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Transit Stations: Sub-centers in Rotterdam Zuid

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CITY OF INNOVATIONS PROJECT

complex projects

TRANSIT STATIONS

Sub-centers in Rotterdam Zuid

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Students of the elective studio:

AR0109
City of Innovations Project, Spring 2022, TU Delft

Contributions by Walk-IN Partners

TU Delft BK Bouwkunde

Gemeente Rotterdam

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City of Innovations Project**
Walk-IN Stations
Chair of Complex Projects, Spring 2022

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** City of Innovations Project is an education format ideated and developed by dr. Manuela Triggianese for the Master curriculum of the Chair of Complex Projects, Faculty of A+BE, TU Delft. 'City of Innovations Project' connects academic research and education with stakeholders for addressing actual urban challenges. The Spring 2022 edition has enjoyed the contributions of the Walk-IN partners City of Rotterdam, Deltametropolis Association, De Zwarte Hond, PosadMaxwan, Mecanoo and Bureau Spoorbouwmeester. Walk-in is sponsored by NWO Kiem GoCi program and is lead by TU Delft.

CONTENT

Preface III

Stakeholder Workshop V

On Rotterdam Zuid V

7 Scenarios for Rotterdam Zuid VII

Rotterdam Zuid Railway Station 30

Zuidplein Metro Station 136

Slinge Metro Station 284

Biographies 410

PREFACE

Transit Stations: Sub-centers in Rotterdam Zuid

P

About the Work

Manuela Triggianese, Yagiz Söylev

The book is the result of the course 'City of Innovations Project' at TU Delft Faculty of Architecture and the Built Environment, led by the group of Complex Projects at the Department of Architecture. 'Transit stations: sub-centres in Rotterdam Zuid' is the theme of the course running in spring 2022. It is connected to the research project Walk-In (acronym of Widening sustAinable mobiLity networKs: Impact on Nodes) financed by NWO and part of the KIEM GoCi program. Students presented their research and design scenarios to the project partners in April 2022 and they learned from their expertise throughout the course. Those are the City of Rotterdam, Delta Metropool Association, De Zwarte Hond, PosadMaxwan, Mecanoo, Bureau Spoorbouwmeester, I&M, Prorail with the collaboration of the University of Gustave Eiffel. By doing so, students contributed to the objective of Walk-In: to investigate the potential of suburban stations in transition in the context of the low car inner city of Rotterdam and to develop generic guidelines and spatial solutions for the integration of sustainable mobility with public space and mixed urban functions and services.

The Dutch Ministry of Infrastructure and Water Management has developed a vision on the future of Public Transport (towards 2040)[1] based on new mobilities and Door-to-Door solutions. The vision was followed by the "Handelingsperspectief", intended as an instrument to jointly map the current and future needs of PT nodes and their surroundings[2]. The stations of the future become hubs[3], where you can transfer from one mode of transport to another. Hubs are also destinations in themselves, places to meet up, to work, to exercise, to eat. How should sub-urban stations be developed in order to act as public places for collective action?
This course attempts to answer those questions through the research-by-design conducted by the students and tutors of Complex Projects with the method of charrette (period of intense design activity and short-term design project, developed in teams).

The main scope of this publication is to disseminate the research-by-design work from the students with other students in the field of architecture and urban design, as well as other disciplines such as transport planning and governance. This output aims to contribute to a dialogue on the role and potential of small stations in metropolitan areas of European cities between academics, stakeholders and designers. The book consists of two main chapters: a preface with the description of the outline of the book, the studio methodology (which includes a stakeholders' workshop) and the case studies in Rotterdam Zuid with a short introduction. Each case or station location has been analysed by a group of 8-10 students. The investigations are presented as support to the design proposals and scenarios. Two or three scenarios are illustrated for each location. The tutors of the course from TU Delft are the main contributors of the first part of the book (introduction), while the students of Complex Projects are the authors of the second part (cases).

The book is part of a series of outputs which focus on the role of design research through education. The series is edited by the staff of complex projects and published on TU Delft OPEN Books website[4]: Stations of the Future, Living Stations, Inclusive Stations.

[1] https://www.rijksoverheid.nl/onderwerpen/openbaar-vervoer/betere-verbindingen-openbaar-vervoer/ov-in-de-toekomst
[2] 'Handelingsperspectief' analyses the stations via the aspects of modalities, network, people and place.
[3] See also the future vision of rail operator ProRail in Station Nxt.
[4] https://books.open.tudelft.nl/

STAKEHOLDER WORKSHOP

S

Stakeholder Workshop

Yang Zhang

Within the current practice of urban planning and transportation projects, the involvement of stakeholders is becoming ever imperative. Urban planners and architects are not only expected to bring an attractive vision of the future but also to be the great coordinator to facilitate this collaboration. Under these circumstances, we introduce a "stakeholder workshop" in this course, as an educational experiment on the collective design process.

During the research phase of this course, students focused on the stations and their immediate surroundings, conducted investigations on real-world situations, concluded with inductive reasoning, and hypothesized from social, economic and environmental aspects. As a conclusion of the research, they summarized the SWOT characteristics (Strengths, Weaknesses, Opportunities, and Threats) and also the main stakeholders and their power/interest coordinates. For instance, in Slinge, a periphery metro station, the decayed public space is one of the main weaknesses. Meanwhile, in a station development project, RET has more power to improve the current situation while NPRZ (National Programma Rotterdam Zuid) and local residents would have more willing to do so.

Following these conclusions, game elements were introduced in the workshop. It was a "role-play" exercise, during which students represented particular stakeholders. Taking housing and station area development as the leading regional driver, students discussed the area vision. They worked in groups of 12, performing different groups with different interests to mimic debates and negotiations between various stakeholders. For instance, the profit-driven developer prefers fast gentrification, contrary to the views of local residences and shop owners. Teenagers in the neighbourhood would want more slow streets to play football, which will affect the road efficiency looking from the point of a mobility expert. Evolving from these conflicts, students concluded quantitative and qualitative wishes and then developed their scenarios following different priorities.

The workshop aims to formulate an understanding of the complexity of urban development and meanwhile imitate the actual project process: starting from the initial driver, receiving the resistance and then collectively finding common ground. Resulting from the workshop, the concept of inclusive station development becomes tangible in a contextualised situation: who are we designing for and what is needed for them. And within the discussion, students are encouraged to use phasing, technological innovation and urban policy innovation to strengthen the spatial tools as design elements. Subsequently, different strategies are proposed at each site with different hypothetical visions of the future. Here, further dialogues may start.

Stakeholder Workshop
02 March 2022, TU Delft BK

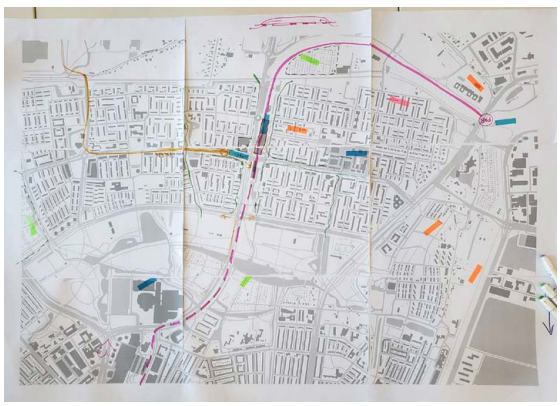


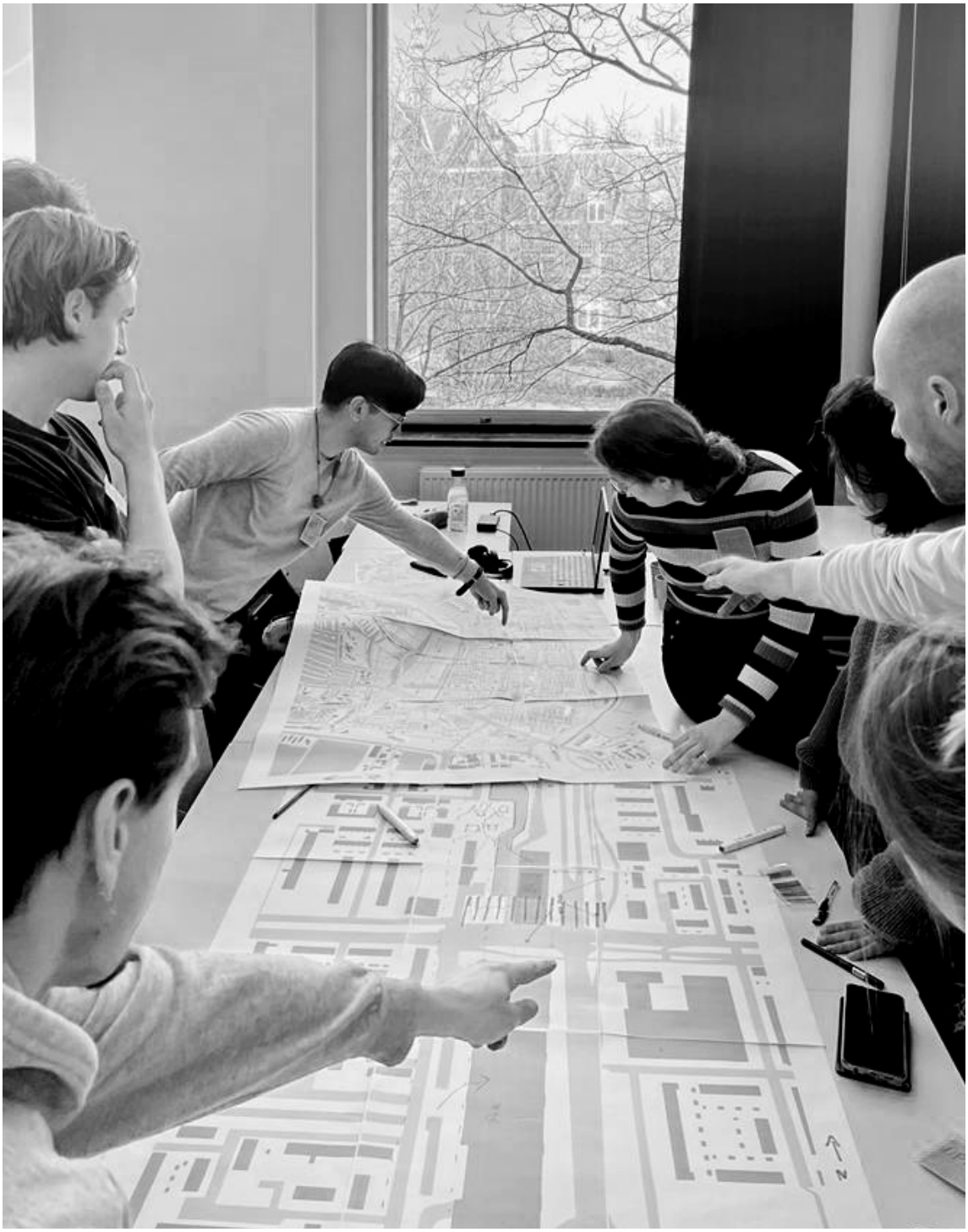












ROTTERDAM ZUID

A brief contextualization for the design of Transport Nodes is Rotterdam Zuid

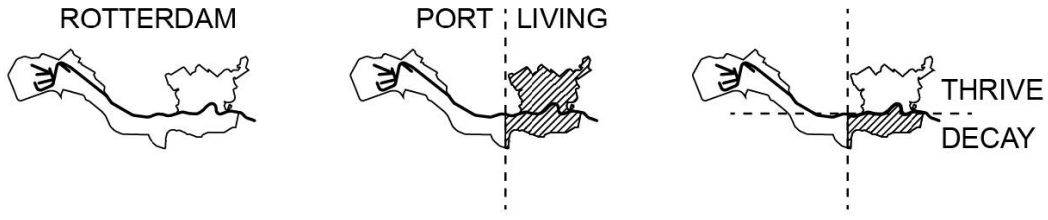
Halina Veloso e Zárate

Introduction

Despite lagging behind Rotterdam's post-war redevelopments[1] and post-industrial prosperity[2], the area South of the river Maas known as Rotterdam Zuid has recently received attention in governmental spatial urbanization plans as a key location for redevelopment around public transportation nodes[3,4]. As a means to achieve sustainable development while coping with 50.000 extra new homes in Rotterdam by 2040[1,2], local plans propose concentrating urban density around public transportation stations and reducing car use[3,4], alluding to a Transit-Oriented Development (TOD) approach[5-8]. There are unique challenges to this endeavour in Rotterdam Zuid, where 3 out of 13 main nodes have been envisioned. Facing chronic socio-economic strains, this area urges integrated expansion of mobility infrastructure, land-use enhancements (housing, schools and opportunity), and environmental solutions to cope with climate change[5-7]. This calls for an investigation of Rotterdam Zuid's context and its conditions to host new Transport Nodes, here explored through the stations Rotterdam Zuid/Entrepot, Zuidplein and Slinge as subjects of study.

Rotterdam Zuid

Rotterdam is a major port city and logistical node in the Randstad region of the Netherlands. Whilst its port represents the core economic output for the city, and dominates the western portion of the municipality, the more predominant urban living is located on the eastern portion. On this part of the city, the infrastructural network is organized around its railway and metro line systems. After the WWII bombing that devastated Rotterdam's city center, the city's development efforts turned to the reconstruction North of the river Maas. At the same time, port activity shifted further West, where new harbours could receive larger ships, leaving the harbours in Rotterdam Zuid obsolete and the working-class population that there resided far from job opportunities. Until the late 1980's, Rotterdam Zuid faced a period of disinvestment and decay (Figure 1). Although an area of chronic socio-economic challenges, Rotterdam Zuid started seeing a change of urban character since the 1990's, with the construction of flagship projects along the Maas, and the construction of infrastructure promoting the connection across the river, Such as the Maas Tunnel, the Erasmusburg and the metro line.

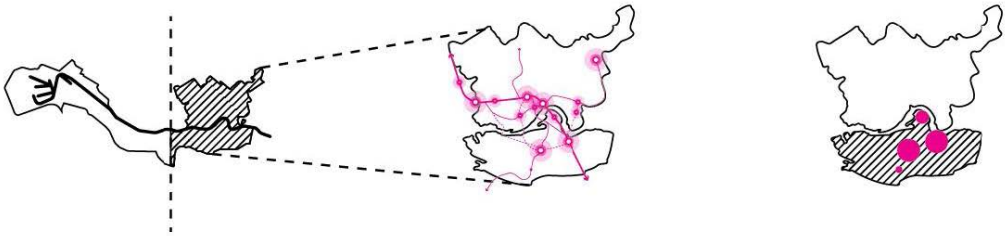


1

Figure 1: Rotterdam's spatial organization, framing its urban condition East-West and North-South of the Maas. Diagrams by Halina Veloso e Zarate.

The National, Regional and City Agendas for Rotterdam Zuid

There is a great plurality of urban plans relevant for Rotterdam Zuid's future development, from national to local level. Amongst them, are the NOVI[5], the Public Transport in 2040[6], Public Transportation Vision 2020-2040[4], Strategic Urbanization Outlook[7], National Programme Rotterdam Zuid 2019-2022[3], and the Environmental Vision[8]. They envision sustainable development from different angles, emphasizing different dimensions of sustainability (environmental, social, economic). They recognize mobility as a means to achieve sustainable development. In particular, the Public Transportation Vision and the Strategic Urbanization Outlook distinguish thirteen key transport nodes for bearing the city growth, following a TOD approach (Figure 2).

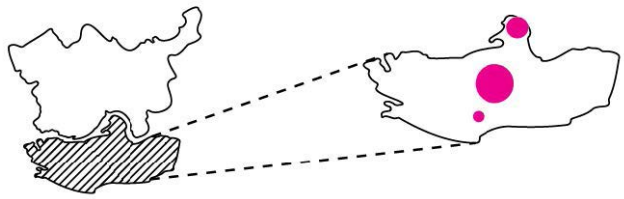


2

Three of them are located in Rotterdam Zuid: Rotterdam Zuid station, Zuidplein and Feijenoord Stadiom. Smaller stations such as Lombardijen and Slinge, also present potential for supporting the larger vision, especially Slinge, which is inserted in an area envisioned for strategic densification.

Three stations with potential for Sustainable Transport Node development

Three stations illustrate the diversity of a way of providing diversity to the research: 1) Rotterdam Zuid/ Entrepot, 2) Zuidplein/Haart van Zuid, and 3) Slinge.



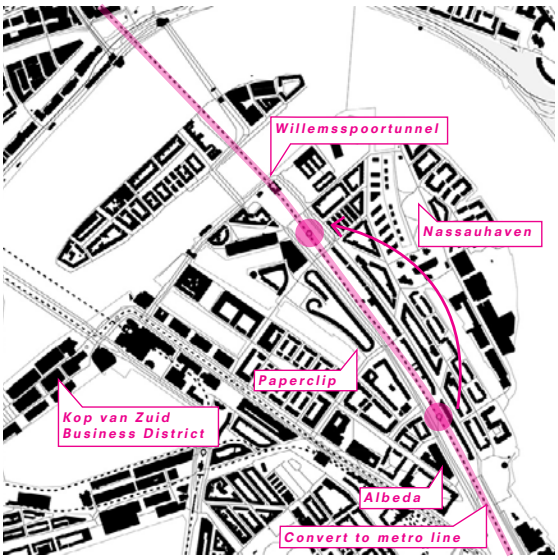
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Figure 2 Rotterdam's public transportation vision, targeting 13 key transportation nodes to bear the city growth, from which 3 are in Rotterdam Zuid.
Figure 3 potential transport nodes in Rotterdam Zuid.
Figure 4 Rotterdam Zuid is a railway station, located in the Breda-Rotterdam line, between Rotterdam and Dordrecht. It is currently situated at the end of the Willemsspoortunnel, in the borough of Feijenoord, but there are plans for its relocation less then a kilometer up North, under the surface parking lot near the Entrepot historic building. Ilustration by Halina Veloso e Zarate.
Diagrams by Halina Veloso e Zarate.

Rotterdam Zuid

Rotterdam Zuid/ Entrepot is a potential Transportation Node that includes station relocation, conversion from train to metro line, and no official masterplan published.





4



The area is characterized by the presence of social housing, including the remarkable Paperclip. Although in proximity to the train station, this area has a relatively small population in comparison with the other 8 boroughs of the Feijenoord District.



The train tracks establish an access barrier dividing the Feijenoord borough and the Kop-van-Zuid - Entrepot borough. Car and train traffic also cause noise nuisance



The real estate is of relatively low value, the population mostly of low income and from a non-western migrant background

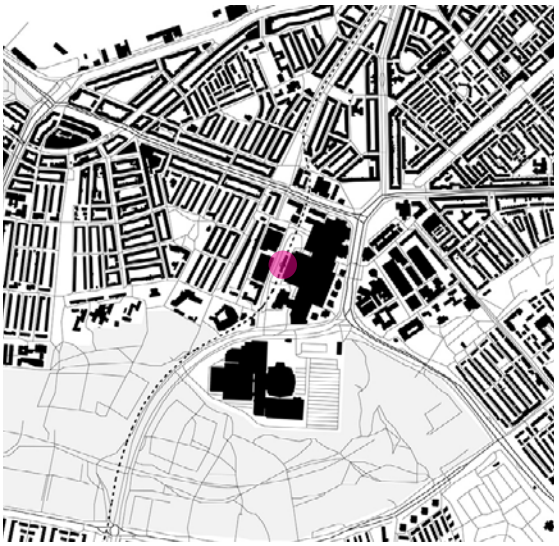


In proximity to water, waterfront enhancement zones and to ferry services, but also part of a flood-risk zone.

Zuidplein

Zuidplein/Haart van Zuid entails in the adaptation of the existing multi-modal hub and its surroundings, counting with published design proposals for the station renovation.





5



The station counts with an elevated metro line and bus services at ground level. This area is targeted for renovation enhancing passenger experience.



The station is adjacent to a shopping center, the Zuidplein Theater and Library, Sports centrum with the first 50m swimming pool in Rotterdam



The Convention center Ahoy, which besides relevant for large events is also stage for the Smart City EU project RUGGEDISED

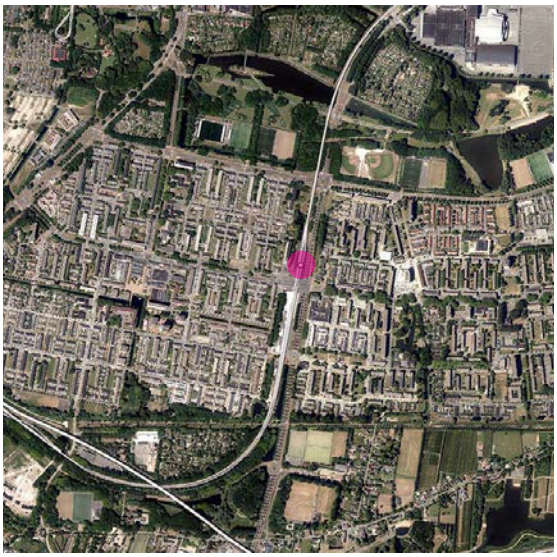


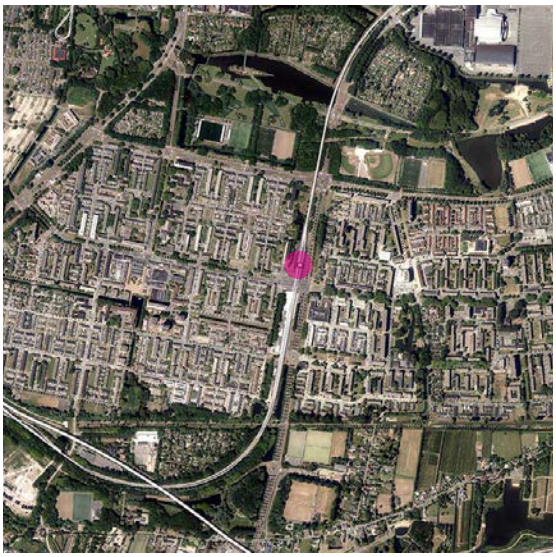
Not much of the land-use in the immediate surroundings of the station is dedicated to housing. There are large surfaces dedicated to cars

Figure 5 Zuidplein is an important transportation hub located in the strategic development area known as Hart van Zuid, that counts with large equipment such as the Ahoy convention center, the Ikazia hospital and the Zuiderpark. It is a vibrant hub of city activities going under physical transformation that include the renovation of the station and the public space around it, enhancement of the connecting paths to Ahoy and Zuiderpark, amongst others.

Slinge

Slinge, is a station at the edge of the metro line, inserted in a mono-functional residential area that has been envisioned to be a densification zone, with no published plans yet envisioning its redevelopment.





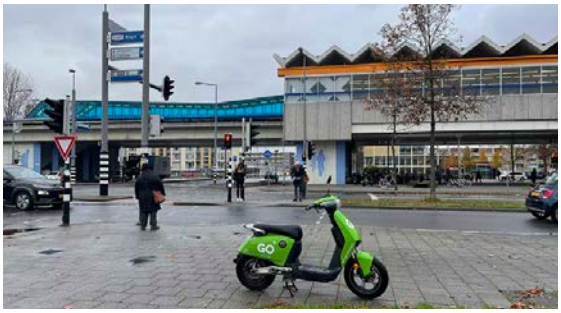
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The station has two platforms and three running tracks, and is seen as a prime location for self-driving transport on both axes of the metro



There is public space in the immediate surroundings of the station but the plinths are not active



Last-mile mobility alternatives do not have a designated area for parking, occupying the public space around the station.



The station counts with a Park&Ride facility, and the building configures a viaduct through which cars and pedestrians can pass.

Figure 6 Slinge is the last stop of the North-South metro line, South of Zuiderpark. It is an above-ground metro station surrounded by predominantly residential land use.

Conclusion

After decades of historic disinvestment and decay, there is now an opportunity to position Rotterdam Zuid as a pioneer in sustainable development and transport node design. The challenges in Rotterdam Zuid vary significantly from site to site, which provides a diverse field of exploration for urban design solutions focusing on different aspects of potential interventions, emphasizing their social, economic and environmental dimensions. With the illustrative examples of Roterdam Zuid/ Entrepot station, Zuidplein and Slinge, it is possible to grasp the uniqueness of their characteristics, challenges and opportunities for sustainable transport node design. Rotterdam Zuid/Entrepot Potential has the potential of being a Gateway Station, through which Rotterdam Zuid is connected to the City Center, North of the River Maas and to the Erasmus University Campus, West across the river. Zuidplein/ Haart van Zuid Potential could leverage the proximity to large urban equipment staged for energy transition projects and configure a Smart Grid Station. With the relatively quiet setting of an edge station, Slinge has the conditions for exploring traffic automation and being an Innovative Mobility Station & Transferium. These are just a few traits of the possible new Transport Nodes in Rotterdam Zuid. They can set a precedent for the densification of other station areas in Rotterdam, also envisioned to bear the city growth till 2040.

1. Meijel, L.v., H. Hinterthür, and E. Bet, Cultuurhistorische Verkenning Vooroorlogse Wijken: Rotterdam - Zuid. 2008, Gemeente Rotterdan, dS+V, bureau Monumenten.

2. Doucet, B., R. Van Kempen, and J.A.N. Van Weesep, Resident Perceptions of Flagship Waterfront Regeneration: The Case of the Kop Van Zuid in Rotterdam. Tijdschrift voor economische en sociale geografie, 2011. 102(2): p. 125-145.

3. NPRZ, National Programme ROTTERDAM SOUTH - Implementation plan 2019-2022. 2019: Rotterdam.

4. GoudappelCoffeng, APPM, and RET, Openbaar Vervoer Als Drager Van de Stad: OV-visie Rotterdam 2018 - 2040, Transportation, Editor. 2018, Gemeente Rotterdam.

5. Netherlands, G.o.t., NOVI - National Strategy on Spatial Planning and the Environment: A sustainable perspective for our living environment, M.o.t.I.a.K. Relations, et al., Editors. 2020, Ministry of the Interior and Kingdom Relations: The Hague - NL.

6. Netherlands, G.o.t., Public Transport in 2040: Outlines of a vision for the future. 2019, Ministry of Infrastructure and Water Management: The Hague.

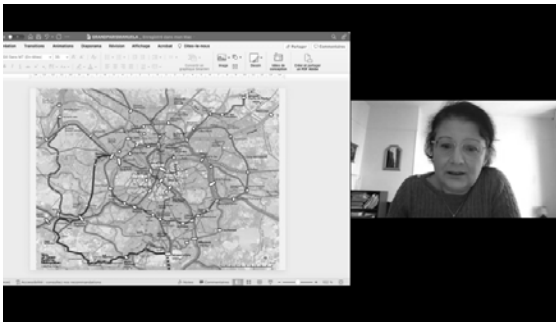
7. Kurvers, B., Strategische Verkenning Verstedelijking Rotterdam. 2019, Gemeente Rotterdam: Rotterdam.

8. Kurvers, B., Ontwerp-Omgevingsvisie Rotterdam: De Veranderstad. Werken aan een wereldstad voor iedereen., w.e.e.g.o. Bouwen, Editor. 2021, Gemeente Rotterdam: Rotterdam.

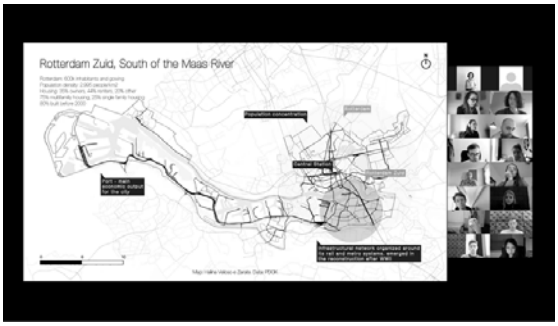
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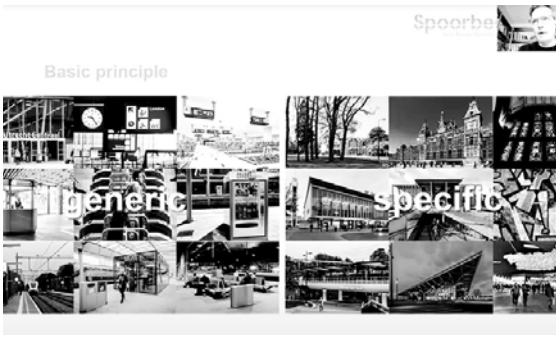
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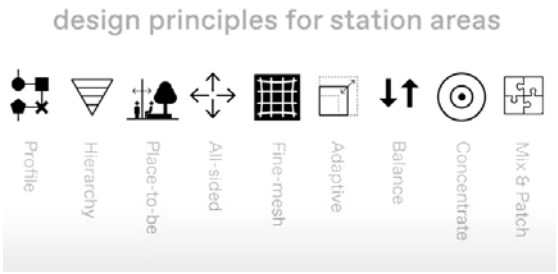
Nacima Baron Grand Paris Express



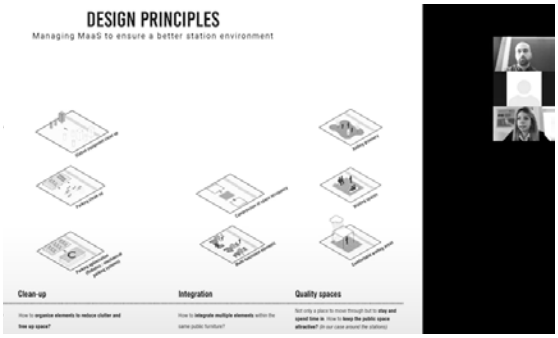
Halina Veloso e Zárate Rotterdam Zuid



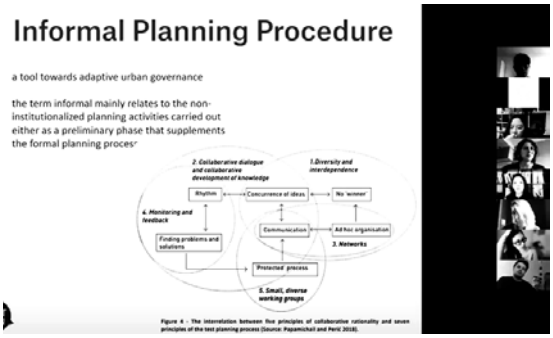
Miguel Loos The New Stations District



Kjai Tjokrokoesoemo Design Principles for Station Areas



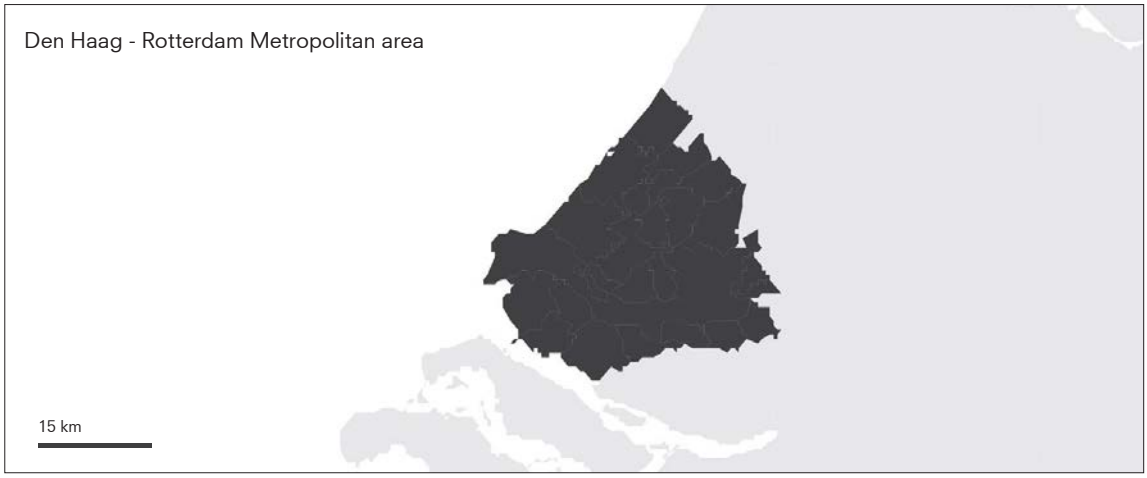
Lydia Giokari Journey to the Future

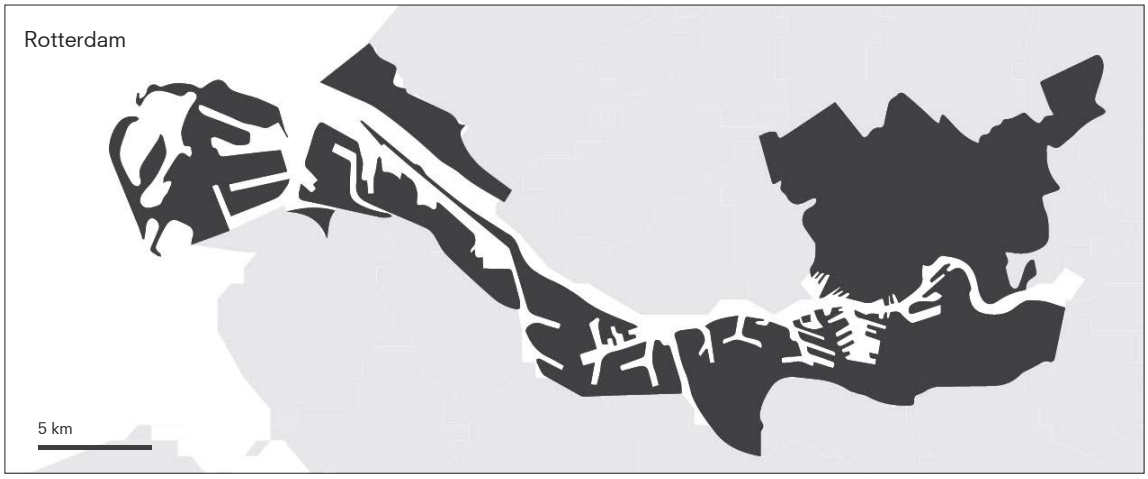


Alankrita Sarkar Eurodelta

7 SCENARIOS FOR ROTTERDAM ZUID

7


Den Haag - Rotterdam Metropolitan area
15 km


Rotterdam
5 km


Rotterdam Zuid
1 km

R O T T E R D A M



INTERMODAL URBAN CONNECTIONS

Zuidplein

© Evelien Dekker, 13 Feb 2022

O V* 2 0 4 0

*OV: openbaar vervoer (NL), public transport (ENG)



50.000 NEW HOMES, 100.000 NEW TRANSPORT USERS

Rotterdam Zuid

© Panayiotis Varoutsos, 23 Feb 2022

R O T T E R D A M



DENSIFICATION

Zuidplein

© Evelien Dekker, 13 Feb 2022

O V* 2 0 4 0

*OV: openbaar vervoer (NL), public transport (ENG)



PERIPHERAL URBAN

Stations as gates into the city

© Cameron Scott, 30 Mar 2022



Metro line E
NS Train Lines

Strategy taken from:
Ontwikkelrichting nieuw planaanbod 2019 © Geemente Rotterdam

Rotterdam Zuid Railway Station **30**

Collective Research 32
Scenario 1: The Move 84
Scenario 2: Breaking the Barriers 120

Zuidplein Metro Station **136**

Collective Research 138
Scenario 1: Community City 182
Scenario 2: Climate Adaptive City 230
Scenario 3: Autonomous City 252

Slinge Metro Station **284**

Collective Research 286
Scenarios 1: A New Mobility Hub 332
Scenario 2: Recharging Slinge 354


Train

R

ROTTERDAM ZUID
TRAIN STATION

Collective Research 32

Urban Criteria 76

Scenario 1
Relocate 84

Scenario 2
Redevelop 120

Valery van Heijst
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Panagiotis Varoutsos
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STATION ROTTERDAM ZUID

Introduction

Station Rotterdam Zuid is a train station located in Rotterdam-Zuid, the part of Rotterdam that lies South of the Nieuwe Maas. Station Rotterdam Zuid is the first train station when crossing the riverbank and is part of the trajectory: Dordrecht – Den Haag.

Rotterdam used to be a fishing village on the north side of the Maas. 'Rotterdam-Zuid' was not even a part of Rotterdam until 1591 when the city bought a big part of the Feijenoord island (Vocke, 2020). In 1568 the city bought the rest of the island but from here it took centuries to develop this island. Centuries later the city was overpopulated, instead of developing the Feijenoord island the city started expanding their city into the river, making the river smaller and smaller. It wasn't until 1872 when the digging of the Nieuwe Waterweg was completed so that big ships could enter the city from sea (Oudshoorn, n.d.). The increase in import and export resulted in companies accommodating their working spaces on the south side of the riverbank. In 1877 they completed the Hefbrug and the Willemsspoorbrug and laid train to make transporting goods across the river and out of the city easier. This was also the year that the first train station on the south side of the Nieuwe Maas was opened; Station Feijenoord, now known as station Rotterdam Zuid. By building stations and laying down train tracks the city of Rotterdam annexed territory towards the south, resulting in the city expanding for the next few decades.

During World War II the city center of Rotterdam was partly bombed, resulting in a housing shortage leaving a lot of inhabitants homeless. In 1954 Willem van Tijen proposed a reconstruction plan that suggested housing in Rotterdam-Zuid to meet to address the housing shortage. Because of the increasing population in Rotterdam-Zuid they built a station 1958 to make the station more accessible. During the next decades the city and its population expanded rapidly and in order to address the growing population Riet Bakker and Teun Koolhaas proposed a plan in 1991 for the Kop van Zuid, making it the first urban plan in Rotterdam to incorporate high-rise buildings. This plan also included the new Erasmusbrug, which was opened in 1996, that would act as the main connection between the city center and Rotterdam-Zuid. With the increasing port traffic, the Hefbrug and the Willemssoorbrug were closed in 1993 because opening the bridges took too much time. In the same year the Willemsspoortunnel that would go underneath the river was opened and a new station for Rotterdam-Zuid was built. The numbers of tracks were expanded from 2 to 4, giving the station 4 platform tracks. To reach all the platforms, a traverse was built over the station, which connects the Rosestraat and the Oranjeboomstraat.

With the new Erasmusbrug and the new station it allowed the city to expand even more to the south side of the Maas with the result of different high-rise buildings appearing on the Kop van Zuid. These high-rise buildings included office spaces but also dwelling in the higher segment attracting more wealthy people to Rotterdam Zuid. This resulted in the fragmentation of the population, pushing the less wealthy people southwards and eastwards making room for the wealthier class. This division is not only visible through architecture but also demographically in terms of income and education level. Nowadays Rotterdam Zuid is being characterized by the residential area for immigrants and the less wealthier and educated inhabitants. This difference in architecture and demographics between the South of Rotterdam and the city center creates a stigma of the south being an unsafe and unpleasant neighborhood.



1650



1850



1880



1900



1930



1950



1980



2000



2020

HISTORY

1872
Construction of the **'Nieuwe Waterweg'** completes granting the city a permenent access to the North Sea boosting its port industries and allowing for futher industrial growth.

1877
De 'Hef' and the **Willemspoorbrug** are finished, creating much needed connections accross the Nieuwe Maas River.

1877
Station Feijenoord is opened with only two tracks as the first stop after the Willemspoorbrug. This station later became Rotterdam Zuid.

1880 - 1920
Following the improved infastructure, Rotterdam saw a surge in population of well over 300% in the course of 40 years, leading to the first in a long string of housing crisis.

1940
German Blitzkregs destroy the majority of historic Rotterdam including De Hef and Station Feijenoord. While less than 1000 people died during these attacks, over 85,000 victims were left homeless.

1945
German Occupation ends and Rotterdam begins planning reconstruction immediatly.

1954
While many cultural sites had been lost, Rotterdam begins officially implementing their post war reconstruction plan by focusing on new housing and reastablishing transit systems.

1958
The station building for Rotterdam Zuid is Built, marking a new begining for the site.

1982
De Peperklip, one of Rotterdam's most controversial residential projects, is completed eluding to the harsh rationalism that led to Rotterdam's current residential typology.

1991
Master plan for Kop Van Zuid is developed with a focus on improving accessablity through a bridge, metro staion, and general roads as well as aditional plans for social housing.

1993
The Hefbrug is made obsolete and closes in the wake of the opening of the **Willemspoortunnel** which more effectively bridges the river Maas.

1993
The new **Rotterdam Zuid Station** opens, adding more tracks and creating a bridge across the tracks which had divided the area into two distinct districts up to this point.

1996
Opening of the **Erasmusbrug** which reinforces Rotterdam's hopes of being a "future proof" city. The massive addition to car travel was largely dwarfed by the amount of train use but planned to account for the growing intrest in personal vehicles.

2021
After years of silent growth, the municipality revisits Rotterdam Zuid as they approach a new growth plan for all of Kop Van Zuid.



1872 - Nieuwe Waterweg



1877- De Hef



1877 - Station Feijenoord



1877 - Willemspoorbrug



1940 - Rotterdam Blitz



1958 - Rotterdam Zuid



1993 - Rotterdam Zuid



1993 - Willemspoortunnel



1996 - Erasmusbrug

HISTORY



1470
Grote Sint-Laurenskerk

One of a few surviving historical landmarks in Rotterdam, this church has been a key figure in the develpment of art and culture throughout the cities history.



1920
Stadhuis Rotterdam

The City Hall for Rotterdam, predates the Rotterdam Blitz and continues to serve as an important landmark for both political and architectural purposes.



1956
De Boeg

De Boeg is a World War II Monument; commemorating those who died at sea. It features sailers tied to the bow of a ship while water begins to engulf them.



2014
Markthal

Markthal is a revolutionary urban planing complex, dualing as Holland's first covered market and a highly attractive apartment complex.



1915
Mallegatpark Water Tower

The watertower and park as a whole represent a distant past of local energy production. This was a part of the first natrual gas facility within Rotterdam.



1937
Station Feijenoord

De Kuip is homoe to Rotterdam's Football club and remains the key attraction in Feijenoord.



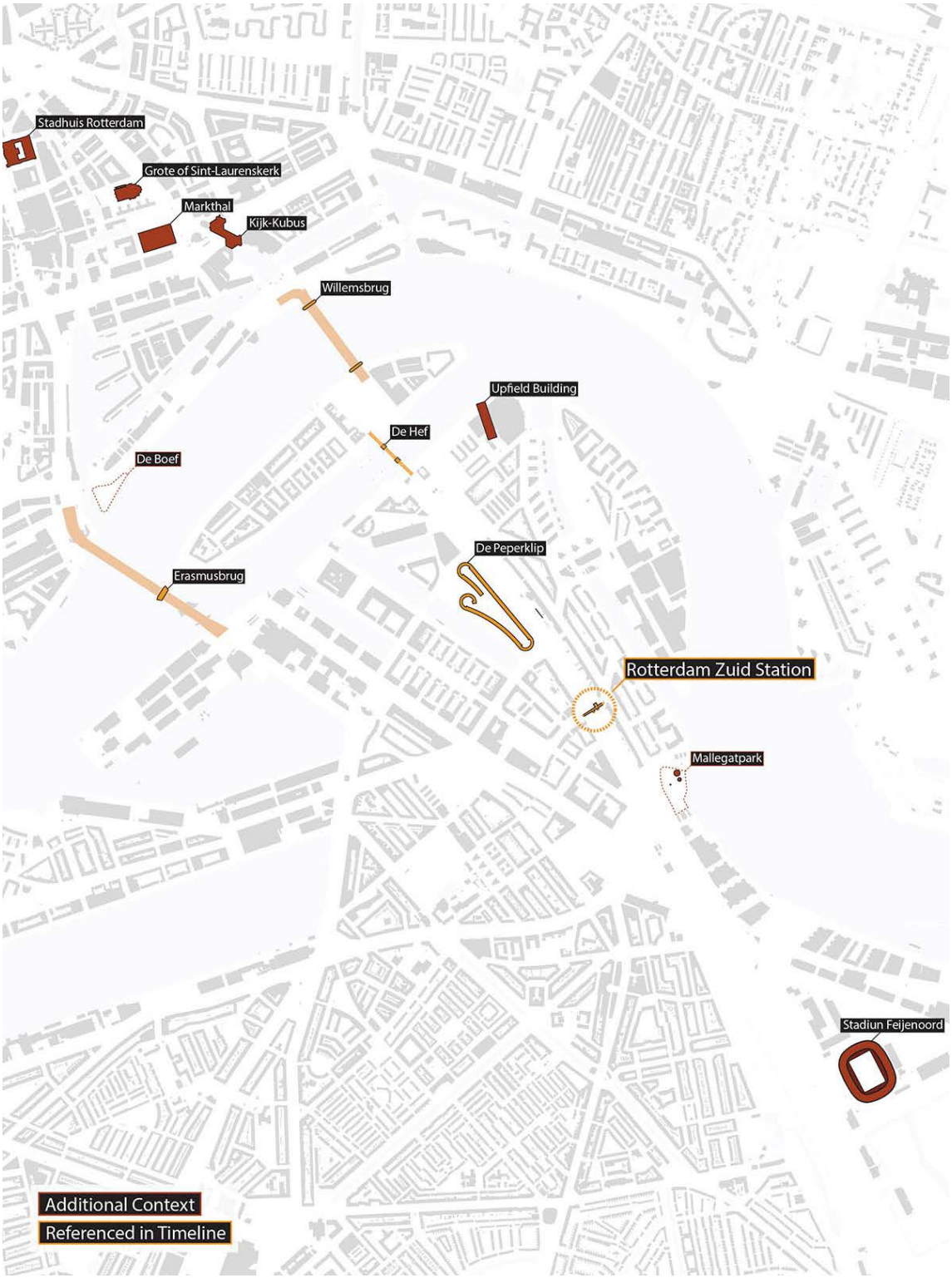
1977
Kijk-Kubas

One of Rotterdam's most famous tourist attractions, the Cube Houses are a testiment to Rotterdam's recent history of architectural experimentation.



2019
Upfield The Attic

A continuation in bizzare design typology, The Attic follows in the footsteps of the Cube Houses; contemporary design pasted on top of historical buildings.


Stadhuis Rotterdam
Grote of Sint-Laurenskerk
Markthal
Kijk-Kubus
Willemsbrug
Upfield Building
De Hef
De Boef
Erasmusbrug
De Peperklip
Rotterdam Zuid Station
Mallegatpark
Stadiun Feijenoord
Additional Context
Referenced in Timeline

MORPHOLOGY
Neighborhood

The area is varied in terms of functions, however, it is noticeable that residential function being one of them is dominant. Housing is accompanied by educational facilities from preschool to eight public elementary schools, VAVO Rijnmond senior high school and several universities. The more t the east, the more difficult it is to access this type of facility. Feijenoord neighborhood serves as a warehouse and industrial facility, while a business and service district is developing in Kop van Zuid, the western edge of the site, especially around Wilhelminaplein metro station. Cultural and religious venues densify in Afrikaanderbuurt and Feijenoord.



Different building functions in Rotterdam Zuid

Different catering facilities such as cafes, restaurants and food halls are scattered loosely on the area of the study. Mostly focused between office buildings of Kop van Zuid and Entrepot with Rotterdam Marina, an uninviting food desert is created around the Rotterdam Zuid station and neighborhoods like Feijenoord, Afrikaanderwijk.



Available places for food and drinks in Rotterdam Zuid

MORPHOLOGY
Neighborhood

Building heights within the study area vary quite significantly, what is linked with the differences in their functions. Residential buildings are similar in number of levels, mostly reaching 10 to 20 meters high. That situation changes towards Laan van Zuid and Wilhelminapier, where high-rise office buildings form a densely built-up business district with OMA's De Rotterdam mixed-use towers rising 44 floors to a height of 150 meters. The maps clearly shows the building height around the Erasmusbridge increasing, creating the connection between the two city centers.



Different building heights in Rotterdam Zuid

The study area varies in terms of the age of the buildings in this area. Development of the southern part of Rotterdam was one of the key projects started by the municipality during post-war era. That is why majority of the buildings date back to 1960s or later, with a few exceptions constructed in the first half of the XX century, for instance Entrepot and some parts of Noordereiland. Kop van Zuid consists of most recent developments in the area. Reflective glass facades of Wilhelminapier form the new skyline of Rotterdam, visible in all its glory from the side of Erasmus bridge.



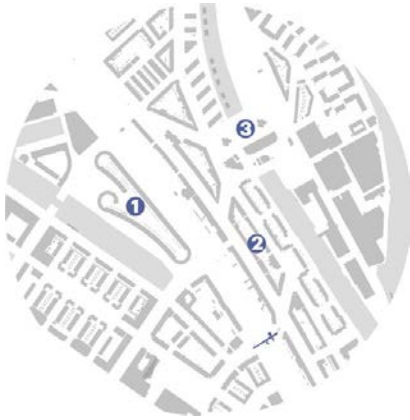


Construction dates in Rotterdam Zuid

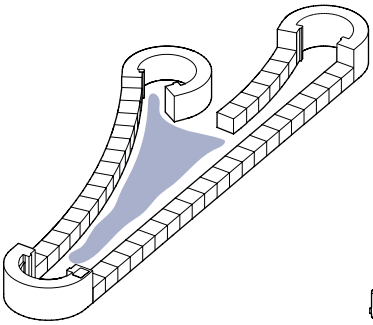
MORPHOLOGY
Neighborhood

Rotterdam Zuid station is surrounded mostly by housing units which vary in size, type, construction date and their morphology. Due to the fact that the southern bank of the Nieuwe Maas is mostly inhabited by non-western migrants and people with incomes below the Rotterdam average, the area around the station is occupied by social housing units such as the Paperclip.

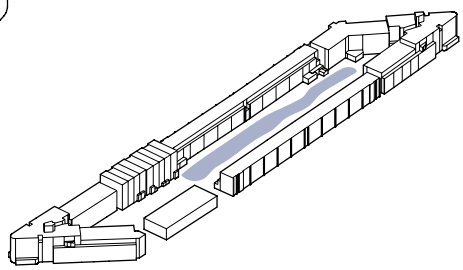
Rotterdam's post-war residential architecture is an example of an attempt to reinvent a Dutch urban block, where the traditional model was replaced with lower density buildings and designed for segregated groups of users that usually shared the same background. Results of those actions are clearly visible in the area of the study. Housing units are directed inwards, not inviting and not enabling human integration. The collective green spaces aimed at providing leisure areas became abandoned by anonymous inhabitants of multi-family blocks, turning into barriers instead of connectors.



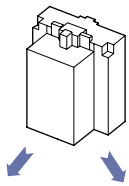
1 social multi-family housing
De Peperklip, built 1982



2 tenement houses
built 1960s



3 housing block
built 2010s



Rotterdam Zuid station located within different morphological types of dwellings

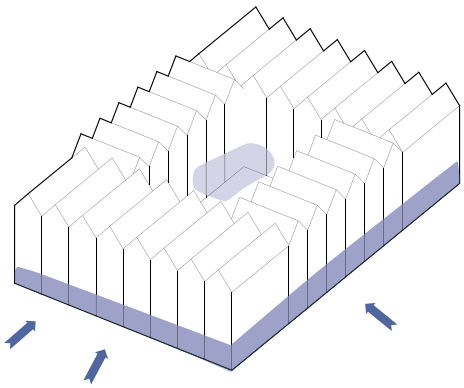
DUTCH URBAN BLOCK

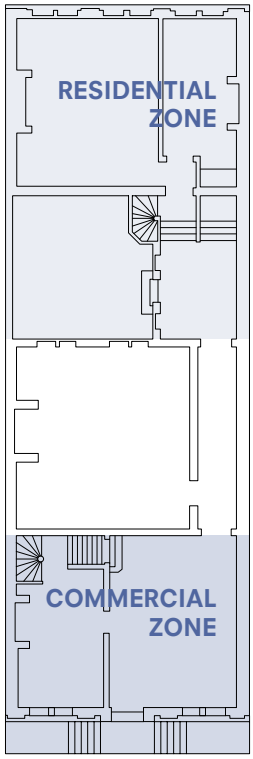
Today the attention paid to employment, dwelling, recreation, traffic and transportation as large separate spatial entities, shifts to the mutual connection of these urban functions. There is a growing interest in those parts of urban economy that are characterized by the integration of dwelling and working, or put into other terms, of production and consumption.

The transition from private to public in the houses of the Amsterdam ring-canals provides a clear example of the overlap of functions during the past and even today.

In the organization of the Dutch house in the Amsterdam ring canals dating from the seventeenth century, where production and consumption were not yet separated, one can see how private space and public domain literally overlap each other. In the private space, for example the front room was used as trading office, and the broad part of hallway next to it forms part of the public domain as of the private realm of the house.

The small-scale urban economy can also be understood as a means for integration and emancipation of Dutch citizens that have a non-western background. The possibility to start one's own businesses, and as a consequence attain economic independence, offers the means to achieve an equal position in Dutch society.





Ground floor layout

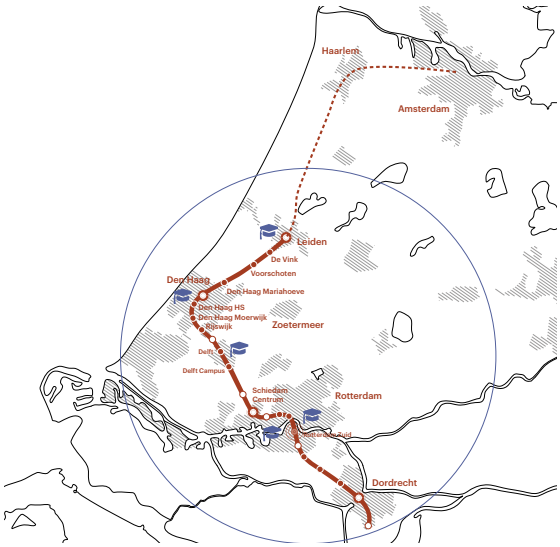
Canal House, arch. Philip Vingboons, 1639, amsterdamsegrachtenhuizen.info

MOBILITY
Randstad - City

The ‘Oude Lijn’ to be redeveloped

The ´Oude Lijn´ is the oldest train track in the Netherlands dating back to the late nineteenth century. It originally connected Amsterdam, Haarlem and Rotterdam and follows the old canal route from Leiden to Amsterdam.

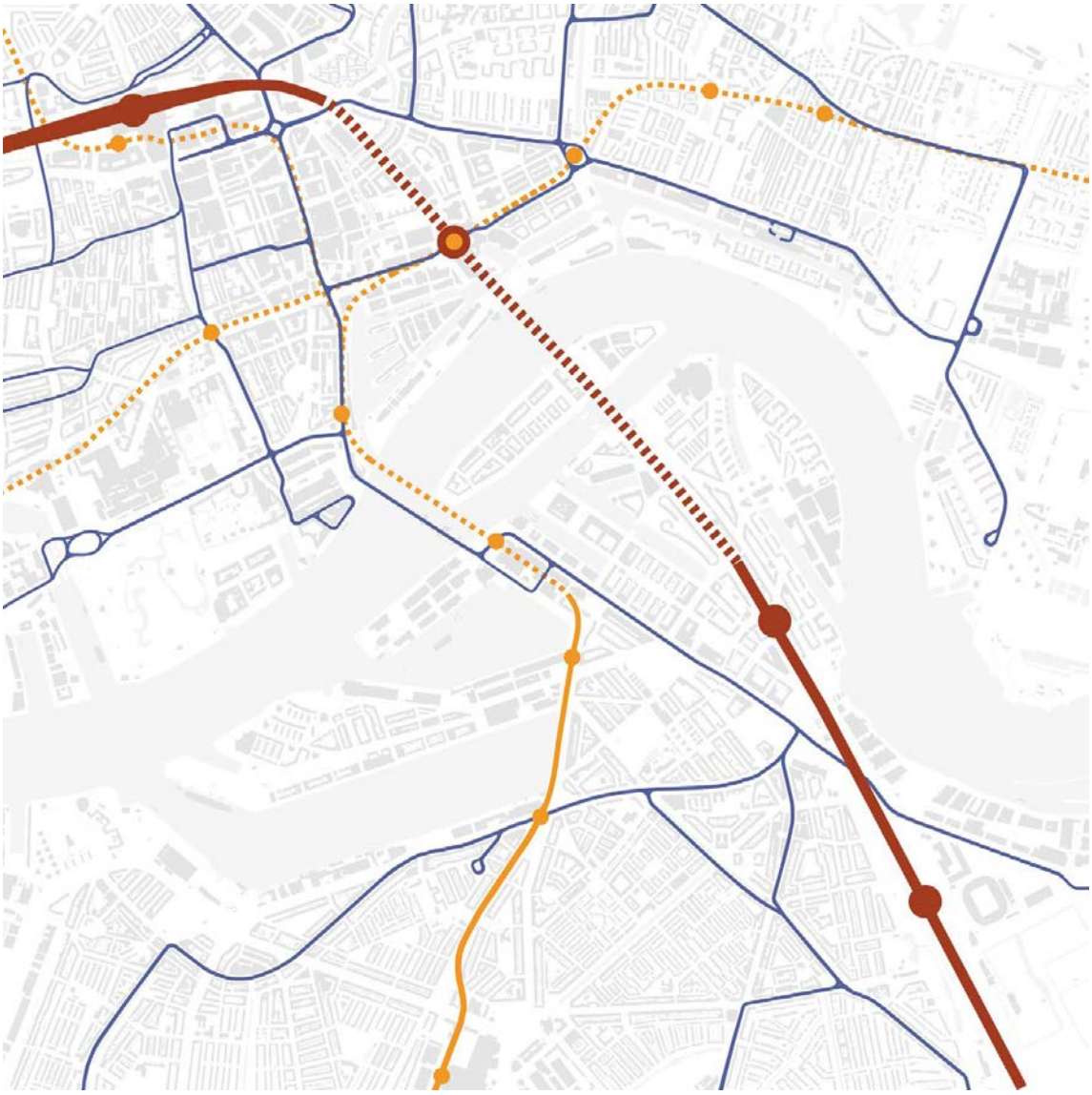
From now until 2040 approximately 240.000 new dwellings will be built next to the ´Oude Lijn´. The province of South-Holland, NS, MRDH and other parties have created a program call MoVe which focuses on upgrading the ´Oude Lijn´ with more stations and more frequent trains to accommodate these new developments so that in the future more passengers can travel environmentally friendly throughout the region (NS, 2022).



Rotterdam Zuid: part of Randstad public transport

As can be seen on both drawings on the right, Rotterdam-Zuid is actively part of the public transport network of South-Holland. Station Rotterdam-Zuid is fairly close to the city centre which makes it a perfect station for commuting towards the centre or even other cities. The station Rotterdam-Zuid right now works quite autonomously. Transferring to different forms of public transport is limited since both tram and metro are not close by. Also main roads are not close to station Rotterdam-Zuid which makes it not a popular park+ride (P+R) location.

The ‘oude lijn’ train track (bron)


train
train, underground
metro
metro, underground
tram
roads

MOBILITY
Zuid

Current reach of station Rotterdam-Zuid

The current reach of the station is determent by the fastest route to the central station in Rotterdam from a central location in each neighborhood. This research concludes that the neighborhoods Feijenoord and Kop van Zuid - Entrepot lay within the reach of the train station.

Because Rotterdam Zuid is only a small station, no intercity stops there, which means the connection to the randstad from this area starts with the same transportation connections to Rotterdam Centraal.



Current reach of area near station Rotterdam-Zuid

Future reach of station Rotterdam-Zuid

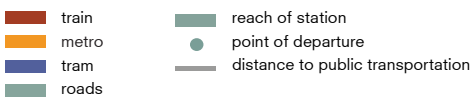
After moving the station to its new location, the reach of the station increases. After this, the fastest way to reach the central station from the neighborhood Noorderwijk is through the new station of Rotterdam Zuid.

The indicated also means the demography of the users of the station will change as well. Both Feijenoord and Kop van Zuid - Entrepot have a large percentage of non-western immigrants whereas Noordereiliand has a large percentage of people with no migration background.

Noordereiland has similar income statistics as Kop van Zuid - Entrepot, but Feijienoord has a much larger percentage of inhabitants with a low income. This means the percentage of users with a high or middle income will increase.



Future reach of area near station Rotterdam-Zuid



Shared mobility network in Rotterdam-Zuid

The number of soft mobility companies within the city of Rotterdam is increasing a lot in the last few years. Currently, there are 15 companies within the city offering shared scooters, bicycles and cars. (Deelvervoer Rotterdam, z.d.)

In the diagram below the companies and the methods of mobilities are shown, as well as if you can park the vehicle within a certain service area or if it has a designated parking spot.

The shared scooters, with their lack of direction as to where to park them, tend to occupy and disrupt the public space. Three companies are offering this type of mobility in Rotterdam. Their service areas around station Zuid are shown on the map on the right.

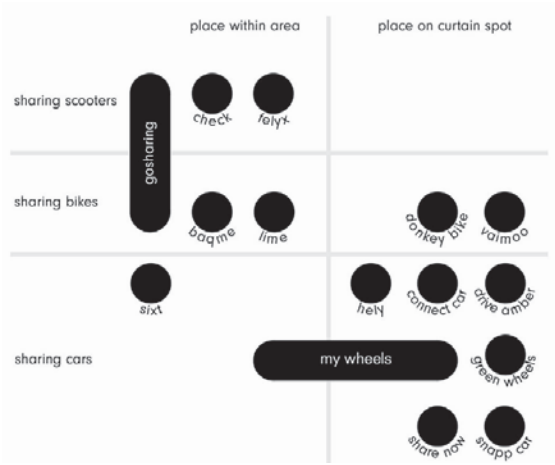


Diagram on different mobility options near station Rotterdam-Zuid



Soft mobility in Rotterdam-Zuid

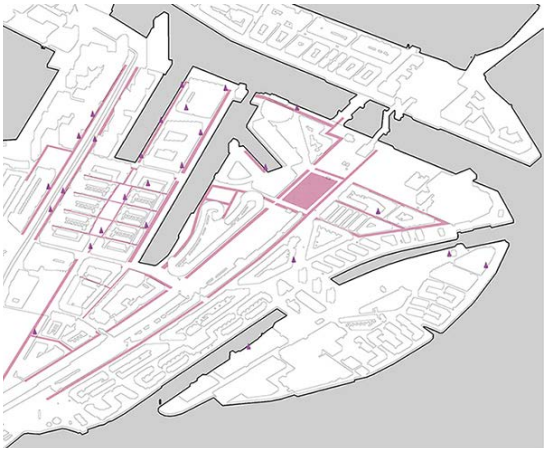
gosharing
check
felyx

MOBILITY
Neighborhood

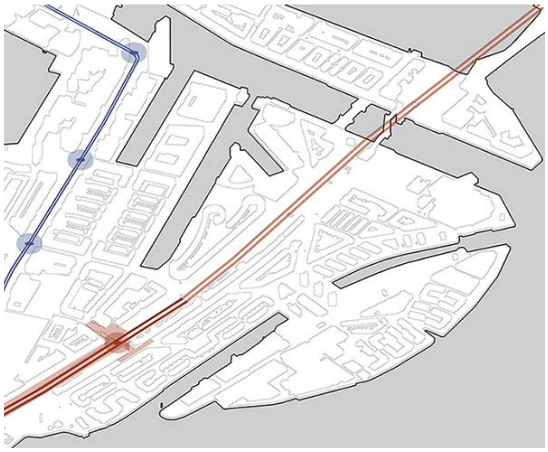


Different modes of transportation in the neighborhood

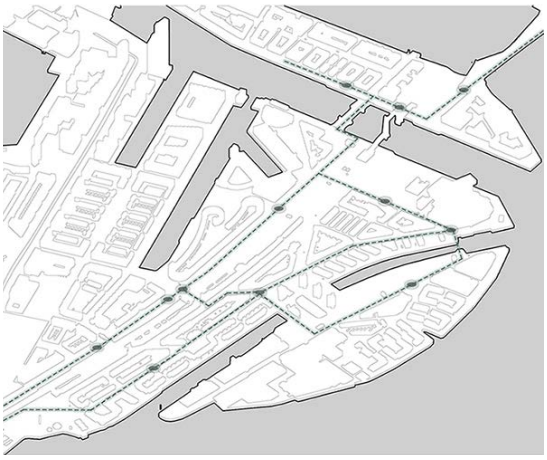
Zooming on our neighborhood we can see a dense transport network, especially evident along the axis of our station where the functions are usually overlaid without particular prioritization or suitable infrastructure. On the right it is shown more clearly each transport method isolated starting with the car where we find a lot of outdoor parking locations, especially around the residential areas of Feijenoord. The parking spaces are usually integrated within the street that proves the location to be of high car density. Closer to the maas there is the largest open parking area that serves generally the areas of Feijenoord and north-east of Kop van Zuid Entrepot. Despite the clustering of transportation in our neighborhood there is poor connection between the tram and the train, isolating Feijnoord from Kop van Zuid and making our station more of a destination rather than a connector with the rest of the surrounding area. The bus can be used locally but also serves mainly the residential areas in Feijnoord. One of the most popular means of transport than can be expanded and play a key role in the development of the neighborhood is via bike and on foot and this is also the main means to transport to and from the station. However, the proper infrastructure such as bike stations or appealing pedestrian routes has yet to be largely developed in the area.



Outdoor car parking and EV points



Tram (blue) and train (red) line and stations

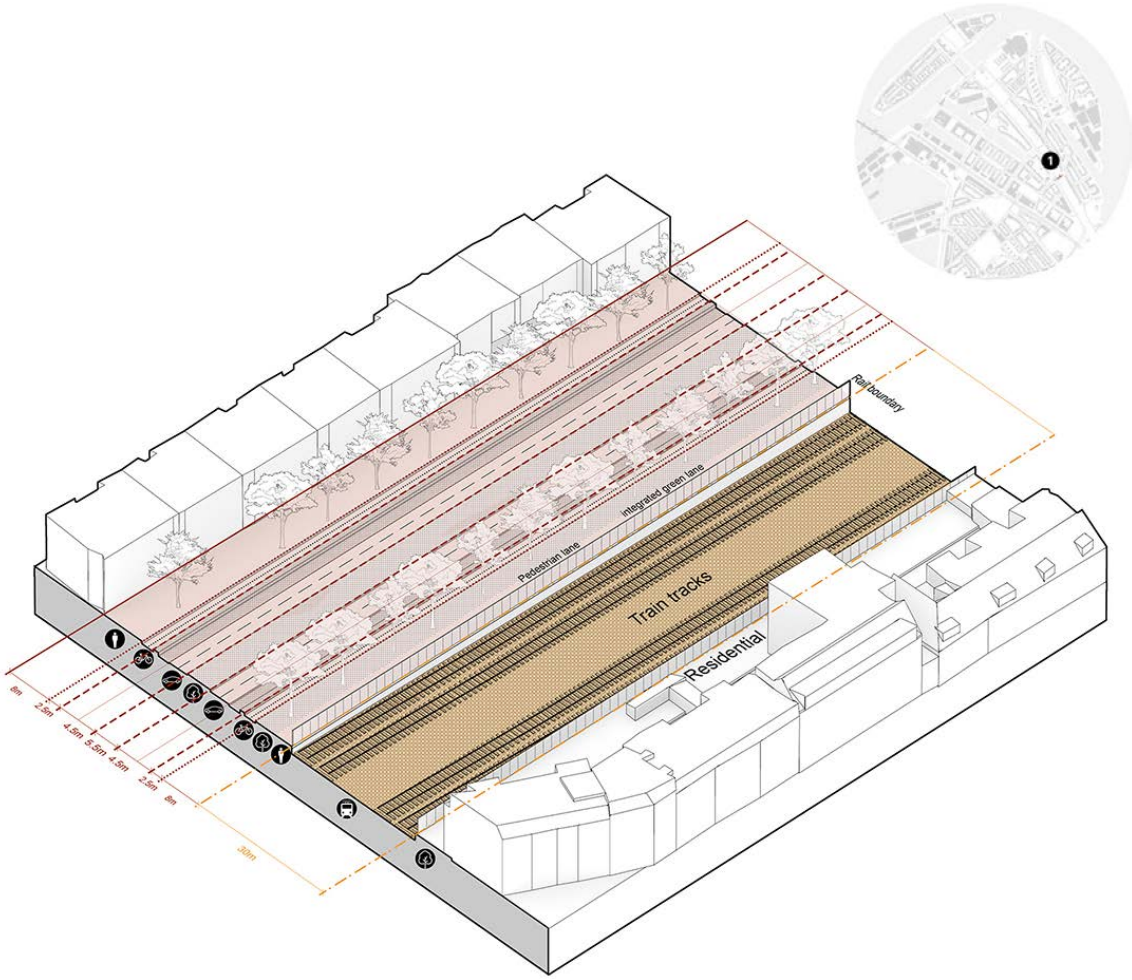


Bus route and stops

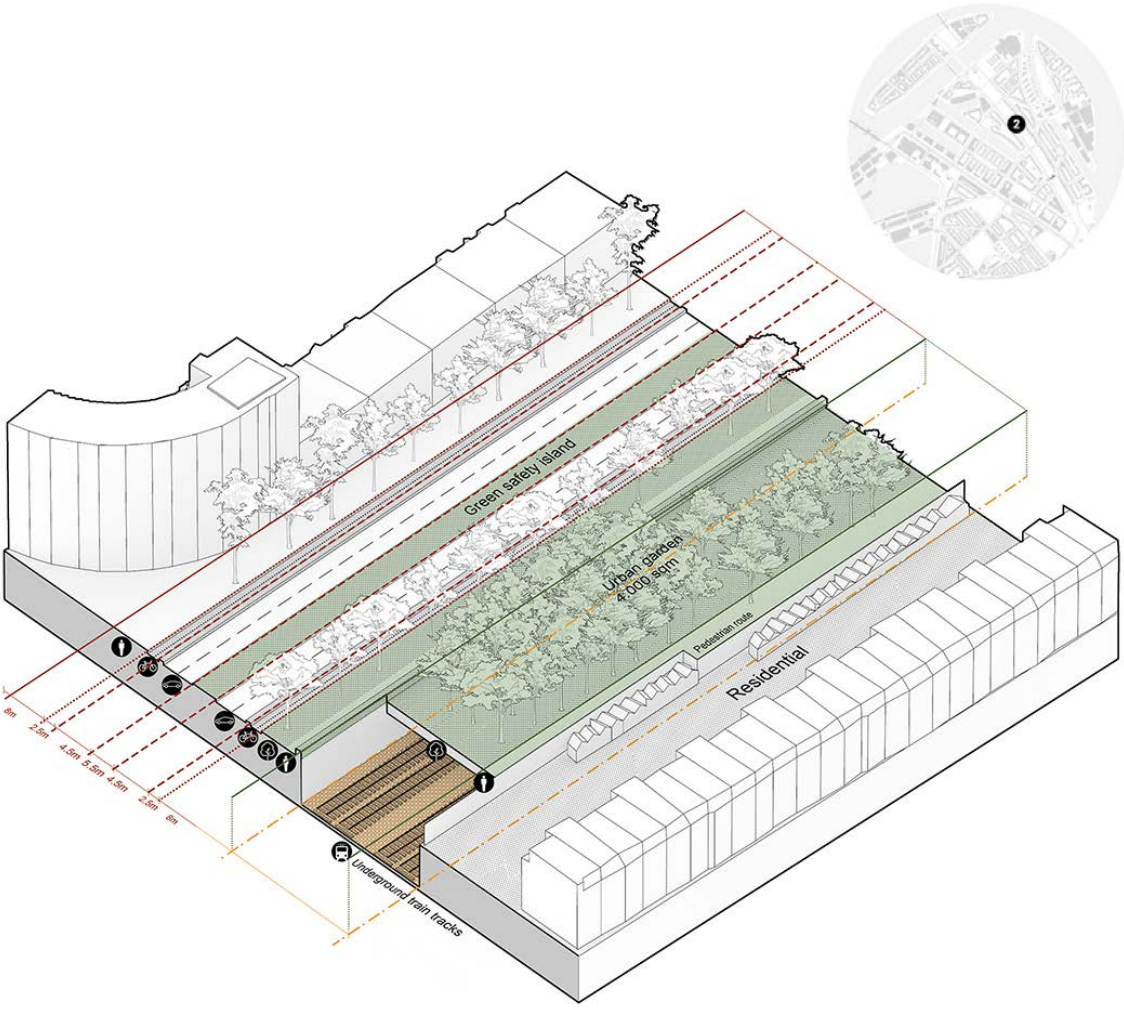


Bike routes (orange) and pedestrian flow (yellow)

MOBILITY

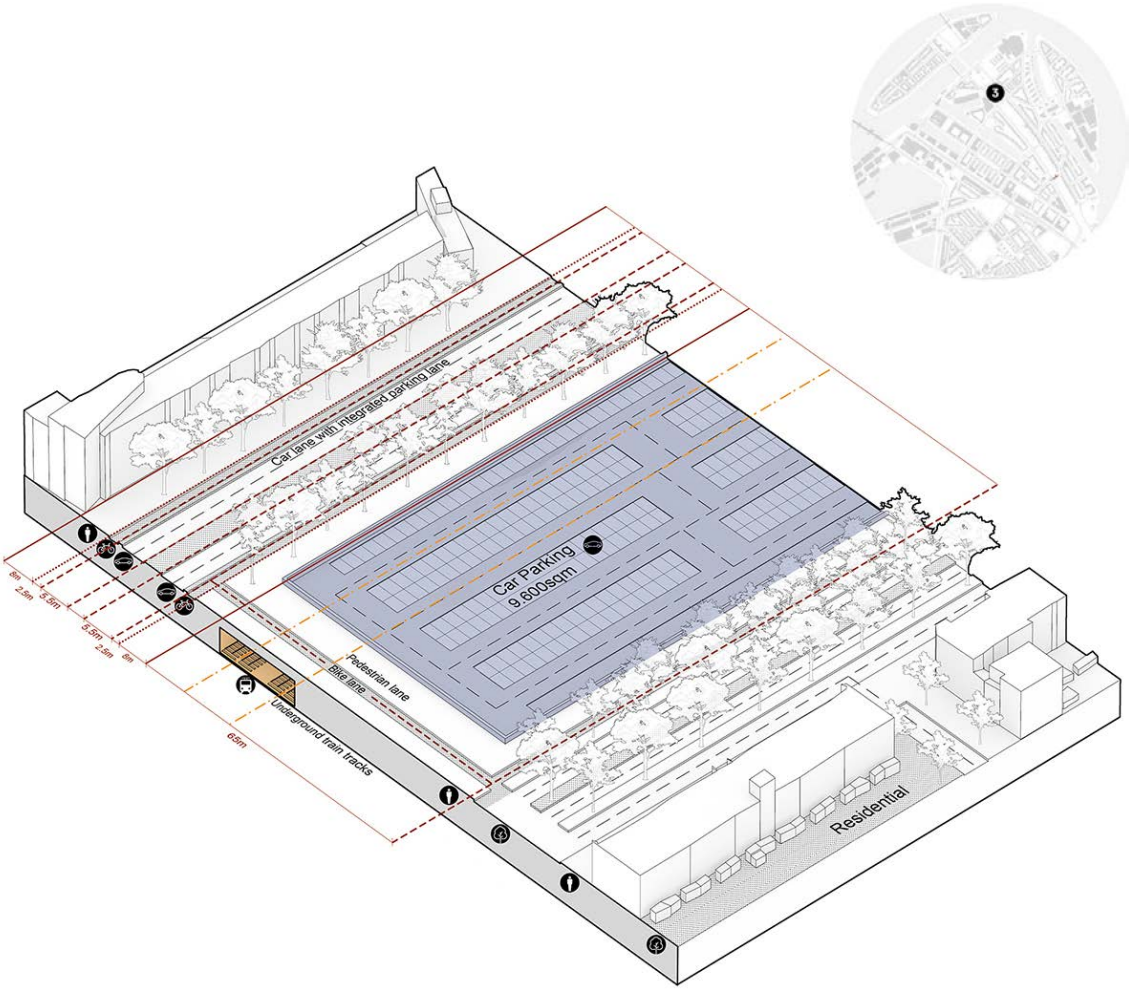


1. The street profile at the area around our station indicates a clear distinction within the neighborhood with the train tracks operating as a barrier that fragments it. The street itself has a complex segmentation including mixed uses for pedestrians, bikes, cars and safety – green lanes. The wide width required for this segmentation takes up a lot of the public space even in relatively low traffic residential areas.

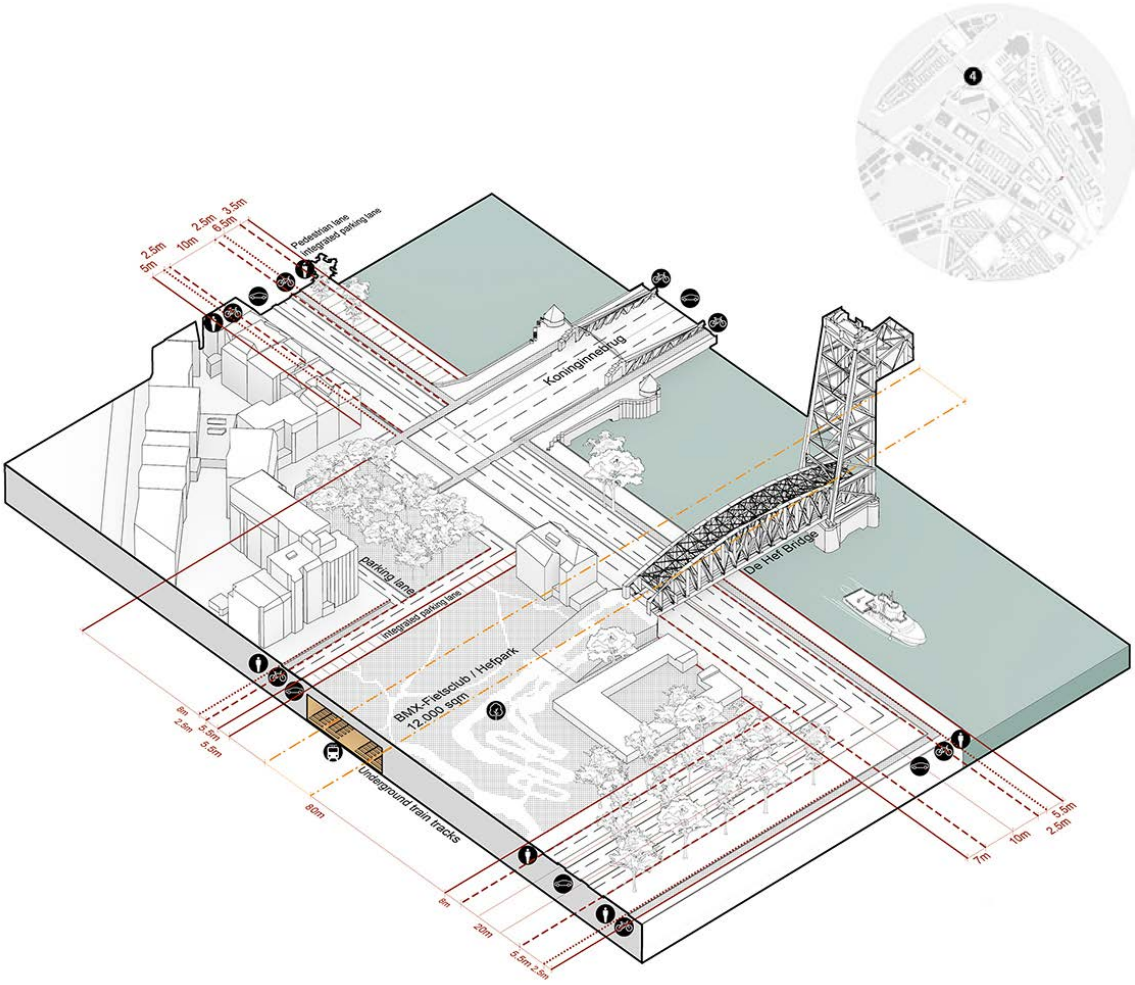


2. As we move across the axis of the station towards Koningshavenbrug, the landscape changes drastically with the tracks going underground giving way to an urban garden - Rotterdamse Munt- that is being maintained as a green lung for Rotterdam Zuid. However, this green lane maintains a more segregated character given the fencing that separates it from its surroundings and its not implemented functionally within the city.

MOBILITY

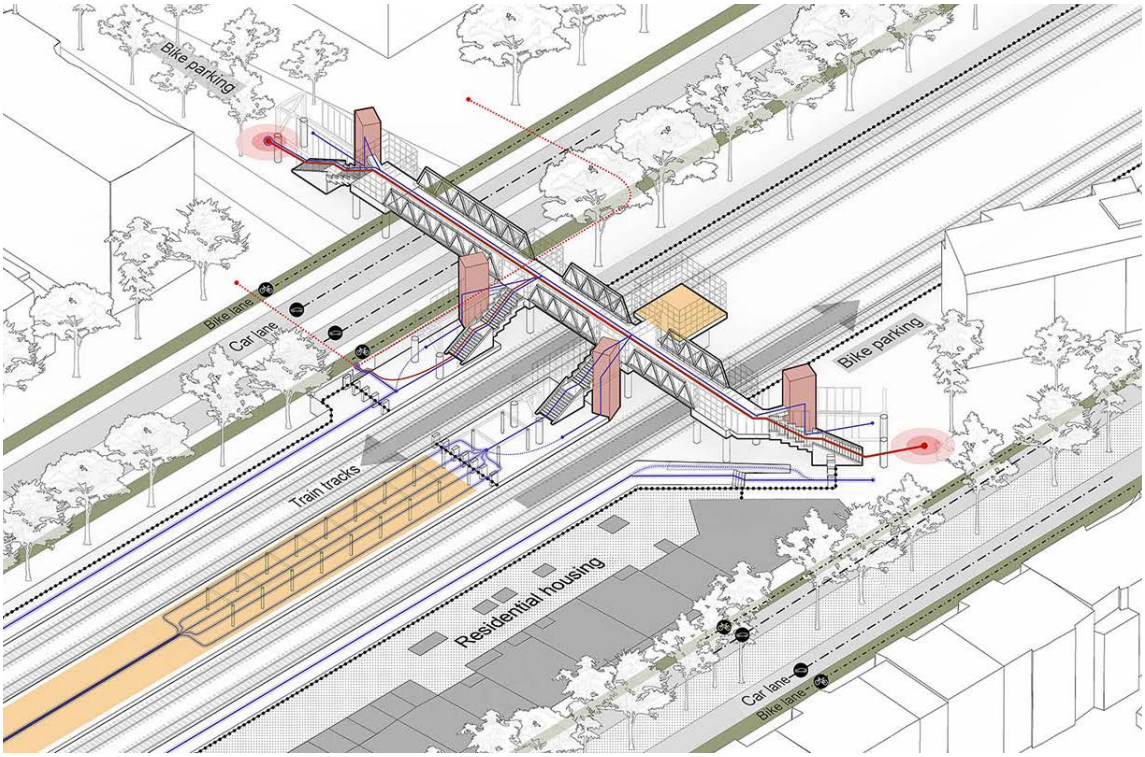


3. Across the garden the texture of the urban landscape changes again giving way to a big open space which functions as a parking area that serves the business quarter of Rotterdam Zuid. Here, the wide width of the enveloping streets and the big urban void provide a lot of potential for the space to attain a more public use.



4. On the last street section we see a dense mobility network with its different functions intertwining and taking up most of the space along the maas. Even for the part of the riverside west to Koninginnebrug which provides a wider esplanade, more than half of it is used for parking space and the area despite its potential for pedestrian and bike routes seems to prioritize car use.

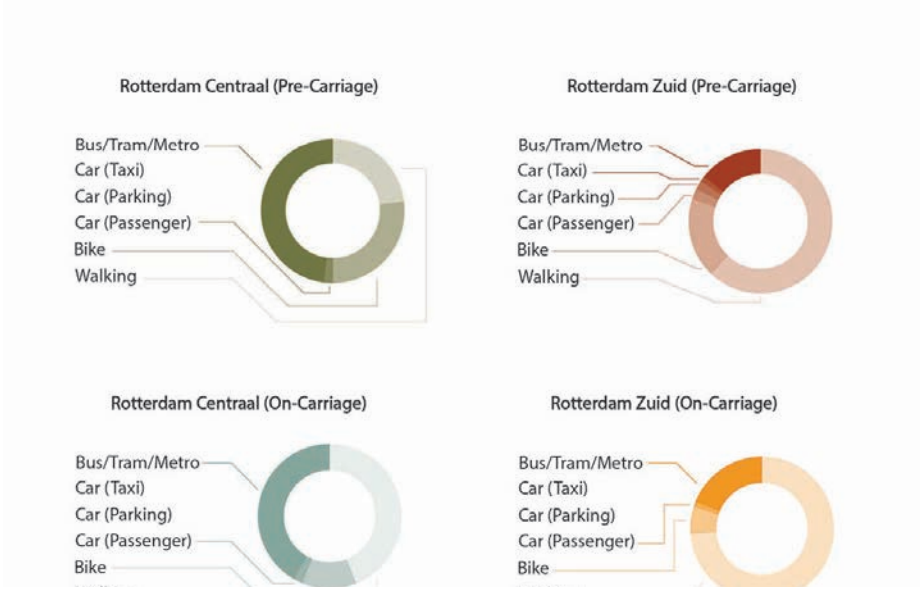
MOBILITY
Station



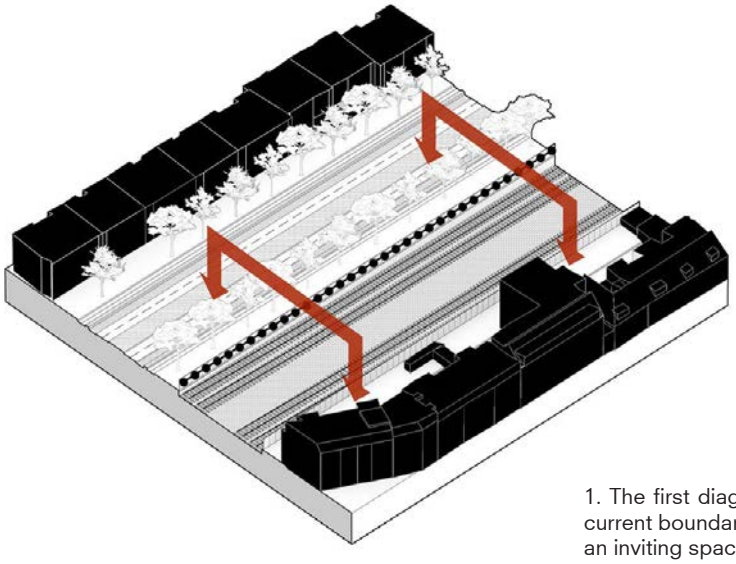
On the smaller scale for the current situation of the station itself, as you can see we distinguish mainly 2 types of mobility schemes that give it 2 different functions. The red one depicts the flow of people that use the station as a bridge to cross over to the other side giving it a big role as a connector between the two neighborhoods. The blue represents the flow of people that make actual use of the station and here we see that the surrounding boundaries and entry points make the station quite inefficient. Also, the long expansion of the platform that stretches for almost 300meters and is accessible from the south as well is often used as a 'meeting point' given the lack of sufficient public space within the station itself. This is also more evident given the fragmented character of the surrounding urban area as the station on the one side is aligned with the street while on the other side the platform literally osculates with the backyards of the neighboring residential houses.

Mobility wise- despite the wide array of different modes of transportation that serve the station there is bad connectivity and lack of sufficient infrastructure. The main way of transit is via bike or foot however the infrastructure that supports those modes of mobility is relying on unprogrammed bike parking outside the station and no proper open and free spaces for pedestrians. Also from the low percentage of people that use the bus/tram or metro to approach the station, we can see that it doesn't make use of its location as a transfer or connector point between different modes of transportation especially compared to central, a hub destination where everything is connected.

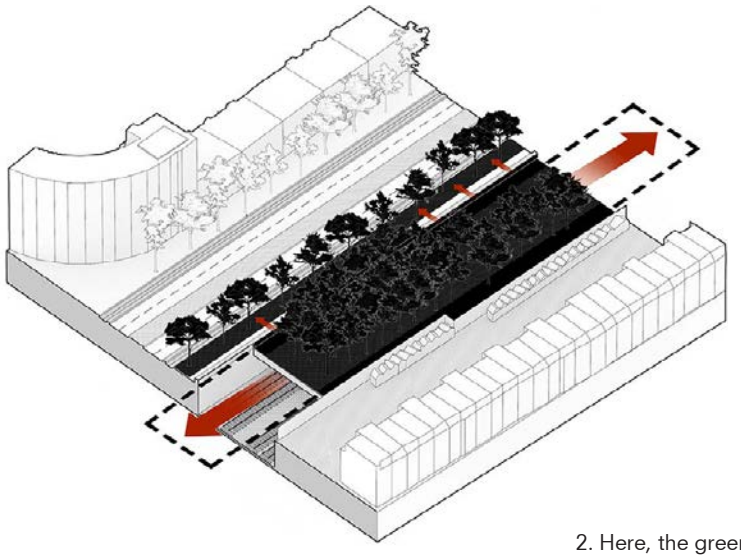
Rotterdam Centraal		Rotterdam Zuid	
120,670 Riders Per Day		3,658 Riders Per Day	
93% Rider Approval		42% Rider Approval	
Pre-Carriage	**On-Carriage**	**Pre-Carriage**	**On-Carriage**
48% Bus/Tram/Metro	44% Bus/Tram/Metro	14% Bus/Tram/Metro	19% Bus/Tram/Metro
0% Car (Taxi)	0% Car (Taxi)	1% Car (Taxi)	0% Car (Taxi)
0% Car (Parking)	0% Car (Parking)	3% Car (Parking)	0% Car (Parking)
2% Car (Passenger)	2% Car (Passenger)	2% Car (Passenger)	1% Car (Passenger)
27% Bike	10% Bike	18% Bike	6% Bike
23% Walking	44% Walking	62% Walking	74% Walking



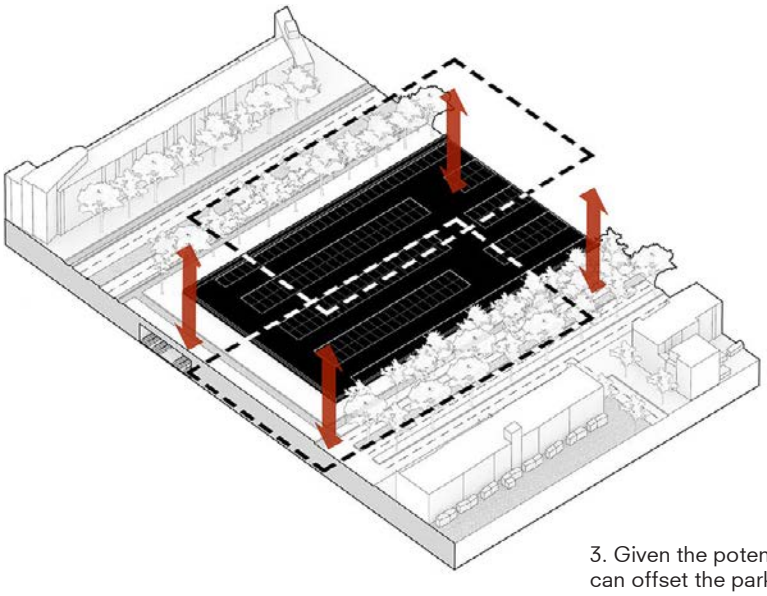
MOBILITY
Conclusion



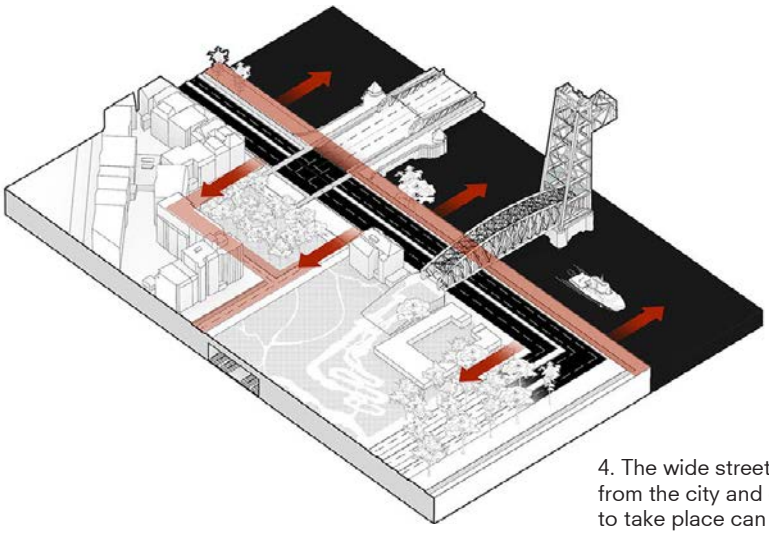
1. The first diagram shows the potential of bridging the current boundary formed by the train tracks in a way that an inviting space with public functions is created, maybe even a network of infrastructures on different key points along the tracks that form gathering spaces instead of crossing bridges like the current station.



2. Here, the green lane can expand, perhaps even be integrated to the already existing or redeveloped station infrastructures and also open up to the public. A way this can be done is by stitching the garden with the tree lines that shelter the pedestrian lane, thus making the route itself an integral part of the public garden.



3. Given the potential of this big urban void, we can offset the parking space upwards creating as a canopy for a multifunctional public area underneath, or downwards thus leaving the space on ground level entirely undivided and free. This can be an integral part of the design for the new Rotterdam Zuid station.



4. The wide street lanes that segregate the riverbank from the city and doesn't allow for any public function to take place can be rerouted based on the already existing infrastructure. That way the esplanade that runs across the maas can be widened and redeveloped to acquire public activities and create an outdoor expansion of the new station.

DEMOGRAPHICS
City

When we look at the demographics of Rotterdam we can see that about twelve percent of the inhabitants of Rotterdam live in Rotterdam- Zuid. (Informatie wijk Feijenoord, z.d.)

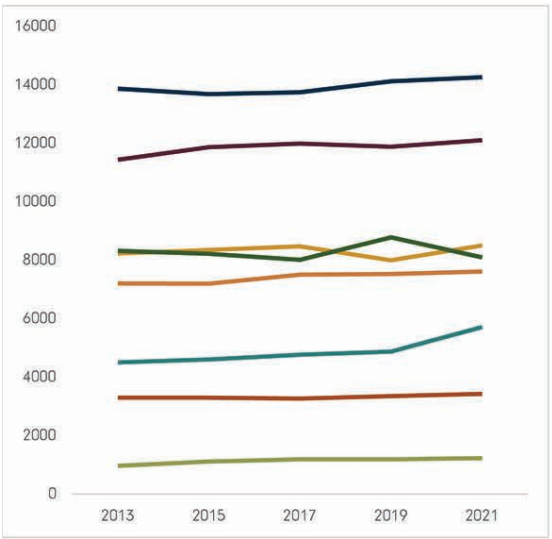
If you compare this percentage to the other statistics, Rotterdam-Zuid has a higher percentage of inhabitants with a non-western migration background. A lower percentage of people with a western migration background, a lower percentage of people with no migration background and a lower real state value than the average of Rotterdam.

Rotterdam	Rotterdam Zuid
	
651.631	**76.960**
inhabitants	inhabitants
220.000	**191.000**
average house value	average house value
255.827	**43.840**
non-western migration background	non-western migration background
88.707	**9.300**
western migration background	western migration background
307.097	**23.820**
native dutch	native dutch
50.268	**5.852**
registered crimes	registered crimes

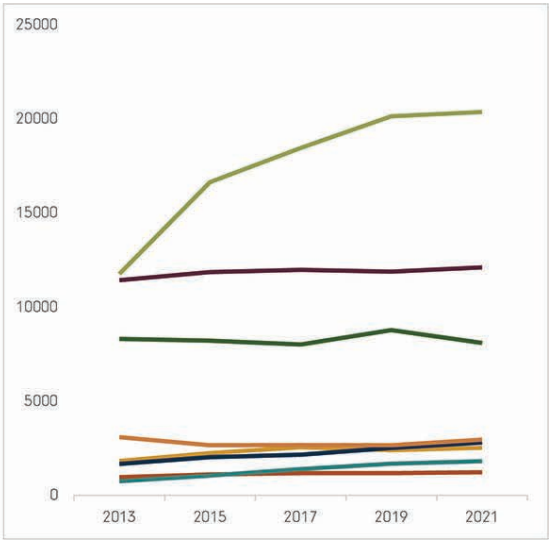
DEMOGRAPHICS
Neighborhood

We can see in the numbers reported by Wijkprofiel Rotterdam that there have been increases in available housing and numbers of jobs within the neighborhood over the last few years. (Feijenoord | Wijkprofiel Rotterdam, z.d.)
This is especially visible in the neighborhoods along the water, Kop van Zuid has a big increase in jobs compared to the other areas and the neighborhood Katendrecht has had the highest influx in housing.

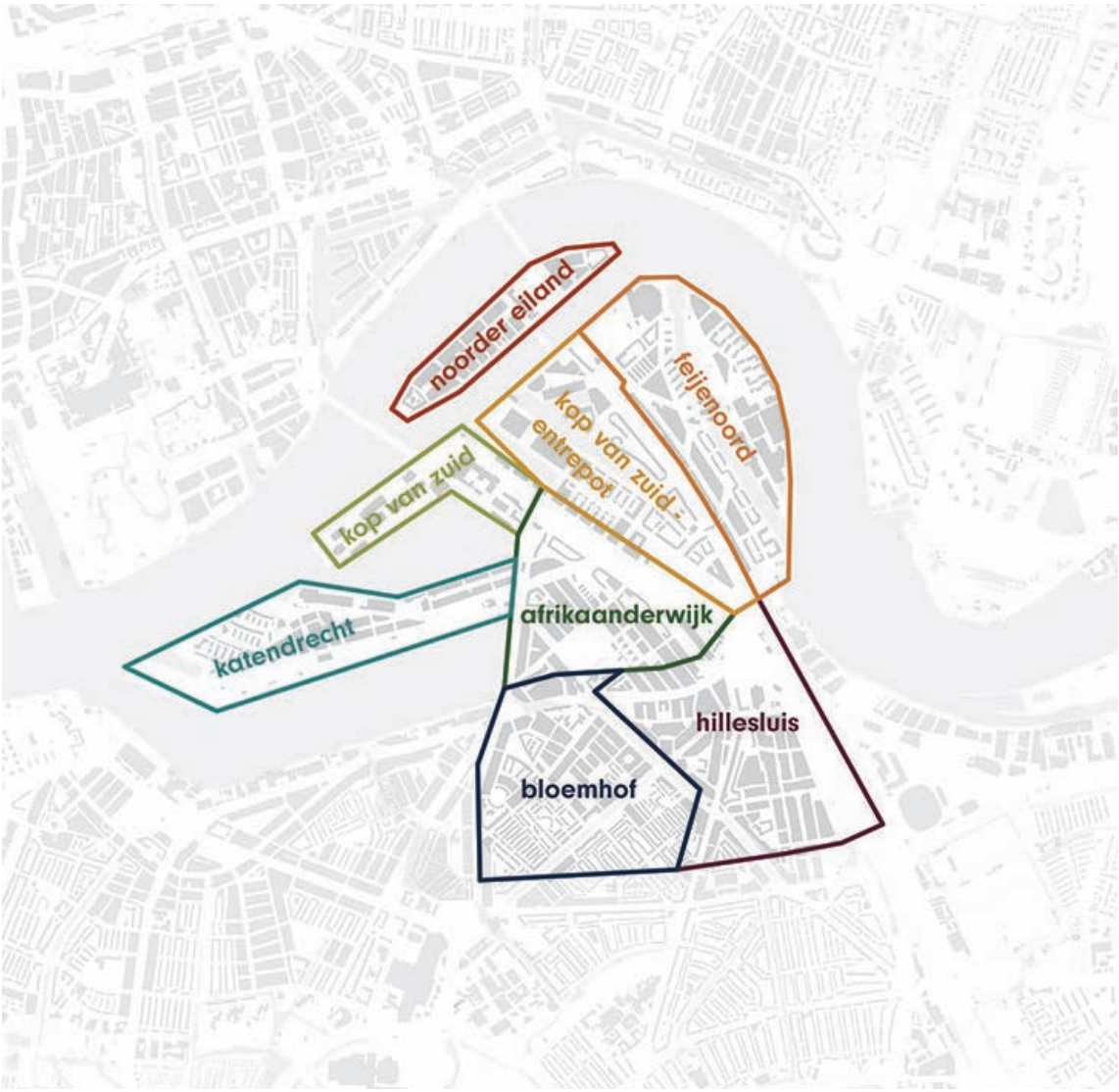
Many different parties have taken action into a structural approach to the accumulation of social problems in Rotterdam Zuid. The organization NPRZ, Nationaal Programma Rotterdam Zuid, has subdivided their action program into three subcategories: work, living and education. (Custers, z.d.) The main goal of the program is to maintain and attract a middle class to the area by creating housing and a living environment that suits this demography. By enlarging this middle class, a balance is created in the population composition.
The organization has appointed focus areas within the social housing sector which include the neighborhoods Feijenoord, Hillesluis, Bloemhof and Afrikaanderwijk. Which are four neighborhoods near station Zuid. The focus neighborhoods with a lot of housing in the private rent sector also have a relatively large portion of the emerging middle class, but when we look at the focus neighborhoods with a lot of social housing it becomes apparent that a lot of residents have little economic capital.



Number of inhabitants between 2013 and 2021



Number of jobs between 2013 and 2021



Demography of Rotterdam Zuid, number based on Wijkprofiel Rotterdam 2022

DEMOGRAPHICS
Neighborhood

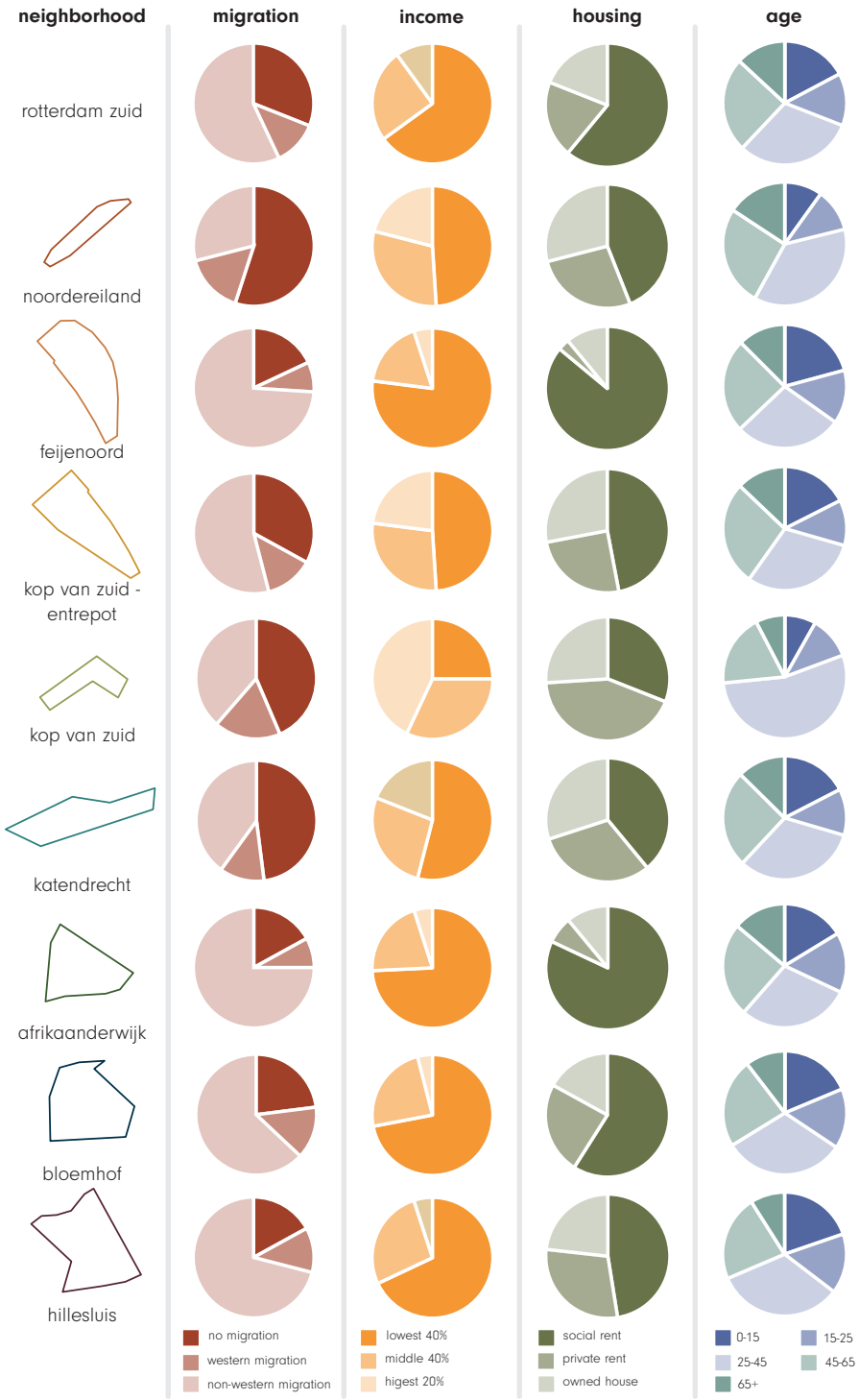
There are considerable differences in demography within the neighborhoods in Rotterdam Zuid.

