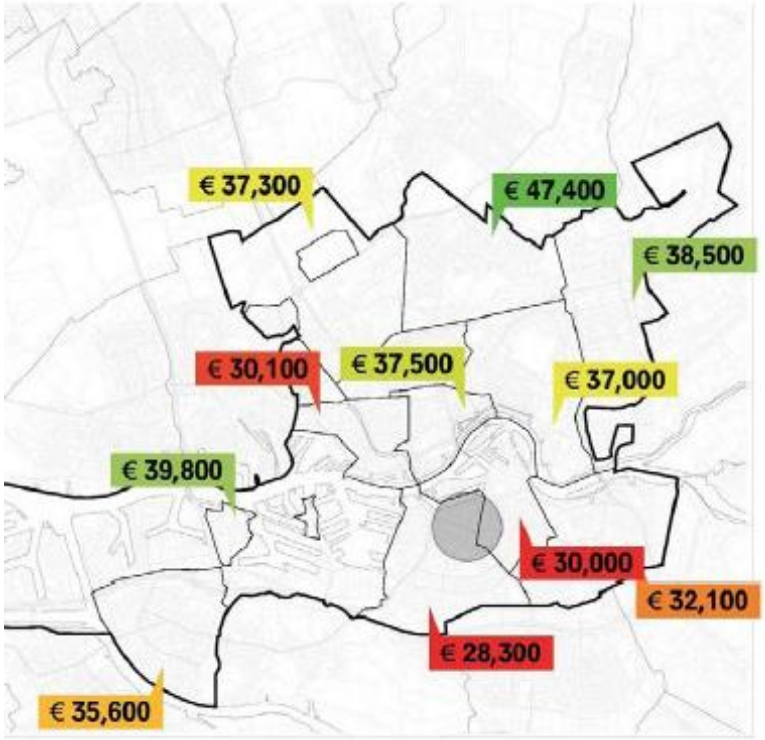
Social, Professional and Scientific Relevance

Social, Professional and Scientific Relevance



Social, Professional and Scientific Relevance

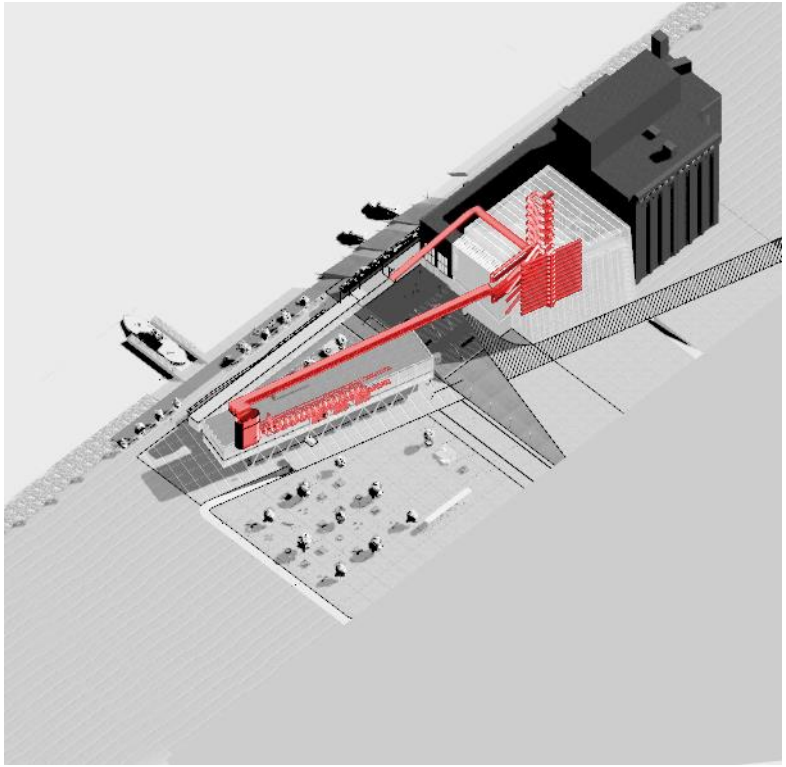
Social, Professional and Scientific Relevance



Average Household Income

Social, Professional and Scientific Relevance

Social, Professional and Scientific Relevance



A strategy that can be multiplied..

ROTTERDAM

HAMBURG

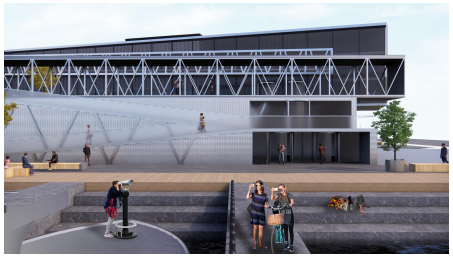
ISTANBUL

TORONTO

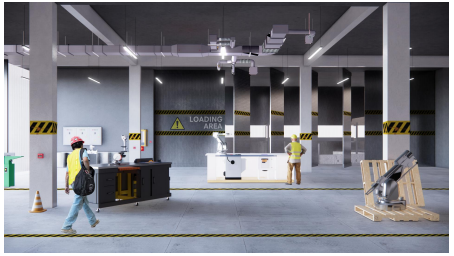
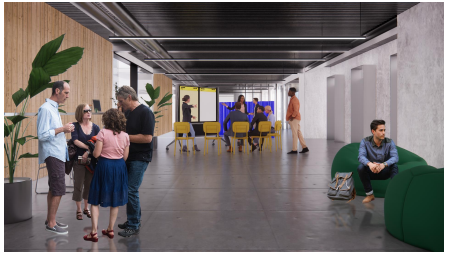
ANTWERP

LONDON

A strategy that can be multiplied..



Thank you!



TODAY'S
EVENT