As is visible in the diagrams on the left the neighborhoods along the water, being Noordereiland, Kop van Zuid, Kop van Zuid - Entrepot and Katendrecht, have a larger group of higher income and a smaller group of lower-income inhabitants than the average of Rotterdam Zuid.
This difference is also reflected in the amount of social housing within the neighborhoods. The neighborhoods along the water have fewer social housing and more owned housing.

The age distribution throughout the neighborhoods is somewhat similar, within each neighborhood the group 25-45 is the largest.

Station Zuid is on the border of the neighborhoods Feijenoord and Kop van Zuid - Entrepot. When we look at the statistics of these two neighborhoods we can see that a majority of the inhabitants have a non-western migration background. Within Feijenoord a majority of the inhabitants belong within the lowest 40% income group and a vast majority of the housing is social rent. Within Kop van Zuid - Entrepot a little less than half of the population belongs within the lowest 40% and a little less than half of the houses belong within the social housing sector.

When the station is moved to the proposed location the station moves closer to Noordereiland, a neighborhood where more than half of its inhabitants have no migration background, and that has similar divisions within the income and housing statistics as Kop van Zuid - Entrepot.



Demographics in Rotterdam districts

ENVIRONMENT

Most of the greenscapes in the region The Hague and Rotterdam is around and in-between the cities. These greenscapes mainly consists of forests, agricultural fields and nature reserves like dunes.

In the Rotterdam region, greenscapes are concentrated around the city rather than in the city. Kralingse Bos, being one of the biggest and most accessible parks around the area, is situated at North. The city center is rather missing green areas and parks and the ones existing are a bit outside the center around the shore such as Het Park.

Rotterdam Natuurlijk

As part of the city initiative of Rotterdam Natuurlijk 2013 has drawn up a plan for a 42-kilometer long recreational nature route right through the city. By completing the route of the Green Marathon in whole or in part, Rotterdammers can experience nature in their city. By bike, on foot, or by canoe. The aim of the Green Marathon is to connect different natural places in the city.

Rotterdam Zuid area is covered densely with concrete and priority of the surface space is given to trains, cars, parking lots, and other transportation mediums. It needs more greenscapes. Most of the greenery that is seen on the map is just grass patches with no public use.



Greenscape Zuid Holland



Greenscape Rotterdam



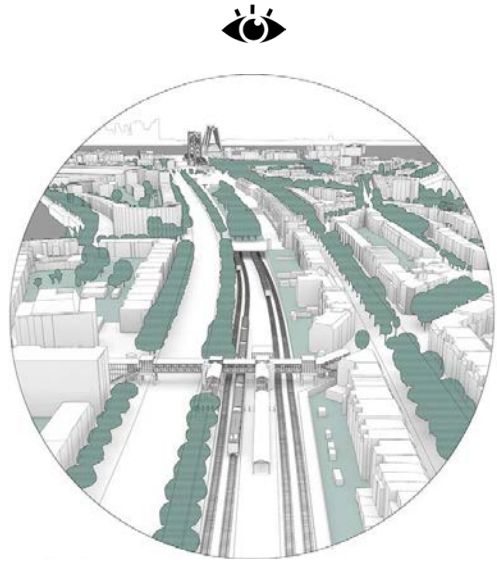
Greenscape Rotterdam Zuid

ENVIRONMENT
Neighborhood

In the region Rotterdam Zuid there are a lot of small greenery and a few parks. It is not very clear what is public and private since most of those greenery is in the format of a courtyard for the housing yet open to walk in. There are also many grass strips along or in between the car roads, however still in a low percentage compared to concrete surface. Meanwhile the public parks offer some activities and place to gather for their residents but are not very well connected and for many visitors or residents unknown.

Ons Park is a big grass area with a sport field and some playgrounds, being situated at Noordeiland between housing. Across the water we find the Hef Park as a continuation of Hef bridge. It consists of a BMX path, an event space and a community garden. Following the old train tracks towards the station there are some play grounds and basketball field however uncared and not really child friendly. Moving along there is Rotterdamse Munt, a non-profit organization founded by the residents of Rotterdam-Zuid in order to make urban gardening and nature available to people in the city. They organize workshops, give education and organize events for their cause and it is possible to enjoy their harvest. Nassauhaven Park, situated a bit on East, is one of the few spots that offers tall greenery and access to water. Moving more down south, there is Mallegat Park along the water with its monumental old water towers.

There is also a high percentage of quays accessible to the public however with no program or function. Most of these quays are not very attractive due to no greenery around and no commercial functions.



Tall greenery



1. Ons Park
2. Hef Park
3. Rottardamse Munt
4. Nassauhaven Park
5. Mallegat Park

Accessible waterfronts
Parks and recreational areas
Rotterdam-Zuid Station

Greenery and quays

ENVIRONMENT

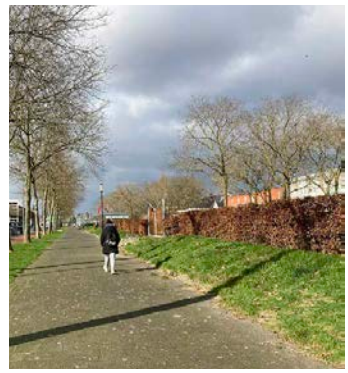
Around the Rotterdam Zuid station there are a lot of visible and physical barriers. Both the train tracks and the parks that are on top of the tunnel are barriers that separate the two neighborhoods. The axis functions as a barrier and thus both neighborhoods and its buildings are built towards the barriers.



1



2



3



4



5



6


PARKING
1
2
3
4
5
6

ENVIRONMENT

Rotterdam Zuid area has only a few public spaces and it is mainly housing and transportation oriented. The only area with a public square and commercial use is around the Entrepot Building. However it is close to the area of Rijnhaven which is a developing area with more public spaces, cultural and commercial functions. Rotterdam Zuid has also a few public parks and community gardens, at the moment most of them a bit neglected and uncared but they have a good potential to be developed especially in a scenario where those parks can be connected and a green belt can be created. There is also a high percentage of quays accessible to the public however with no program or greenery. In conclusion we can say that there is only a few public spaces and greenery in Rotterdam Zuid and many barriers however these barriers can be also seen as potentials. There are many potential plots that can be given to the public and greenery if studied and the existing public spaces can be improved.

Opportunities
- Putting program and commercial use to public spaces
- Giving parking lots to public use and greenery
- Connecting the existing greenery and parks



Public Spaces
Public Spaces with program/commercial use
Trains Station and platforms
Surface Parking Lots
Train tracks

Use of space

PLANNED DEVELOPMENTS
City

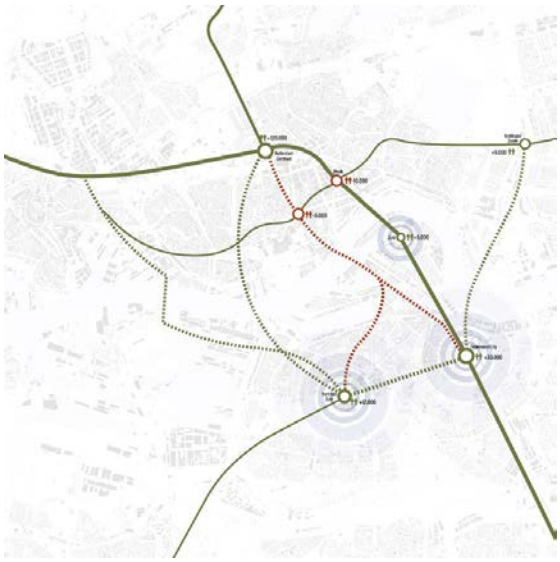
The municipality of Rotterdam made a public transport and an urban development vision for the upcoming 20 years (2018-2040) including the renewal of Rotterdam-Zuid. The vision discusses accessibility, mobility & connections and urban development.

Accessibility

The accessibility of working places is an important benchmark for public transport. With the increasing population and building density a lot of jobs move towards Rotterdam-Zuid. The municipality wants to stimulate the use of public transport thus wants to improve the accessibility for workers in the south. They want to increase this accessibility through optimizing public transport connections and urban densification around the public transport axis.

Mobility & Connections

With the new and improved public transport infrastructure the municipality of Rotterdam expects an increase in the daily users. With a lot of planned development (Gemeente Rotterdam, 2017) in the south the connection between Central Station and the south will see an increase of daily users. Feyenoord City expects 33.000 daily users, Hart van Zuid expects 12.000 more and station Zuid 6000. The total increase of these three station is 51.000 compared to the increase of 120.000 daily users at the central station.With the increasing population and the urban densification, especially in the city center, there is a demand for dwelling and offices. The south of Rotterdam will be a new city center that creates these opportunities. With the improvement of the cities public transport the municipality wants to increase the mobility within the south for both workers and residents.



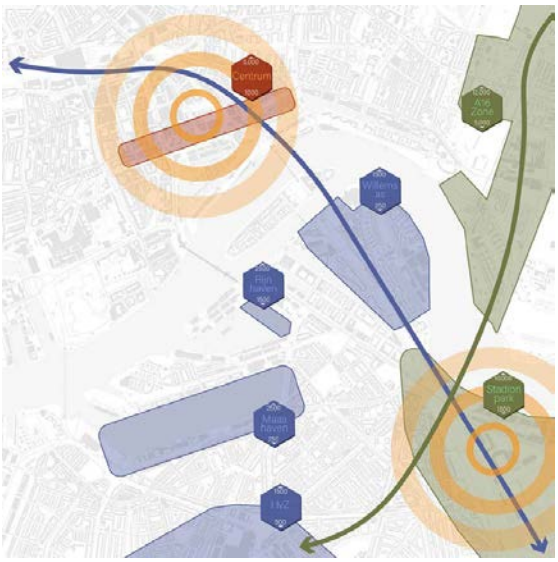
OV vision municipality Rotterdam, Gemeente Rotterdam (2017)

Planned Urban Developments

With the increasing population density, the city of Rotterdam is expected to add 50.000 new houses in the upcoming 20 years. A lot of these houses will be built in and around the south of Rotterdam. The municipality expects to be able to squeeze a 1000 to 5000 houses in the city center which is already very dense. With the development of the south, especially the Stadion park area, there is a lot of exploration going on for the possibilities of housing. There are already some projects being built such as Stadspark. In the center of the south (Willem as, Rijnhaven, Stadion park, Maashaven and Hart van Zuid) the most development will take place.

The municipality expects to be able to realize between 4000 and 18.000 houses in the center of the south. Comparing this to the possibility of 5000 houses in the city center it shows the urban possibilities of the south.

The priority development is focused on the city center and Stadion Park. With these developments the municipality wants to expand the city center towards the south connecting all the neighborhoods with each other.



Urban planning vision municipality Rotterdam, Gemeente Rotterdam (2020)

PLANNED DEVELOPMENTS
Expanding the city center

With the new developments the municipality of Rotterdam is expanding the city center towards the south. However, this raises some questions especially around the residential areas in Rotterdam Zuid. With the expansion of the city center the municipality also needs to add commercial use to the function in order to create an attractive city center. Rotterdam Zuid is now mainly functioning as a residential area, some say it being underdeveloped but at the same time its a more rural area thats quiet and residents like their living environment. With the development of the Rijnhaven, adding more public use such as a museum there is a risk that in order to maintain this new city center the use of residential space needs to be redeveloped in commercial space. With the current ideas of moving station Rotterdam Zuid to the entrepot it creates a new station for the wealthier people who currently live in the Entrepot neighborhood or Kop van Zuid.

By moving the station it makes it less attractive for the less wealthier residents who mainly represent Rotterdam Zuid. While they are currently developing Rotterdam Zuid, known as Parkstad Rotterdam, the users of the station will drastically change and wont respond to the now less wealthy population. So in order to attract more people to the station the area needs to have a more public and commercial use at the cost of the precious residential area. This should be taken into consideration when designing a new station: what role should this station play considering its in between Feijenoord and Blaak and for who to redevelop and redesign the station?



Expanding the city center towards Rotterdam Zuid

PLANNED DEVELOPMENTS

Urban development in the neighborhood

The neighborhoods that are just over the bridge such as Kop van Zuid, Afrikaanderbuurt and de Willem-as are currently under development. To avoid gentrification the municipality will not only develop housing in the mid to higher segment but will also develop social housing and renovate current housing. The new development shows more public space and green in between building blocks, trying to stimulate social cohesion. With the development of Parkstad, which will be located along the axis of the Laan op Zuid, the municipality wants to develop a living environment for different target groups. The housing program consists of new construction projects including Remisehof, Machinistenhof, Overmaas and Leeuwenkuil. In addition to housing, there will also be facilities such as a swimming pool and a sports hall in the Huis op Zuid, creating different public hubs to stimulate social cohesion



parkstad
Willemsas potential
de Pols
rijnhaven
Tweebosbuurt

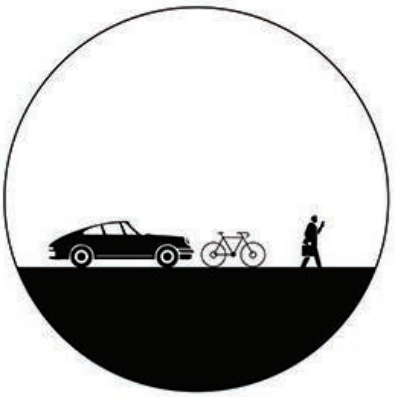
URBAN CRITERIA



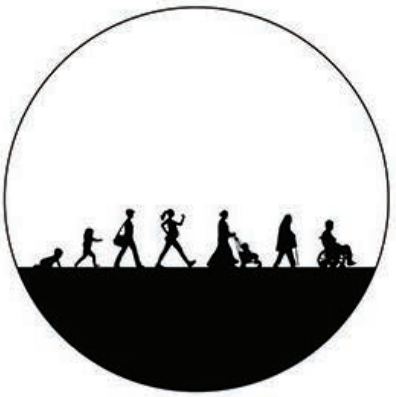
Fears over gentrfication must be addressed



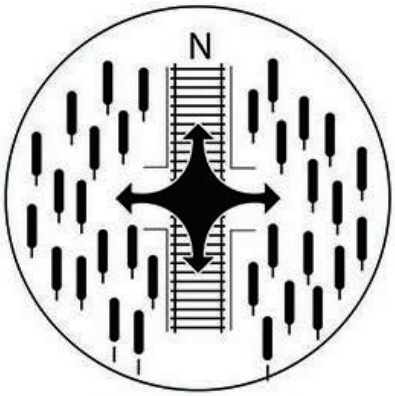
The current site is a food desert, new programs must attract restaurant owners



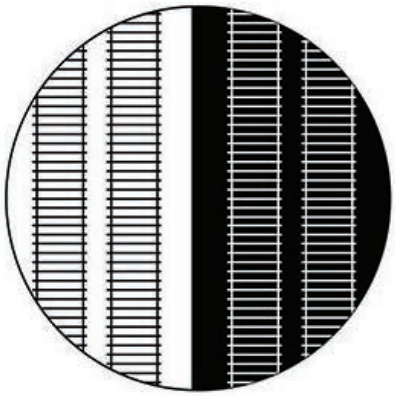
Subtle diversity in transit must be maintained and expanded



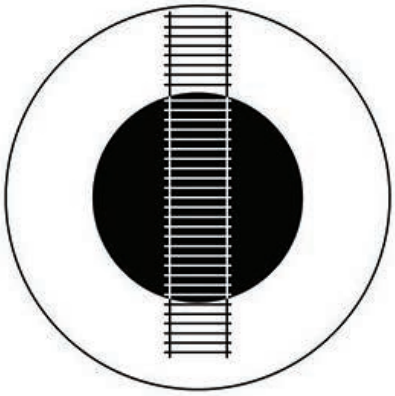
The wide range of demographics should be celebrated



Scattered Greenery can create an East West connection



Two of the four train lines will be repurposed for Metro lines



Tracks as a barrier must be redeveloped



Station must serve as a hub for residents and travelers alike

REFERENCES

"City of Architecture", accessed March 8 2022, https://en.rotterdam.info/architecture/.

Custers, G. (z.d.). Veranderingen in de bevolkingssamenstelling van Rotterdam Zuid. 50.

Deelvervoer Rotterdam. (z.d.). Gemeente Rotterdam. Retrieved on 9th of march 2022, van https://www.rotterdam.nl/wonen-leven/deelvervoer/

Feijenoord | Wijkprofiel Rotterdam. (z.d.). Retrieved on 19th of february 2022, van https://wijkprofiel.rotterdam.nl/nl/2022/rotterdam/feijenoord

Gemeente Rotterdam. (2020). Rotterdamse Mobiliteits Aanpak.

Gemeente Rotterdam en MRDH. (2018). OV-visie Rotterdam 2018—2040. Gemeente Rotterdam.
Informatie wijk Feijenoord. (z.d.). AlleCijfers.

Komossa, Susanne. Towards new architecutral and urban models: the Dutch urban block, public domain and city economy. The 4th International Conference of the International Forum on Urbanism (IFoU), Amsterdam/Delft, 2009.

NS. (2022). Oude Lijn - CitySprinter. Retrieved from NS: https://www.ns.nl/over-ns/de-spoorsector/regio-zuid/oude-lijn-citysprinter.html

Reizigersgedrag | NS Dashboard. (2019a). Reizigersgedrag 2019. Retrieved March 11, 2022, from https://dashboards.nsjaarverslag.nl/reizigersgedrag/rotterdam-zuid

Reizigersgedrag | NS Dashboard. (2019b). Reizigersgedrag 2019. Retrieved March 10, 2022, from https://dashboards.nsjaarverslag.nl/reizigersgedrag/rotterdam-centraal

Rouwendal, J. van der Straaten, W. (2008). The costs and the benefits of providing open space in cities. CPB Discussion Paper, The Hague, Netherlands.

Suzanne Oudshoorn, Meer over Rotterdam Zuid (n.d.), https://www.dagvanderotterdamsegeschiedenis.nl/page/385/meer-over-rotterdam-zuid

Wouter Vocke, Waarom zeggen we in Rotterdam eigenlijk 'in Noord' en 'op Zuid'? (In de Buurt Rotterdam, 2020), https://indebuurt.nl/rotterdam/genieten-van/mysteries/waarom-zeggen-we-hier-op-zuid~46760/

IMAGE SOURCES

Amsterdamsegrachtenhuizen.info

Gemeente Rotterdam. (2022). Parkstad Rotterdam. Retrieved from https://www.rotterdam.nl/wonen-leven/parkstad/

Rotterdam Natuurlijk. (2013). De Groene Marathon [Map]. Rotterdam Natuurlijk. (2013). De Groene Marathon [Map].

Scenario 1

RELOCATE



The move suggests moving station Rotterdam Zuid to the entrepot region. Through a network of mobility nodes and points of interest that will both activate and reactivate the area, the Move aims to stitch the neighborhoods together. On a bigger scale the scenario aims to make Rotterdam Zuid a bigger node in the city and make the neighborhoods not just a residential area but also a space for recreational use and leisure.

Scenario 2

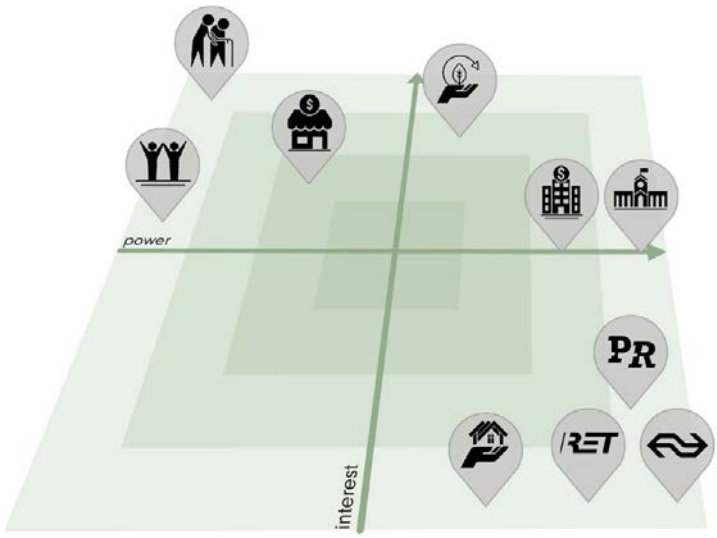
REDEVELOP



The transformation of an existing train station presents as many challenges as possible benefits. The barrier that the railroad tracks represent for the district at the moment is difficult to conceal, therefore the project aims to change the nature of the space around Rotterdam Zuid so that the area changes from an obstacle to a link between the two neighborhoods. Leaving the station in the place where it currently exists allows also to strengthen its connection with the nearby ferry terminal, significantly expanding its impact on the city scale.

STAKEHOLDERS ANALYSIS

Keeping the station at its current situation is of interest to the many residents since the surrounding is highly residential. Small businesses near the current location also could benefit from having the station at the same spot since it stimulates the number of people coming to the specific area. Having the station close to big businesses like around Entrepot would danger the survival of the small businesses. However, even though residents and small businesses have the most interest they have the least power. Meanwhile, big businesses and municipalities, being on the power, are more neutral to the location of the station since it doesn't affect them much. On the other hand, keeping the station where it is now isn't really profitable for companies like NS, ProRail, and RET since it wouldn't increase the number of passengers coming by the station. This is caused by the location not being very attractive and harder to develop. Housing developers also wouldn't benefit from keeping the current station because the location of the station has a low average income and it is not very attractive for people with high income. These companies and housing developers being the investors of the station has the most power and say. Keeping the current location might not look advantageous at first sight for these companies however in the long run all the stakeholders would benefit from developing the area and would stimulate each other's progress.



REDEVELOPING THE STATION


municipality

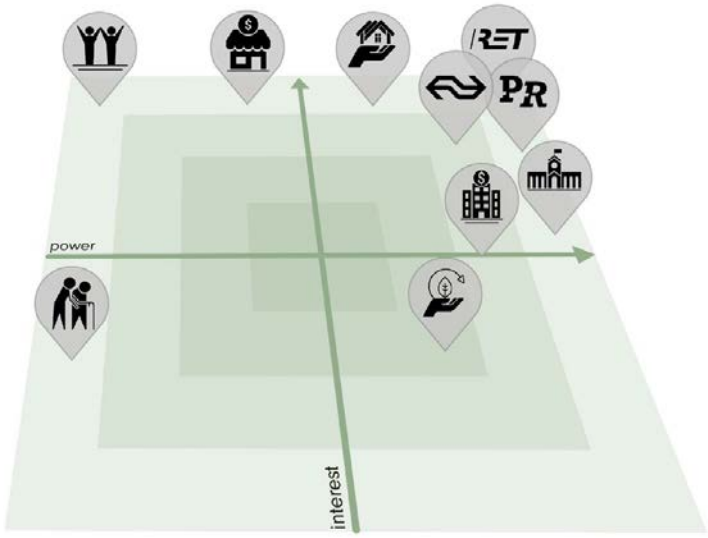

sustainability


big business


small business


housing developers

Moving the station upwards to the Entrepot region would be the preference of housing developers, since a new station would increase the value of their soon to be built properties. Also NS, ProRail and RET would be in favor of moving the station since that area is easier to develop and would cause more people to use it. Also small business owners nearby Entrepot would not mind the station to move since it would increase the amount of people in their area. The Municipality of Rotterdam does probably not mind about the location, as long if the station will be expanded. However, residents of the area where the station is located now would not want the station to be moved. It would leave them with the noisy train tracks and they will remain to be confronted with the current barrier. Overall a big concern of moving the station towards the river is that the area starts to gentrify because of new, costly developments.
It would only increase the already existing gap between the relatively wealthy residents of Noordereiland and Kop van Zuid-Entrepot and the less fortunate residents of other neighborhoods nearby Station Rotterdam-Zuid.



RELOCATE THE STATION

elderly residents

young residents

NS

RET

ProRail



Relocate

Rotterdam Zuid

This scenario proposes moving the Rotterdam Zuid station to the entrepot region. Through a network of mobility nodes and points of interest, that will both activate and reactivate the area, the Move aims to stitch the neighborhoods together. On a bigger scale the scenario aims to make Rotterdam Zuid a bigger node in the city and make the neighborhoods not just a residential area but also a space for recreational use and leisure.

Valery van Heijst
Quinten Smits
Djamo Mastenbroek

CONCEPT CRITERIA

'The Move' is a strategy in which the current Rotterdam-Zuid station is moved to the Entrepot region. The strategy is based on three main concepts: identity, coherency and mobility.

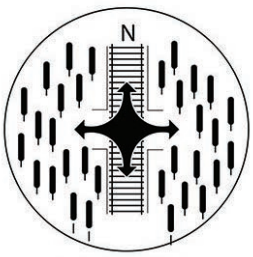
The neighborhoods around Rotterdam-Zuid station are currently identified as residential areas. While this is a great thing for Rotterdam and its housing demand, it results in the areas lacking identity. The new strategy proposes a new vibrant neighborhood, where new public functions such as restaurants and cultural accommodations will create a new recreational district. Rotterdam-Zuid should not just be an end destination for most but should also be a place where people from the inner city want to go to spend their free time. The scenario aligns itself with the Parkstad development, which is already under way. By maintaining social housing despite the new demographics that will be attracted to this area, this scenario aims to preserve the current demographics. The new identity will be reinforced by a coherent design concept that connects different public spaces together.

With the current station in place and its above-ground train tracks, it divides the neighborhoods creating a non-coherent area. 'The Move' proposes cohesion between east and west by breaking down the barrier. The new station will be a public node that not only provides easy access to the public transport network of Rotterdam but will also give back the public space to the neighborhood. With its public functions and its formal language, the station will be the biggest design intervention in the area that connects all the other smaller nodes together. With a coherent design concept that will be applied to both east and west, the strategy implies one coherent area. Through new sight lines, green corridors, a coherent form language and a mobility strategy 'The Move' aims to lace the east and west together.

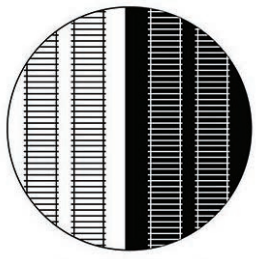
By proposing a new identity and coherency within the area, the key element to reaching these goals is an improvement in mobility. Whereas the current station is a mere end destination for most, the new station will play a more significant role on both a bigger and smaller scale. The new station will be a more extensive mobility hub that connects the train tracks, metro lines and buses and stimulates the use of soft mobility. On a smaller scale, the new station will be the most prominent mobility node in a network consisting of smaller mobility nodes such as parking spaces for e-scooters. The strategy also proposes a better soft mobility flow in the area by accentuating cycling paths and sidewalks and slowly reducing car use in the neighborhoods.

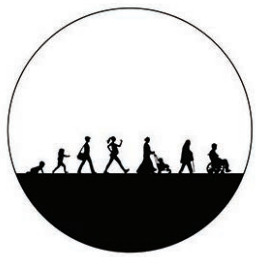
'The Move' proposes a new district that is the new gateway from the city centre to Rotterdam Zuid. The district should stimulate recreational use and soft mobility while the new station not only plays a big role in the neighborhoods but also on a much bigger scale.

In the collective research phase we identified eight design criteria. This scenario focuses on four of these: scattered greenery forming a connection between East and West; two of the four train tracks will be re-purposed as metro lines; the station must serve as a hub for residents and travelers alike; and the fear of gentrification must be addressed.



Greenery forming connection


New metro line


Fear of gentrification


Station as a hub

IDENTITY



Recreational station-park and neighborhoods



Station park



Multifunctional amenities



Gateway from the city centre to Rotterdam Zuid



Form language identifies the station and the neighborhood

COHERENCY



Connecting different functions



Connection the two neighborhoods through mobility



Connecting through the main axis which is a green corridor



Coherency through form language of the mobility nodes

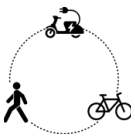
MOBILITY



Rotterdam Zuid functioning as a bigger node on the larger scale



Connecting different modes of mobility



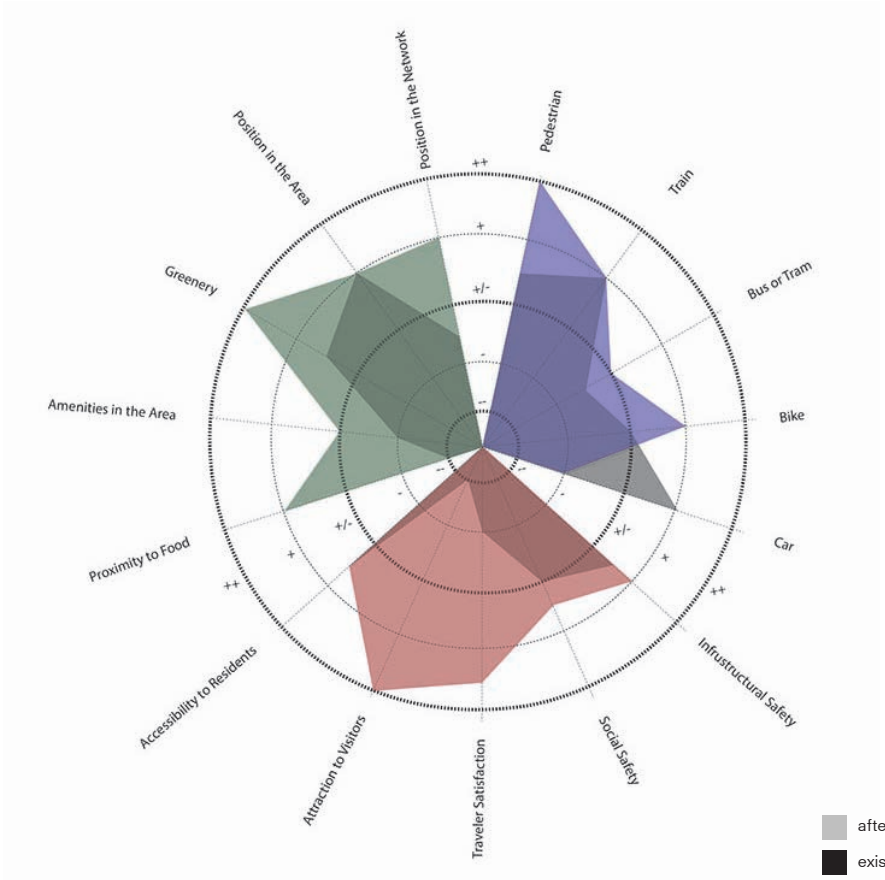
Stimulation soft mobility within the area



Mobility nodes that identify the neighborhood and stimulate the use of soft mobility

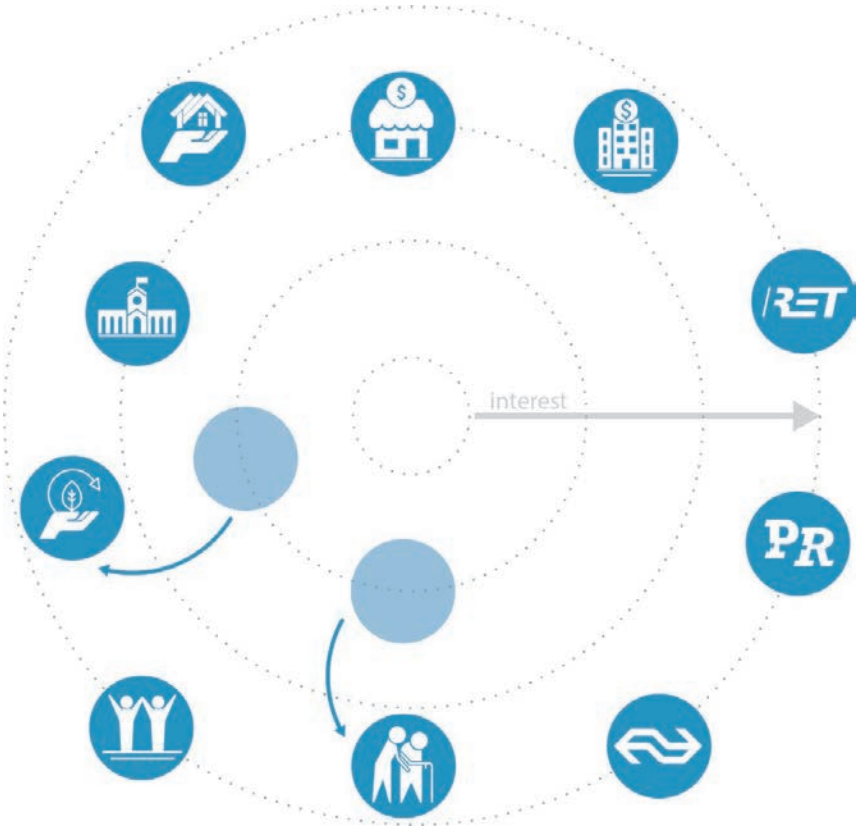
BUTTERFLY DIAGRAM

The three main focus areas of identity, coherency, and mobility can be further developed into smaller categories to analyze the neighborhood's aspects that need improvement. The current state of these elements are shown in dark blue, and the improved state after the design improvements are shown in light blue.



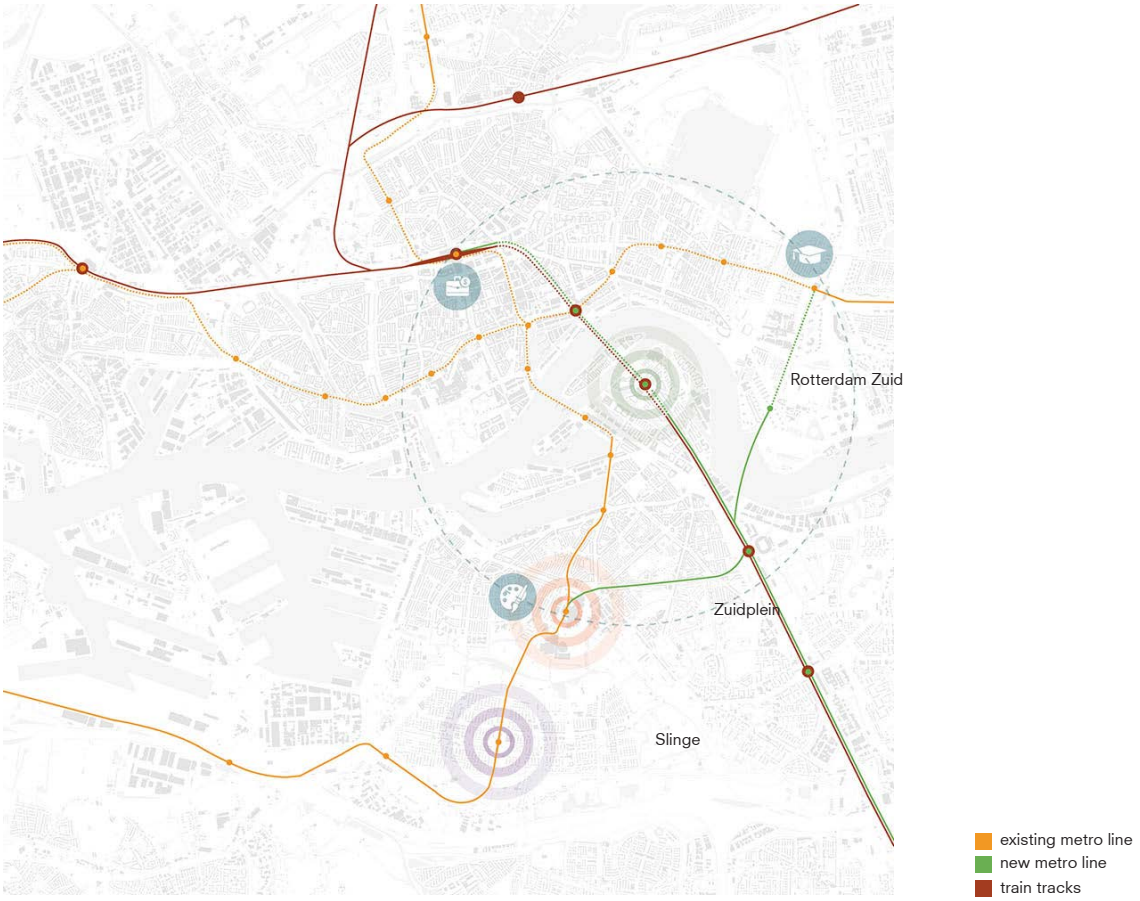
STAKEHOLDERS

With the decision to move the station, we have to consider the stakeholders that will benefit from the move and the stakeholders against the move. Looking back at the stakeholder analysis, we can see that the two parties least interested in the station's relocation are the elderly inhabitants and the sustainability department of the municipality. With the station's relocation, we have to consider the demands of these two parties. The design needs to be easily accessible, elderly-friendly and needs to be environmentally friendly, which also means a new purpose for the old station.



ROTTERDAM SCALE
Positioning on a larger scale

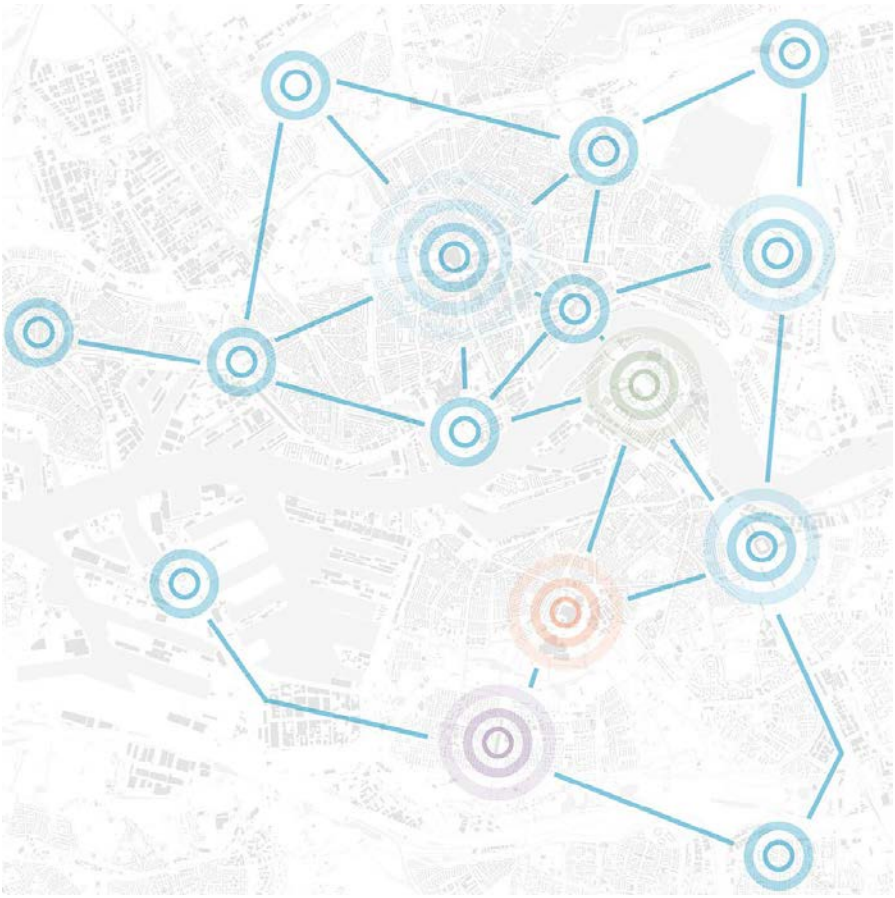
Rotterdam Zuid is currently a small node in a large city. However, there seems to be a lot of potential for Rotterdam Zuid's neighborhoods and station. Rotterdam Zuid's positioning is the epicenter of the three big districts in Rotterdam: the financial district (city centre), cultural district (Zuidplein) and the educational district (Erasmus University and Hogeschool Rotterdam). With the new plans for a new metro line that puts extra emphasis on the connection between the city centre and Rotterdam Zuid it brings the opportunity for Rotterdam Zuid to function as a gateway from the city centre to the south. With the new additional connection between east and west Rotterdam Zuid will play an even bigger role in connecting the different districts.



ROTTERDAM SCALE

Expansion of mobility nodes

Whereas we propose a network of mobility nodes on a neighborhood scale it is a strategy that can be implemented on the city scale of Rotterdam. Neighborhoods can have their own bigger mobility node that are interconnected from neighborhood to neighborhood. Smaller mobility nodes can be applied for the residential use in the neighborhood rather than on a larger scale.

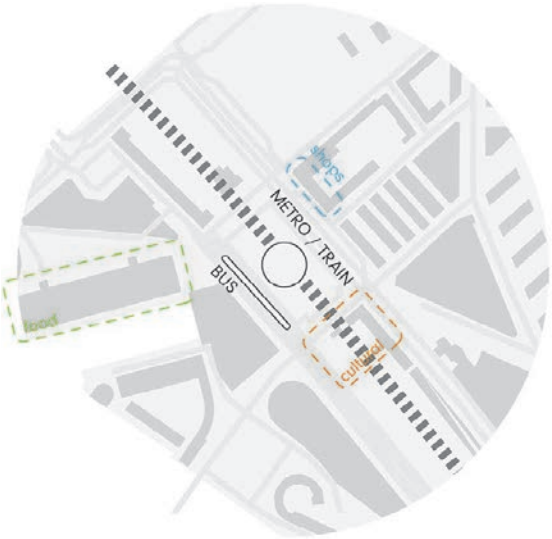


intermediary stations

transit hubs



Scale Blaak



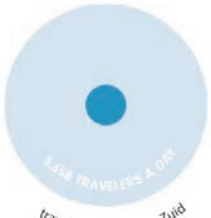
Scale Zuid

A comparison is made between the stations Rotterdam Blaak and Rotterdam Zuid. Both maps are shown on a scale of 1:5000. As you can see, Blaak is situated in a dense area. The building blocks are smaller and appear more frequently. The station is also located in an area with more functions around it. Next to the station are a lot of functions that attract people to the area. Station Zuid has much fewer surrounding functions that will attract travelers.

That is also clearly visible in the number of travelers each station currently has every day. Station Blaak has 13 times more travelers than Station Zuid. With the redevelopment of the area of Rotterdam Zuid and the addition of the train tracks, the use of station Zuid will be able to grow considerably. But the station will never reach the capacity of Blaak, as this is an intercity station and the surrounding centre of Rotterdam will still have more to offer to travelers than Zuid. But it is valuable to make this comparison as it shows the potential of a train and metro station in a vibrant area.



travellers Rotterdam Blaak



travellers Rotterdam Zuid



Parc de la Villette



Station Zuid

Another comparison that is made is between Parc de la Villette and Station Zuid. We have chosen to take a similar design approach to the design of the points of interest as Parc de la Villette has used to design the structures within the park. By using a similar form language within the architecture, the area becomes connected.

To see if this strategy will work on the location of station Zuid, we compared the scale and structures of Parc de la Villette with the scale and our point of interest around station Zuid.

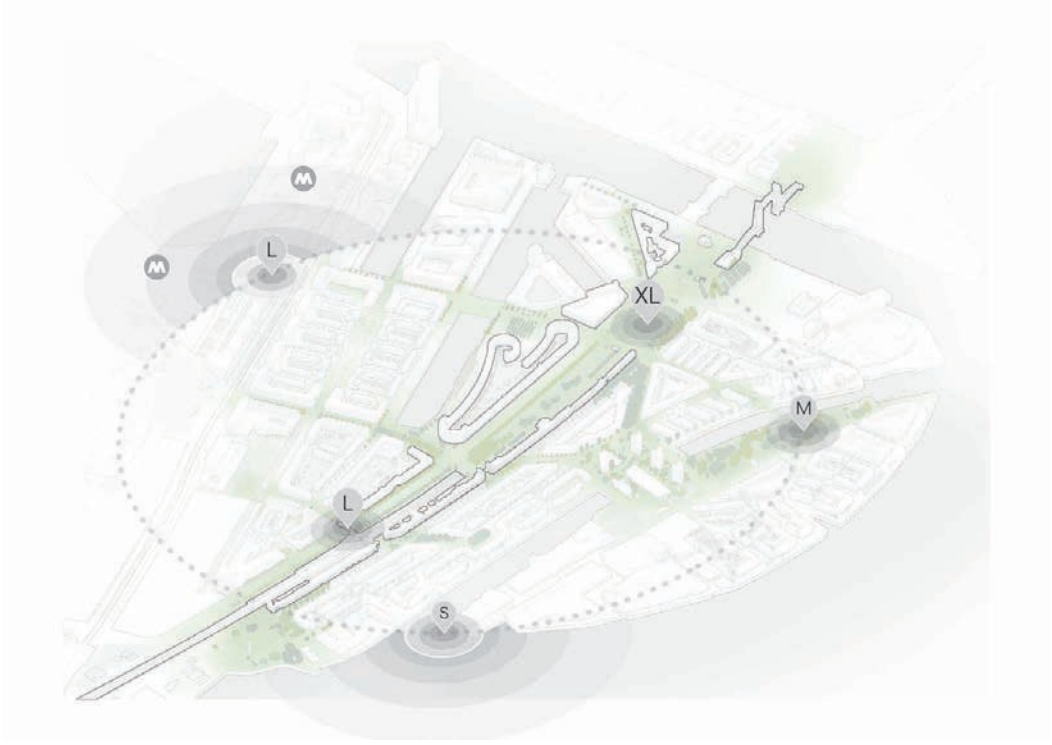
Both the scale and the distance between the points are smaller in Parc de la Villette, but the urban scale of the surrounding buildings within the park is a lot bigger than the scale of the morphology in Zuid. This is why we think having fewer and more spread out points of interest around station Zuid will be a better solution for this area.

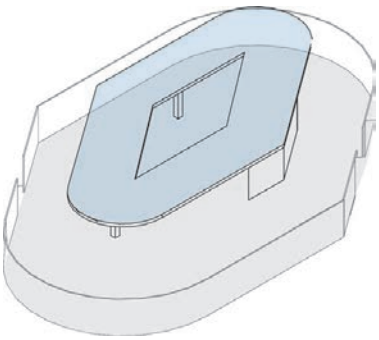
NEIGHBORHOOD SCALE
Overview mobility nodes

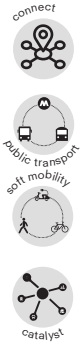
Five different mobility hubs will be distributed throughout the station neighborhood. These mobility hubs are created in four different scales: XL, L, M and S. The mobility hubs can have four functions: to connect the neighborhood, as a hub for public transport, as a hub for soft mobility and as a catalyst for the public space. The different scales will have a different combination of these four functions.

To strengthen the coherent character of the neighborhood, the mobility hubs are designed using the same formal language. The formal language of the newly designed station of Rotterdam will set the example for this. The smaller nodes will feature the same rounded diamond shape. This will make the hubs recognizable and create a consistent visual image for the neighborhood.

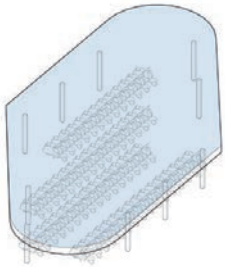
XL **-** station Zuid
L **-** Rijnhaven & old station
M **-** Nassauhavenpark
S **-** Piekstraat





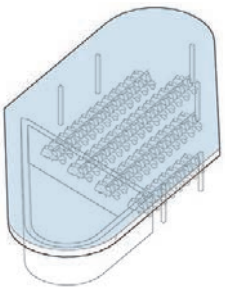


XL
STATION ZUID
The station will function as a hub for travelers by public transport such as the train, metro, bus, and soft mobility. The new station will enlarge the connection Zuid has to the other part of Rotterdam by being at the centre of the new mobility network created with the mobility nodes. Besides that, the station will be a catalyst for public activity with the new public functions the station will house and the connection to the redeveloped station park on the south side of the station. The station also sets the standard for the architectural language of the other mobility nodes. The rounded diamond shape will become the language used to identify them.



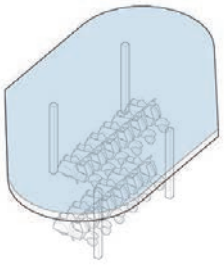


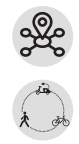
L
RIJNHAVEN | OLD STATION ZUID
The L sized mobility scales will be located near the metro stations Rijnhaven and Wilhelminaplein and near the old location of station Zuid.
Both of these locations connect the new station area to the surrounding neighborhoods within Rotterdam Zuid and will enable to bring travelers to and from the new station area.





M
NASSAUHAVENPARK
The medium-scale mobility hub will be located at Nassauhavenpark. This mobility hub will serve as a transportation node for the residents from the surrounding neighborhoods and, at the same time, serve as a catalyst for the public space within the park and the neighborhood with an additional public function such as a cafe. The Coffee and Bikes bike storage on the TU Delft campus is a good reference for the type of pavilion and catalyst we envision for the location.



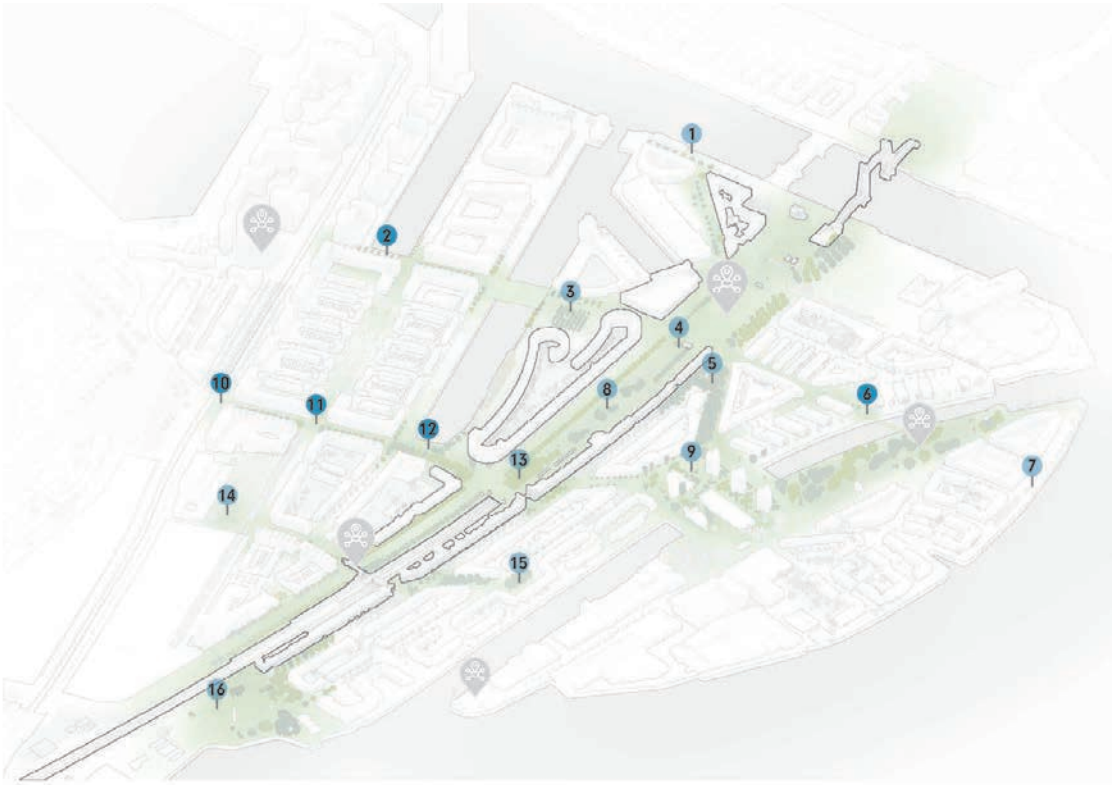


S
PIEKSTRAAT
The small scale mobility hub is located at the ferry terminal at Piekstraat. The ferry boat connects Zuid to the neighborhood De Esch on the other side of the Nieuwe Maas. This mobility node will serve on a smaller scale as a connecting transportation hub for travelers between the ferry and the new transportation net of Zuid.

NEIGHBORHOOD SCALE
Overview points of interest

To strengthen the new character of Zuid, several points within the neighborhood have been appointed for the activation or reactivation of the public space.

Elements of these points of interest will correspond to the formal language of the mobility hubs. This will create a more dense network of connecting elements and structures within the neighborhood.



1 - de Moestuin
2 - Spoorweghaven
3 - Draaischijf
4 - sportcontainer
5 - Persoonsstraat
6 - Parkbrug
7 - Feijenoordkade
8 - Rotterdamse Munt
9 - Persoonsdam
10 - Vuurplaat
11 - Witteveenplein
12 - Binnenhaven
13 - Burgdorfferstraat
14 - Spoorweghavenplein
15 - Persoonshaven
16 - Mallegatpark





Reactived
Sportcontainer, Rotterdamse Munt, Draaischijf, Spoorweghavenplein, Persoonsstraat, Persoonsdam, Persoonshaven, de Moestuin, Burgdorfferstraat, Mallegatpark, Feijenoordkade

The reactivated points of interest are in spots within the neighborhood where public space or a public function is already present but lacks the character of a quality rich public space. An excellent example of this is the current public functions housed in what will be the station park. These functions are the sportcontainer and the gardens of Rotterdamse Munt. The sportcontainer and the surrounding sports fields are functions we want to reactivate by designing a more inviting and attractive area. We will remove the enclosed character the facility has now and improve the accessibility and visibility. The gardens of Rotterdamse Munt have a similar issue. The gardens currently have an enclosed character. Because of this, the gardens don't have a prominent image in the neighborhood at the time and are now often overlooked. We want to improve the visibility and quality of the gardens.

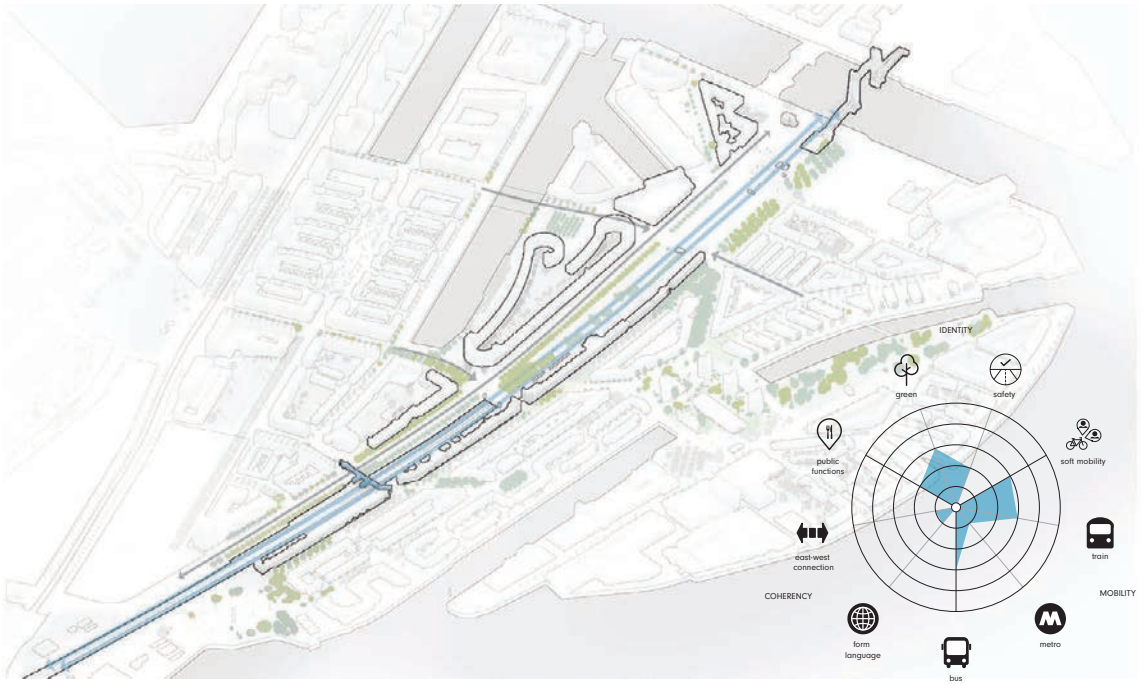
A similar approach will be applied to the other locations where the public space needs to be activated. A set of guidelines will ensure this is done coherently and according to the vision of the neighborhood.

Activated
Binnenhaven, Witteveenplein, Spoorweghaven, Brede Hilledijk, Parkbrug

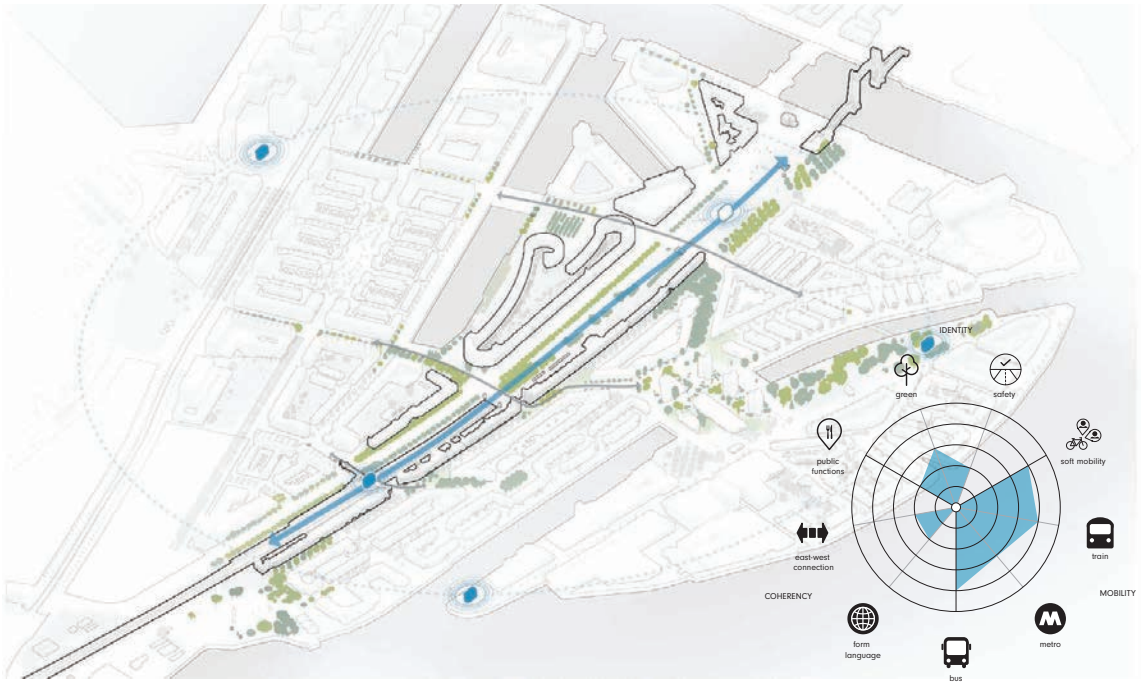
The activated points of interest are points within the neighborhood where we see possibilities to improve the public space.

An example of the public space we want to activate is the waterfront of the Binnenhaven. This location has a large amount of public space before the buildings. However, currently, the space is being used by roads and parking to accommodate the car. We envision this area can be redeveloped into an extension of the green corridor by creating a harbor front park with spaces for leisure and recreation.

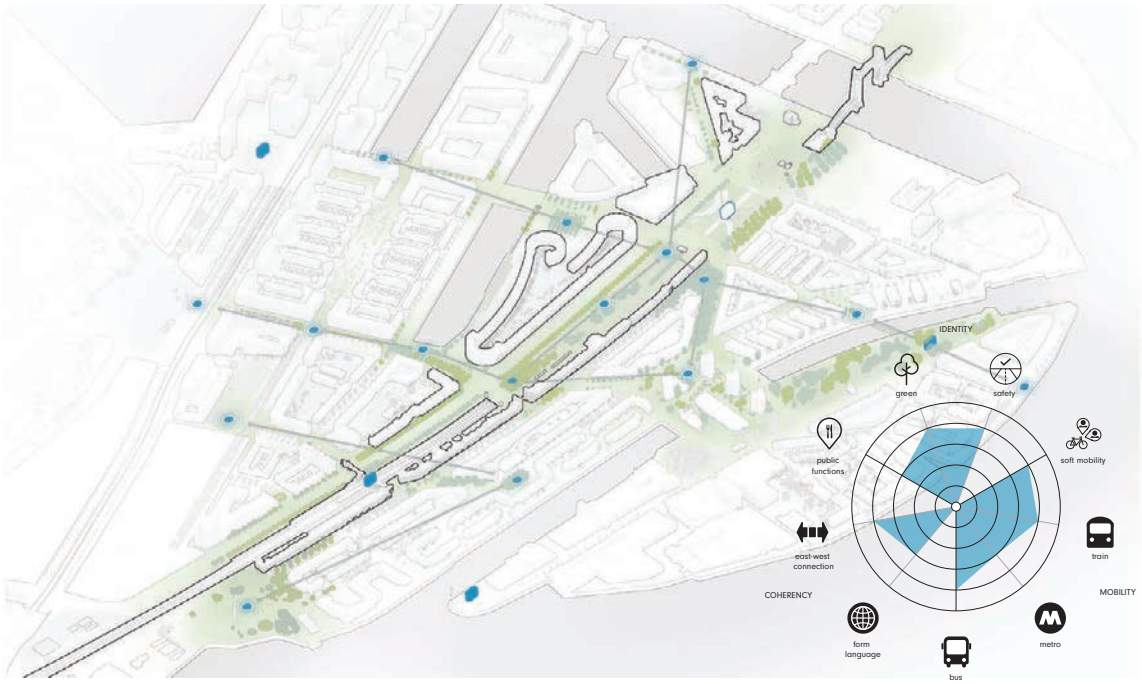
Similarly, the other places where we see the possibilities for activating the public space will be redesigned according to a set of guidelines we have developed.



Current condition



Phase 1: mobility nodes



Phase 2: points of interest

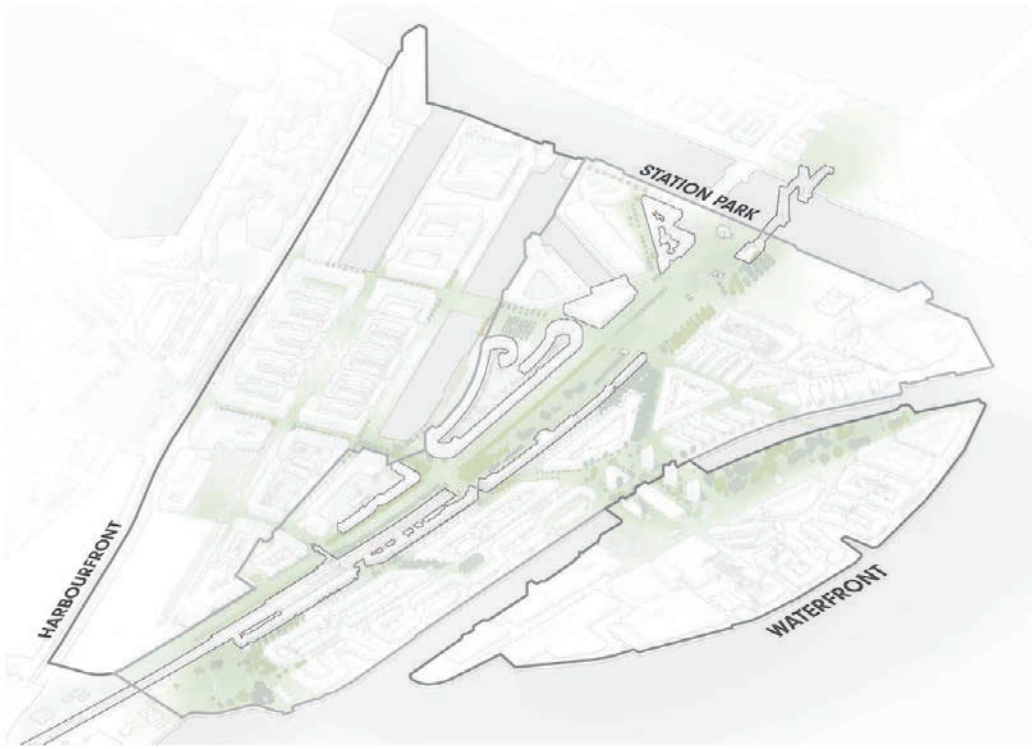
DISTRICT SCALE
Overview districts

The station's area of reach is divided into three smaller areas. Each of these areas has an emphasis on a different character.

HARBOR FRONT
The Harbor Front area focuses on a recreational character. Many recreational functions can already be found within this area, such as the bars and restaurants along the Entrepothaven, a museum and numerous sports functions. In addition to that, we see a lot of potential to elaborate these recreational functions. Many of the other harbor fronts at the moment are used for functions such as parking. We can see a redevelopment of these areas where the focus is on pedestrians and the residents.

STATION PARK
We want to reactivate the public functions around the new station area. The axis reaching from the new to the old station will be redeveloped into a park. The focus here is to maintain the current public functions found in the area, such as the sports fields and the gardens. But to bring them more prominently insight within the public space.

WATER FRONT
Within this area, the focus lies on leisure. The primary function within this area is housing, and we find it important to maintain this quality. The focus for the area is to enhance the leisure spaces already found within the area such as the Nassauhavenpark. We want the extend this character along the waterfront of the neighborhood.



Station area is divided into three neighborhoods

DISTRICT SCALE
Masterplan station park

The two interventions of the mobility hubs and the points of interest will come together to form a network of recognizable nodes reaching from the new station throughout the neighborhood. The network of nodes will strengthen the coherency within the neighborhood, which is currently lacking. Furthermore, connecting this area through the nodes will brake the barrier the train tracks are currently posing.

Another intervention that will eliminate the barrier is the new station park, reaching from the new station location to the old one. The focus within the park is on intensifying the green and enhancing the public functions already located in this area, such as the sports fields and the gardens. Additionally, the park focuses on opening up this public space and eliminating the gates currently seen around the functions. Thus the barrier the axis forms will also be reduced.



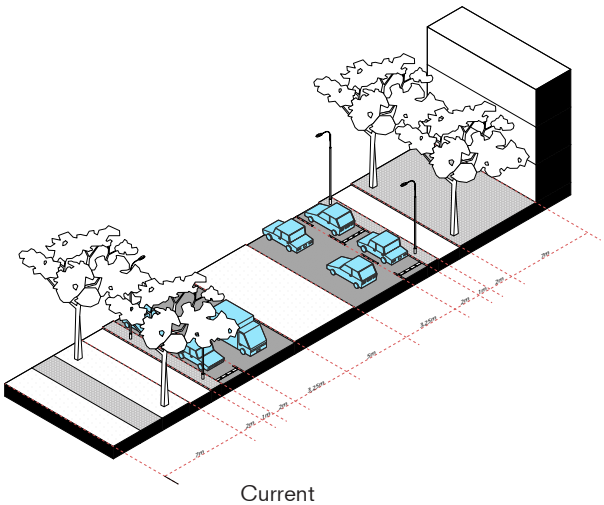
Masterplan proposal for the station area

DISTRICT SCALE
Street profile: station park

Current profile

Currently the main axis next to the train tracks is Rosestraat. The Rosestraat is dominated by cars and offers close to no space for soft mobility. The current profile consists of two single lanes for cars with parking on the side. The two lanes are divided by a 5 meter wide green stroke. This green stroke is neglected, there is no vegetation except for some grass and the space is merely being used by people walking their dog. Next to the car parking there are cycling lanes on both sides. What is remarkable is that only the car lanes are lit during the night, making this road an unsafe place for pedestrians and cyclist. On the train track side of the street there is a small path in between two neglected green strokes that function as a divider between pedestrians and the tracks.





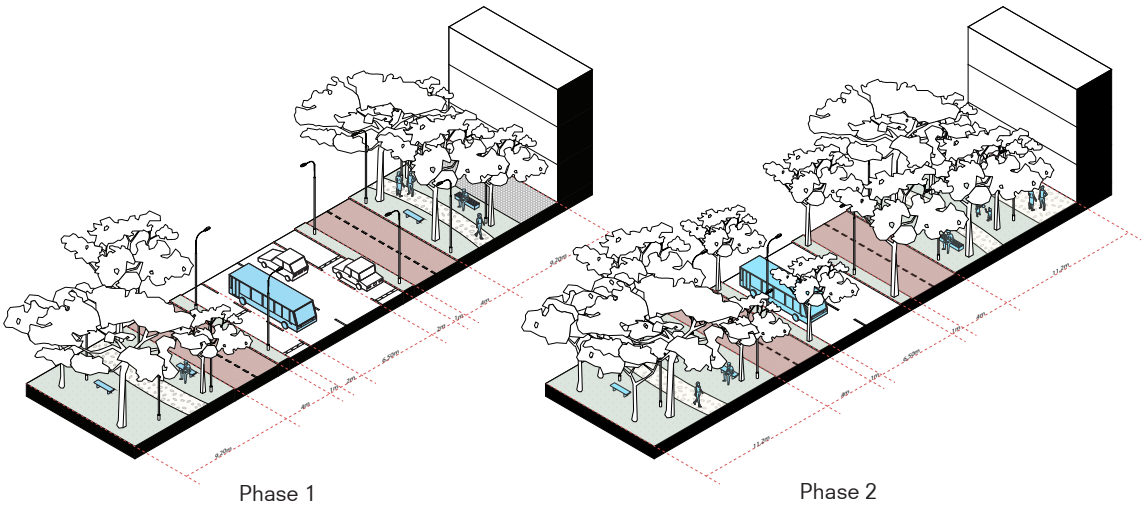
Current

New profile (Phase 1 - 10 years)

The first phase of transforming this profile that will function as a station park is giving more room to soft mobility. By increasing the width of the cycling lanes and the side walks we aim to stimulate soft mobility. By adding green we create a more pleasant street that not only functions as a park but also connects the different amenities and neighborhoods. We believe that the car will still be dominant in 10 years so we kept the same profiles for both the car lanes and parking. However, we got rid of the green stroke in the middle and gave this space back to the neighborhood. By adding more street lights and trees this street will feel more safe and will act as a main vein in the neighborhood.

New profile (Phase 2 - 30 years)

Our aim is to create a station park that stimulates soft mobility and is dominated by pedestrians and cyclists. The phase 2 profile offers limited space for cars. By making the roads only accessible for residents and buses we try to bring back the amount of car traffic. Wide pedestrians lanes with green strokes in between make a comfortable and pleasant experience for pedestrians. The aim for the Rosestraat is to function as a station park rather than a car dominant street.



Phase 1

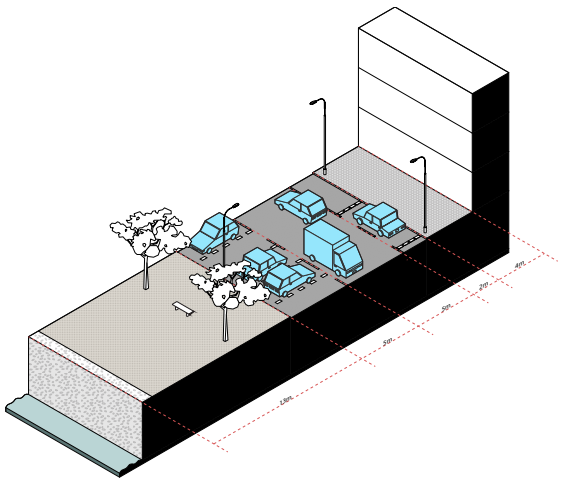
Phase 2

DISTRICT SCALE
Street profile: waterfront

Current profile

The Feijenoordkade is a quay with a lot of potential. The street currently functions as a car parking space for the residents in that area. While the quay itself is dimensioned quite wide it does not have any function. There are a few small trees and benches but the apart from that the quay is hardened making it an unenjoyable space. The street itself is smaller than the Rosestreet because there is less traffic, yet there is a lot of space reserved for car parking. Cyclists and moped users are forced to share the two way street with cars.





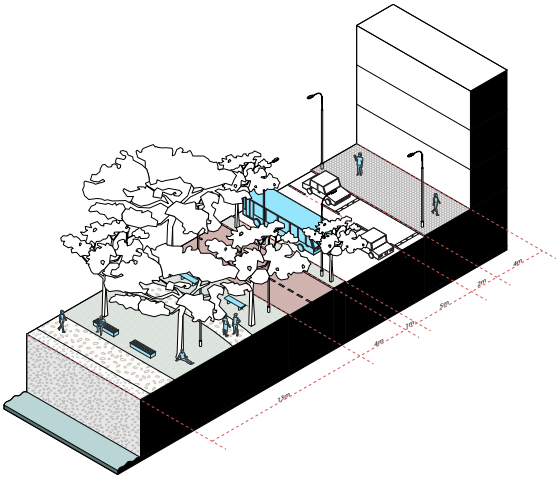
Current

New profile (Phase 1 - 10 years)

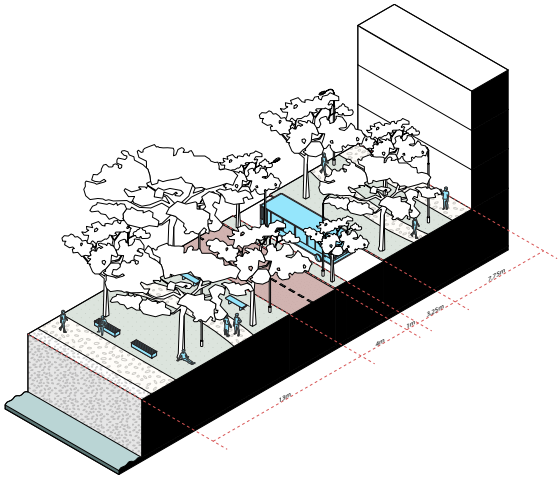
The first step in evolving this street profile is redeveloping the quay to a waterfront park. By adding greenery and urban furniture the quay offers a tranquil walking route for the neighborhood to relax and enjoy the water side. Phase 1 gets rid of the horizontal parking spaces giving the space back to the soft mobility users by creating a cycling path that is portioned off the car lane.

New profile (Phase 2 - 30 years)

The last phase of the transformation of the waterfront consists of two main interventions. First of all the car parking disappears in the profile. The car lane is getting narrowed to discourage the use of cars. With this space that is created the second intervention that will happen is widening the pedestrian lane and creating a profile that functions as a park on the waterfront.



Phase 1



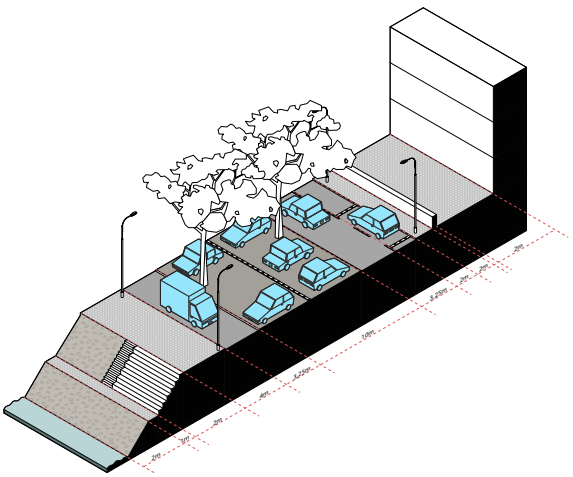
Phase 2

DISTRICT SCALE
Street profile: harbor front

Current profile

While the harbor quays have a lot of potential in Rotterdam Zuid they are not being used. This street profile once again shows a car dominant street where soft mobility is out of the picture. There is more parking space than sidewalks and cyclist have to share the road with the cars. The quays in the harbor have some sort of public function. A stair case with 40 cm high steps offer a seat at the harbor front. However, this space is not being utilized as much because of the uninviting street profile.





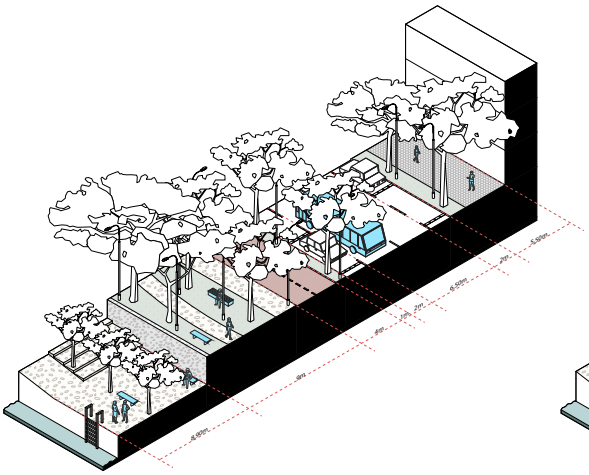
Current

New profile (Phase 1 - 10 years)

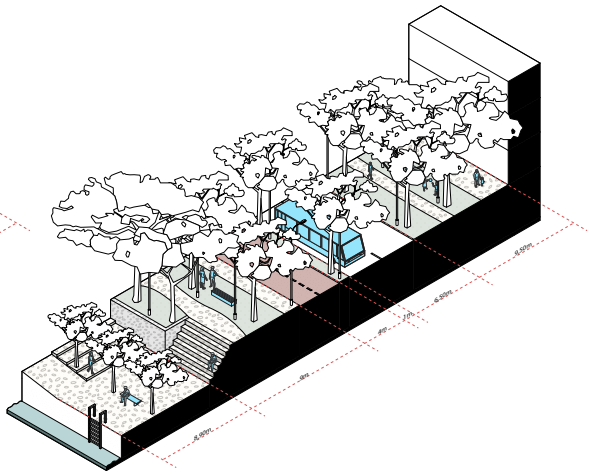
To make these harbor quays attractive we made a big intervention creating a harbor front park. This park is below street level and offers a nice quiet area as far away from the cars as possible. By adding urban furniture and light poles the area becomes recreational. On top of that the side walk also now functions as a smaller park. A big part of the parking is gone and cyclist now have their own two-way cycle path. We don't expect cars to leave the city in 10 years so there is still room for cars and parking. However, we try to discourage car users as much as possible.

New profile (Phase 2 - 30 years)

The last phase of the transformation of the harbor front is making the street soft mobility dominant. There is no room for parking anymore and just a 2 lane car lane that is mainly being used by buses. The other sidewalk is widened and now also offers pedestrians more room for a nice walk to the Laan op Zuid, where they can hop on the tram or do some shopping.



Phase 1

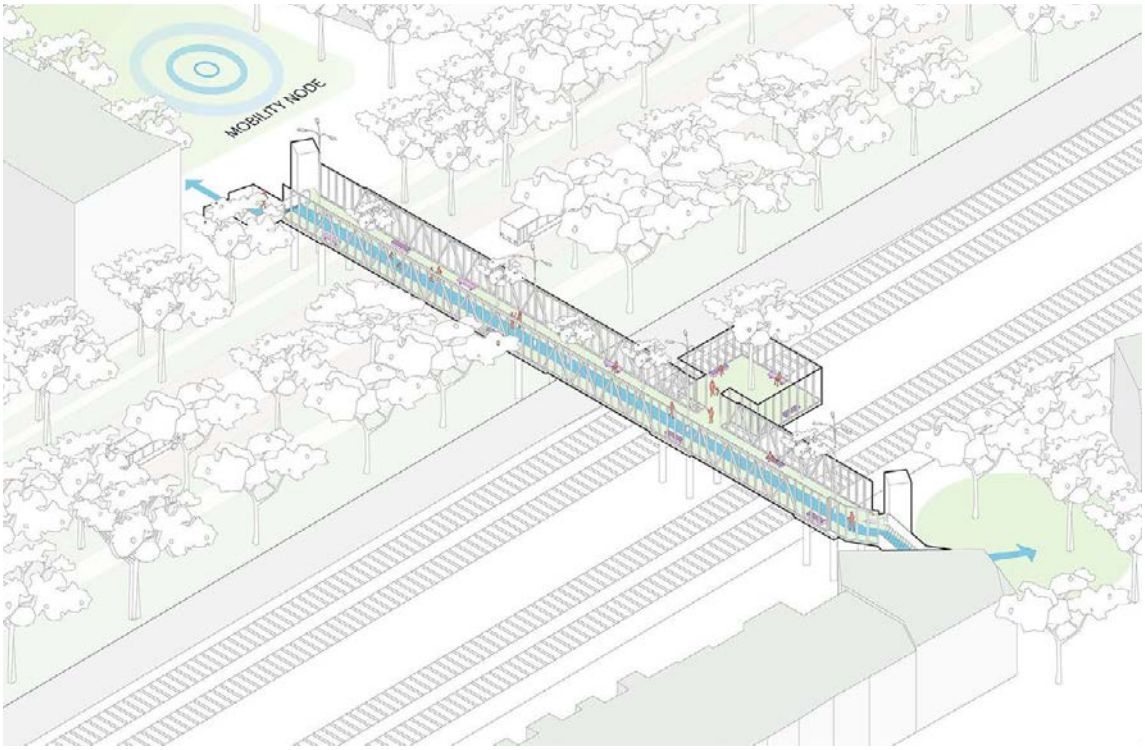


Phase 2

STATION SCALE

Old station as green connector/mobility node

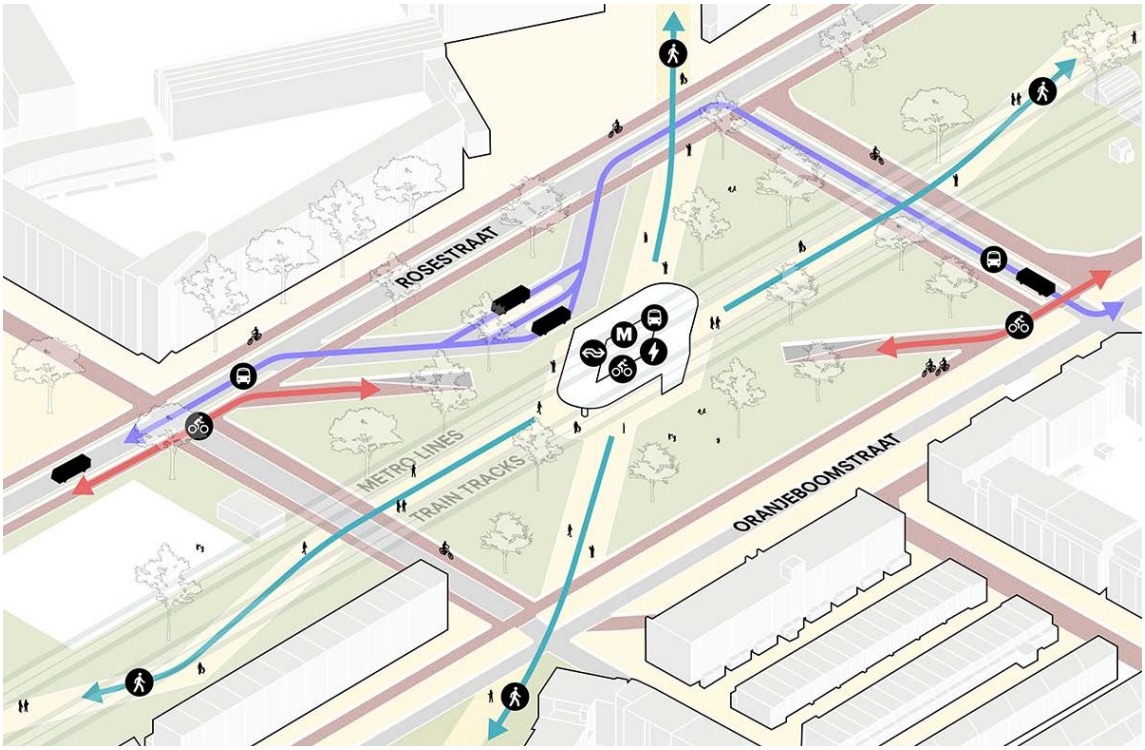
The current station of Rotterdam Zuid will function as both a new mobility node within the network and a point of interest. Instead of completely getting rid of the station we keep the bridge structure and use it to its full potential. With the addition of greenery and urban furniture the current station should be both a qualitative public space and a connection between east and west. The station currently already functions as a connector between east and west but because of the lack of safety a lot of residents avoid using the bridge during night time. The revitalization of the station will tackle the problem of safety and make this a bridge that only connects but also gives back to the people. There are already some mobility hub functions in place such as bike racks. However, by stimulating soft mobility there will be a bigger demand for bike storage. To answer this demand we expand the mobility hub that is already in place



STATION SCALE

New station as mobility node and landmark

As told earlier, the diamond shaped roof creates a clear contrast with the existing built environment. The new station becomes a landmark within Rotterdam Zuid and creates a unifying design language which makes other added mobility hubs easily recognizable. It will also serve as a gateway for people coming from the centre of Rotterdam. Since the new station will be part of the main green axis, it was preferred that it would fit this green stroke rather than creating another big structure in Rotterdam Zuid. Therefore the design is specifically kept small above ground and divides the different flows of traffic in a clear and understandable way.ble.



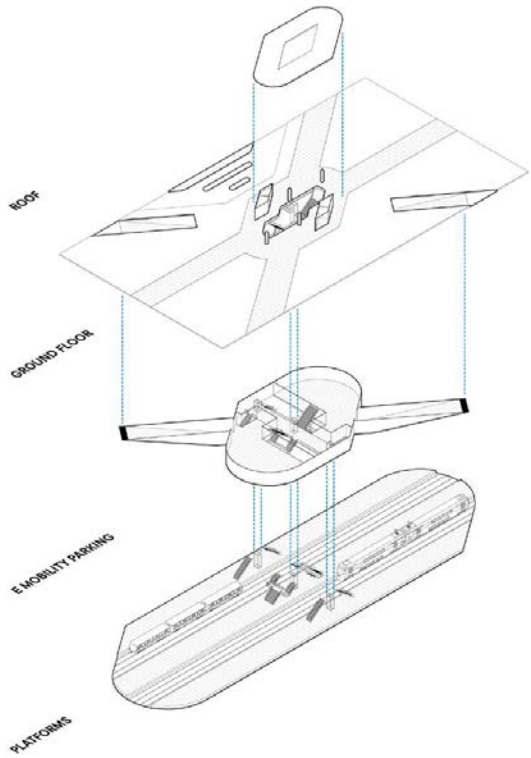
STATION SCALE

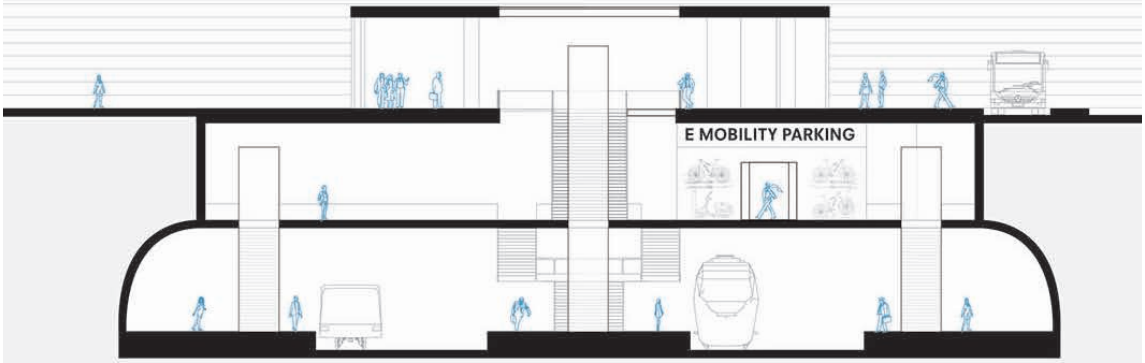
Layered program and accessibility

To create this, the design is split up in different layers where only the cafeteria, public toilets, bike repair shop and bus platforms are above ground. The main volumes above ground compliment the newly created sight lines.

Underneath ground level, the E mobility parking is situated. This is a place where (electric) bicycles, (electric) mopeds and (electric) scooters can be parked safely and charged if necessary. By this, the station and the mobility hubs actively tackle the current issue of e mobility vehicles being scattered around Rotterdam Zuid. Next to tackling this problem, the E mobility parking also creates a seamless flow from soft mobility to public transport or vice versa. Without any interruption, travelers can enter the stations' parking via one of the two ramps. After parking their bicycle, moped or scooter they can easily enter the station on parking level and walk down to the platforms.

Twelve meters below ground level are the platforms which connect Rotterdam Zuid with the existing train network and newly built metro system. Because of the atrium and gap in the roof, natural daylight can enter the platforms.





New station: layered program and accessibility




1402



Redevelop

Rotterdam Zuid Station

The transformation of an existing train station presents as many challenges as potentials. The barrier that the railroad tracks currently create for the neighborhood is difficult to overlook. This scenario aims to change the nature of the space around Rotterdam Zuid so that the station transforms from an obstacle to a link between the two neighborhoods. Keeping the station in its current location also allows to strengthen its connection with the nearby ferry terminal, significantly expanding its impact on the city scale.

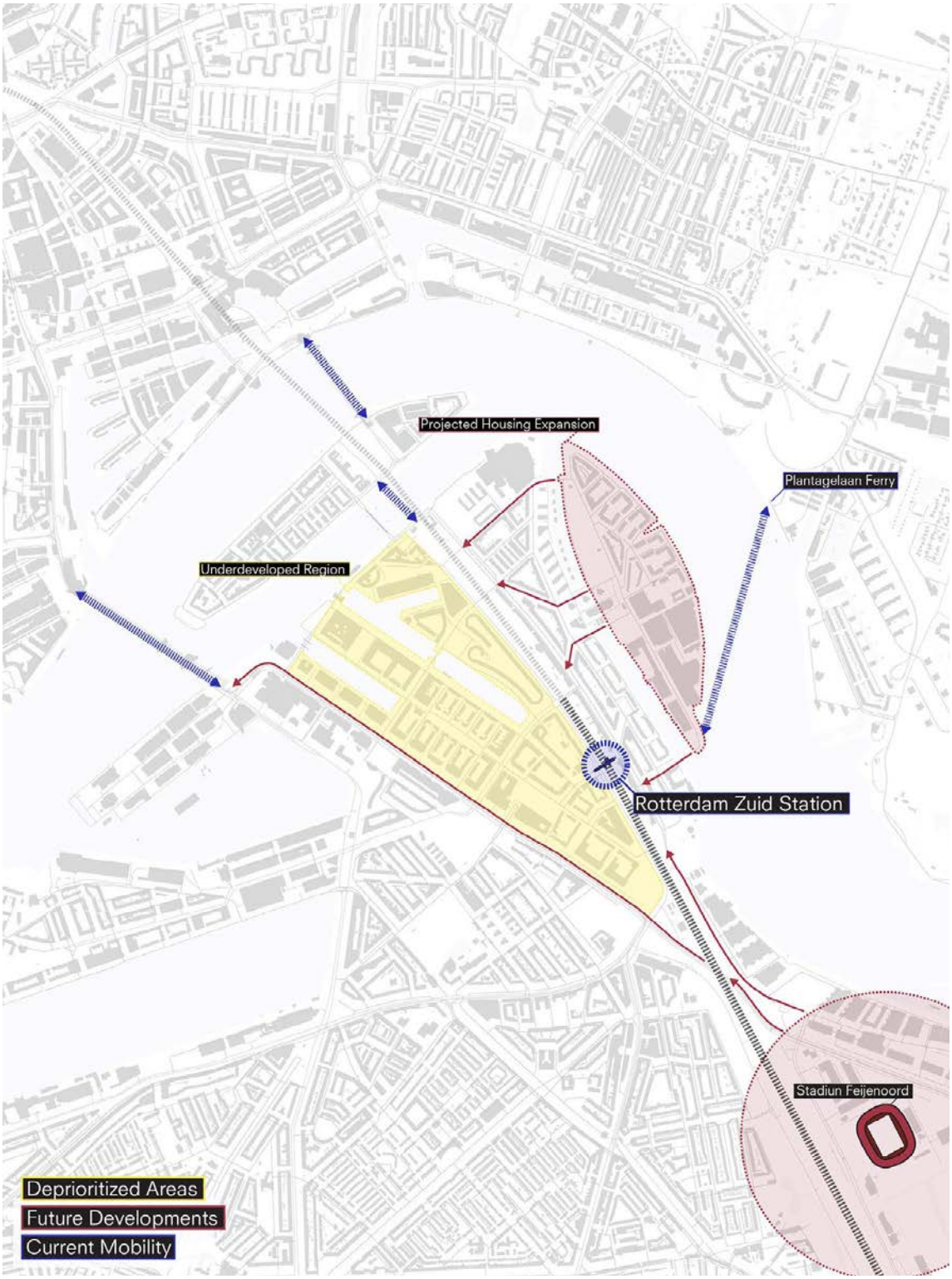
Almira Tanrikulu
Panagiotis Varoutsos
Katarzyna Ingielewicz
Cameron Scott

KEEPING THE STATION

The current state of Rotterdam Zuid station posses a number of issues. In fact, the municipality is considering the possibility of moving the station entirely to allow stronger access to the north side of Rotterdam Zuid given that wealth in the area trickles down from the north. In doing so, most of the existing residents would lose direct access to the station that they currently depend on. The new station would be designed to cater to the wealthier residents, and the high cost of building a new station from scratch would force the municipality to raise prices on the new amenities. Gentrification would shortly follow as the cost of living would gradually increase. Eventually, the lower income residents would be forced out of their homes due to their inability to keep up with the new market.

Regarding future developments, the city is currently planning on building a new stadium in the south of the Feyenoord district. Although the project has been postponed, it's currently still on the list of planned developments within the next 20 years. The project boasts a complete revitalization of the southernmost neighborhoods while revamping the station Feyenoord, making the area much more attractive to travelers. Unfortunately, gentrification is always an inevitability with projects of this caliber.

Furthermore, the island just northeast of Rotterdam Zuid station is currently undergoing a process of transforming the existing industrial parks into massive housing complexes. This new influx of people will put stress on the existing community around the station. The combination of these future plans would leave the center of Rotterdam Zuid underdeveloped. In response, we choose to focus on the area around the station while prioritizing the southwest region.


Projected Housing Expansion
Plantagelaan Ferry
Underdeveloped Region
Rotterdam Zuid Station
Stadiun Feijenoord
Deprioritized Areas
Future Developments
Current Mobility

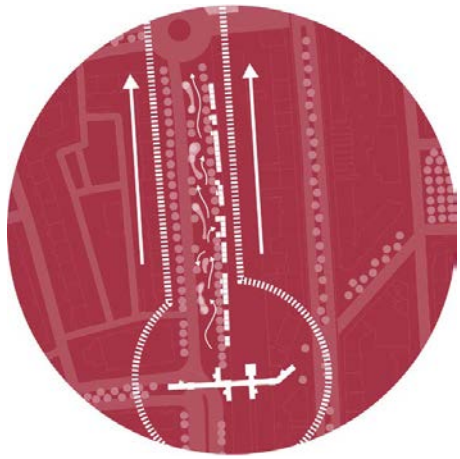
PLACE
The site is lacking greatly in local cafés, bars, or restaurants. The ones that do exist seem scattered and disconnected from the station due to poor paths. Moreover, there are some existing amenities such as a BMX park, a skate park, basketball courts and a few gyms. Here we want to re-prioritize these existing nodes by making them more visible through improved paths. This also addresses the lack of greenery by expanding the existing green spaces as the means to increase visibility. Thus we propose a webbed network throughout the area to increase its overall position within the neighborhood, without actually moving anything. In regards to its place within the city, it currently serves its purpose as an intermediate station, but we want to expand that usage into a space where residents and travelers would be inclined to visit rather than just pass through.

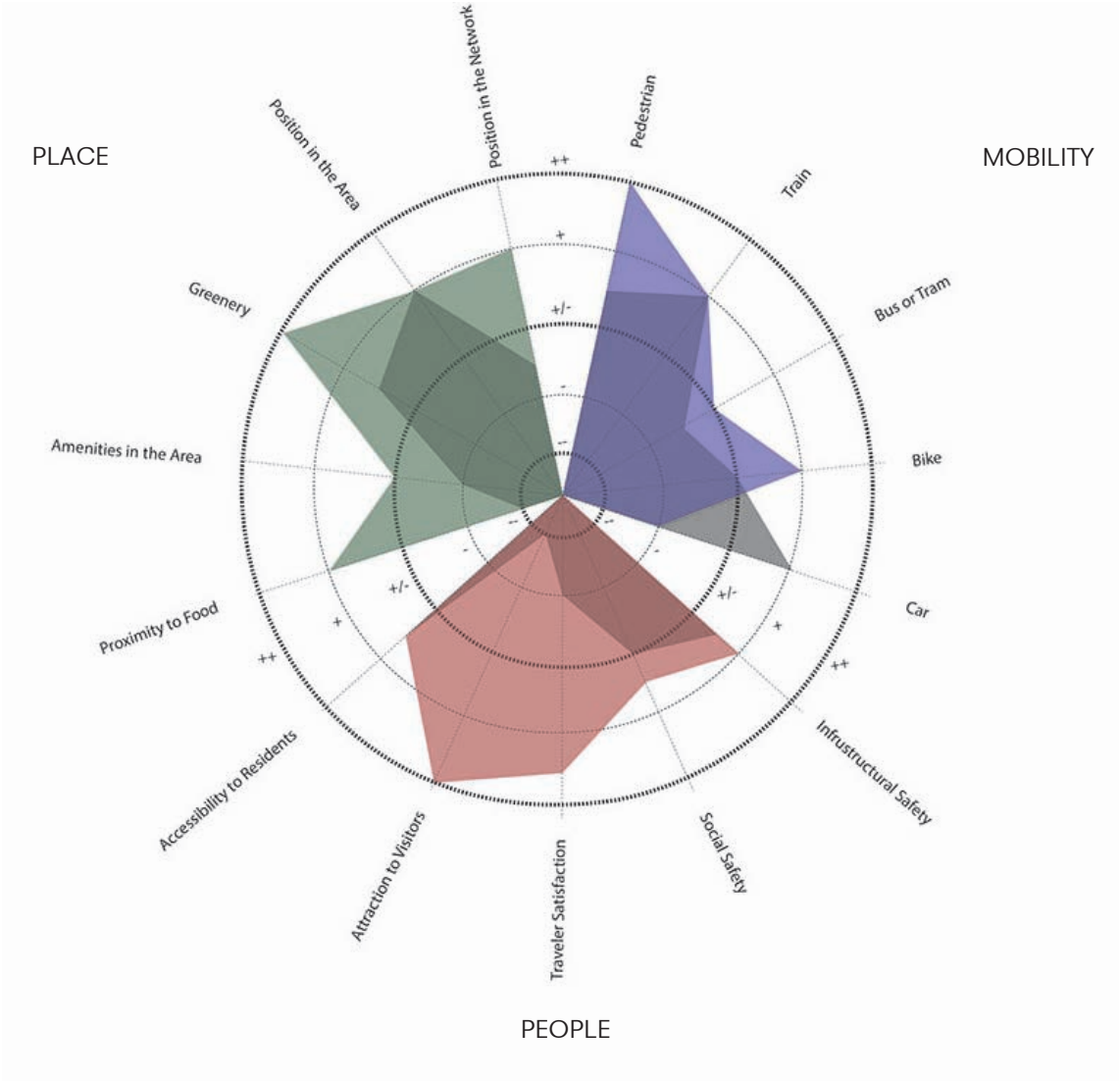


MOBILITY
Even though the station itself acts as a pedestrian bridge between two neighborhoods, it also becomes a hard barrier dividing all forms of mobility across the train tracks. By increasing the pathing described previously, the station becomes more of a node allowing stronger access to pedestrians. Currently, there are four train tracks serving commuter trains. The city is planning on adding metro lines by replacing two of the existing tracks. This plan provides new possibilities for local transit, while maintaining the existing lines. We also propose reducing car access in order to give the additional space to the pedestrians and bicyclists. Regarding other forms of transit such as bus and tram lines, we propose to add a mobility hub that will introduce higher bus access as well as e-scooters.

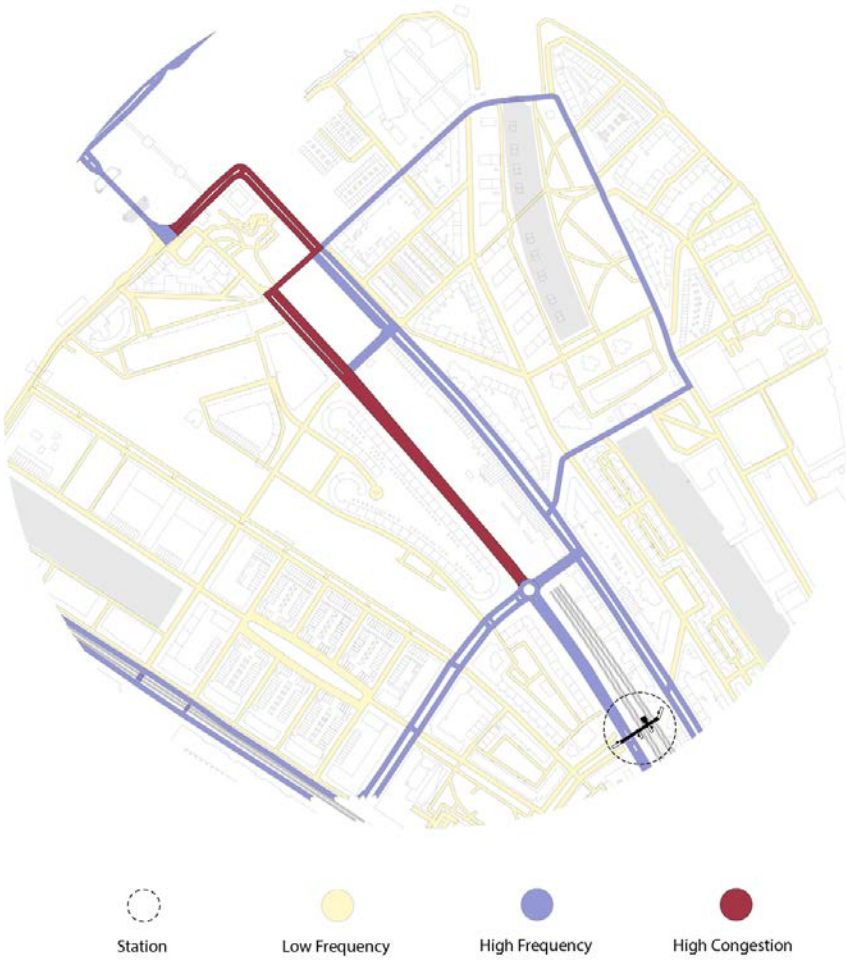


PEOPLE
The station already has strong infrastructural safety, as the tracks are well guarded to prevent someone from falling. Also, by de-prioritizing car traffic, we reduce risk of pedestrians getting into accidents. While the site isn't necessarily unsafe, the surrounding area is rather dark at night so the new additions and lighting in the surrounding area would increase visibility at night, helping night travelers feel much safer. Together with the improved amenities and commercial spaces, the proposal aims to help travelers feel more safe and welcome. Furthermore the site-specific design approach generates a small local attraction, aiming to increase visitor frequency. Meanwhile the primary focus of the proposal remains with the local residents and aims to protect and boost the existing community as much as possible.

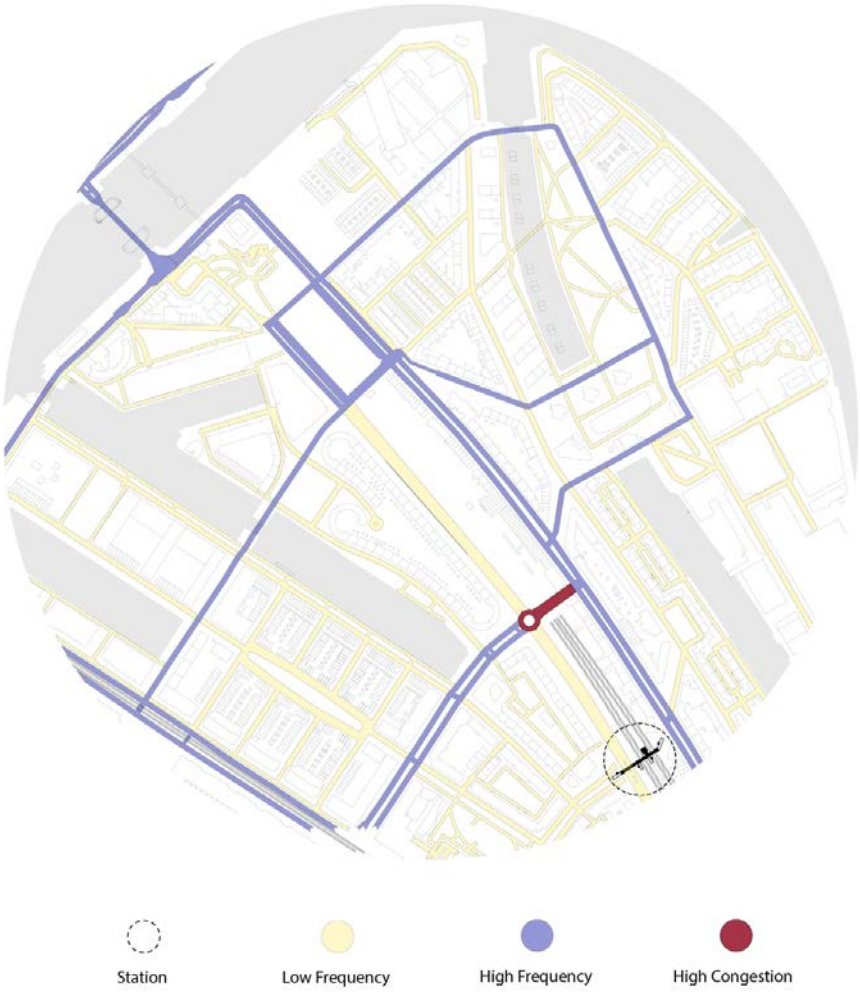



PLACE
MOBILITY
PEOPLE
Position in the Network
Pedestrian
Train
Bus or Tram
Bike
Car
Infrustructural Safety
Social Safety
Traveler Satisfaction
Attraction to Visitors
Accessibility to Residents
Proximity to Food
Amenities in the Area
Greenery
Position in the Area
++
+
+/-
-
--
Existing Condition
Future Place
Future Mobility
Future People

MOBILITY EXPANDED
Braess effect



Current condition



After the intervention

DESIGN TOOLS

Before making any design decisions we first generated a set of site-specific design tools. According to the butterfly analysis made in the previous chapter, we developed the design tools under three main chapters: place, mobility and people.

For place making, our main goals is to use greenery, introduce new amenities and expand the impact area of the station. Currently the station is mono-functional and the green areas are barriered. Following the intervention the area will have a multinational character and green spaces will work as connectors rather than barriers.

For mobility, pedestrian friendly and priority environment is the outermost priority. Currently the area is designed for cars and they sit on the top of the pyramid. After the intervention, we will turn the pyramid upside down and pedestrian being the priority there will be also more soft mobility and public transport options with a slowed down minimal car traffic.

For people, the aim is to create a community, attracting people and giving people easy access to and within the area. After the intervention we propose to strengthen the community with urban gardening and also promote the existing sport and event facilities.

1. PLACE-MAKING



Greenery



Food & Amenities



Position

BEFORE



Only residential functions



Unaccesible green



Unattractive station

AFTER



Multifunctional identity



Green as connector rather than a barrier



Attracting people to station and around

2. MOBILITY



Pedestrian Priority



Soft Mobility



Public Transportation



Slow Traffic

BEFORE



Road as a barrier



Car and parking dominated

AFTER



Road is reconfigured for more usable space



Reduced and slowed heavy traffic

3. PEOPLE



Attractions

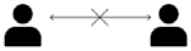


Accesibility

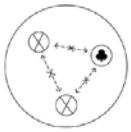


Safety

BEFORE



No community interraction



A lot of space & greenery underused or unwelcoming

AFTER



Stimulating the existing community through urban gardening



Attracting people with greenery and existing activities

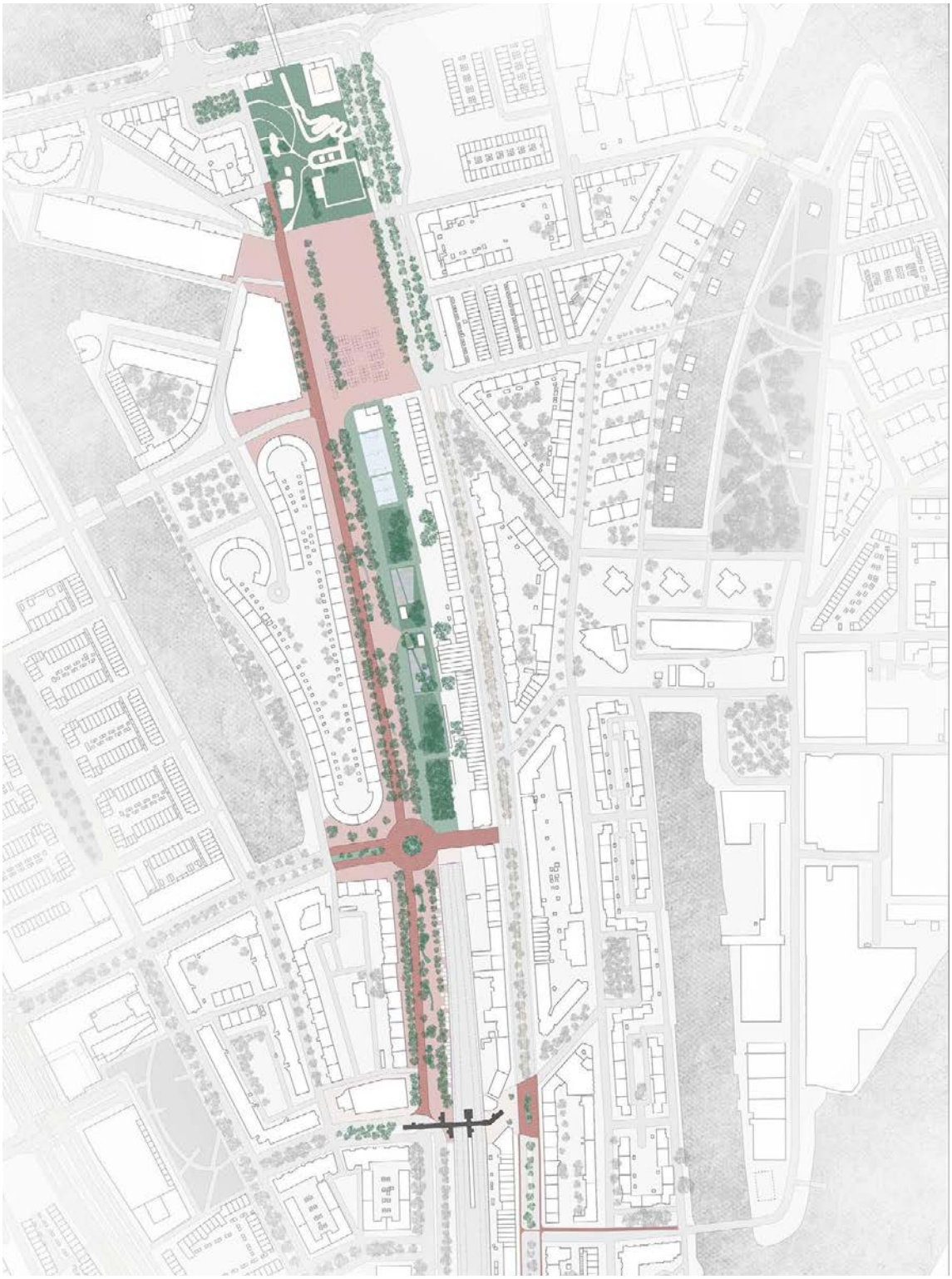
MASTERPLAN

The adopted design principles are shown in the masterplan. The green corridor is formed along the pedestrian zone by redirecting the traffic from Rosestraat. The street, which acted as a strong barrier, now functions as a zone that brings the two neighborhoods together, enabling more human interactions, leisure with safe and more welcoming conditions for the residents and people coming across the River Maas. The ferry connection, going through the Maas from the Erasmus University, is also strengthened by introducing a bike route straight from the ferry terminal, directing the passengers to the Rotterdam Zuid station and encouraging them to combine all the different modes of transport that are available at the site. Where the station building crosses the street, we enter a safe, human-centered zone, where vehicles and bicycles can go through, but with a lower speed limit and fewer traffic lanes.

The junction is a place where the green corridor crosses a road, enabling cars to go to the other side of the neighborhood. It provides a safe pedestrian crossing and allows for shared transport modes.

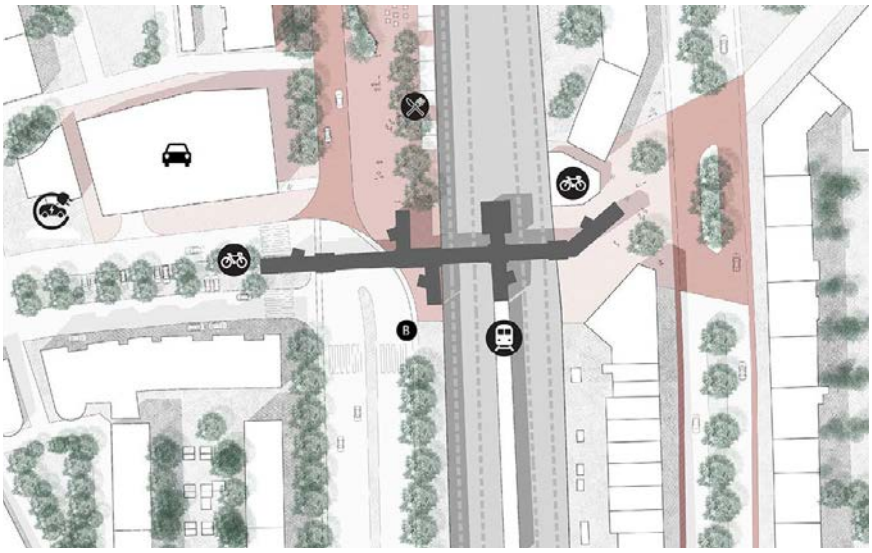
After the junction, the existing park and a community garden are open to the street, inviting the people passing by and providing shade and rest spaces. After passing the outdoor sport facilities, we enter a square, which used to be a large parking area. The square can house different activities, events, markets or simply serve as a meeting place while putting the Entrepot building more on display and connecting the green area with the park by the river bank.





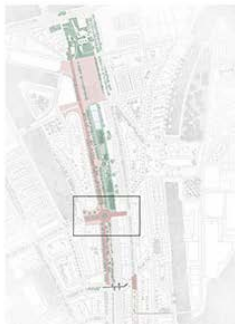
CLOSE-UPS

Closer views of the masterplan provide the more in-depth look into the design. The station becomes a mobility hub with different modes of transport and the abandoned building is transformed into a multi-story car parking to make up for the parking space taken from the square. Another addition is the covered bicycle parking building on the other side of the train tracks.



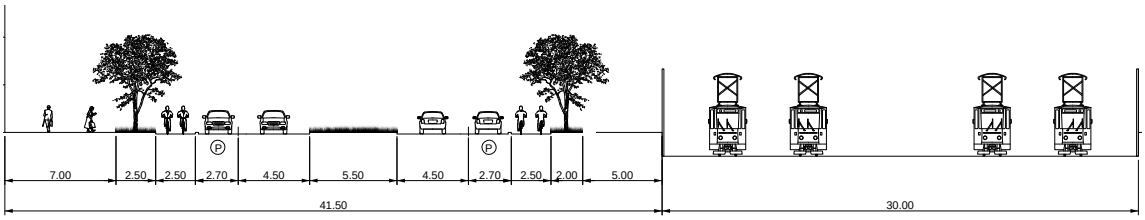
Zoom-in 1: Station



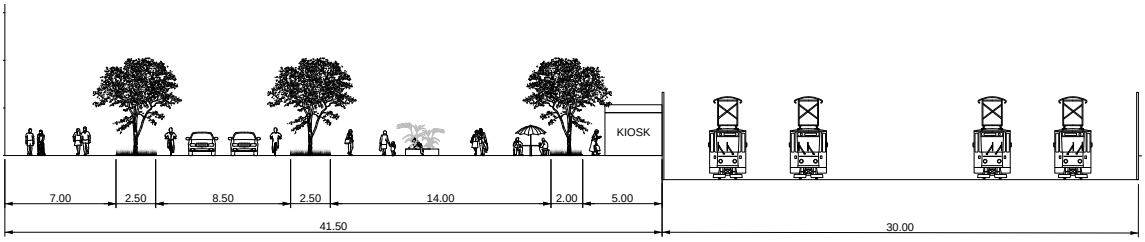


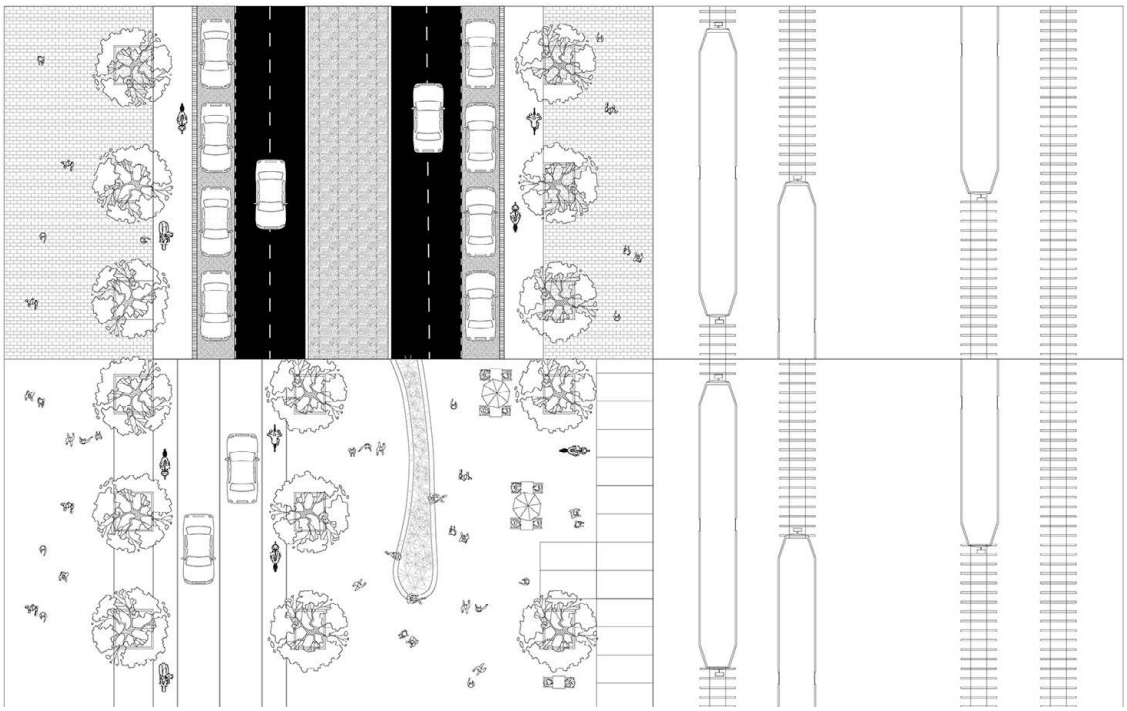
Zoom-in 2: Junction

BEFORE



AFTER





DESIGN STRATEGIES

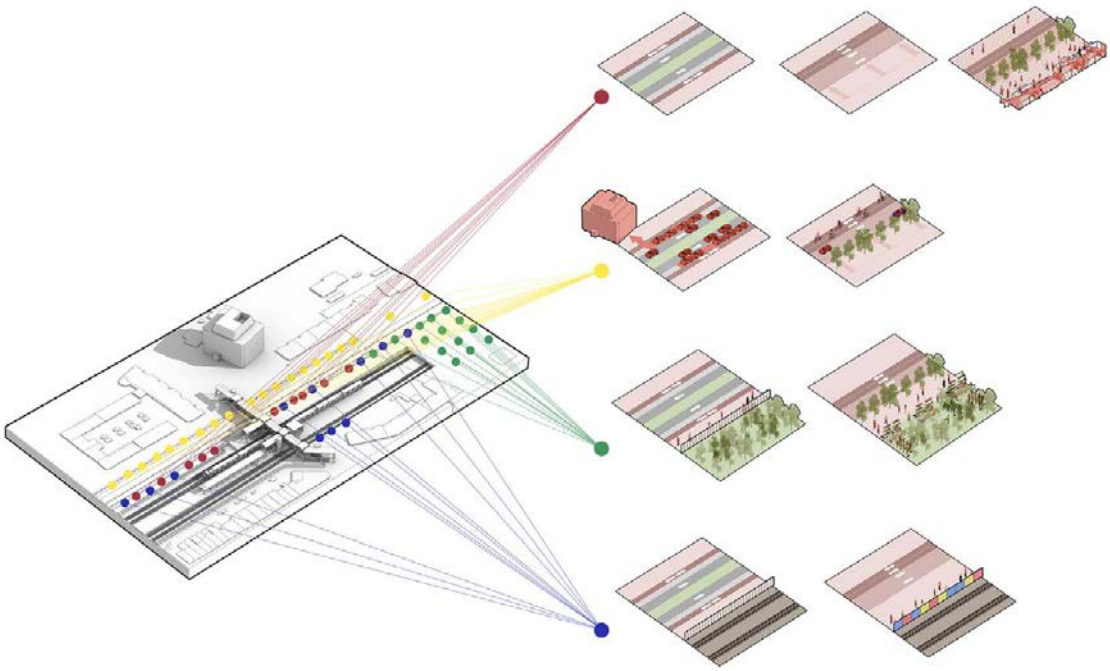
After understanding the area and its characteristics, we developed a design strategy that aims to improve the current situation of the station and its surroundings by focusing on four main principles.

For place-shaping, we decided to rearrange the organization of the street in order to extend the pedestrian routes and create space for the proposed architectural interventions. These interventions are temporary and can accommodate different functions.

For mobility, we decided to create mobility hubs and indoor parking spaces in the currently unused and empty building shells that would help with traffic decongestion.

On the green axis, we are getting rid of the physical boundaries by opening up the green space to the public and potentially creating urban agricultural activities that can create relationships between community members and provide local produce.

In order to enhance the local cultural sector, we propose creating temporary art installations and murals by local artists and residents on the facade closer to the station.

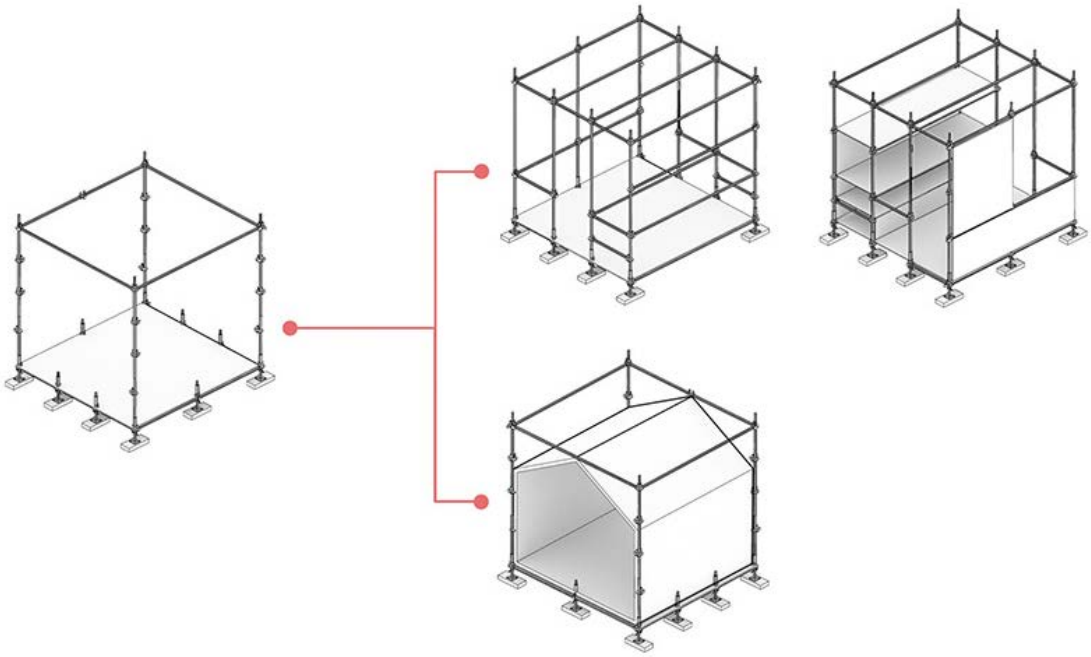


DESIGN TYPOLOGIES

For the architectural concept we decided to follow the station's current architectural identity and borrow its formal characteristics to develop our own architectural vocabulary. More specifically we got inspired by the architect Harry Reijnders who designed the station back in 1993 and is also the architect behind other major stations across the Netherlands such as Rotterdam Blaak, which opened the same year and Leiden Centraal (1996).

Using the typical gable roof typology that resembles the Dutch traditional houses, the steel frame of the station and the trusses, we propose a scaffolding unit (4x4) that can be expanded across the station in the vertical and horizontal axis. The aim is to create a more integral public space for the local community and the visitors of the station.

This flexible unit can house enclosed compartments that shelter different functions or generate versatile spaces for the visitors to move through or rest. Those assemblages can then extend and populate over the train tracks as well to create more typologies like the station itself where outdoor or semi-outdoor functions and activities for the community can be held.

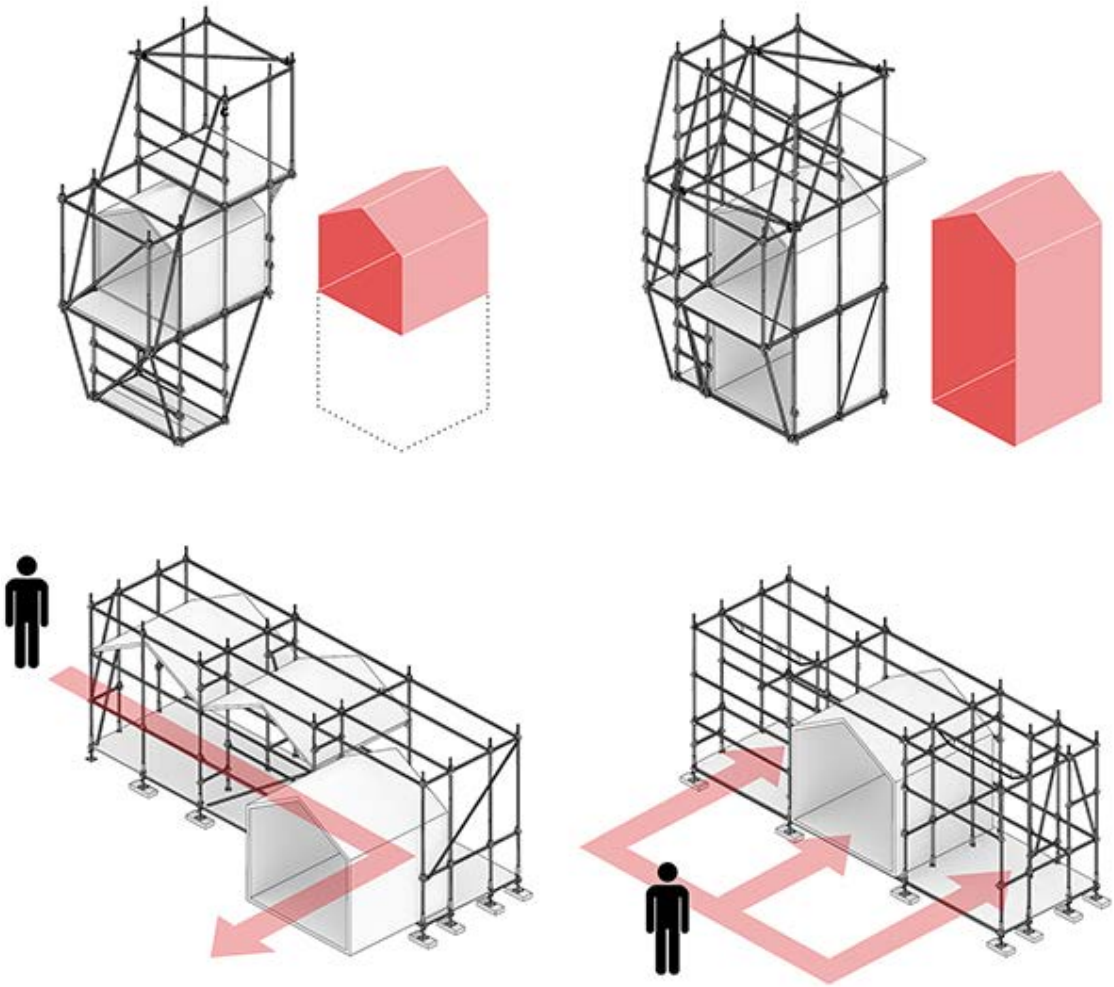


Unit typology / paneling

DESIGN TYPOLOGIES

The diagrams below show how those aforementioned units extend vertically and horizontally to create public space and housing functions for visitors, residents and commuters. The vertical expansion creates balconies that look over the station and the city, as well as stops where people can rest.

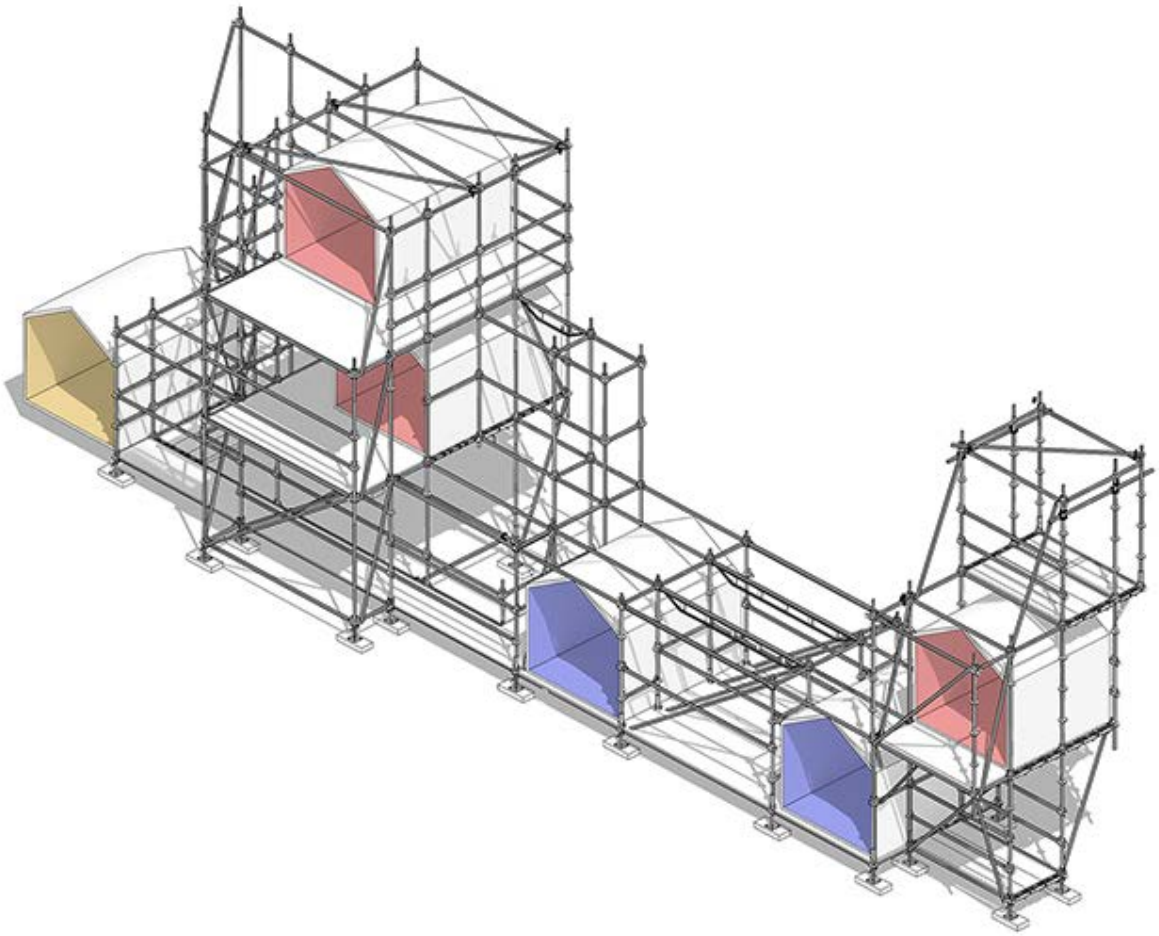
The access ladders embedded in the structure provide entrance to the top layer of this vertical extension. The extension are also aggregated horizontally by creating a 'loggia' for people to walk through, while the gable roof compartments can be either extruded or fitted to the main structure.



Unit typology / extension

Below we see how a possible assemblage may look like. The benefit of this structure, despite its formal proximity to the existing station, is that it is temporary and doesn't alter or interfere with the already existing topology of the place. Therefore, it can be easily maintained, updated and also provide great future adaptability.

Lastly, to distinguish the housing functions of the structure we used the colors that we find in the station itself red, blue, yellow and green to correspond to the food and beverages, market, station for bikes and retail stores respectively. Those functions add more program to the site and support the local community and production by creating the space where all those amenities that are currently absent from the area can be provided.



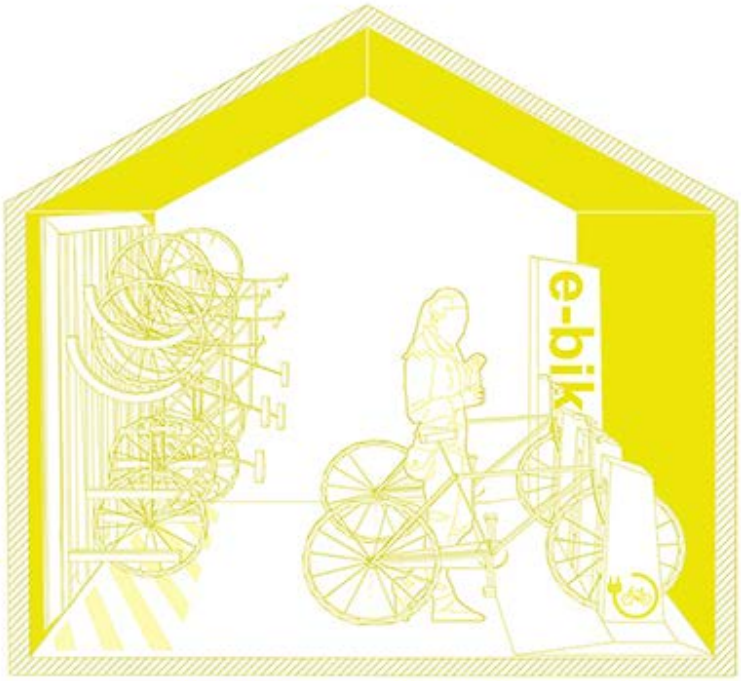
Unit typology / assemblage



Market

F&B





Bike Station





Retail


Coffee




Metro Lines
D/E

Z

ZUIDPLEIN
METRO STATION

Collective Research 138

Scenario 1
Community City 192

Scenario 2
Climate Adaptive City 230

Scenario 3
Autonomous City 252

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INTRODUCTION
Research Zuidplein

Metro station Zuidplein, completed in 1968, is an important hub in the transportation network of Rotterdam. This station is located in Charlois, currently one of the most poorest neighborhoods of the city. The crime rate is high, and besides the Ahoy event center, the area is not very inviting.

In the coming years, this station and the area around it will see a drastic transformation. Boulevards will replace the current streets. Many activities such as café's and restaurants will be realized. The housing shortage of Rotterdam will also be partly solved in this area.

In this booklet, research is conducted on several relevant topics about Zuidplein station. The topics are: History, demographics, morphology, mobility, environment and future developments. For the research, 3 different scales of focus are selected. The largest scale focuses on Zuidplein in relation to Rotterdam. The middle scale is the relation between Zuidplein and its neighborhood, and the small scale primarily focuses on the station and shopping mall itself.

The research is concluded with diagrams. From the conclusions, several visions come forward. Finally, these visions will be transformed into 3 future scenarios, which will be further developed in the coming weeks.



Zuidplein



Station



Rotterdam

HISTORY
Large scale developments

Rotterdam Zuid
In 1872, the construction of the Nieuwe Waterweg, a wide canal connecting Rotterdam with the North Sea, was completed. The port of Rotterdam developed steadily, and Rotterdam grew into one of the largest port cities in Europe. The many dock workers, mostly from the countryside of South Holland, Brabant and Zeeland, settled in Feijenoord and Charlois. After the completion of the construction of the ports of Rotterdam, less work was available and a large part of the guest workers moved to the new housing estates just outside Rotterdam. They made way for a new group of residents: the guest workers from Turkey, Morocco and the Dutch Antilles from the 1960s.[1]

Charlois
Located on the southern bank of the Maas, this area was not incorporated as a sub-municipality of Rotterdam until January 1, 1973. Until 1895, Charlois was an independent agricultural village.[2] In 1952, the Zuiderpark was laid out in the heart of Charlois. In present times, it is the largest city park in the Netherlands.[3]

Zuidplein
Looking into the history of Zuidplein and the extended surroundings, it becomes clear that what is considered part of Rotterdam today was agricultural land in the 18th and 19th century.[4,5] After World War II, several emergency villages were built in Rotterdam to alleviate the housing shortage, including the Brabantse Dorp. The Brabantse Dorp was demolished in the 1960s for the development of the Zuidplein.[6]

An important step towards the expansion of Zuidplein was the construction of the first metro line of Rotterdam in 1961.[7] Zuidplein became an important public transportation node that connected the North and South of Rotterdam. In present times, Zuidplein station is the Netherlands' second largest bus hub with local and regional buses.

From the 1960s onwards, many developments took place around Zuidplein that changed the functionality of the area. In 1971, the Rotterdam Ahoy opened, which was inextricably linked to the reconstruction of Rotterdam after the second World War. The shopping center Zuidplein opened in 1972. In 1978, the theatre Zuidplein was renovated (Hart van Zuid, n.d).[8]

Zuidplein is located within an area that is generally not considered particularly safe. In 2006, it received a rating of 4.4 on the safety index.[7] A research in 2011 around Zuidplein concluded that the outdoor space is perceived by the users as pure functional and not experienced as a living space. The quality of stay in public space lags behind, leading to complaints about safety and nuisance.[9] The coming years, the area around Zuidplein will be transformed into the center of Rotterdam South.

1. Strehl, T. (2008). *Rotterdam-Zuid, stadsdeel achter de Maas.* VPRO.
2. Stadsarchief Rotterdam. (n.d). *Charlois.*
3. Rotterdam.nl. (n.d). *Zuiderpark.*
4. Geschiedenis van Zuid-Holland. (n.d.). *Geschiedenis van Rotterdam.*
5. Topotijdreis. (n.d.) *Maps of Rotterdam throughout the decades.*
6. Bet, Hinterthür and Meijel. (2008). *Cultuurhistorische verkenning vooroorlogse wijken.*
7. Wikipedia (2022, January). *Zuidplein (metrostation).*
8. Hart van Zuid Rotterdam. (2021b). *Wij zijn op Zuid, jij ook?*
9. Veldacademie (2017). *Hart van Zuid 2017: Onderzoek naar het gebruik en de waardering van de openbare ruimte in het Hart van Zuid in Rotterdam.*

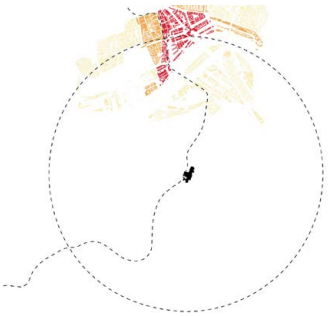
Growing city center -1880



Annexation of municipalities, 1900



Influx of new residents - 1910



Expansion of Rotterdam - 1930



Pre-war Rotterdam - 1940



Post-war restructuring, public housing,1960



Urban renewal and experimenting - 1970



City densification - 2010



HISTORY
Timeline Zuidplein Area

1950

1950 - 1971
Plans and execution of the Rotterdam Ahoy.



Author: Rob Mieremet / Anefo
Source: Wikipedia Commons

1960

1961
Construction of the Metro station Zuidplein.



Author: BNA Photographic
Source: Alamy Stock Photo

1968
Opening of the metro station Zuidplein. It was the first metro line in Rotterdam and connected the North of Rotterdam with the South.



Author: Eric Koch for Anefo
Source: Wikipedia Commons

1970

1972
Opening of shopping center Zuidplein.



Author: Dick Leeuwestein
Source: Jopie & Dick Leeuwestein

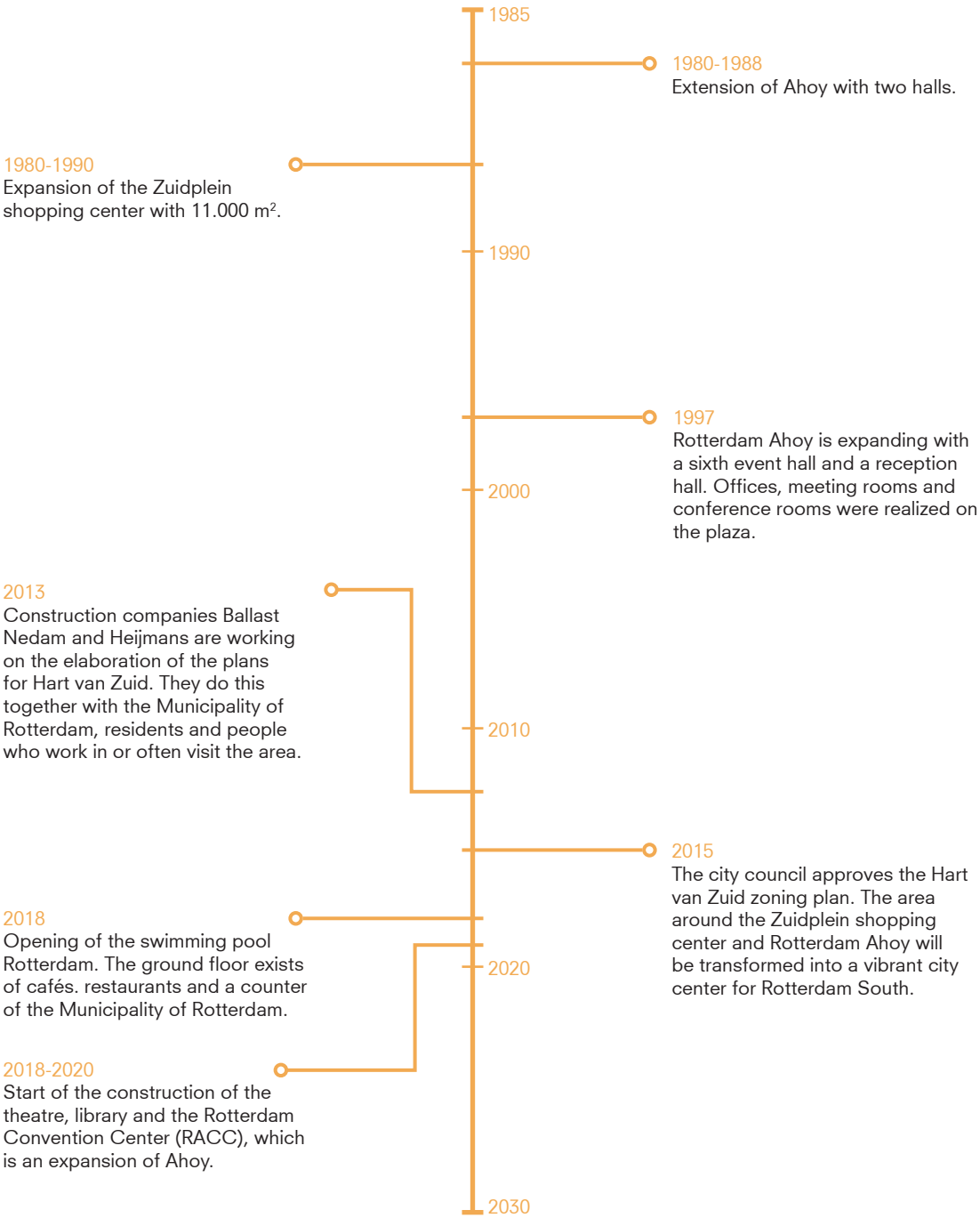
1978
Renovation of theatre 'Groote Schouwburg'. The name of the theater changed to Theater Zuidplein.



Author: Jan van Helleman

1980

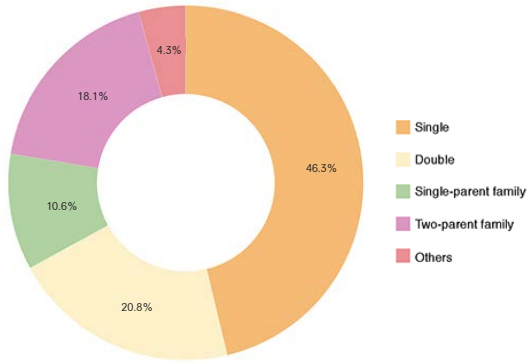
1985


1985
1980-1988
Extension of Ahoy with two halls.
1980-1990
Expansion of the Zuidplein shopping center with 11.000 m².
1990
1997
Rotterdam Ahoy is expanding with a sixth event hall and a reception hall. Offices, meeting rooms and conference rooms were realized on the plaza.
2000
2013
Construction companies Ballast Nedam and Heijmans are working on the elaboration of the plans for Hart van Zuid. They do this together with the Municipality of Rotterdam, residents and people who work in or often visit the area.
2010
2015
The city council approves the Hart van Zuid zoning plan. The area around the Zuidplein shopping center and Rotterdam Ahoy will be transformed into a vibrant city center for Rotterdam South.
2018
Opening of the swimming pool Rotterdam. The ground floor exists of cafés. restaurants and a counter of the Municipality of Rotterdam.
2020
2018-2020
Start of the construction of the theatre, library and the Rotterdam Convention Center (RACC), which is an expansion of Ahoy.
2030

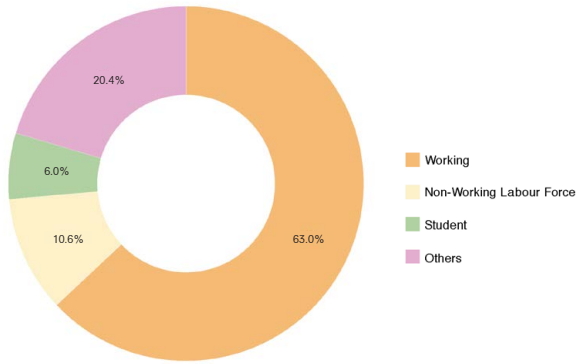
DEMOGRAPHICS
Large scale

Demographics of the study area were collected and compared at two scales: the large scale refers to the scale of the city of Rotterdam, and the medium scale focuses on the neighborhood of Zuidplein. These sets of information are helpful in developing a better understanding of the characteristics of the existing population and stakeholders in Zuidplein. Demographic factors studied include age groups, household type, employment status, average income and migration background.

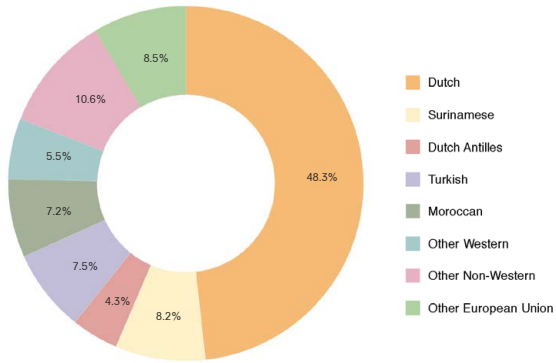
According to the latest statistics from the municipality, Zuidplein has 1,302 inhabitants, amounting to 0.2% of the population of Rotterdam. This number is low in comparison with its surrounding residential-based neighborhoods, namely Tarwewijk, Bloemhof, Vreewijk and Carnisse, with populations of more than 11,000. Situated at the center of these residential areas, Zuidplein plays the role of a transit and cultural hub instead which sees the constant flow of people coming in and out of the neighborhood.



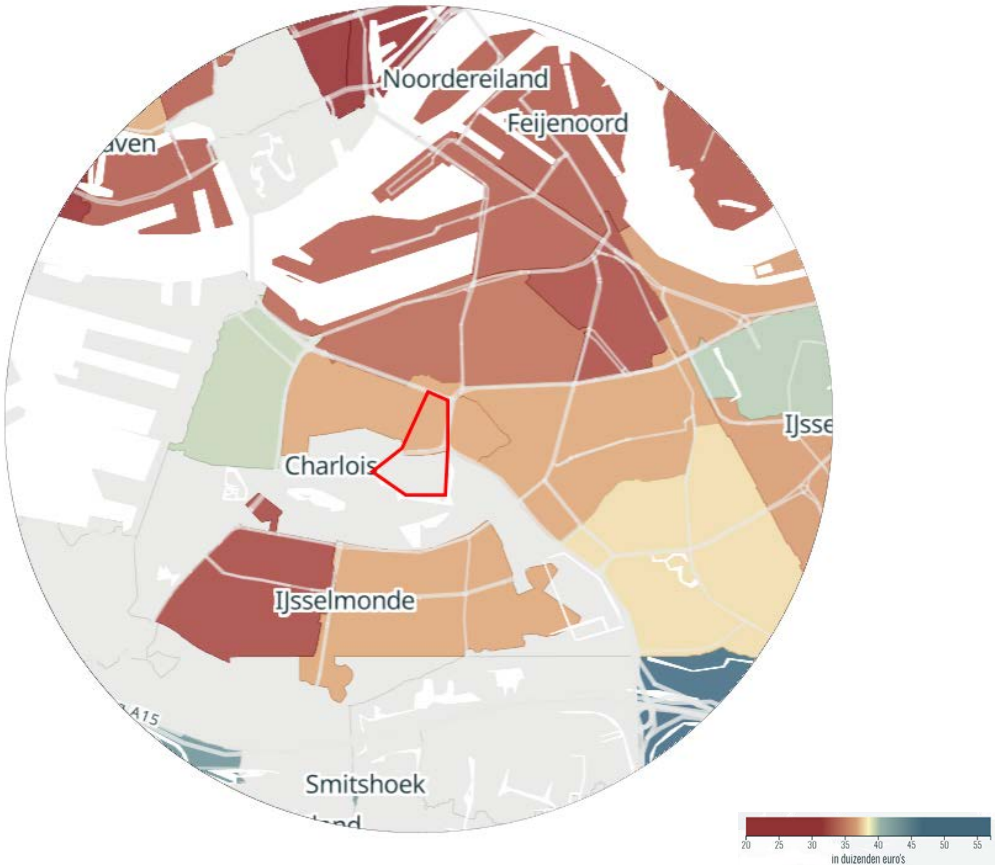
Household type, Rotterdam (From Onderzoek010, 2021)



Employment status, Rotterdam (From Onderzoek010, 2021)



Migration background, Rotterdam (From Onderzoek010, 2021)



Household income distribution, Rotterdam
Source: KansenKaart, 2022

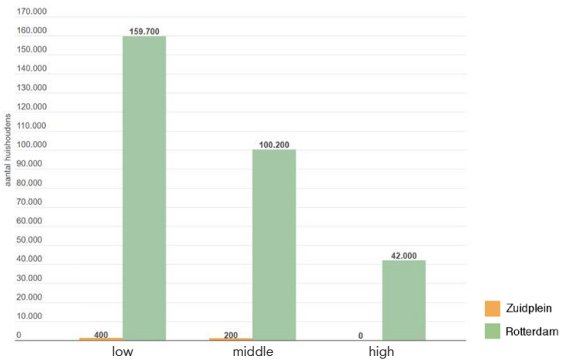
DEMOGRAPHICS
Medium scale

The study of age groups shows that Zuidplein has a high percentage of the elderly population, close to 20%, but relatively few children and teenagers. The aging phenomenon is more significant than that of Rotterdam. This is also reflected in the household composition chart, which shows that single-person households are the majority, even more so compared to Rotterdam. However, Zuidplein has a relatively low income average since households mostly belong to the bottom 40% of the national income distribution, and none of them are in the high tier.

Zuidplein houses a diverse population in terms of migratory background, with more than half being non-local Dutch. Among them, there are large numbers of Surinamese, Turkish, Moroccan and also non-Western people.

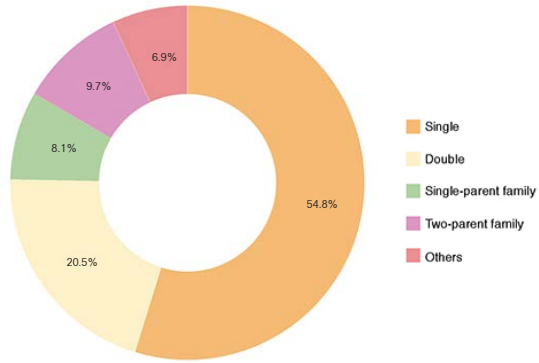
In conclusion, in light of the aged demographics of Zuidplein, emphasis shall be placed on pedestrian accessibility and barrier-free design. The new developments at Hart van Zuid also pose an opportunity to attract a younger population into the area so as to energize the aging neighborhood.

Although Zuidplein is a small neighborhood with few inhabitants, due to the station and surrounding amenities, it is still busy during the day and attracts significant pedestrian footfall. Daily commuters traveling through Zuidplein (which are not included in the demographics data) represent a large part of the "user" category. Hence it is also important to address their interests besides that of residents.

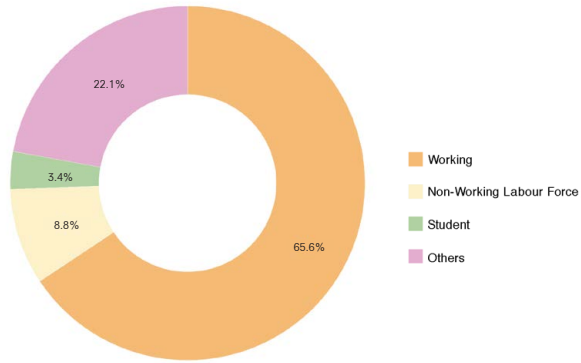


Low = Belonging to the bottom 40% of the national income distribution
Middle = Belonging to the middle 40% of the national income distribution
High = Belonging to the top 20% of the national income distribution

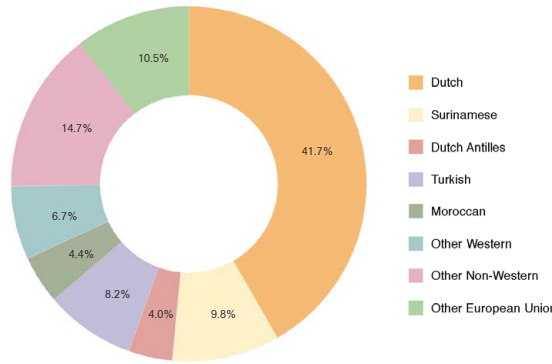
Household income distribution, Zuidplein&Rotterdam (Onderzoek, 2021)



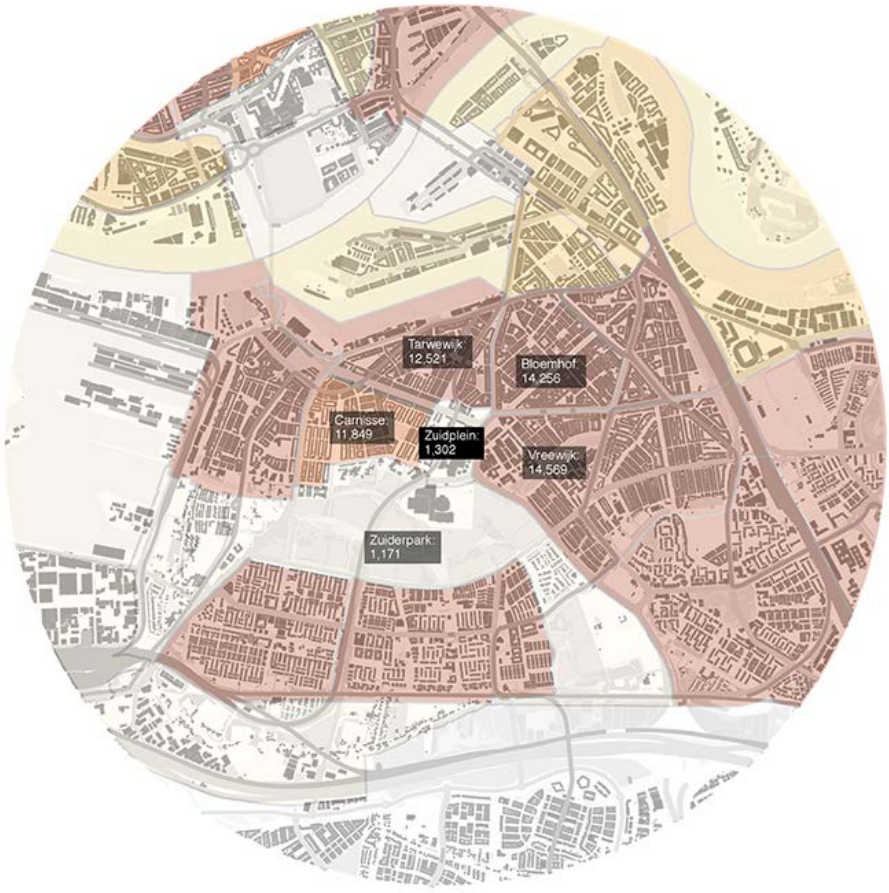
Household type, Zuidplein (Onderzoek010, 2021)



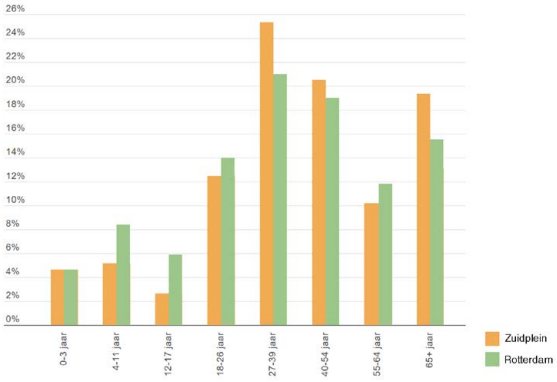
Employment status, Zuidplein (Onderzoek010, 2021)



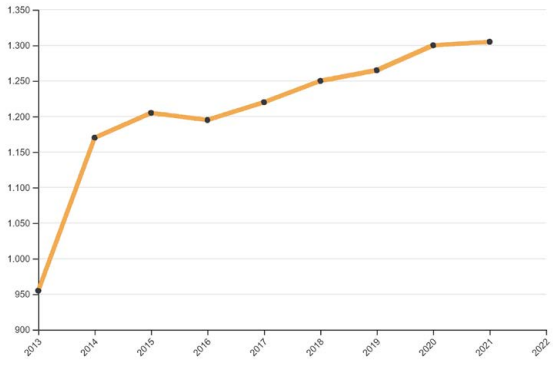
Migration background, Zuidplein (Onderzoek010, 2021)



Population density, Rotterdam (Onderzoek010, 2021)



Age group, Zuidplein & Rotterdam (Onderzoek010, 2021)



Population growth, Zuidplein (AllCharts.info, 2022)

MORPHOLOGY
Open versus filled space

The morphology map illustrated on the right side of this page portrays the filled space versus the open space around the area of metro station Zuidplein. Looking at this map, there are a few things that stand out. First of all, the strong difference in building density between the top and bottom side of this map. The wide open area at the bottom part is the Zuiderpark, the largest park in Rotterdam. This park was built in 1952 for functional rather than for aesthetic reasons. This is why there are many sports facilities and allotment gardens situated in this park.

The second thing that stands out are the two major buildings that are significantly bigger than their context. These are the Zuidplein metro station with shopping mall and the event stage of Ahoy. Both buildings are built around 1970. There once was a direct connection between Ahoy and the station with a walking bridge, however, this connection was later removed because of the relocation of the main entrance of Ahoy.

Thirdly, there are several open spaces in this urban layout, marked with pictures next to the map. Most of these areas are green spaces in the city, where people can go out for a walk or exercise. Remaining open spaces are mostly reserved for car traffic. As in one of the pictures, the intersection between the Zuiderparkweg and the Vaanweg is visible.

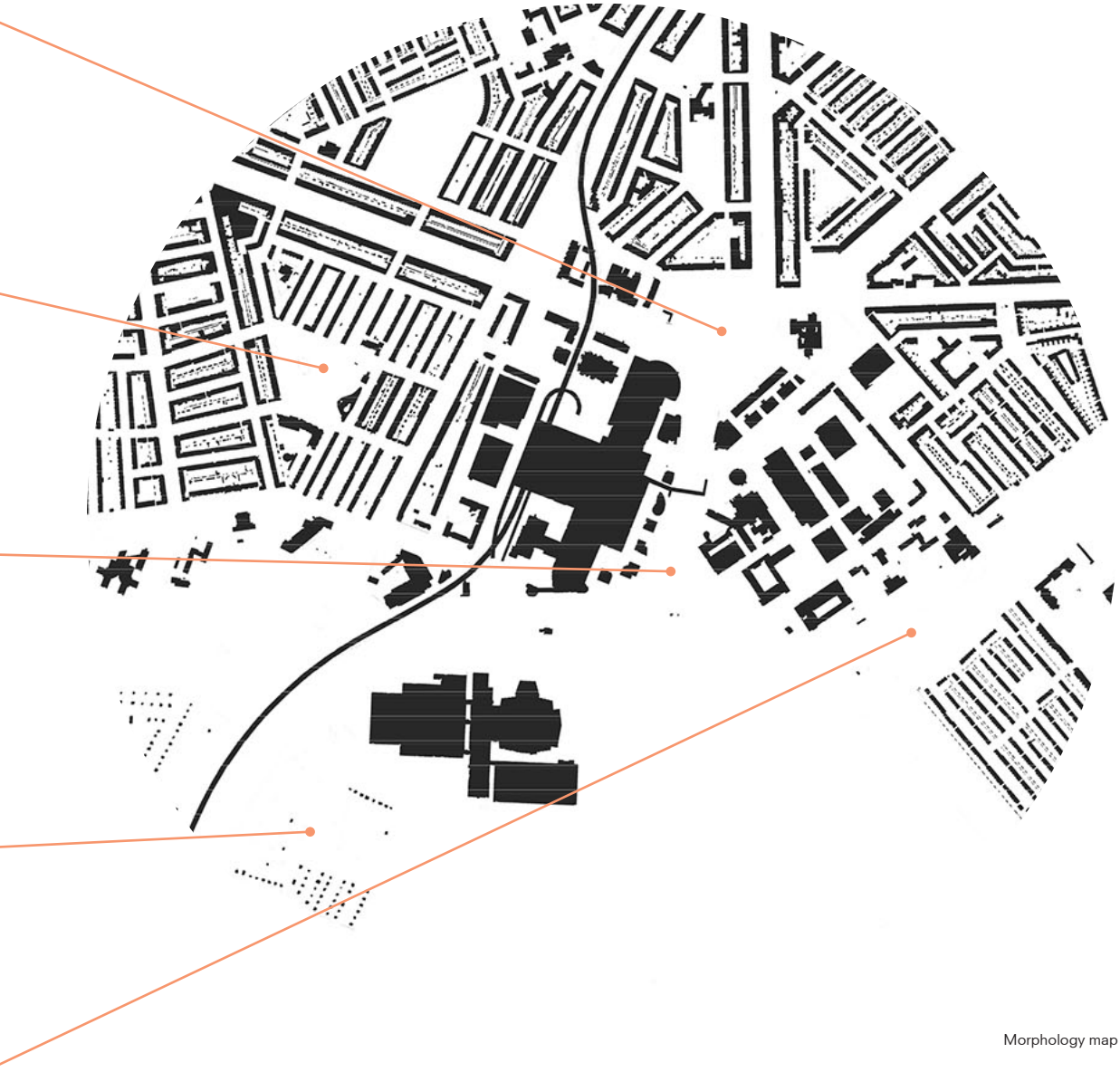

Wevershoekstraat


Amelandse plein


Intersection S103


Allotment gardens


Zuiderparkpromenade



Morphology map

LAND USE
Rotterdam and Zuidplein

The city of Rotterdam has quite a diverse type of land use. On the North side of the Nieuwe Maas river lies the city center. Most inhabitants of Rotterdam go to work here, shop, eat and have fun. The center is surrounded by predominantly residential neighborhoods. When crossing the Erasmus bridge, we enter the southern part of Rotterdam.

The more to the south we go, the more the area turns into a residential area. This is also where the Zuidplein station is located. Here, however, we also find plenty of retail in the shopping mall. Further south from the Zuidplein station there is the large and very green Zuiderpark, with the Slinge neighborhood lying further south. Towards the west lies the industrial harbor area.



Map showing land use in Rotterdam
Source: ruimtelijkeplannen.nl
Author: Own image, using the interactive map software



Map showing functions around Zuidplein

Zuidplein Station is located in a densely built area with a wide range of building uses, architectural types, and built eras. A large portion of the surrounding buildings are traditional 3-4 story residential apartments, with small retail services on the ground floor. To the east lie the contemporary high-rise public developments, such as the Ikazia Hospital and many educational facilities. Buildings scatter and become irregular in size and shape towards the south, which serves the recreational Ahoy center within the large area of greenery.

- Commercial & residential
- Community
- Education
- Medical
- Recreation
- Religious
- Residential

GREEN AND WATER
Rotterdam Zuid

In a large scale map as the one shown on the right, it becomes clear that green areas are abundant to the south of the station especially because of the presence of Zuiderpark. Other green areas shown in the map are further away from the station but still within a walkable or cyclable distance from Hart van Zuid. Green areas are often combined with water canals or ponds. These features are also more often observed towards the south of the station.

Zuiderpark is well maintained and has many different destinations, such as sports, culture but also hiking, playgrounds and bicycle paths. In addition, Zuiderpark runs into areas such as skate parks, allotment gardens and sports fields. The green areas around Zuidplein station can be categorized in directions of the compass rose:

South of Zuidplein
· Zuiderpark
· Volkstuinvereniging de zandweg
· Sport clubs and fields
· Cool park
· Skate park

East of Zuiplein
· Valkeniersweide
· Speeltuinvereniging de Vaan

West of Zuiplein
· Ameandsplein
· Sportfields as well

North of Zuidplein
· Wevershoekstraat has a lot of green + soccer field
· Millinxpark
· Blankenburgstraat + playgrounds



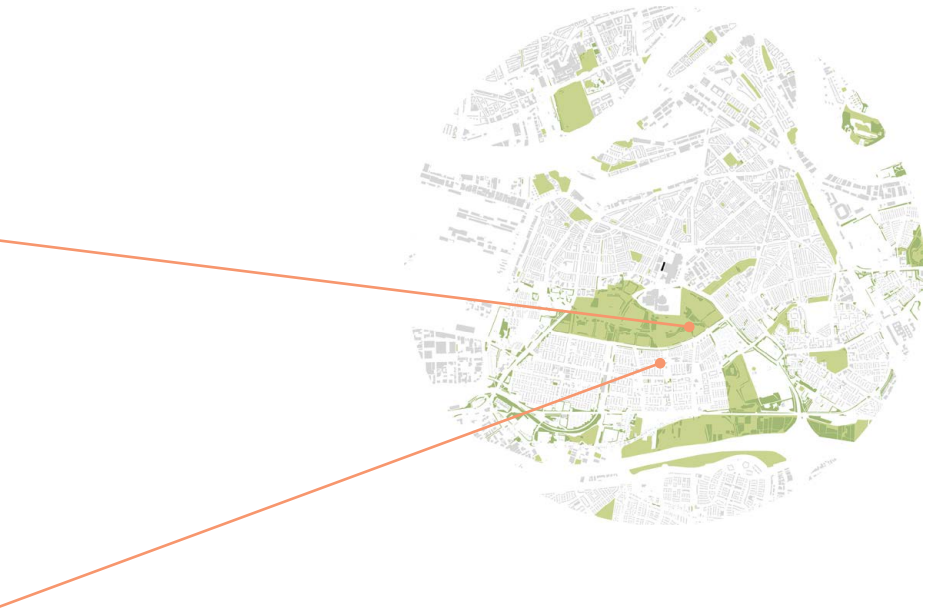
1. Parking area in front of AHOY



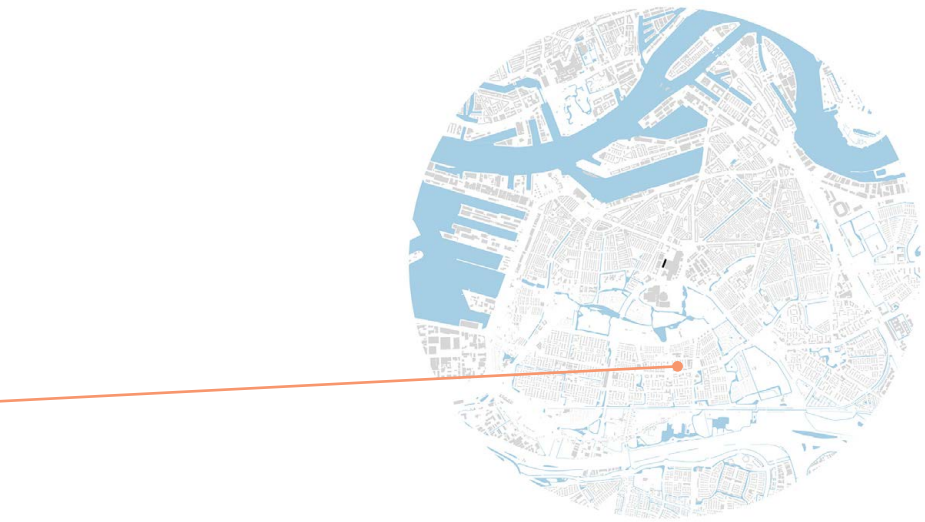
2. Zuiderpark



3.Zuiderpark



Green areas Rotterdam Zuid. (Data from Openstreetmap)



Water areas Rotterdam Zuid. (Data from Openstreetmap)

GREEN AND WATER
Station Area

Greenery or water in the immediate area around the Hart van Zuid station are not so common. The busy roads that surround the station act as a barrier, preventing the accessibility of people to the Zuiderpark or the Valkeniersweide park. Almost everything is asphalted or paved, which causes poor drainage, heat in summer and an uninviting atmosphere. The neglect of the few plant boxes scattered around the area is perhaps due to the fact that work is planned, so people feel that there is little point in putting in the work now if all the plants are solely seasonal. However, the appearance of such a barren area can have an impact on the space and surroundings.

The green spaces are very empty, with only a few trees. The diversity of plant species is mostly low, with a majority of green areas consisting in patches of grass. This is not inviting for visitor nor attractive to native fauna like bees, birds or other smaller animals that can help pollinate and maintain the natural ecosystem. In addition, the soil is very compact, making impermeable surfaces that make it difficult for water to drain away. Especially at peak moments like storms and rain showers, this can cause serious drainage problems.

Inside the station, there is almost no greenery either. There are some beds with plants, however, not more than five have been counted. The lack of natural light plays an important role in this problem; most places inside and around the station are simply too dark for plants to grow.



1. Pavements and lots of stones



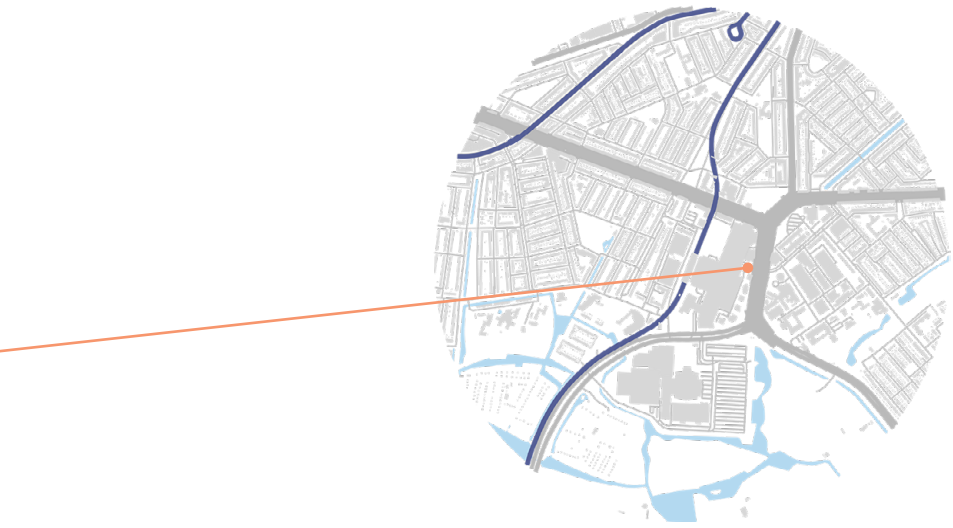
2. Green spaces are empty and poorly maintained



3. Planters are empty



Green areas around the Hart van Zuid. (Data from Openstreetmap)



Water areas around the Hart van Zuid. (Data from Openstreetmap)

ENVIRONMENT
Urban heath island effect

Even tough it is known to be a port and industrial city, Rotterdam is one of the greenest cities in the Netherlands. The green areas are not equally distributed throughout the city, however. In the area around Station Zuiplein, there are several parks, of which Zuiderpark is the biggest. Zuiderpark is a big city park, created for leisure, sports and picnics. Getting to Zuiderpark is difficult, because of heavy polluting traffic, roads, and them boundaries created by the station and Ahoy.

Shown in the 'car oriented map', cars play a big role to the area around Zuidplein; the Ahoy parking lot gives place to around 2000 parking spaces. The large paved terrain does not create any additions to the liveability of the area or enhance visitors' experiences with nature or greenery.

The urban heat island effect is described as the unusual accumulation of warmth caused by the presence of solid and dark surfaces such as concrete or metal. This phenomena can cause great temperature differences between the areas in the heat island and the areas outside of it. In the Hart van Zuid, it is clear how the concrete surfaces and the lack of green spaces are affecting the temperatures on the area, leading to an increase of up to two degrees celcius in comparison with its immediate surroundings on a summer day.



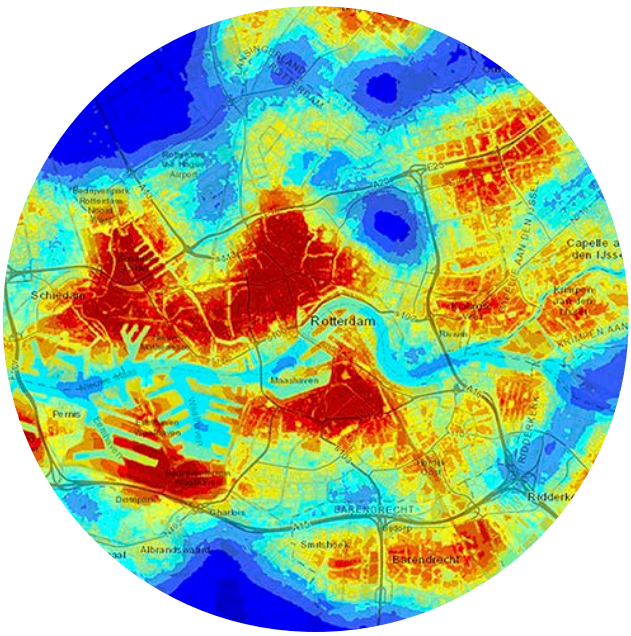
Busy roads of Zuiderparkweg



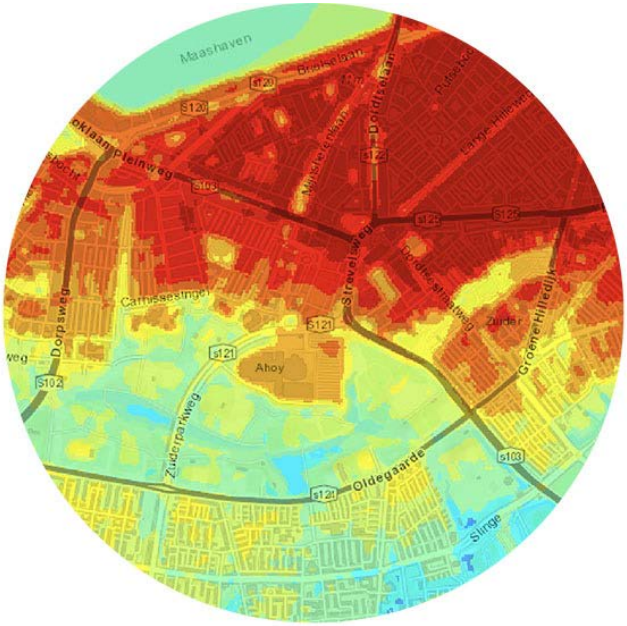
The end of the Gooilandsingel



Car oriented map



Heat map Rotterdam. (Data from Openstreetmap)



Heat map around Hart van Zuid. (Data from Openstreetmap)

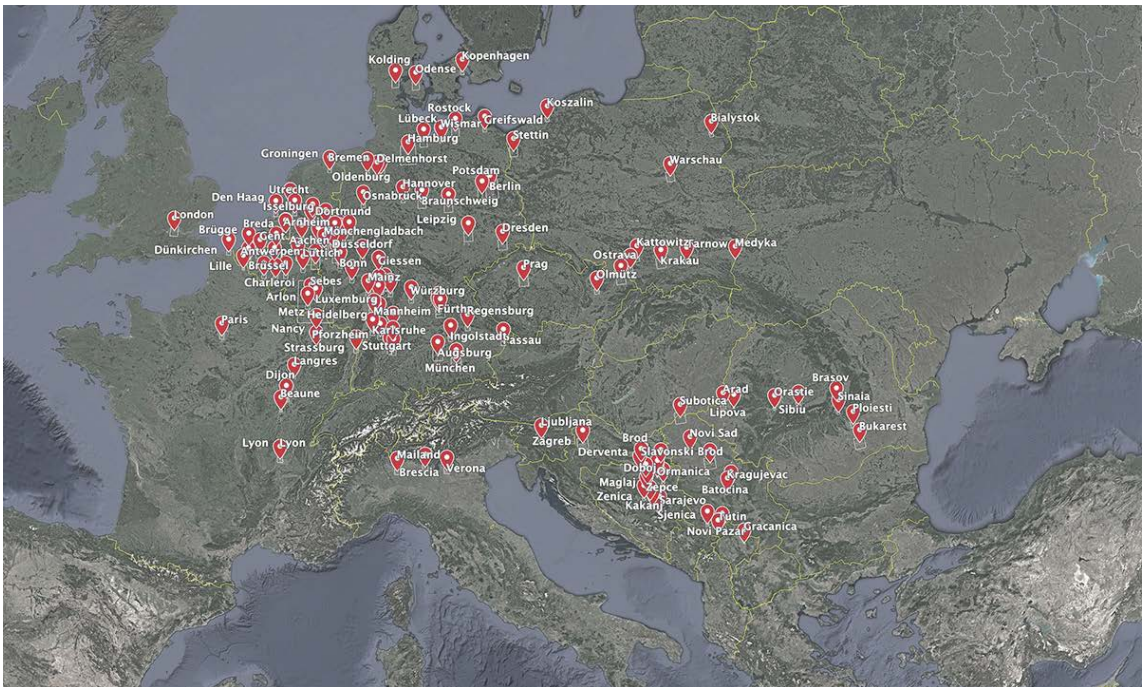
MOBILITY
Large scale

There are many modes of mobility connecting to the Zuidplein station. On this page, the mobility flows on a large scale are examined.

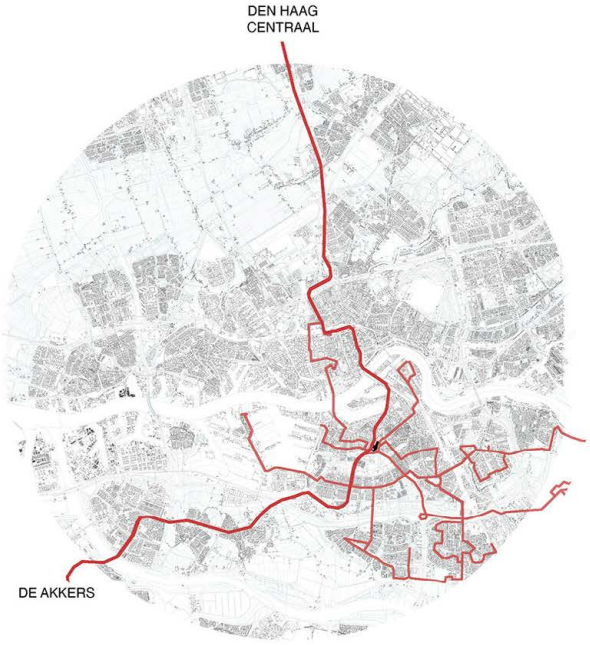
The Zuidplein station has direct public transport connections to many stations in the south of Rotterdam, spread out equally. The bus line 44 also connects Zuidplein directly to the north and Rotterdam Central.

Two metro lines stop at the Zuidplein station and reach as far as Den Haag and De Akkers. The bus lines and the metro lines connect Hart van Zuid with the central region of Rotterdam and different neighboring cities, however, the station is also part of a much larger network with cities further away.

There are two FlixBus stations in Rotterdam. Zuidplein is one of them, besides Rotterdam Central. The FlixBus lines therefore connect Hart van Zuid with many cities all around Europe and becomes part of the FlixMobility network.



FlixBus destinations from Zuidplein
Source: Google Earth Images
Author: FlixMobility GmbH, 2022



All public transport lines running from Zuidplein



Overview metro network
Source/Author: RET, 2022

MOBILITY
Rotterdam

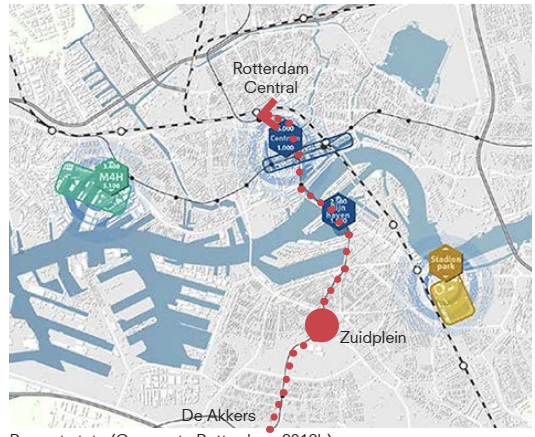
A closer look into the development strategies by the city of Rotterdam:

Today, the Zuidplein station is a stop on the north - south oriented metro lines between De Akkers and Den Haag.

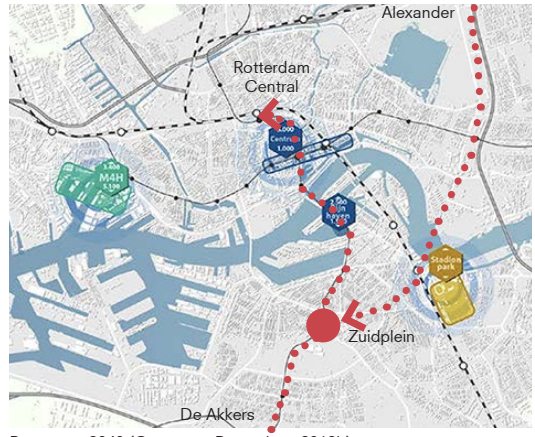
Until 2040, the city plans to establish a new metro line between the Hart van Zuid and Alexander, which improves connectivity for the region.

Until 2050, the city plans to establish one more metro line between Hart van Zuid and station Schiedam. At this point, Hart van Zuid will have drastically increased in its importance in the region by becoming an important mobility hub in the city network. With the introduction of this new metro line, Hart van Zuid is on the crossing point of the north - south and east - west oriented lines.[1]

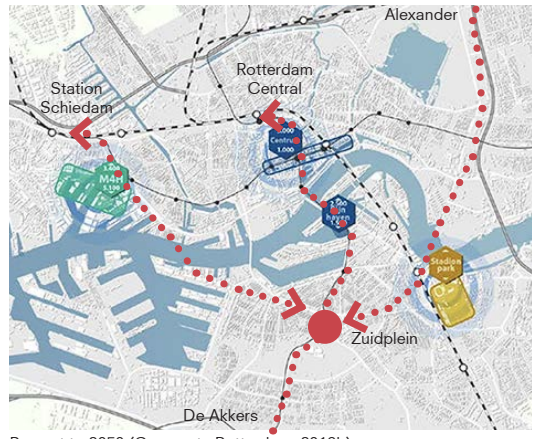
Also important for the station's future is the expected growth of passengers. According to current planning scenarios by the city, the passenger growth at Hart van Zuid will amount to 12,000 extra people.[2]



Present state (Gemeente Rotterdam, 2019b)

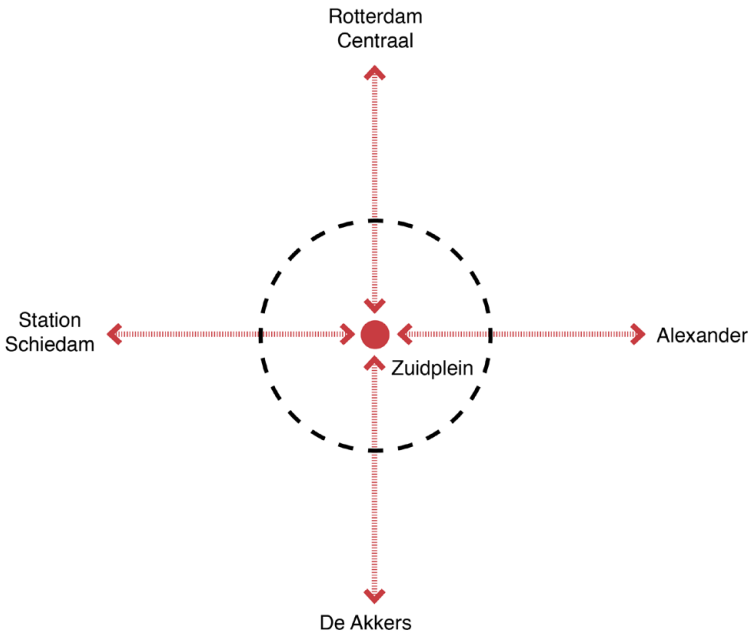


Present to 2040 (Gemeente Rotterdam, 2019b)

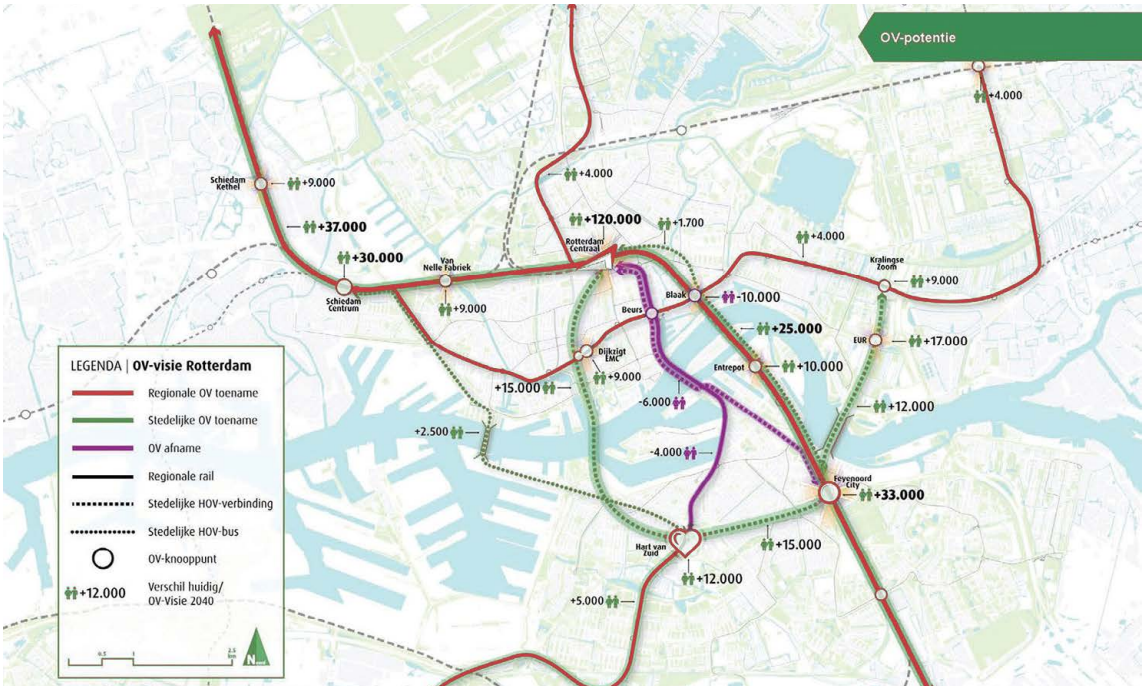


Present to 2050 (Gemeente Rotterdam, 2019b)

1. Gemeente Rotterdam. (2019b, December). *Rotterdamse Mobiliteits Aanpak.*
2. Gemeente Rotterdam & MRDH. (2017, November). *Openbaar vervoer als drager van de stad. OV-visie Rotterdam 2018.2040.*



Scheme Zuidplein as new sub-center



Future development of passenger flows
Source/Author: Gemeente Rotterdam & MRDH, 2017

MOBILITY
Mobility flows

The three maps in the next column visualize the catchment area for a 15 min commute to the station with different modes of transport. For a commute by bike, a significant area of southern Rotterdam can be reached from Zuidplein within 15 min (from Kop van Zuid to Waalhaven all the way to Lombardijen). The catchment area of public transport compared to bike is smaller but still covers a good part of the south. One can see that the areas in the north and east of Zuidplein are better connected by public transport than the southern and western areas. Finally, the zone showing the distance of 15 min walking to the station is again significantly smaller. It reaches from the station to the close neighborhood but not far beyond. The reason for that could be the inefficient accessibility to the station for pedestrians due to many obstacles like bus lanes, multi-lane roads and road crossings.

The two diagrams on the right-hand side show the routes and mobility flows for individual traffic and public transport to Zuidplein. The individual traffic routes are spread out evenly throughout the neighborhood and there are two main characteristics to be observed:

1. The main routes connect radially to Zuidplein, which makes the station a center of the individual mobility flows
2. Around the station, the main routes form a loop. The station becomes an island within that mobility loop. The public transport follows a different scheme; here, the connectivity is not radial but rather linear. From east to west, bus lines connect the neighborhood to the station, and the metro lines predominate the north-south direction.

Zuidplein is less of a center and rather a node on the important metro connection from the south to the north with Rotterdam Central.



15 min biking



15 min public transport



15 min walking



Metro
Bus
Tram

Public transport



Pedestrians
Cars

Individual transport

MOBILITY
Traffic patterns

The mobility flows in the small scale are complex in the case of Zuidplein. The different modes of mobility are side by side, intersecting and crossing, making it a three dimensional weave. As mentioned on the previous page, the outstanding feature in this scale is the mobility loop around the station. Because of that loop, the station becomes an island with a clear border. This makes it especially difficult for pedestrians and bikers to access the station. At the moment, they can cross the loop only through crosswalks and pedestrian bridges. The motorized traffic is clearly the dominant mode of mobility and the muscle-driven modes are subordinate.

If we have a look at the publication "Journey of the Future", we see that in the future, the most important mode of transport for the last mile shall be walking, followed by other muscle-driven modes. "To better connect the first and last mile of our passengers journeys and meet our sustainability goals, we need to prioritize muscle over fossil fuel, encourage shared transport and promote high capacity modes."[3]

This clearly shows, that the current situation needs to change in the coming years. The current hierarchy of mobility should be turned upside-down for the years to come to facilitate the accessibility for pedestrians and make it become a "Walk-IN" station.


Pedestrian bridge on the North side of the station


Multi layered accessibility

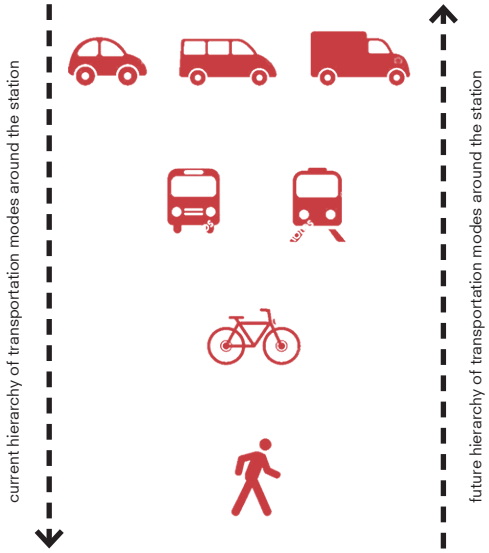

Stairway to pedestrian bridge on South-East side


Mobility flows side by side

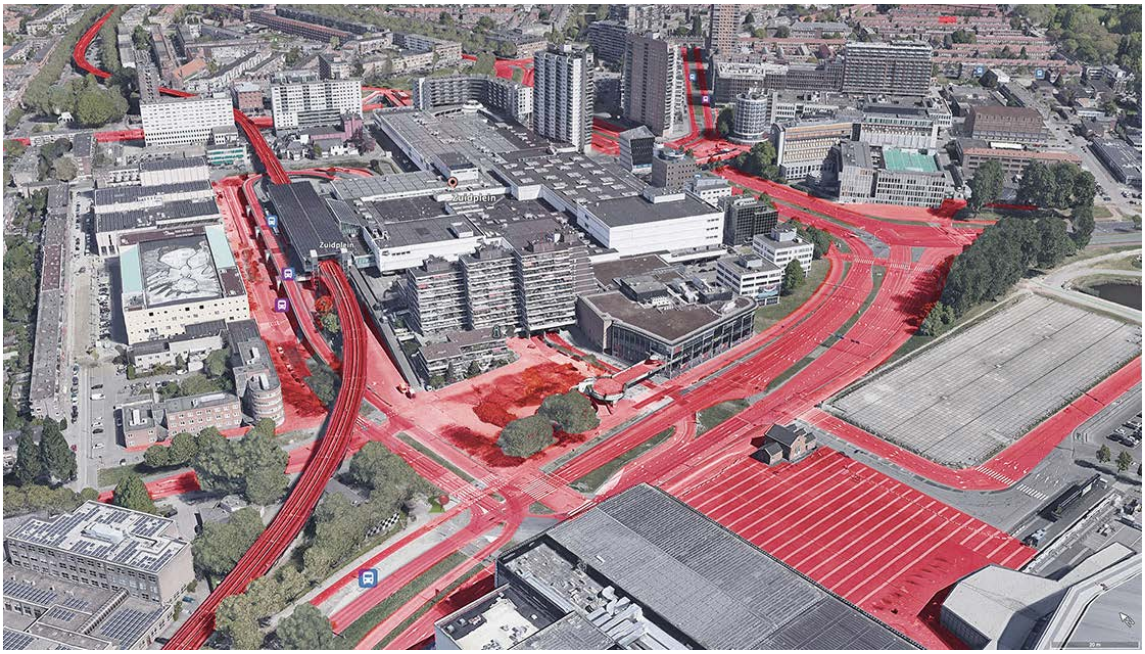
3. Mecanoo Architecten et al. (2019). *Journey to the future, A Passenger Experience.* Nederlandse Spoorwegen (NS).



Accessibility scheme



Hierarchy scheme of mobility flows



Station accessibility and mobility flows (Google Earth, 2019)

MOBILITY
User patters

By following the behavior of the various users on Google Maps, we determined the peak times of the station, the mall as well as the traffic around the area. As seen in the graphs to the left, the busiest time for the station is in the morning, most likely by commuters that only pass through. During the afternoon, the station is less congested, but we notice that a similar number of users access the adjacent mall. Therefore, we can assume that there is an overlap and there are people who come to the station to go shopping in the mall.

Following traffic patterns and comparing them to the use of the station, we can conclude that the space is unevenly distributed, the user of the station requiring more space at the moment. There is very little traffic around the area of the station at peak times. The space taken by car lanes ought to be re-purposed for pedestrians and cyclists, especially since the Slinge station will become a “Park and Ride” and the center on Rotterdam is expected to be entirely car free.



Traffic patterns Monday

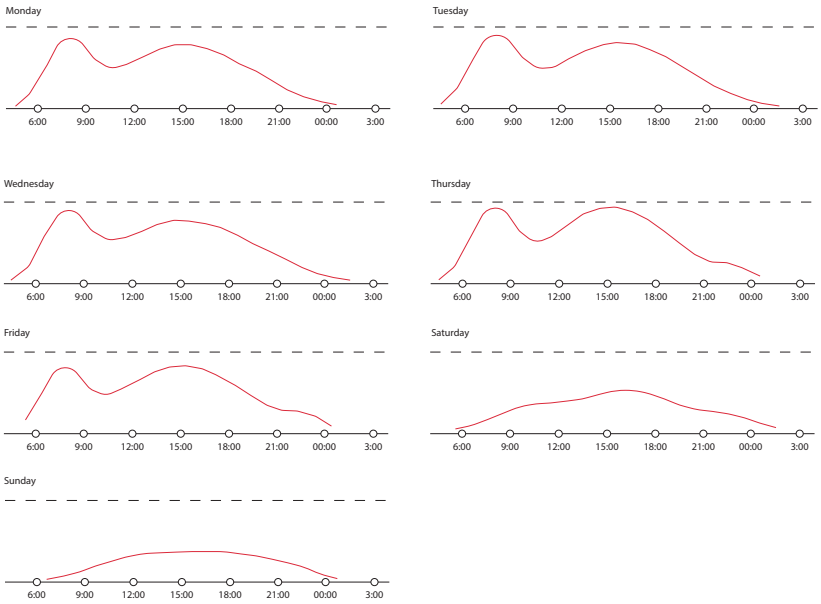


Traffic patterns Tuesday

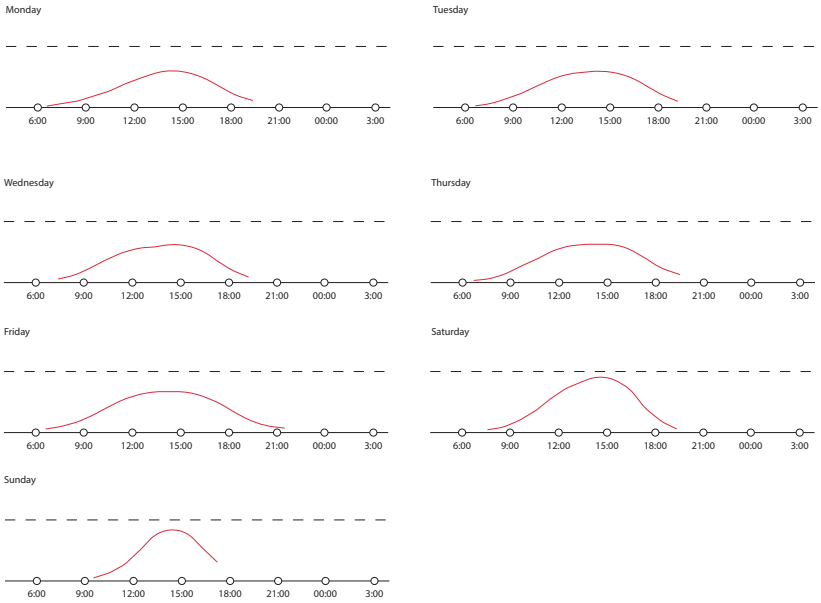


Traffic patterns Wednesday to Sunday

User patterns in the station



User patterns in the mall



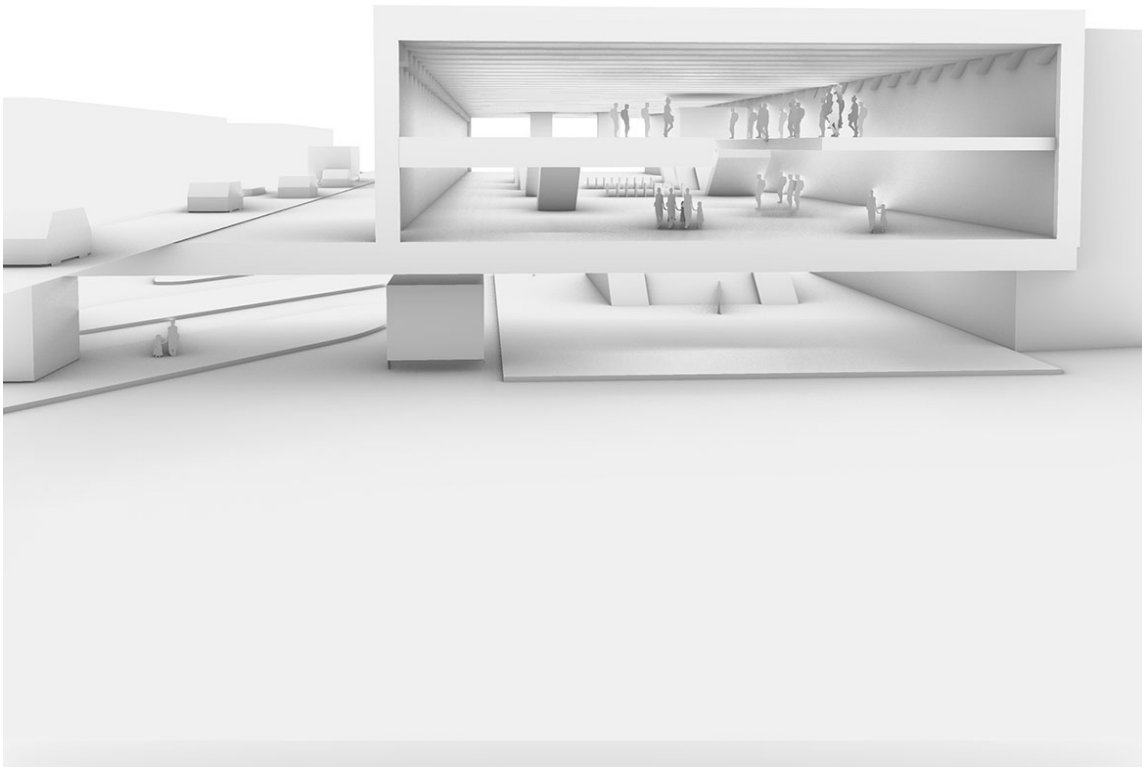
MOBILITY
Transport modes and spatial layout

The station is three stories high and exclusively above ground. The primary public transport connections that the station provides are the metro line and the bus station.

Ground floor
The ground floor provides the highest variety of modes. In terms of accessibility of the station, a large road provides access to the station by car. Several pedestrian crosses provide access by foot. A few bike racks are provided in order to park bikes. However, seemingly not enough space is provided, as bikes are placed (illegally) throughout the pedestrian space. The open space on the south side of the station, towards Ahoy, is a shared space between pedestrians, bike share parking, scooter share parking and the international bus stop. Two large staircases with moving stairs and two elevators provide access to the first floor on the north and south side of the station. In between the staircases there are small shops and meeting spots, but not enough light is provided, so this space is relatively dark and creates an unsafe feeling. By foot, Zuidplein, Ahoy and the Theatre and swimming center are closely accessible. However, the infrastructure does not seem to be designed with pedestrian priority. There are little cross ways or clear paths available and the lines of visions towards the buildings of interest are often blocked, making it difficult to understand where to go.

First floor
The first floor is predominantly designed for pedestrians. The station is directly connected to a large shopping mall. Furthermore, a car lane presumably designed to drop off passengers like a park & ride runs along the building's long side, but at the time of the site visit, the road was blocked. A walkway provides access to Ahoy, but creates a detour, as the direct walkway road is blocked; visitors must exit the station on the car lane and then walk around towards the walkway. On this floor, machines are also provided for public transport cards.

Second floor
This is the metro station. Seven escalators and stairs, as well as two elevators provide access to the platforms. On one side, a kiosk provides food and drinks. The station provides many different transportation modes, however it has not been designed with the intention of this multi-modality. Improvements can be made in terms of space allocation, especially for pedestrians and bikes. Furthermore, the surrounding recreational destinations (Ahoy, theatre, mall, Zuidplein etc.) can be better integrated into the stations design, by creating clear fields of visions and by creating clearer paths to go to these destinations. Lastly, the ground floor shops need to be better designed to create more openness and ensure a feeling of safety.

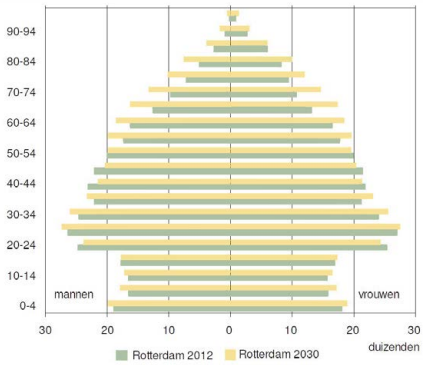


Station model on a Monday afternoon

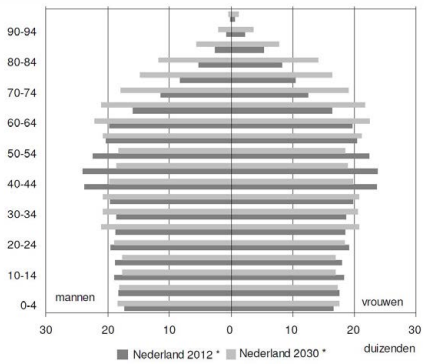
FUTURE DEVELOPMENT
Demographic growth

The urban development in Rotterdam and especially the district of Charlois has a significant influence on the developments of Hart van Zuid. The population of Rotterdam has increased substantially in recent years. Apart from the fusion with the municipality of Rozenburg in 2010, the growth is caused by an increase in births and migrations and a decrease in deaths.[1] However, Rotterdam is aging, the number of over-65s will increase from 14% to 18% in 2030. The number of young people (0-19 years) remains almost constant, so there is less growth at the bottom of the population pyramid than at the top. What is striking in the pyramid of Rotterdam compared to the whole of the Netherlands, is that the number of young adults (20-40 years) is considerably higher in Rotterdam and that the number of people over 65 is much lower than in the whole of the Netherlands.

The development of the various boroughs goes hand in hand with the current differences in population structure and the future housing stock interventions. The Stadscentrum is expected to be the most rapidly growing district, especially in the potential workforce between the ages of 20 and 64.[2] In addition, strong growth is expected in the northern district and in IJsselmonde, but Charlois is one of the districts for which the expected population growth is very limited. Nevertheless, with the number of inhabitants Charlois remains between the averages of Feijenoord and IJsselmonde and represents a large part of the Rotterdam population.

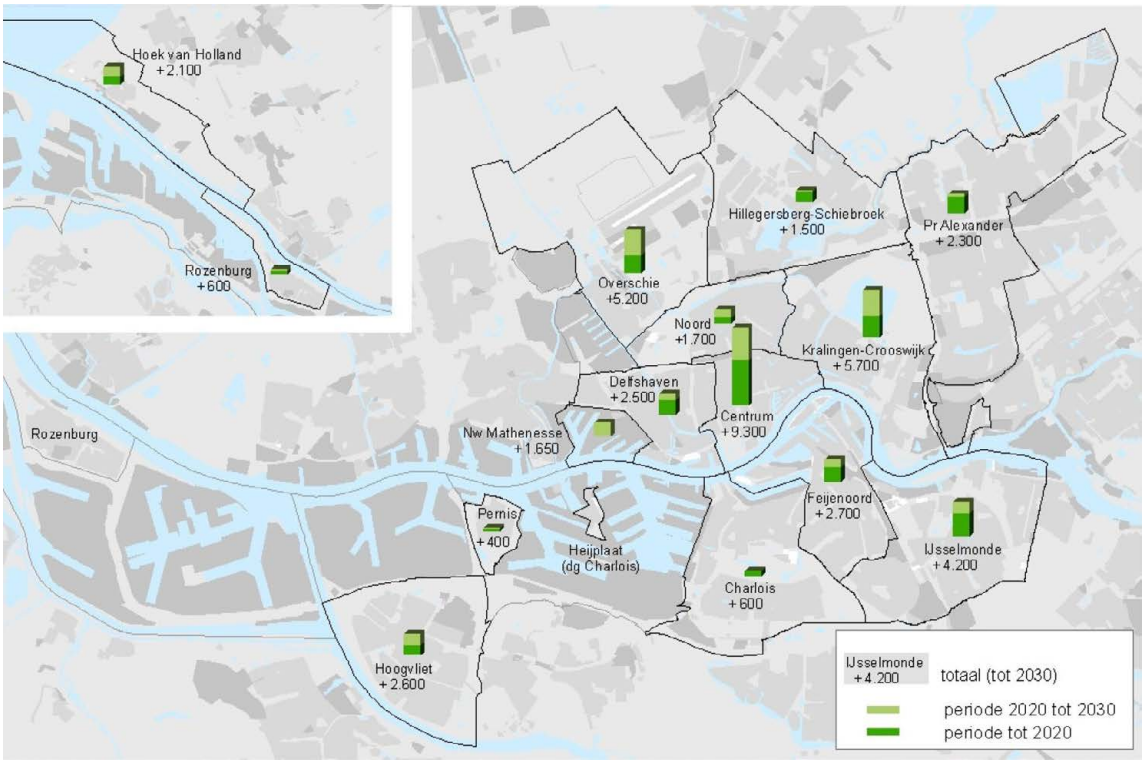


Population pyramid Rotterdam (2012)
Source: Centrum voor Onderzoek en Statistiek (COS)
Author: Hoppesteyn, M.

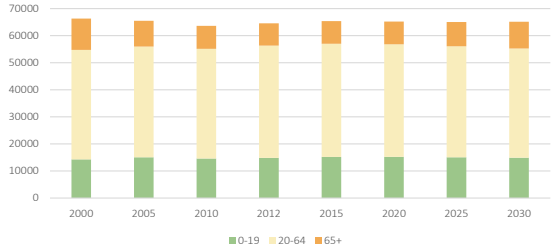


Population pyramid Netherlands (2012)
Source: Centrum voor Onderzoek en Statistiek (COS)
Author: Hoppesteyn, M.

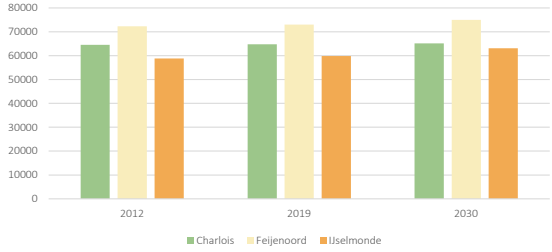
1. Hoppesteyn, M. (2012, October). *Bevolkingsprognose Rotterdam 2013-2030*. Centrum voor Onderzoek en Statistiek (COS)
2. Hoppesteyn, *Bevolkingsprognose*



Expected population development until 2030 per district
Source: Centrum voor Onderzoek en Statistiek (COS)
Author: Hoppesteyn, M.



Expected population development until 2030 in Charlois
Source: Centrum voor Onderzoek en Statistiek (COS)
Author: Hoppesteyn, M.



Expected population development in Rotterdam South
Source: Centrum voor Onderzoek en Statistiek (COS)
Author: Hoppesteyn, M.

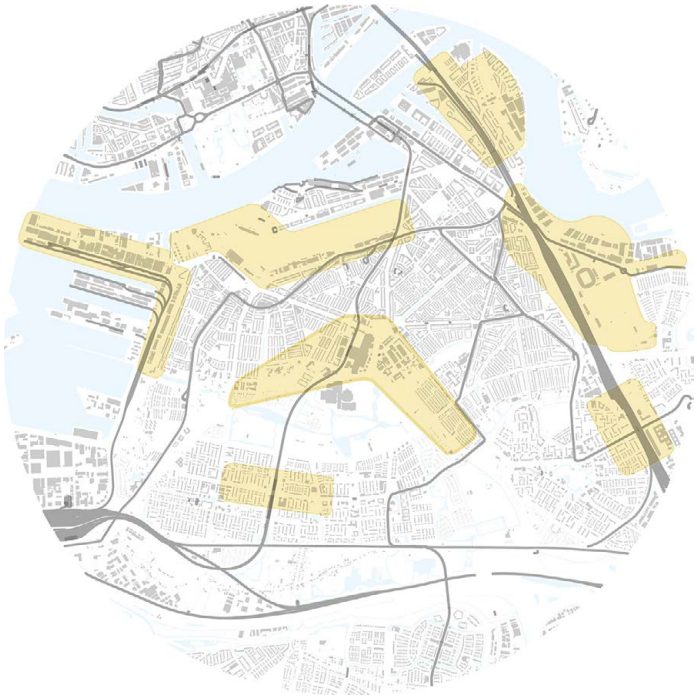
FUTURE DEVELOPMENT
Growing demand for housing

The population of Rotterdam is expected to grow until at least 2040. The growing demand for housing in Rotterdam will put pressure on Rotterdam's housing stock. But the growth of the city is about more than just housing. A complete and attractive city also requires sufficient and good quality schools, green spaces, work locations, cultural facilities, care, public transport and so on.[3] As a first step, the City of Rotterdam is concentrating on condensing existing priority areas by looking for smart combinations of functions.
In step two, the existing public transport network will be optimally utilized to create new urban nodes with a mix of functions. In step three and four, the eastern and western riverbank connections will make Rotterdam South more accessible by public transport. The four steps provide interesting development zones for urbanization, creating the potential for 12,000-50,000 extra new homes in the city, of which 500-1500 homes around Hart van Zuid.

3. Gemeente Rotterdam. (2019a, June). *Strategische Verkenning Verstedelijking.*



Development Housing Plans 2020-2030



Development Housing Plans 2030-2045

Maps Housing Plans, Information Source: *Gemeente Rotterdam* (2019a)

FUTURE DEVELOPMENT
Hart van Zuid

Rotterdam Zuid has more than 200,000 inhabitants of 169 different nationalities and is one of the most important areas of the city, yet it is missing a center and cohesion. For this reason, the municipality of Rotterdam has developed plans to improve the quality of life in Zuid. It concerns the area development around Ahoy, the Zuidplein and the surrounding Motorstraat area. The area development, called Hart van Zuid (Heart of South), is intended to ensure that the activities in the area are linked by public space facilities.[4] The project aims to create an area for living, working, entrepreneurship and relaxation. The ambition is to create a lively meeting place for residents, entrepreneurs and visitors.

Previously, the functions and facilities were not connected, mainly due to the movements of the bus. Public transport users and motorists pass through the area almost unnoticed or only for a targeted visit. There is little reason for them to stay in the area longer than necessary. Based on the characteristic themes of 'business & entertainment' and 'shopping & culture', two hot spots will be realized in the area: Plein op Zuid and Ahoy Plein. These squares are seen as the catalysts of the area and must set the desired developments in motion, reinforce and accelerate them. The Plein op Zuid will become a real city square in the dynamic center of the Hart van Zuid. The squares are connected by the Gooilandsingel, which will be transformed into an attractive central meeting place. In addition, several buildings will be transformed or added to the area (see '*Map Urban Developments*').



Connection to the surroundings (Gemeente Rotterdam, 2015)



Two hot spots (Gemeente Rotterdam, 2015)



One city boulevard (Gemeente Rotterdam, 2015)

4. van Rosmalen, E., & Eenink, F. (2014, October). *Startdocument Hart van Zuid Rotterdam.* Utrecht: Tauw.



Map Urban Developments, Information Source: *Hart van Zuid Rotterdam*, 2021a

FUTURE DEVELOPMENT
Hart van Zuid



Author: Scagliola Brakkee
Source: De Zwarte Hond

ZUIDPLEIN THEATRE
The new theatre is a replacement for the 1953 theatre, which was demolished in 2020. It is located in the center of Hart van Zuid at the Annie M.G. Schmidtplein and the Gooilandsingel. Besides two theaters, the building also houses a library and a café-restaurant.



Author: Kraaijvanger Architects
Source: Kraaijvanger Architects

GOOILANDSINGEL
Hart van Zuid will be enriched with a new green 750-meter boulevard. The 'green carpet' will run from the Zuiderpark to the Ahoyplein and on to Pleinweg, next to the theatre. The boulevard is especially designed for pedestrians and cyclists to stay and meet, with plenty of room for trees, seating areas, terraces, and space to play.



Author: Kraaijvanger Architects
Source: Kraaijvanger Architects

SWIMMING CENTER ROTTERDAM
The former Charlois swimming pool has made way for a 50-meter swimming pool in the old borough office on the Gooilandsingel. Kraaijvanger architects' design preserved the original facades and kept the ground floor open for cafés, restaurants, shops and a gym.



Author: TomDavid Architects
Source: TomDavid Architects

SHOPPING CENTER
The Zuidplein shopping center is one of the largest covered shopping centers in the Netherlands and is not only being renovated but also extended. The expansion consists of various retail units and additional catering facilities. The new building section will be connected to the existing shopping center and will have an entrance at the new bus terminal.



Author: Kraaijvanger Architects
Source: Kraaijvanger Architects

STATION HALL
The metro station will be transformed into a grab-and-go area for travelers, local residents and shoppers. The station, which is difficult to oversee, will be transformed into a light, safe, easily accessible open space. The transparent building is located directly on the new city boulevard.



Author: Stijn Poelstra
Source: Stijn Poelstra

CONVENTION CENTER
The Rotterdam Ahoy Convention Center is the new entrance to the complex. The building contains 35 halls varying in size from 50 to 1,000 people and serves as a music hall for concerts and as a theatre/auditorium. The exhibition halls were also renovated, improving combination possibilities and realizing an extension for the exhibition floor.



Author: Cie Architects
Source: Cie Architects

CINEMA & HOTEL
The new cinema near Ahoy will be located in a central and accessible spot that, thanks to Ahoy's expansion and the arrival of more catering establishments, will become a new entertainment center for Rotterdam. Ahoy and the new cinema will embrace Zuiderparkplein on three sides, making the square more pleasant and lively.



Author: Ballast Nedam
Source: Ballast Nedam

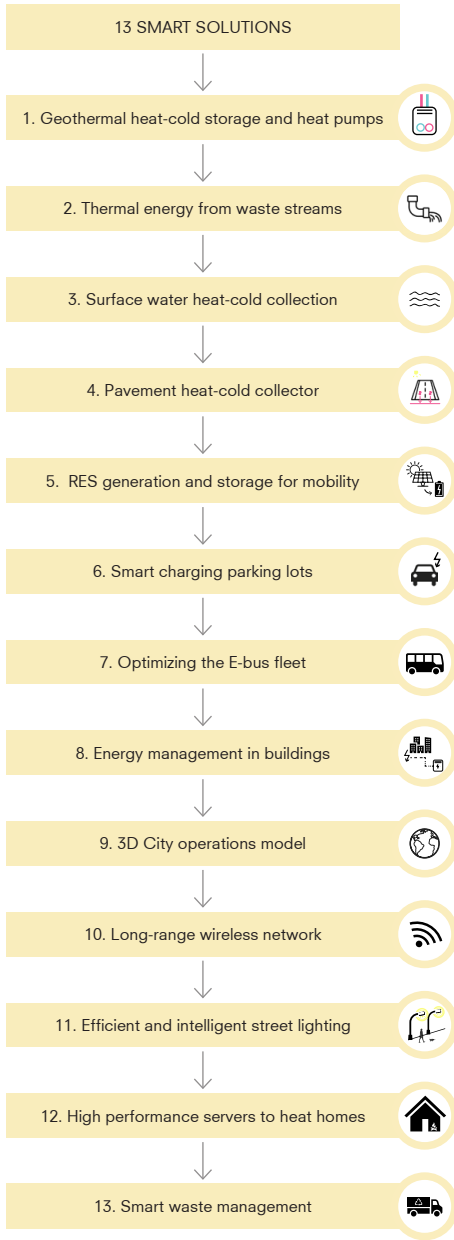
RESIDENTIAL AREA
In the new district "In 't Zuiderpark", 98 family homes will be built on the former Z'67 tennis club. Various housing types, from three to four stories, will be distributed over two residential areas and will be energy-neutral. The homes will be equipped with district heating, heat recovery ventilation and solar panels.

FUTURE DEVELOPMENT
Sustainable future

Rotterdam is one of the six cities participating in the RUGGEDISED project, which aims to prepare cities for a sustainable future. This mainly concerns the transition from a linear, fossil fuel-driven economy to a circular economy with sustainable energy sources.[5] The other cities taking part are Umeå, Glasgow, Brno, Parma and Gdansk. Each city develops and tests new techniques at a pre-designated location in their own city. In Rotterdam, the location Hart van Zuid has been selected as the 'Lighthouse district' where thirteen smart solutions will be developed and implemented. Currently, Rotterdam Zuid is facing major socio-economic challenges associated with a young and multicultural population. The area is dominated by a car-oriented infrastructure where citizens and visitors sometimes feel estranged.

RUGGEDISED helps the district of Hart van Zuid with a serious transition consisting of:
- The renewal of the public transport hub and several large-scale multi-functional buildings;
- The development of a thermal grid to distribute heat between buildings;
- The implementation of electric buses;
- A new 'smart' timetable for electric buses;
- The use of sensors in, for example, lampposts and waste containers.

The use of the Internet, big data, robotics and sensor technology will contribute to these developments and ensure that the city's inhabitants benefit optimally from the sustainable changes. With this project, the municipality of Rotterdam is preparing the neighborhood for the future with the aim of achieving maximum energy efficiency and CO2 reduction, while at the same time striving for a major socio-economic impact in terms of employment, citizen participation and quality of life.



5. ICLEI Europe. (2020). *RUGGEDISED - Smart city lighthouse project | ROTTERDAM.* RUGGEDISED.eu.



Map Urban Developments
Source: *RUGGEDISED*
Author: ICLEI Europe

RESEARCH SUMMARY
Characteristics Zuidplein

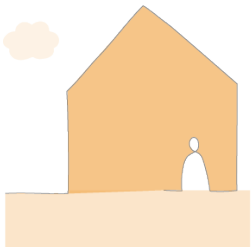
Zuidplein Station, located in the Charlois district, is an important junction in Rotterdam's transport network. During the week, 40,000 people travel to and from Zuidplein by bus. Some 35,000 passengers pass through the metro station every day. And the Zuidplein shopping center attracts some 29,000 visitors every day[1]. The users of the station area are diverse: they range from residents and commuters, to Ahoy visitors and Feyenoord fans.

However, because of this, Zuidplein Station is located in a car-oriented neighborhood, where the lack of greenery and pedestrian access offer little reason for external visitors to use the area. The station itself may act as a major hub for many forms of mobility, but it is laid out in an inefficient manner, making signage difficult and also creating unsafe gaps. On a slightly larger scale, the immediate surroundings of the station are often neglected, although efforts have been made to revitalize the area by introducing contemporary entertainment facilities and leisure centers.

One of the main challenges for the Zuidplein area is therefore to improve the visibility and accessibility of the station so that it becomes an efficient and attractive hub for the many people who pass through it every day. In addition, the sense of community in the neighborhood needs to be restored and new developments should aim to bring local residents together to build their sense of pride and identity.

1. Veldacademie. (2019). *Hart van Zuid 2019: Onderzoek naar overstapbeleving en fietsgebruik in Hart van Zuid, Rotterdam.* Retrieved from: https://www.veldacademie.nl/pdf.html?load=/img/Document/8e/e3/8ee3c13b-e964-4767-8c51-c81e2e958e79/HartVanZuid_2019.pdf

Demographics



Single-Person Households

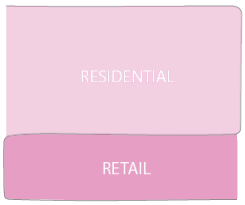


Ethnically Diverse

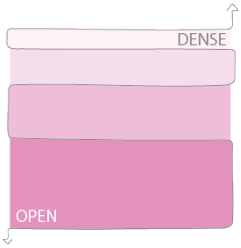


Aging Population

Morphology



Residential & Retail



Denser Towards North

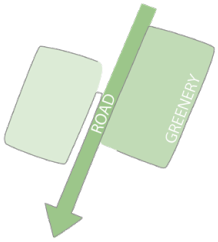


Typology Mix

Green and Water



Greenery To South

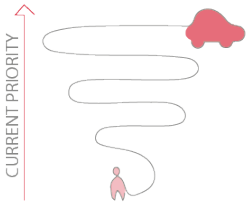


Roads Act As Barriers

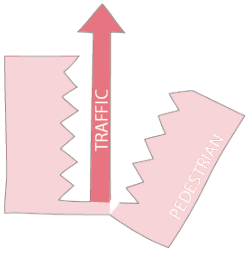


Urban Heath Island Effect

Mobility



Car-Centered Layout

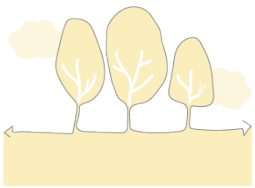


Road Act As Barriers



Unorganized Layout

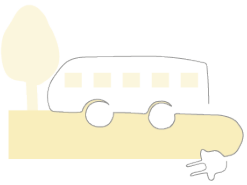
Developments



Greening



Smart Network



Hub For E-Transport

STAKEHOLDERS
Power and interest

The metro station Rotterdam Zuidplein is located in a very urban area. On the larger scale it is a part of Rotterdam Zuid, followed on the medium scale by the greater Charlois neighborhood and finally at the smallest scale it is part of the Zuidplein area. Each of these scales have their own unique stakeholders. It's very important to be aware of relevant stakeholders when it comes to urban development. By identifying these groups, the proposed design can be targeted and catered towards these stakeholders. By engaging the stakeholders in the design process, it's possible to increase the overall success of the project. The stakeholders can also be very a valuable source from which the project can learn. The stakeholders have been divided into four separate groups: Municipality of Rotterdam, Mobility Departments, Profit Organizations and Users of the Station.

Municipality of Rotterdam
The developments will take place in Rotterdam therefore it is crucial to have the support from the municipality. The Zuidplein area is already part of a greater vision that was developed by the municipality and we can use this to inform our own designs. We have divided this group into four further stakeholders: environmental department, urban development department, infrastructure department and the culture department

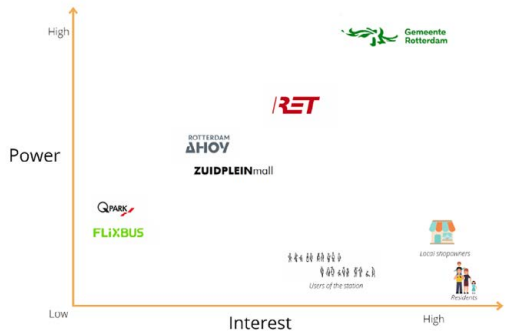
Mobility Departments
These are the groups that have their primary focus on the mobility aspects. As Zuidplein provides in both transportation for the city of Rotterdam, as well as the larger Randstad area (all the way to The Hague) and even Europe with Flixbus, we have managed to define the following four groups as stakeholders:

- Metro-pole region Rotterdam
- Metro, bus and tram department RET
- Flixbus organization
- Qpark

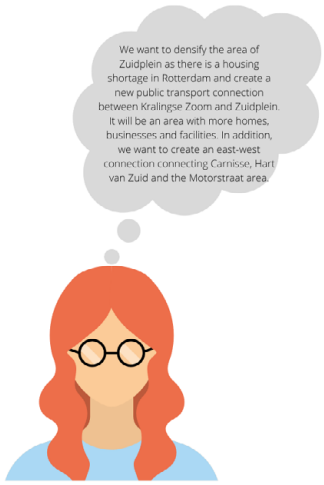
Profit Organizations
These are the stakeholders that are part of the smallest scale for the Zuidplein area. They consist of primarily business around the station.
- Ahoy Rotterdam
- Mall Owners
- Shop Owners
- Zuidplein Theatre
- Zuidplein Swimming pool

Users of the Station
The Zuidplein station will be experienced mostly by its daily users and passers by. We have divided the users into three different groups, namely:
- Residents
- Travelers
- Workers

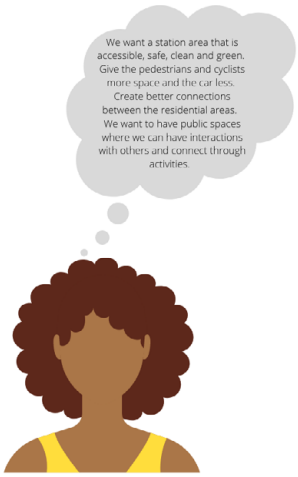
After having identified the relevant parties it becomes possible to map the stakeholders in order to prioritize them. For the Zuidplein station, we have chosen to uses the power-interest matrix as a way of visual representation. The groups with high power need to be kept satisfied, while groups with high interest need to be kept informed. When a stakeholder scores high on both it is important to manage their expectations closely. Groups that fall in the low categories have to be properly informed to make sure they remain happy.



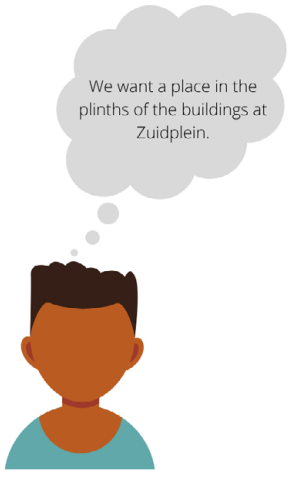
Power and Interest matrix for Zuidplein



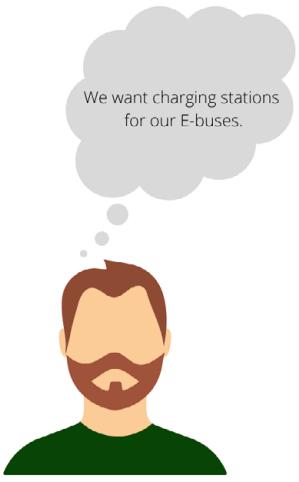
Municipality of Rotterdam



Residents



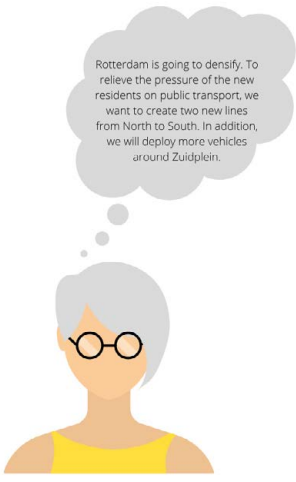
Local shopowners



Flixbus



Ahoy Rotterdam



RET

Interests of most important stakeholders for Zuidplein

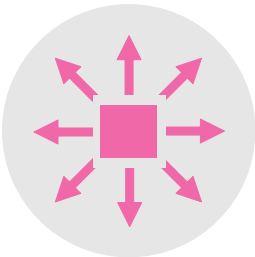
PARAMETERS

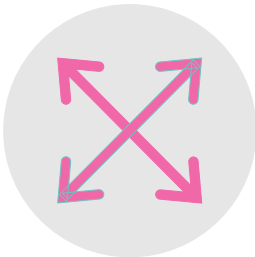

Inclusive


Affordable housing

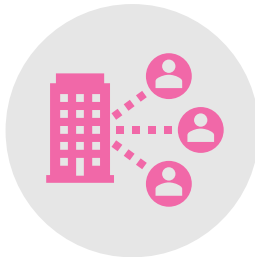

Attract young people


Good public space


Multi-functional

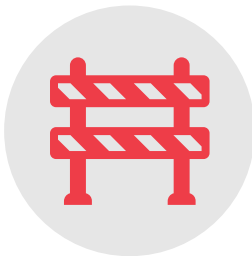

All sided station


Human scale


Active plinth


Walkable


Smart network


Barrier free

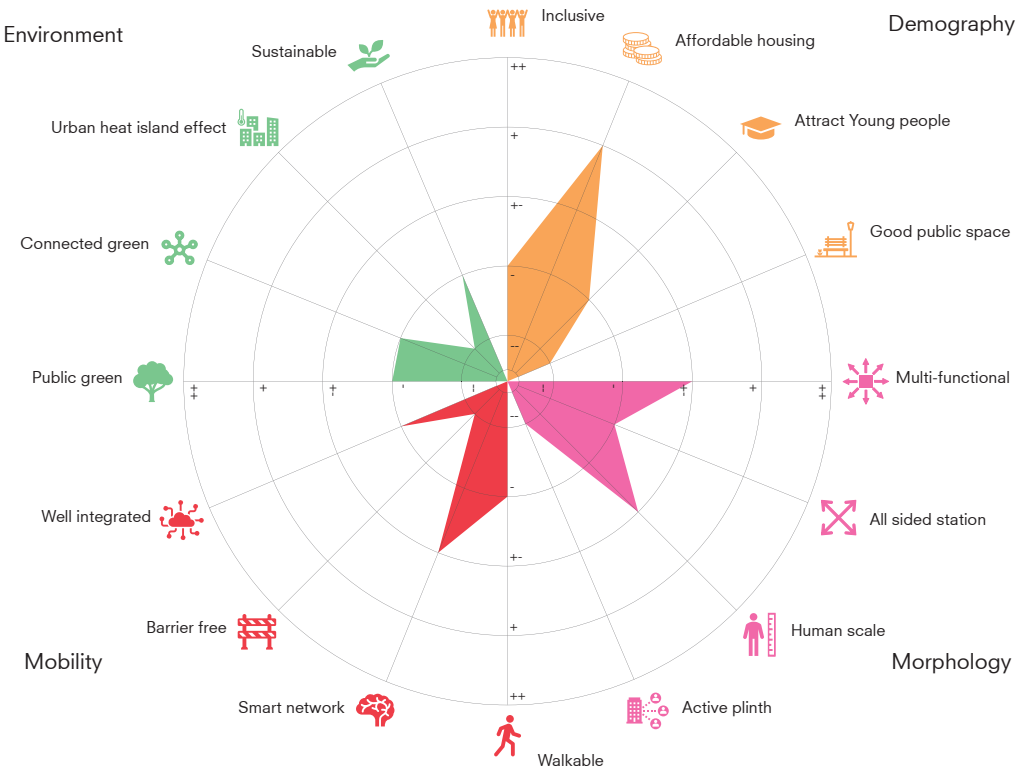

Well integrated


Public green


Connected green


Urban heat island effect


Sustainable



Butterfly diagram showing the existing condition

REFERENCES

Bet, Hinterthür and Meijel (2008). *Cultuurhistorische verkenning vooroorlogse wijken.* Retrieved from: https://www.elsbet.nl/dl/CH%20verkenning%20Rotterdam%20Zuid.pdf

FlixMobility GmbH. (2022). *Bus to and from Rotterdam | FlixBus.* Flixbus. Retrieved February 2022, from https://global.flixbus.com/bus/rotterdam

Gemeente Rotterdam. (2019a, June). *Strategische Verkenning Verstedelijking.* https://docplayer.nl/153242704-Strategische-verkenning-verstedelijking.html

Gemeente Rotterdam. (2019b, December). *Rotterdamse Mobiliteits Aanpak.*

Gemeente Rotterdam & Ballast Nedam. (2015, May). *Structuurvisie Hart van Zuid.* http://docplayer.nl/15181673-Structuurvisie-hart-van-zuid-rotterdam-mei-2015.html

Gemeente Rotterdam & MRDH. (2017, November). *Openbaar vervoer als drager van de stad, OV-visie Rotterdam 2018 - 2040.* Gemeente Rotterdam.

Geschiedenis van Zuid-Holland. (n.d.). *Geschiedenis van Rotterdam.* https://geschiedenisvanzuidholland.nl/verhalen/verhalen/geschiedenis-van-rotterdam/

Hart van Zuid Rotterdam. (2021a). *Projecten - allesisopzuid.nl.* Retrieved 15 February 2022, from https://www.hartvanzuidrotterdam.nl/projecten/

Hart van Zuid Rotterdam. (2021b). *Wij zijn op Zuid, jij ook?* Retrieved from: https://www.hartvanzuidrotterdam.nl/over-op-zuid/

Hoppesteyn, M. (2012, October). *Bevolkingsprognose Rotterdam 2013–2030.* Centrum voor Onderzoek en Statistiek (COS). https://docplayer.nl/12191790-Bevolkingsprognose-rotterdam-2013-2030.html

ICLEI Europe. (2020). *RUGGEDISED - Smart city lighthouse project | ROTTERDAM.* RUGGEDISED.Eu. Retrieved 15 February 2022, from https://ruggedised.eu/cities/rotterdam/

Mecanoo Architecten, ProRail, Bureau Spoorbouwmeester, & Springtime. (2019). *Journey of the future, A Passenger Experience.* Nederlands Spoorwegen (NS).

Rotterdam.nl. (n.d). *Zuiderpark.* Retrieved from: https://www.rotterdam.nl/locaties/zuiderpark/

Stadsarchief Rotterdam. (n.d). *Charlois.* Retrieved from: https://stadsarchief.rotterdam.nl/regio/rotterdam/charlois/

Strehl, T. (2008). Rotterdam-Zuid, stadsdeel achter de Maas. Retrieved from: https://www.vpro.nl/programmas/tegenlicht/lees/bijlagen/2008-2009/jong-in-rotterdam-zuid/rotterdam-zuid-stadsdeel-achter-de-maas.html

Topotijdreis. (n.d.) *Maps of Rotterdam throughout the decades.* Retrieved from: https://www.topotijdreis.nl

van Rosmalen, E., & Eenink, F. (2014, October). *Startdocument Hart van Zuid Rotterdam.* Utrecht: Tauw. https://www.commissiemer.nl/docs/mer/p29/p2969/2969-021startdocument.pdf

Veldacademie (2017). Hart van Zuid 2017: *Onderzoek naar het gebruik en de waardering van de openbare ruimte in het Hart van Zuid in Rotterdam.* Retrieved from: https://www.veldacademie.nl/img/Document/53/05/530540c1-be16-4007-999d-cfc6cb92ebb9/Rapportage%20Hart%20van%20Zuid%202017_Veldacademie.pdf

Wikipedia (2022, January). *Zuidplein (metrostation).* Retrieved from: https://nl.wikipedia.org/wiki/Zuidplein_(metrostation)

IMAGE SOURCES

Ballast Nedam. (2020). Residential Area Zuiderpark [Artist Impression]. Ballast Nedam Development. https://www.development.ballast-nedam.nl/nieuws/2020/start-verkoop-42-woningen-fase-2-aan-het-zuiderpark-in-rotterdam/

Brakkee, S. (2020). Zuidplein Theatre [Picture]. Allesisopzuid. https://www.allesisopzuid.nl/projecten/theater-zuidplein/

Cie Architects. (2020). Cinema & Hotel Ahoy Plein [Artist Impression]. Allesisopzuid. https://www.allesisopzuid.nl/projecten/pathe-bioscoop-aan-het-ahoyplein/

Kraaijvanger Architects. (2012a). Gooijlandsingel [Artist Impression]. Kraaijvanger. https://www.kraaijvanger.nl/nl/projecten/gebiedsontwikkeling-hart-van-zuid-rotterdam/

Kraaijvanger Architects. (2012b). Metrostation Zuidplein [Artist Impression]. Allesisopzuid. https://www.allesisopzuid.nl/projecten/stationshal/

Kraaijvanger Architects. (2017). Swimming Center Rotterdam [Picture]. Kraaijvanger. https://www.kraaijvanger.nl/en/projects/swimming-centre-rotterdam/

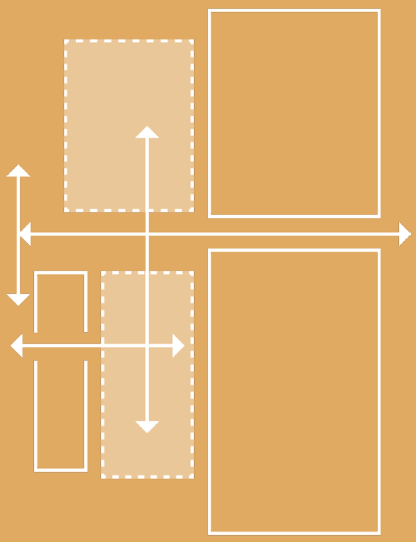
Poelstra, S. (2021). Convention Center [Picture]. Ahoy. https://www.ahoy.nl/zakelijk/organiseren/congres-vergaderingen/waarom-het-racc

RET. (2022). Metro Network Regio Rotterdam [Illustration]. RET. https://www.ret.nl/home/reizen/dienstregeling/metro/weekendmetro.html

TomDavid Architects. (2021). Hart van Zuid shopping mall extension [Artist Impression]. Tomdavid. https://www.tomdavid.nl/portfolio/hart-van-zuid/

Scenario 1

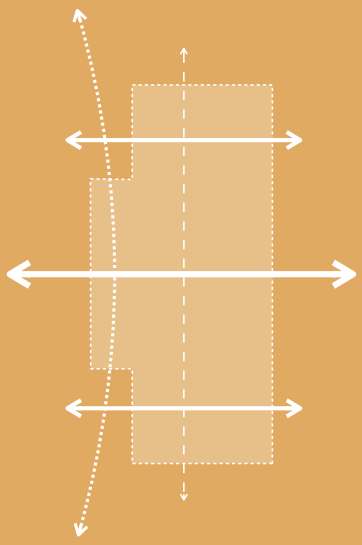
COMMUNITY CITY



Building further on the challenges and opportunities that have been identified in the first booklet of Zuidplein, this scenario will focus on four ambitions that are community-focused: inclusivity, connection, wayfinding, and greenery. These ambitions have led to one of the future scenarios of Zuidplein: the Community City. The Community City has the following vision: "Creating a station area that is community-centered, with high quality, connected green spaces, public places of interaction and sociability and an attractive and efficient station for all kinds of users."

Scenario 2

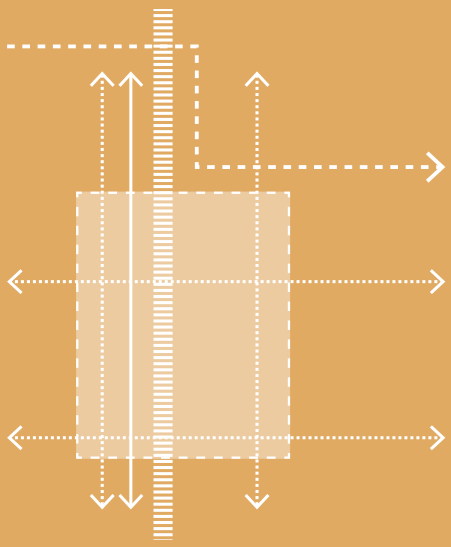
CLIMATE ADAPTIVE CITY



Groene Hart van Zuid proposes an open station design with a focus on circularity and high-quality public space. The rigid barriers and inactive plinths are removed to create a flexible and spacious hub which serves as an important mobility node as well as a destination in itself. One of the core values of the station is circularity. The station design aims to create a better and more balanced relationship with resources like water, energy, food and materials. The emphasis lies on showing the value that these resources have, with which we as humans have often lost touch.

Scenario 3

AUTONOMOUS CITY



The autonomous city is focused on the creation of an autonomous, sharing and connected society. The autonomous city also relies on society itself that's aware of climate change, sustainable choices and willingness to share their transport. This scenario may not only be beneficial for the municipality of Rotterdam, but can open the eyes of different parties, companies, researchers and administrators.



Community City

Zuidplein

Building further on the challenges and opportunities that have been identified in the first booklet of Zuidplein, this scenario will focus on four ambitions that are community-focused: inclusivity, connection, wayfinding, and greenery. These ambitions have led to one of the future scenarios of Zuidplein: the Community City. The Community City has the following vision: "Creating a station area that is community-centered, with high quality, connected green spaces, public places of interaction and sociability and an attractive and efficient station for all kinds of users."

The community city focuses on three main areas of improvement: the bus station, the station plaza and the pedestrian connection towards Ahoy. This research will discuss the current situation of the station area, followed by the ambitions and potentials, and lastly the conceptual design of the community scenario. Throughout this research, we will refer to relevant topics around history, demographics, morphology, mobility, environment and future developments that have been researched in the first part of the booklet.

Iris van der Moolen
Kristen Valdez
Sari Naito
Stephan Koeckhoven

COMMUNITY CITY
Ambitions

The Zuidplein station area is currently an unattractive place. The station and the shopping mall are connected by a wide bridge. Bus stops are currently located under this bridge and under the metro station. This results in many dark passages, little visibility and many closed facades. In addition, both the shopping mall and the metro station are one-sided, meaning that they only face Zuidplein and do not connect with the north, east and south areas. The separation of these areas is also enhanced by the large roads on three sides of the station that act as a barrier. Although pedestrian bridges allow people to get from one side of the road to the other safely, this makes the walkability of the station from the surrounding areas difficult and unattractive.

In addition to the wayfinding and infrastructure of the area, the public spaces and greenery in the area can also be improved. Public areas are currently only present between the theatre and the swimming pool. However, this area is not used very often, because of its uninviting orientation and is almost hidden behind the metro station. There is a lack of social interaction in the streets, which makes people unwilling to go outside. The amount of greenery in the area is also disappointing, as most of it is paved with concrete structures. On the other hand, many patches of greenery scattered around in the surrounding neighborhoods. However, the integration of these can be improved by introducing green connections that lead people from the neighborhoods to the station. The community city will thus mainly focus on the ambitions of public space, all sides station, active plinth, walkability and more green.

The plaza between the metro station and the shopping mall will function as a place where all users, from residents and commuters, to Ahoy visitors and Feyenoord supporters can meet, interact, and socialize. The functionality and comfort of the area are of greatest importance for the residents, as they make up a large portion of the area's users. Wayfinding within the station and towards the shopping mall will also be clearer due to the open layout of the plaza. In this way, the Community City envisages the Zuidplein area to be a place where people want to linger, instead of a place where people simply pass through. The central plaza also connects to smaller public spaces around the area, such as the water square, the market and the public space between the library and the swimming pool, encouraging the community to engage in an array of activities. The public spaces in the Community City thus conform to the ideals of a successful community area; a place that is comfortable, has a good image and is accessible (Project for Public Spaces, 2014).

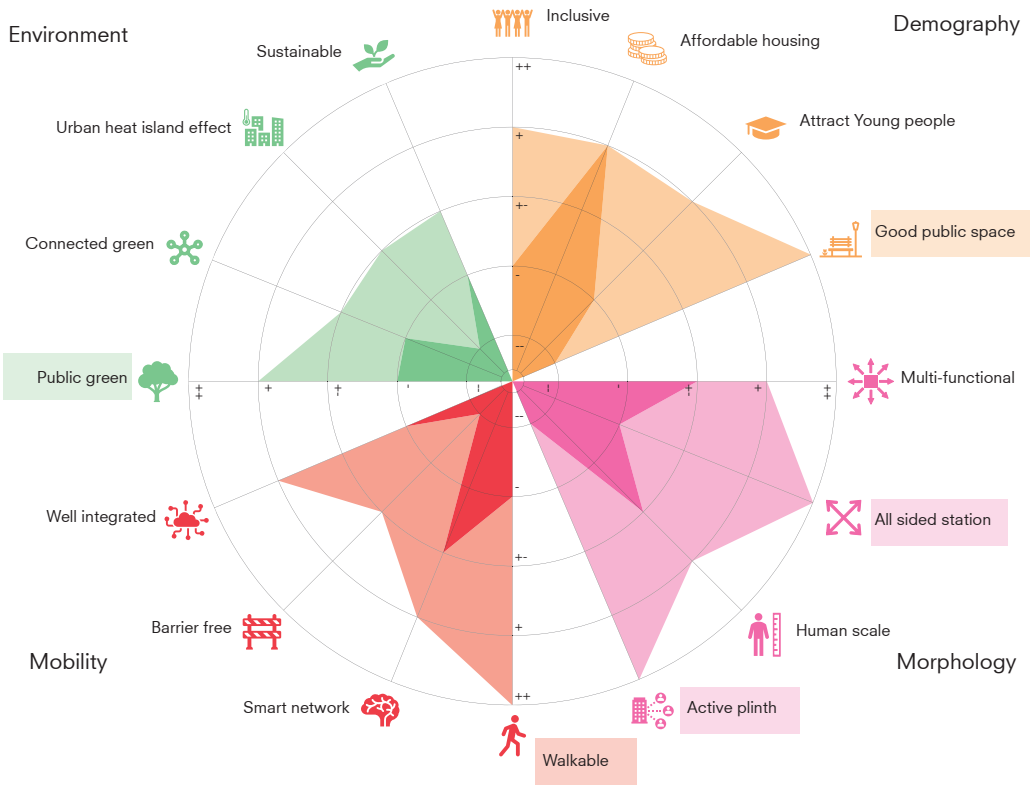
The design also focuses on the human dimension of mobility such as walking, cycling, scooters and public transportation. In this scenario, priority will be given to walking and cycling within the hierarchy of transport modes. Low-car cities create more livable, social and resilient places (Sim, 2019), thus the Community City gives pedestrians the priority, for instance in the connection between Ahoy Rotterdam and the station. This breaks up the existing traffic barrier by creating passages that prioritize the pedestrian users of the station area. It additionally opens up the station to the rest of Rotterdam, which is an important factor, as Zuidplein has the potential to be a key center in future developments of the wider city.

The proposed design aims to capture the qualities of the existing buildings and spaces, while transforming the area's unattractive image. The derelict buildings and dark spaces currently create an unsafe experience for residents and visitors. To improve this, the central part connecting the shopping mall and station will be taken out and replaced by an open public plaza. Similarly, the shopping mall will also be split up into two volumes in the N-S direction, connected by glazed bridges. By doing so, an open corridor for the pedestrian to walk from the station/plaza to the hospital will be created outside.

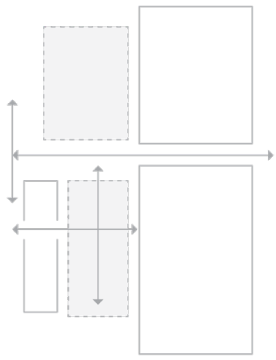
The buses are moved to the currently unused north area, creating a station that is clear and visible from each side. This also creates a safe connection from the station to the mall and its adjacent neighborhoods. Visitors also have enough shelter options underneath the organic-shaped canopies that are spread out across the plaza and bus stops.

The design will be realized in 3 phases. The first phase is the relocation of the bus station and removal of the pedestrian bridges. After this, the current mall will be divided into two volumes so the shopping mall and station are separated with a plaza in between. Finally, a traffic-free connection from the station to Ahoy is created by threading the cars underground and creating a roundabout at the large junction. Through these interventions, we aim to create a community-orientated city that serves as a green and open hub for residents and visitors alike.

1. Project for Public Spaces (2014). Ten strategies for transforming cities and public spaces through placemaking. Retrieved from: https://www.pps.org/article/ten-strategies-for-transforming-cities-through-placemaking-public-spaces
2. Sim, D. (2019). Soft city: building density for everyday life. Island Press.



Butterfly diagram showing the existing and proposed condition



Concept diagram station, breaking up the shopping mall to create more public space and all sided buildings



Concept diagram urban area, connect small public spaces with the large plaza in the new center of Zuidplein

DESIGN STRATEGY
Community centered vision

Building inclusive, healthy, functional and productive spaces for the community is a great challenge. In the case of Zuidplein, the current unattractive and uninviting appearance of the station and its surroundings makes this even more challenging. The lack of green spaces, car-oriented design, unattractive walkability and one-sided orientation of the shopping mall and metro station give people little reason to stay in the area.

Building further on the challenges and opportunities that have been identified in the first booklet of Zuidplein, this scenario will focus on four ambitions that are community-focused: inclusivity, connection, wayfinding, and greenery. These ambitions have led to one of the future scenarios of Zuidplein: the Community City. The Community City has the following vision: “Creating a station area that is community-centered, with high quality, connected green spaces, public places of interaction and sociability and an attractive and efficient station for all kinds of users.”

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Conceptual drawing of station square



Conceptual drawing of station and shopping mall facades

INCLUSIVITY
Current situation

The existing station and shopping mall act as a large barrier, catering mostly only towards car- and metro-users. Spaces around the station stand on their own and are not connected, also often unused and in a derelict state. Similarly, some parks are also scattered around the area, but most have only a few outdated play equipment, and almost no activity was seen in the parks during the several site visits. Smaller shops and businesses are hidden in the less reachable areas, whereas larger retail businesses are clustered among the station, thus creating a very unbalanced flow of people and traffic.

Possible improvements in the inclusivity of mobility patterns can be seen as well. Currently, priority is given to cars and buses, and pedestrians and cyclists are pushed off to the side. This makes the area further noninclusive as it is less accessible for some groups of people, and the lack of pedestrians gives the station area a static, uninviting atmosphere.



Empty neighborhood parks

Some parks scattered around the neighborhood, but many empty and unattractive



Paved paths and different levels

Paths concreted and monotone, requiring constant transitions to different levels



Dark and uninviting bus station

Bus station completely covered with minimal day-light, making the space dark and unsafe



Priority given to traffic

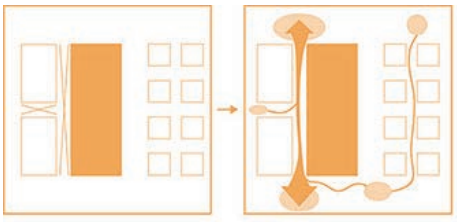
Cars given priority, and pedestrian paths weave around them



Unattractive sidewalks

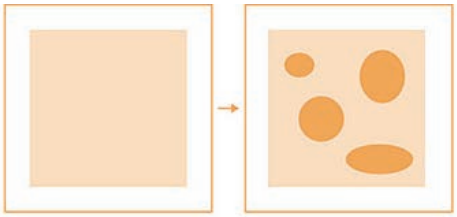
Sidewalks narrow and often not marked clearly

Ambitions



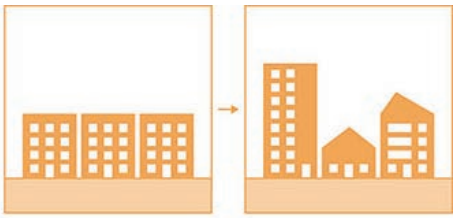
Unused public spaces

Small, connected public spaces



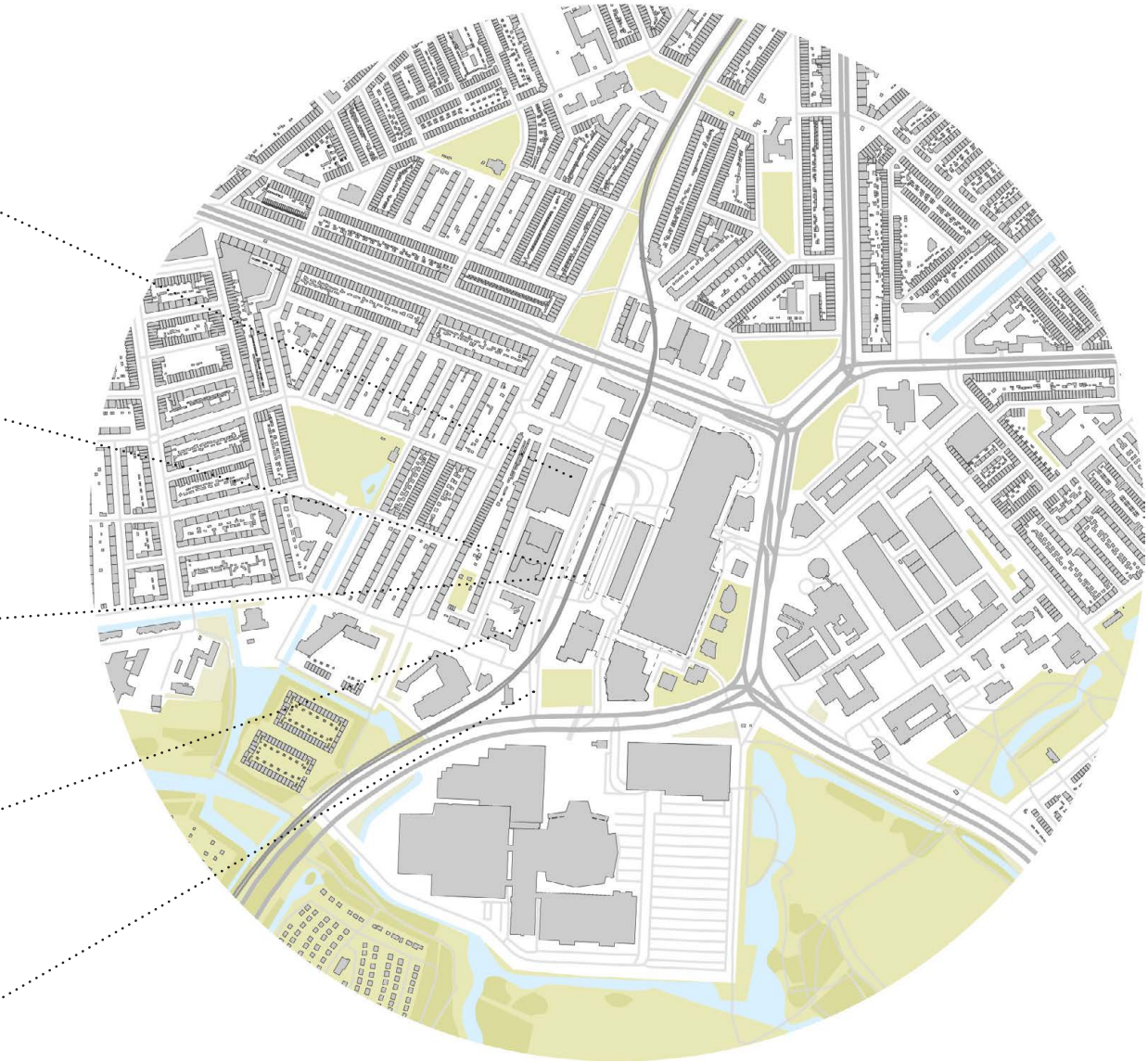
Desolate open spaces

Play areas and amenities for gathering



Uniform housing

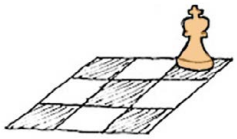
Social housing with character and identity



INCLUSIVITY
Potentials

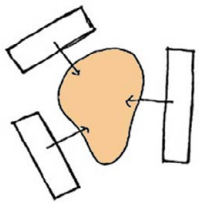
The proposal aims to cater towards many groups of people, not only the current users of the area (mainly commuters and elderly residents). Firstly, creating open plazas with attractive play amenities and seating areas will invite more children and families to make use of the neighborhoods. Similarly, green hubs will be scattered around the residential blocks to give the locals a sense of belonging to the community and identity, despite the large scale of the development.

To attract a more youthful population to the area, the connection to Ahoy will be improved, where pedestrians are prioritized and makes the entire southern area feel like an extension of the central plaza between the station and shopping mall. Finally, more voice will be given to smaller businesses by creating a dedicated market lane next to the station, where local shops can set up stalls or run events to celebrate the diverse ethnic backgrounds in the area. The location of the market will create an attractive sight line, and encourage users of the station to casually stop by during their commute.



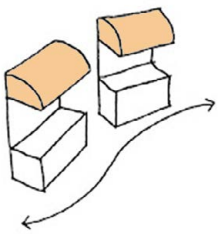
Playful area catered towards all age groups

Large chess boards, benches, play area make the area an attractive destination



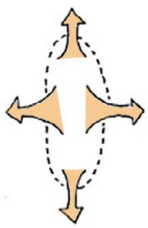
Green hubs create inclusive communities

Green areas used for community events, gardening, play equipment - gives each neighborhood a sense of identity



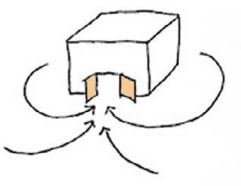
Open market area for local food and crafts

Dedicated space for regular markets and cultural events support local businesses and the diverse ethnic backgrounds in the area



Central hub connected to all sides

The plaza is accessible from all sides, inviting in all user groups



Ahoy as hub for youth culture

Events at Ahoy, large open spaces for flexible use attract young population, lacking in the area

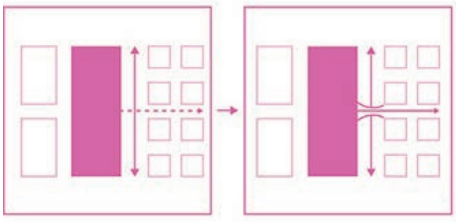


PUBLIC SPACE
Current situation

The quality and use of current public spaces are limited; spaces and buildings around the station act as loose blocks, and are not connected to each other. This creates abandoned, interstitial spaces that are avoided because of their dark and unwelcoming nature. The fact that the station has a very clear front and back side also adds to this effect, as the back areas are unkept.

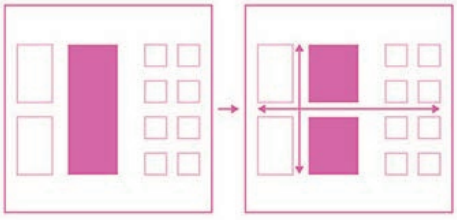
Some attempts at creating public spaces can be seen, such as the areas around the new theatre and swimming pool complex, however, because it is located towards the 'back' of the station and unconnected from the rest of the area, it mainly only attracts the specific users of the buildings. Thus, opening up the station and creating good physical and visual connections to this area is an ambition to be explored. Activating the plinth by moving shops and restaurants into the ground floor of the surrounding buildings will also encourage a more sustainable and community-orientated use of public spaces.

Ambitions



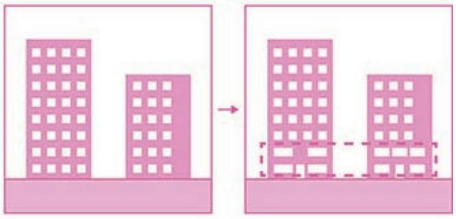
Large road as barrier

Connection through green infrastructure



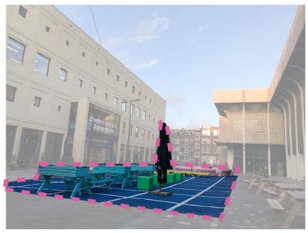
Loose blocks of buildings

All-sided station



Buildings with closed ground floor levels

Active plinth



Unused urban furniture

Signs of redevelopment through urban furniture, but some unused



Minimal active use of plinths

Some plinths used for cafes and shops, but not very attractive



Little maintenance of neighborhood

Graffiti, trash and signs of vandalism seen in areas around the station



Clear front and back side

Station and shopping mall have an obvious front side and a less attractive back side



Unconnected open spaces

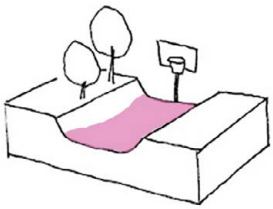
Paved areas around station act as unwelcoming interstitial spaces



PUBLIC SPACE
Potentials

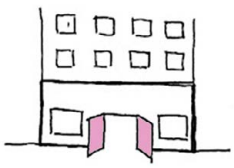
The driving concept in improving the public space in the Zuidplein area is to open up the station and shopping mall, and creating a large, open ‘plaza’. By creating smooth transitions to this main area from several other smaller public spaces, the entire neighborhood feels more connected. This can be done through several interventions, such as creating a pedestrian prioritized, reduced-car lane, and using urban furniture elements to physically mark the connecting routes.

Furthermore, to encourage the use of the public spaces, shops and restaurants will be moved to the plinths of buildings, leading to a more casual use of the open spaces. This will also create ‘natural surveillance’; people feel safer using the spaces because they know they are constantly being overlooked by others, as opposed to areas which are closed off or shaded. Creative use of public spaces, such as a water square to raise awareness of local water issues, will also create an incentive for people outside of the neighborhood to visit.



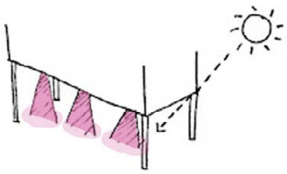
Water basin to collect excess rainwater, can be used for other activities when not flooded - educates community about water issues

Active plinth next to station



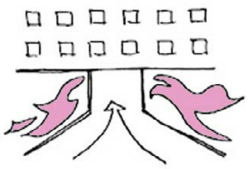
Plinths more approachable by housing local businesses

Water square for social and environmental awareness



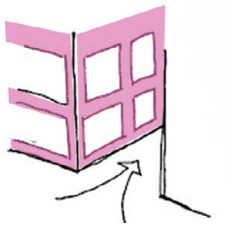
Space under metro station designed as a continuation of plaza, with sufficient lighting

Bright and airy waiting spaces underneath station



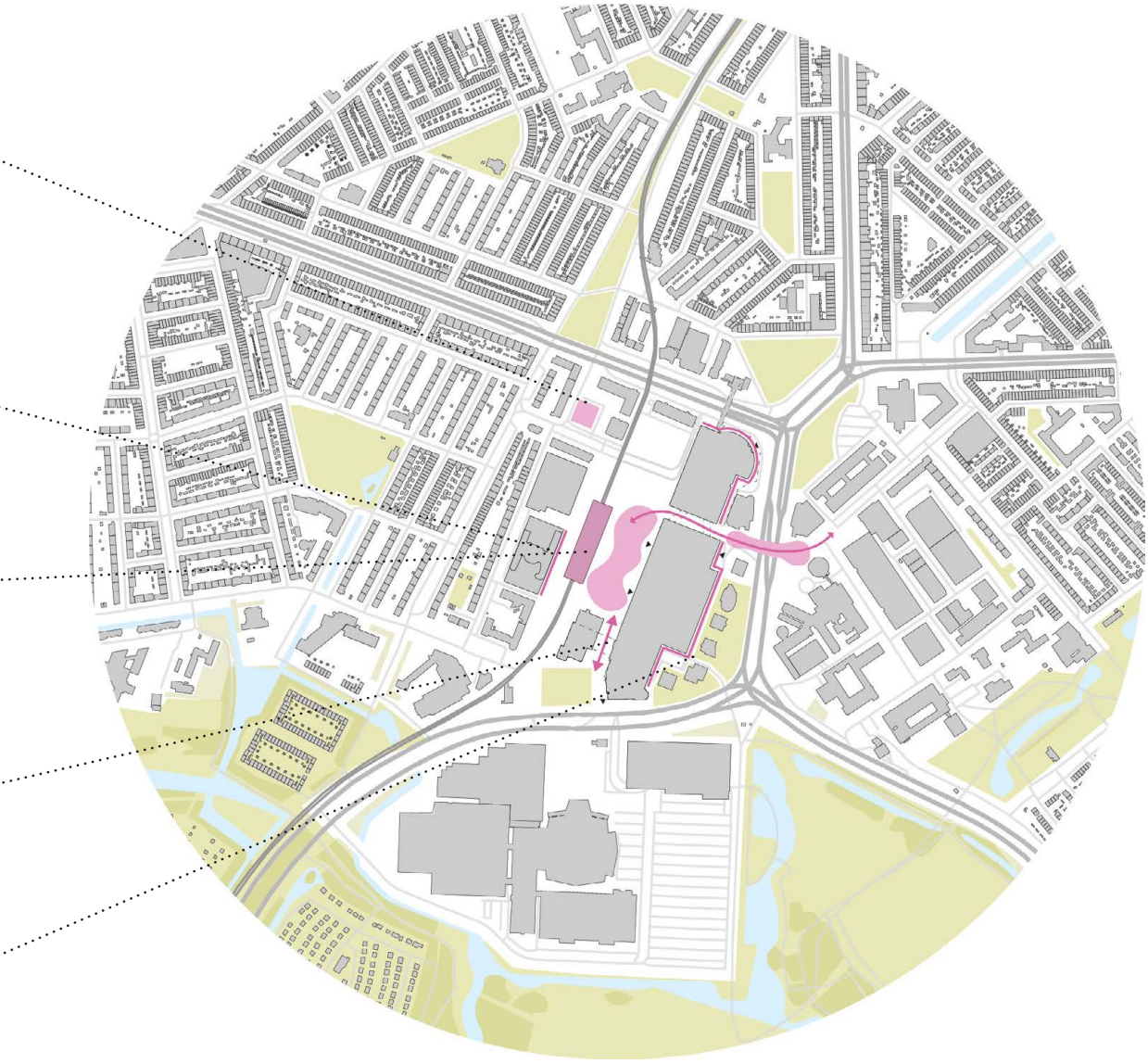
Bottom floors of existing residential block demolished to create wide pathway to plaza

Connection underneath existing building



Offices take advantage of the convenient location and will not suffer from the density of the buildings - narrow path between buildings also converted into a pedestrian zone

Unused plinth as offices



WAYFINDING
Current situation

With the current traffic-prioritized layout of roads, wayfinding for pedestrians and cyclists is difficult. Various modes of transport, such as bikes, scooters, cars, buses, and the metro merge into each other with no clear division or dedicated spaces. This not only makes spaces cluttered and difficult to navigate, but also create unsafe spaces and traffic flows. Pedestrian flows are considered almost as an afterthought, where several overpasses connect the neighboring areas to the shopping mall. However, these have not been in good use, as many are not attracted to the idea of changing levels to cross a single street.

Wayfinding is especially problematic in spaces around the station, where the bus lines are laid out in a disorganized manner with little clear signage. The darkness of the ground floor bus station area also adds to this effect, as it restricts the view of passengers navigating their way around the station.



Unattractive overpasses

Several overpasses leading to the shopping mall, but little sight lines and rarely used



Faded wayfinding elements

Unkept wayfinding signs, unstructured bus waiting areas



Difficult wayfinding

Paths not marked, too many choices for passengers, slowing pedestrian flow



Scattered bikes and scooters

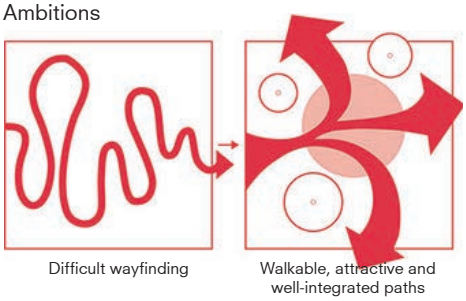
No clear parking spaces for bikes and scooters, also leading to damage or theft



Mixed modes of transport

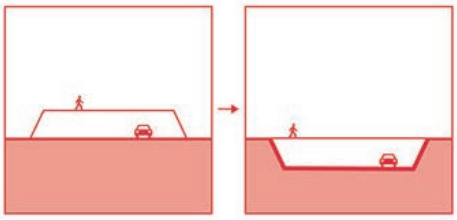
Difficult and unsafe wayfinding as all modes of transport share the same spaces/roads

Ambitions



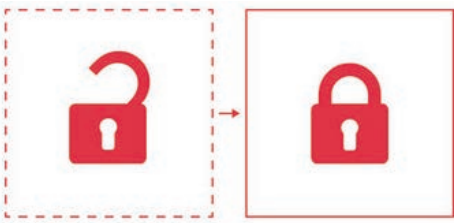
Difficult wayfinding

Walkable, attractive and well-integrated paths



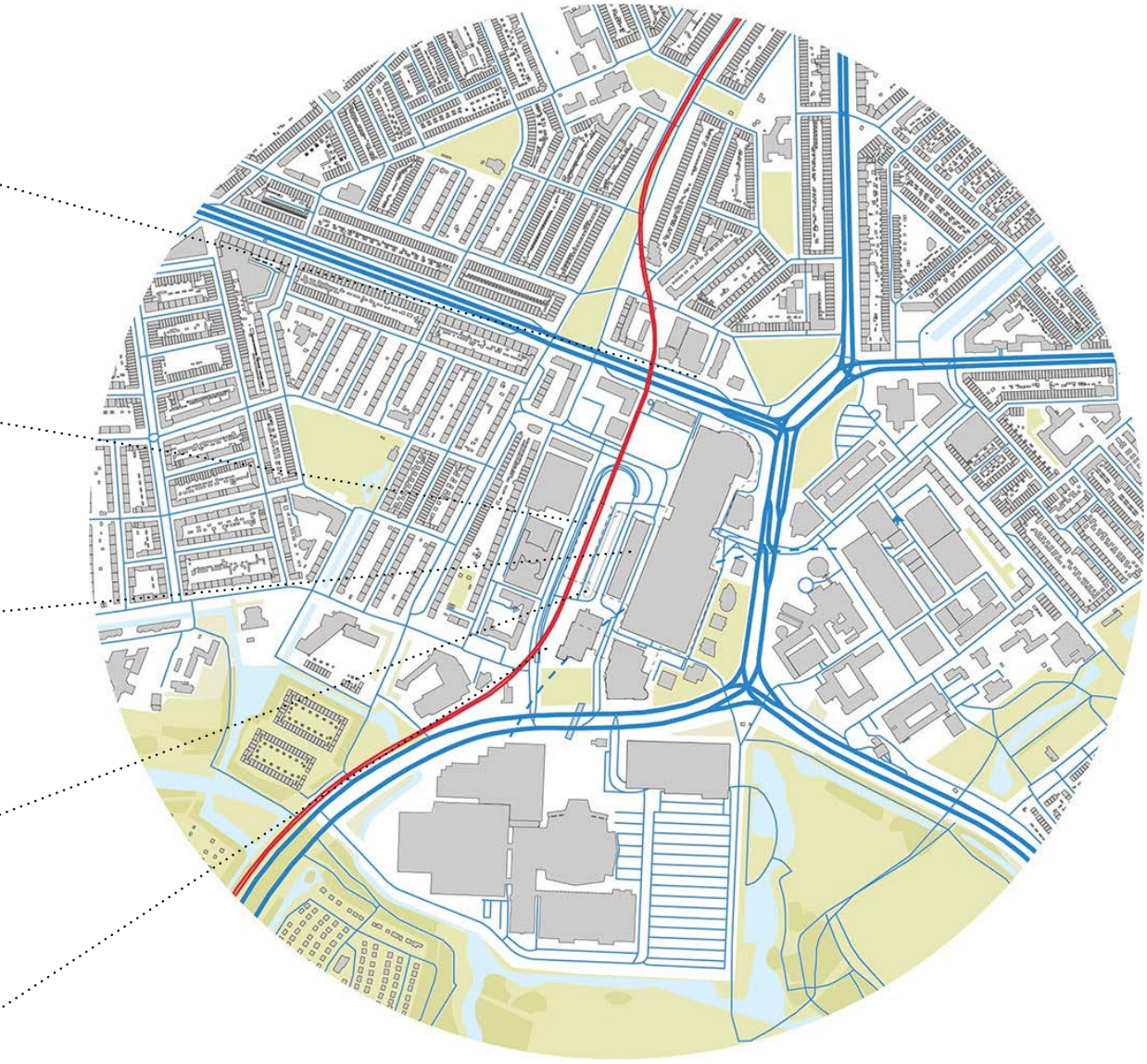
Priority given to traffic

Priority given to pedestrians



Little spaces for bike parking, in dark areas

Dedicated and safe bike parking areas



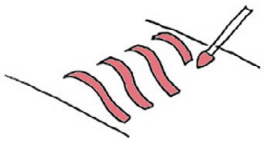
Metro

Traffic

WAYFINDING
Potentials

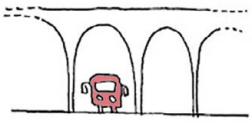
The main aim of the new proposal in terms of wayfinding is to improve the accessibility and attractiveness of the station area for pedestrians and cyclists. This can be done through larger and safer pedestrian crossings that slow down the traffic speed, making is evident that pedestrians have priority. Making these an attraction of their own, such as by introducing unique artwork, will also encourage more people to access the area by foot.

In addition, the different modes of transport can be separated and organized, so not only wayfinding is made simpler, but the flow of people using the area is better controlled. For instance, the bicycle/scooter parking and car parking spaces can be separated into the two different volumes of the shopping mall. The bus station will be assigned its own open-air area instead of being located in a dark underpass area as before. Similarly, the metro station will be pulled apart from the shopping mall to give it its own identity, and thus make wayfinding more intuitive and simpler for all visitors.



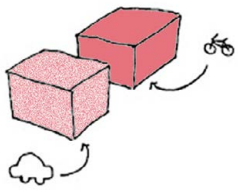
Crossing artwork

Local artwork at crossings attract visitors to encourage more pedestrian access, and help drivers slow down



Enlarged, open bus station

Bus station is moved from under buildings to its own space, allowing for easier wayfinding and identification



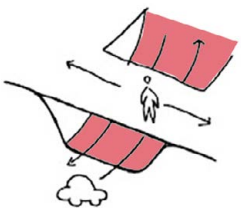
Bicycle/scooter and car parking

Bicycle/scooter parking and car parking are completely separated with different entrances



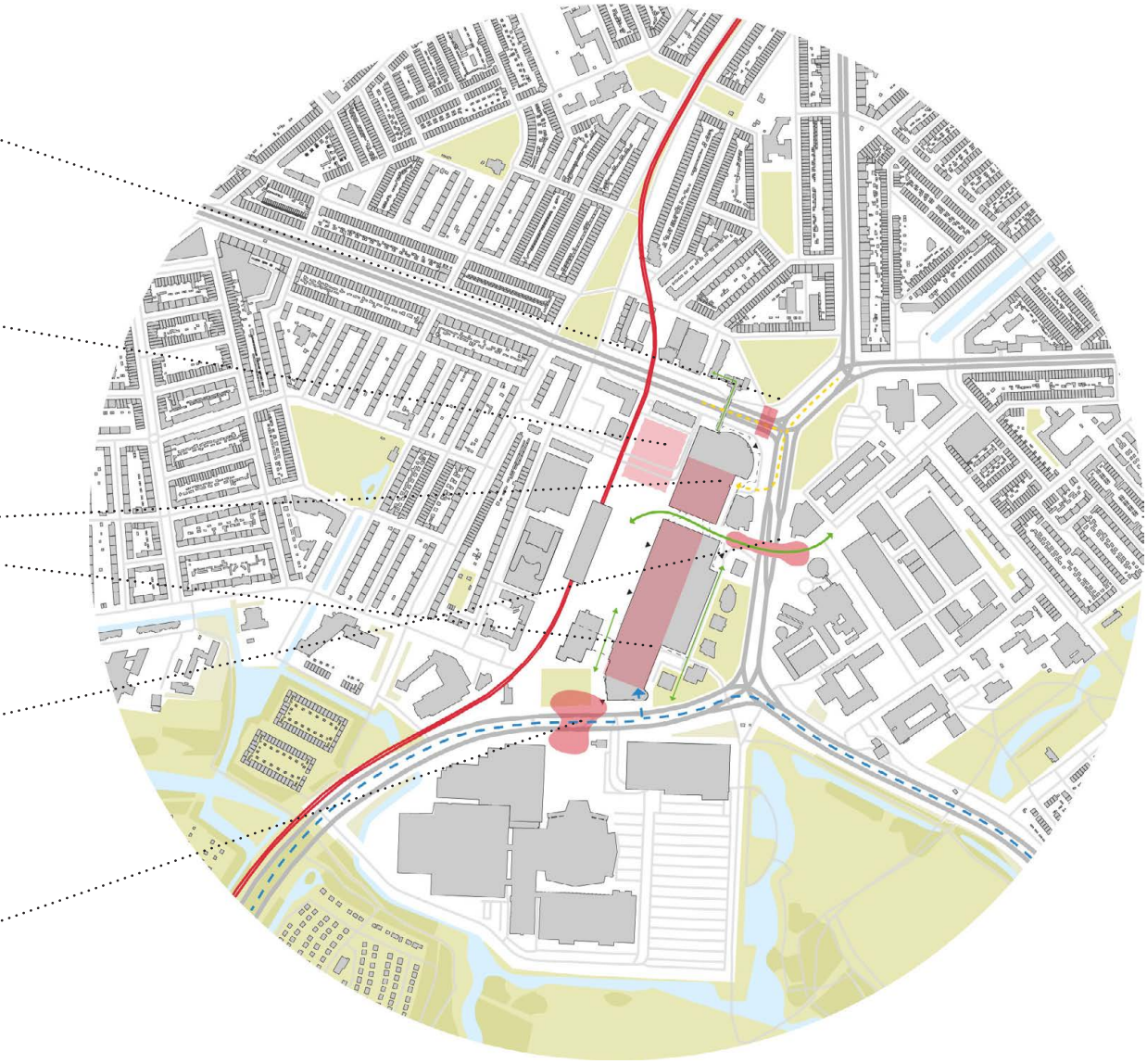
Pedestrian prioritized crossing

Large, open pedestrian crossing, forcing cars to slow down and thus reduce traffic



Short tunnel for traffic flow

Pedestrian access level with ground for access to and from Ahoy, with traffic running underneath



Metro
Traffic
Bicycle/scooter
Pedestrian

GREENERY
Current situation

The lack of greenery, especially in immediate spaces surrounding the station and shopping mall, are obvious in the current situation. Although some small grassy patches line the streets, most areas are paved, and the few plants and trees nearby seem to be untended. As a result, the large amount of concrete surfaces and the lack of greenery contribute to the urban heat island effect, and also reduce the quality of air around the area.

The scattered parks around the residential areas towards the north provide little benefits, as many look to be unused or unkept. No connections between the green areas can be seen, and they act as independent blocks of spaces in the neighborhood. These areas currently simply fill up the interstitial spaces between buildings, but have the potential to be a bigger catalyst in bringing communities together.



Greenery in neighborhoods

Green patches and trees lining pedestrian and bike paths - can be implemented in more areas



Greenery lining paths

Some large areas of greenery in residential areas



Low quality green

Few trees scattered around back of station, but in unkept state



Single, unconnected green areas

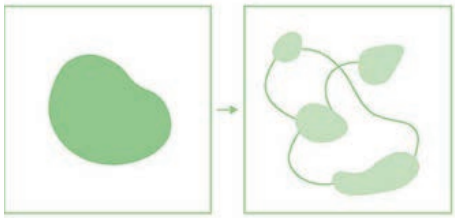
Minimal green areas around shopping mall with little purpose or thought



Open, derelict areas of planting

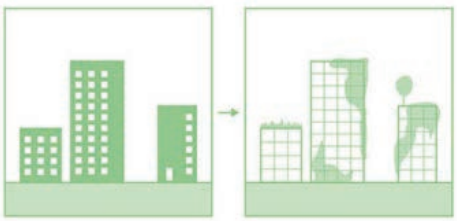
Some spaces around the station showing potential for greener replanting

Ambitions



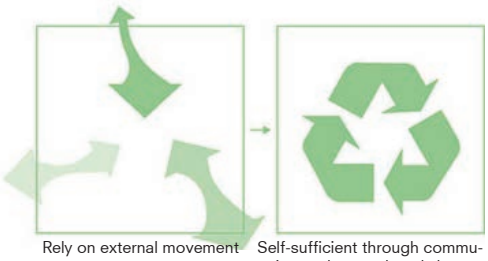
Single green areas

Pocket parks connected by green corridors



Concrete facades

Green roofs and facades, timber structures



Rely on external movement

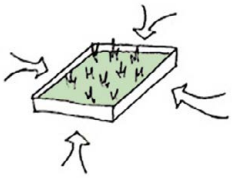
Self-sufficient through community gardens and workshops



GREENERY
Potentials

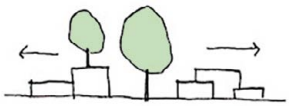
To improve urban green in the area, one of the main potentials is to create smaller hubs around the neighborhood that are connected by green corridors. For instance, designing community gardens in those hubs will encourage residents to come together to maintain them, and thus evoke a sense of identity and community. Introducing urban furniture and planting along streets will connect these spaces to the central station area in a subtle but intuitive way.

On a smaller station scale, the greenery in the area can be improved by creating a biodiverse central hub with planting in the central plaza. This will not only bring in environmental benefits, but also social improvements, as it creates a more welcoming atmosphere. Trees lining the new east connection will also clearly mark the presence of the new route and make it a more attractive pathway.



Green hubs with community gardens

Community garden in each neighborhood bring locals together and create a sense of belonging



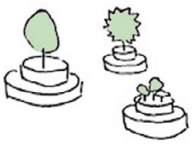
Green areas connected with trees and urban furniture

Trees and urban furniture line the streets connecting the green areas, clearly marking the paths



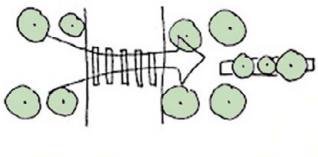
Green roofs

Green roofs mitigate the urban heat island effect, and help with rainwater collection



Biodiverse central hub

Plants in the central hub make it an inviting and comfortable place to linger, instead of simply passing through

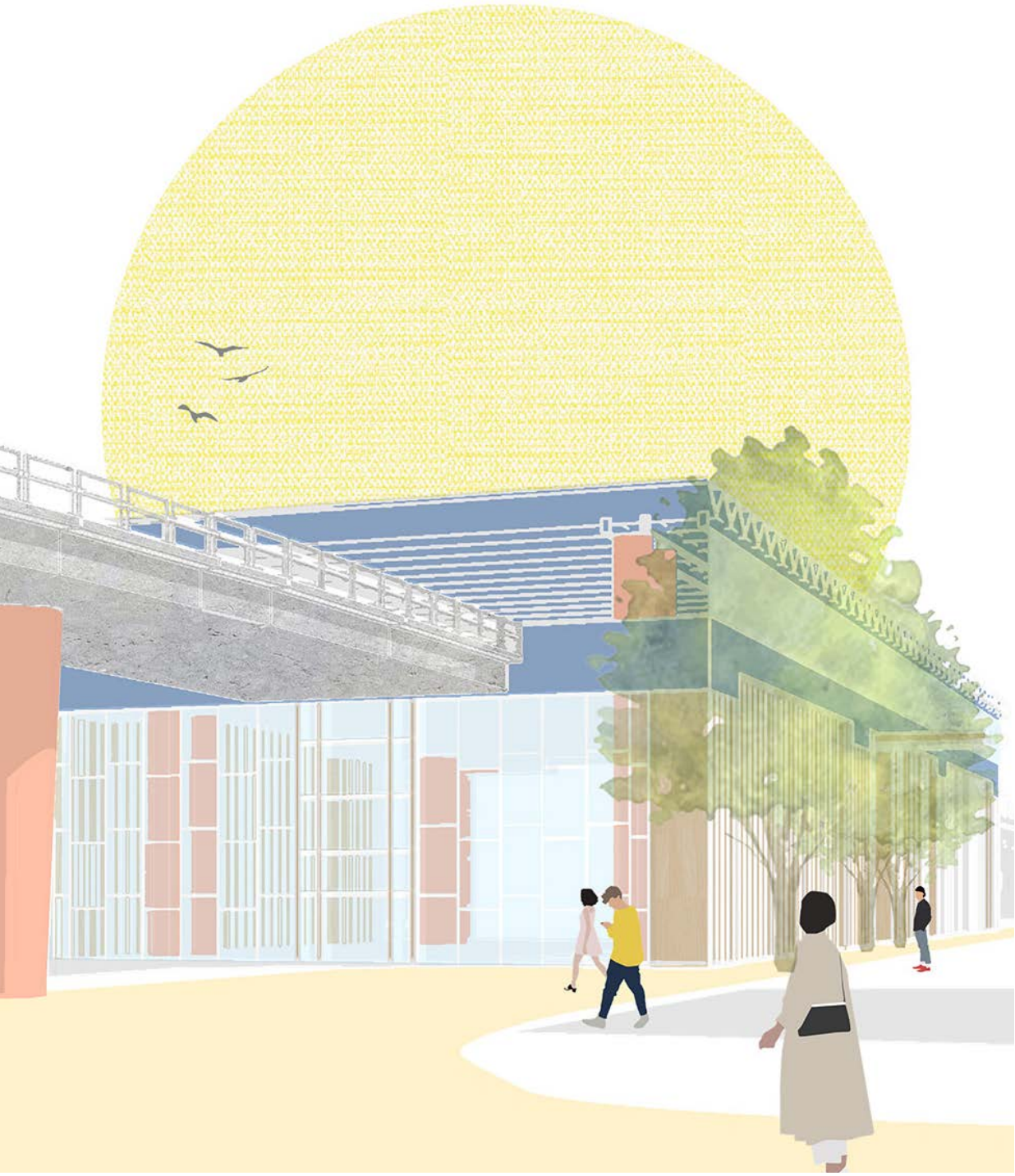


Central green carpet

Central green carpet as the main attraction, trees and flowerpots mark the journey

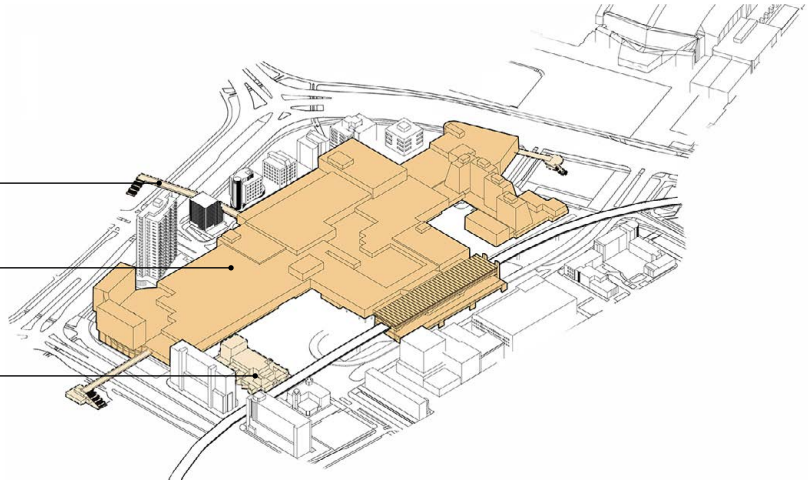




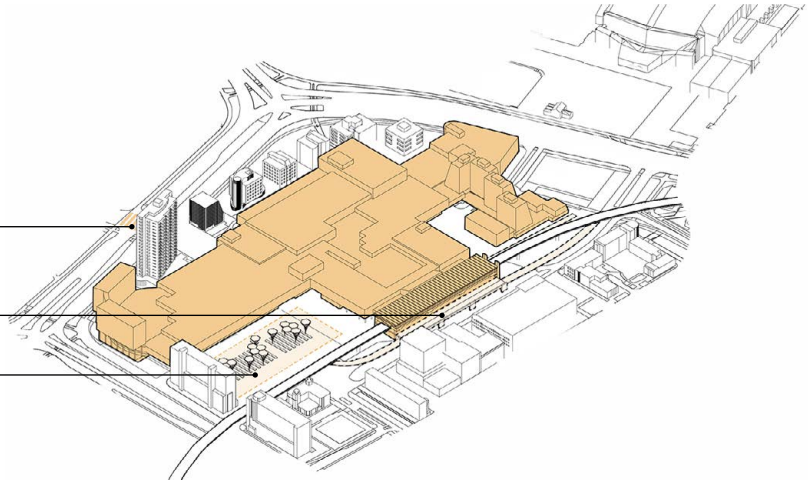


PROPOSED PHASES OF CONSTRUCTION
Removing/adding elements

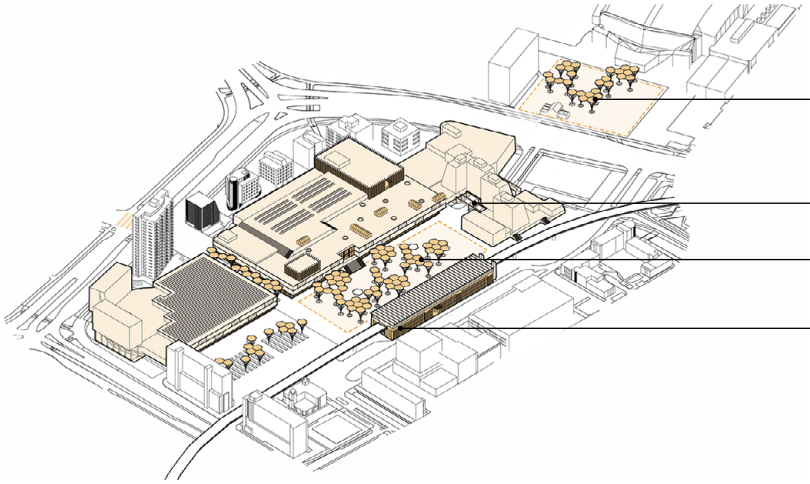
Current condition



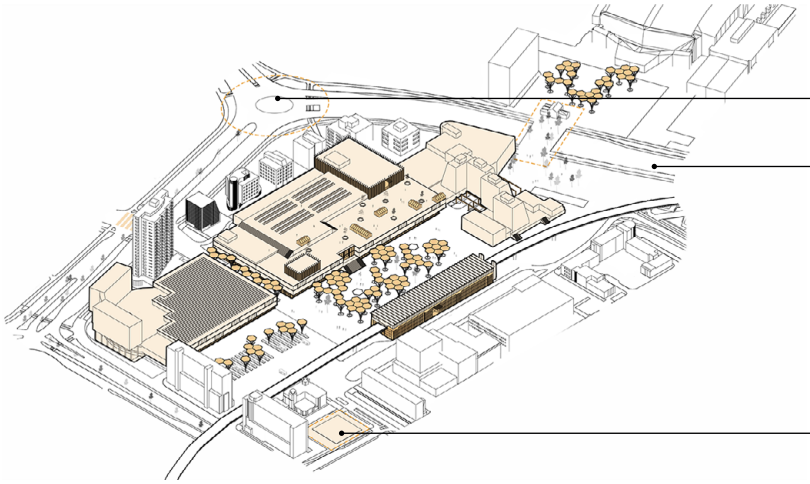
Phase 1



Phase 2

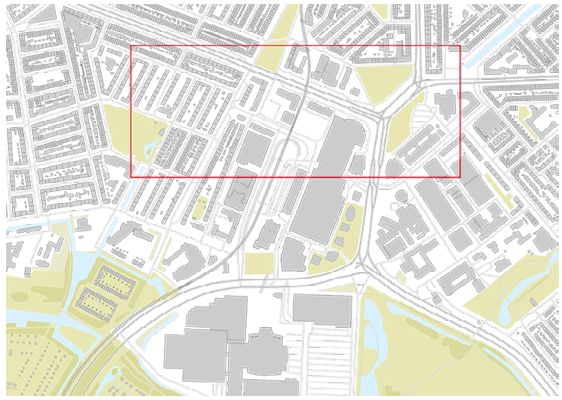


Phase 3



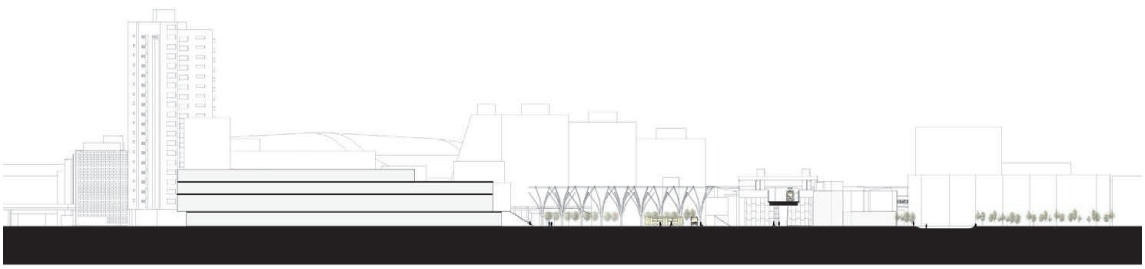
AREA 1
Bus station and neighborhood connection

The area to the north of the shopping mall and station is currently heavily traffic dominated, and smaller roads leading to the bus station are overcomplicated with level changes, curves, and many one-way streets. The proposal of this area is to better connect it to the residential areas by introducing new crossings and improving the overpass, while also improving the accessibility of the bus station.

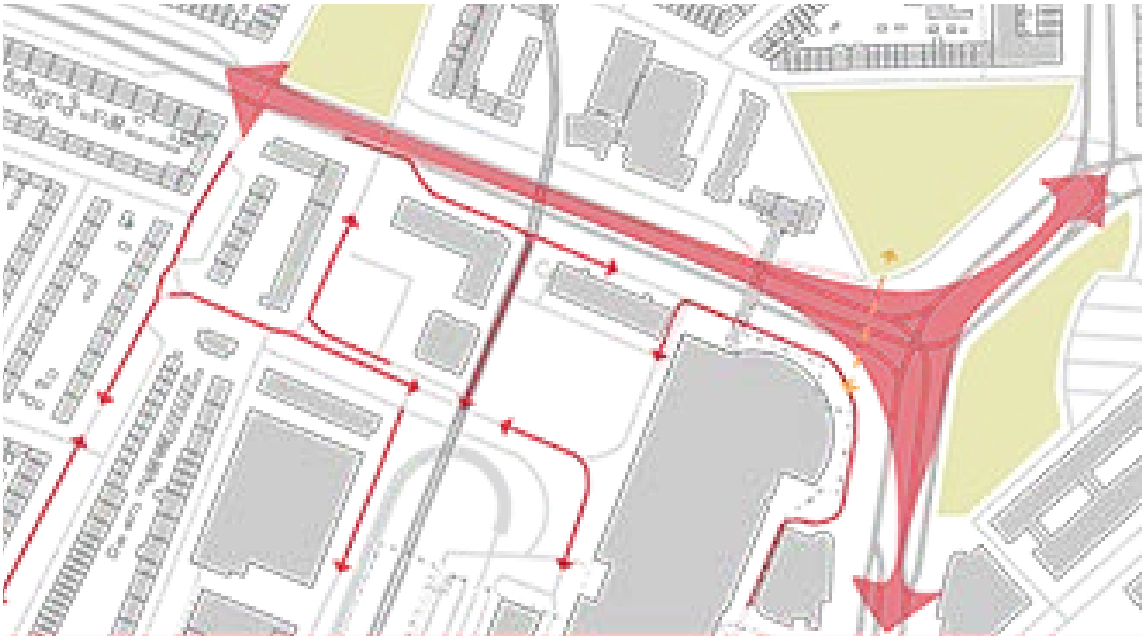


The bus stop is pulled out from under the shopping mall/metro station into the currently open space so it is easily recognizable. This is especially important for a transit station such as Zuidplein, as wayfinding must be simple for all commuters switching from the metro to the mus or vice versa. Charging stations for e-buses and scooters are introduced, and the circulation of the buses is also simplified. Furthermore, waiting spaces and bike racks are seamlessly integrated into this space to make the bus stop more approachable.

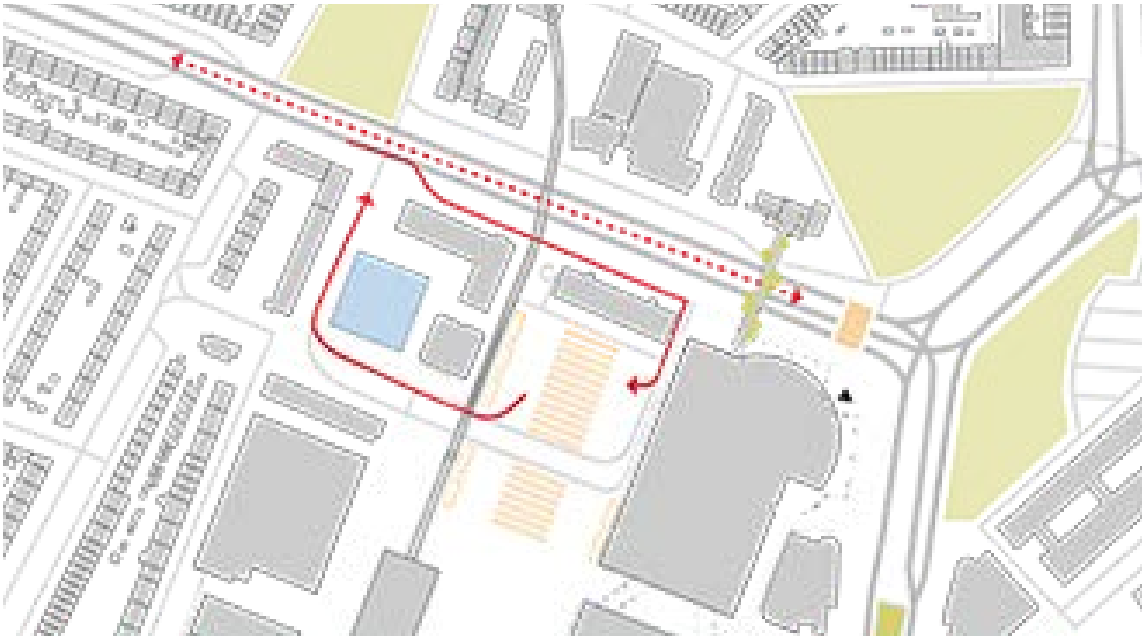
In addition, a small water square in the current parking area will not only create a public open space that caters towards many user groups, but will also educate the local neighborhood about the issues regarding water in the area.



SECTION
1:2000



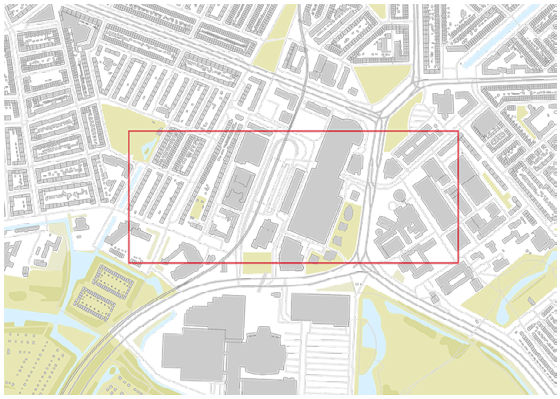
EXISTING
1:5000



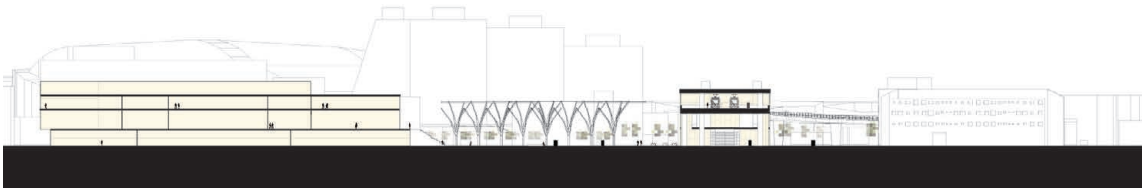
PROPOSED
1:5000

AREA 2
Main plaza and station

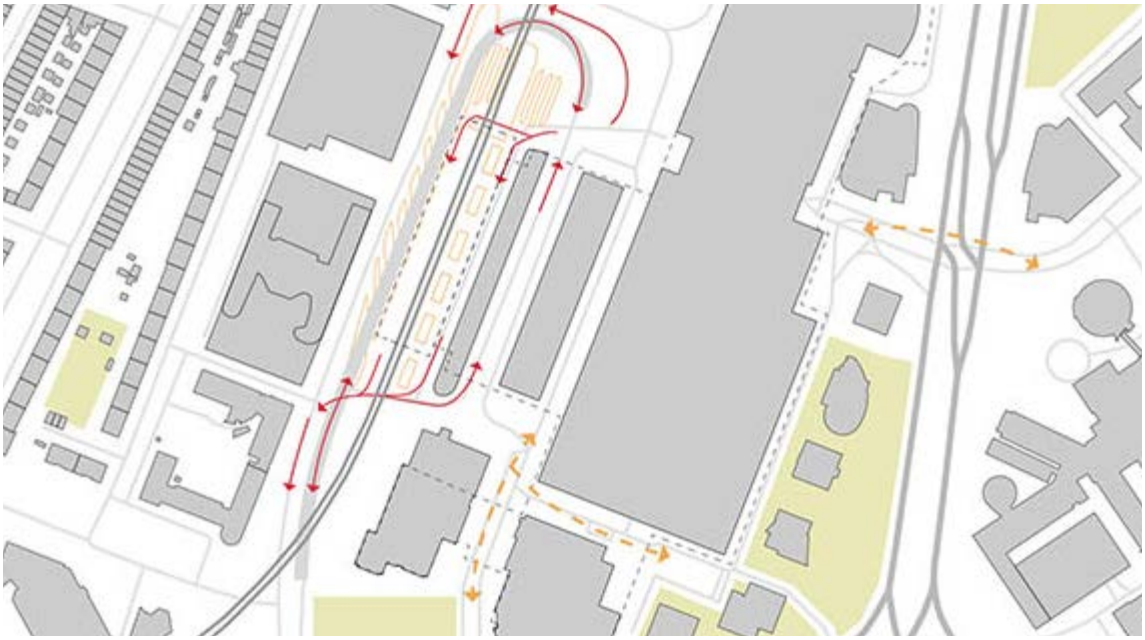
Currently, the space under the metro station and the shopping mall is used for bus stops and bus routes. There is little space for pedestrians and the bus stops are positioned in a cluttered way. The large bridge from the shopping mall to the metro station creates unpleasant and dark spaces on the ground floor. Visitors have to take the escalator up through a narrow entrance to reach the station. There is no clear main entrance to either the station or the shopping mall.



The proposal for this area is to remove the connection between the shopping mall and the metro station, creating a large public square. This will give both the station and the shopping mall the opportunity to make all sides of the building usable and to introduce a clear entrance. The new plaza will also function as a connecting and social element for travelers and local residents alike. In addition, the connection with the eastern residential area, Vreewijk, will be improved by opening up the shopping mall. Bridges will connect the two buildings to make the space underneath much more pleasant. Traffic on the eastern side of Zuidplein will be reduced by providing fewer traffic lanes and giving priority to pedestrians in the area. The station square in front of Hart van Zuid will function as a new center for meeting and relaxing.



SECTION 1:2000



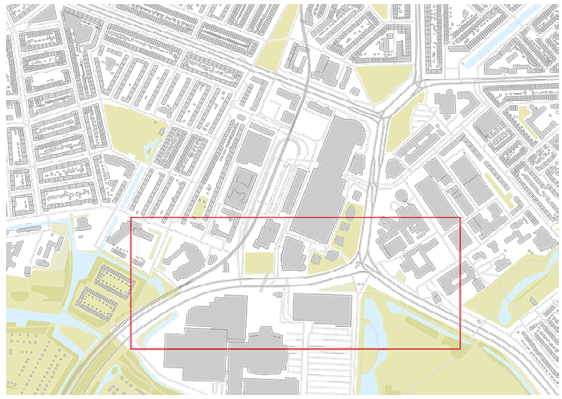
EXISTING 1:5000



PROPOSED 1:5000

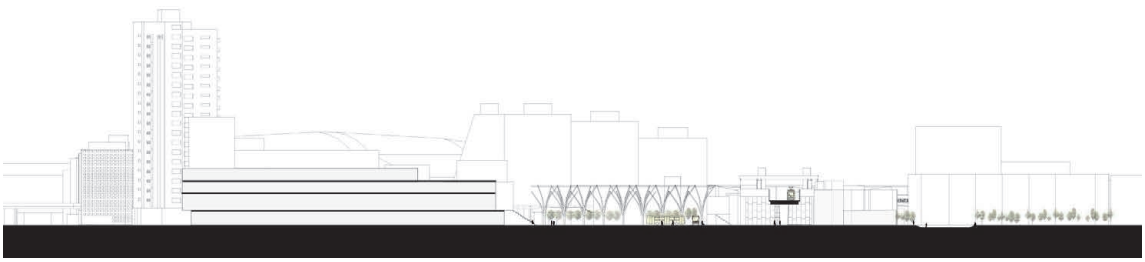
AREA 3
Connection to Ahoy

The large road running east-west acts as a barrier between the station area and Ahoy. Traffic flows are very complicated, consisting of multiple lanes that merge into each other. Considering the aim is to reconnect the Ahoy area to the station to invite the youthful population, this urban structure is problematic; Ahoy is completely cut off from the hub and requires visitors to cross over such a complicated street.

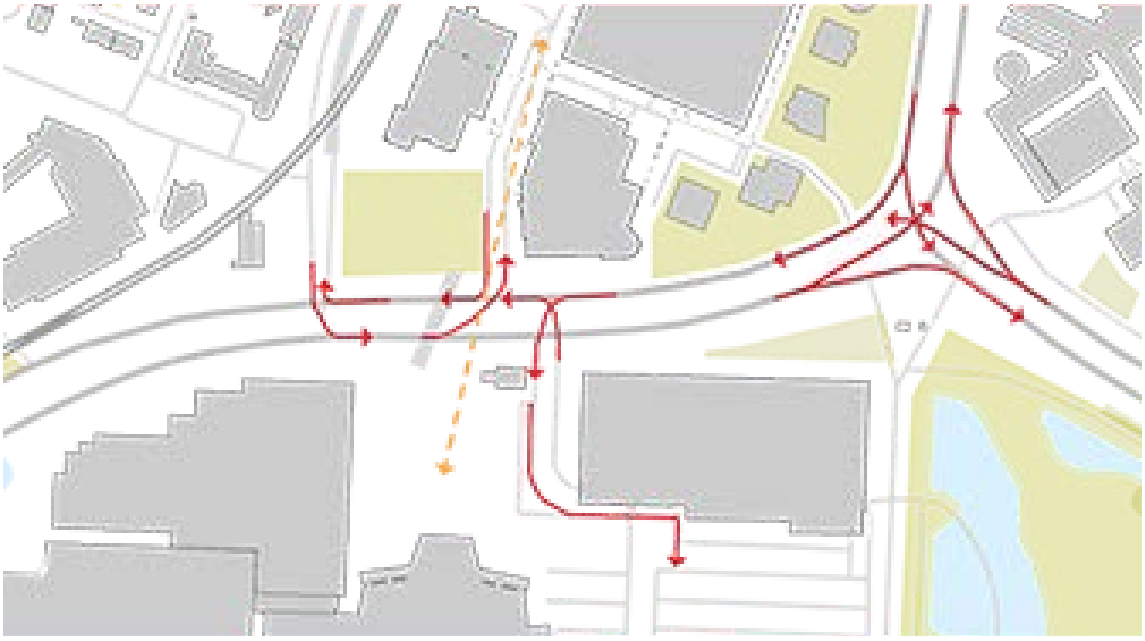


In order to improve this, two main interventions are being proposed - the underpass for the cars and a large roundabout at the junction with the N-S road. As the central plaza and Gooilandsingel will be completely pedestrianized, there is no more need for cars to access the area, and the entire traffic can be threaded underground in front of the Ahoy complex. This creates two large benefits for the area: firstly, pedestrians can easily access Ahoy using a wide pathway without crossing the traffic heavy road or using an overpass, which is especially convenient during night events when large numbers of people will access the area at once. Secondly, by rerouting the entry to the car park around to the side, the main facade of Ahoy will be kept clean and approachable for pedestrians.

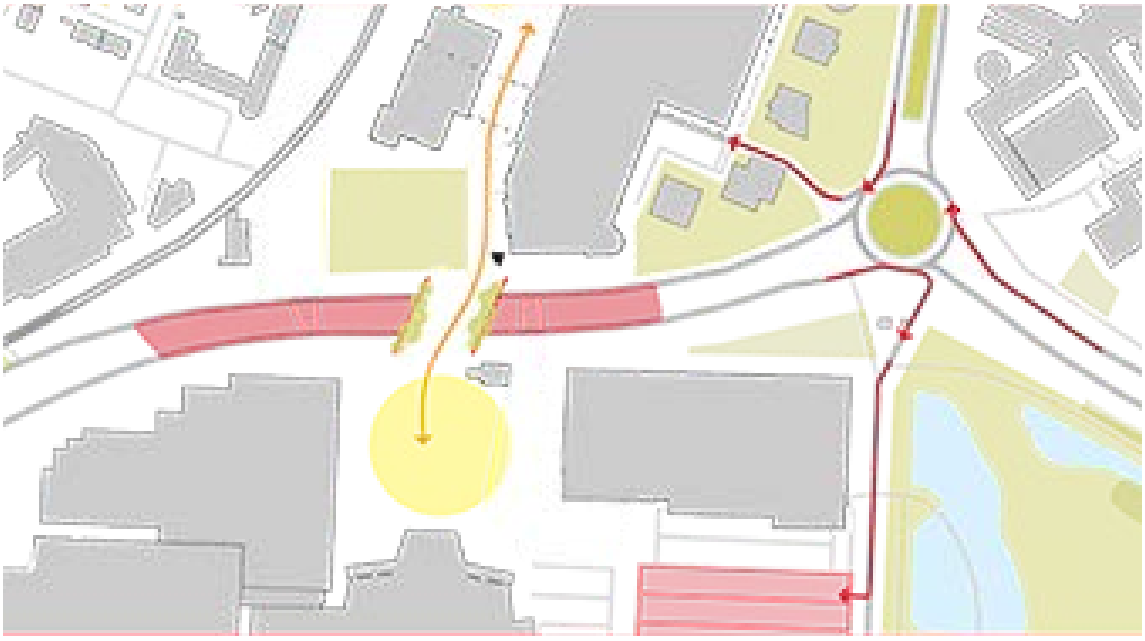
The proposed roundabout will help in both simplifying the wayfinding for cars at the large junction, and in slowing down of the vehicles. Another advantage of this is that the center of the roundabout can be used to insert more greenery or display artwork that exemplifies the identity of the Zuidplein area.



SECTION 1:2000



EXISTING 1:5000



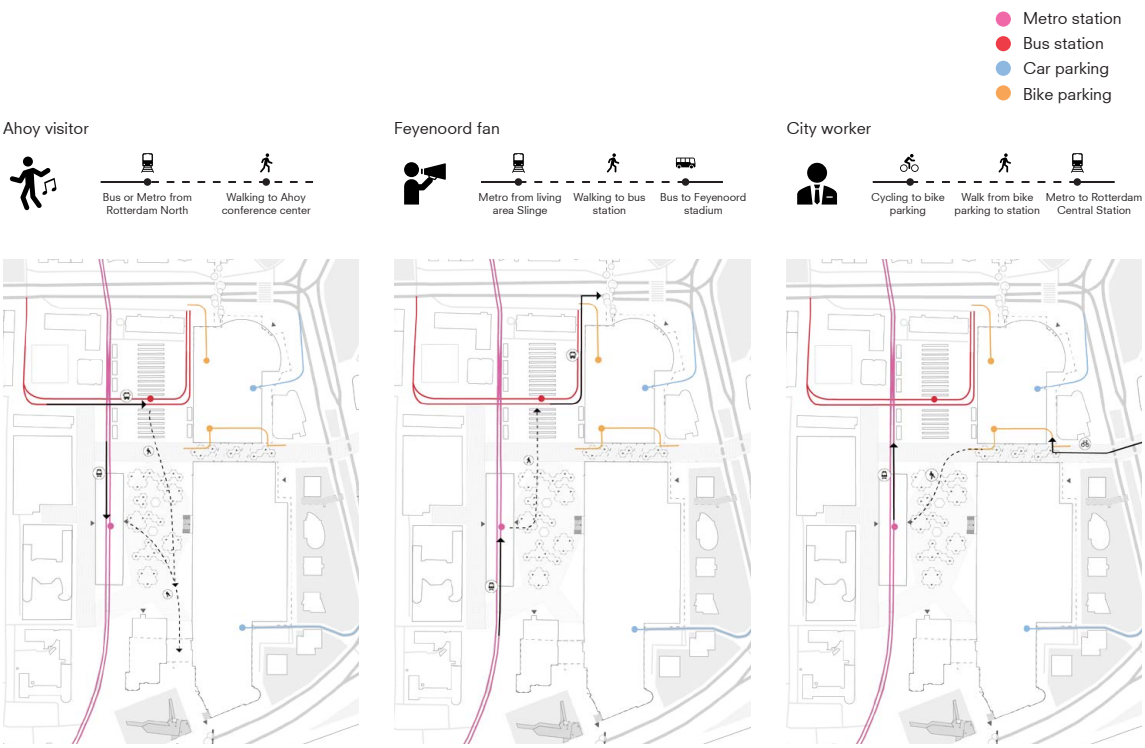
PROPOSED 1:5000

STATION SQUARE
Usage of Zuidplein

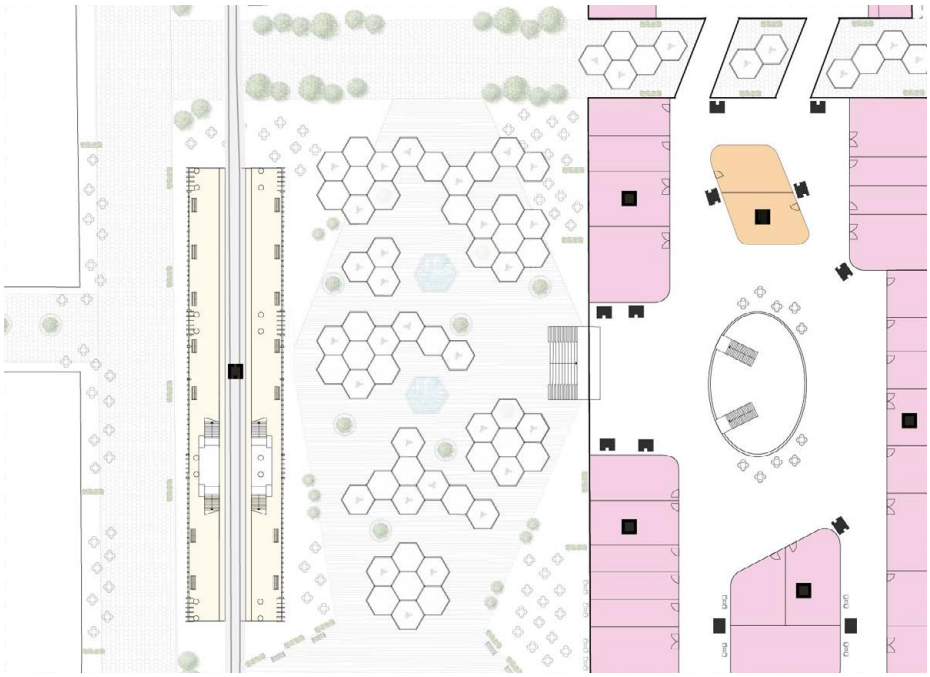
The new station square is central to the proposal for Zuidplein. For local residents, Zuidplein is already a familiar place where they can recreate in the shopping mall. Nevertheless, the area has the chance to receive more attention in order to become a true center of Rotterdam South. The station square therefore functions as a meeting and relaxation place for both local residents and outsiders. Pavements are used to indicate different zones. The stone-covered street profile leads people towards various smaller squares, such as between the theatre and the swimming pool and the water square at the northern end of Zuidplein. The linear pavement indicates the square, which people use both functionally, from the bus station to the metro for example, and where people can relax or wait. The light pavements that remain are used for restaurant terraces.

The station square also provides an all-sided station and mall. All the facades can now be used functionally, creating an active plinth. There are also more entrances, so that all flows of users can gradually find their own most functional access.

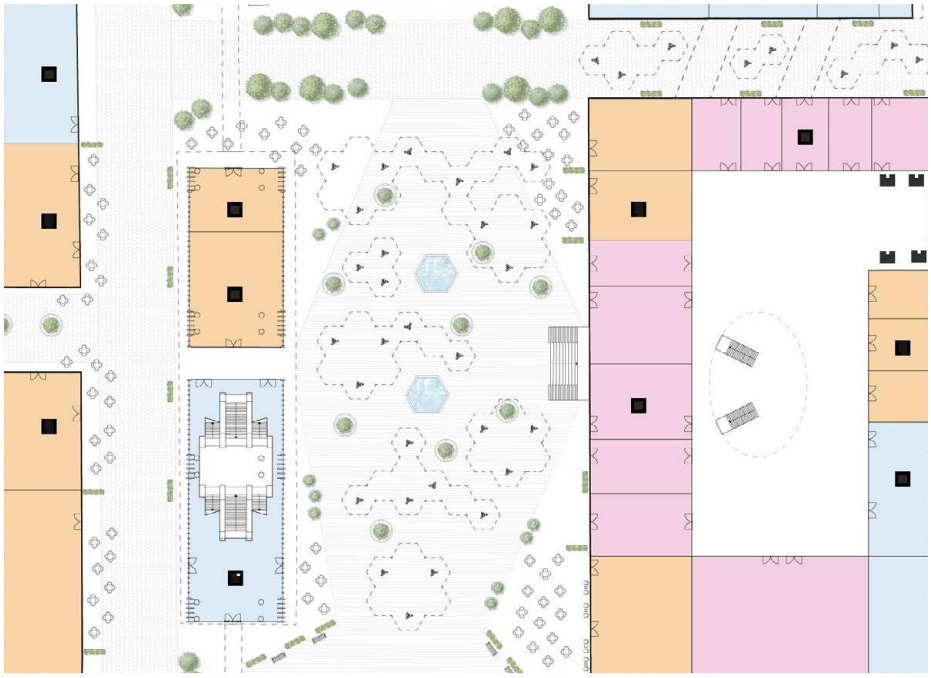
Finally, three user scenarios were examined to see what the station square means to them. All three travelers use the station square, whether they come from the bicycle shed, the bus station or the metro station. As a result, the square also has to provide enough space to accommodate all the different pedestrian flows. The shelters add value here to offer the travelers as much shelter as possible. In conclusion, the new station square is a valuable addition to the area. Not only for local residents, but also for travelers who now have a reason to spend more time in the Heart of South



User flows within station area

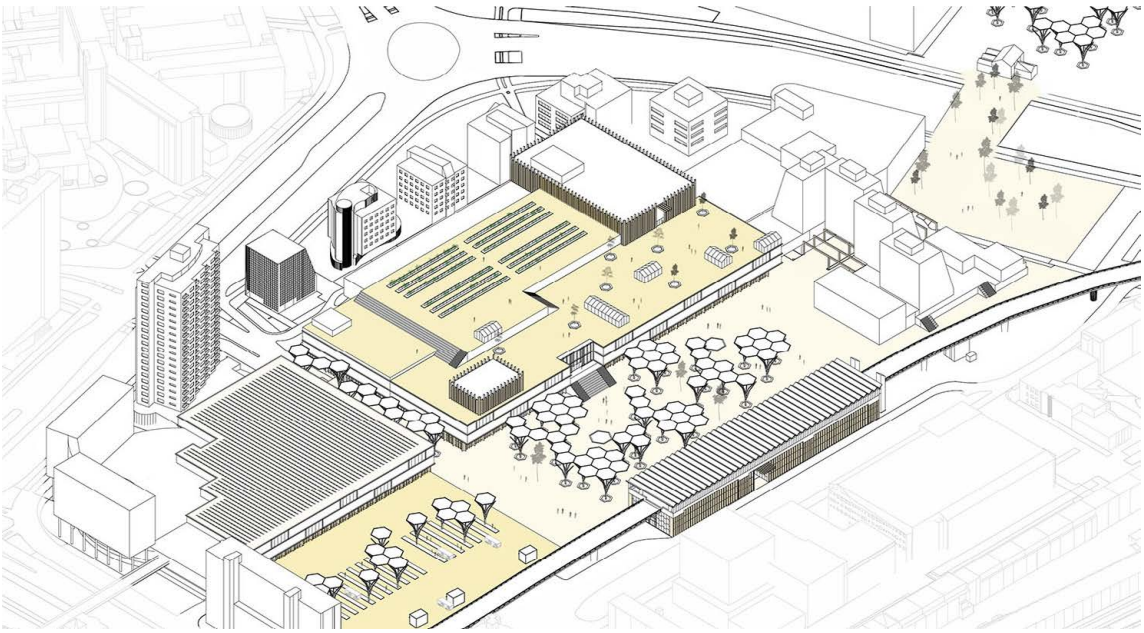


First floor station and shopping mall, scale 1:2000



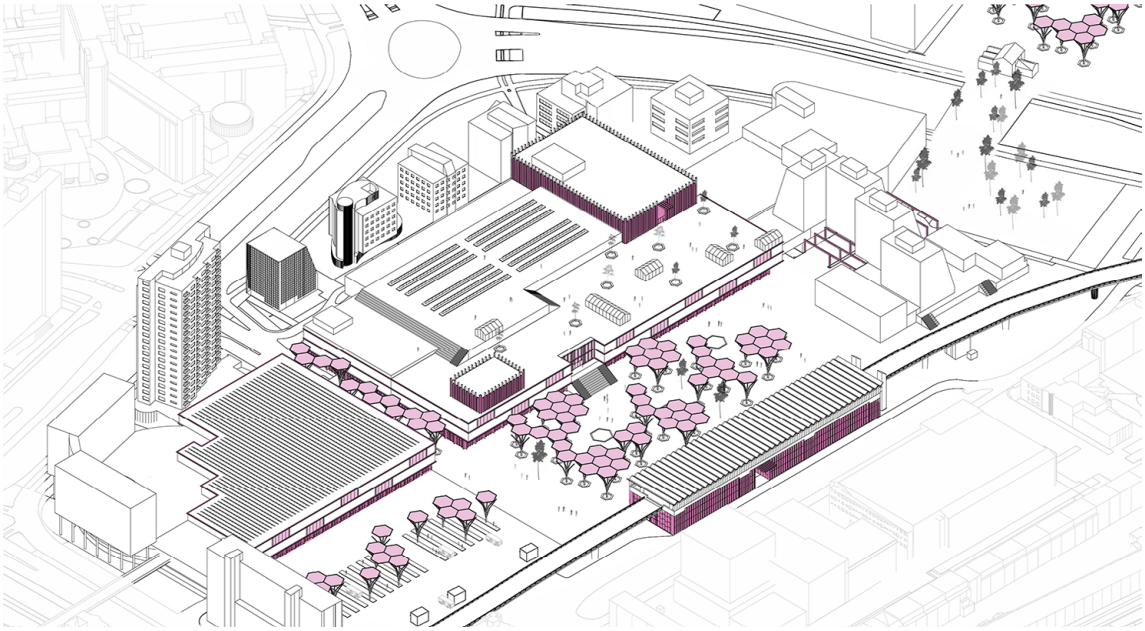
Ground floor station and shopping mall, scale 1:2000

PUBLIC SPACE
Use of public spaces



In this diagram public spaces are marked in yellow. The new created plaza between the station and shopping mall is most prominent. To make this extra clear, most canopies are located on this plaza. In this diagram the continuous flow of spaces is clearly visible. From the station routes are possible in all directions without obstacles. There is a pedestrian friendly route from the bus stops al the way to Ahoy. In the current situation the roof is only used for installation purposes. In the final design the roof is accessible for public. On the roof there is room for a restaurant, communal gardens and greenhouses.

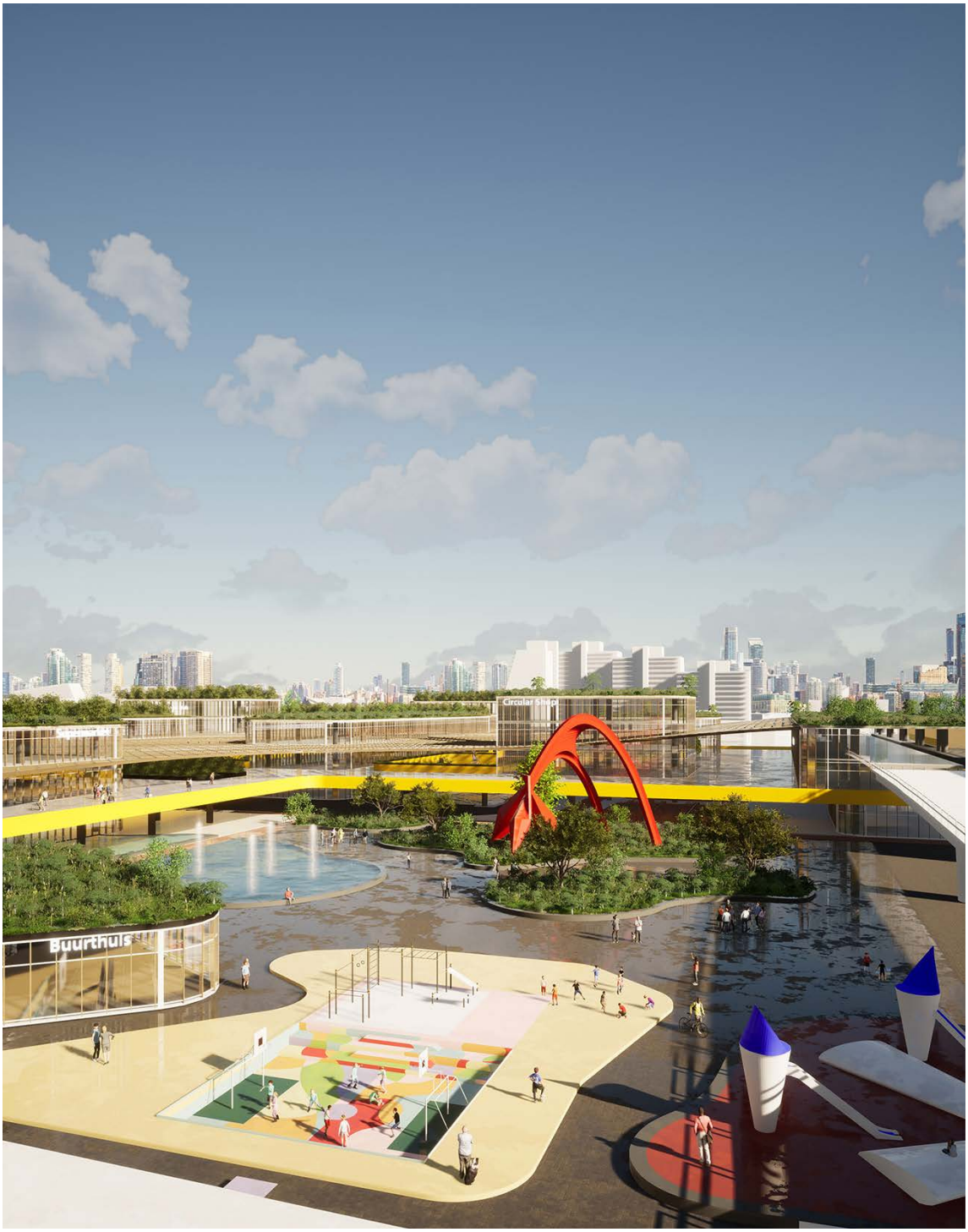
OPEN PLINTH
Open plinths and materiality



This diagram shows the open plinth and all the other wooden elements in the design. The open plinths are an important aspect of this design and therefore made clearly visible with the vertical wooden elements. This open plinth is applied on both the shopping mall and the separate station. The vertical elements also make the station appear higher. In this way the station differentiates itself from the other buildings, this will guide the traveler in a natural way towards the station. In the existing situation, the shopping mall has limited to no windows. This gives the mall also from the outside a depressing look. This can be solved by adding large window frames all over the facade. These frames are also in wood to create a uniform look.






Buurthuis

Climate Adaptive City

Zuidplein

Groene Hart van Zuid proposes an open station design with a focus on circularity and high-quality public space. The rigid barriers and inactive plinths are removed to create a flexible and spacious hub which serves as an important mobility node as well as a destination in itself. One of the core values of the station is circularity. The station design aims to create a better and more balanced relationship with resources like water, energy, food and materials. The emphasis lies on showing the value that these resources have, with which we as humans have often lost touch.

Evelien Dekker
Iulia Popescu
Matias Cardoso
Sharon Lam

AMBITIONS
Connection to the collective research

From the ambitions as defined by the collective research we have decided to focus on 3 ambitions in particular:
1) Sustainability
2) Barrier Free
3) Public space

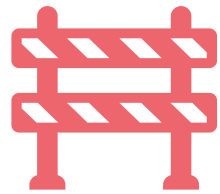
All three ambitions score low in the current design, so they are a good starting point, as improvement is necessary.

Sustainability
Sustainability was chosen as the main focal point of our design. We want our design to be future-proof and serve as an inspiration to other stations and re-development projects in Rotterdam and the wider area. Increased sustainability is a precondition to a prosperous and high-quality living space around the world. So with this design, we want to stimulate and inspire change in others as well as induce critical thinking in visitors to the site.



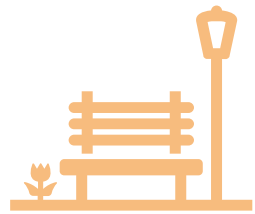
Sustainable

Barrier free
Barrier-free was chosen as it is a large obstacle for the station. As the Zuidplein will transform to be Hart van Zuid, its station must be well-accessible for a variety of modes, but especially soft mobility. This is not reflected in the current design and should thus be improved.

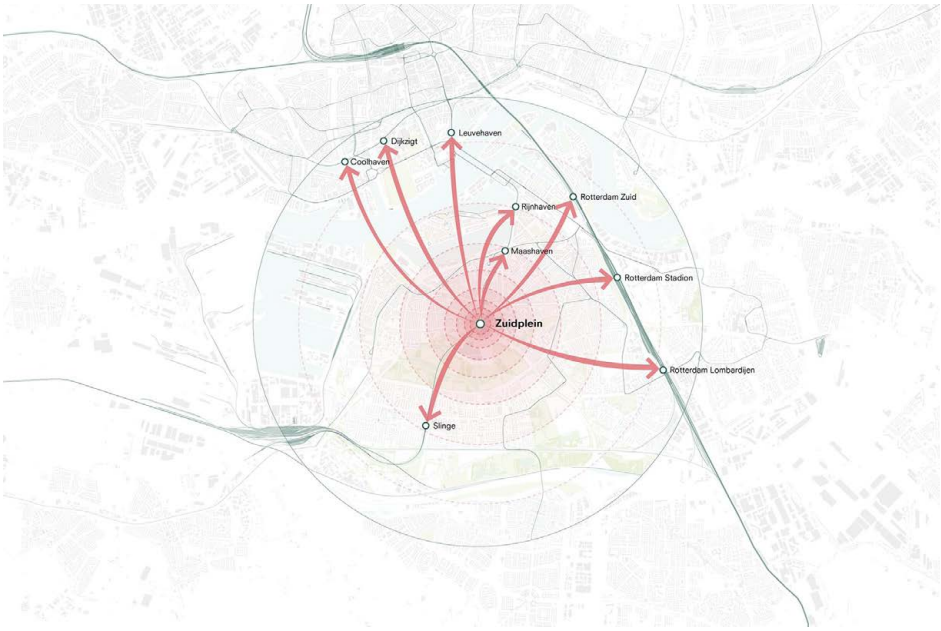


Barrier free

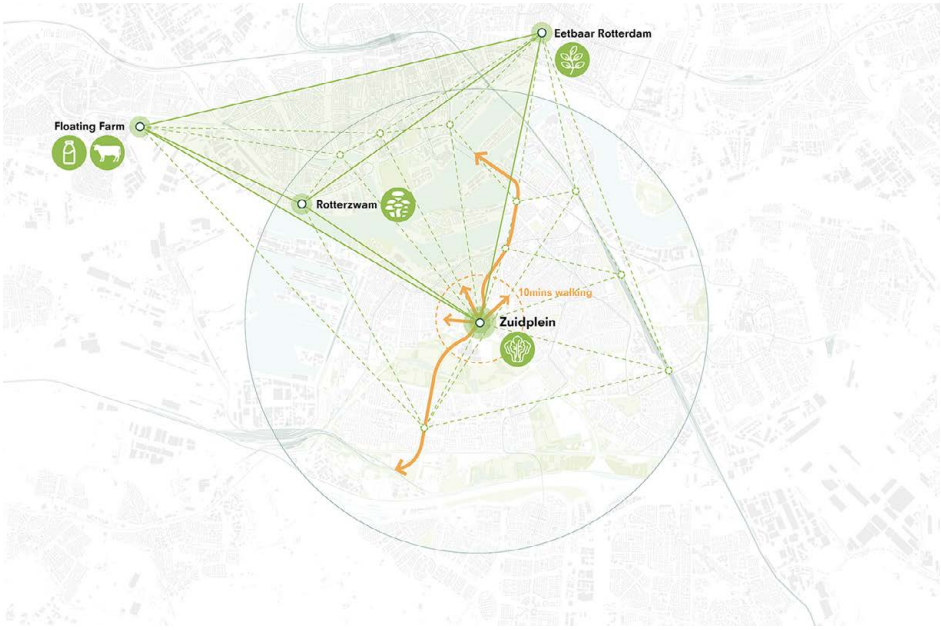
Public space
Public space was chosen as high-quality public space is currently lacking. Even though there is an abundance of social and cultural destinations around Zuidplein (Ahoy, theatre, swimming pool etc.), the place does not feel like a destination you would want to visit. We think this is partly due to the lack of high-quality public space. If this were to be improved, we might be able to utilize more of the potential of the Zuidplein area.
The other identified ambitions will still be acknowledged, but do not have a particular focus in the design. In the final assessment, it will be indicated how well the final design scores on all identified ambitions.
These ambitions will be achieved through a circular station design. This will add additional value to the station and surrounding area as well. A circular hub will be created where innovative circular initiatives can be tested and implemented. With this innovative approach, a future-proof station will be the end result. The circular approach will take the current urban farming network in Rotterdam across the river to the south, creating a stronger network for the whole Rotterdam area. Furthermore, a circular station toolkit will be developed, so that other stations in the area can form their own network of circular stations and organizations.



Public Space



Potential circular stations network around the Hart van Zuid



Urban farming network potential in Rotterdam

PARAMETERS



Inclusive



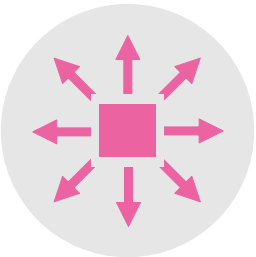
Affordable housing



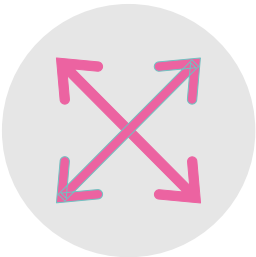
Attract young people



Good public space



Multi-functional



All sided station



Human scale



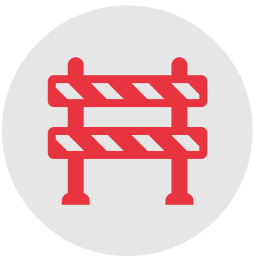
Active plinth



Walkable



Smart network



Barrier free



Well integrated



Public green



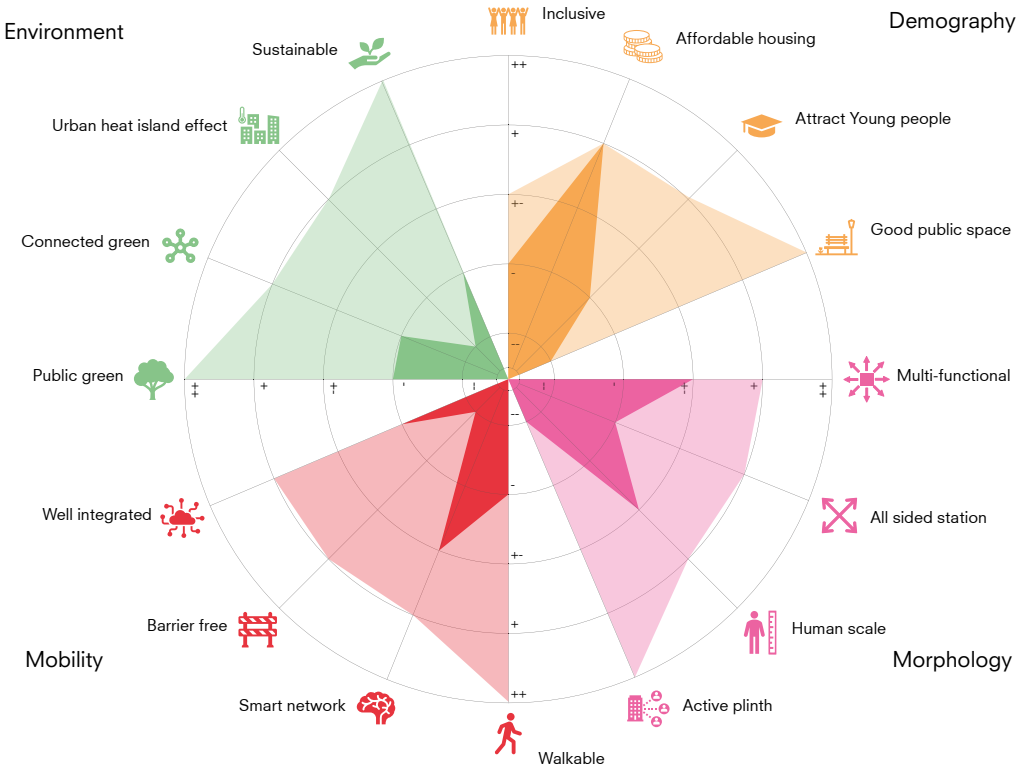
Connected green



Urban heat island effect

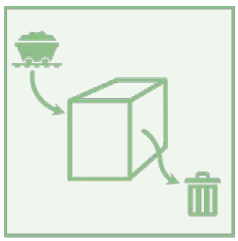


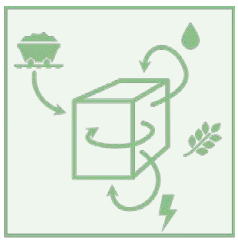
Sustainable

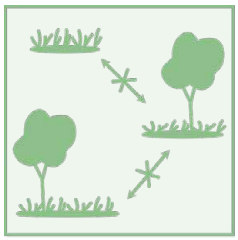


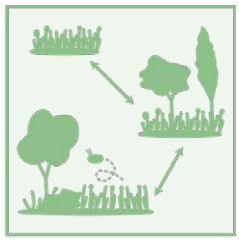
Butterfly diagram showing the existing condition

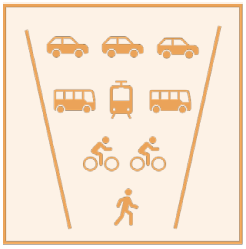
CHALLENGES & SOLUTIONS
Connection to the collective research

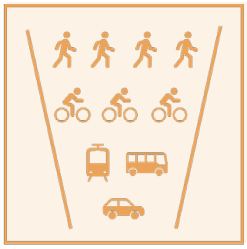

Linear system, where resources are wasted

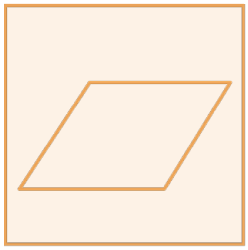

Circular system, where resourced are reused

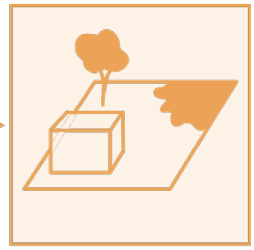

Uniform and disconnected green spaces

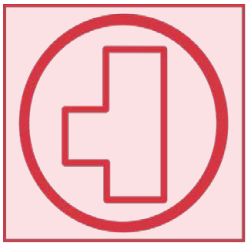

Diverse ecosystems & supporting biodiversity

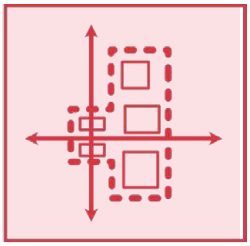

Hierarchy based on cars

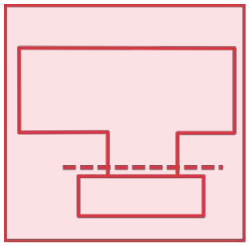

Walkable Zuidplein

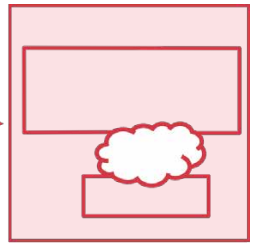

Empty Zuidplein square


High quality park


Barrier created by surrounding infrastructure


Decreased barriers for passive modes


Harsh distinction between mall & station


Blur barrier between mall & station

CIRCULAR STATION TOOLKIT

Potential for a circular station network

The measures taken to make the station circular can be copied in other stations as well. The following toolkit supplies interested parties with a toolkit to inspire measures in their station or organization.

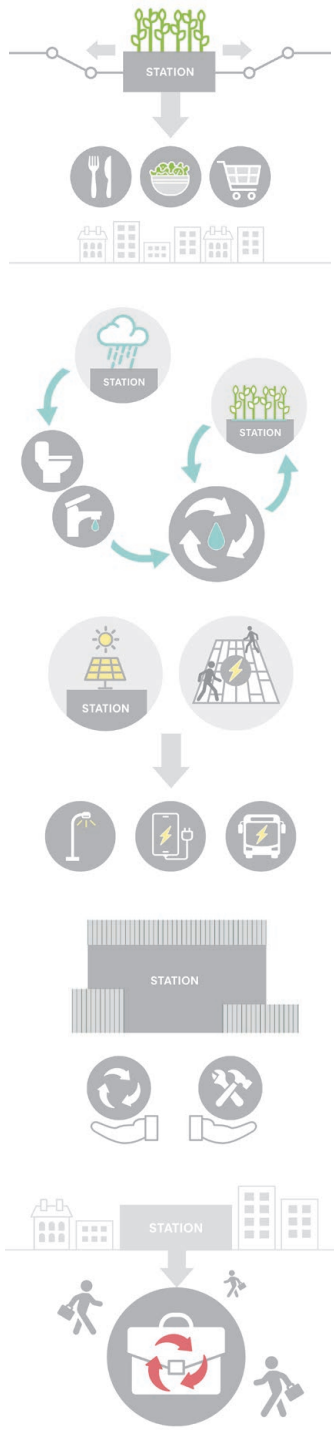
Urban food production
Food production can add to a circular station as its roof is usually quite large and thus has potential for functions there. The rooftop farm can provide food for the surrounding area. And it is a very visual measure.

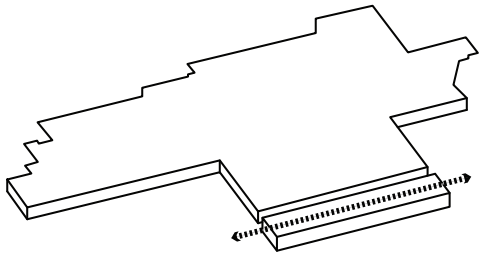
Water collection and reuse
Stations often have unpleasant toilets. To change this bad image, it can be changed to something fun and sustainable. Your pee will feed our plants! Furthermore, the toilets can be regulated easily and a lot of excrement is available in a public building like this.

Clean energy production
Stations can also be energy producing hubs. Seeing as (public) transport is destined to be electrified, this is also a future-proof investment. Energy producing tiles, charging stations and solar panels will become part of this landscape.

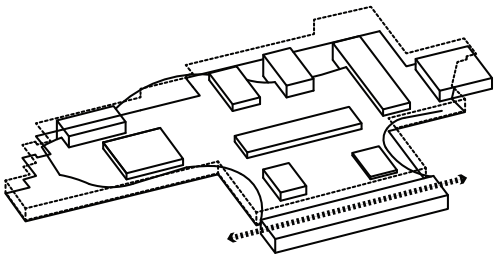
Recycled materials
Bio-based materials are recyclable and also give a pleasant feeling to travelers. For new designs, modularity and adaptability should be central focuses. For possible demolition waste, one should look into a valuable reuse option within the new design.

Circular jobs
By investing in circular (building) products, we can stimulate the creation of circular jobs. Especially because a station is a big investment. The urban rooftop farm, the solar panels producers, the bio-refinery workers the recycle industry, all can be given a boost though a circular station design.

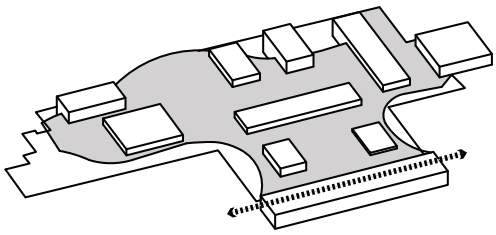




Current situation



Volumes



Proposal

Design scheme for the proposed changes in Hart van Zuid

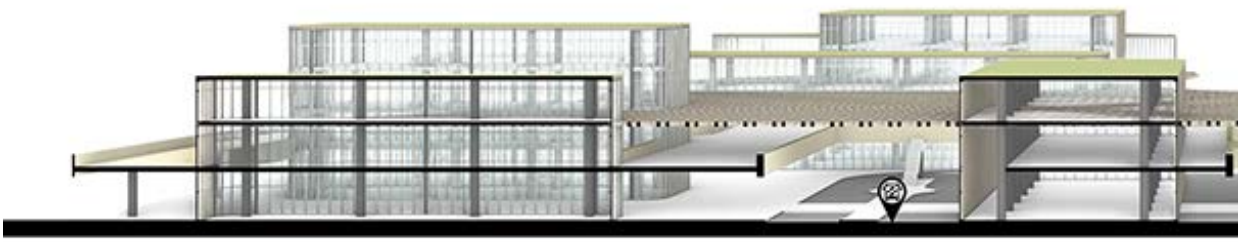
PHASING
Station over time

Phase 1: 5 years
First, the mall will be cut to make space for a new bike lane. Furthermore, the bus station will be moved to under the current mall and the first floor of the mall will be demolished and rebuilt to host the new design. In this way, an open and light bus station can be created. New bike parking will be included and glass facades will be added to the current station to create an inside space.

Phase 2: 10 years
Second the mall will be compartmentalized or cut op into pieces. The foundation and the main parts of the load bearing structure will remain, but walls and roof will be demolished. Active plinths will be built on the ground floor. Housing will be included on the first floor as well as relocated shops from the old mall. The roof will be built and the energy production, water retention and urban rooftop farms will be included on the blocks that peak out of the roof.



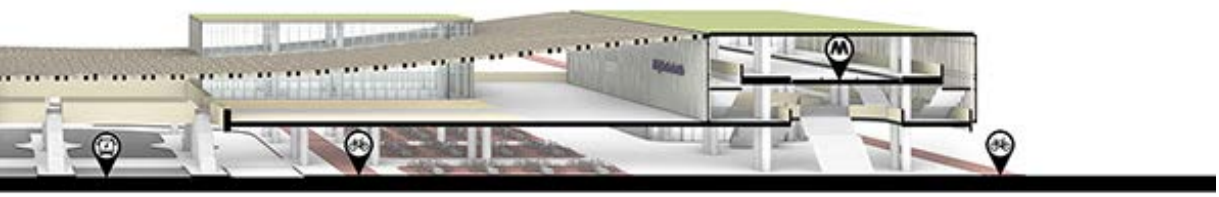
Section - Current situation

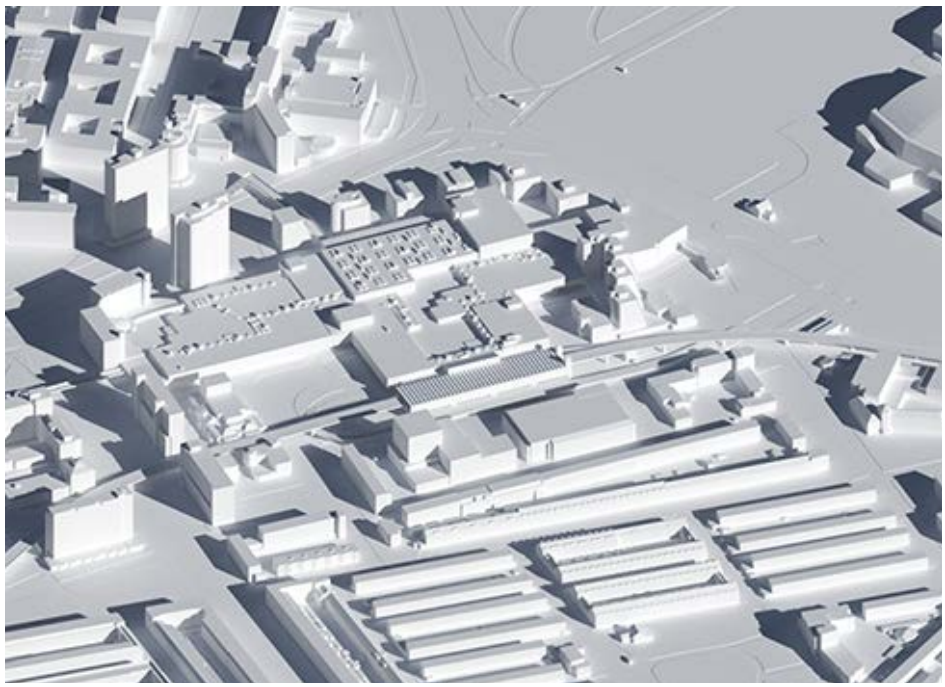


Section - Proposal

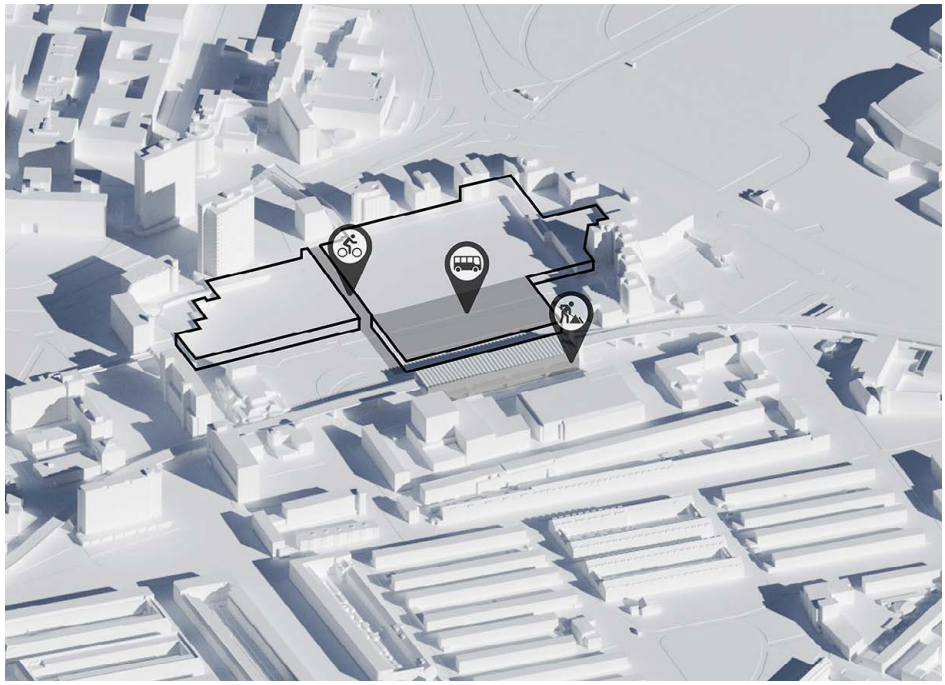
Phase 3: 15-20 years
Lastly the new houses will be built. It consists of 6 similar blocks which will host around 2.000 new homes. Active plinths are included in this street as well.



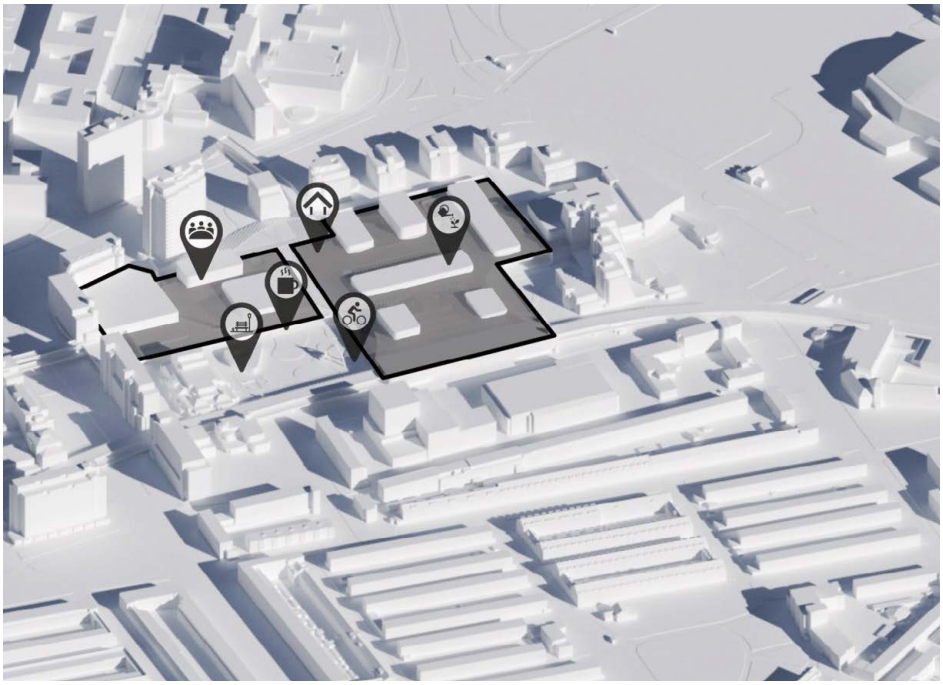




Current situation



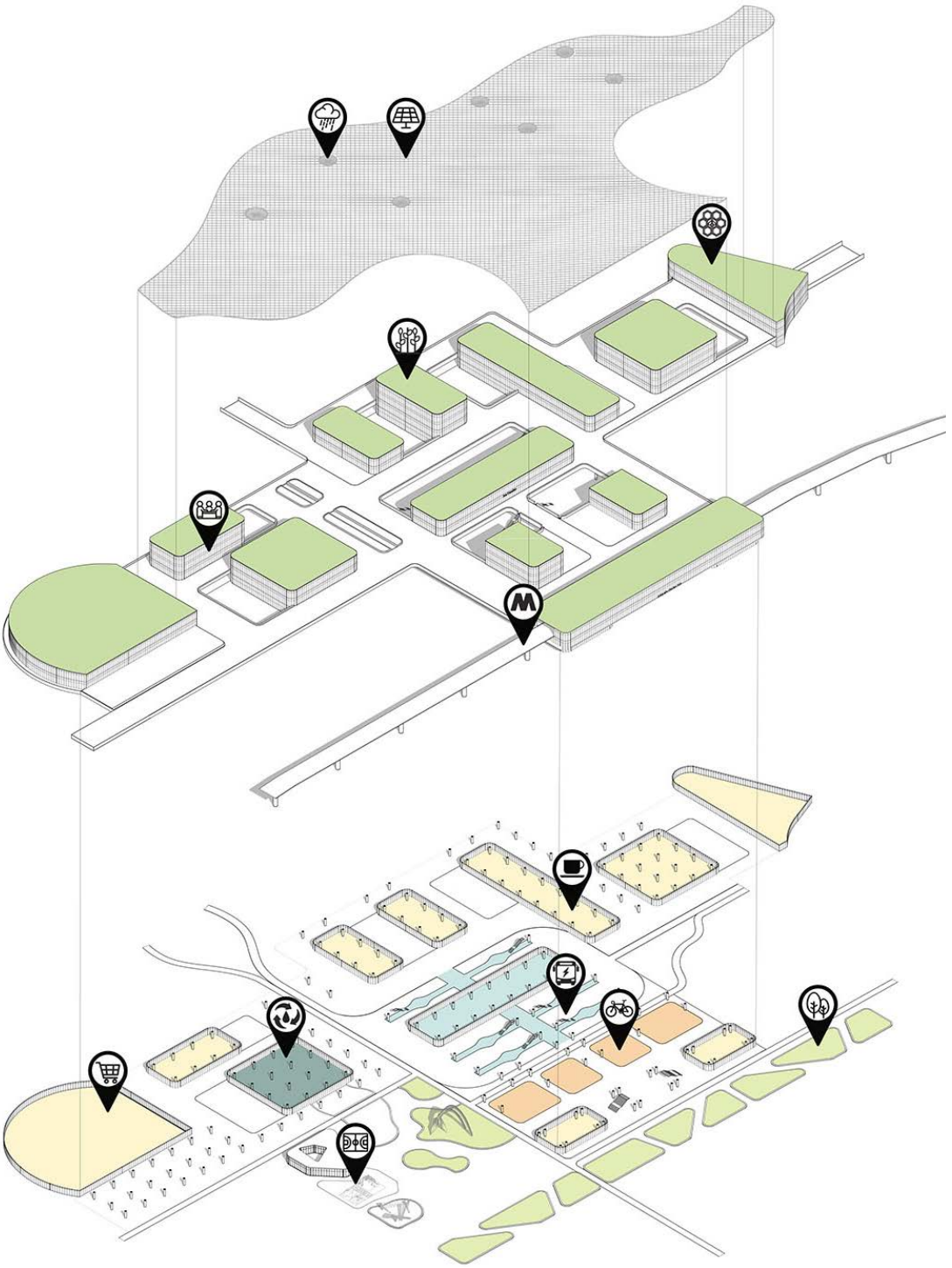
Phase 1: 5 years in the future



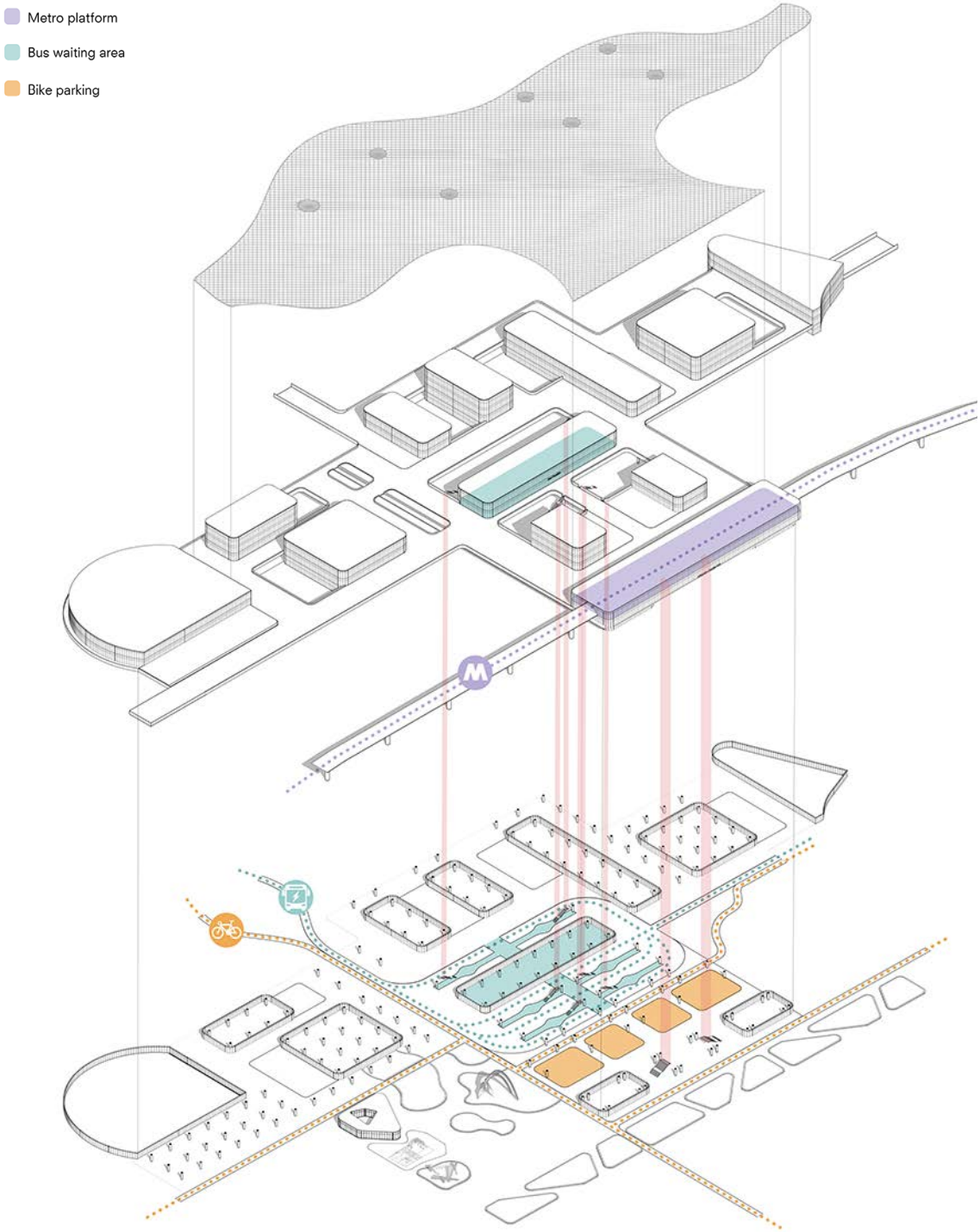
Phase 2: 10 years in the future



Phase 3: 15 to 20 years in the future (new housing is included)

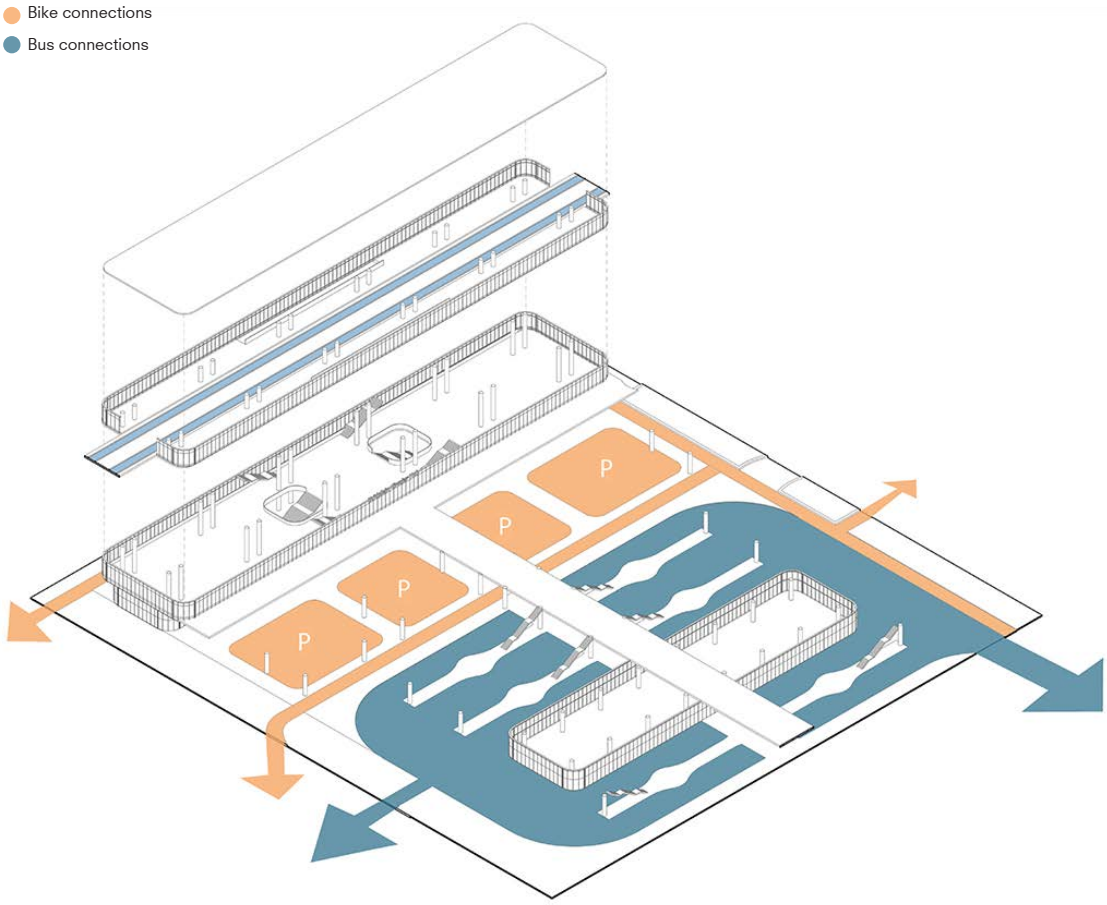


Program in the new Hart van Zuid station

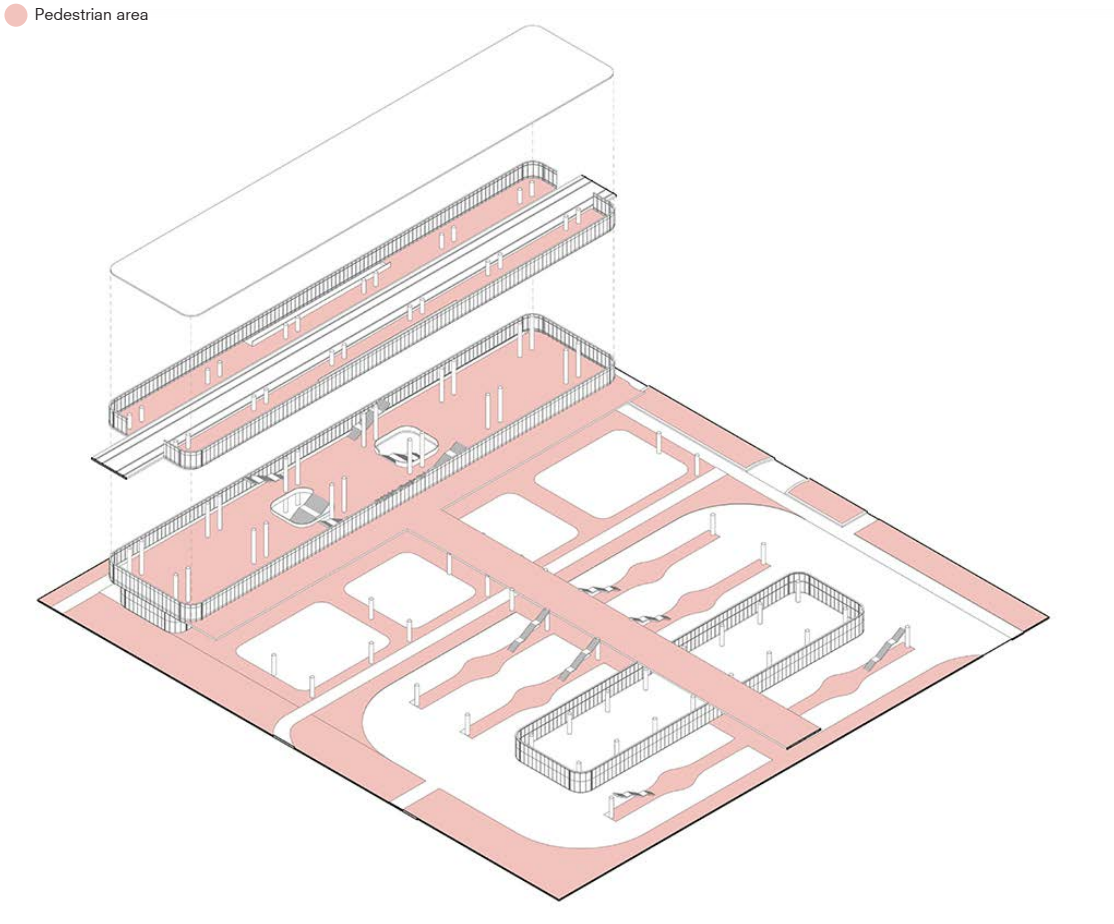


Mobility flows in the new Hart van Zuid station

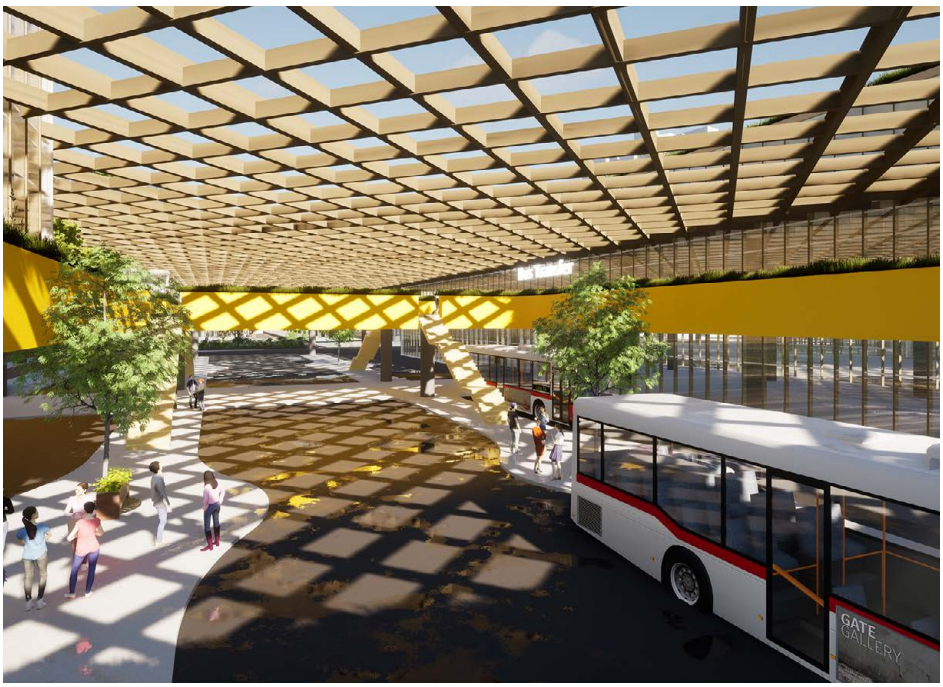
MOBILITY
Spatial solutions



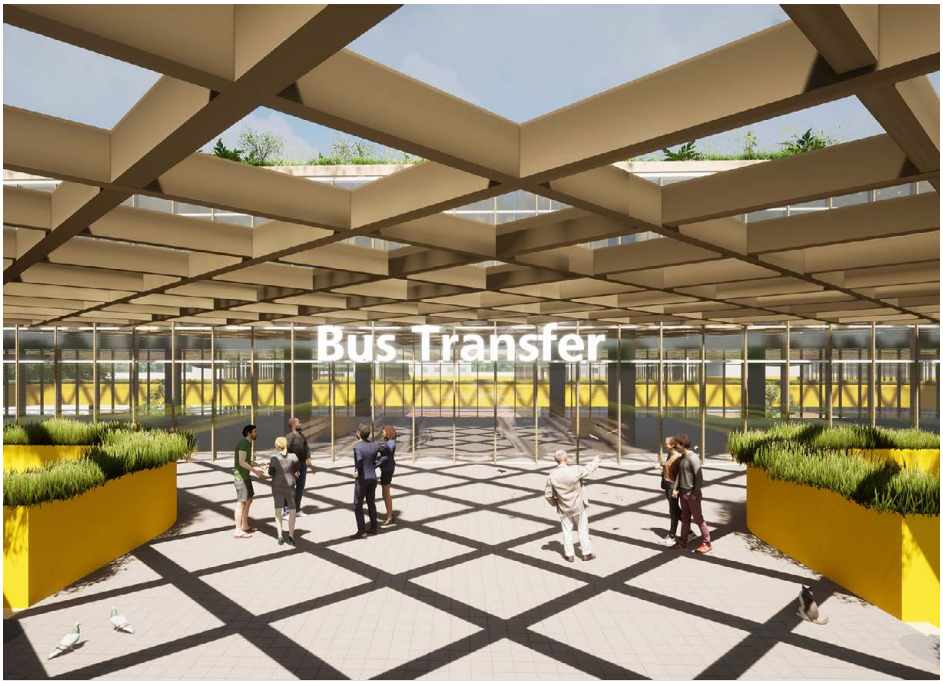
Mobility hub detail



Pedestrian areas in the mobility hub



Urban bus station



Main entrance to the bus station



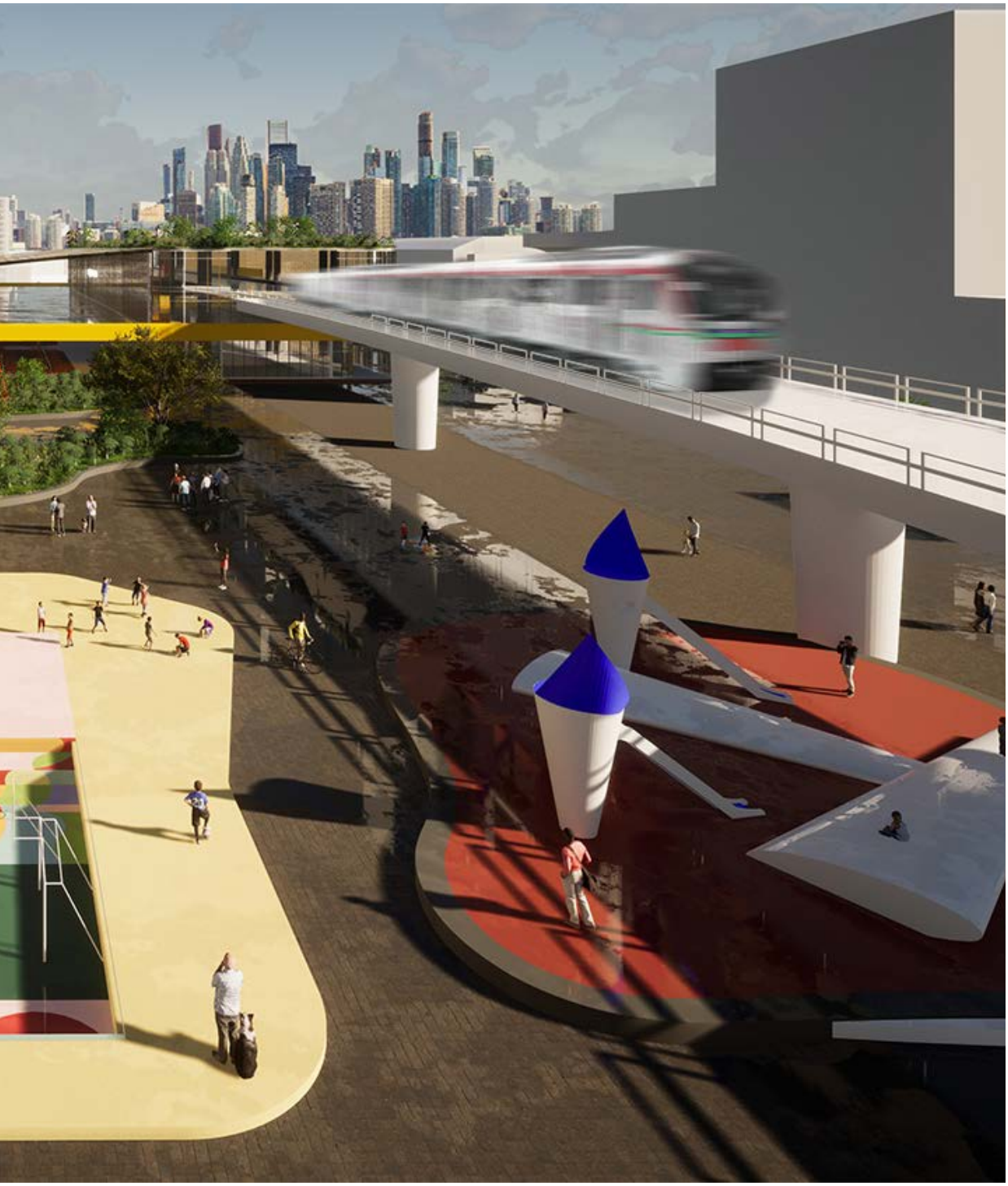
Design proposal for the Gooilandsingel



Commercial area on the first floor



New Zuidplein square




Route
2024
Zuidplein

Autonomous City

Zuidplein

The autonomous city is focused on the creation of an autonomous, sharing and connected society. The autonomous city also relies on society itself that's aware of climate change, sustainable choices and willingness to share their transport. This scenario may not only be beneficial for the municipality of Rotterdam, but can open the eyes of different parties, companies, researchers and administrators.

This scenario will focus on three ambitions:

- Adaptive streetscape
- Shared mobility
- Internet of things

Jelle Boorsma
Nico Stutz
Yannick Bakker

Autonomous City
Zuidplein

The study area is Zuidplein metro station and the surrounding neighborhood. The station, completed in 1968 is an important knot in the transportation network of Rotterdam and is located in Charlois, currently one of the poorest neighborhoods of the city. The crime rate is high and besides the Ahoy event center, the area isn't very inviting. In the coming years, both the station and the area around it will see a drastic transformation. Boulevards will replace the current car-dominated streets. Many activities like café's and restaurants will be realized. The housing shortage of Rotterdam and the greater Randstad area will also be partly solved here. All of these interventions create a new perspective for a future-proof design for metro station Zuidplein and it surroundings.

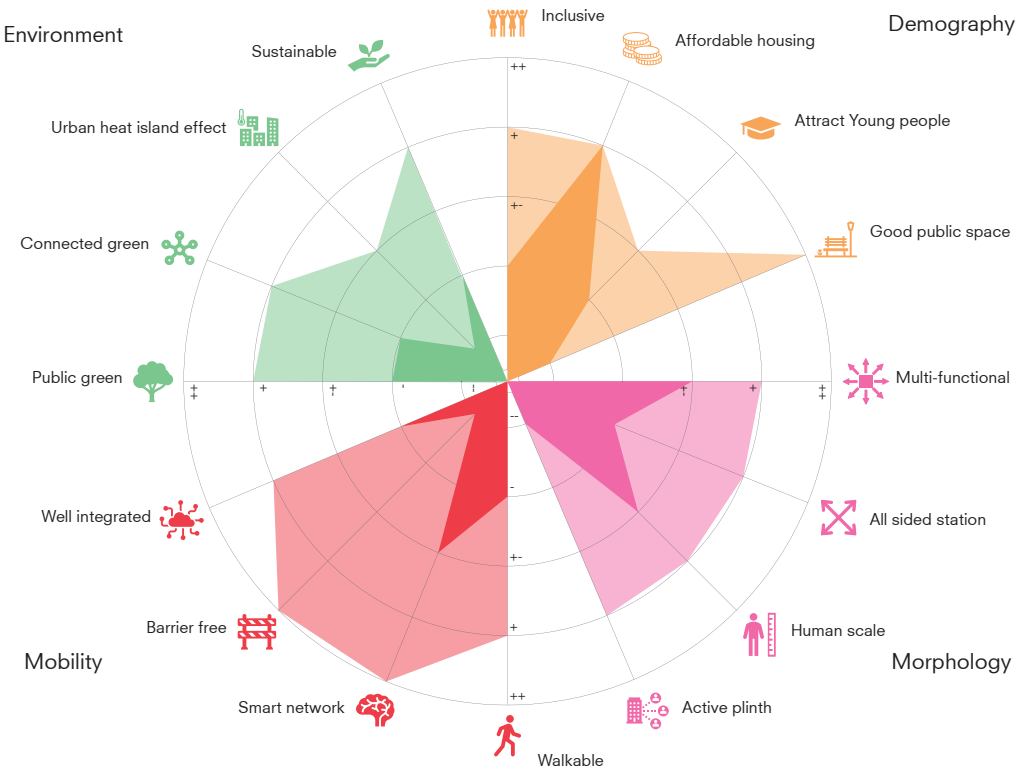
In this research and design we will come up with a design based on both future plans for the area as well as generate new ideas. The car-oriented area with different transport modes and local functions will be investigated. The area we are focusing on is around 145.000 m2. Important buildings in the area are Ahoy, the Zuidpleintheatre, a swimming pool and shopping center. Because of these different functions in this area, many different people visit the area. Around Zuidplein station there are residential houses as well as parks and sports fields. However, increasing pressure on the housing remains, and the area also needs to become more sustainable as there is little greenery and a lot of paving, which in summer creates an intensified urban heat island effect.

In the first part of this booklet research was conducted on relevant topics about Zuidplein. These topics were history, demographics, morphology, mobility, environment and future developments. For the research 3 different scales of focus are selected. Here, we will make conclusions with a focused vision according to different ambitions. Finally, this vision will be transformed into our futuristic scenario: The Autonomous City.

Editors Note
During the research and the design phase we found out that not only Zuidplein but also the interventions and our designs are connected to other places in Rotterdam and other groups and their designs. The autonomous city is really focused on the creation of an autonomous, sharing and connected society. This however is impossible without the groups that focus on the improvement of the connectivity by new metro lines or bus lines. The autonomous city also relies on the society itself that's aware of climate change, sustainable choices and willingness to share their transport. This development and understanding in society is 'not yet' included in our design strategy.

In front of you lays the booklet of a strategy that may not only be beneficial for the municipality of Rotterdam, but can open the eyes of different parties, companies, researchers and administrators. We have not chosen to go for the most obvious solution. If we want to develop as human beings, if we want to save our planet and still be able to live in a vibrant and liveable city, we sometimes have to take decisions that may not seem logical at first sight. In our design, this translates intolooking at the ground floor in a completely different way. Secondly, by looking beyond the first floor where there could be more functionalities. Three, by seeing streets not as a fixed object. Four, by letting transport fulfill more than one function. And lastly, above all, not to be afraid for new ideas.

Let your eyes fall on this booklet and let us open your eyes, let us inspire you!



Butterfly diagram showing the Autonomous City scenario

RESEARCH SUMMARY

Transition to our scenario

Based on research that was done on the Zuidplein station, the most relevant conclusions were selected that are thought to be at the basis for improving both mobility and the station area itself. The selected conclusions can be seen on the right.

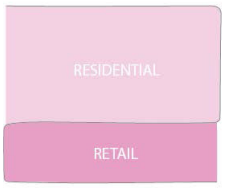
Active Plinth, Stacking of Program
There is not a lot of activity happening on the ground floor of buildings, especially in the area around the shopping mall. Mono-functional buildings are also present throughout the site. There is potential to create a more lively area.

Green and Healthy Neighborhood
In the station area there is not a lot of green. The green that is present is of low quality. Green can be used to create a healthy neighborhood.

Car-Centered Layout
The current hierarchy of mobility should be turned upside down for the years to come. To facilitate the accessibility for pedestrians and make it become a "Walk-IN" station.

Roads Acts as Barrier
Around the station, the main routes form a loop. Poor accessibility to the station due to many obstacles like bus lanes, multi-lane roads and crossings.

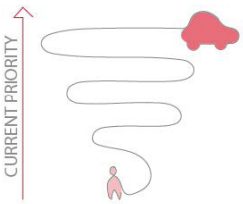
Unorganized Layout of Mobility
The station provides many different modes of transportation, however it has not been designed with multi-modality in mind. This leaves room for improvement.



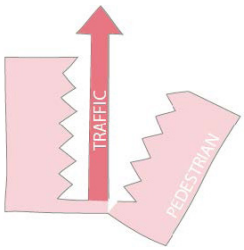
Active Plinth
Stacking of Program



Green and Healthy Neighborhood



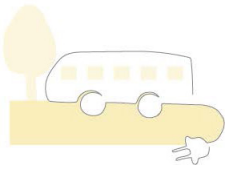
Car-Centered Layout



Roads act as Barrier

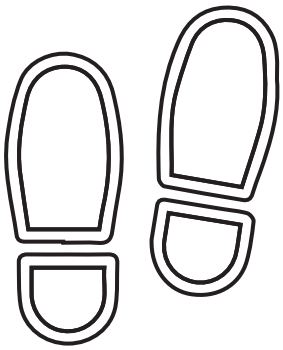


Unorganized Layout of Mobility



Development E- and Smart-Mobility

AMBITIONS



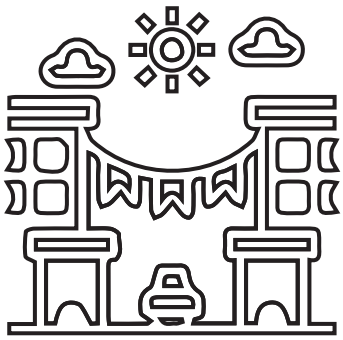
Walkable

Access to buildings and station does not cause any conflicts with pedestrians, arriving from different sides of the station. Above all, it must be logically designed.



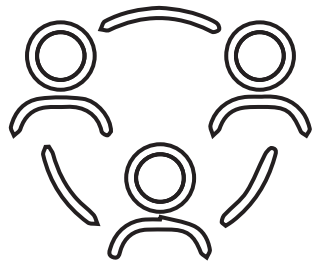
Smart Network

Integration of autonomous vehicles into the streetscape to allow for on demand public transport. This also creates a more safe public space.



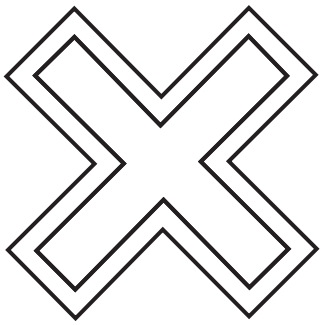
Adaptive Streetscape

Streets that adapt to the time of day using movable street furniture and street designs. Not every moment of the day needs the same street design.



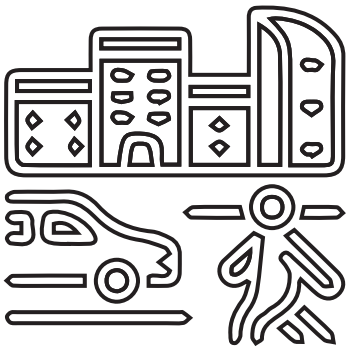
Shared Mobility

Shared mobility, not only of transport but also of space. Saving space, money and time and being environment friendly.



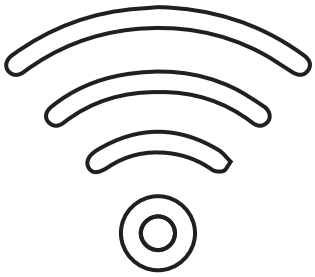
Barrier-Free

Access to the station and other transport possibilities without limitations due to barriers, such as roads, curbs and walls.



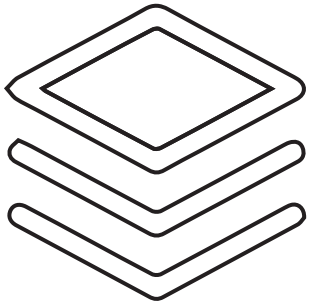
Integrated Mobility

The routes logically connect to the different areas in and around the station. Clear and effective connections between different modes of transport.



Internet of Things

To monitor, manage, and control devices, as well as to extract fresh insights and actionable data from huge quantities of real-time data.



Multi-Layered City

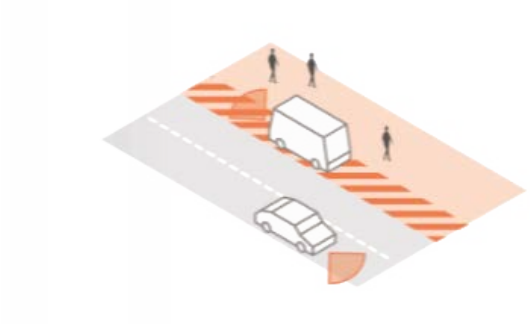
A city that improves stimulates alternative mobility, creates more space, independence, and a livable city on various levels.

THREE PILLARS

In this city of innovation design three major interconnected principles were devised. It simplifies things, and if we can assign a practical role to the connections that unite them, we can build our design upon it. The tree pillars introduced for the autonomous city are smart infrastructure , shared mobility & soft modes of transportation and connectivity & accessibility.

Smart infrastructure figures as the key functionality in the autonomous city. This smart infrastructure reflected in transport but also in the environment around it, such as streets and buildings. Because autonomous vehicles (AVs) can track, anticipate, and coordinate their movements, streets can be designed to modify the number and direction of lanes throughout the day. Furthermore, because smart electric vehicles travel more reliably and generate no emissions, they are safer for pedestrians, allowing for more flexible roadway use and streets without curbs.

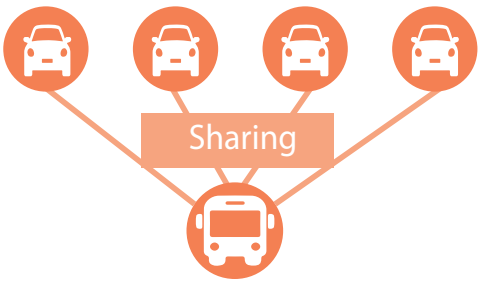
Smart infrastructure goes hand in hand with sharing & soft modes of transportation. By using and sharing transport, public space can also be shared again. Where previously cars had the upper hand, now people can use the space again. As technologically sophisticated as it may be, it's a throwback to the street from the pre-car period. Streets used to be hubs of social activity, where people congregated. If well-designed, the streets can be both again, a connected and sociable place. This sharing is even more extensive. Energy can be shared by utilizing heating and cooling systems, where buildings are cooled in the summer and heated in the winter using local resources like surface waters. Sharing opens up many opportunities for connectivity. By sharing transport, mobility gets a boost. In addition, you can go to many more places and, for example, green roofs are accessible to people. By sharing data, energy and the internet, the relationship between people and the environment around them can be increased.



Smart Infrastructure

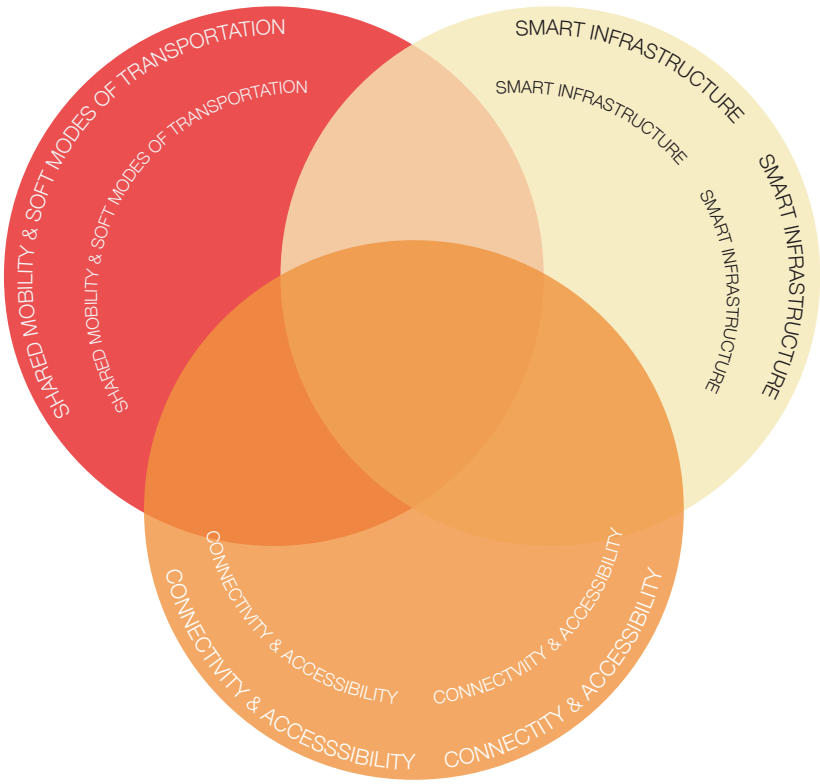


Connectivity & Accessibility



Shared Mobility & Soft Modes of Transportation

Images based on diagrams in "Het Nieuwe Stationskwartier"


SHARED MOBILITY & SOFT MODES OF TRANSPORTATION
SHARED MOBILITY & SOFT MODES OF TRANSPORTATION
SMART INFRASTRUCTURE
SMART INFRASTRUCTURE
SMART INFRASTRUCTURE
SMART INFRASTRUCTURE
CONNECTIVITY & ACCESSIBILITY
CONNECTIVITY & ACCESSSIBILITY
CONNECTVITY & ACCESSIBILITY
CONNECTITY & ACCESSIBILITY

CONNECTIVITY & ACCESSIBILITY

First we zoom out to the functions of Zuidplein in Rotterdam, the Netherlands, and Europe. Today, Zuidplein serves as a stop on the De Akkers-Den Haag metro lines, which run north-south. Until 2040, the city possibly plans to establish a new metro line between Zuidplein and Alexander, which improves connectivity for the region. The city also intends to build a new bus line between Zuidplein and Schiedam station until 2050. Since it becomes a major knot on the city network, the area will gain dramatically in importance for the region. Zuidpein will now serve as a new center in Rotterdam, thanks to the addition of these new bus lines. Public transport lines that run north-south and east-west open up a whole range of possibilities, both for the metro station and the surroundings.

Even more zoomed out, Zuidplein is very well connected to cities many cities in Europe. The bus lines connect with different neighboring cities, but the station is also part of a much larger network with cities far away. Zuidplein is one of the two Flixbus stations. Buses to Lyon, Krakow, Prague and London leave daily. In this manner Zuidplein is a part of the FlixMobility network.



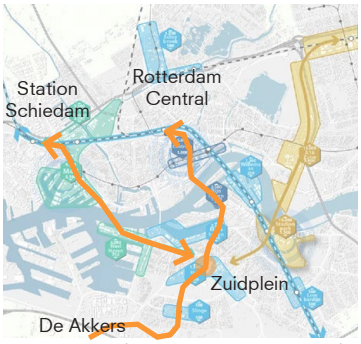
Scheme Zuidplein as new sub-centre



FlixBus destinations from Zuidplein (FlixMobility GmbH, 2022)



Present state (Gemeente Rotterdam, 2019b)

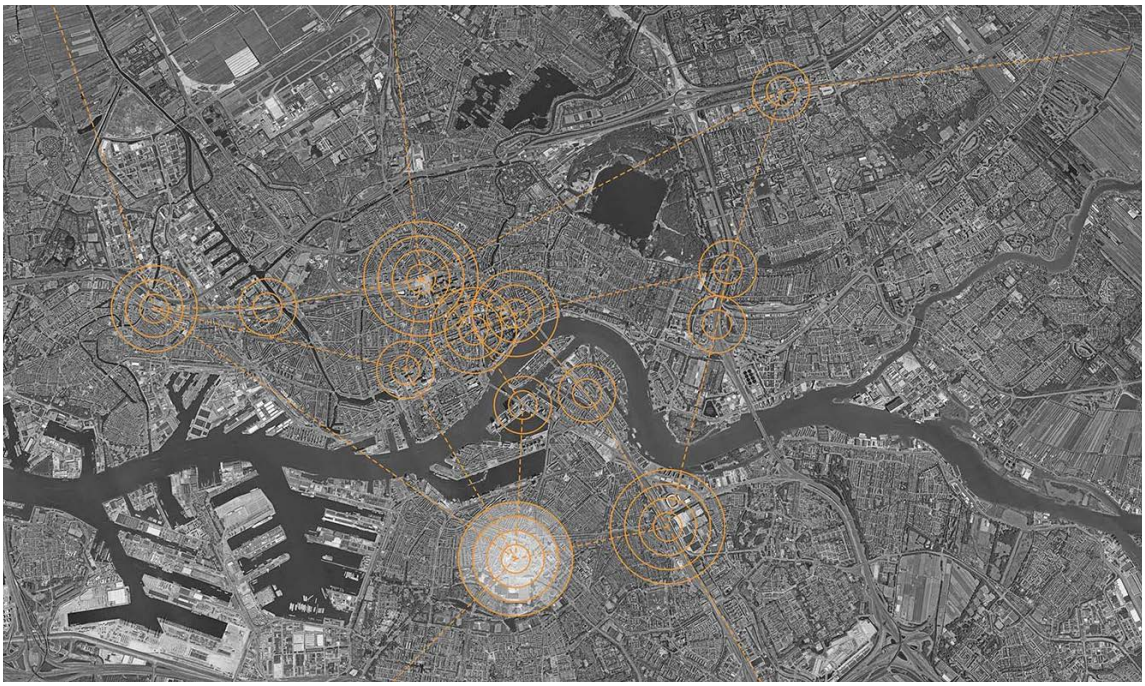


Present to 2040 (Gemeente Rotterdam, 2019b)



Present to 2050 (Gemeente Rotterdam, 2019b)

Present 2040 2050



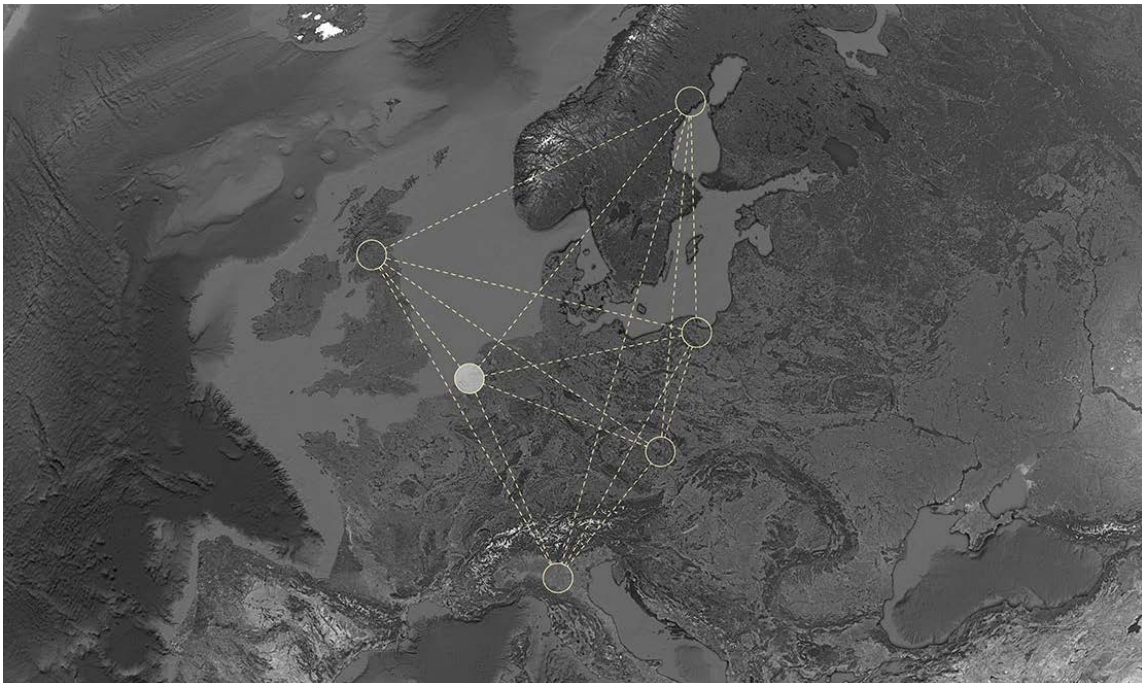
Polycentric network of Rotterdam

SMART INFRASTRUCTURE

To improve the station of Zuidplein, Rotterdam has created an alliance with 5 other big cities in the RUGGEDISED project, which aims to prepare cities for a sustainable future. The main problem it wants to tackle is the transition from a linear, fossil fuel-driven economy to a circular economy with sustainable energy sources (RUGGEDISED.eu, 2022 https://ruggedised.eu/cities/rotterdam/). The other cities that take part are Umeå, Glasgow, Brno, Parma and Gdansk. Each city develops and tests new techniques at a pre-designated location in their own city. In Rotterdam the location Zuidplein has been selected as the 'Lighthouse' district where thirteen smart solutions will be developed and implemented. Currently, Rotterdam Zuid is facing major socio-economic challenges associated with a young and multicultural population. The area is dominated by a car oriented infrastructure which also demotivates the use of public transport. Citizen and visitors feel the urge to keep using cars and feel sometimes estranged.

RUGGEDISED helps the district of Zuidplein with a serious transition consisting of:
- The renewal of the public transport hub and several large scale multifunctional buildings.
- The development of a thermal grid to distribute heat between buildings.
-T he implementation of electric buses.
- A new 'smart' timetable for electric buses.
-The use of sensors in, for example, lampposts and waste containers, to optimize energy.

The autonomous city could really benefit to RUGGEDISED, but also the other way around. Plans are already made and can be improved one or the other way. In the figure on the right possible locations are visible for green roofs and solar panels. Furthermore surface water is shown in red as possible options for heat and cold collection for buildings. Generating the clean energy flows together with a shift in the use of fossil fuels to electric mobility options improves the equality of life for citizens. A clean and innovative Zuidplein.



Network of RUGGEDISED projects

13 SMART SOLUTIONS

1. Geothermal heat-cold storage and heat pumps
2. Thermal energy from waste streams
3. Surface water heat-cold collection
4. Pavement heat-cold collector
5. RES generation and storage for mobility
6. Smart charging parking lots
7. Optimising the E-bus fleet
8. Energy management in buildings
9. 3D City operations model
10. Long-range wireless network
11. Efficient and intelligent street lighting
12. High performance servers to heat homes
13. Smart waste management

Rotterdam Smart Solutions (RUGGEDISED, ICLEI, 2020)



Map Urban Developments (RUGGEDISED, ICLEI, 2020)



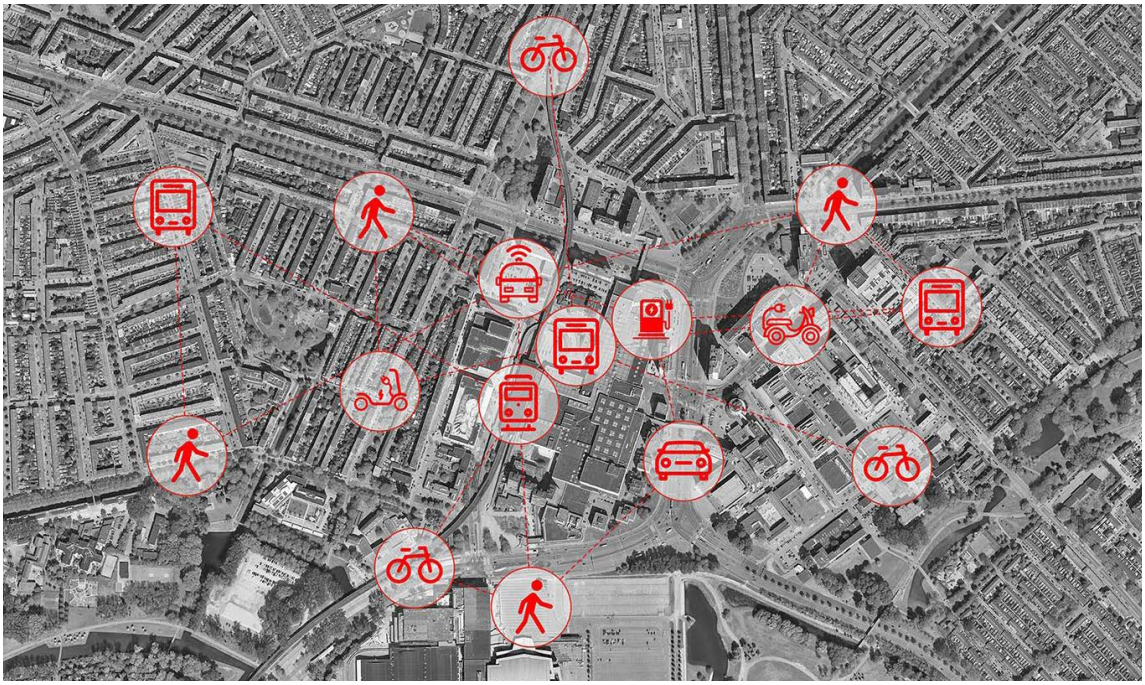
Potential of solar energy and surface water heat-cold collection

SHARED MOBILITY & SOFT MODES OF TRANSPORTATION

The current situation of mobility has more disadvantages than advantages. Cars have priority in most of the area. The area is disrupted, cars come and go and there is not enough space to park. People feel blocked by the roads and intersections. Many barriers have occurred and the visibility and accessibility for other transport options has faded from view. Therefore shared mobility can be the first step in the process to flip the hierarchy in mobility. Shared mobility has several levels. The first one being micro shared mobility, such as e-steps, bikes and e-bikes and e-scooters. Secondly there is shared mobility such as car or taxi sharing, buses and transport buses, which be introduced electric and possible transformed into autonomous vehicles as well. Automated vehicles have the opportunity that they can dramatically expand transit options and reduce the cost. This shift in mobility services will change the layout of streets. Where at this moment 4 or 5 lane streets are located, this can be changed into 2 lane streets. Changing the street design opens up a lot more area for flora, as well as pedestrians and cyclists.



Hierarchy of types of mobility within the last mile around the station



Network of modes of mobility around the station



4.5 Vervoer op de 'first- & last mile' en ketenmobiliteit

Mobility as a Service (MaaS) en de daarbij behorende gepersonaliseerde (op maat toegesneden) reis gaat een belangrijke rol spelen in de toekomstige mobiliteit. MaaS heeft betrekking op de hoofdvervoerwijze van een verplaatsing, maar ook zeker op de first & last mile van een reis. De opkomst van MaaS is reeds zichtbaar in lopende initiatieven, zowel privaat als publiek. Denk hierbij aan de reisplanners als CityMapper, maar ook aan vervoersdiensten als Uber of Car2Go. De reeds ontstane veelal lokale initiatieven om het wegvallen van een ontsluitende buslijn op te vangen kunnen een opmaat zijn voor opschaling van MaaS-toepassingen. Naast MaaS zijn ook andere opties denkbaar om de first & last mile beter aan te laten sluiten op het dragende hoofdnet van het OV. Denk hierbij aan de combinatie (elektrische) fiets en OV, het verbeteren van looproutes van en naar de haltes, het versterken van P+R, het inzetten van deelauto's en deelfietsen of het inzetten van zelfrijdende voertuigen.

Autonomous mobility
Source: OV-visie Rotterdam 2018-2040

HOW MODES OF TRANSPORTATION SHAPED OUR CITIES

City of Pedestrians



Morphology of Florence

- Street Activities
- Horse Connectivity
- 15 Minute City
- Cohesion

1100

City of Rails



Morphology of Bijlmermeer, Amsterdam

- Station and Rails
- Urban Connectivity
- Rise of Jobs
- Interconnected Society

1825

City of Cars



Morphology of Hollywood, Los Angeles

- Roads and Asphalt
- Car Parking
- Decentralization
- Polluted City

City of Places



Future morphology of Zuidplein?

- Public Realm
- Street Activities
- Traffic Restraints
- Adaptive Streetscape

1900 2022

TRANSITION FROM PRESENT TO AUTONOMOUS FUTURE



Present



Future



Present



Future



Present

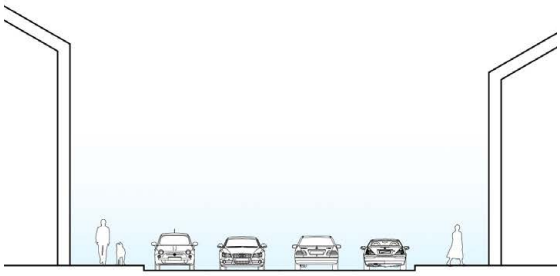


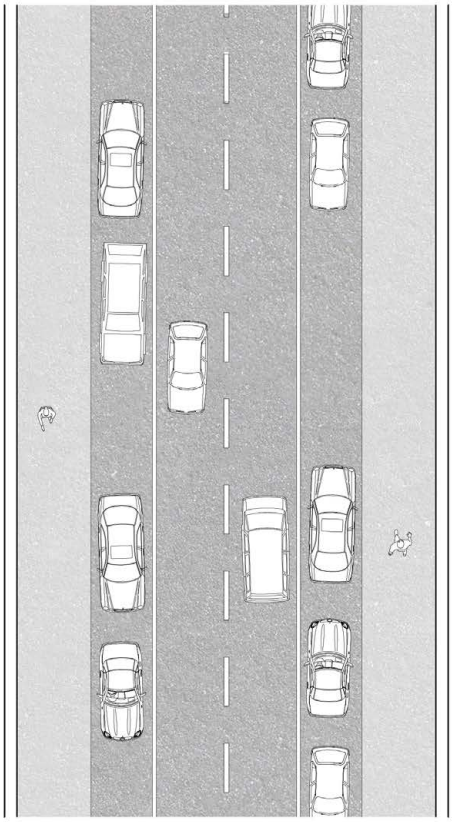
Future

metro
bus
tram
pedestrian and bicycle
main car routes

MEDIUM SCALE
Current

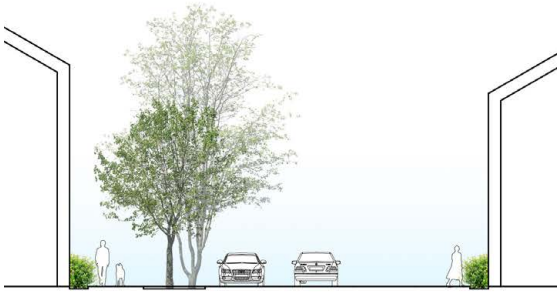


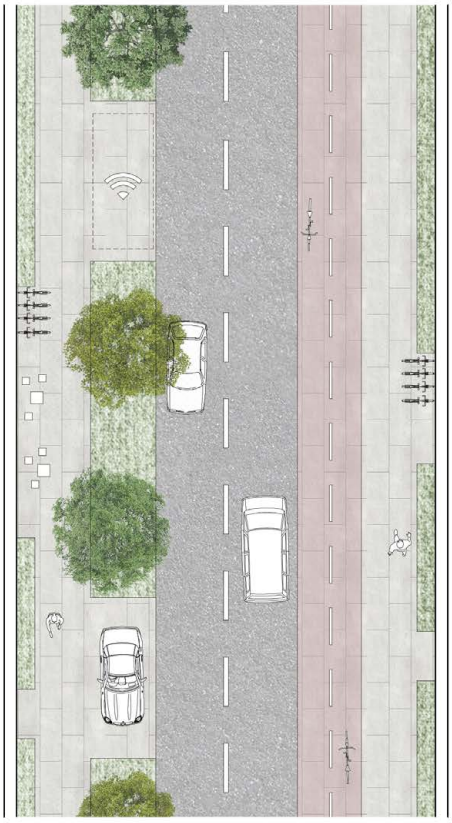




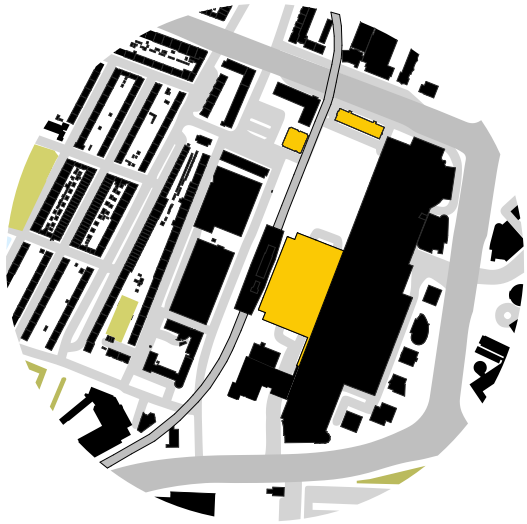
MEDIUM SCALE
Future

















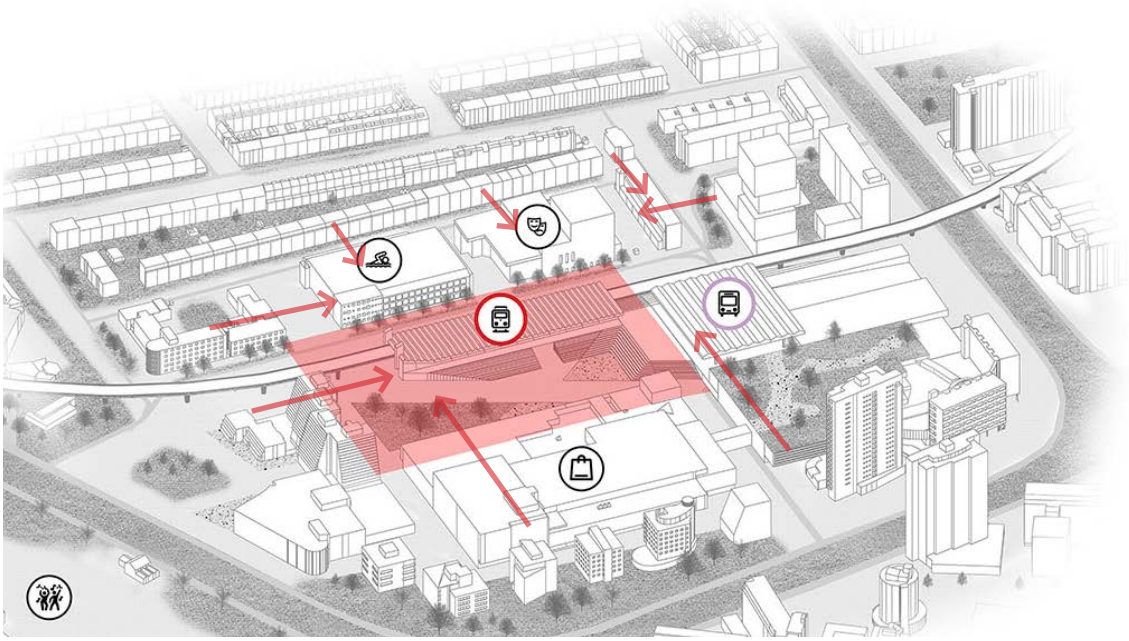




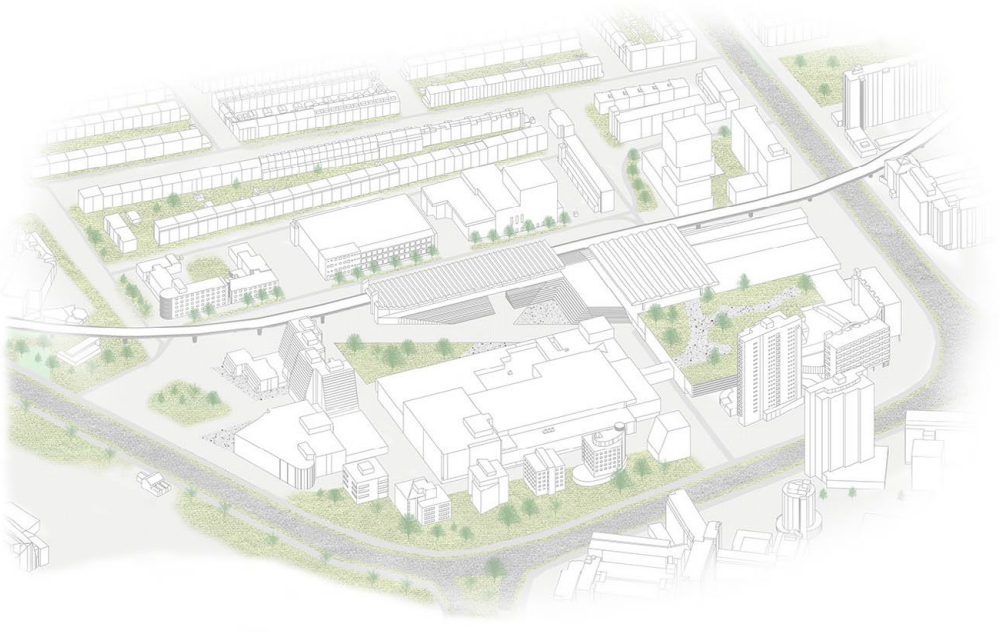


development

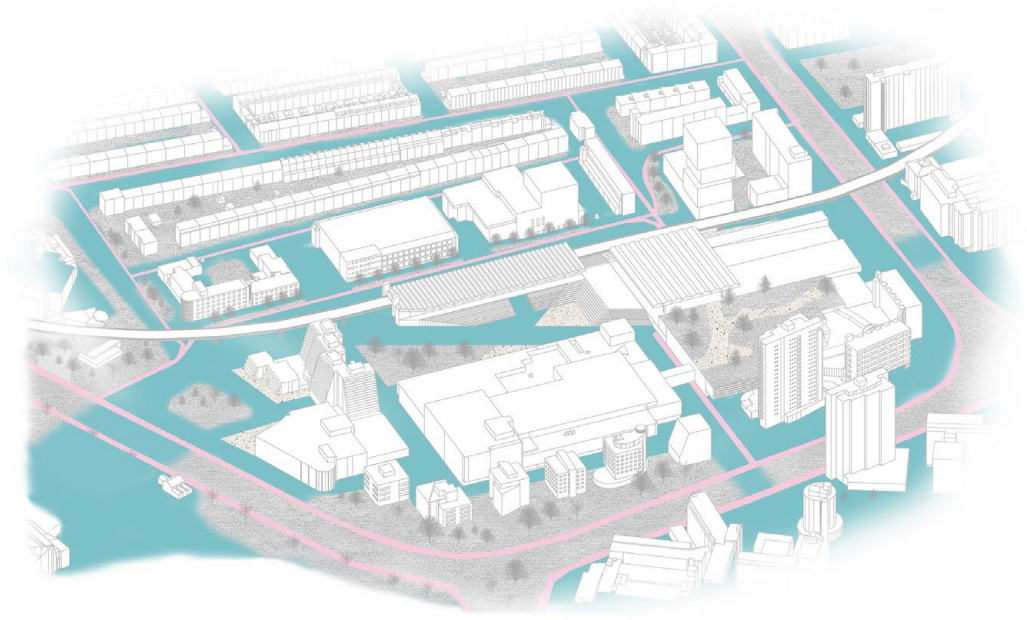
deconstruction



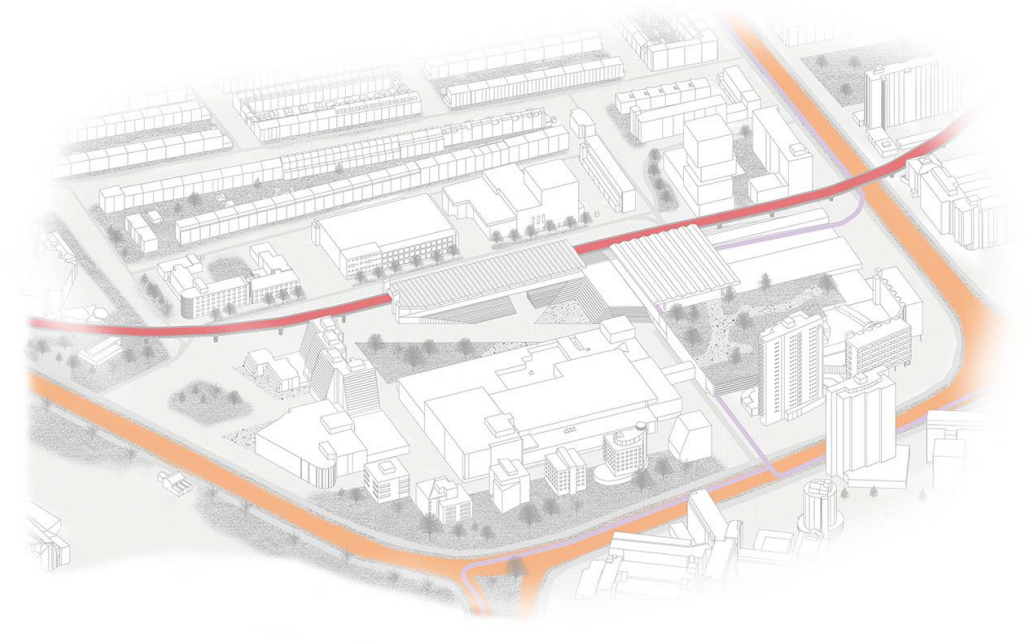
accessibility and visibility, program



greenery

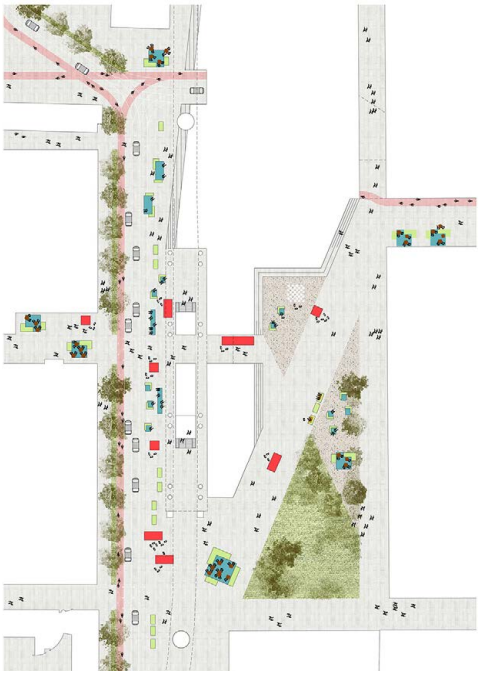


pedestrians and cyclists



car, metro and bus

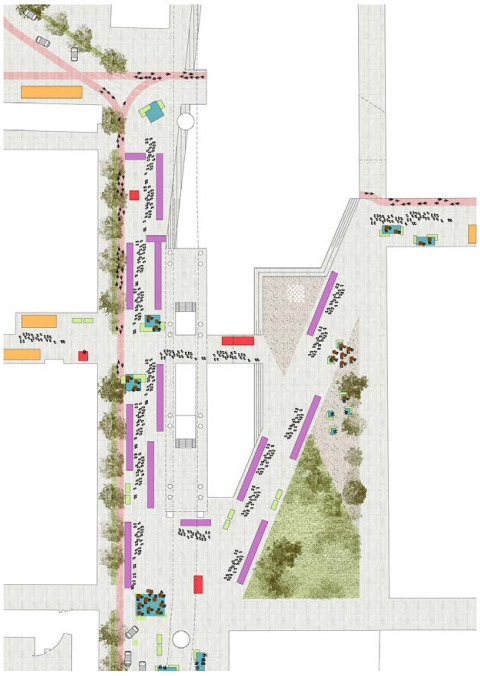




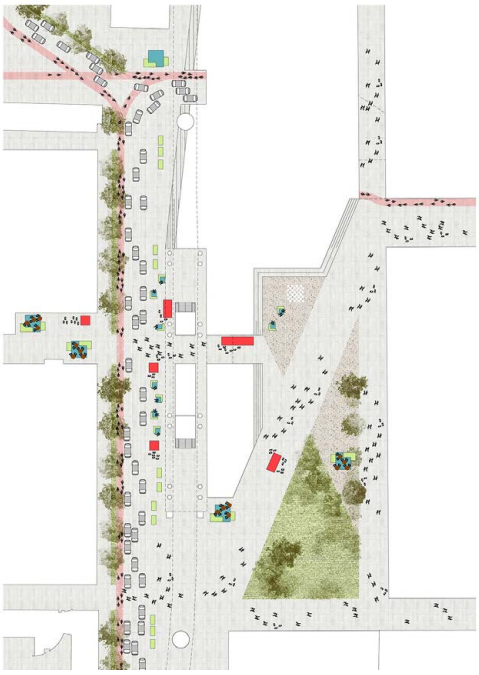
day time



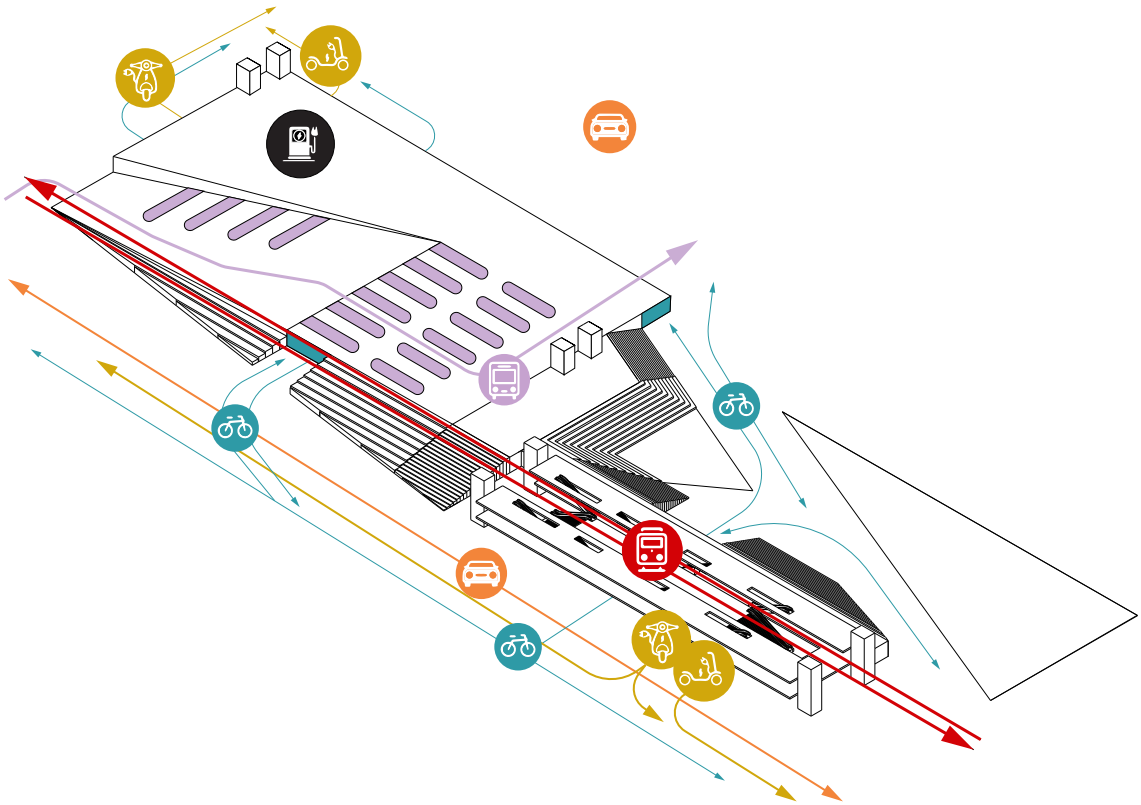
festival



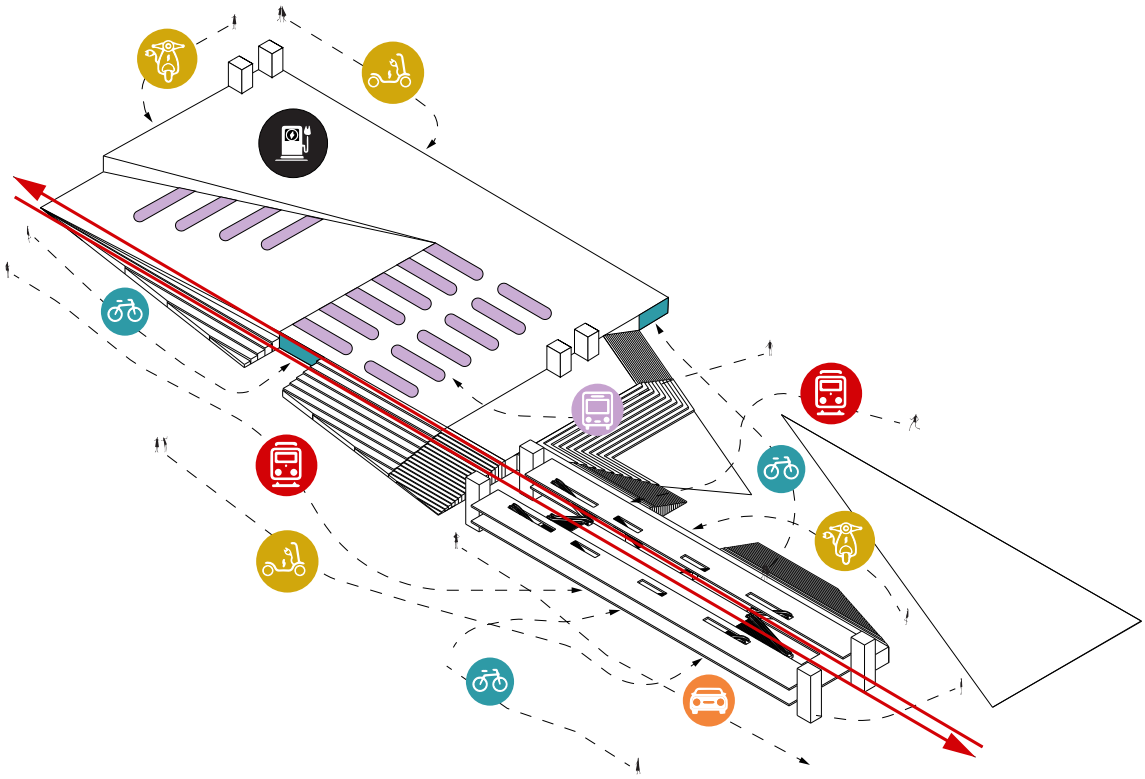
market



rush hour



Mobility flows at station



User adaptation

metro
bus
e-scooters
bicycle
car






FLIXBUS




Metro Lines
D/E

S

SLINGE
METRO STATION

Collective Research 286

Scenario 1
A New Mobility Hub 332

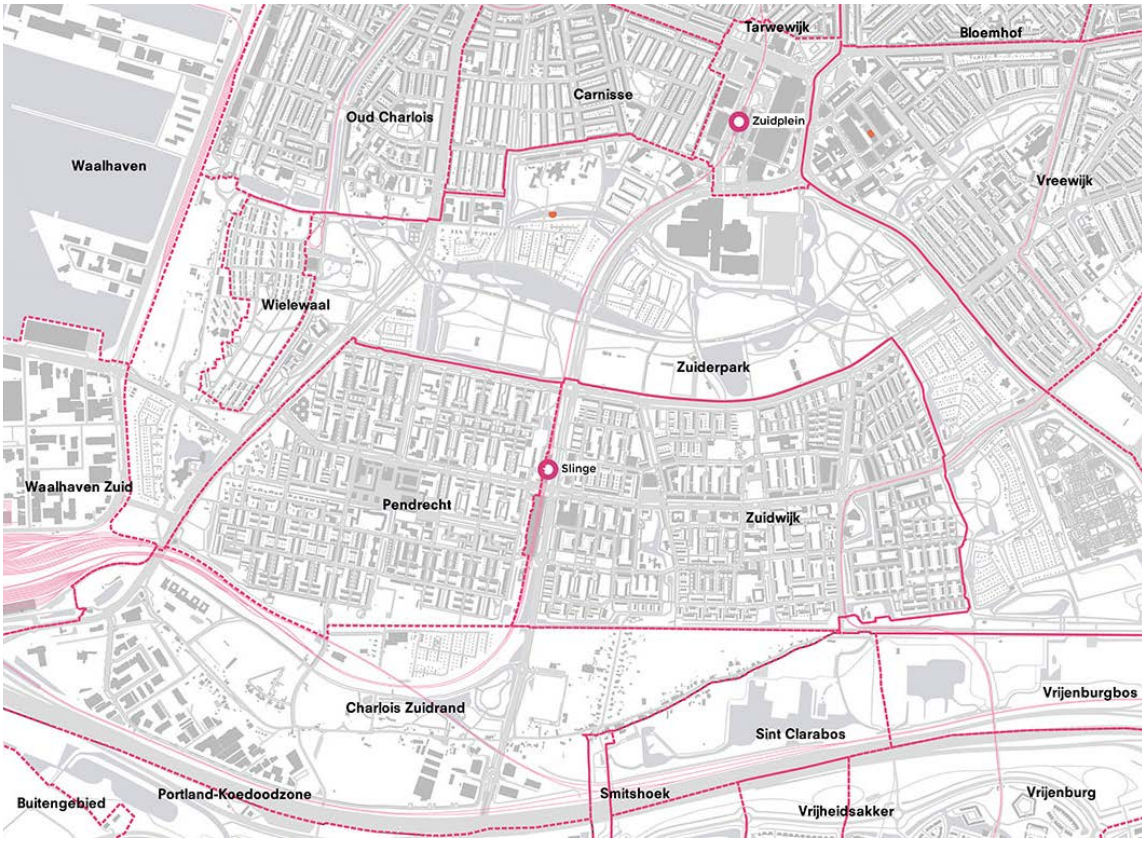
Scenario 2
Recharging Slinge 354

Adam Shehabuddin
Florentine Ris
Fruzsina Kovács
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Mats Kolmas
Melanie Waidler
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Mirko Cestari
Olivia Wong
Pelle Rademakers (Research)

INTRODUCTION

As the housing market is booming in Rotterdam, the city aims to add 5000 new dwellings to its housing stock (Gemeente Rotterdam, 2018). Rotterdam Zuid in particular is an area of interest, as there is large potential for increasing the current number of dwellings, while also contributing to a livelier living environment.

This research specifically focuses on the area around the metro station of Slinge in Rotterdam Zuid, which is the center point between the neighbourhoods Pendrecht and Zuidwijk. Currently, the metro lines D and E cross the Slinge station, which connects the area with the north and the south of Rotterdam. Together with its proximity to the highway, Slinge enjoys a high degree of connectivity and serves as a multimodal mobility hub. However, the mobility pressure created by the new developments and existing problems in the area can obstruct the success of Slinge in the future. This research elaborates on the history, the current situation and the future opportunities for Slinge.

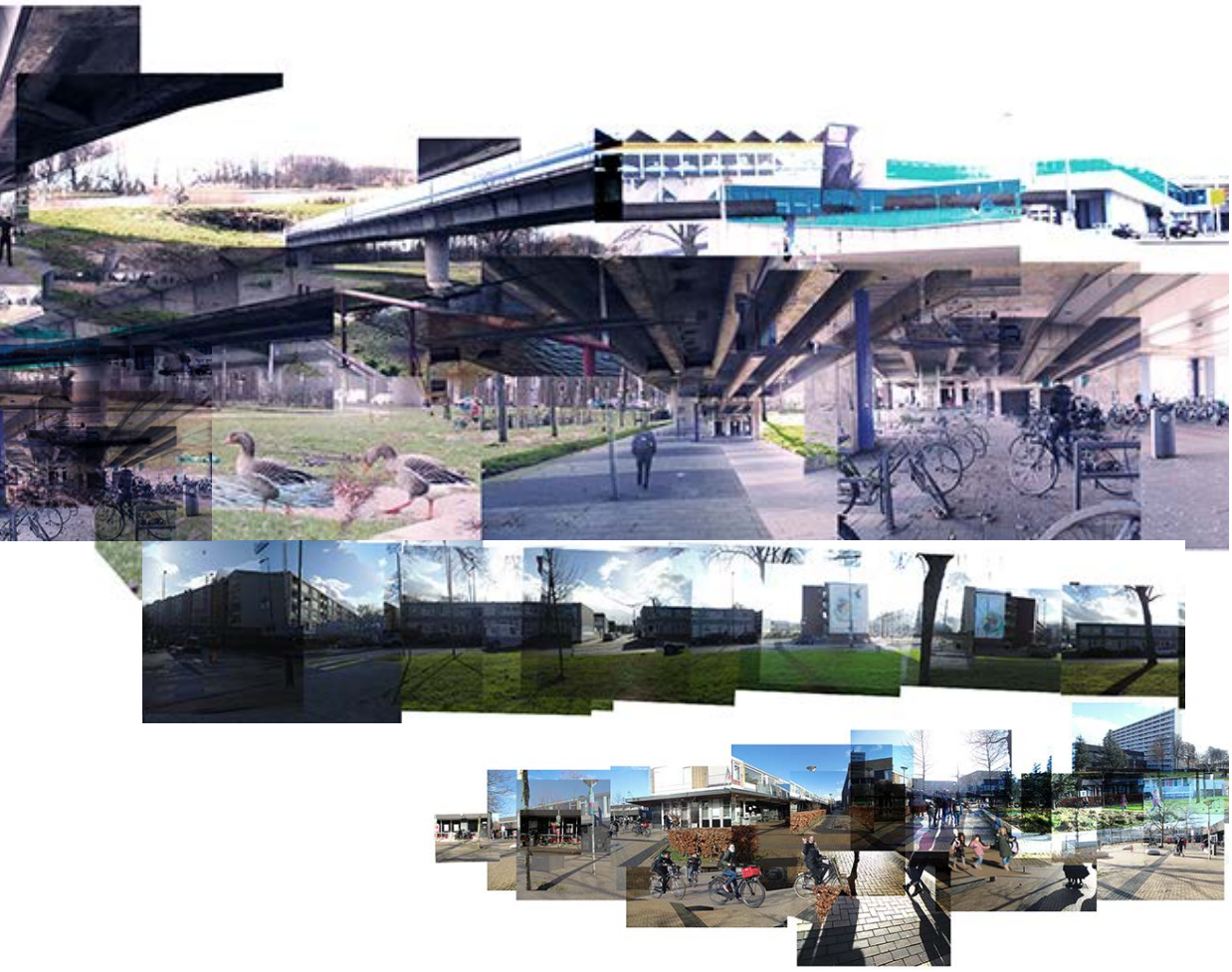


Station located between neighborhoods

NEIGHBORHOOD IDENTITY
First impressions



Photographic sequence collage of the aproximation to Slinge station and through the neighborhood



SLINGE TIMELINE

1950 1960 1970 1980 19



Pendrecht and Zuidwijk were built



Opening metro line from Rotterdam central station towards Zuidplein



The Akkers get adde
the most southern s



The line gets extended towards Hoogvliet



The metroline gets extended towards Slinge



New modern train design



The First Park+Ride opens in the Netherlands

Visual timeline Slinge, (2by4, 2009) (RET, 2018)



ed, until this day
top

2000

2010

2020

2030



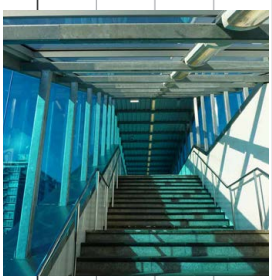
Randstadrail opens and Slinge is now connected to The Hague



New metro trains



Sedar Soares (13) was shot dead at Slinge



The station was renovated with a new transparent corridor designed by 2by4-Architects

MOBILITY
Metropolitan

To understand Slinge station's situation and its role in the public transportation system of Rotterdam, an overview of the main connections and station in the metropolitan region is investigated, on an "XXL scale".

This shows that Slinge is closely connected with a system of intercity stations. Which creates an efficient access to the larger area of Rotterdam, Delft and The Hague. Furthermore, due to its close proximity to the highway and P+R, many commuters opt for changing from car to the metro at Singe, from where they can easily reach Rotterdam Central and accordingly other stations in the region by train.

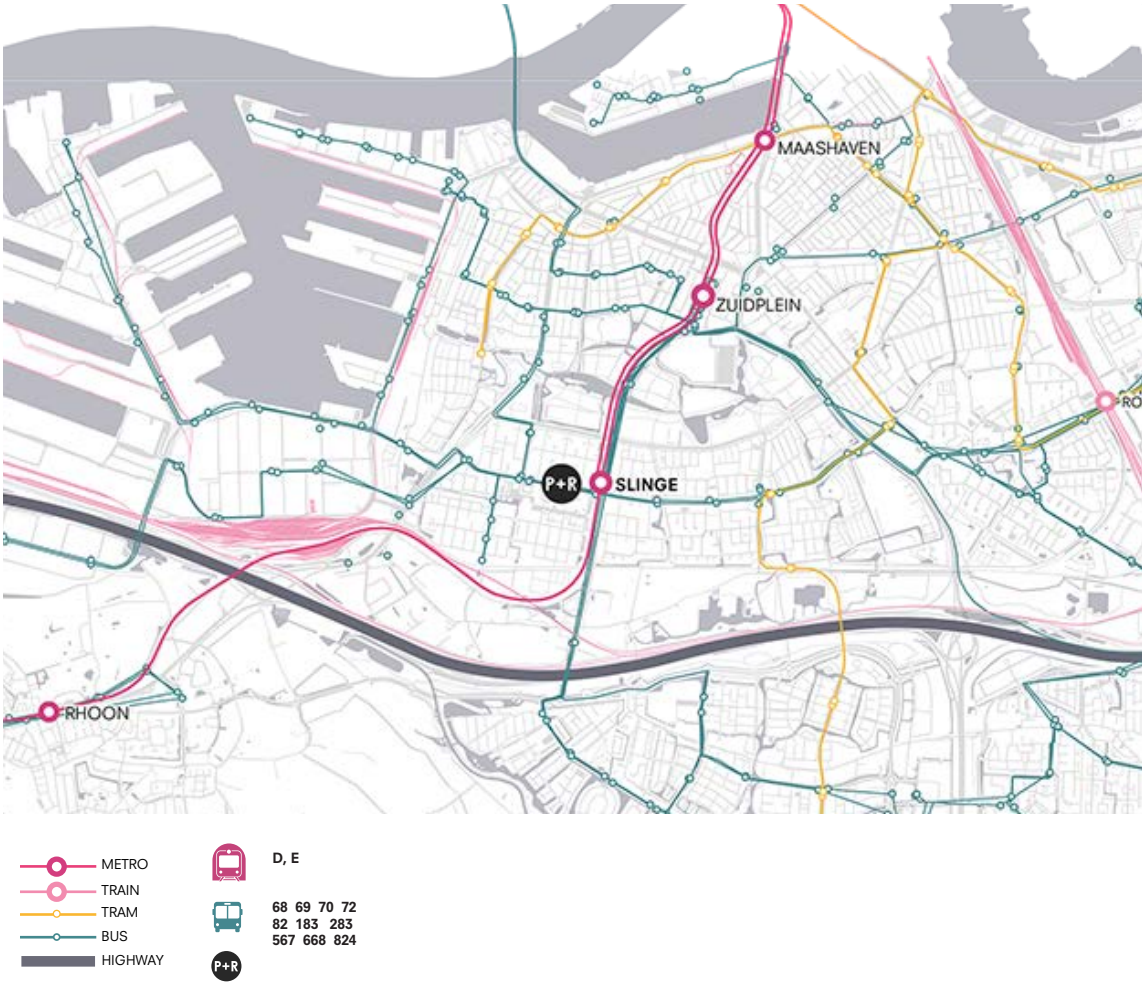
M-scale-connections
Slinge metro station has a good connection within the city of Rotterdam, being a part of the metro line E and D connecting the north and south of Rotterdam. Apart from the its role as a metro station, it also has an important bus stop, which is covering more of the west to east connections, making it also possible to access the train station of Rotterdam Lombardijen.

This map also illustrates the strategic position of Slinge as a Park and Ride location, as people from smaller villages situated south of Rotterdam can park their car next to the station in a Park and Ride (P+R) facility, and resume their travel by metro to the inner city.



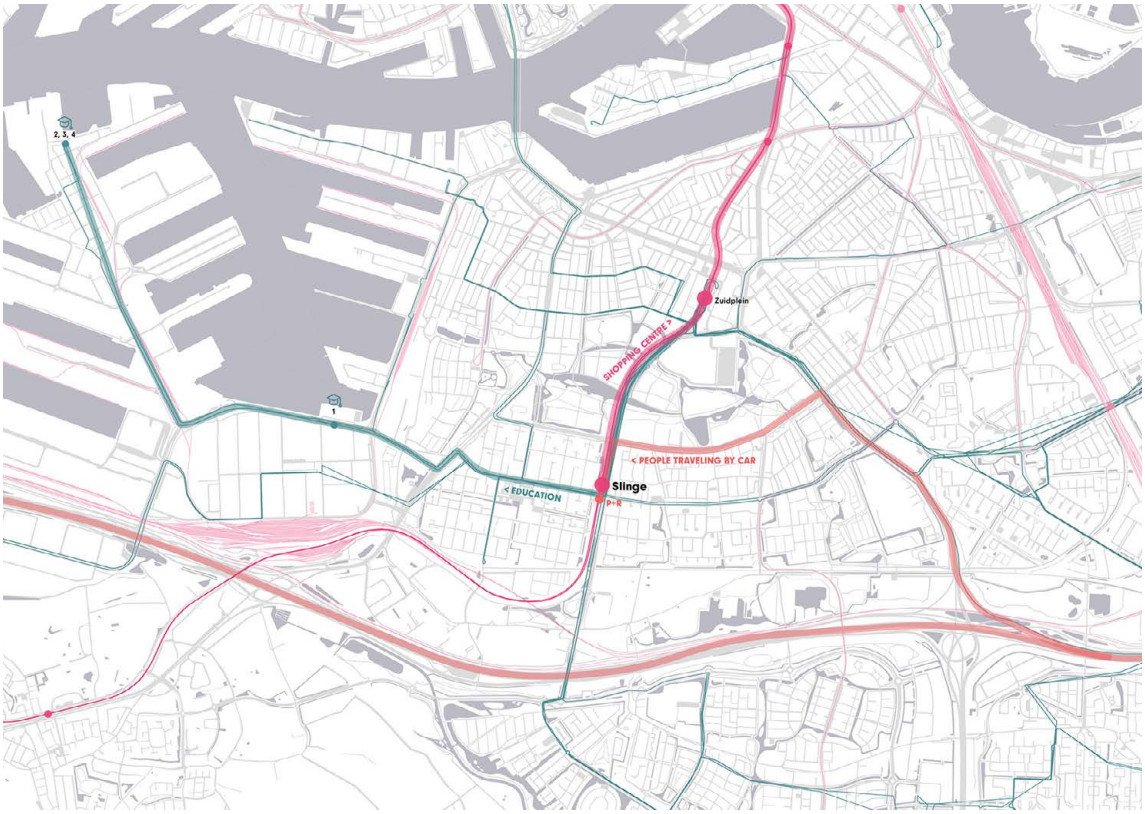
Main flows in metropolitan scale

MOBILITY
Current connections



Map of present transport connections of Slinge. Source: own elaboration with data from OMS and PDOK.

MOBILITY
Flows and users of the station



1 STC college
2 Rotterdam Academy of Architecture and Urban Design
3 Rotterdam University of Applied Sciences
4 Engineering College RDM

P+R Park and Ride

M-scale mobility flows in the area

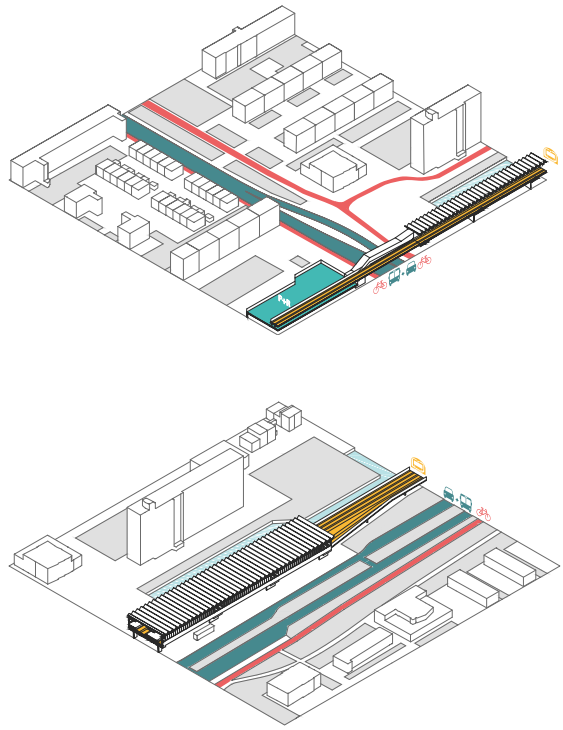
This map specifically focuses on the flows that occur around Slinge. Beside the P&R function, there is also a flow travelling from Slinge westwards, where there are multiple educational facilities. Moreover, people from Slinge also travel towards Zuidplein, as there is a larger availability of amenities and commercial areas.

Source: own elaboration with data from OMS and PDOK.

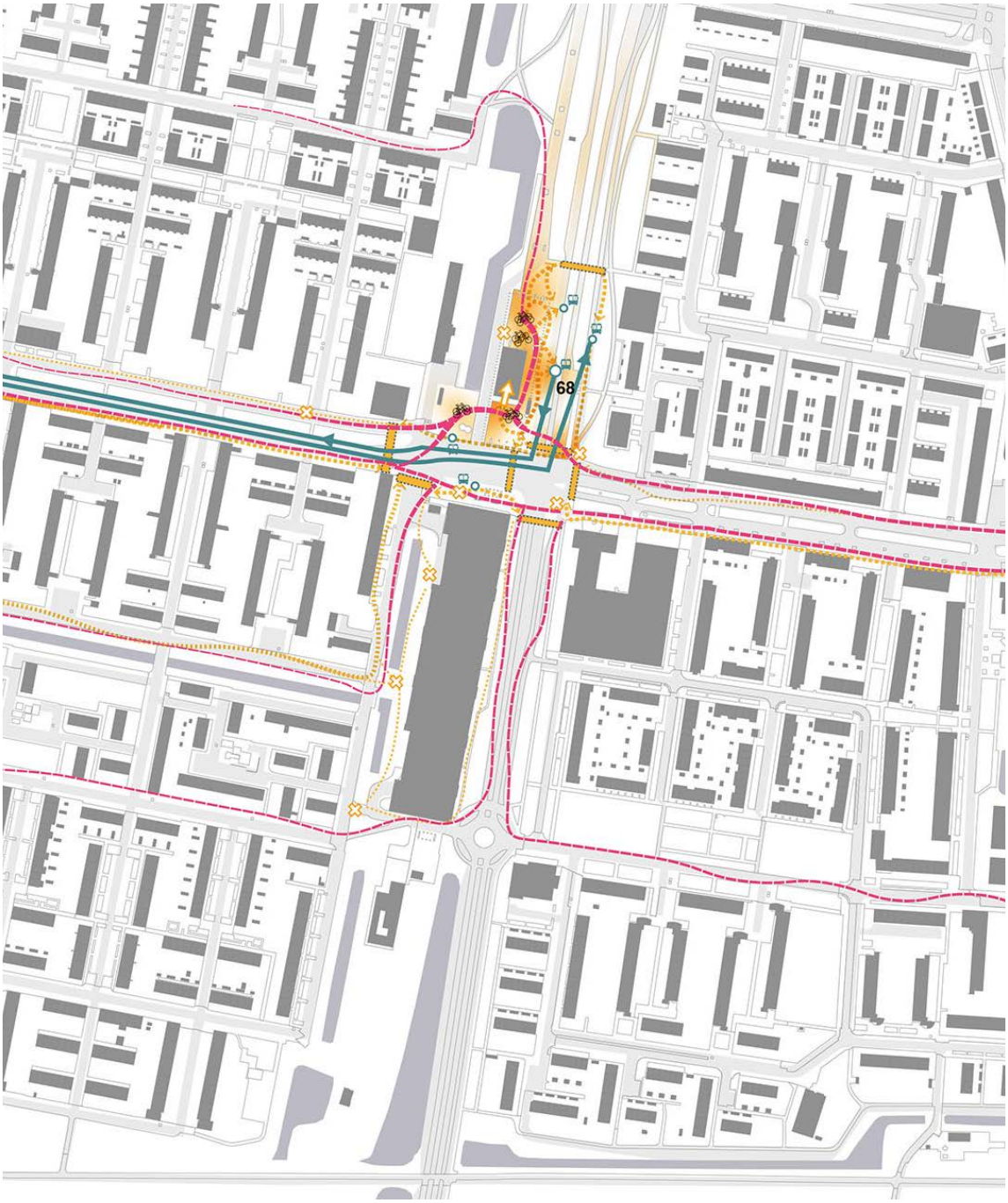
MOBILITY
Flows and users of the station

The station currently acts as a quiet regional stop within a residential neighborhood. While there are not many businesses and activities around this station, the multiple traffic flows give the station the potential to become a hub. For this to happen, the connection between different elements needs to be made better and safer.
Considering that it is a space where multiple modes of transport convene, it also creates a cluttered and unclear area. During rush hour, there are large groups of people clustered around the bus stops, while obstructing the rest of the pedestrianised area, and people will exit busses and take the shortest route to their destination, creating dangerous situations with the close proximity of cars that are arriving at the red lights with a high speed.

Also, aside from a kebab store and a kiosk, there are large blind spots and underutilised spaces around the station, that could negatively affect the feeling of safety at the station in the evening.



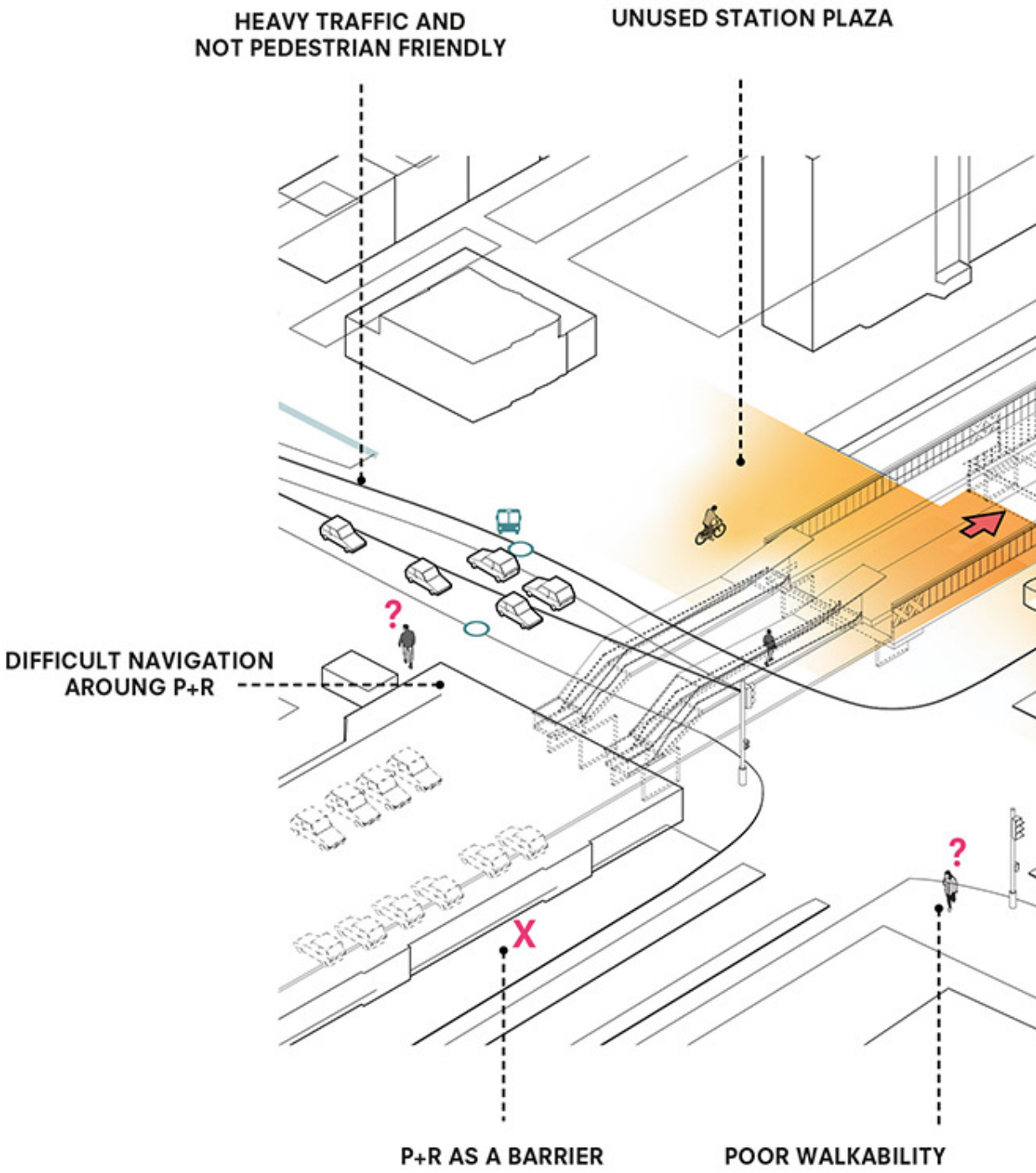
Source: own elaboration with data from OMS and PDOK.

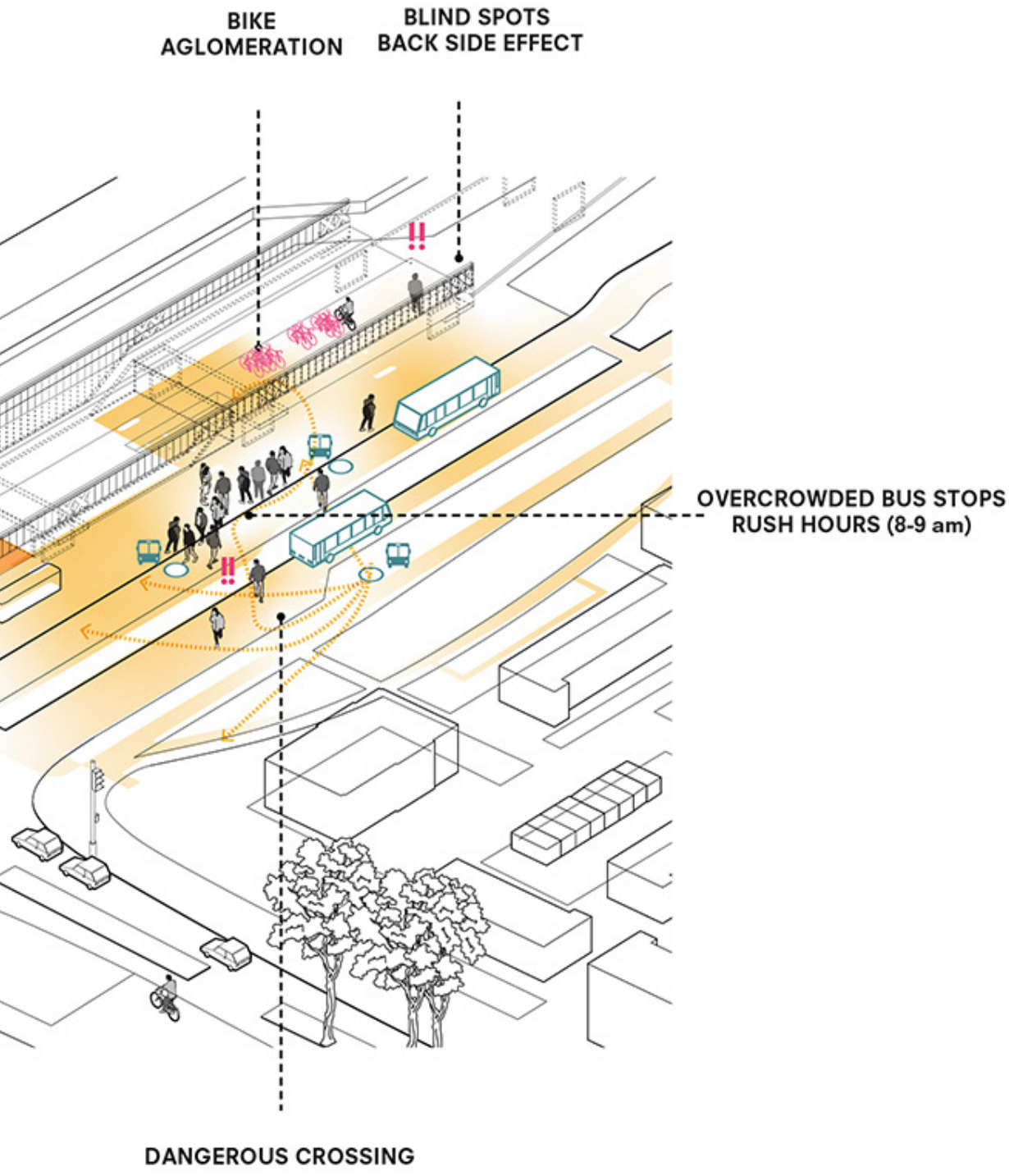


Pedestrian and bike flowa to the station. Source: own elaboration

BIKE PARKING SPOT

MOBILITY
Problems of the station




BIKE
AGLOMERATION
BLIND SPOTS
BACK SIDE EFFECT
OVERCROWDED BUS STOPS
RUSH HOURS (8-9 am)
DANGEROUS CROSSING

MOBILITY
Future plans

In the next 20 years, there will be many infrastructural changes around the Slinge station, being part of a bigger development strategy all around the city of Rotterdam.

Every station will have an assigned role in the network. Hart van Zuid (Zuidplein) will be the "Heart of the South", it will be the major commercial area with a P+B role. A new connection between the planned Feyenoord train station and Rotterdam Centraal will be made, making Zuidplein the biggest exchange station. In comparison, the Urban Vision assigns Slinge the role of the P+R station, being the main changing point from car to public transport, alongside Waalhaven (Gemeente Rotterdam, 2018).



The frequency of the metro will be increased, there will be 24 metros every hour. A new station - Waalhaven - will be made south-west from Slinge, and the metroline E will be extended till this station.



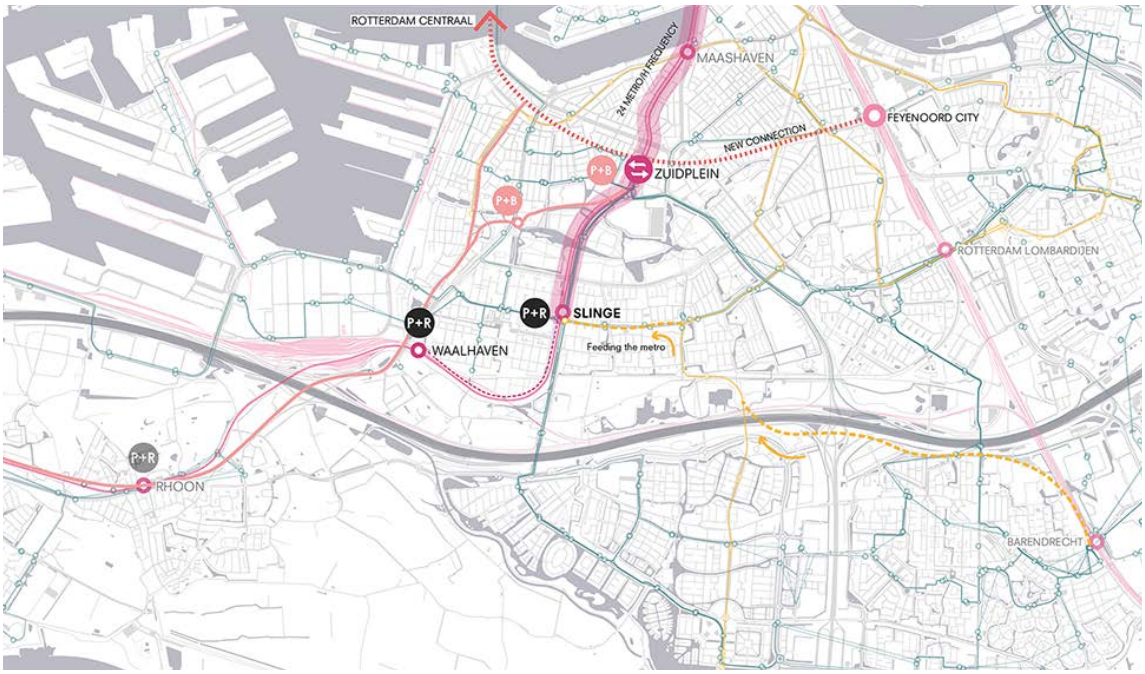
The existing tram lines are too long, and their capacity is limited. The reduction of these lines, and their connection with the major metro- and train stations in the southern region is planned, redirecting the main traffic flow to these stations, "feeding" the metro.



The development of the soft mobility is also discussed. New bikelanes will be installed near the P+B stations and the Waalhaven area.



Slinge has an existing P+R function with a parking lot. The Urban Vision keeps this role, and gives a similar identity to the other two stations south from Slinge (Waalhaven and Rhoon).



Future transportational system according to the Rotterdam Urban Vision

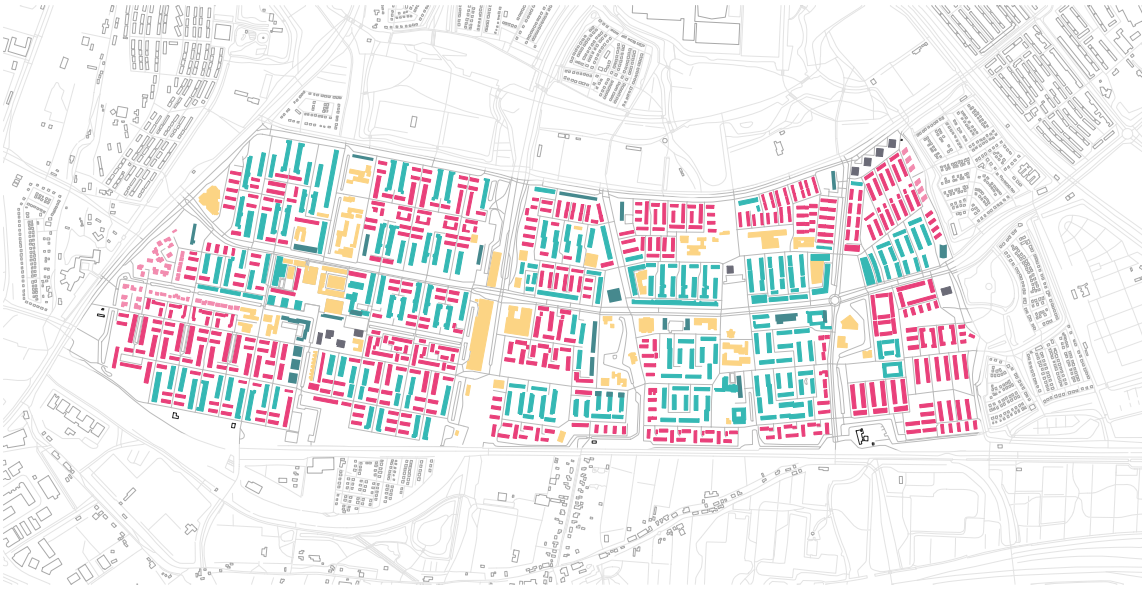
MORPHOLOGY
Building typologies

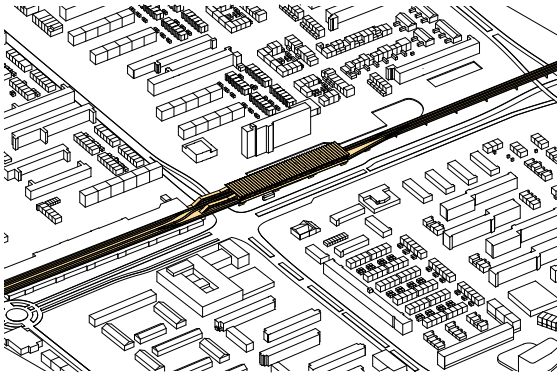
Zooming into the Slinge area, one notices the distinction in the typology of the dwellings. Though built in the same era and according to the Garden City concept, the typology differs greatly. Pendrecht is characterised by housing clusters that were built to create a typology mix, with the idea in mind to create a mix of residents with different incomes.

On the east side, which is Zuidwijk, you can see that dwellings of the same typology are often clustered, so there is not a mix similar to Pendrecht. Townhouses are mostly positioned on the borders of the neighbourhoods, while the in-line, mid-rise buildings are concentrated in the center of the neighbourhood.

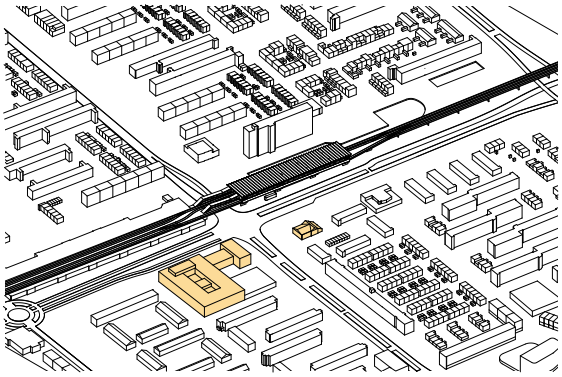
Residential:
- Tower
- In line condo (more than 5 levels)
- In line condo (max 5 levels)
- Townhouse
- Single or double house

Non residential:
- Low-rise

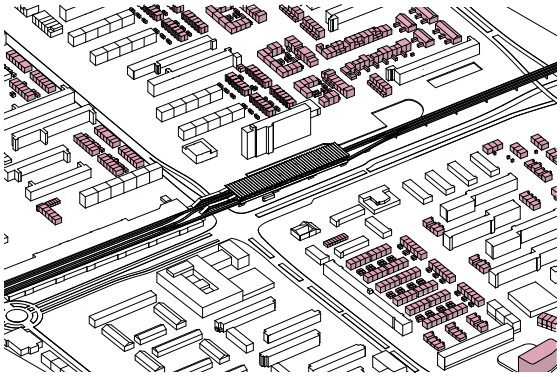




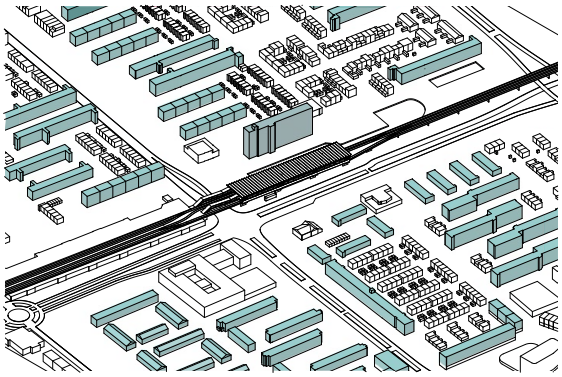
Transportation



Industry and office



Residential, Rowhouses



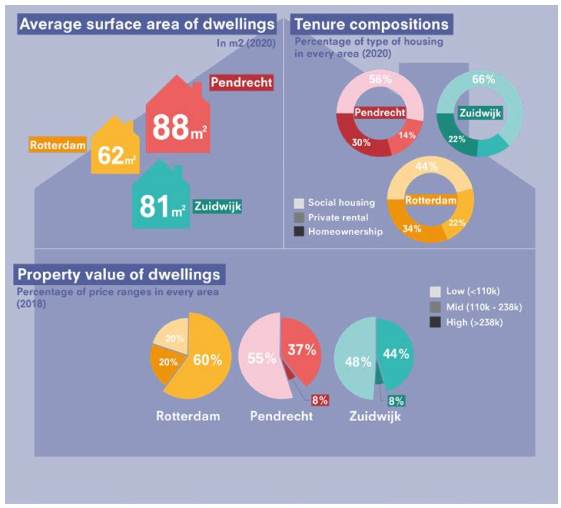
Residential, Apartment blocks

HOUSING

During the reconstruction period after the Second World War, Rotterdam looked to the southern outskirts of the city to build social housing to accommodate the rapidly growing population. This expansion was labeled as the 'Southern Garden Cities'. Pendrecht and Zuidwijk were the first neighbourhoods of this plan that were built during the 1950s (Architectuurgids, n.d.).



Architect Lotte Stam-Beese was responsible for Pendrecht. Stam-Beese's design can be categorised as part of the 'Nieuwe Bouwen' movement. Typical for this movement was the focus on functionalism, modular construction and an abundance of green space. Her distinctive contribution to Pendrecht was the creation of the 'wooneenheid': a set of 90 dwellings, distributed in housing blocks that varied from single family row homes to multi-family stacked homes which were centered around communal gardens (Architectuurgids, n.d.). Her aim was to create a neighbourhood in which residents from all different population groups could live next to each other (Oosterhof, n.d.). Architect Willem van Tijen was involved in the design of Zuidwijk. Van Tijen's work was also part of the 'Nieuwe Bouwen' movement. He is mainly known for his large contribution to public housing in the Netherlands through his design of high-rise multi-family homes, which was revolutionary in the 1950s. Gerrit Rietveld also contributed to Zuidwijk, through his addition of low-rise multi-family housing blocks.



However, similar to other modernist neighbourhoods like the Bijlmer in Amsterdam, Zuidwijk and Pendrecht slowly fell into despair (Oosterhof, n.d.). Due to the outflux of the middle class residents, and an influx of lower income residents, the neighbourhoods have become a less desirable place to live.

The ambition to create more public housing still remains to this day, as over 50 percent of dwellings in both neighbourhoods are social housing. In comparison to Rotterdam's average, this is over 10% more.

In Zuidwijk and Pendrecht, it is apparent that the share of dwellings with a high property value is significantly lower, while the share of dwellings with a low property value is higher when compared to the average of Rotterdam. This can also be attributed to the high share of social housing in the neighbourhoods.

Moreover, Pendrecht and Zuidwijk on average have a larger number of square meters per dwelling when compared to the whole of Rotterdam. At the same time, the population density in the neighbourhoods is over 3 times as dense as the average of Rotterdam.



1900

Before the creation of the neighbourhoods of Pendrecht and Zuidwijk, this area mainly was rural and belonged to the city of Rhoon.



1955

After World War II, the city of Rotterdam was in need of housing, as the city was bombed and the population was growing rapidly. To accommodate this demand, the two neighbourhoods of Pendrecht and Zuidwijk were built.



1982

In the 1980s, the metro station and tracks are visible, as the Slinge station was added after 1970. The area further developed into the neighbourhoods we know today.



2020

In comparison with the 1980s, Pendrecht and Zuidwijk have remained quite similar in terms of morphology

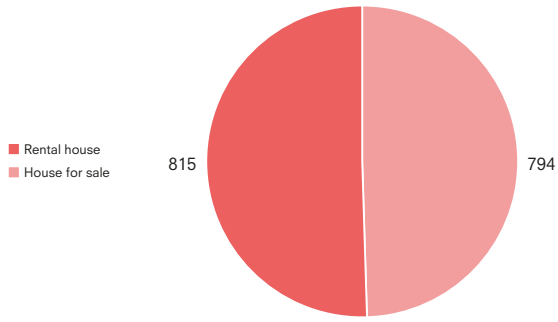
Author: Stadsarchief Rotterdam
Source: https://www.rotterdaminkaart.nl/?overlayBar=%2Fkaarten%2Fhistorische-kaarten%2F&overlay=%2Fkaarten%2Fhistorische-kaarten%2F1850-1900%2F

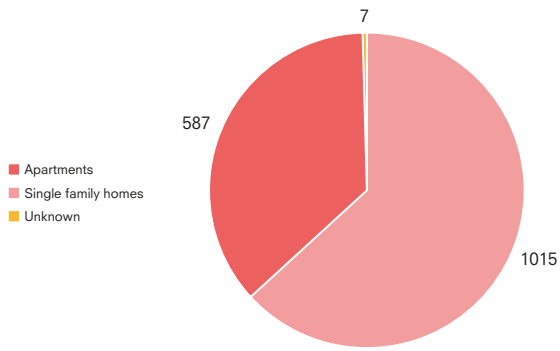
HOUSING
Future plans

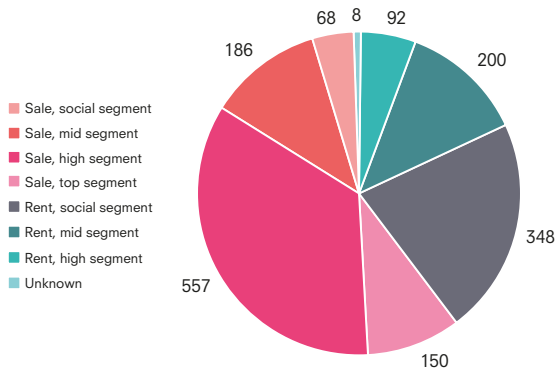
In the Slinge-Hart van Zuid-Waalhaven area many housing developments are taking place between 2021 and 2030. In total, approximately 1609 homes will be added in the coming years, not counting the Waalhaven area's 3000 dwellings (Bouwen aan Rotterdam, 2022).

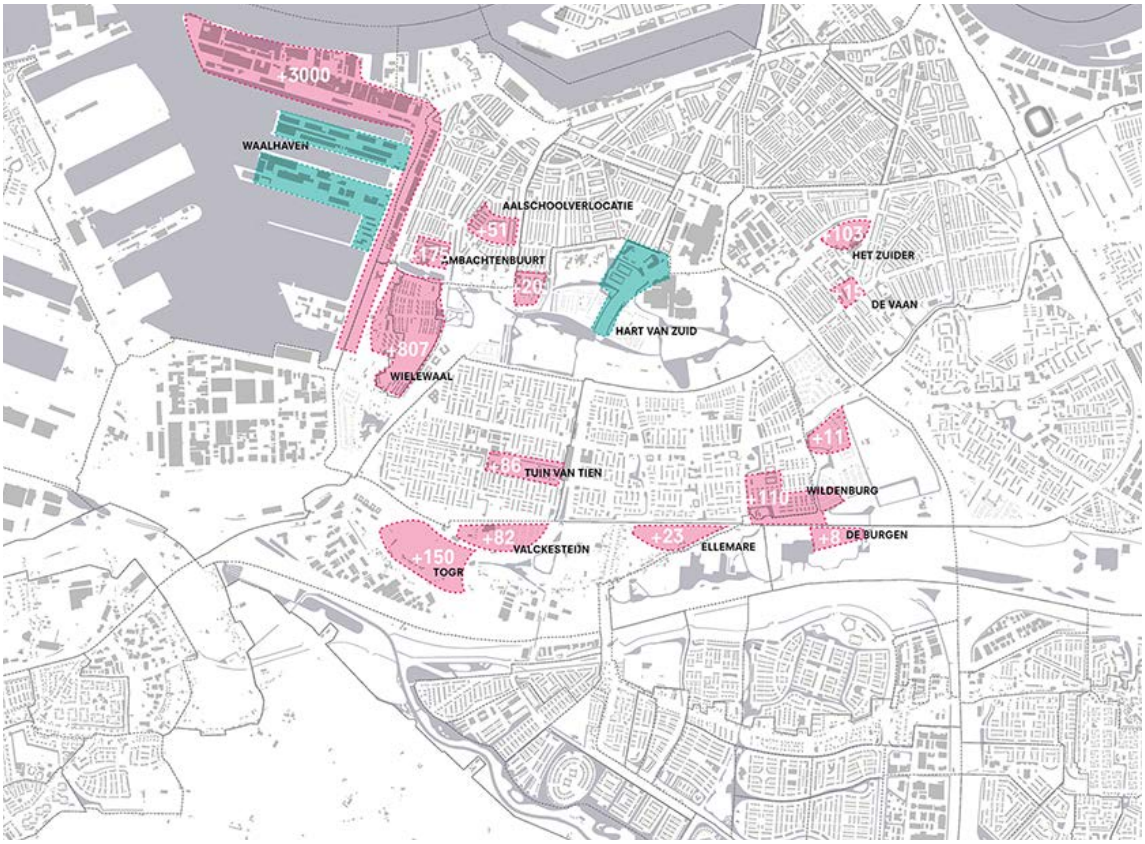
The ratio of owner-occupied and rental property is the same. Houses for sale in the high segment comprise the largest share in terms of the type of housing that is being built, while houses for sale in the social segment comprise the smallest share.
The share of single family homes is greater than the share of apartments.
The Waalhaven area will also be developed into a new cultural centrum, while Hart van Zuid will not only have a cultural, but also a commercial role (Bouwen aan Rotterdam, 2022).

With all the developments happening in the area, it is important to consider the effect of gentrification. Finding a balance between the new habitants and the existing residents, while creating new homes and amenities is crucial in the future remodeling process of the Slinge-area.









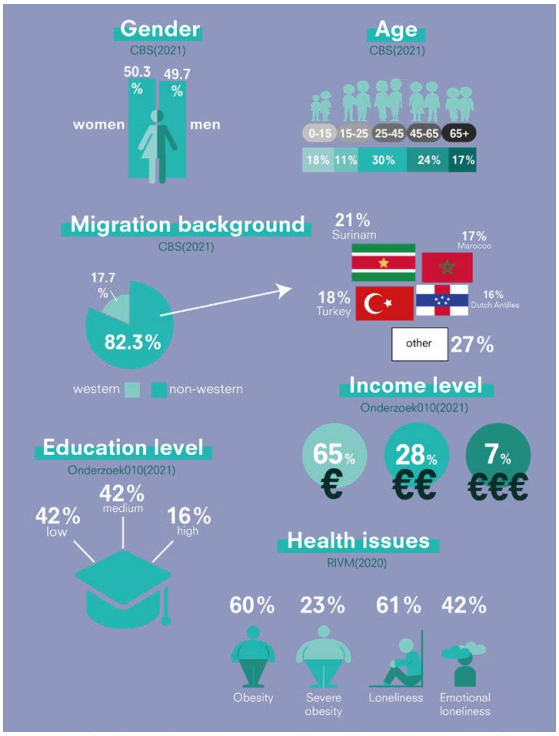
Developments in the area - residential buildings in pink, commercial developments in blue

DEMOGRAPHICS

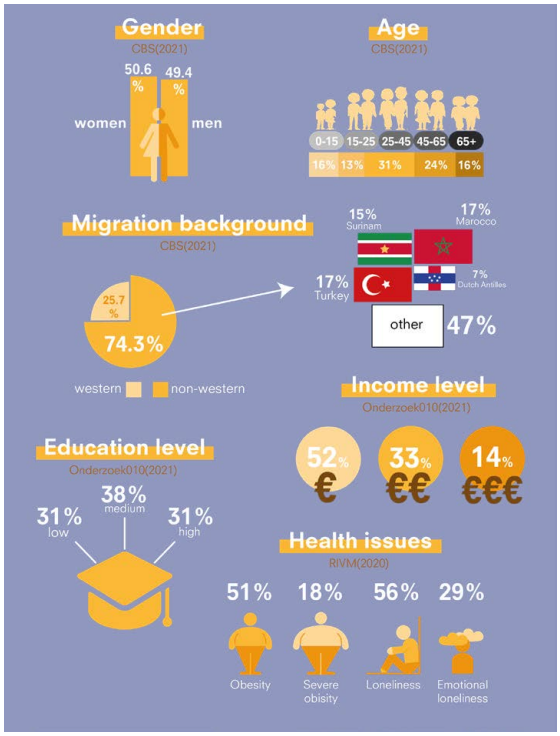
The developments in the South of Rotterdam have brought several ‘generations’ of inhabitants. With the first generations being farmers from surrounding areas who started working on the docks and left Rotterdam South when they climbed higher on the social ladder, which created space for the migrant workers who can be identified as the second generation (Steenhuis, 2019). This transition can still be seen in the neighbourhoods Pendrecht and Zuidwijk.

Demographically, the neighbourhoods are not very different from each other and are almost identical. The current social character of the neighbourhoods can be defined as non-western and low to medium educated. Striking is the high amount of inhabitants with a low income in both areas. Around 60 to 65 percent of the inhabitants the region are within the 40 percent lowest income groups within The Netherlands. Another remarkable difference with both municipal and national percentages is the level of education. The neighbourhood has an excessively high amount of low-educated people and the number of people who are highly educated is strongly underrepresented.

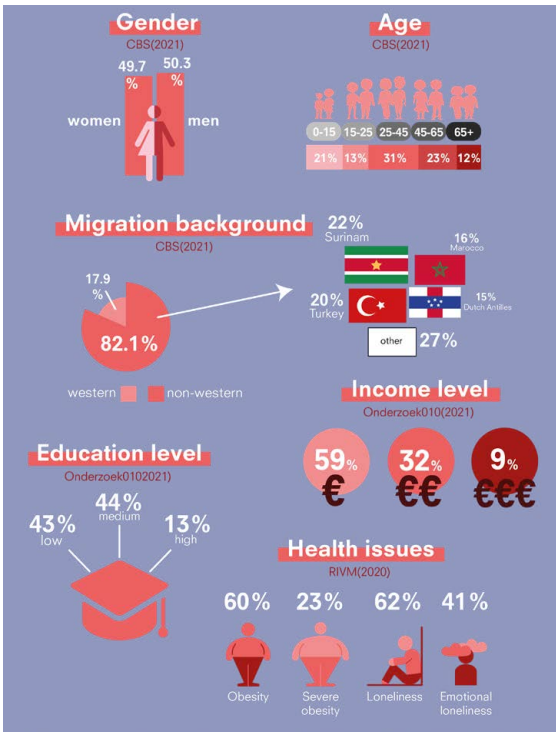
Within the group of people with a migration background, the statistics show a large share of inhabitants with a non-western background. In both neighbourhoods there are mainly people with a background from Suriname and Turkey.



Zuidwijk



Rotterdam



Pendrecht

FUNCTIONS

The Slinge area is a primarily residential area (shown in the pink color on the map on the right side).

In the West, there still are wharfs and other industrial activities, remnants of the city's industrial past (and present) function. These areas are often underutilised, there are old traintracks and other artifacts left behind.

Regarding the green spaces, the Slinge area is enclosed by two large green spaces on the north and south side. There are allotment gardens in the Zuiderpark, and also on the east and south side of the area.

If we concentrate on the neighbourhoods next to the station, we can find services, schools and other amenities clustered around the local hotspots (Plein 1953, Asterlo Zuidwijk).

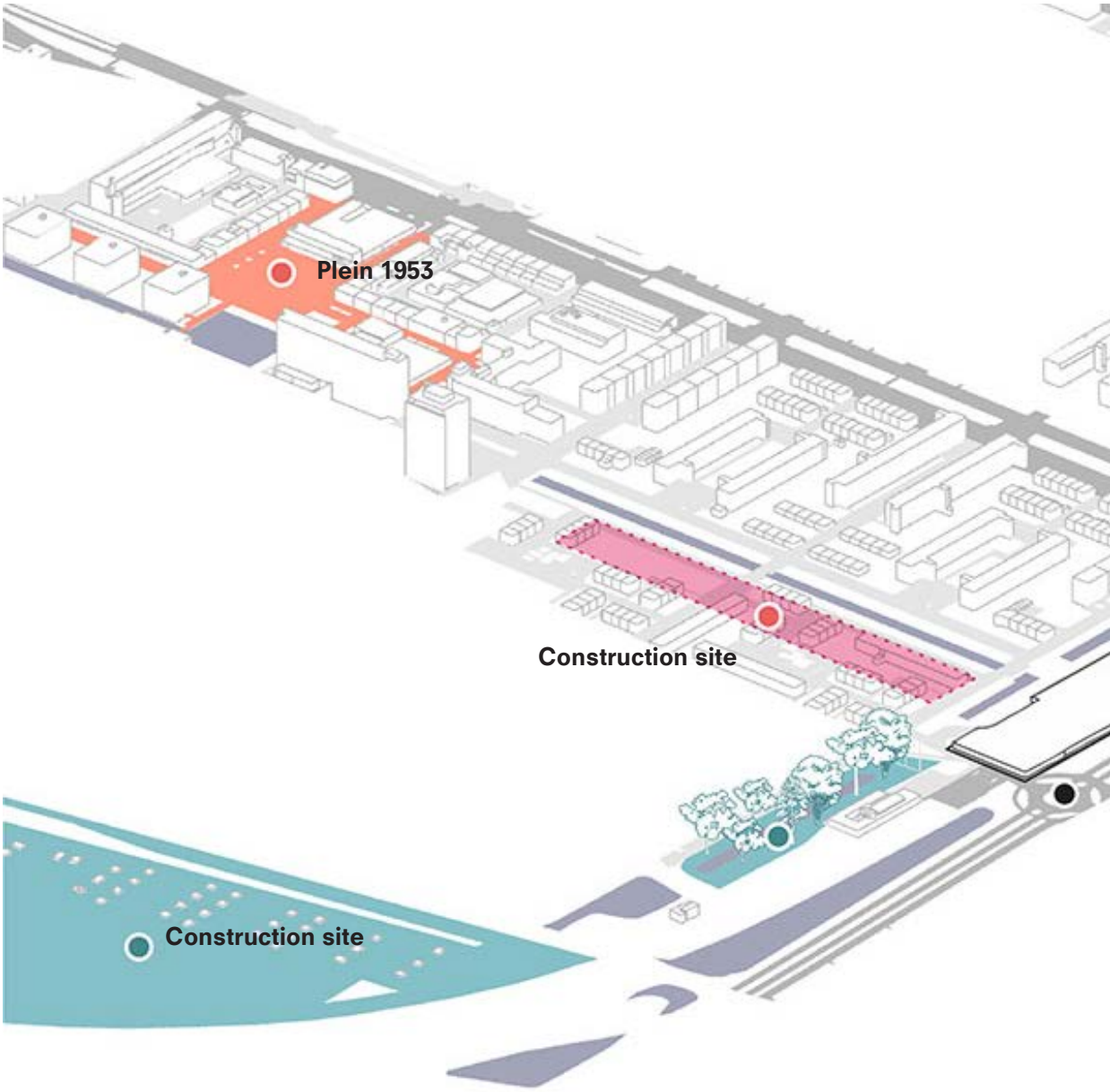


Land use map, green space map.

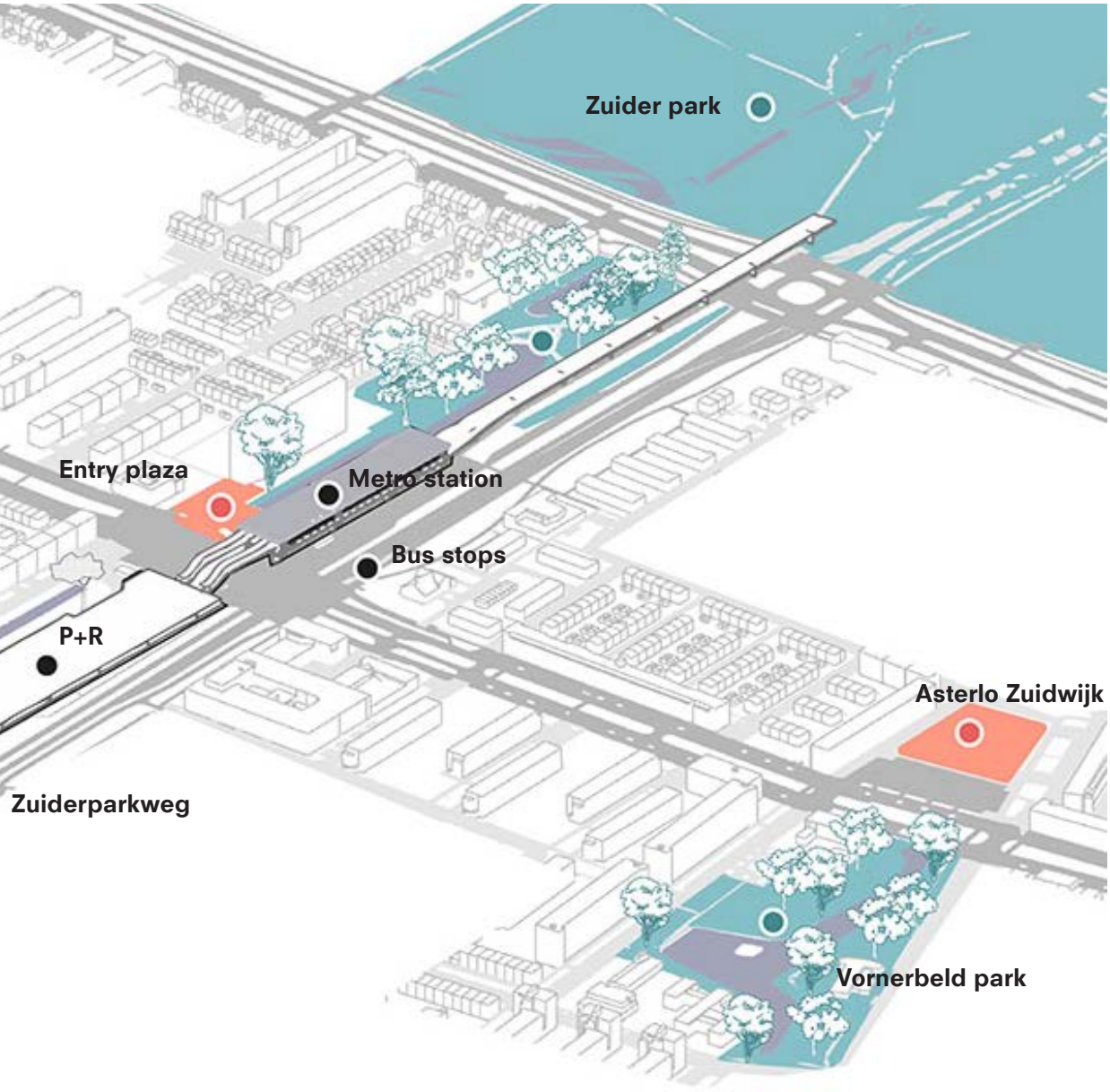


Building fuctions: Non-residential (Top) Overall (Bottom)

SPATIAL QUALITY
Important spaces around the station



Identity axonometric. Source: own elaboration


Zuider park
Entry plaza
Metro station
Bus stops
P+R
Asterlo Zuidwijk
Zuiderparkweg
Vornerbeld park

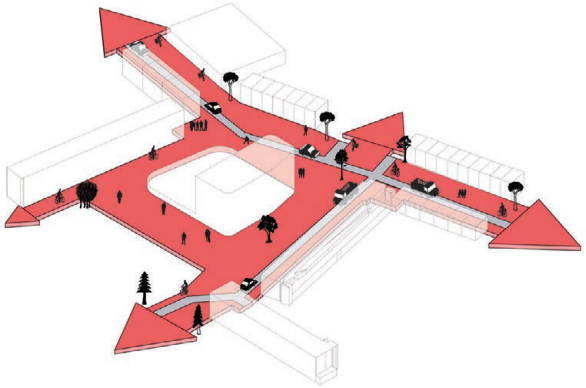
SPATIAL QUALITY

Public space - commercial clusters

Public space can be observed in three main areas - around Slinge Metro Station, at Plein 1953, and at Asterlo Zuidwijk. Around Slinge metro station, the public space serves as a transitory space for commuters transferring between various modes of transport. However, at Plein 1953 and Asterlo Zuidwijk, the main activity generators are the shops and retail amenities available, but they are not well connected to Slinge Metro Station through pedestrian and cycling corridors.

Plein 1953 consists of two pedestrian- and bicycle-only linear axes that cross each other along the main open plaza. This forms the central node of pedestrian activity, with many residents gathering and moving through the space. The public space at Asterlo Zuidwijk is centred around the recently constructed mixed-use development of Asterlo Nieuwbouw. Unlike Plein 1953, vehicular through traffic is permitted alongside pedestrian and bicycle access.

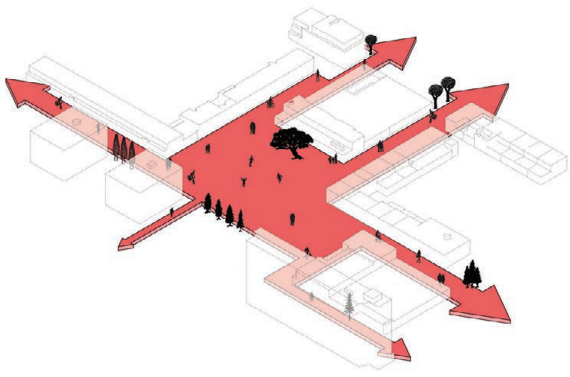




Asterlo Zuidwijk

Identity axonometric. Source: own elaboration





Plein 1953

Identity axonometric. Source: own elaboration

SPATIAL QUALITY
Green spaces and parks

Slinge has a largely modernist character to its architecture and spatial quality, with many residential buildings of a low-rise typology. Given its history of development in the 1960's and 70's, large green areas were reserved between buildings.This relatively wide spacing creates a patchwork of green areas in Slinge. Much of this space does not contain any specific programming, but instead consists of grass surfaces planted with trees and shrubs. From our field observations, we noticed that although these spaces seem to be relatively well maintained, they were largely underutilised since most people were unable to easily use these spaces to socialise, play, or rest, moreover in some cases they also lack social control. There is also no coherent flow between these void spaces throughout Slinge.

In Zuidwijk, there is a small neighbourhood park that is adjacent to Asterlo Zuidwijk. This park provides one of the better options for residents to enjoy the outdoors, with benches and a walking path surrounding the pond.

Lastly, the entire Slinge area sits south of Zuiderpark, which is a large regional park for Slinge as well as Hart van Zuid. We noticed that despite its proximity to Slinge, pedestrian access was limited as the sidewalks beneath the metro tracks were not paved.

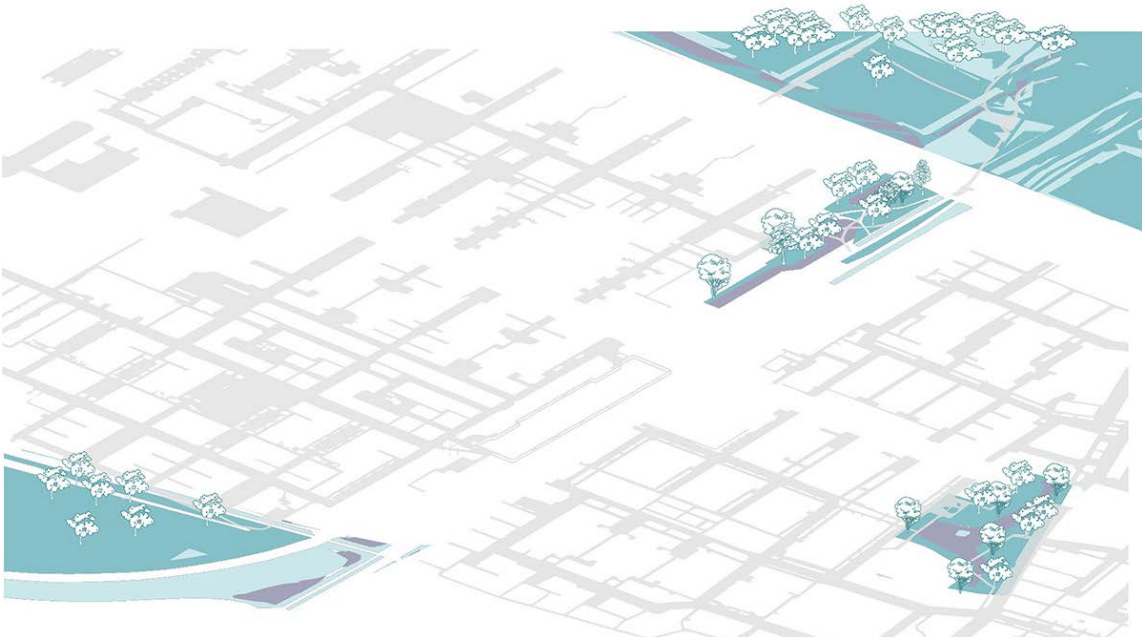








Secondary greenery around buildings, most of it unused and without function

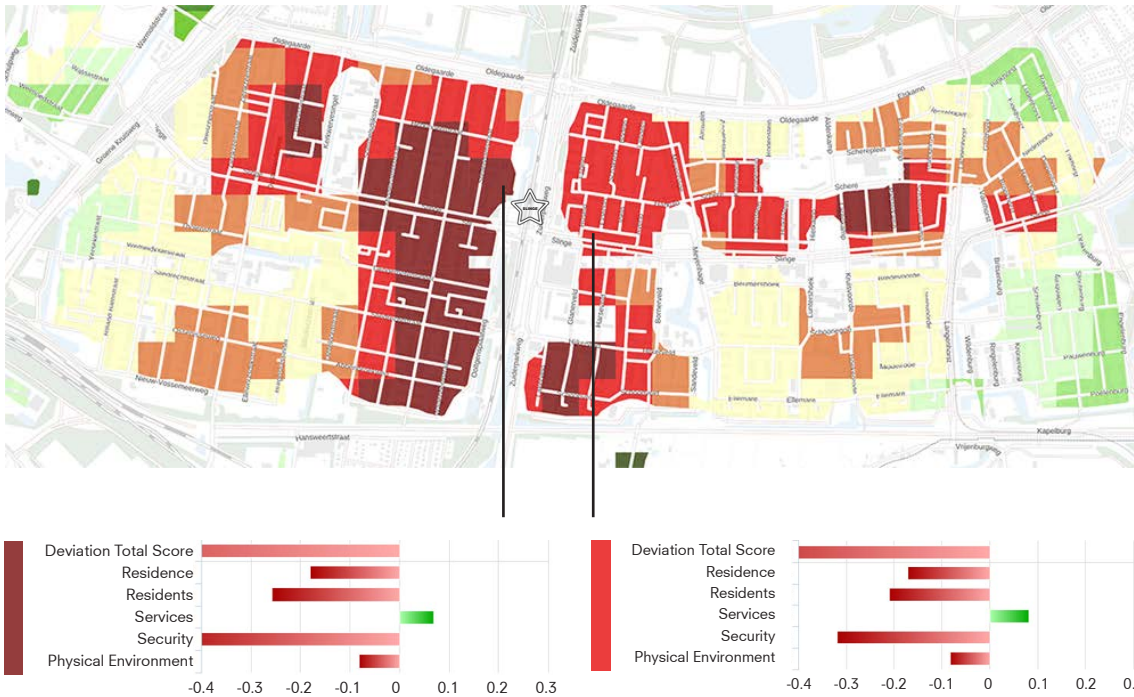


Main green areas and parks around the station

LIVEABILITY
Zuidwijk & Pendrecht

The liveability of a neighborhood or area is defined as the extent to which the living environment corresponds to the conditions and needs set to humans. The liveability level is determened out of one hundred indicators (see appendix), divided over the five categories relating to Residences, Residents, Serves, Security and Physical Environment. These hundred indicators originate from extensive statistical research from the government, and are justified to be the guidelines for estimating liveability in an area.

All indicators for each category receive a score (RIGO Research & Advies, 2014), and their average determine the categories' score. The deviation to the countries average liveability standards will determine the level of liveability on the scale ranging from 'Extremely Unsatisfactory' to 'Excellent'. Around the Slinge station there are two neighborhoods directly located, Zuidwijk on the West and Pendrecht on the East. In the Liveabilty map we can see that the areas directly facing the station score 'extremely unsatisfactory' and 'very unsatisfactory'. The areas are scoring especially low on liveability in terms of 'Security' and 'Residents', and rather positive on 'Services' of the area.



Liveability

Author: RIGO Research & Advies
Source: https://doc.leefbaarometer.nl/resources

SAFETY
Criminal incidents at Slinge

In 2003 a schoolboy, Sedar Soares, was shot after throwing a snowball on the P&R platform at the Slinge station. But even since the increase in safety measurements a lot of criminal activities have taken place in and around the station such as stabbings, fights, theft and assault.

The diagram on the right displays the neighborhood profiles in terms of safety of the connecting neighborhoods Pendrecht and Zuidwijk. These diagrams show the main indexes of a variety of factors connected to the safety of the neighborhoods. All factors, having to do with Theft, Voilence, Burglary, Vandalism and Nuisance, are measured in an objective way (facts and statistics) and a subjective way (opinions and appreciation), and given a score from dark green (way above Rotterdam's average) and yellow (way below Rotterdam's average; Wijkprofiel, 2022).

From these graphs we can interpret that for both the objective as subjective view on the safety factors there has been quite some improvement in the neighborhood. Burglary and vandalism have improved in Zuidwijk as well as voilence in Pendrecht. Even though objectively and subjectively the neighborhoods score higher in 2022 than in 2014, the safety experience remained the same or gotten worse.

Man (62) opgepakt voor steekdrama bij metrostation Slinge

UPDATE Een 62-jarige man is vanmorgen aangehouden in Rotterdam vanwege het steekdrama bij metrostation Slinge in Rotterdam-Zuid. Daarbij raakte gisteravond laat een man gewond aan zijn nek.

Redactie Rotterdam 27 12 19, 06:20 **Laatste update:** 27 12 19, 14:43

Verdachte aangehouden na dreigen met explosief metrostation Slinge

De politie heeft zaterdag een 35-jarige Rotterdammer aangehouden die zou hebben gedreigd met een bom in de metro richting Slinge.

Redactie Rotterdam 25-09-21, 16.12 **Laatste update:** 25-09-21, 16.14

Neighborhood safety profiles



Anonymous *on Jan 18, 2021:*

I have been living in south rotterdam for a few years, recently the younger generation (12-16) have been gathering in huge numbers. in my area people are attacked daily from these youths verbally and physically. today i was attacked i had been spat at and stones been thrown, i informed the police but they will do nothing 1!! even though i have been assaulted.

something needs to be done as one day an adult will defend him self and end up in prison for hitting a minor

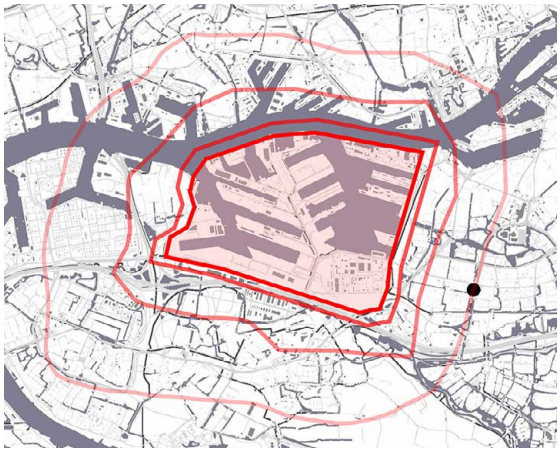
NOISE
Traffic, Rail and Industrial

The law concerning the nuisance of noise has set the highest acceptable noise levels for traffic noise, rail traffic noise and industrial noise. Whether there is excessive noise disturbance in the area caused by any of these activities, the next part will dive deeper into.

Road traffic noise
Road traffic noise in the context of Slinge Station can be caused by main roads Zuiderparkweg and Slinge and a handfull of secondary roads as Ooltgensplaatweg, Ooltgensplaathof, Stellendamstraat, Sliedrechtstraat, Melissantstraat, en Tiengemetensingel.
For the main roads around, a study[1] has shown that the height of the noise does not reach the limit of 48 decibel (Kraaij Akoestisch Adviesbureau, 2020). Secondary roads inside the neighborhoods of Pendrecht and Zuidwijk stay within the maximum of 46 dB, with small exemptions. Regardless of the small exceedances the living quality is acoustically acceptable (BOdG Ruimtelijk Advies B.V., 2019).

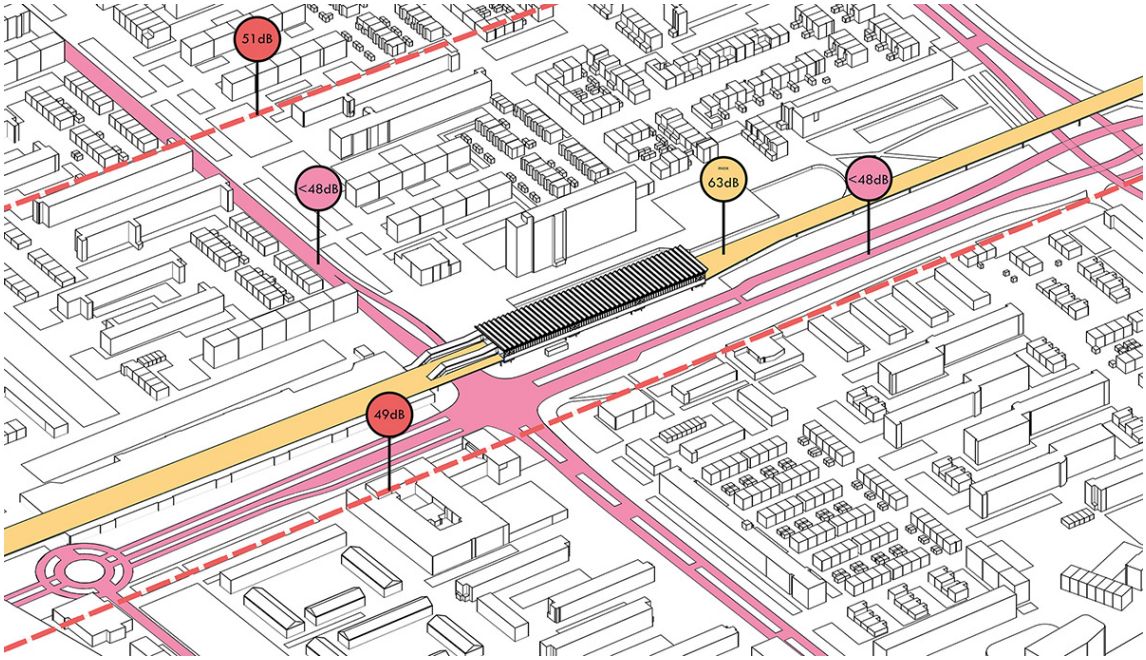
Rainway traffic noise
Because this upperground metroline is not taken into account for the the law concerning the regulations of soundceiling of railways in The Netherlands it has to be considered as the noise ceiling for road traffic. Measurements have shown that the maximum produced decibel of the metrotrack is 63 dB. This exceeds the prefered value of 48 dB by 15 dB.

Industry noise
Closeby industry that could exceed maximum disturbance of 55 dB for industry, is the Waal-Eemhaven. The industry area has set sound contours for possible affected neighboring areas. The Slinge Station falls outside of the disturbed area being in between the 49-51 dB proximity.



Industry Sound Contours

Author: Eems-Waalhaven
Source: https://repository.officiele-overheidspublicaties.nl
Copyright: Kraaij Akoestisch Adviesbureau



Out of data collected from the muncipality of Rotterdam we can see that other sources of sound also cause nuisance. Notable were the excessive disturbances of Businesses, Mopeds and Scooters and Neighbors in the area below Zuiderpark, Pendrecht and Zuidwijk.

Relatively less noise was caused by Trains, Airplanes, and Traffic >50km/h (Kraaij Akoestisch Adviesbureau, 2020).

Another issue in Rotterdam is fast accelerating cars, a noice disturbance which mayor Aboutaleb is trying to solve with acceleration cameras.

Roadway	Railway	Industry
<48 dB	63 dB	49-51 dB

Main other disturbances
Mopeds, Neighbors and Businesses

Noise polution Roadways, Railways and Industry

URBAN CRITERIA - L-SCALE SWOT ANALYSIS

STRENGTHS



Public green spaces



Proximity to Zuidpark and its sport facilities





New investments in the area



Presence of Slinge Station

WEAKNESSES



Metro line and busy roads as barriers



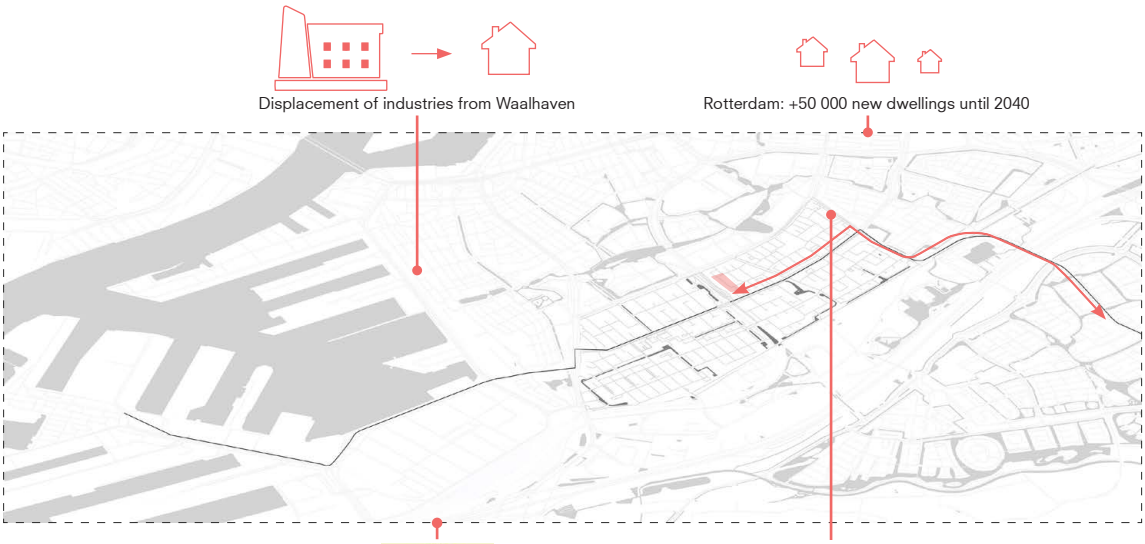
Public spaces in decay



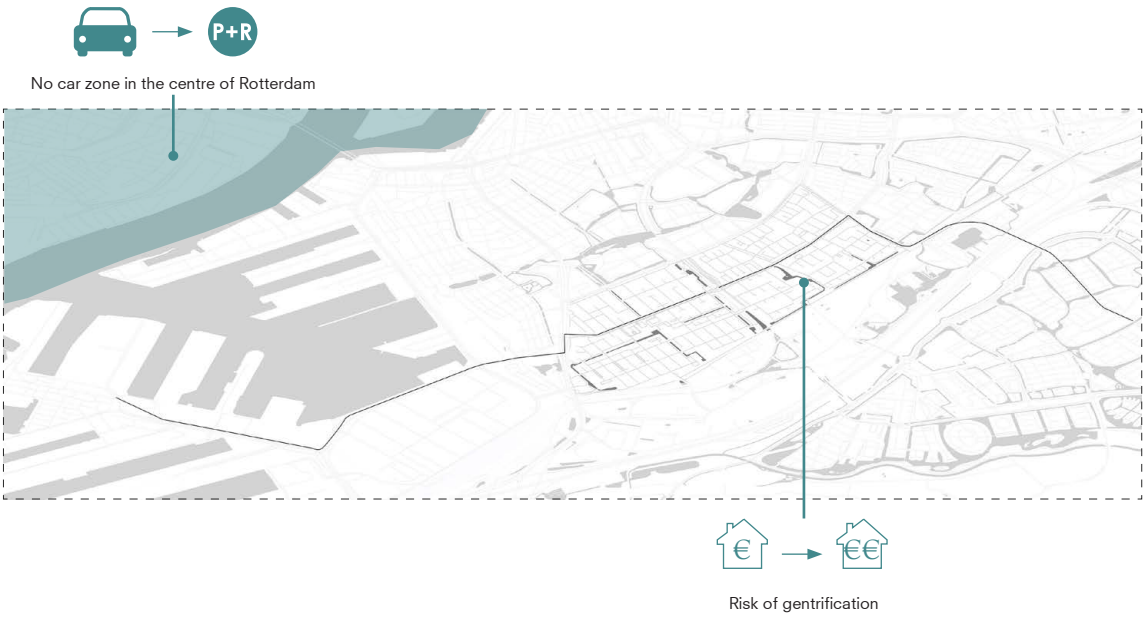


Safety problems in the neighbourhood

OPPORTUNITIES



THREATS



URBAN CRITERIA - S-SCALE SWOT ANALYSIS

STRENGTHS

Slinge station:
a crucial transport hub

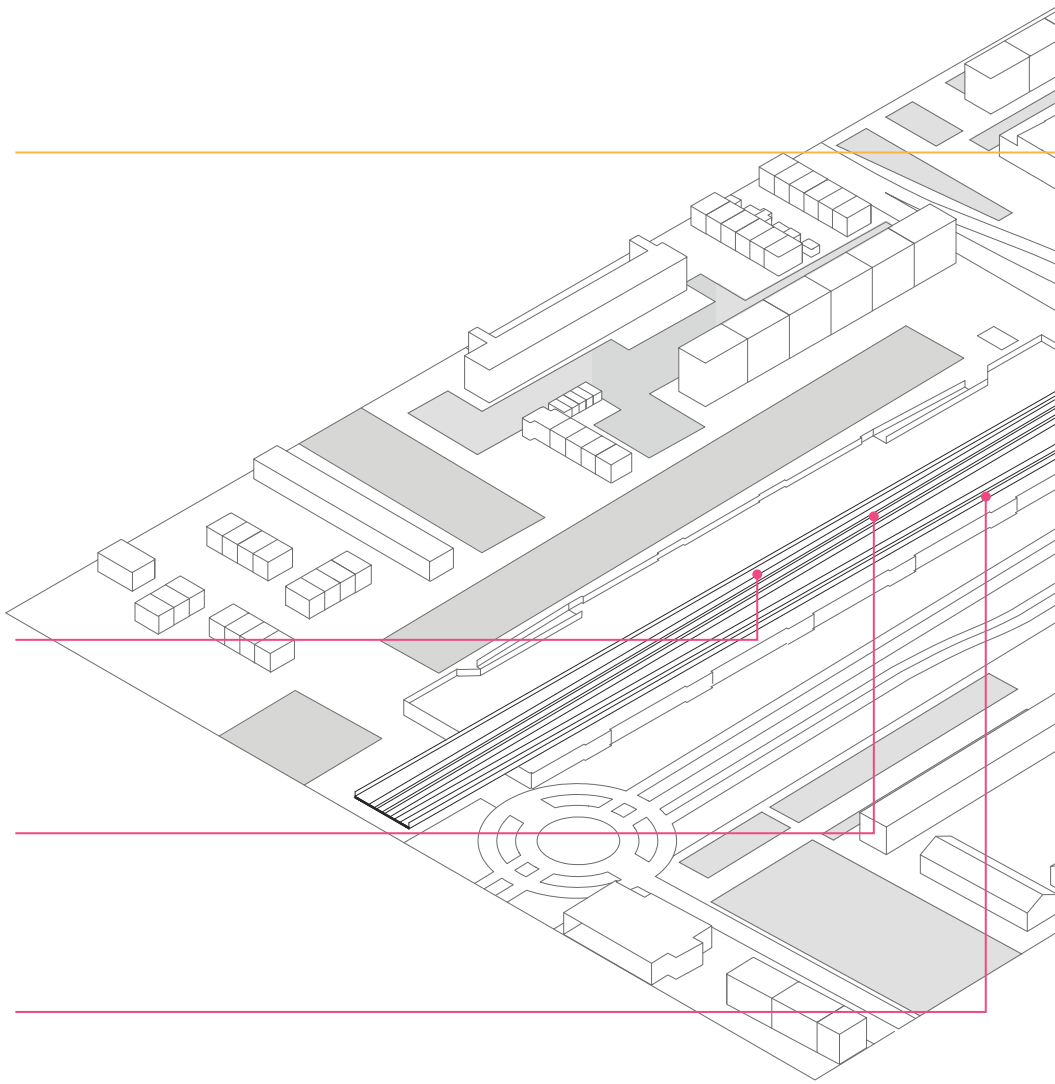
Ongoing new tram line

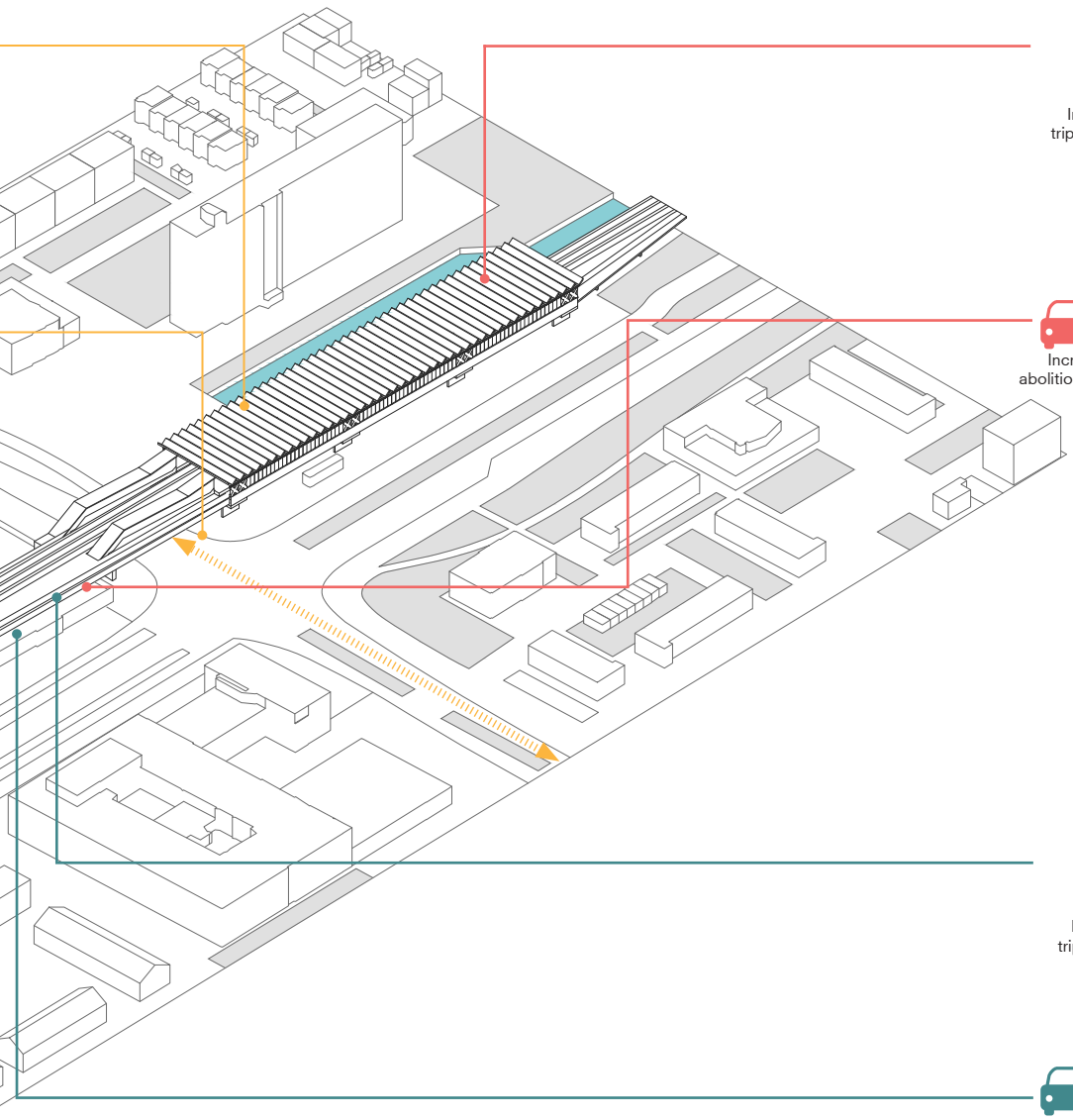
WEAKNESSES

High level of noise

Capacity problems
of E - line

Insufficient modal
exchange facilities





OPPORTUNITIES

24x hour

Increase of mentro trips: better connection

P+R

Increase of users due to abolition of cars from the centre

THREATS

24x hour

Increase of mentro trips: increase of nosie

P+R

Increase of traffic due to abolition of cars from the centre

STAKEHOLDERS

Municipality of Rotterdam
With its ambition to build 50 thousand new dwellings by 2040, the municipality of Rotterdam is looking to the south of the city for room to expand (Gemeente Rotterdam, 2018). Consequently, this means that they have to assure that the mobility accessibility for the current and future residents of Slinge will be sufficient. Of all stakeholders, the municipality has the largest amount of power and interest in the success of future developments in Slinge.

NPRZ
The National Program Rotterdam Zuid (NPRZ) is a collaboration between the national Dutch government, municipality of Rotterdam, housing corporations, health institutes and many other stakeholders to work towards a more prosperous Rotterdam Zuid (NPRZ, n.d.). Their main objective is to improve education, labor participation and living quality in this district over the coming twenty years. Simultaneously, it aims to diversify the area with residents with different levels of income and education. This collaboration was brought to life as the socio economic problems that Rotterdam Zuid currently struggles with are of great concern, especially when compared to the rest of the Netherlands. Any future developments of the Slinge metro station and the surrounding neighbourhoods would also concern the NPRZ, as the program has created action perspectives for both Pendrecht and Zuidwijk (NPRZ, 2015).

RET
The RET, which is the metro and tram operator of Rotterdam, is the main stakeholder concerning developments of the metro station. Their main objective is to ensure a well functioning public transport connection, while also contributing to a nice living environment around the stations. Thus, their power is significant with regard to the station, but their interest does not concern the neighbourhood as a whole specifically. The RET is also interested in testing new mobility concepts such as MaaS and autonomous vehicles at the Slinge station.

Residents
Children: 32% of the population of Slinge are children and young adults. There are no sufficient places and activities, such as community centres, for them to spend time together, so they mostly hang on the streets.

Elderly: This group needs easy access to public transport, and safe crossings around the station and the neighbourhood. Some of the residents live here since the construction of the neighbourhood, they want to keep its character.

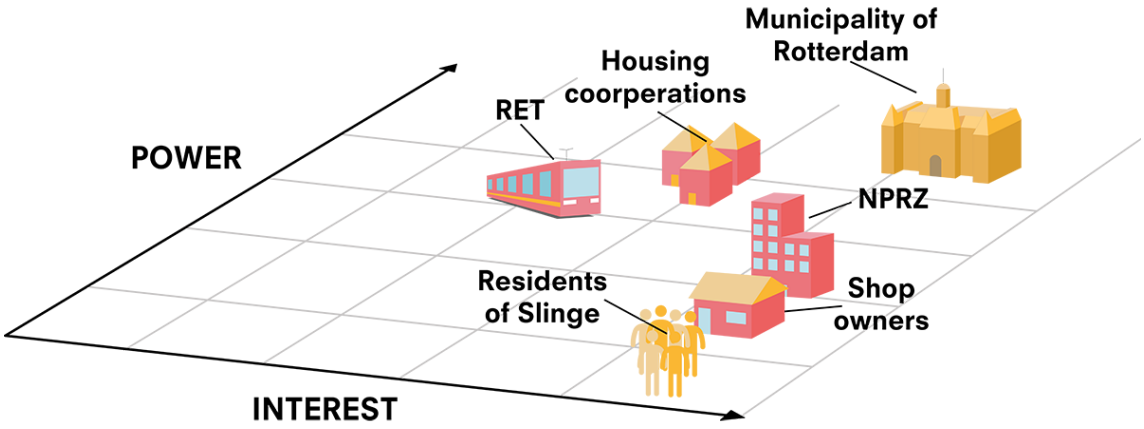
In general, the social security around the station needs to be improved, so people can feel safe in the neighbourhood. They want a place of belonging, as Pendrecht and Zuidwijk are residential neighborhoods. The residents would also require easier access to shops either in the own neighborhood, and also a better connection to Zuidplein or Rotterdam Centraal.

Real estate developers
Another stakeholder that has a significant amount of power and interest is the real estate developers. Currently, the housing prices in Rotterdam are increasing rapidly, making Slinge an interesting opportunity for real estate developers to densify and increase the number of dwellings. They are interested in making the area more attractive, as this would reflect into higher housing prices and making thus new developments more financially feasible.

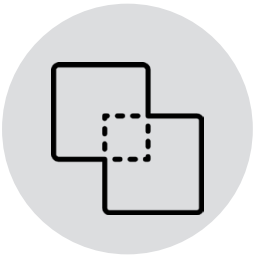
Residents
As for the residents of the Slinge area, it is in their best interest to live in a safe living environment with good transportation accessibility. Their power is limited, as it mainly lies within the participation initiatives set up by the municipality or housing corporations. The other actors have the responsibility to keep the residents at least informed of all future developments. A side effect of these new developments is that gentrification can cause negative neighbourhood effects such as displacement or loss of sense of place. Thus, future developments must keep in mind that physical changes can also lead to demographic changes. Specifically, Slinge currently lacks public spaces that are inviting for youth to hang out, indicating that it would be in their interests that future developments would take this into consideration. This could in turn contribute to a greater sense of community and less crime.

Shop owners
With the introduction of new residents with other demographic characteristics, gentrification could affect the current shops that are situated around Plein 1953 in Pendrecht and Asterlo in Zuidwijk. The assortment of shops can change to adhere to the new residents, such as trendy cafes. Meanwhile, the 'upgrade' of the neighbourhood can lead to an increase of rental prices for the current shop owners, possibly leading to the current shop owners not being able to afford rent. This could contribute to a loss of sense of place, as smaller, often family-owned shops disappear. Thus, while their interests are significant, their power to influence future developments of Slinge is limited.

Housing corporations
The housing corporations in Pendrecht and Zuidwijk have a great amount of both power and interest, as over 50% of the dwellings in the neighbourhoods are social housing. They are responsible for the maintenance of their dwellings and for creating a nice living environment for their tenants. Housing corporations have shown concern regarding the liveability and social unsafety in Slinge. For example, housing corporation Vestia renovated three housing blocks in Pendrecht while also adding murals to create a more appealing appearance (Vestia, 2020). However, in relation to the other stakeholders, their power and thus their interest is limited to the dwellings that they own.



PARAMETERS



Function Mix



Sense of Community



(Social) safety



Gentrification



Bicycle



Quality of Amenities



Quality of green spaces



Quality of public spaces



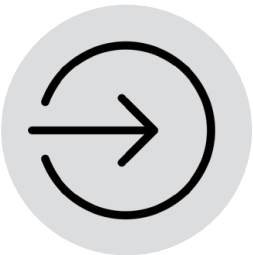
Walkability



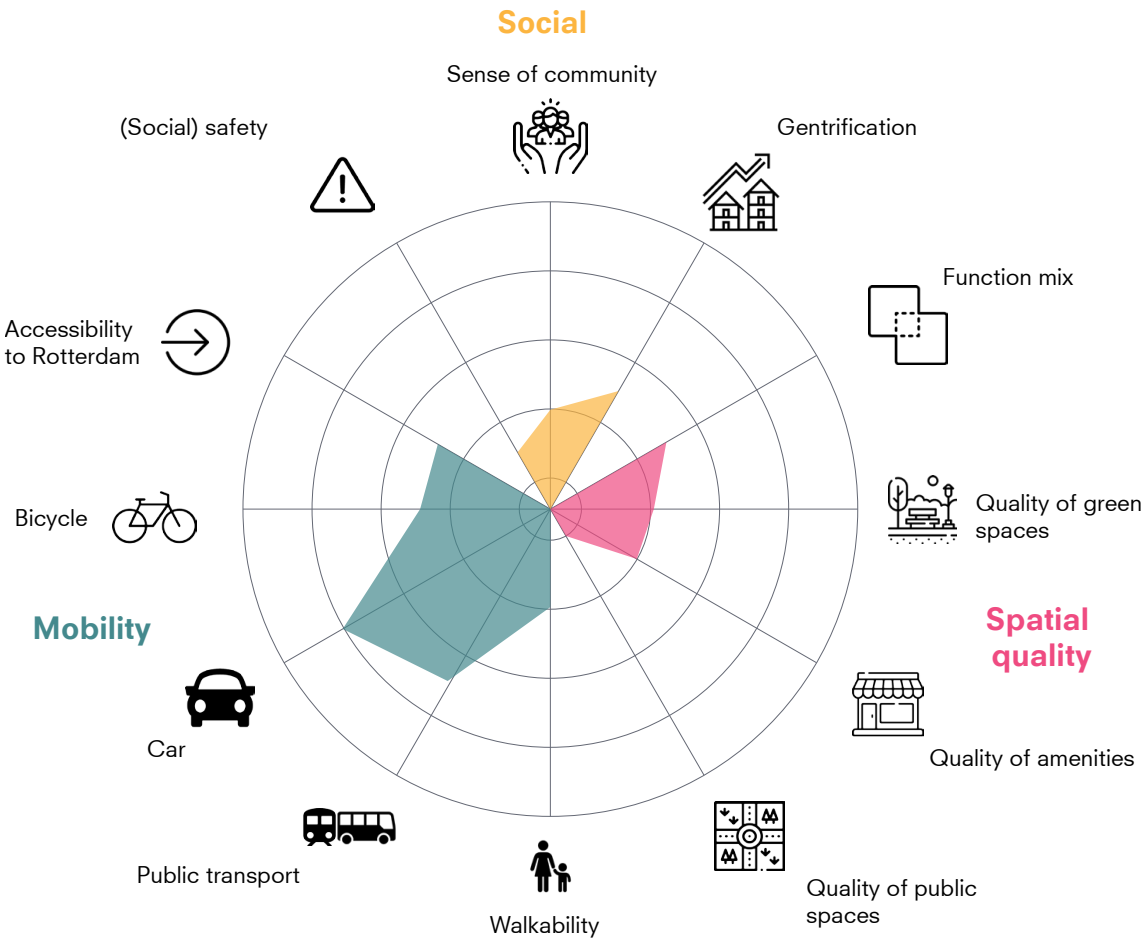
Public Transport



Car

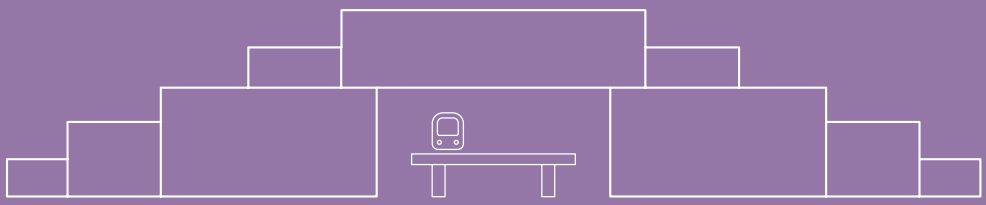


Accessibility to Rotterdam


Social
Sense of community
Gentrification
Function mix
Quality of green spaces
Spatial quality
Quality of amenities
Quality of public spaces
Walkability
Public transport
Car
Mobility
Bicycle
Accessibility to Rotterdam
(Social) safety

Scenario 1

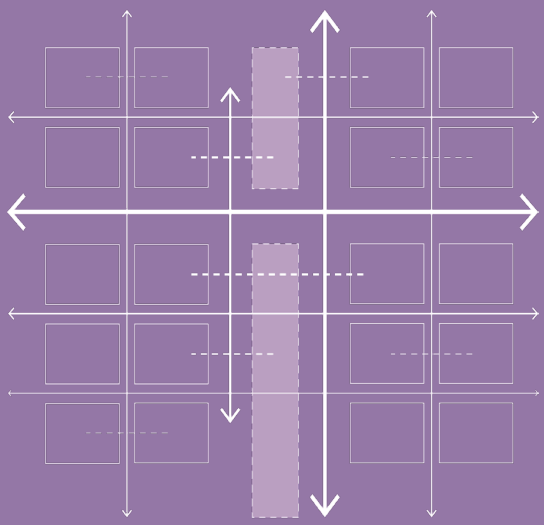
A NEW MOBILITY HUB



The Slinge as a mobility hub vision focuses on connecting the “islands” Pendrecht and Zuidwijk and the surrounding southern cities with Rotterdam and the metropolitan region. It should function as a node with its own identity and with improved space for intermodal transfer and provide an environment to innovate new transportation modes.

Scenario 2

RECHARGING SLINGE



The main aim of this vision is to make Slinge station a place from a space, by also incorporating and reactivating existing public spaces, reconnecting the east and west side of the neighbourhoods. This is a mainly pedestrian-centered approach, the goal is to break up the barrier of the station, upgrade social safety and create cohesion between Pendrecht and Zuidwijk by adding cultural activities and transforming the station area into a community hub.



A New Mobility Hub

Slinge

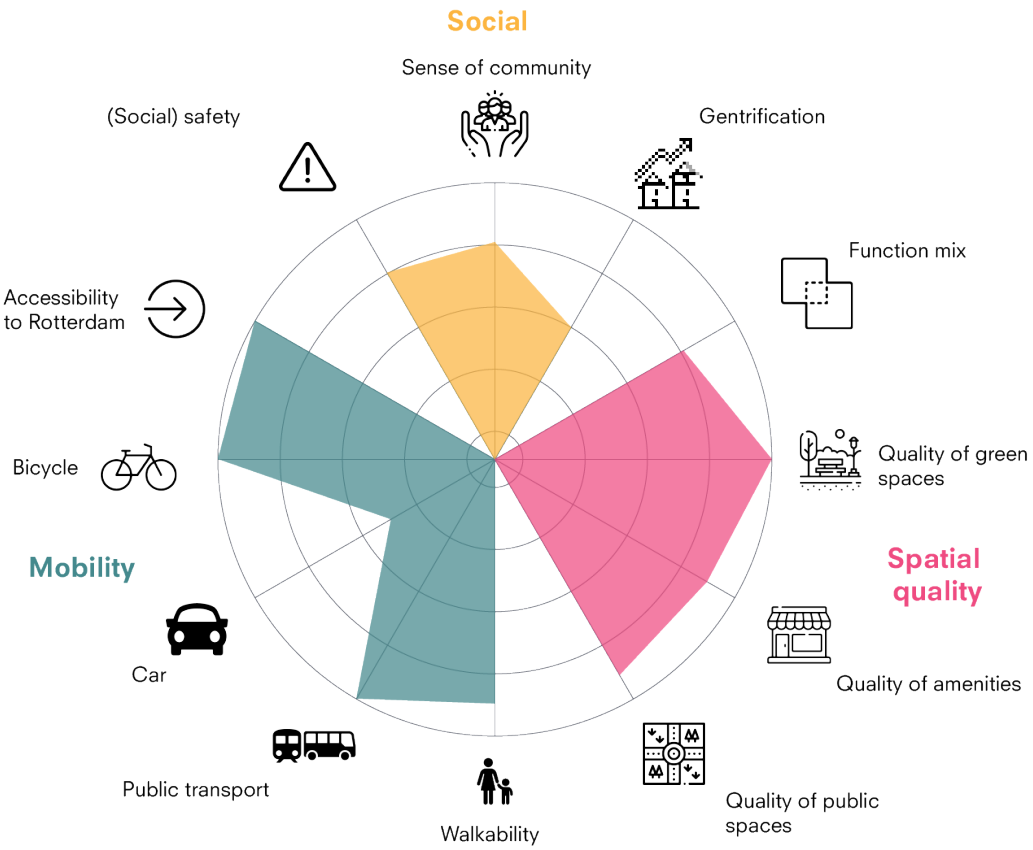
In our vision, the station of Slinge will be a place where people can switch from modes of mobility fluently, where two neighborhoods come together and where the future of a car free city centre of Rotterdam is facilitated.

Adam Shehabuddin
Florentine Ris
Marius Tromholt-Richter
Mike Cleintuar

INTRODUCTION

Within this scenario the main focus will be on mobility. The design aims to increase the role of Slinge Station and re-imagine it as a new mobility hub that increases value on an urban scale, neighbourhood scale and local scale.

Especially the quality of green spaces will increase, as the current green spaces are often deprived and under utilised. This also counts for the quality of other public spaces and the amenities surrounding the station. For the social parameters, the design aims to connect the two neighbourhoods and create a sense of safety, as both are lacking at this moment.



AMBITIONS

Rotterdam is becoming an increasingly popular place to live. As a result of this population growth, the municipality wants to densify rather than expand. The consequence of the future increase in population density is, among other things, that there is less space per person available to move around. Thus, transportation modes should change. Rotterdam has ambitious goals when it comes to mobility. The municipality intends to reverse the mobility hierarchy and prioritise slow mobility by 2040. They aim to shift the amount of car commuters from 42% to 26%, which translates to 17.000 travellers, and increase the number of bike riders by 67.000 (Gemeente Rotterdam, 2020). Besides, the number of shared cars should grow from 15.000 to 100.000. These goals contribute to the desire to create a carfree city centre and encourage the residents to use a different mode of transportation.
The mobility transition goes hand in hand with the co2 emission targets which were set by the municipality. The government of Rotterdam wishes to reduce the overall CO2 footprint by 49% by 2030.
Slinge has an important role in the mobility strategy. It can be seen as a bottleneck, a centerpoint for mobility transition. Currently, line E between Slinge and Pijnakker is experiencing capacity issues. As a solution, alternatives should be created. Likewise, the P+R should be expanded, since it is most of the time at least 95% full. This indicates that the current situation will not be sufficient for the mobility transition wanted by the municipality.



RESEARCH CONCLUSIONS

To tackle the current problems and prepare the station for the future developments, we look at mobility on three different scales: urban scale, neighbourhood scale and local scale, and understand the present flows.

Slinge is part of the metroline which is connected to Rotterdam central and the larger metropolitan region. Looking at all the metro stations in Rotterdam South, they all have an identical design, creating no character or identity. As for the cars, the main roads lay at the border of the two neighbourhoods and in the centre. On a neighbourhood level, these hard barriers cause a subdivision. The Zuiderparkweg, which forms a north-south axis, creates an urban connection, while the street Slinge serves mainly as a neighbourhood connection. The residential character of both neighbourhoods offer potential to improve the bicycle connections and the adjacent parks and greenery grants the potential to intertwine with the neighbourhood. On a local level four main transportation modes flow through the area, being cars, the metro, bicycles and pedestrians. However, combining the mobility flows creates a mess and often unsafe situations. Observations show desired short cuts, indicating that pedestrians are underprioritzed and that cars are dominating the urban environment. The access of the station and P+R is uninviting and has an unfriendly atmosphere as a result of fences and spikes.

The analysis resulted in the following objectives: Strengthen, Seamless Transition and Create Identity. The first objective aims to connect Slinge to the overall mobility strategy of Rotterdam. The second objective, seamless transition, intends to make the relationship between different modes of transportation more seamless in the neighbourhood. For the last objective, we wish to give Slinge an Identity and use it to connect a now subdivided area. The strategy for realising the objectives will be divided into three phases.



STRENGHEN

Connect Slinge to the overall mobility strategy of Rotterdam



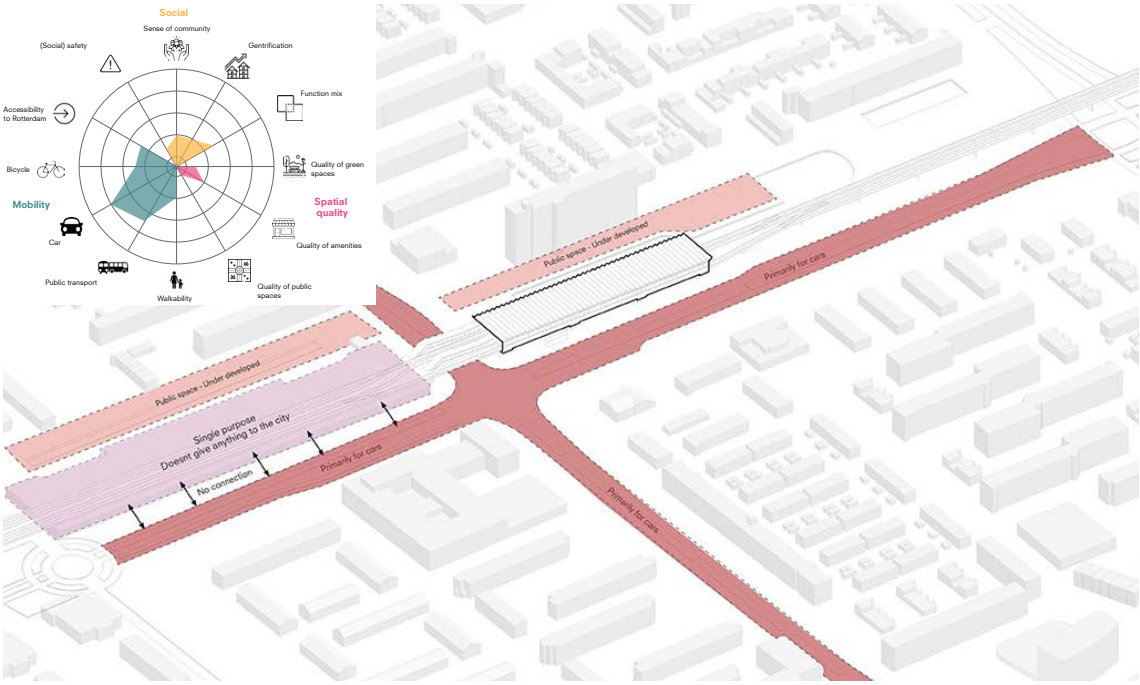
SEAMLESS TRANSITION

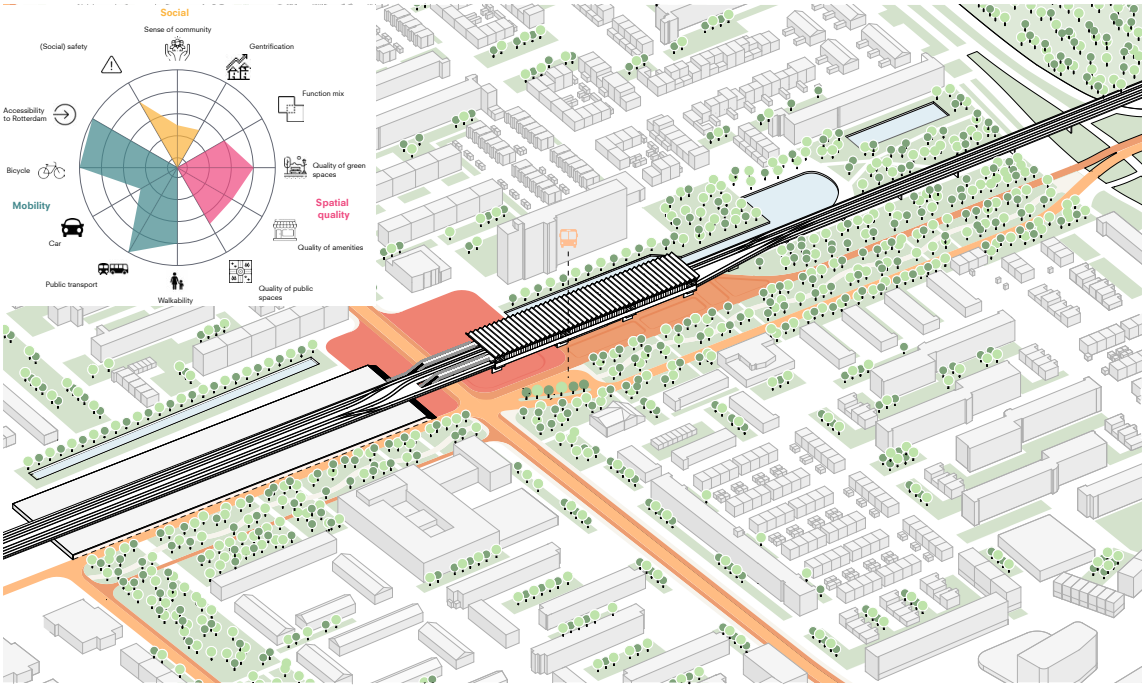
Make the relationship between different modes of transportation more seamless in the neighbourhood



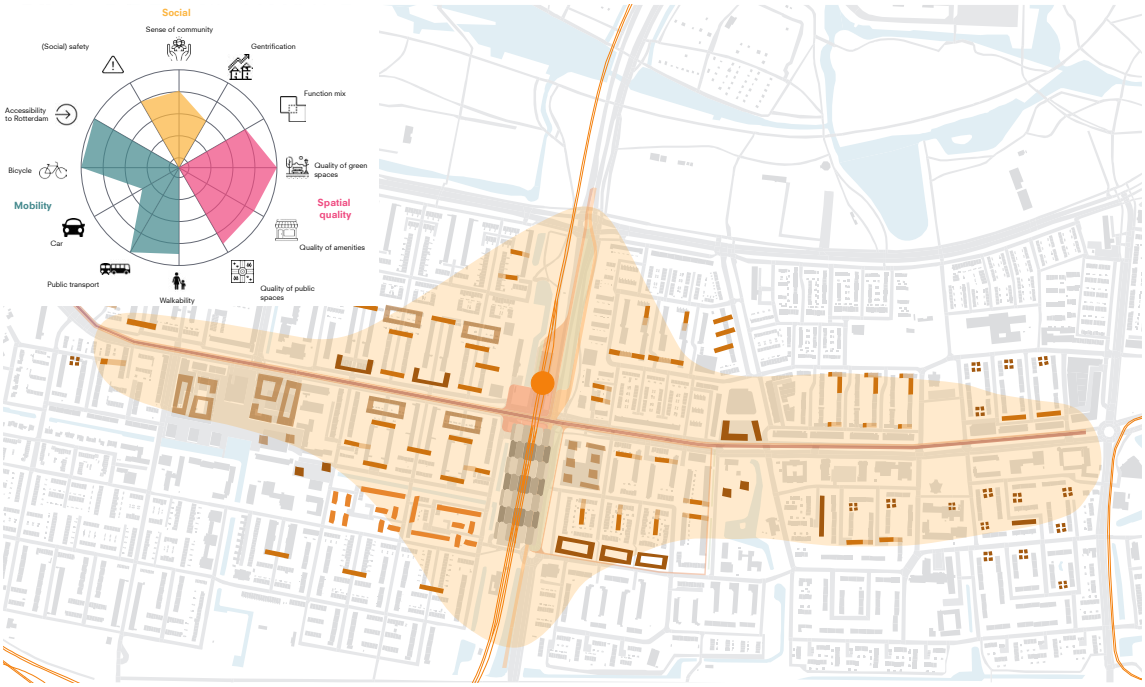
CREATE IDENTITY

Give Slinge an Identity and use it to connect a now subdivided area


Social
Sense of community
Gentrification
Function mix
Quality of green spaces
Quality of amenities
Quality of public spaces
Walkability
Public transport
Car
Bicycle
Accessibility to Rotterdam
(Social) safety
Mobility
Spatial quality
Public space - Under developed
Single purpose
Doesnt give anything to the city
No connection
Primarily for cars
Primarily for cars
Public space - Under developed
Primarily for cars


Social
Sense of community
Gentrification
Function mix
Quality of green spaces
Quality of amenities
Quality of public spaces
Walkability
Public transport
Car
Bicycle
Accessibility to Rotterdam
(Social) safety
Mobility
Spatial quality


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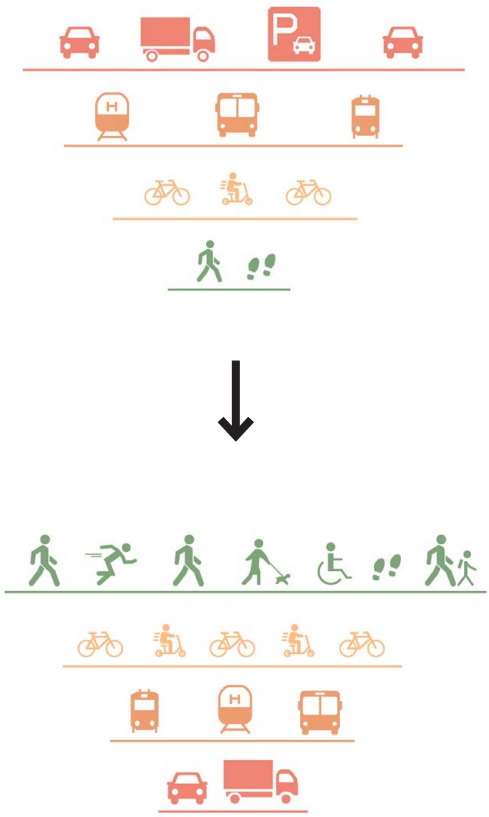

Social
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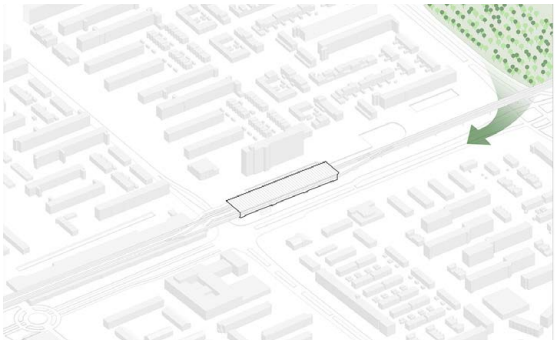
PHASE 1 - REZONING
2025

The first phase will be focused on rezoning the area around the metro station. This phase has the least impact out of the three phases, and is therefore the most uncomplicated phase to realise. As stated before, the area is currently primarily for cars and public space is underdeveloped. The P+R takes up quite some space and only has a single purpose, which is not desirable when densifying an area.

For the first step, we want to make a connection with the Zuiderpark, and create a park next to the metro station where pedestrians and cyclists can move. This immediately creates a boundary for the motorised vehicles. With this first step, pedestrians can transit safely and freely to the metro station, by creating several crossings. Subsequently, we extend the park to the other, north side of the metro station and create a pedestrianised plaza in front of the station. Adjacent to the plaza and metro station a slow mobility hub will be created. These slow mobility stations will be dipped down to maintain sight and not disrupt the visual flow to the park. In line with the mobility transition, the street Slinge will be only accessible for autonomous vehicles. At this stage, cars can reach the P+R through entrances on the east side and the north side will be open up for pedestrians with a broad stairway.

To ensure continuity on the Zuiderparkweg, but avoid interference with slow mobility, the road will slide slightly over to the right which makes sure that there is no confrontation between the two modes of mobility. The step for this phase consists of creating a transit hub, where people can easily and safely switch from different (public) transportation modes.





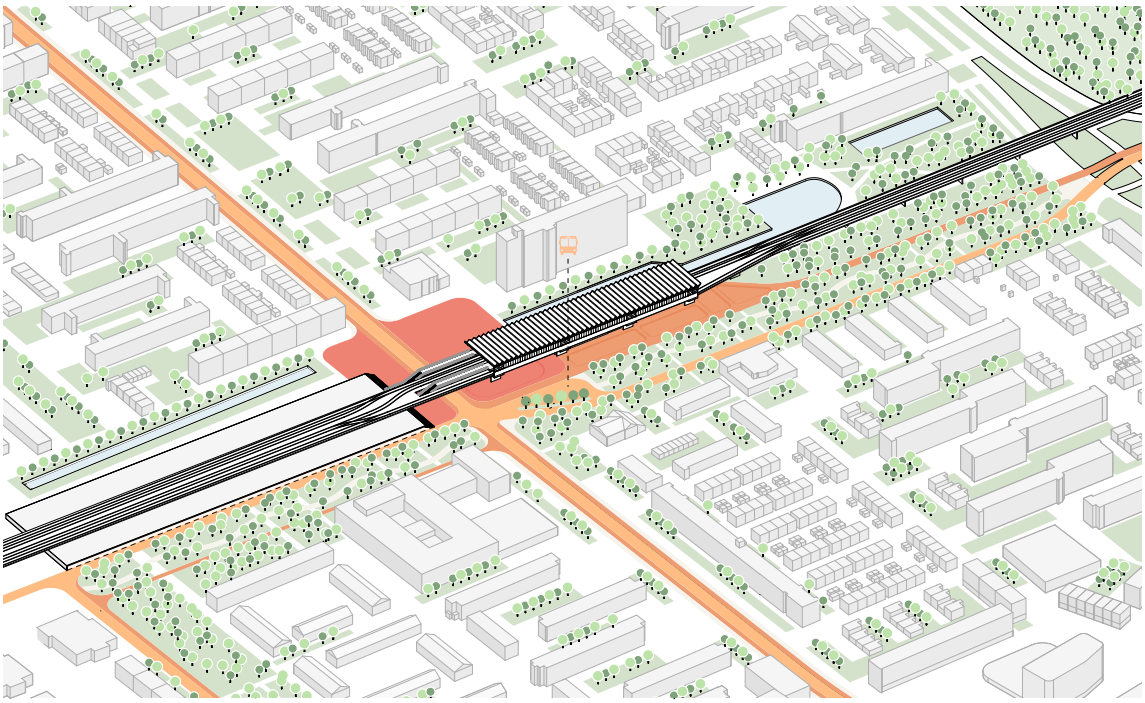


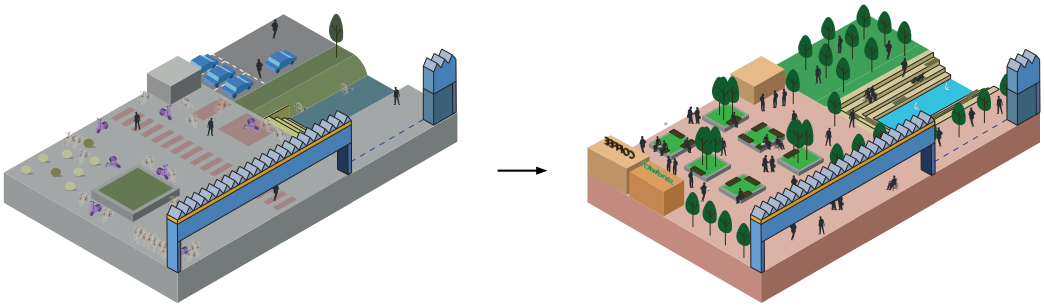




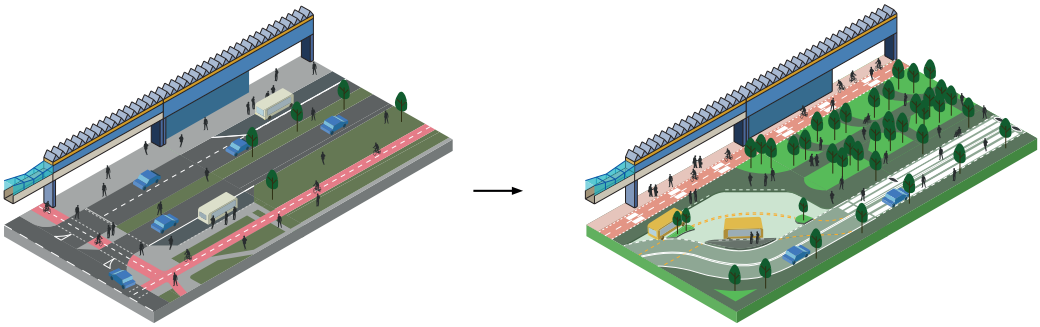




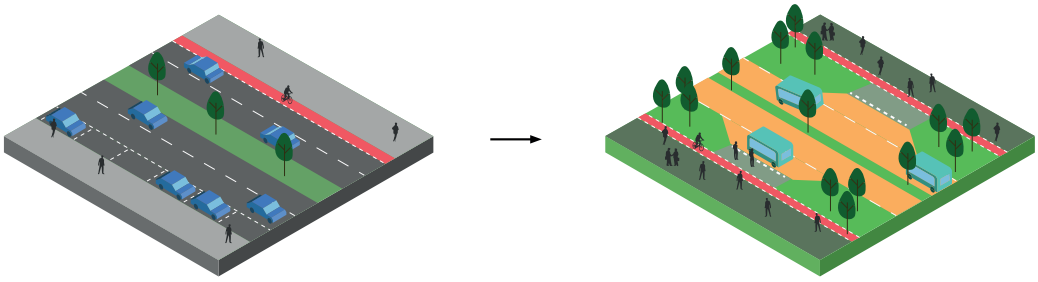




Plaza



Mobility transition zone and park

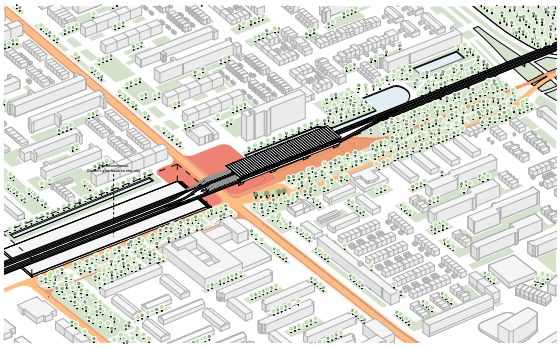


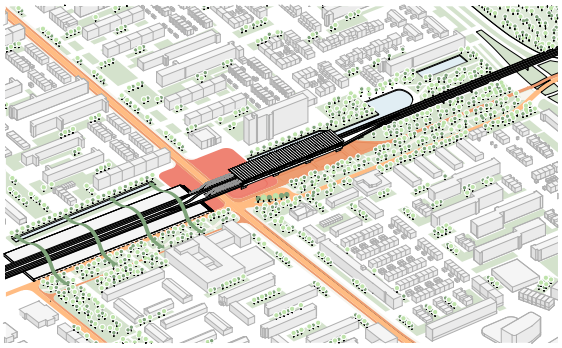
Slinge road (becoming AV only)

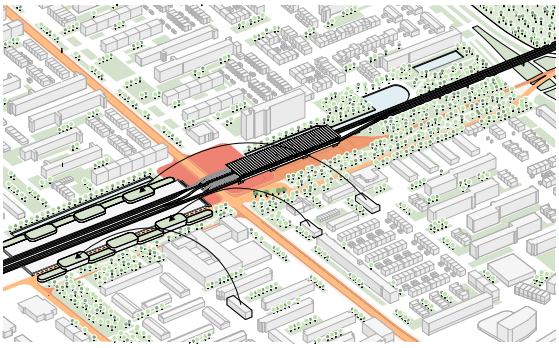
PHASE 2: SENSE OF PLACE
2030

For the second phase we will be focussing on the P+R area. This phase has two main goals. One being to be able to provide for the future increase of the use of the P+R. The second is to create a node and an identity so it would become interesting to move to the neighbourhood.

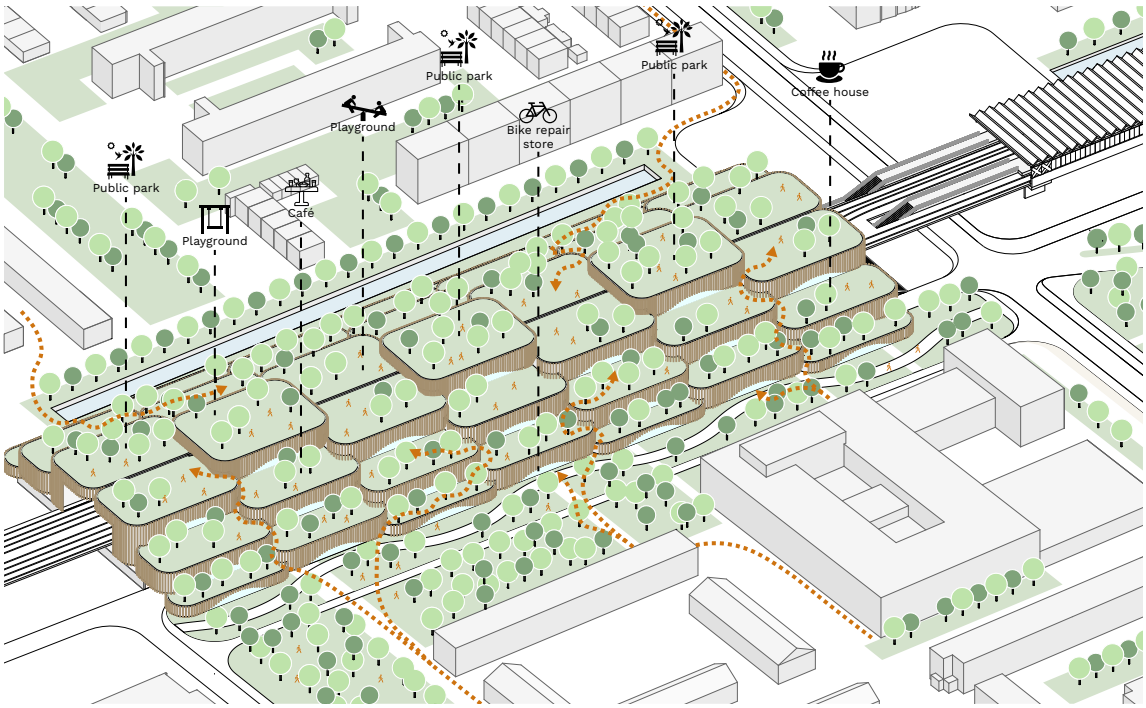
Right now, the P+R is monofunctional and the question raised whether to what extent it could be re-imagined and multi-functional. Since the metro structure creates a barrier between the two neighbourhoods, we wanted to design a public space which stitches the area together and creates a new cultural centrepoint. As the municipality wishes to desify, the surface is scarce. Therefore, we want to make use of the void space above and beside the P+R. With that idea, the park alongside the metro station and P+R continues up and above the train tracks and is broken down in scale to fit the surroundings. At this point a new public hillside is made that will attract the entire neighbourhood and establish a gathering spot, and additional space is created to provide for the growing pressure on the parking availability of the P+R.

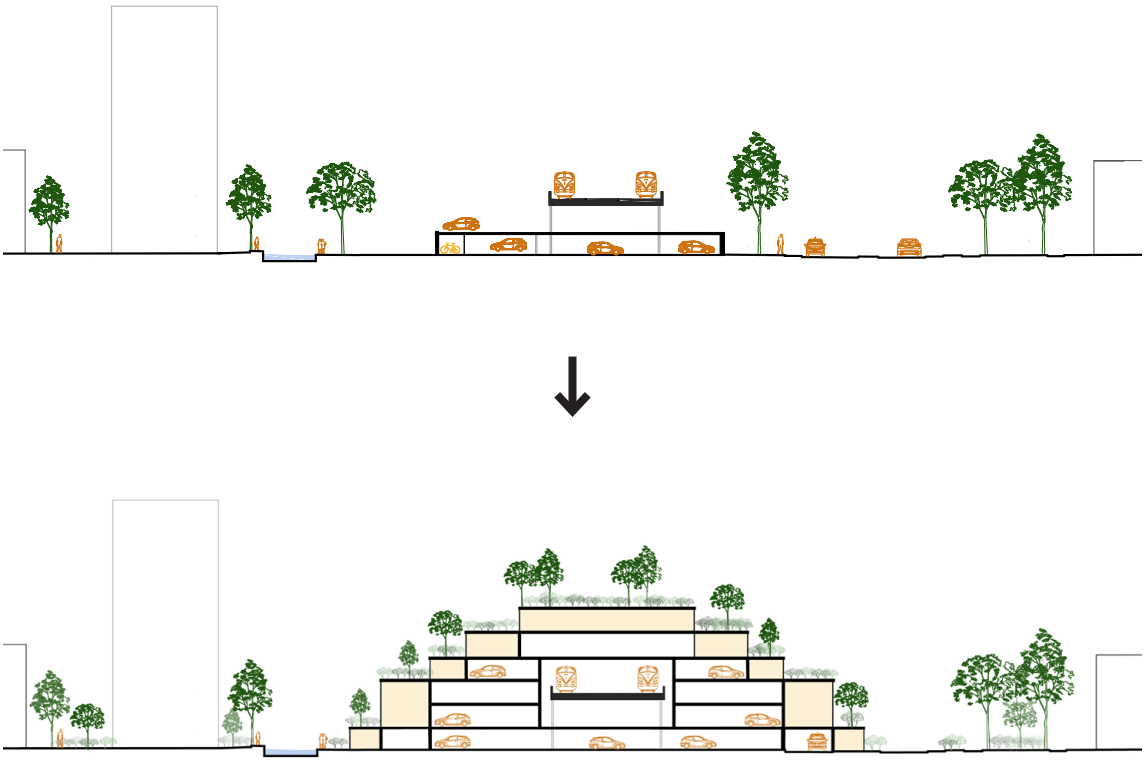






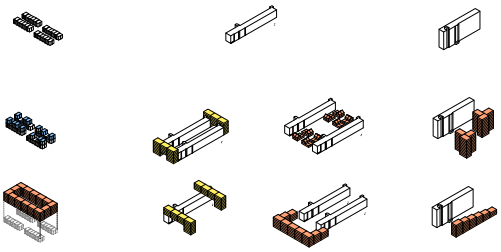



Public park
Playground
Bike repair store
Pubtic park
Coffee house
Public park
Café
Playground



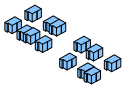
PHASE 3: DENSIFICATION
2045

Now that the area has gotten an identity, people are excited to move to the area. With the area being relatively dense already, it is tricky to simply add buildings, so we need to look at the current housing situation and what types of adjustments can be made. Currently there are several housing development plans which involve demolishing outdated dwellings. Since it is not desirable to demolish every building we found several options to add dwellings to existing buildings. However, the quality of some dwellings is relatively low which makes demolishing inevitable. This will happen in the final phase. In the interim, there are a few potential building sites which could be developed.





Current Construction
126 dwellings



Extensions to single family homes



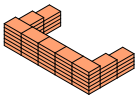
21 units
x 18 sites

378 dwellings



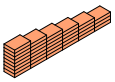
20 units
x 16 sites

320 dwellings



53 units
x 4 sites

212 dwellings



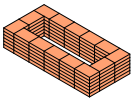
33 units
x 3 sites

99 dwellings



8 units
x 16 sites

128 dwellings



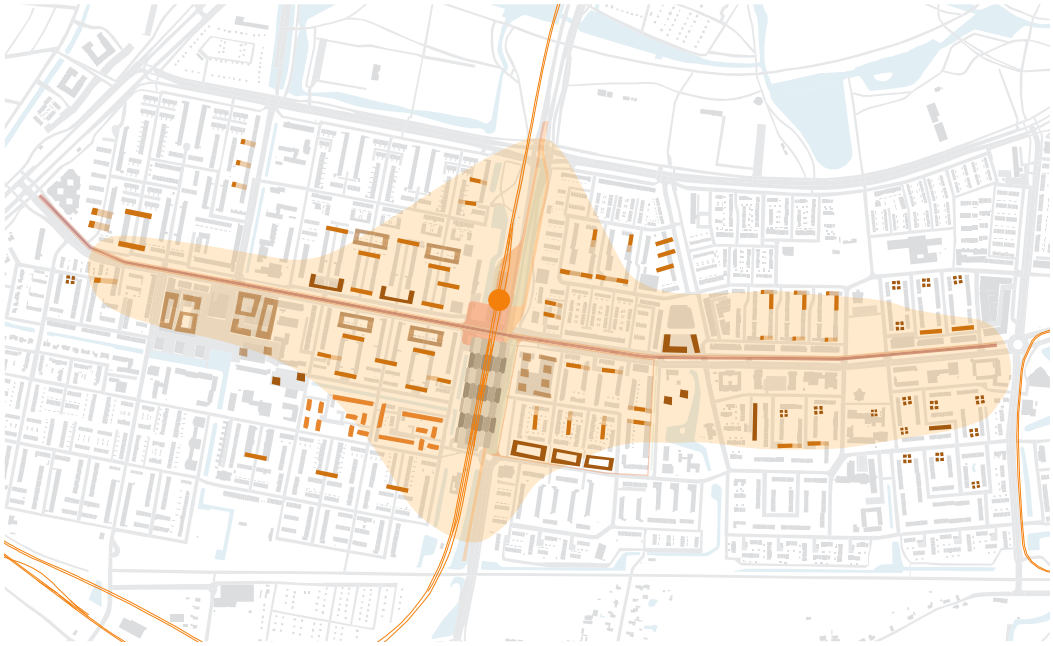
84 units
x 9 sites

756 dwellings

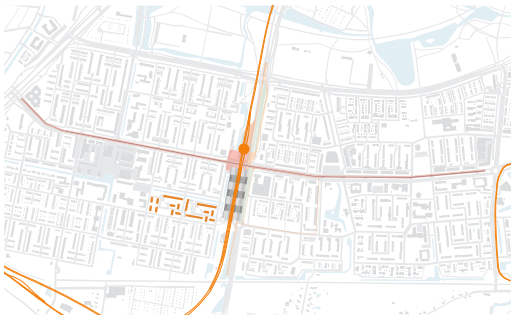


36 units
x 11 sites

396 dwellings











By focusing the housing developments around the main axis within the neighbourhoods, we aim to provide the demand for the new transportation mode on the street Slinge, and the centrepoint at the station. Nonetheless, we should not forget to look further than Slinge, and it appears that the neighbourhood has many potentials for other main slow mobility routes. By making use of the environmental features in the area we create pleasant passages throughout the whole locality.

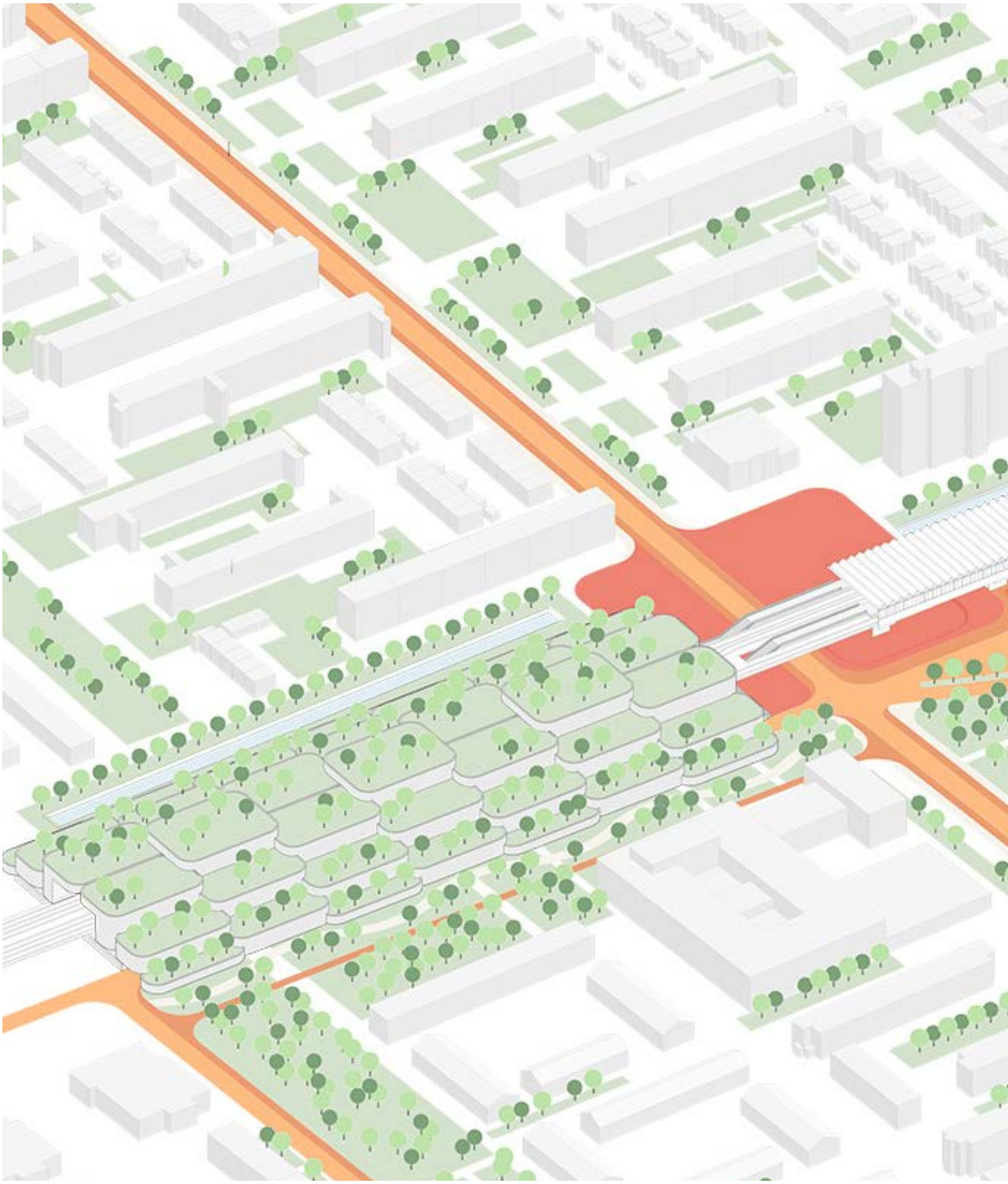
- Bike paths
- Greenery
- Water
- Main bike paths
- AV road
- Water

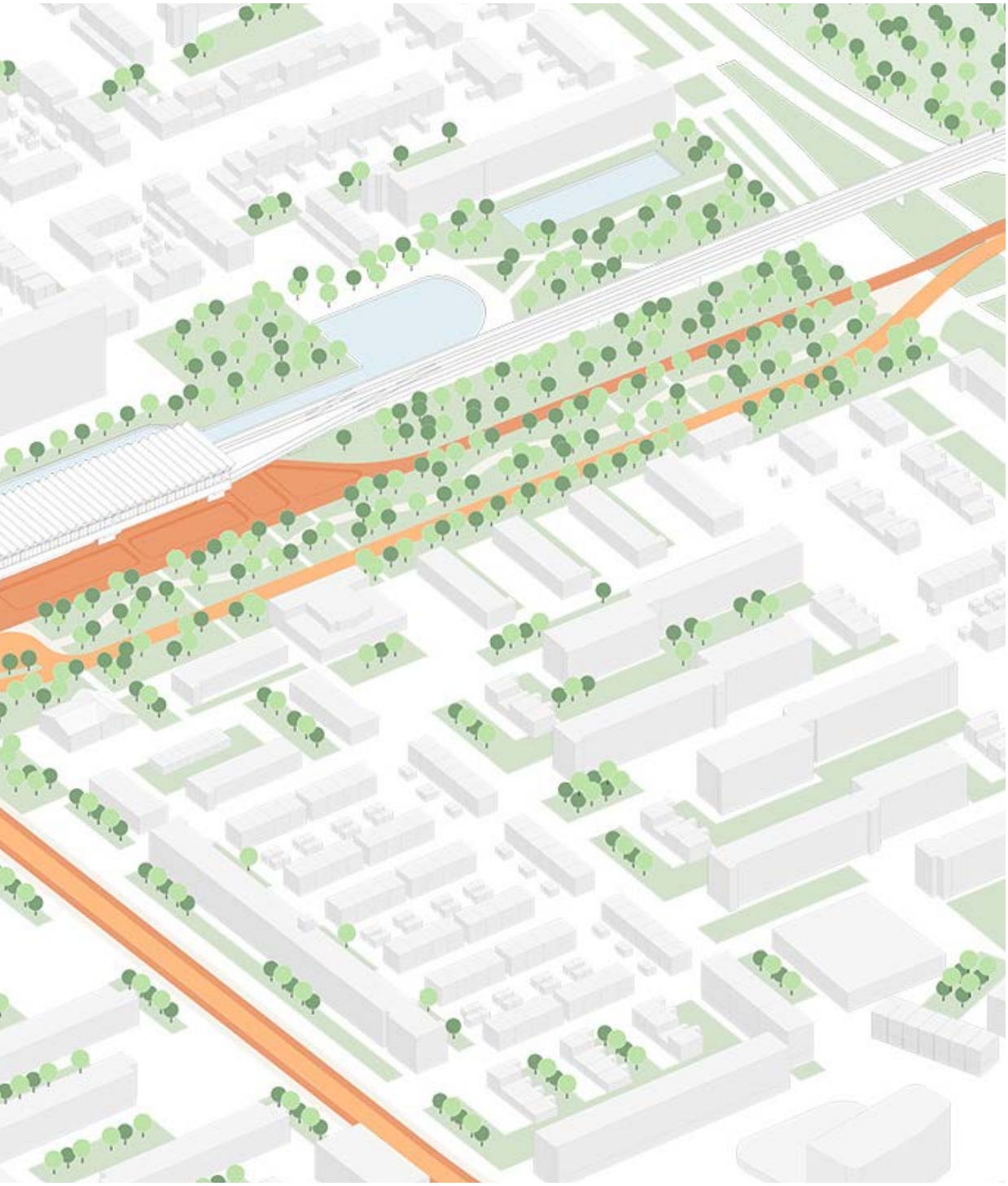














Recharging Slinge

Slinge

The main aim of this vision is to make Slinge station a place from a space, by also incorporating and reactivating existing public spaces, reconnecting the east and west side of the neighbourhoods. This is a mainly pedestrian-centered approach, the goal is to break up the barrier of the station, upgrade social safety and create cohesion between Pendrecht and Zuidwijk by adding cultural activities and transforming the station area into a community hub.

Fruzsina Kovács
Mats Kolmas
Melanie Waidler
Mirko Cestari
Olivia Wong

RECHARGING SLINGE
Application of Urban Criteria

Our design centres around the concept of 'recharging Slinge'. We aim to optimise the potential of the existing structure, by supplying 'plug-ins'. These are small scale interventions that reactivate the public space in the Slinge area. The adaptive plug-ins will allow the community to participate and co-design the public space according to their needs, which will make the impact of the design more sustainable for the longer term.

The 'recharging' of Slinge is based on the hotspot principle: creating and activating smaller hotspots throughout the neighbourhood to increase liveability in the entire neighbourhood. By using a community-driven design approach, we aim to primarily increase the spatial quality and social cohesion in the Slinge area through the following core objectives:

First of all, this transformation aims to increase the experienced safety at the station, as this is currently one of the largest concerns for the station and its surrounding public space. Thus, this design prioritises activating the public space by adding new social functions to the public space. These activities will cater to the different needs of the diverse residents which simultaneously ensure eyes on the street at all times.

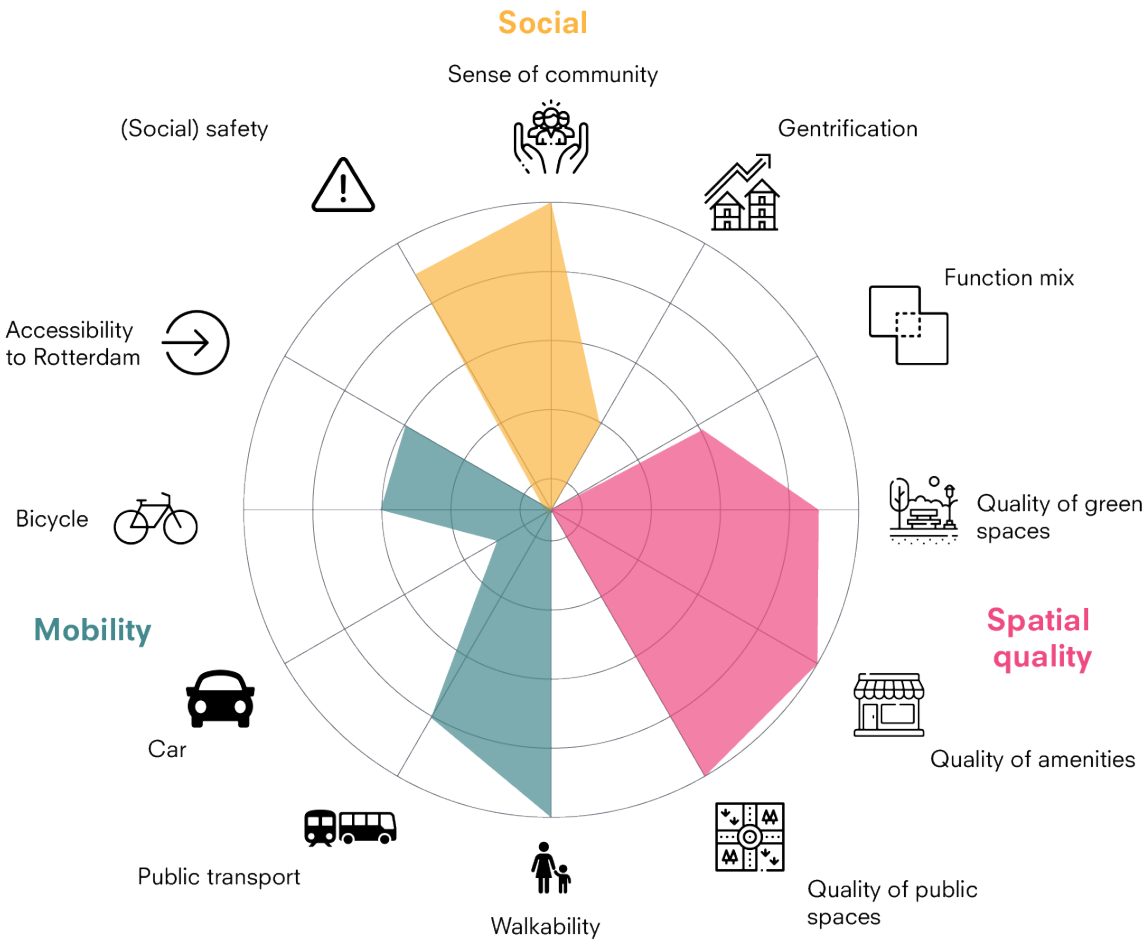
Part of this intervention is opening up the station, both physically and socially. The space behind the entrance of Slinge, which is currently unused and perceived as unsafe, is activated by an additional entrance to the metro and new amenities such as a café. This ensures new flows of people passing by. These additional amenities will encourage social encounters, creating more liveliness around the station.

Furthermore, conversations with residents have led to the conclusion that there currently is a lack of meeting spaces for residents of all ages. By creating a new communal hub around the station, it also gives residents opportunities with a low threshold to meet and connect with each other. With the influx of new residents in the coming decades due to the expansion of the housing stock, it is expected that this will change the demographic composition. Thus, this underlines the importance of investing in the social cohesion amongst the residents of the Slinge area. Additionally, it could contribute to a decrease in loneliness in the neighbourhood, which was one of the most pressing current concerns.
With regard to the diverse backgrounds and thus needs of residents, our design aims to cater to the different uses of the public space of the residents of Slinge. This is analysed and visualised through the use of personas. Each persona represents a demographic group whose use of public space is integrated into our design.

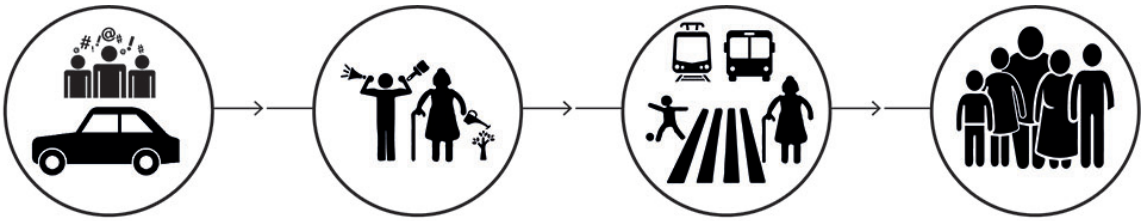
In terms of mobility, this transformation includes the principle of reversing the modal priority within the neighbourhood. While Slinge currently is a multimodal hub and prioritises the car in the road profile, this transformation aims to decrease the role of the car in favour of slower modes of transport. Additionally, the concept of shared streets is introduced to adhere to this principle. This is to improve road safety and create spatial opportunities for more social encounters in the public space.

Taking into account that the housing stock will increase with 5 thousand dwellings in the coming decades, we choose to densify the current housing stock using the principles of topping up, extending and replacing. Consequently, this minimises the odds of displacement and loss of sense of place with the original inhabitants, while diversifying and enlarging the housing stock in favour of a tenure mix. In other words, it diminishes the negative effects that are often associated with gentrification. Moreover, the growing housing density reduces the negative effect on the abundance of green which characterises the Slinge area.

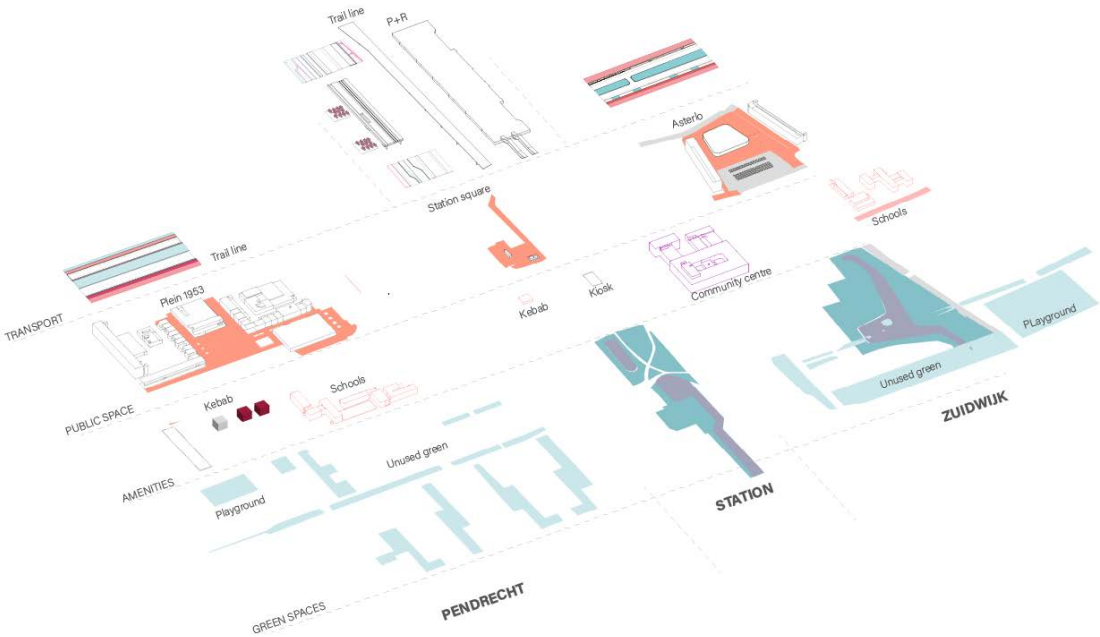
In conclusion, these objectives are integrated into our design to work towards a recharged Slinge with an activated community.


Social
Sense of community
Gentrification
Function mix
Quality of green spaces
Spatial quality
Quality of amenities
Quality of public spaces
Walkability
Public transport
Car
Mobility
Bicycle
Accessibility to Rotterdam
(Social) safety

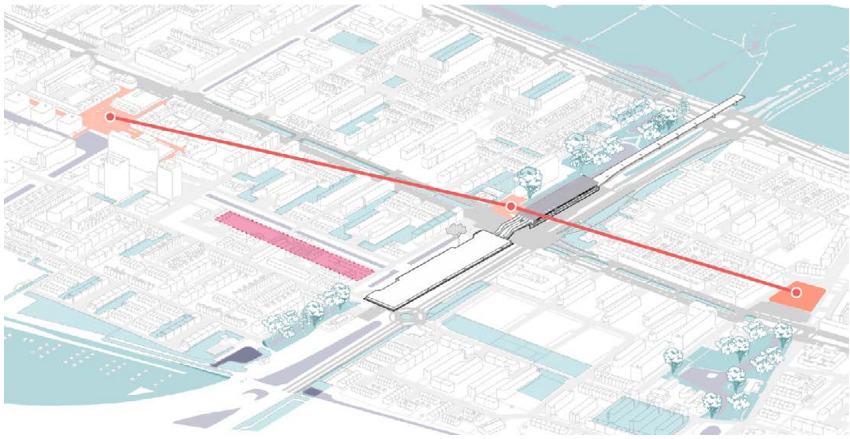
THE NETWORK APPROACH
Reconnecting the neighborhoods in phases

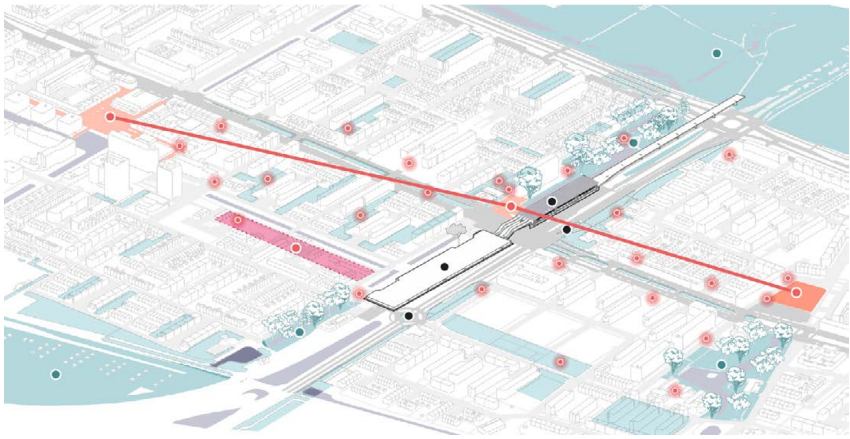


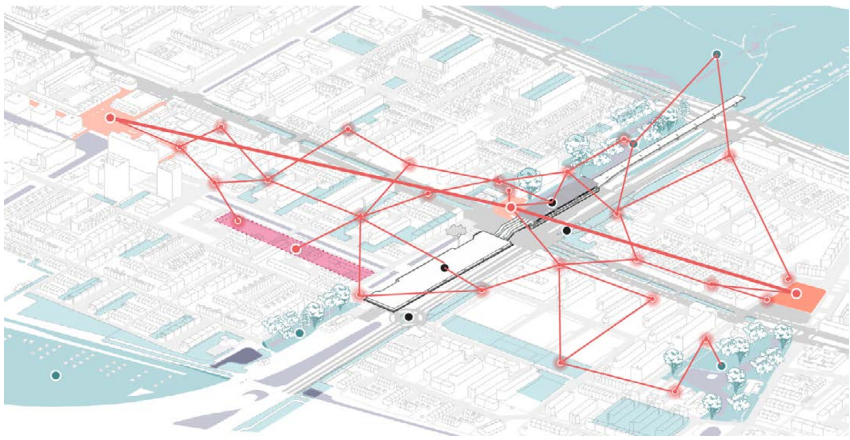
Present | Tactical urbanism | Transformation of spaces | Reactivation of spaces



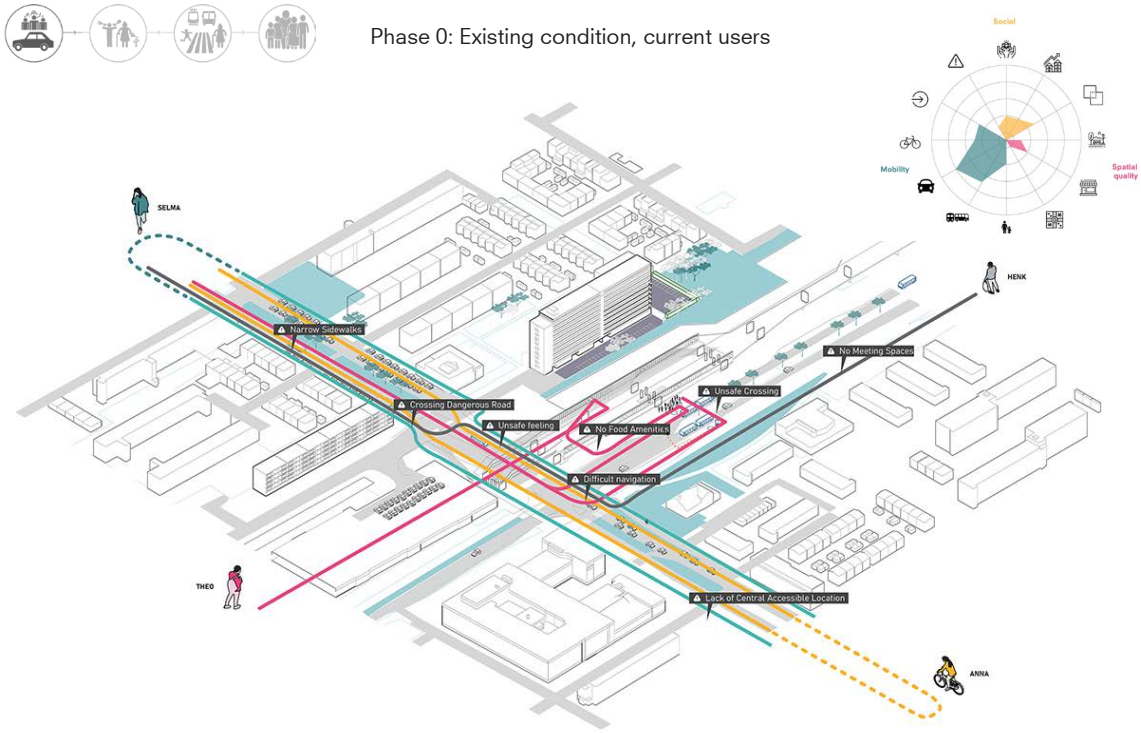
Comparative catalogue of amenities



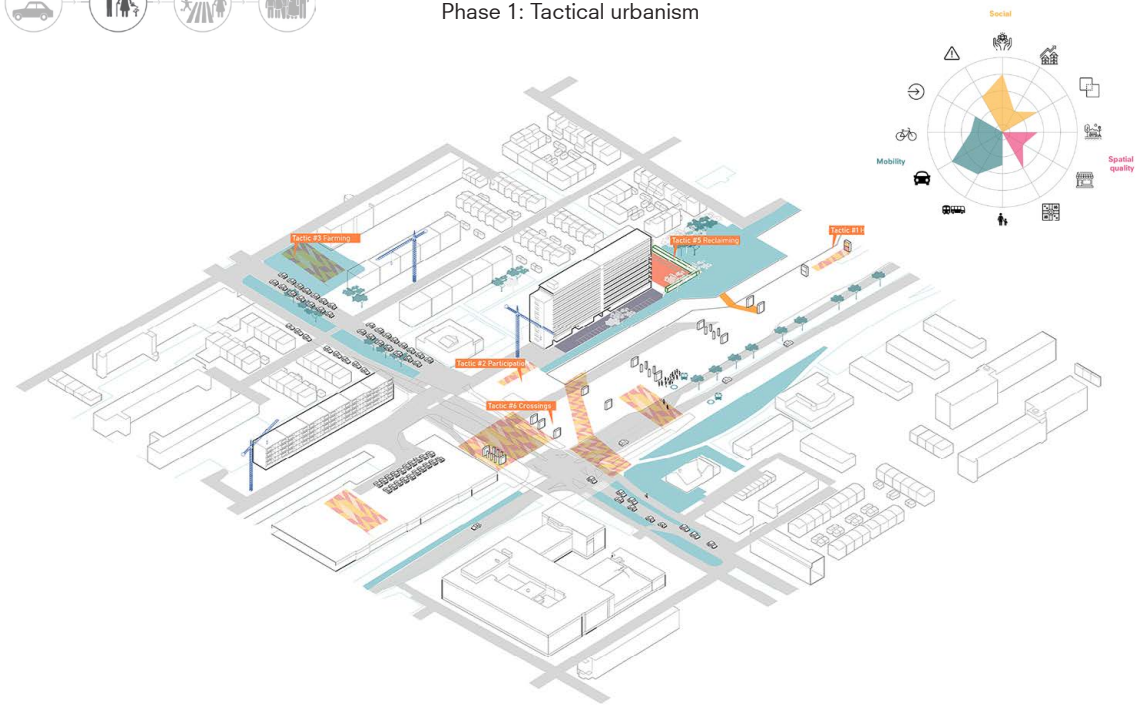




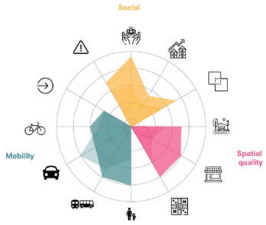
Phase 0: Existing condition, current users

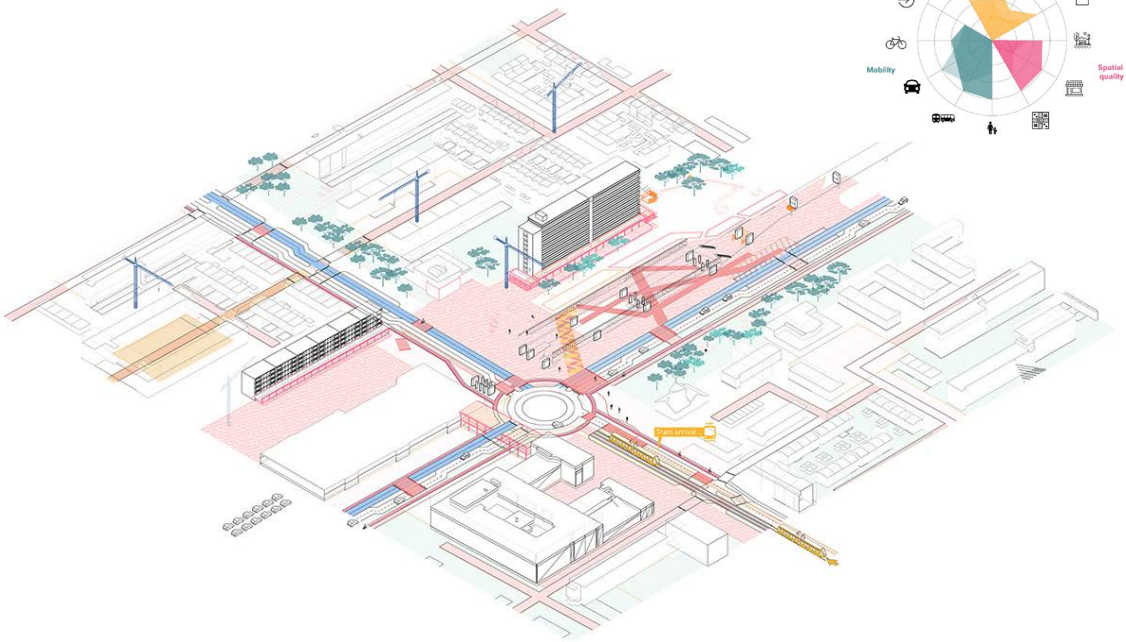


Phase 1: Tactical urbanism

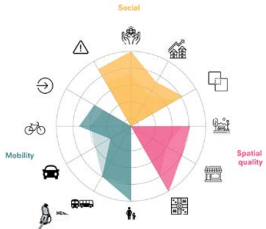


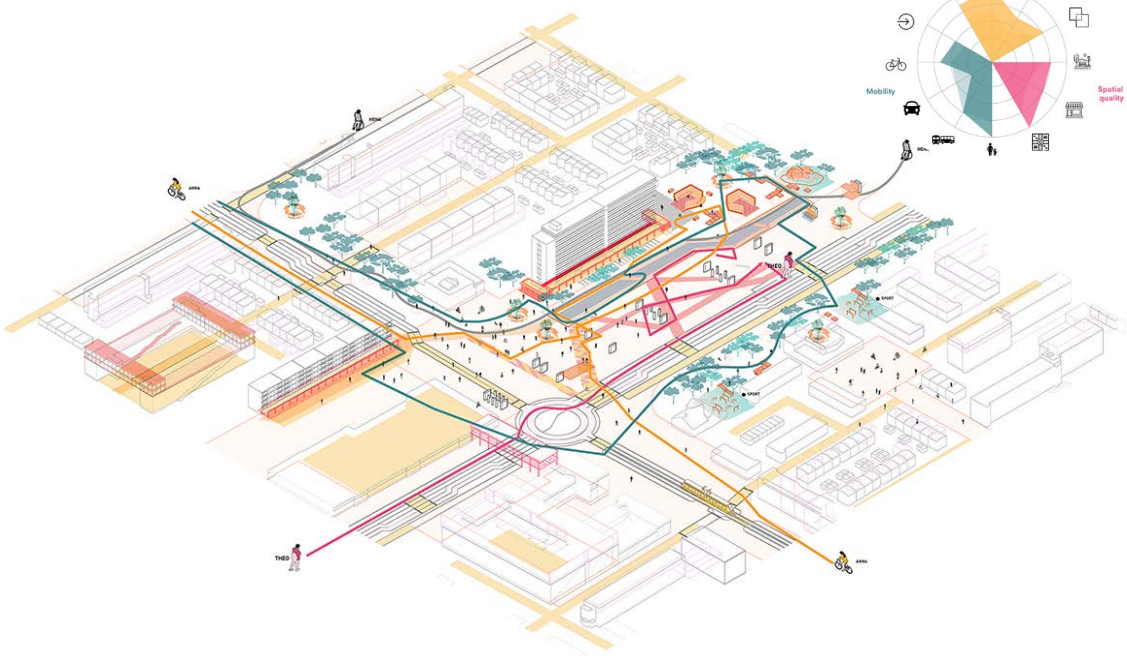
Phase 2: Transformation





Phase 3: Reactivation

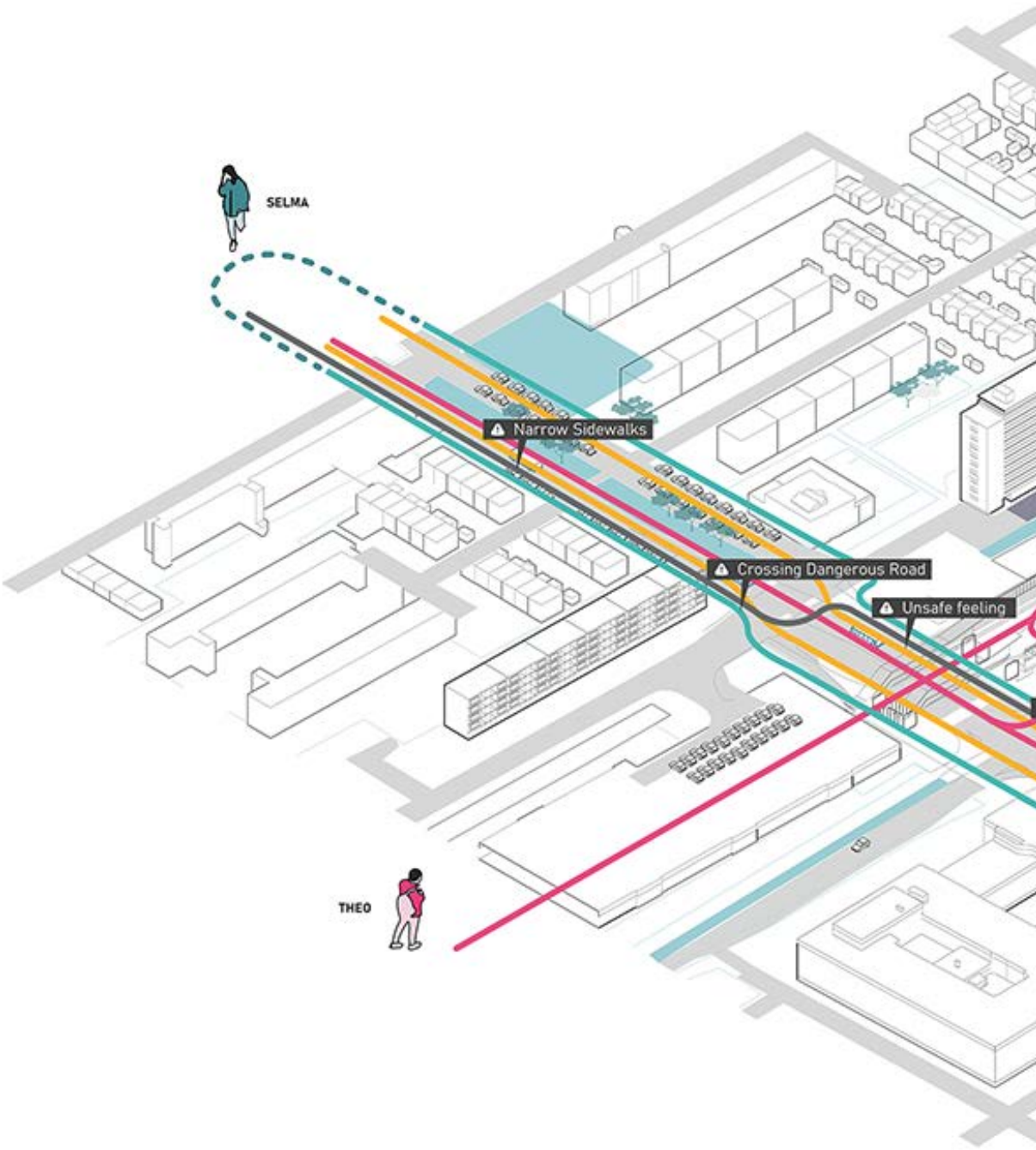


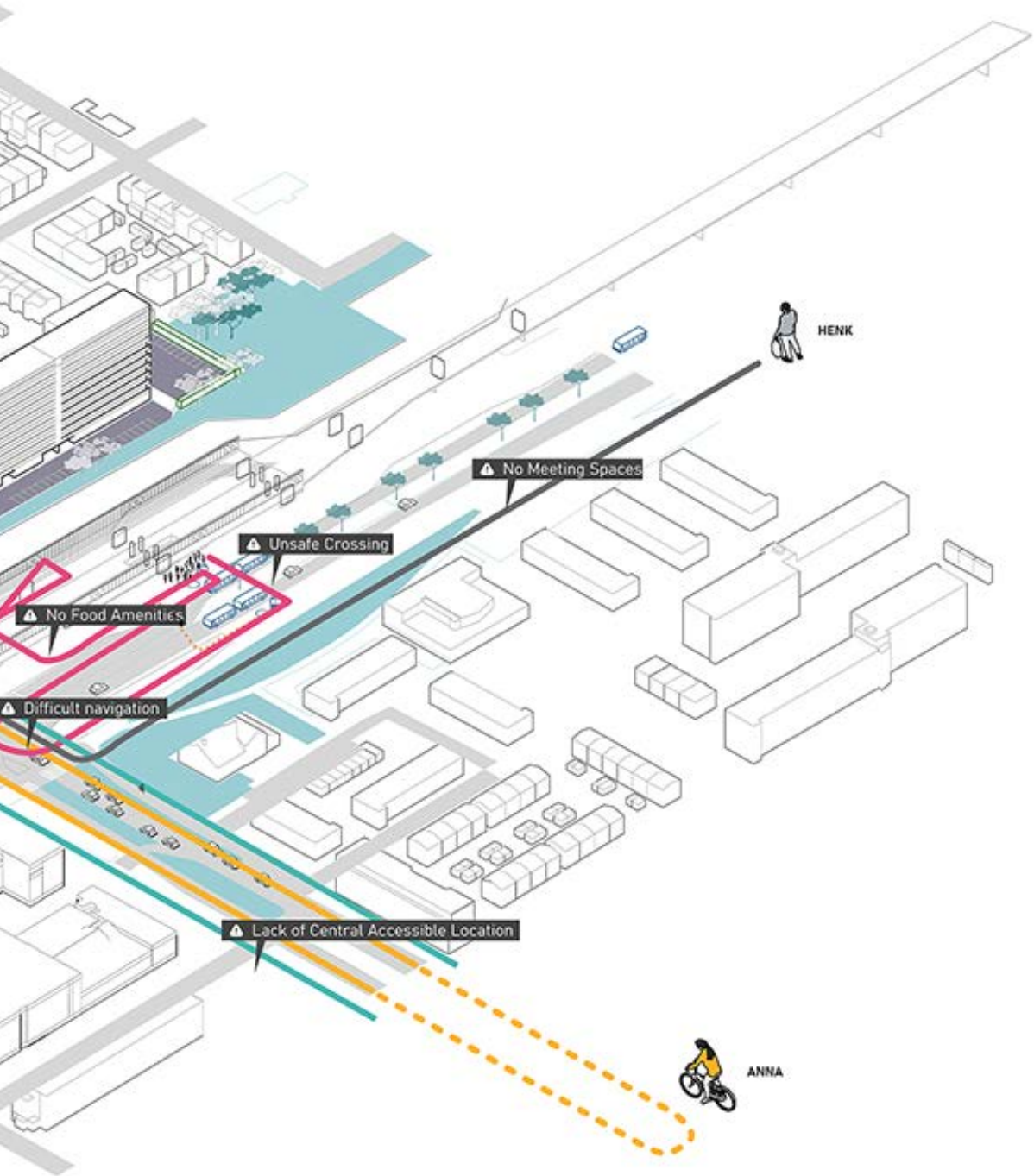






PERSONAS
Routes and problems found in the station.




HENK
No Meeting Spaces
Unsafe Crossing
No Food Amenities
Difficult navigation
Lack of Central Accessible Location
ANNA

PERSONAS
Daily patterns

To get a better understanding of the use of public space by different demographic groups, personas were created to embody the daily patterns of the residents. Consequently, their needs can be incorporated into a well-adjusted transformation of the Slinge area.

Anna
Anna starts off her day by using the bicycle to go to school. She lives in Pendrecht, west of Plein 1953. As there are no high schools in both Pendrecht and Zuidwijk that suit her needs, she needs to travel to the Karl Marxbuurt for her high school (Portus Zuidermavo-havo). This journey by bicycle is about 12 minutes/3.6 kilometers.

After school, Anna bikes to meet up with her friends at Albert Heijn. She buys snacks there and hangs around with her friends at the Asterloplein. There are a few benches to sit on, but she would like to have a nicer place to hang out with her friends.

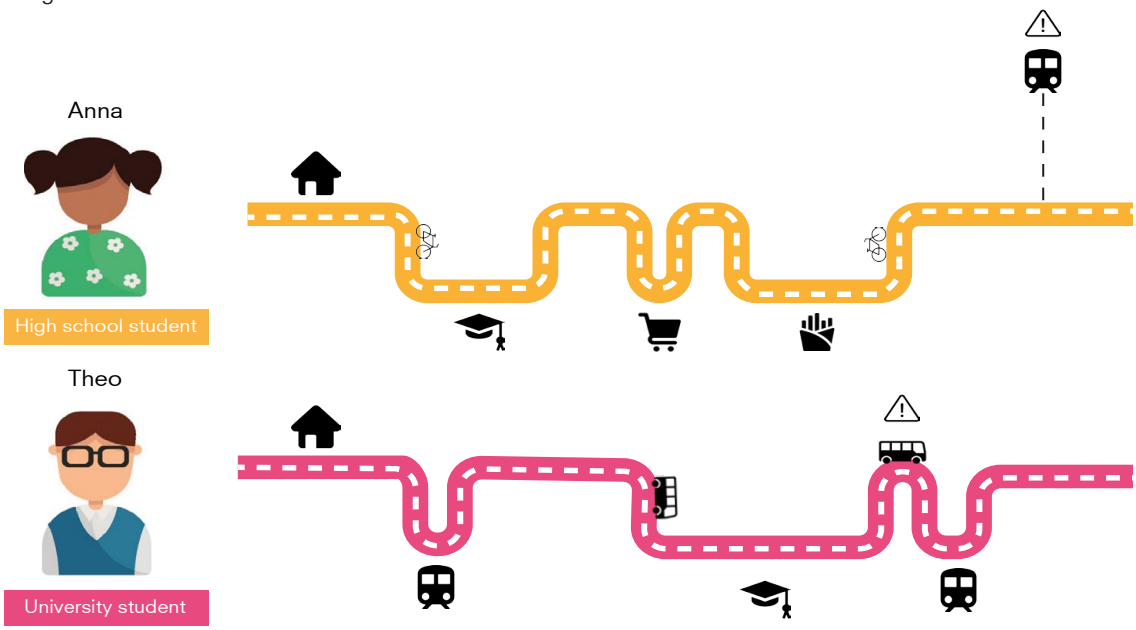
She then moves on by going to her part time job, at the Snack corner where she proceeds to work until 10 PM.

Anna finishes her day and returns home, biking to Pendrecht again. During this journey, she has to pass the Slinge station, which gives her a feeling of unsafety. Often, there are people that will be people that give the impression that will bother her. Also, she has to be very attentive as the crossing with the large car roads can be dangerous at night, as cars have the tendency to run the red light.

Theo
Theo travels from De Akkers, the end station of the metroline D, to Slinge in order to get to his school in the Waalhaven.

Theo travels early in the morning, and arrives at 8 AM at Slinge. While he waits for his bus to arrive, he wishes to buy a sandwich somewhere around Slinge for his breakfast. However, none of the amenities offer anything appropriate.

He takes the bus to the Waalhaven and proceeds with his day. On his way home, he passes through Slinge once again. This time, arriving at the opposite end of the road. He is in a hurry and needs to transfer to the metro as fast as possible. Thus, he chooses not to wait for the green light and crosses through the green patch, as everyone does that anyways. This can be dangerous, as many cars need to stop and are not aware that people do this regularly. Theo then gets into the metro and leaves to De Akkers.



Selma
Selma has three daughters, of which two are old enough to go to primary school. She starts off her day by bringing them to school by foot. She does not feel comfortable sending her children to school by themselves, as some roads in the neighbourhood she thinks are not safe for smaller children.

Selma then goes to the park with her youngest daughter, near Albert Heijn. There is a nice playground where her child can play without the danger of fast cars. She does not know anyone else in the neighbourhood, but it would be nice to have a place to meet them.

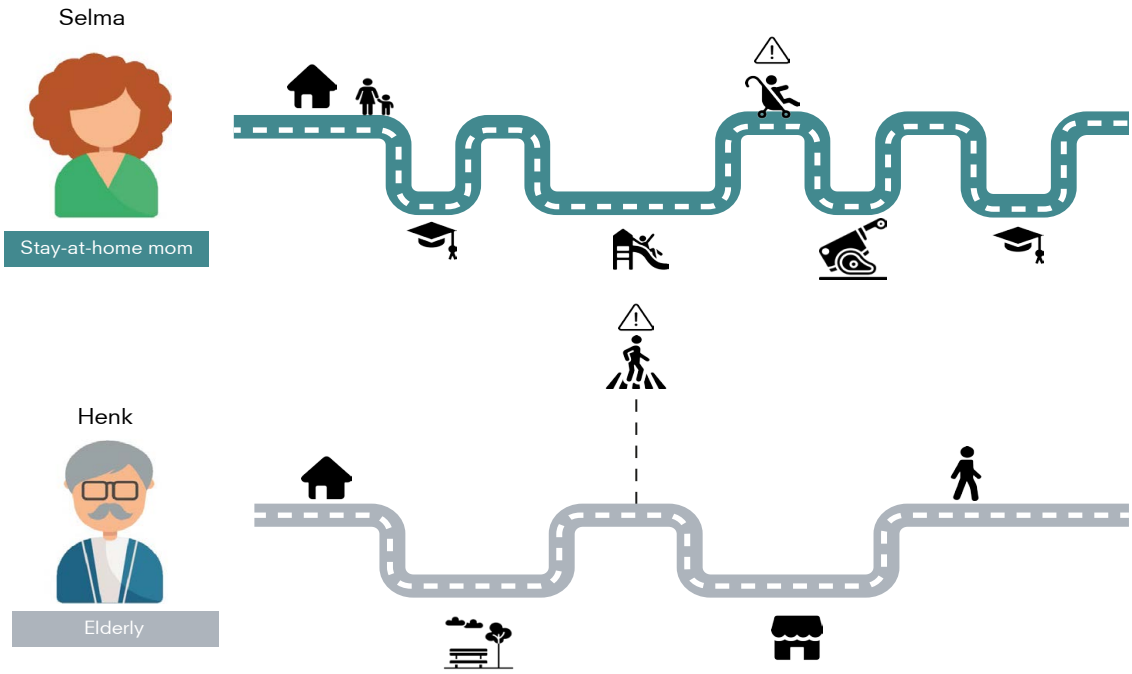
She proceeds by walking from Zuidwijk to Pendrecht for the halal butcher. During her walk, it sometimes is hard to maneuver the narrow sidewalks with her stroller. She returns and picks her children up from school.

She does not have the financial means to send her children to after school activities such as tennis or homework tutoring: a central location that is more accessible would be nice for both her children and herself.

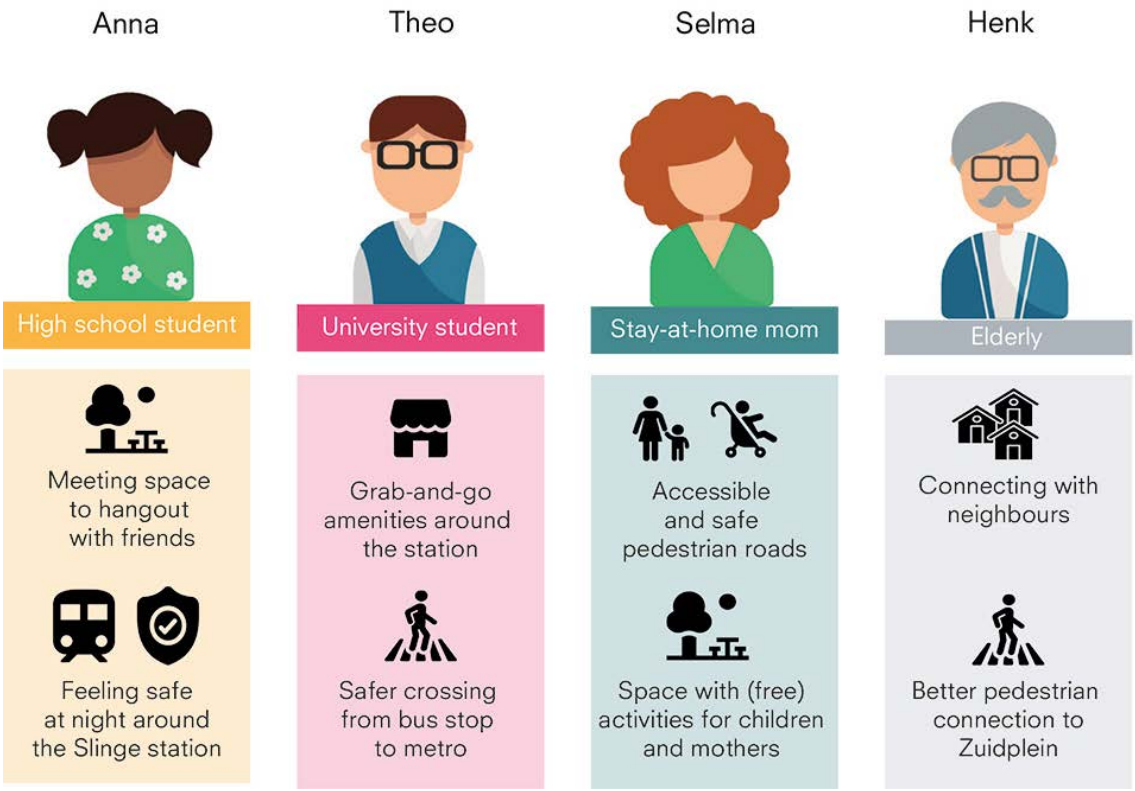
Henk
Henk has lived in Pendrecht for over 40 years and is a retired painter. He goes everyday to Plein 1953 to eat his lunch and watch the birds and the people. He has seen the neighbourhood change a lot: he does not know his neighbours, as most of his old neighbours have moved away. Rent prices went up and some felt unsafe in the neighbourhood.

Henk is lonely, but there are no other spaces for him to connect with others. He feels excluded off the religious groups, as he does not go to the church or mosque.

On the weekend, he walks from Pendrecht to Zuidplein to go to the larger range of shops they have there, as he collects post stamps. He has to go through the Zuiderpark for this journey. However, he needs to cross a very dangerous road in order to reach the park, which is undesirable.



PERSONAS
Demands



PERSONAS
Future resident

Sam

Sam just moved to Zuidwijk, in one of the new dwellings that were built. He bikes to the station in the early morning, and goes by metro to the city center to his office.

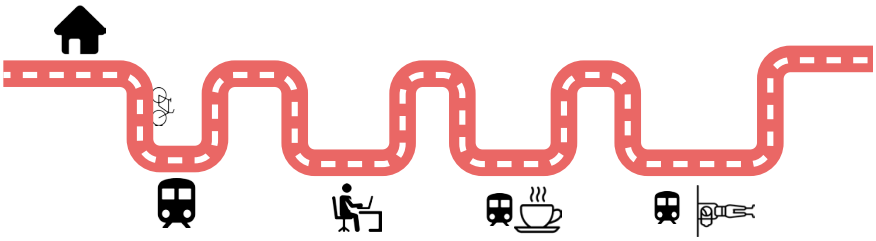
In the afternoon, he returns and he is in need of a space to have a coffee. Luckily there is a place at the station where he can grab a coffee and sit outside the terrace. This also is an opportunity for him and the existing residents to meet, as they use the same space. Perhaps Sam can contribute to the neighbourhood by helping residents with legal advice. This gives Sam also more purpose to his life, as his current job is unfulfilling.

He returns home after work hours, but goes back at 8 PM to the Slinge station to meet up with his friends to climb and utilise the calisthenics equipment. There are less people commuting within the station, but the people that exercise there create a sense of eyes on the street and makes it unattractive for people to deal drugs or do other undesired activities.

Sam

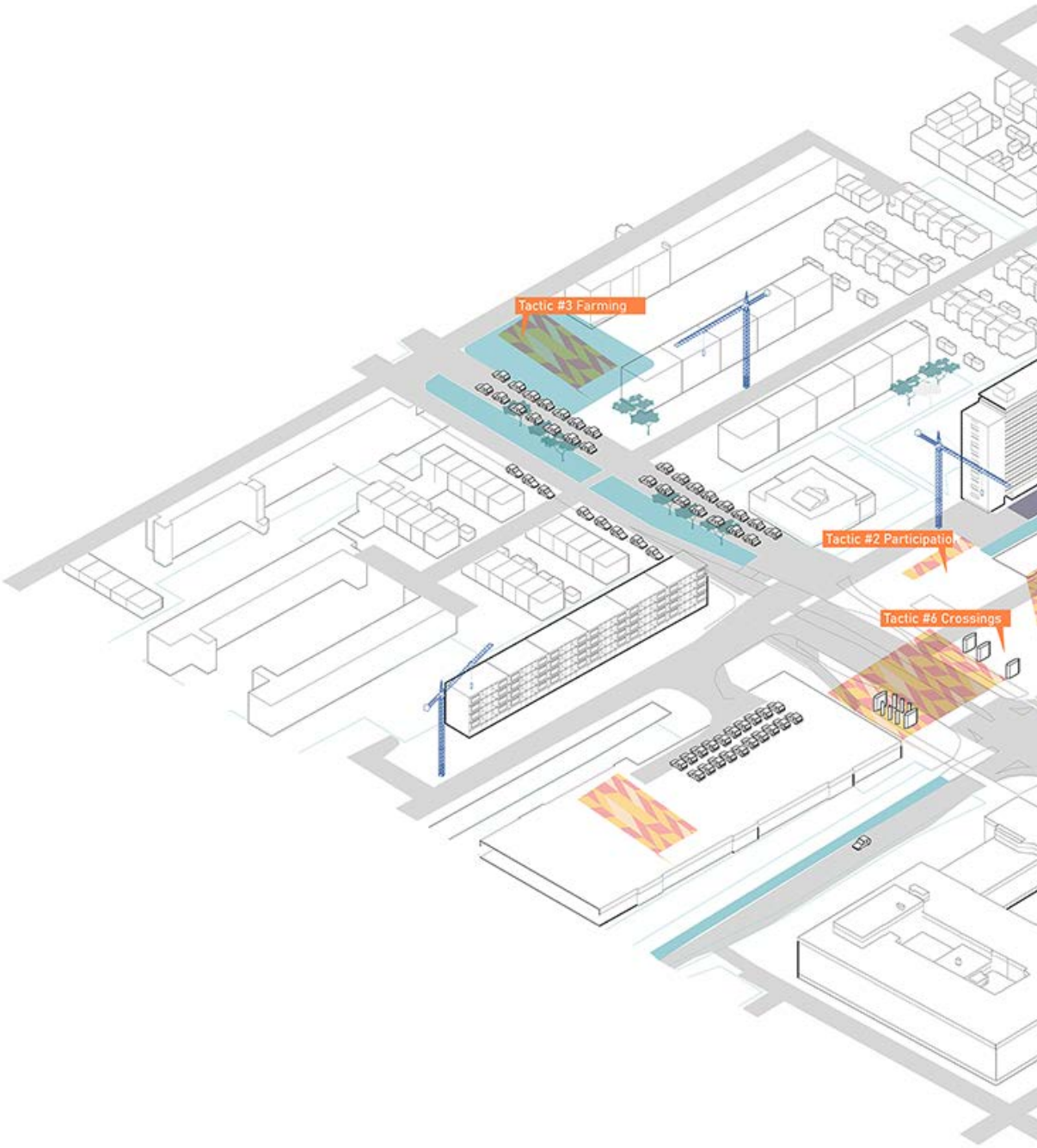


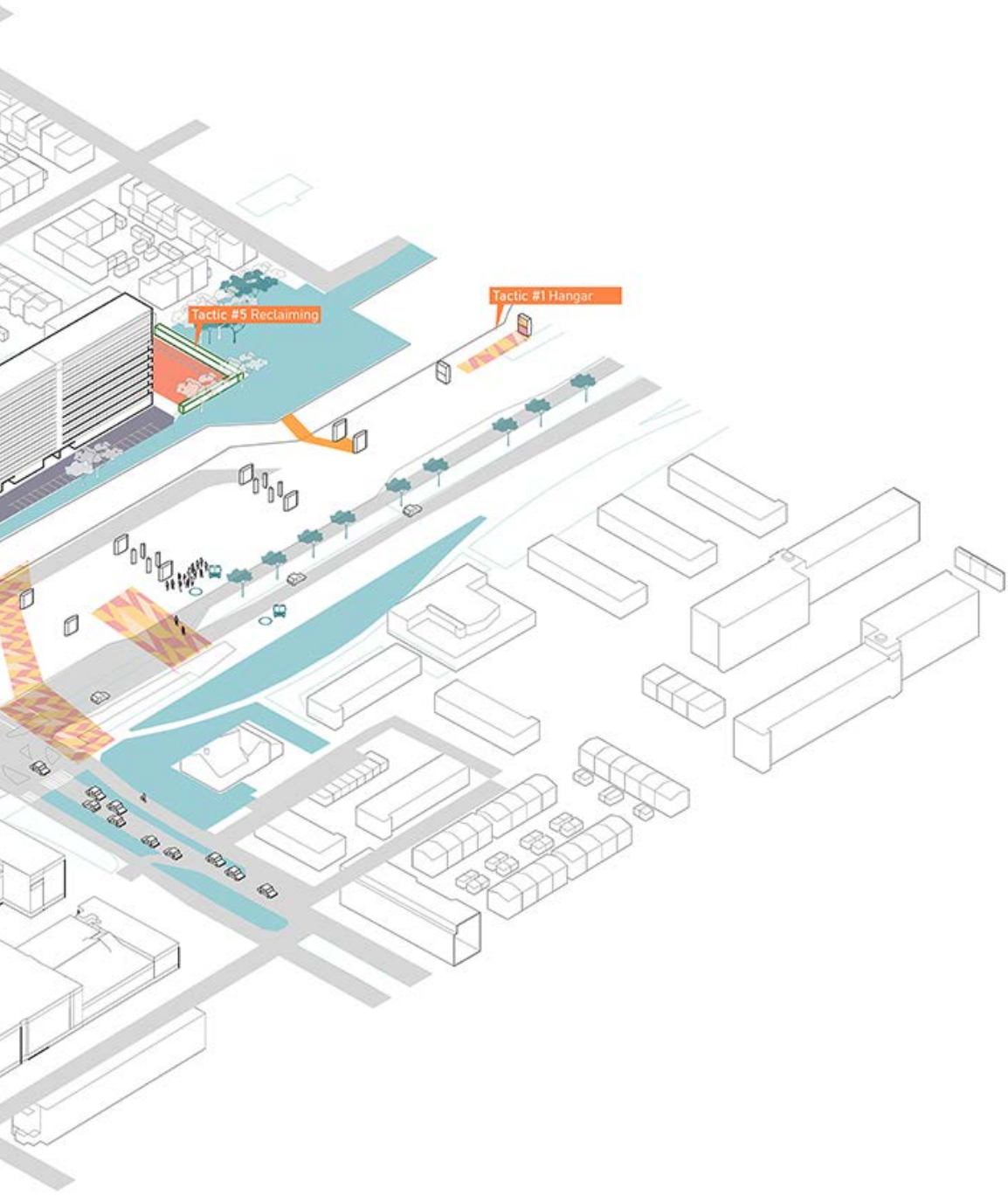
Young Professional



PHASE 1
Tactical urbanism and participatory design.






Tactic #5 Reclaiming
Tactic #1 Hangar

URBAN INFORMAL TACTICS

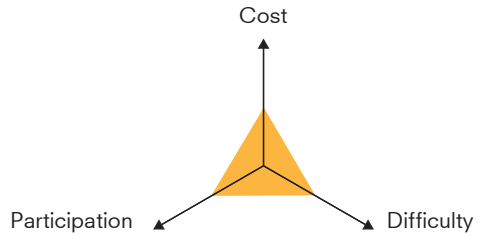


We strongly think that the only way to reach a successful urban project is to have the support and the help of the community. For this reason the first phase of our project is the involvement of the community. The current situation of the neighborhood is a general unsafety feeling, the underuse of potentially attractive spaces and the difficult situation of pedestrian in this car dominated area.

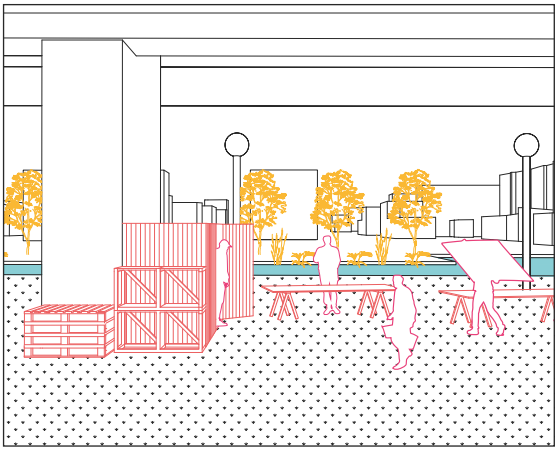
For this reason would like to involve the inhabitants giving them a crucial and active role not only in the design phase but also in the realization process. We implemented a catalogue of urban tactics, proposing them in a specific location in the neighborhood, but after the first application these tactics can works as catalyst and most of them can be applied by the citizens themselves and spread around the neighborhood. They are all based on cheap and reused material and the realization doesn't need any specific knowledge, in that way all the community can be involved in different ways and with different roles. We aim to activate the community, reclaiming and activating some public spaces that are now underused or unused, trying to start a trigger a community sense that now seems to be really missing in this area. Trough this process we also aim to receive feedbacks on our design strategy and eventually adjust and change it according to the real needs of the community.

01 TACTIC HANGAR

Ingredients
Who: Citizens, Community Group, Municipality.
What: Wooden locker, trestles, pallets, wooden panels
Where: Underneath the railway.

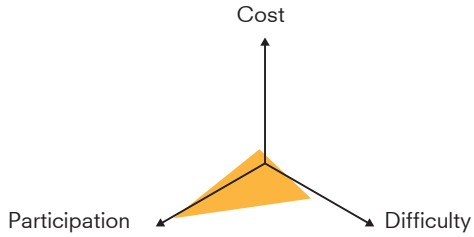




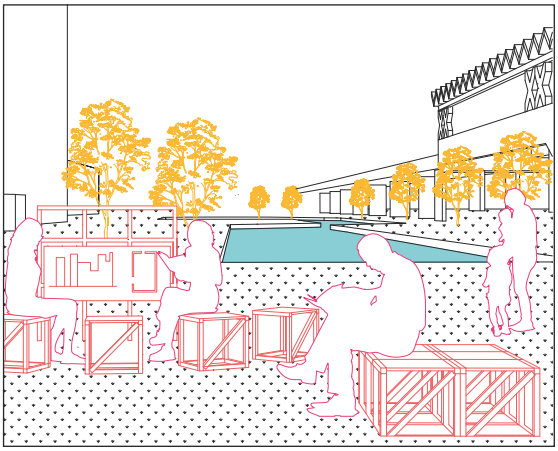


02 PARTICIPATION HQ

Ingredients
Who: Citizens, Community Group, Municipality.
What? Metal frames,wooden boards, notebooks, pens.
Where? Station plaza.

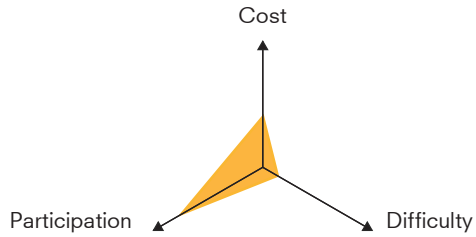




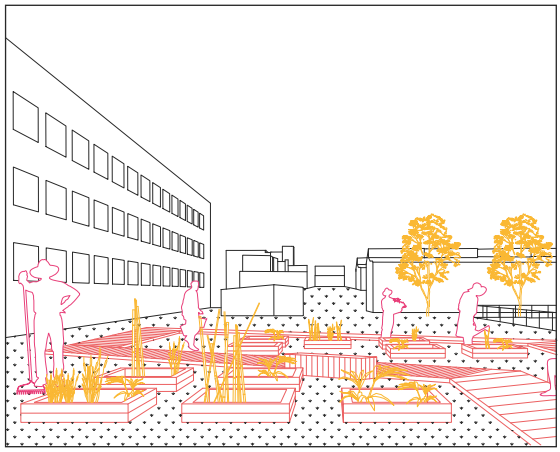


03 FARMING THE CITY

Ingredients
Who? Citizens, Community Group, Municipality.
What? Garden tools, plants, wooden boards.
Where? Unused green spaces between urban blocks.

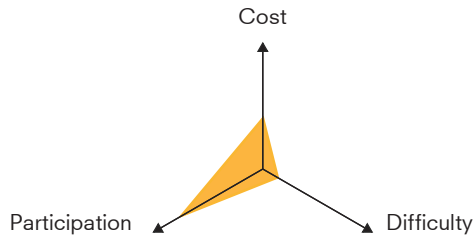




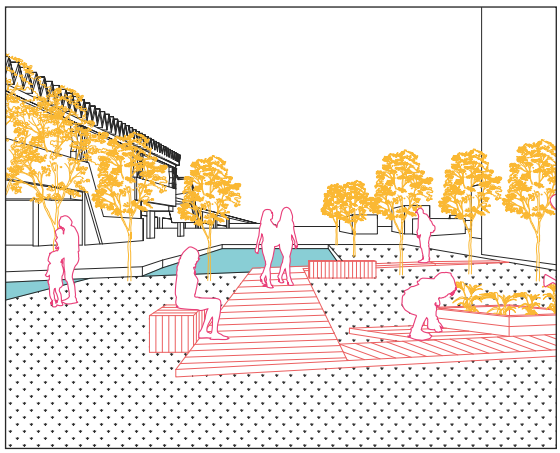


04 RECLAIMING PUBLIC GARDENS

Ingredients
Who?Citizens, Community Group, Municipality.
What?Garden tools, plants, wooden boards.
Where? Unused or underused green spaces.

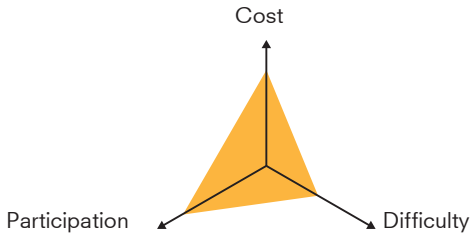




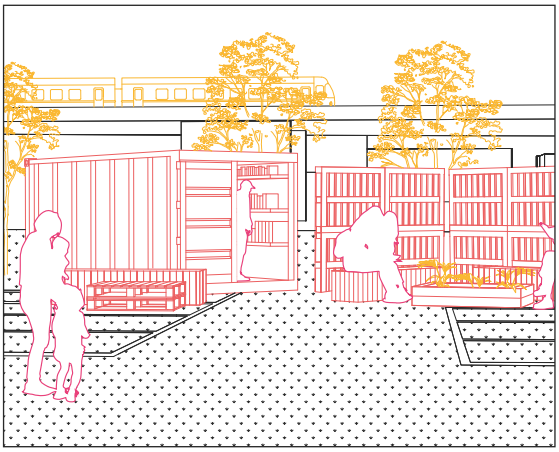


05 RECLAIMING PARKINGS

Ingredients
Who?Citizens, Community Group, Municipality.
What? Garden tools, books, container, wooden boards
Where? Urban parkings.

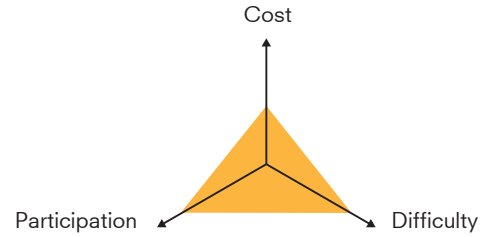




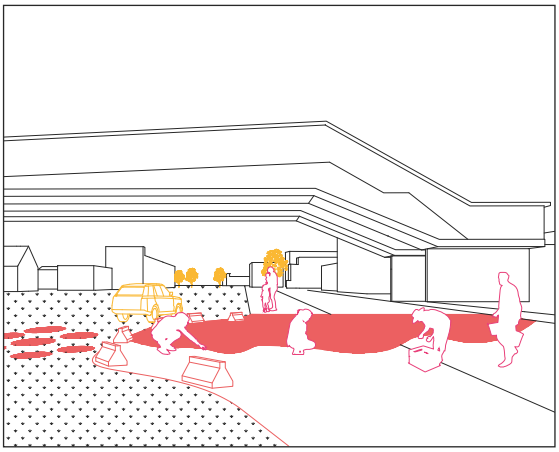


06 RECLAIMING PEDESTRIANS' STREET

Ingredients
Who? Citizens, Community Group, Municipality.
What? Concrete barriers, brushes, paint.
Where? Streets.

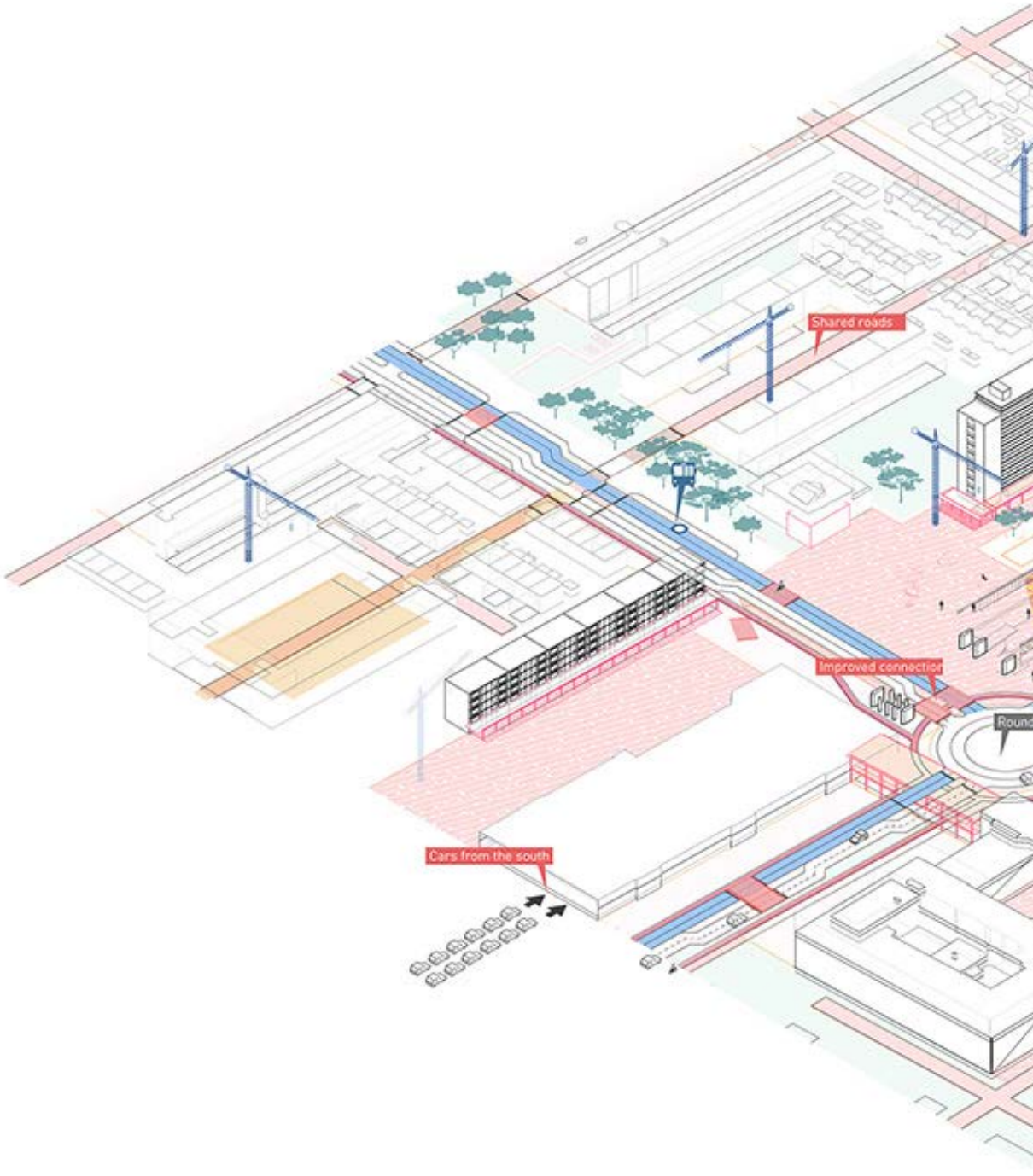


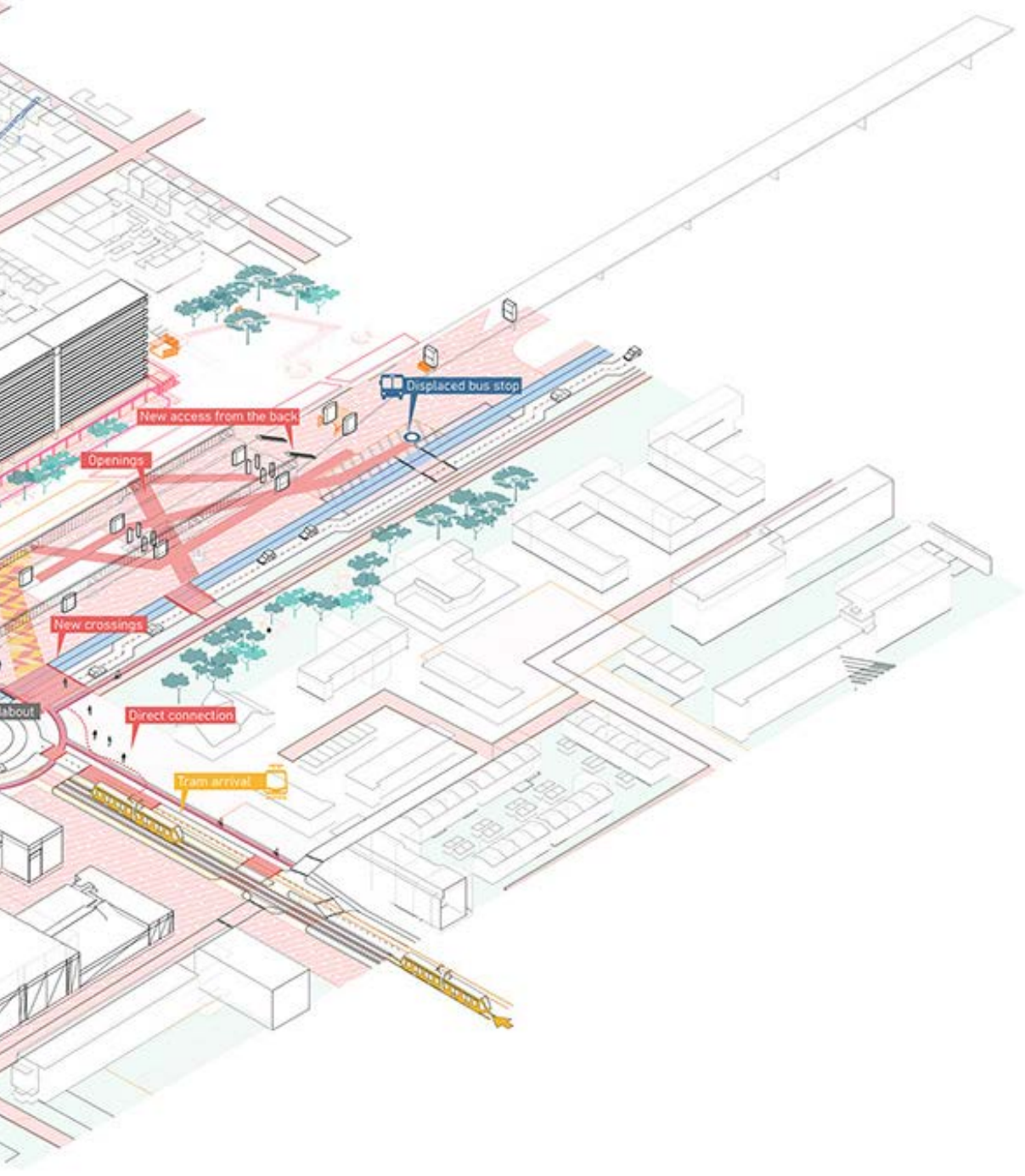




PHASE 2
Transformation and development






Displaced bus stop
New access from the back
Openings
New crossings
Direct connection
Tram arrival

MOBILITY
Design principles

Nowadays Slinge has the main function of a transit station between different modalities, it is mostly ruled by the car traffic with the huge, cage-like Park and Ride building.

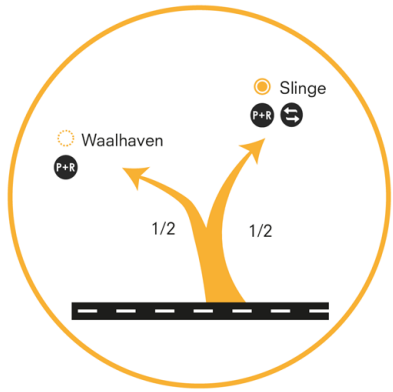
To change the current situation and improve the existing infrastructure, one of the most important steps regarding mobility is the redirection of the car flows around the station and the neighbourhood, distributing the traffic more evenly between the neighbouring stations and Slinge.

The car traffic from the highway could use the P+R parking facilitated at the already planned Waalhaven metro station (Gemeente Rotterdam, 2018), as well as the existing one at Zuidplein. Those who come from the southern outskirts of Rotterdam (the "Drechts"), can use the P+R at Slinge, alongside the residents of Pendrecht and Zuidwijk.

The goal for the final phase is that the two neighbourhoods become car-free, the people leave their cars in the parking lot, and they opt for soft mobility, the use of Mobility as a Service or Autonomous Vehicles for their last mile.

The P+R would be renovated using green facades and condensed in the south side of the existing building from the first floor up, leaving the ground floor for the shared mobility, the AV and most importantly the pedestrians, ameliorating social safety. There is a possibility to make vertical extensions, new floors for the cars, if needed.





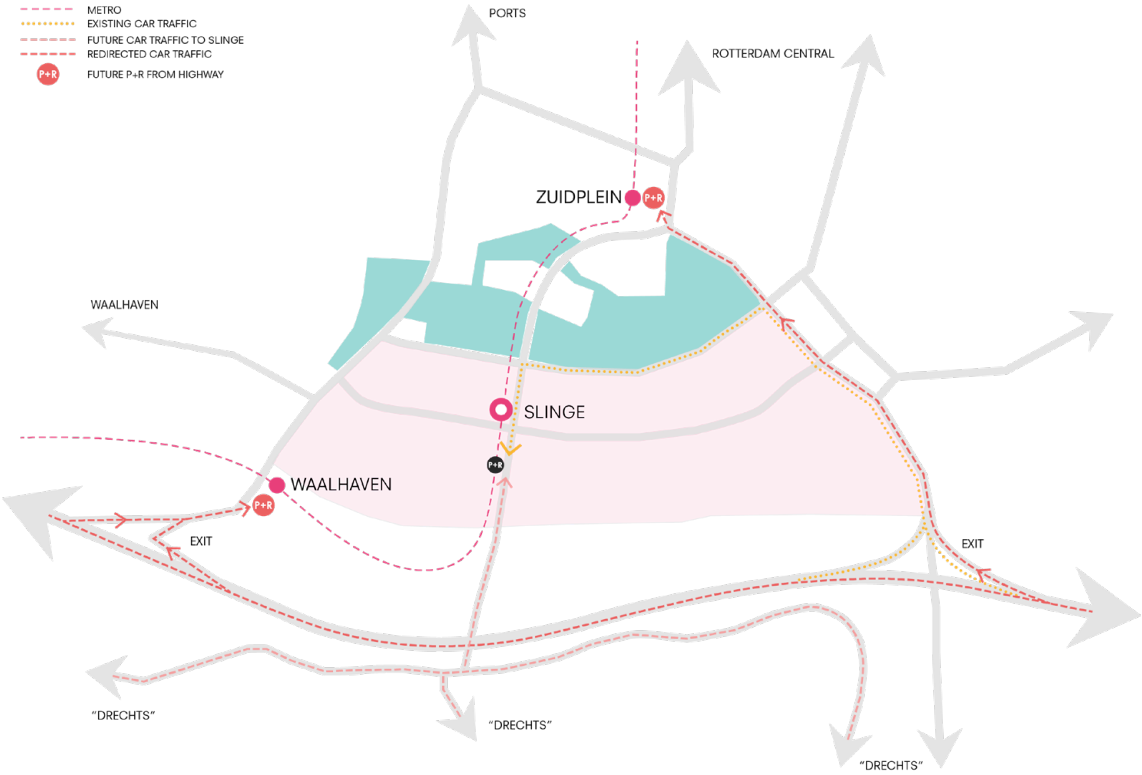
Redirection of car flows



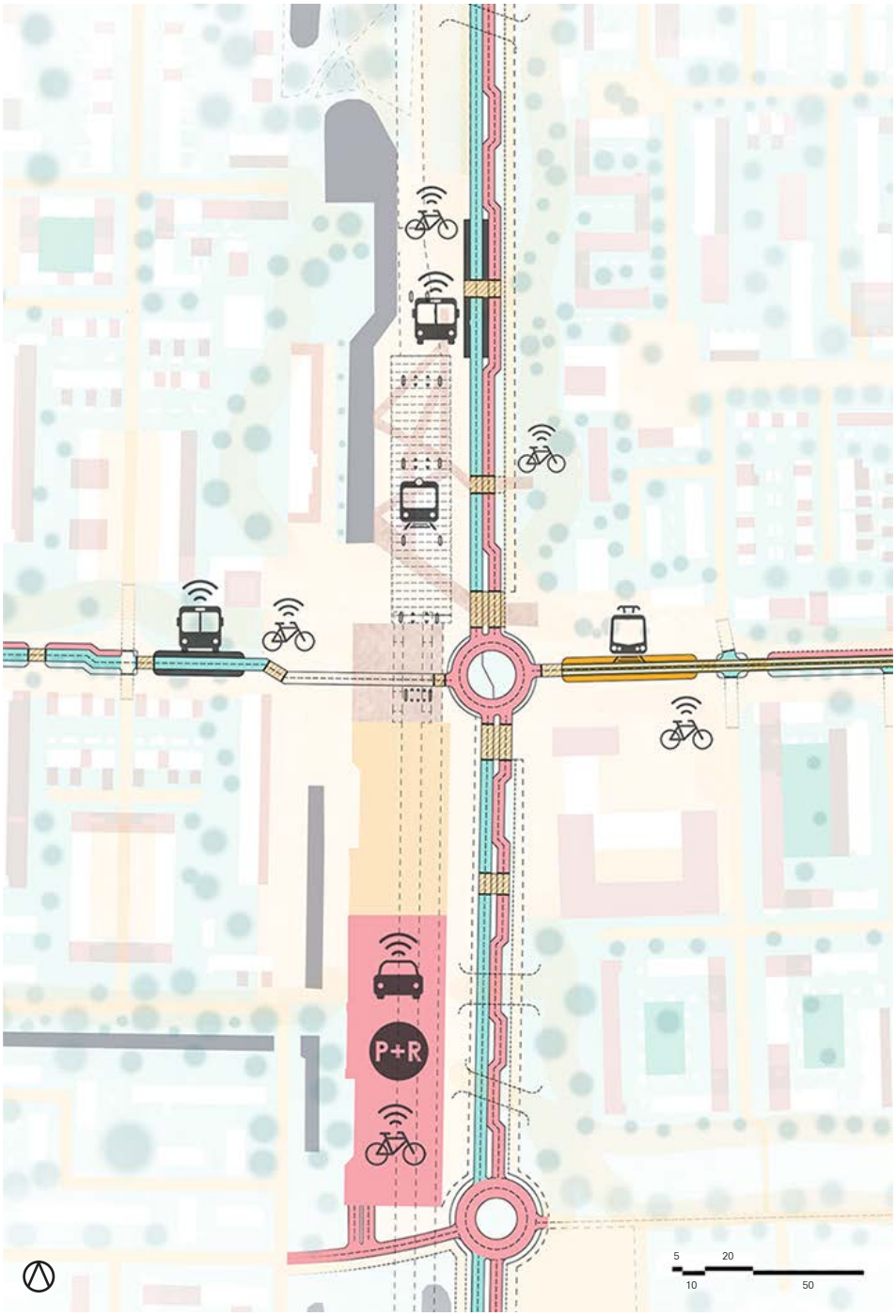
Reverse hierarchy



Shared streets


METRO
EXISTING CAR TRAFFIC
FUTURE CAR TRAFFIC TO SLINGE
REDIRECTED CAR TRAFFIC
P+R
FUTURE P+R FROM HIGHWAY
PORTS
ROTTERDAM CENTRAL
ZUIDPLEIN
P+R
WAALHAVEN
SLINGE
P+R
WAALHAVEN
P+R
EXIT
EXIT
"DRECHTS"
"DRECHTS"
"DRECHTS"

MOBILITY
Intersections and roads



Masterplan of the intersection, final phase

The intersection
During our research and site visits one of the most problematic nodes concerning mobility was the intersection of the two main axes. It was purely designed for the benefit of the cars, leading to unsafe and slow crossing for pedestrians and bikes.
We transformed the traffic light intersection into a roundabout. It distributes the car traffic better, makes drivers more aware of the soft modalities and pedestrians, slows down their speed.
The stops of the public transport (bus, tram, later AV), as well as the shared mobility hubs were moved to the perimeters of the station plaza, leaving the centre area to the pedestrians, separating the different mobility flows around Slinge station. This is also emphasized by the floor-paintings of the tactical urbanism, highlighting the main flows, giving directions.

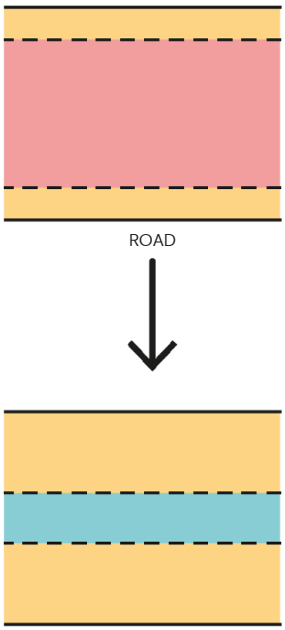


The intersection in the present (source: Google maps)

Road profiles
We realised quite early on during the design process, that the current layout of the roads was the main source of problems in the neighbourhood regarding mobility, separating, fragmenting Slinge into different parts, making the crossings difficult and dangerous.

By redesigning the roadprofiles, we want to favour the pedestrians, reducing the surfaces used by cars and public transport, creating safe crossings along the streets, transforming the roads into urban landscapes with the help of topography and plug-ins.

In the next few pages, we showcase the different phases of the design, using floorplans and sections for each of the four main roads (Pendrecht-axis, Zuidwijk -axis, South-axis and North-axis). In the first phase, the cars and the public transport gets separated. We added "chicane"-s (NACTO, 2013) to the car lanes, preventing cars from speeding. In the final phase only the public transportation remains, the other parts of the road are transformed into shared streets (pedestrians and soft mobility), and urban landscapes, activated by plug-ins.

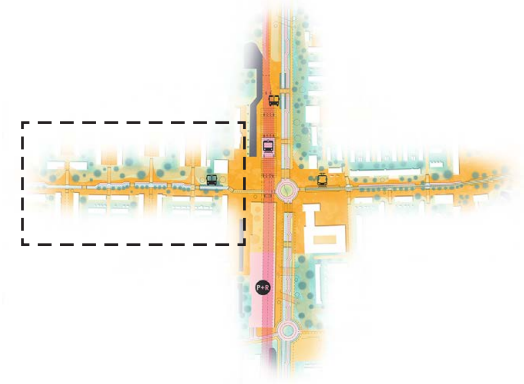


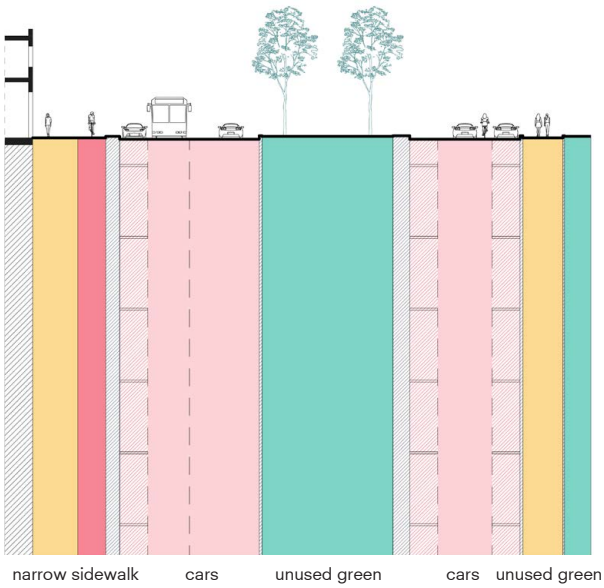
Reference: NACTO - Urban Street Design Guide; 2013

MOBILITY
Redesigning the road profiles

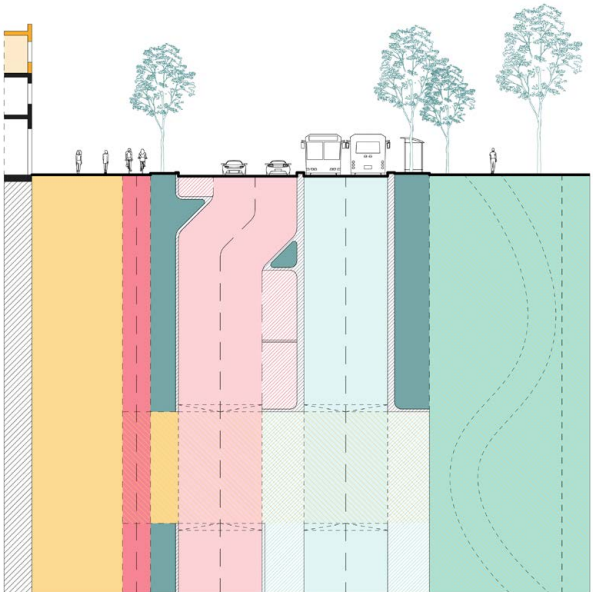
Pendrecht axis
Pendrecht-side of the Slinge road is mainly occupied by car-lanes and parking spaces at the moment, leaving unused green surfaces in-between.The first step in the redevelopment is the separation of the cars and the public transportation in the middle of the area, which allows the low-quality green spaces next to the roads to extend, and to become activated by urban interventions and tactics.

In the final phase only the lane of the public transportation stays, for the MaaS and the AV. The other parts of the road are shared streets between pedestrians, bikers, and other forms of shared mobility, the green areas are transformed into urban landscapes.



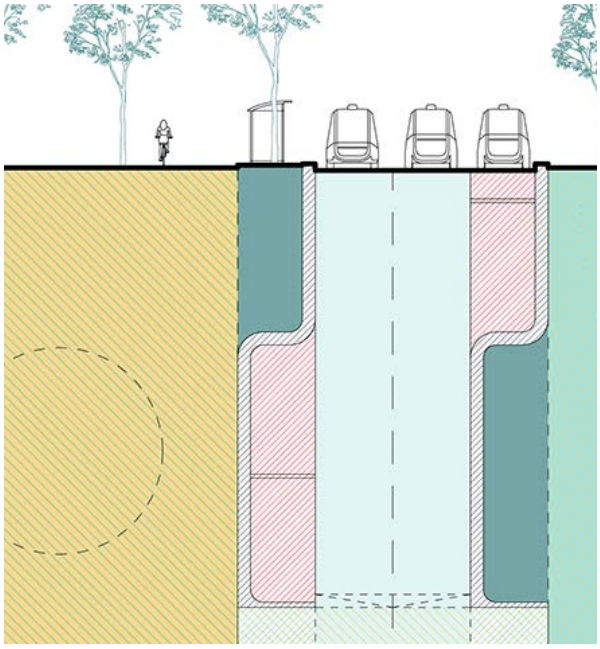


Current condition



pedestrian lane cars public transport growing, activated green

First phase



shared street with plug-ins public transport urban landscape

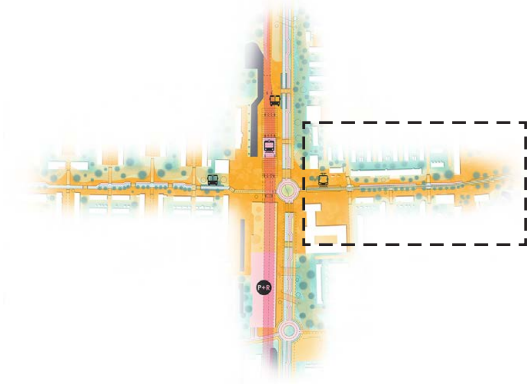
Second phase

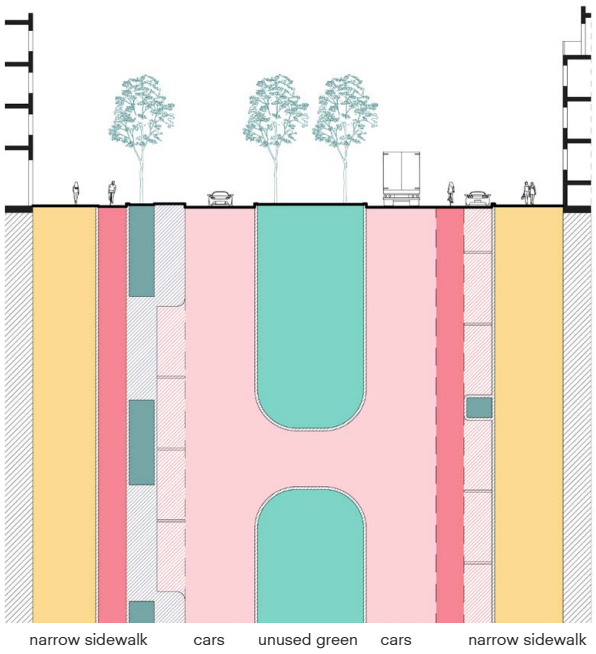
Sections and plans of road profiles, M = 1:200

MOBILITY
Redesigning the road profiles

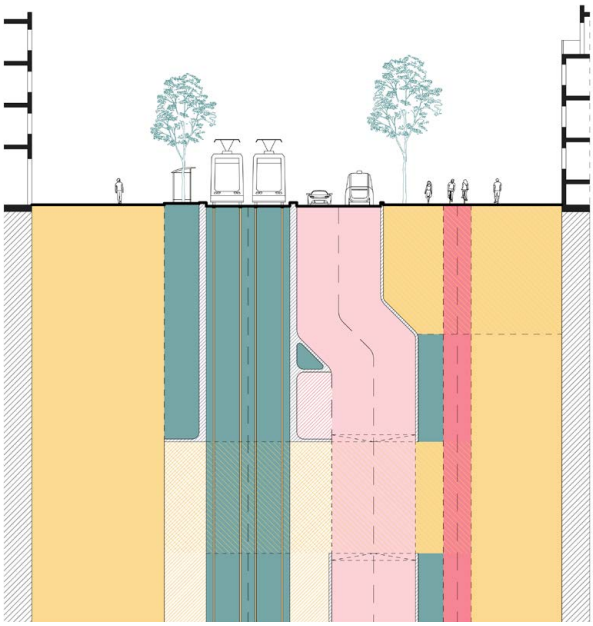
Zuidwijk Axis
The Zuidwijk-side works a bit better at the moment than the other side, yet it requires transformation and the reduction of car traffic. During the first step, a new tram line is introduced, according to the Rotterdam Urban Vision, alongside the redesigned car lanes, leaving space on the sides for the pedestrians, creating safer crossings.

The final phase combines the tram lane with the lanes of the AV and the MaaS. Shared streets with green patches are created on both sides, activating the public areas with the help of plug-ins (transfer, community, mobility), and tactical urbanism.

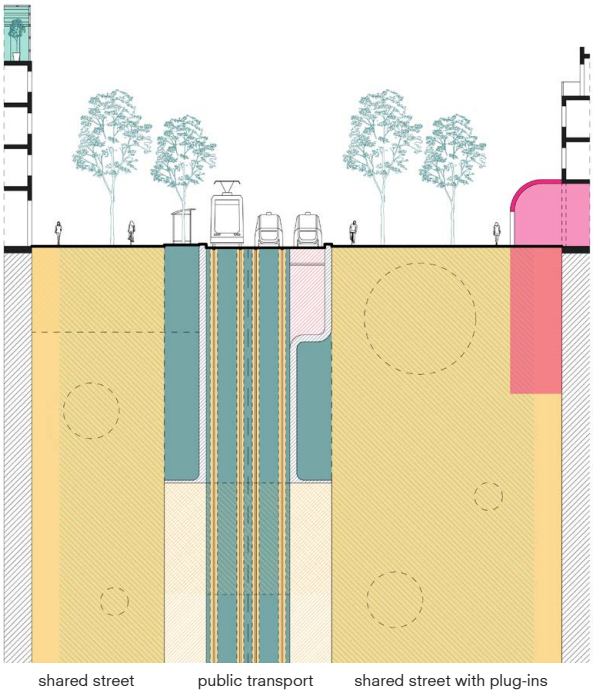




Current condition



First phase



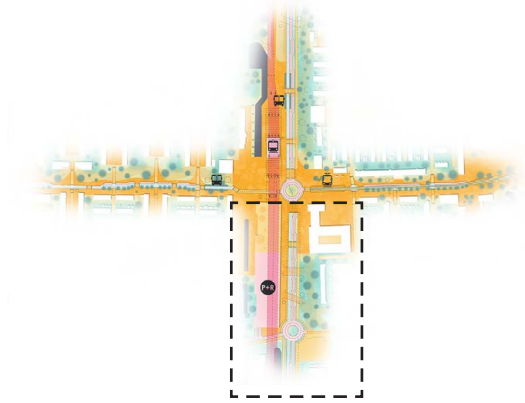
Second phase

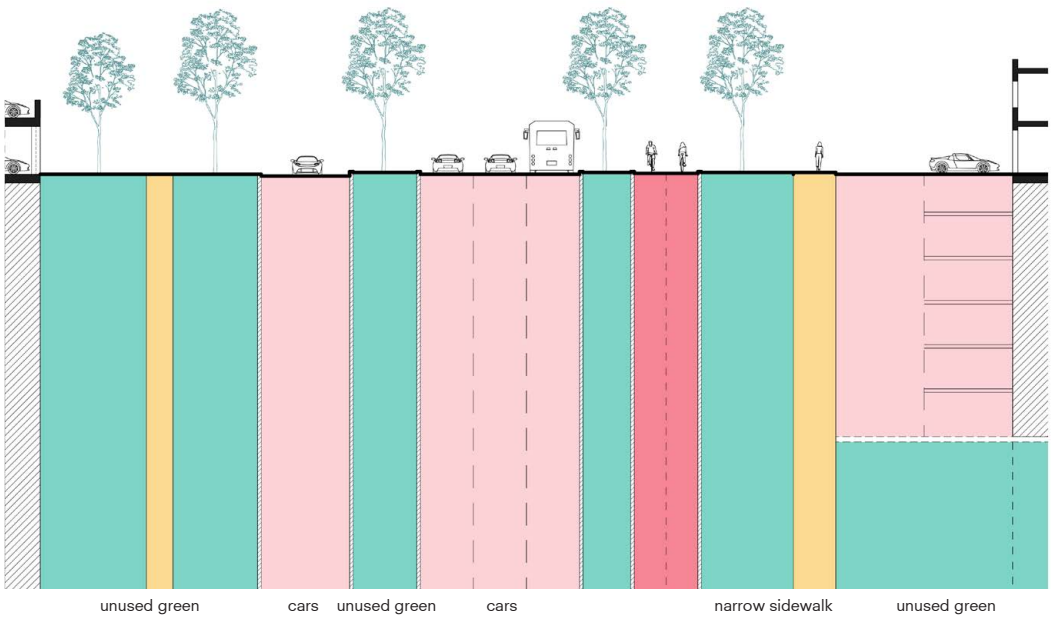
Sections and plans of road profiles, M = 1:200

MOBILITY
Redesigning the road profiles

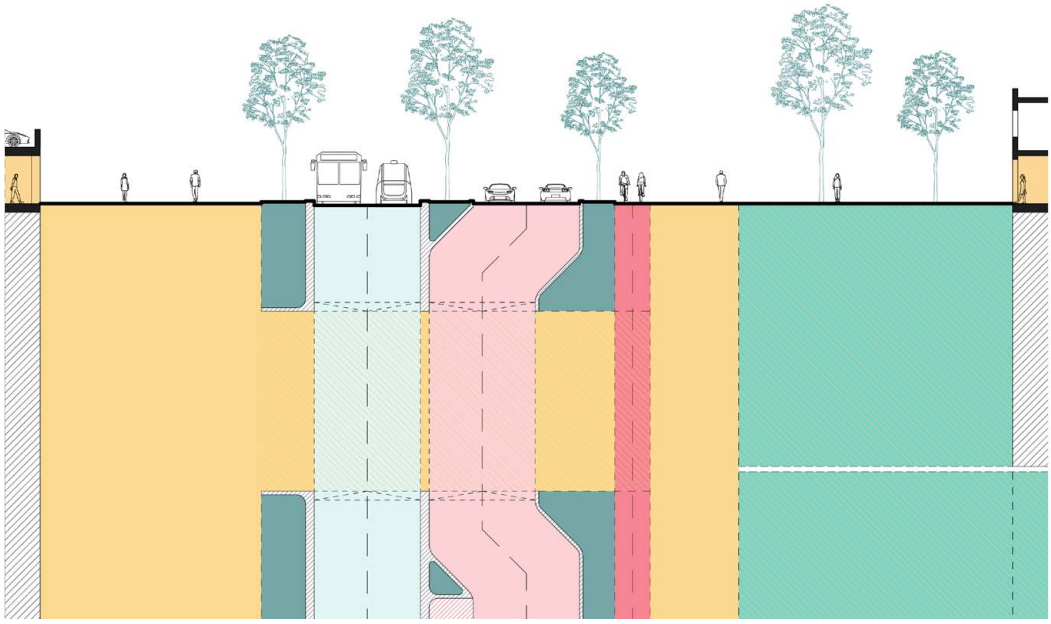
South Axis
The South-axis is next to the P+R, between the existing and the future roundabouts. Nowadays it's almost only used by cars, leaving a lot of unused green spaces and only a narrow pedestrian walkway on the sides.

First, the public transport and the car traffic gets separated, similar to the horizontal axis, then in the final phase the buses are mostly replaced by autonomous vehicles, and the green gets connected to the playscapes on the Zuidwijk side. Furthermore, the connection between the P+R's transformed community side and the adjacent community house, is established with the help of a bridging plug-in. The cars can access to the P+R from the original roundabout. The lane between the two roundabouts can be the perfect test-route for the AV's among the first steps.



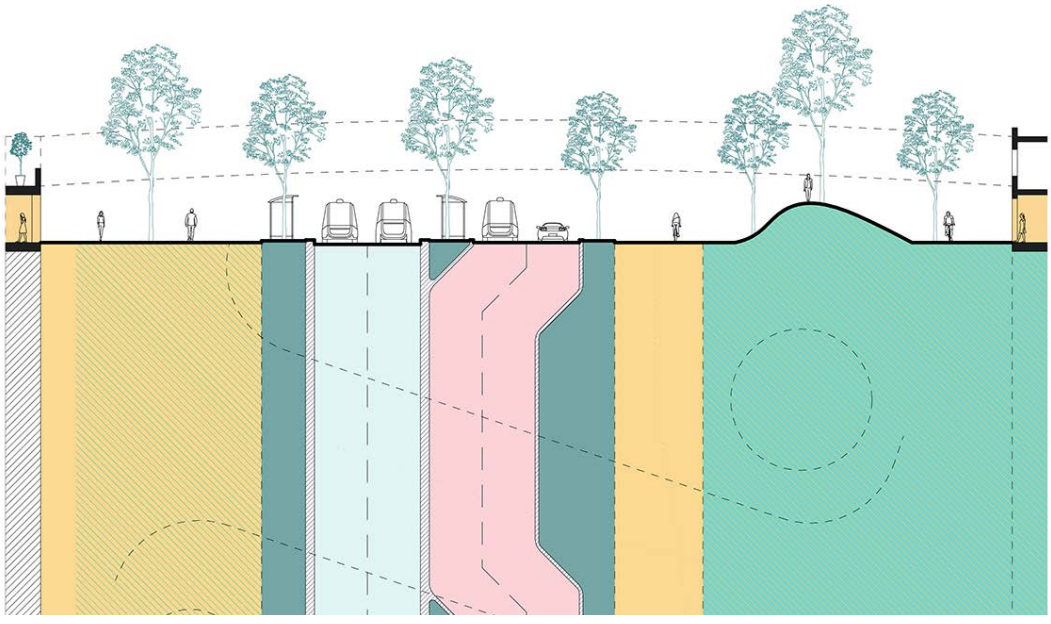


Current condition



shared street | public transport | cars | pedestrian lane | growing, activated green

First phase



shared street | public transport - AV + MaaS | cars | shared street | urban landscape

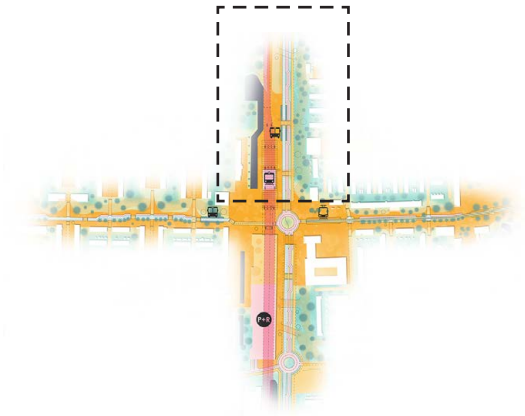
Second phase

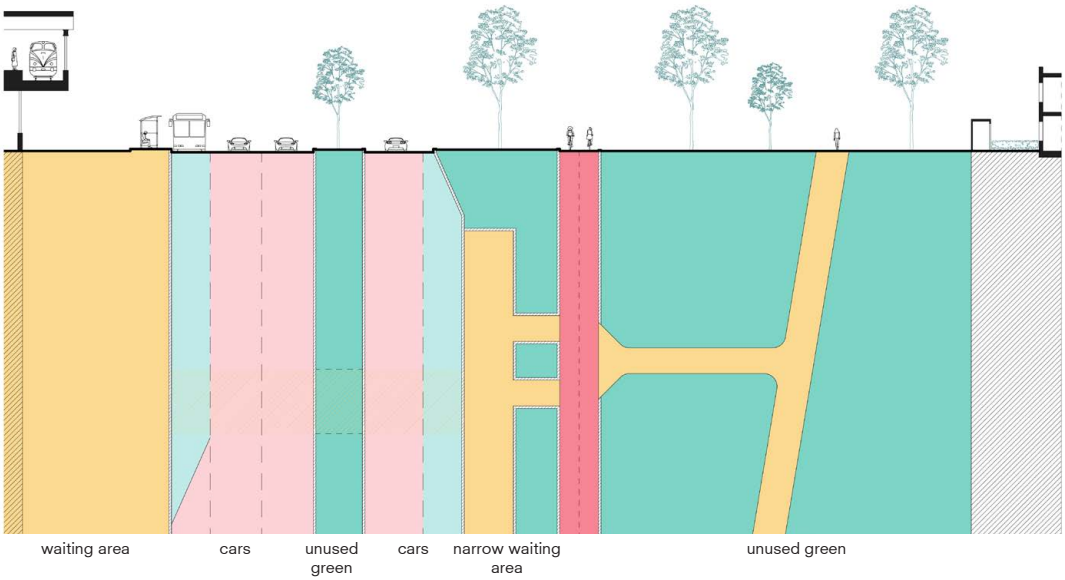
Sections and plans of road profiles, M = 1:200

MOBILITY
Redesigning the road profiles

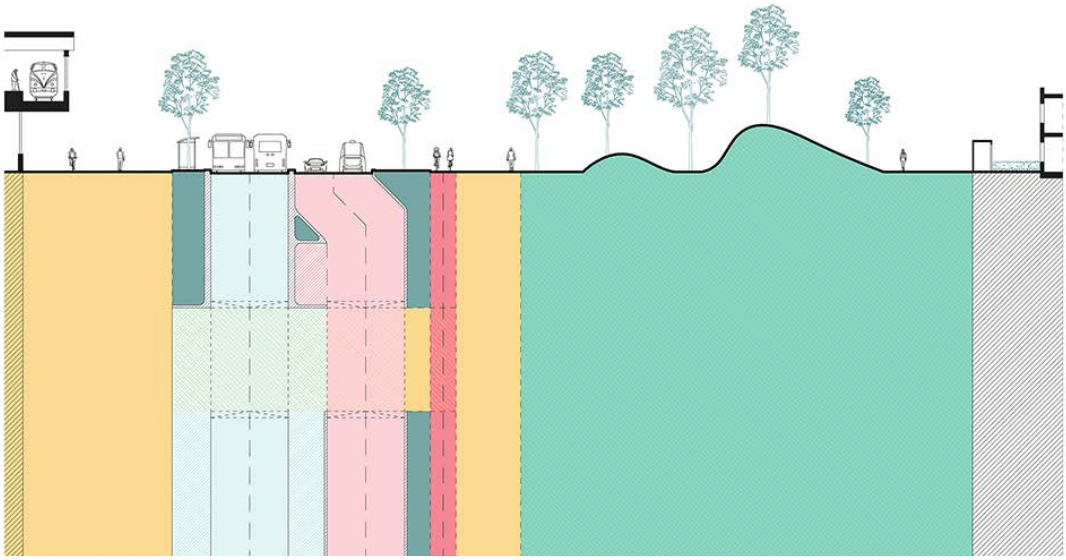
North Axis
The North-axis is the road that connects Slinge station to the Zuiderpark and Zuidplein, it's the direction to the centre of Rotterdam.The development here is very similar to the South-axis, the separate bus lanes are on the left side of the road, so the commuters from the metro station can easily reach the stops, without crossing any major roads. That way we can avoid the dangerous desire-routes through the green strips, that we can find in the present.

In the final phase the shared streets and the urban landscapes dominate the road, also creating a noise barrier between the station and the neighbouring residential houses with the plants.



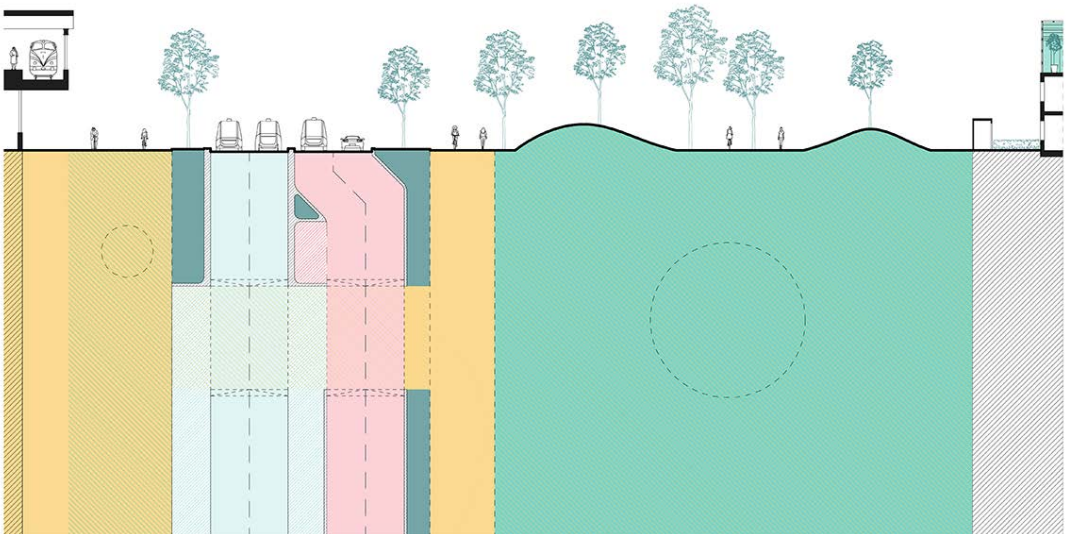


Current condition



shared street | public transport | cars | pedestrian lane | growing, activated green

First phase



shared street | public transport - AV + MaaS | cars | shared street | urban landscape

Second phase

Sections and plans of road profiles, M = 1:200

MORPHOLOGY
Adding 5000 homes to Slinge area



According to the Rotterdam Development Plan, the goal is to add 5000 houses to the current housing stock, to supply the housing shortage and growing population of Rotterdam. Another spearpoint of Rotterdam is to densify the city rather than expand. These were the entry points for the development of a Morphology strategy that also connects to the community approach of our development strategy. To conform with the city's plans to densify, the housing strategy aims to add residential units within the current boundaries of Zuidwijk and Slinge. We initially identified open locations, which could allow for housing development within the current neighbourhood structure. These spaces are visualized in the second plan below. Here one can see that there are in fact quite some open spaces that would technically allow housing development. However most of these zones are marked private (shown in red). Some are sports fields belonging to a club and some are school yards. This means there actually is not much space to build houses within the current stucture. This led to a housing strategy that adds to the existing housing structures.

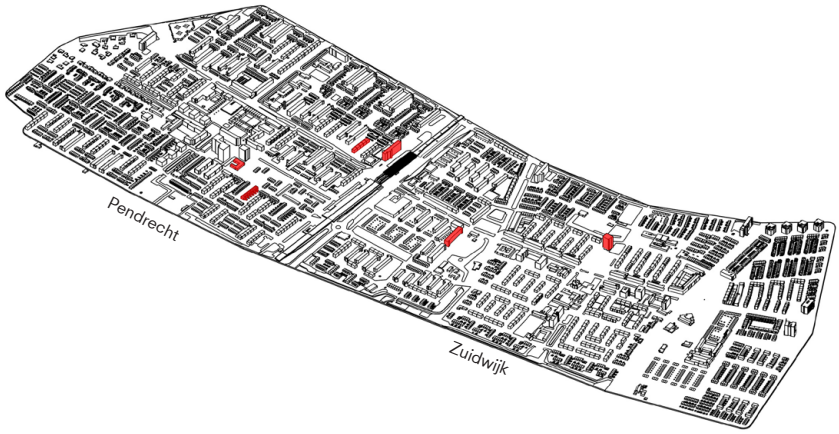


Privatized Open Space
Open Space

CATALOG

Instead of adding housing seperate from the ones that are already there we propose that the new houses should be an addition to the existing housingstock in Pendrecht and Zuidwijk. Therefore we sought the main six typologies of the neighborhood where we could evolve the housing strategy around.

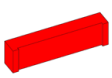
These are displayed below. They consist of a Gallery Flat, Town Houses, Gallery Houses, High Rise Flat, Malls and High Rise Towers. These typologies we will use to develop housing strategies to.



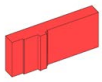








Gallery Flat


Town Houses


High Rise Flat

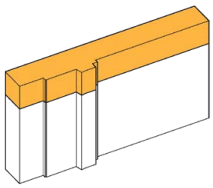

Gallery Houses


Malls

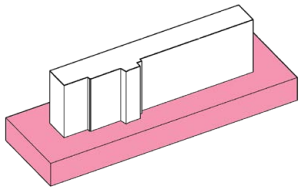

High Rise Tower

ADDITION STRATEGY

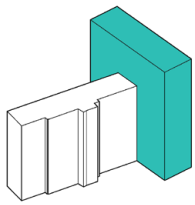
To add housing to the current stock, we propose three different methods: top up, extend or replace the current housing stock. Therefore the additions to the current conservative neighborhood will not feel like a competing group of people, but blend in with the current inhabitants. In the remainder of our preposal the colors of the added houses remain accordingly.



Top up

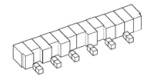


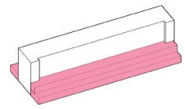
Extend

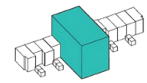


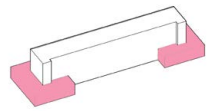
Replace

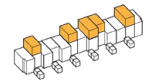


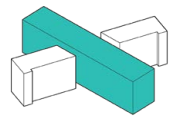


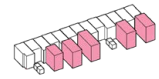


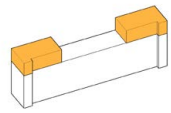


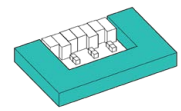


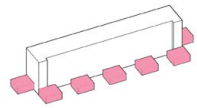


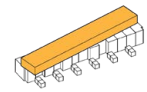


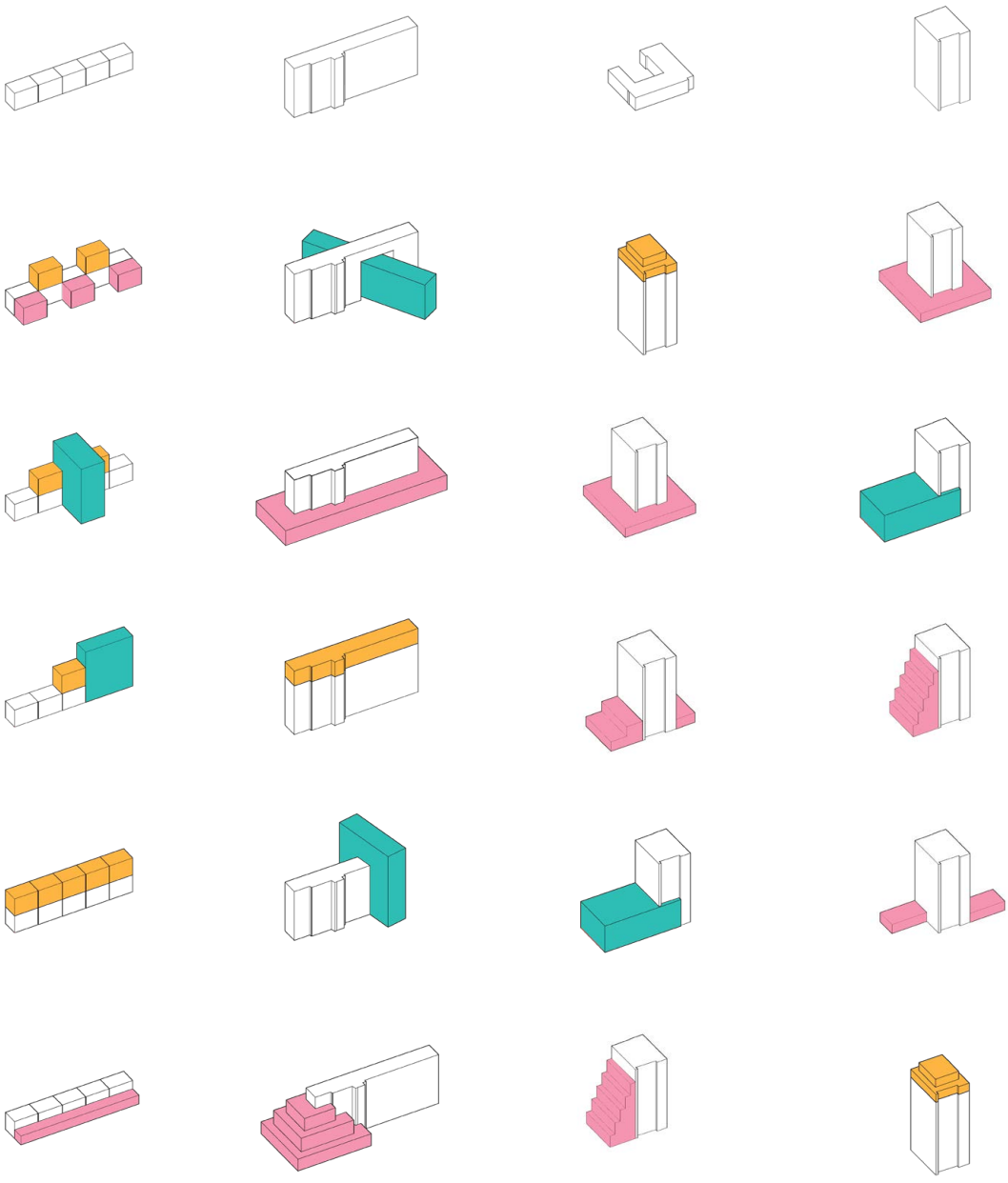


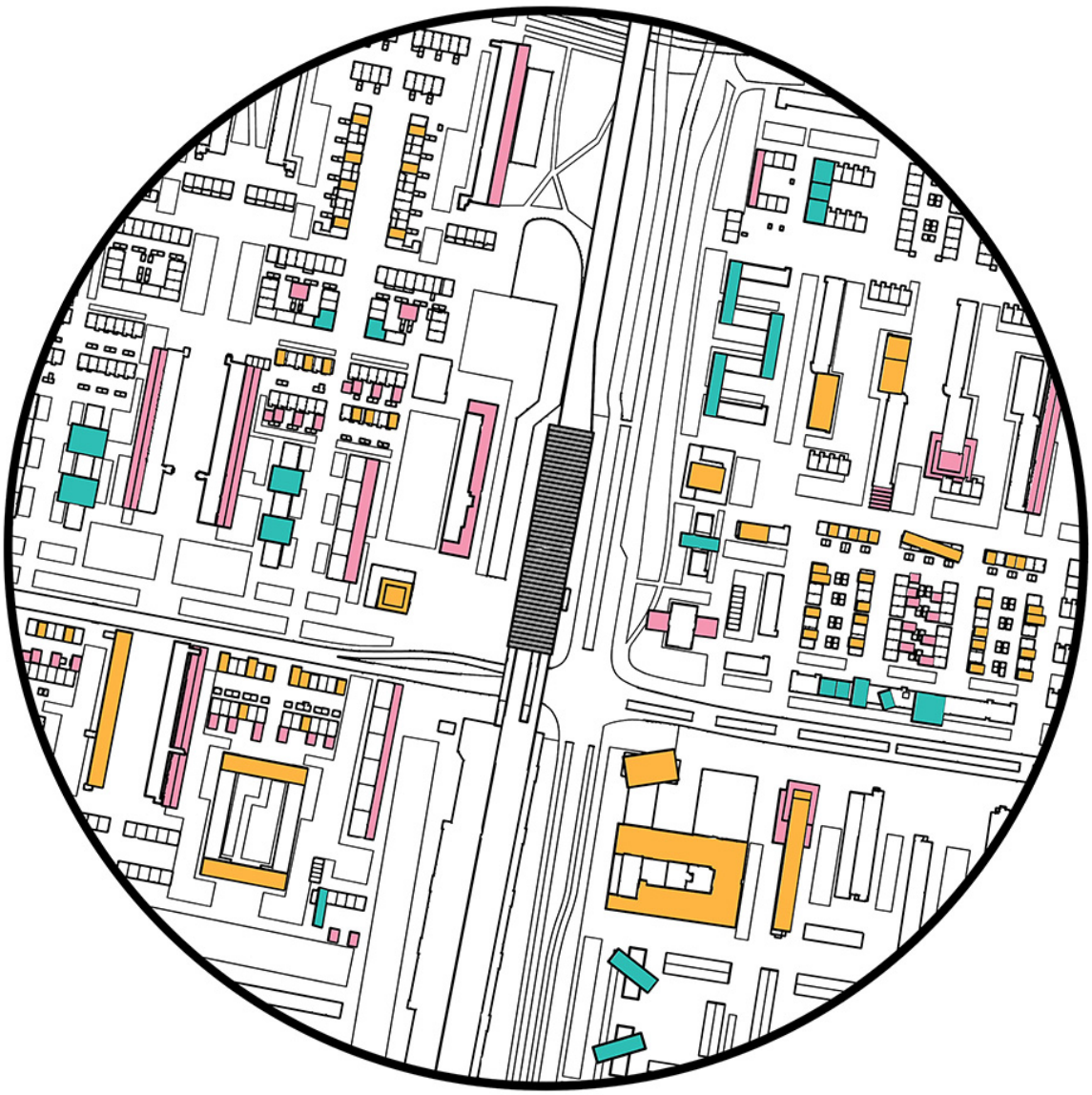




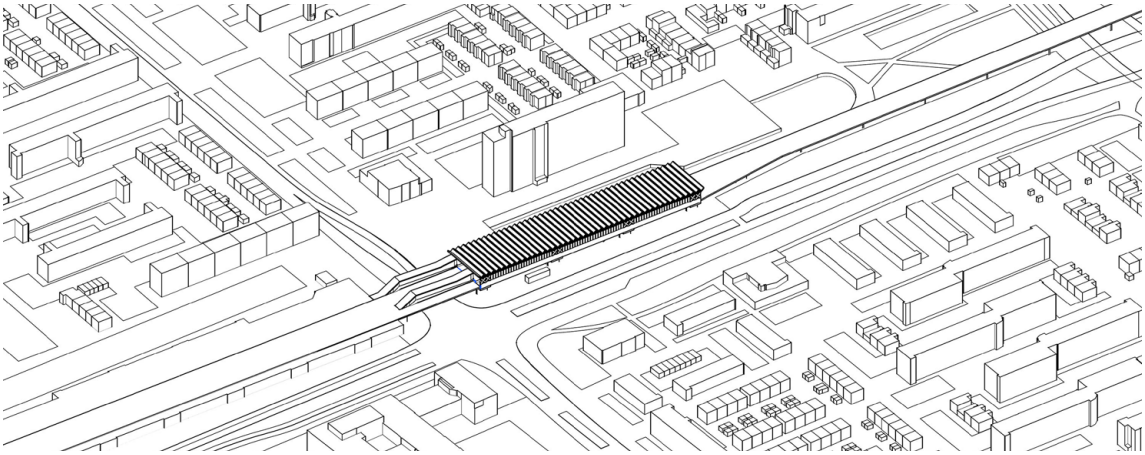




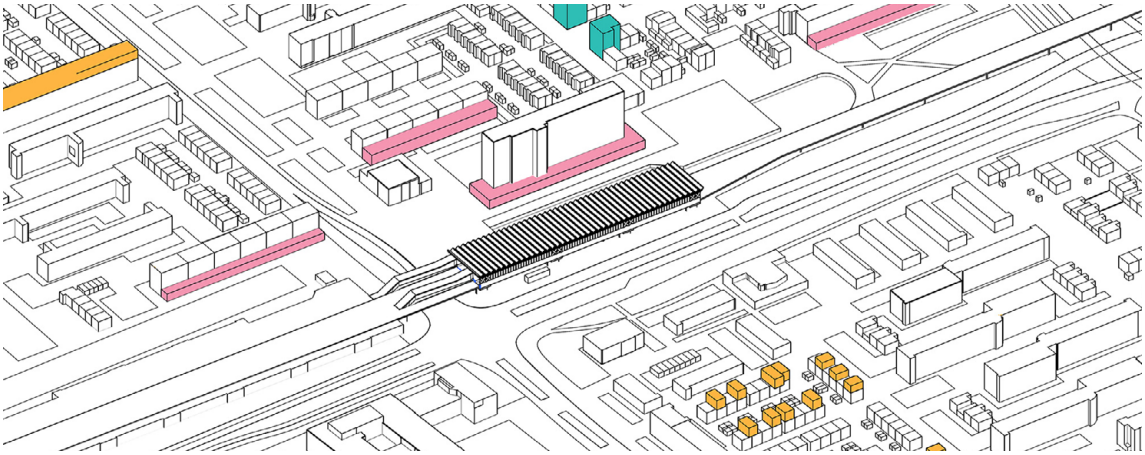




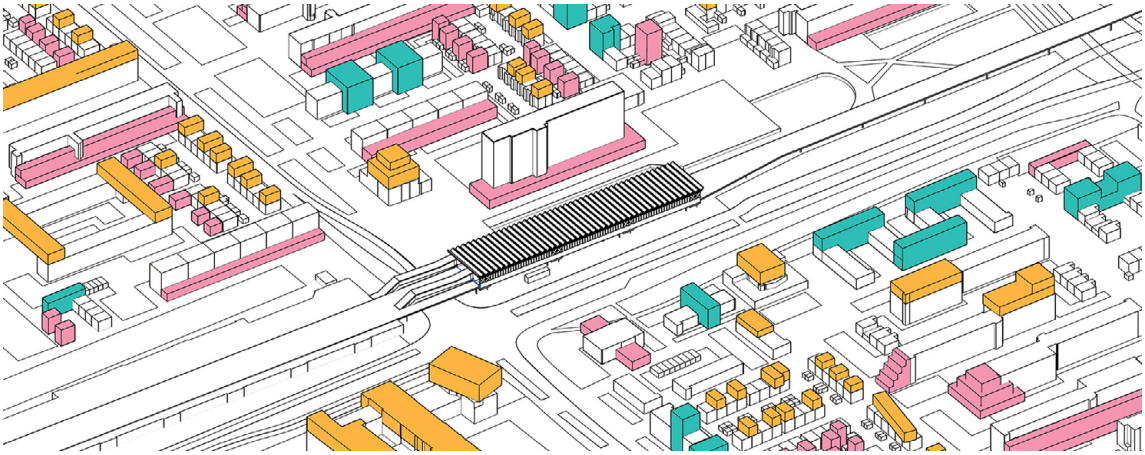
Housing strategy plan view



Current condition



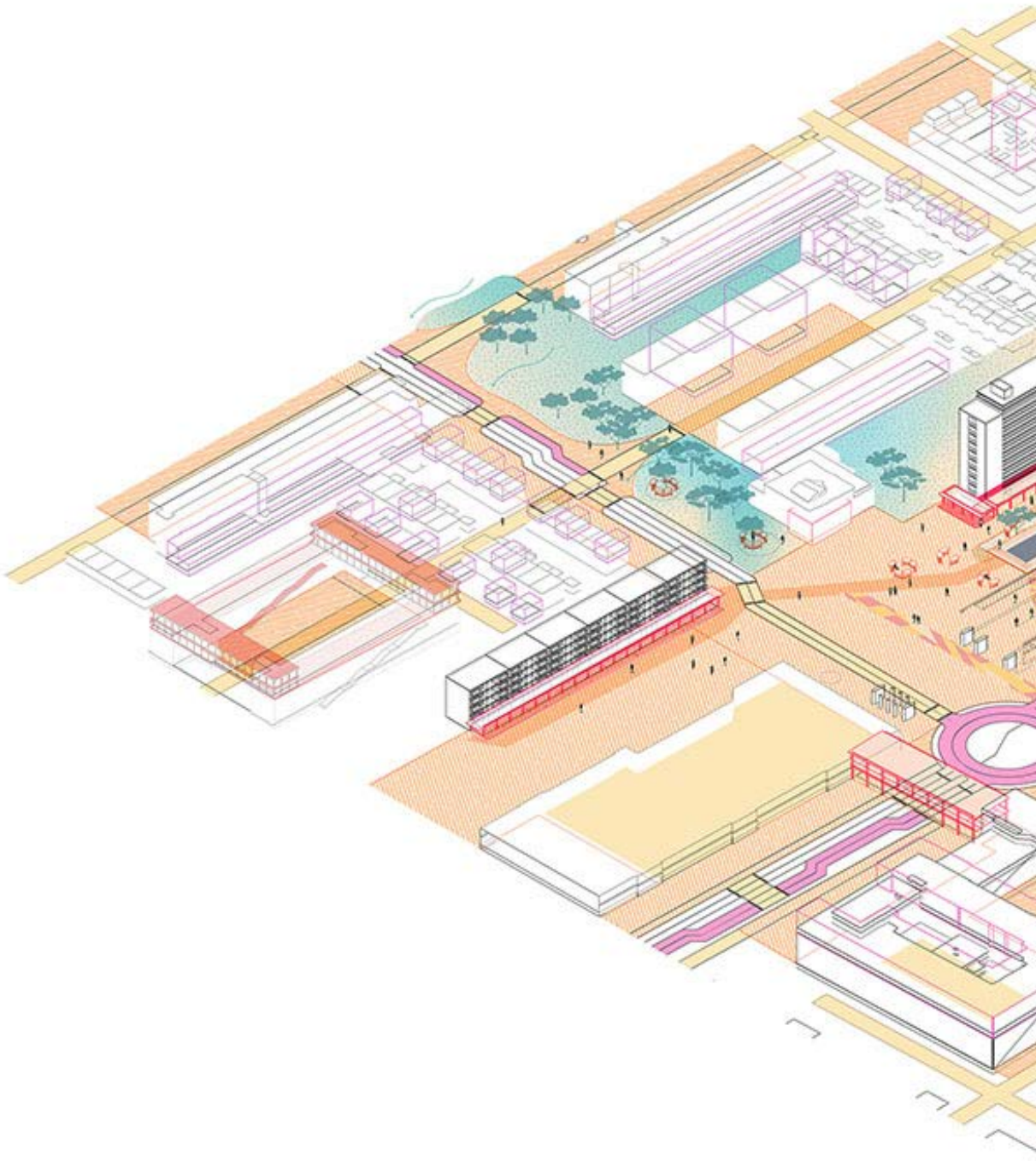
First phase

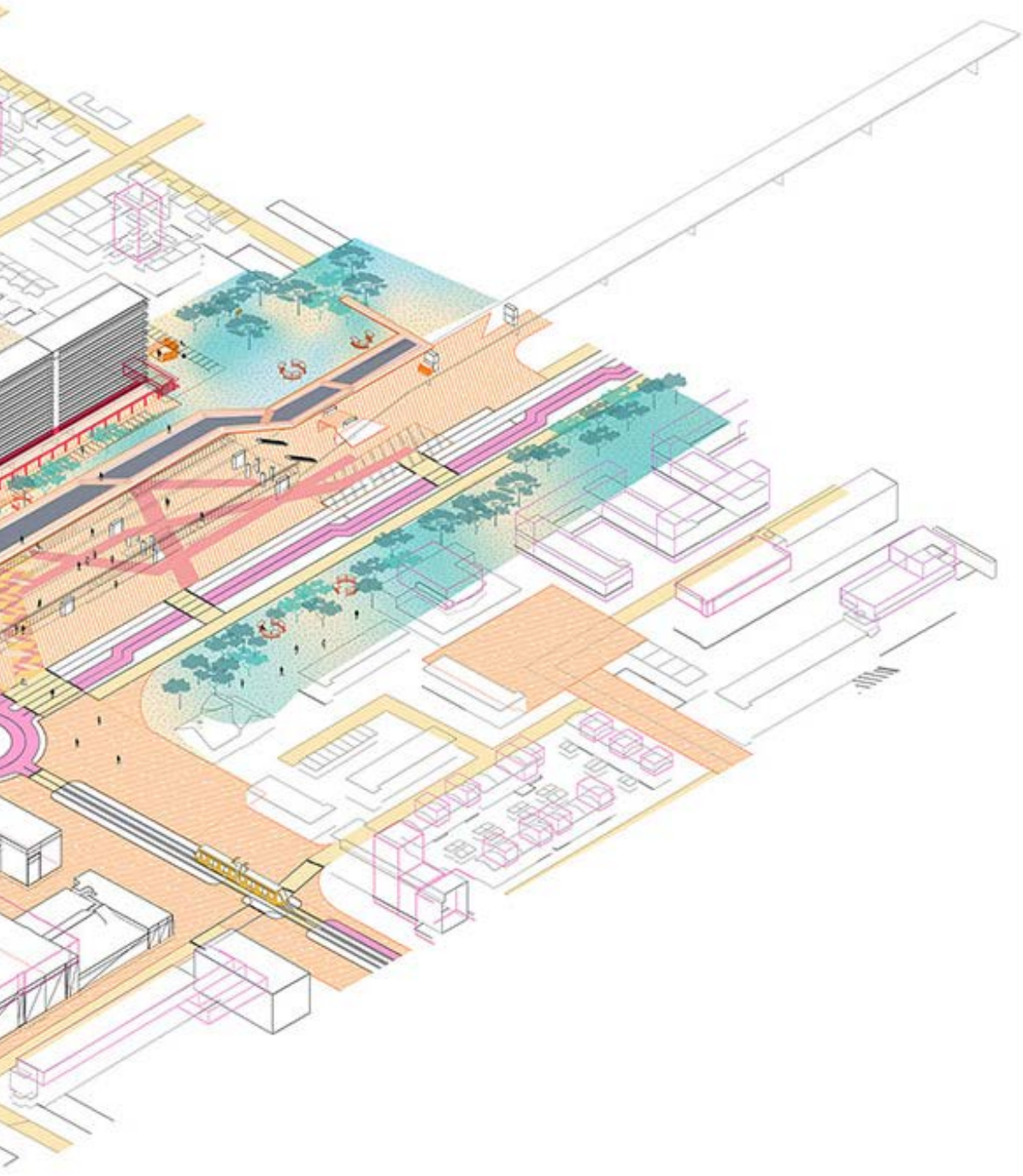


Second phase

PHASE 3
Reactivation of public space







MASTERPLAN
Final phase



The masterplan was created to illustrate the final phase of the development process, highlighting the network that was created between the different public spaces.

All the public spaces, now sufficiently connected and activated, are marked with orange colours. The main pedestrianised areas are around the horizontal axis, linking the commercial clusters of the neighbourhoods, Plein 1953 to Asterlo Plein, including the new central public area at the station, making it the heart of the communities of Pendrecht and Zuidwijk. Our goal is to create a place to stay, instead of a place to get stabbed.

The green landscapes are also visible alongside the roads, leading to a more playful urban layout, with tactics such as urban farming, the creation of playscapes, other elements of urban furniture and plug-ins.

With the additions of the new housing units and the dedicated plug-ins, new plazas and semi-private courtyards are being created in between the apartment blocks, replacing the unused, low-quality green spaces around the buildings. In this arrangement, residents can have more of a feeling of ownership, creating community gardens, playgrounds and other interventions in them. Apart from the housing blocks, the plug-ins provide community spaces, storage units and smaller shops too.

In this final, future state the Mobility as a Service (MaaS) is dominant, so the main shared soft mobility hubs are distributed around the station. Also, the P+R has a dedicated space for shared cars and other modalities. Autonomous Vehicles replace buses in public transportation, they can move freely along the shared streets of the neighbourhood, programmed to take the people safely home. They are also used as moving shops or workspaces and are also available to make deliveries.

New amenities are being introduced around the station. One target group is the people who change modalities in Slinge. They require sufficient meeting spaces, cafés, bakeries, restaurants, and waiting areas. The other group is the locals, for then the station can serve as a new community centre. The added functions include study spaces, libraries, playgrounds, restaurants, shops, places for events and workshops. Participation is key throughout the development process; it is important to give people the places and tools so that they can create new plug-ins which suits their needs.

AREAS

- Public transport
- Cars
- Shared street (pedestrian + bike)
- Shared street (pedestrian + car)
- Greenery
- Semi-private courtyards
- New housing additions
- Schools
- Water
- Urban landscape, paths
- Main interventions - plug-ins

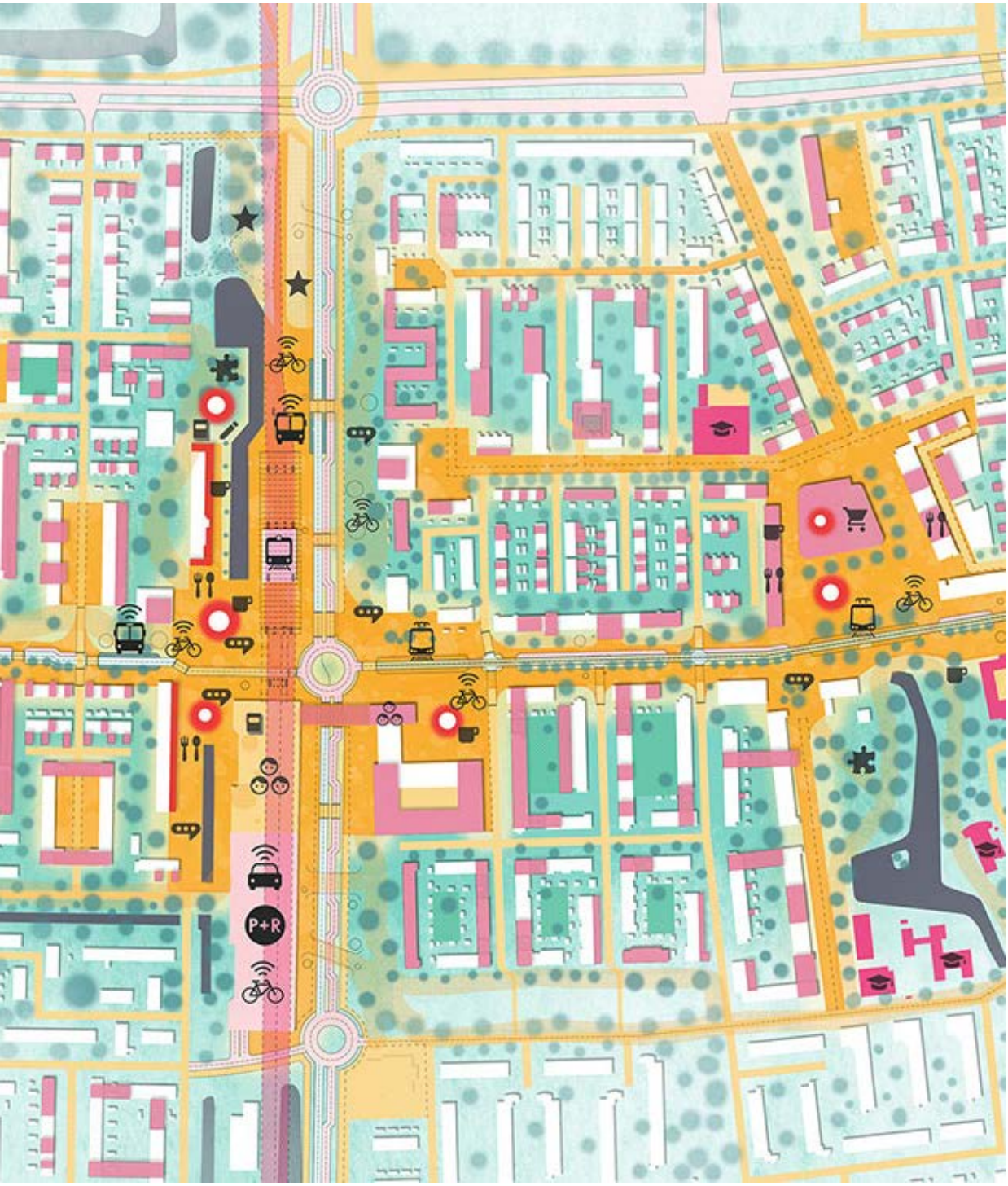
AMENITIES

- School
- Study spaces, co-working
- Open library
- Playground, playscape
- Spaces for the community
- Metting space
- Event space
- Café
- Restaurant
- Shop
- Church

MOBILITY

- Park and ride
- Tramstop
- Bus stop
- Metro station
- Shared soft mobility
- Autonomous Vehicles
- MaaS




P+R

PLUG-INS
Reactivating spaces



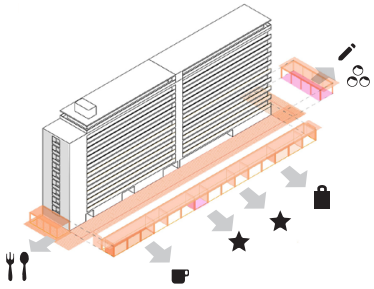
After the transformations the station and the neighborhood have been through, the improvements in spatial quality and walkability set the ground for the spread of the new activators. These ‘plug-ins’ can be defined as function condensers that were co-designed, prototyped and tested by the community since the tactical phase.

During the final phase, the most successful tactical structures would be manufactured and placed in a more permanent way in strategic spots, which were also discovered by reclaiming different spaces and infrastructures in the previous phases.

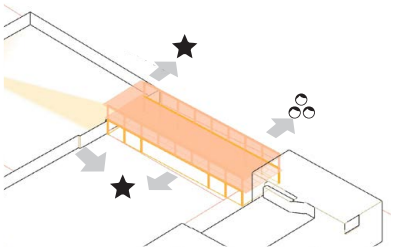
Most plug-ins take direct advantage of existing buildings and infrastructures, such as the space below the trail lines or the ground floor of the renovated housing blocks. The community would be involved in the assembly and placement of most plug-ins, and they would be managed by the local amenities,municipality or NR depending on the type or function.

All plug-ins should be flexible and adaptable enough so that they can be updated, moved or multiplied. We have used parametric tools for the preview of some examples of the plug ins, as this approach for design would be very useful for testing multiple variations and have feedback form the final users

A. Building plug-ins and additions

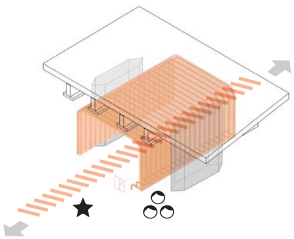


A1 Ground floor activator
Extends the ground floor of a building and creates flexible commercial spaces.

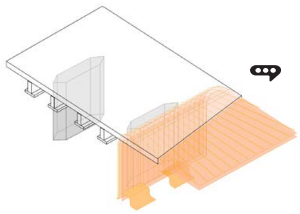


A2 Building connector
Connects spaces or bridges the gap between two buildings

B. Station plug-ins

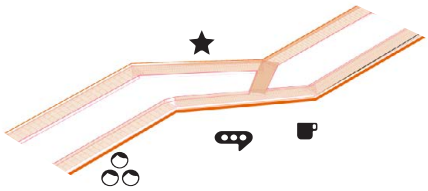


B1 Passage
Improves acoustics and creates warmer spaces for circulation.



B2 Bus canopy
Extends the railway protection and includes waiting spaces and access to bike parking.

C. Landscape activators

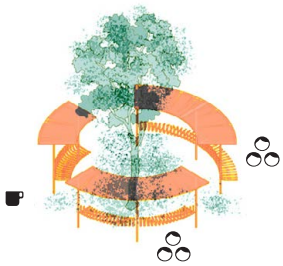


C1 Canal path
New walking path that connects the station and the activated building block.

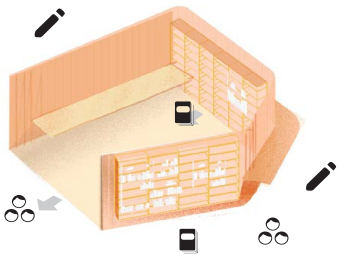


C2 Natural playground
Elevated terrain that includes methods for reclaiming green spaces.

D. Community activators

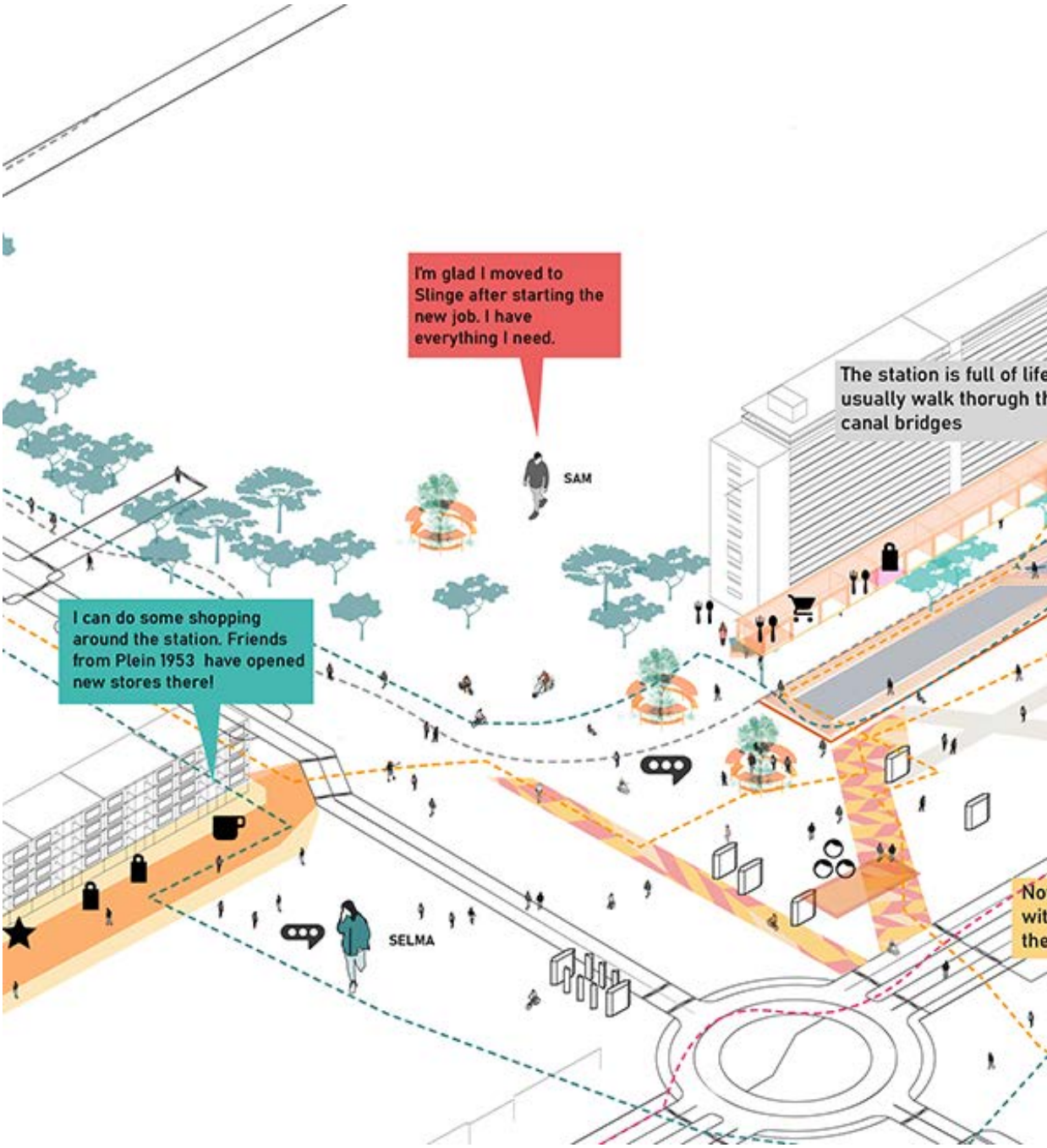


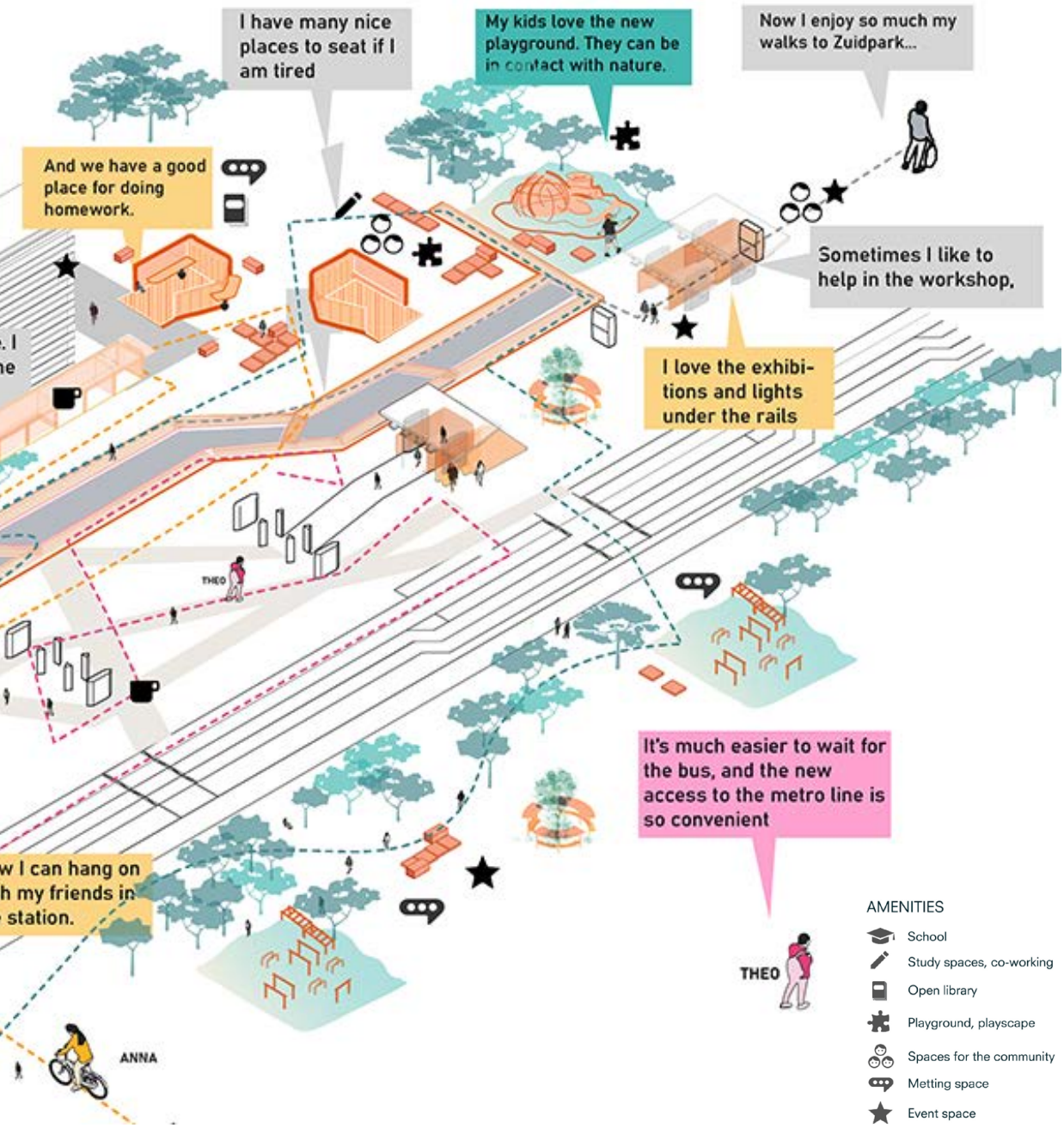
D1 In-out seats
Extends the railway protection and includes waiting spaces and access to bike parking.



D2 Book Exchange
Self-sufficient structure that encloses quite study places but offers public book-exchanging and outdoor tables.

FUTURE PERSONAS
New routes and interactions with plug-ins




I have many nice places to seat if I am tired
My kids love the new playground. They can be in contact with nature.
Now I enjoy so much my walks to Zuidpark...
And we have a good place for doing homework.
Sometimes I like to help in the workshop.
I love the exhibitions and lights under the rails
THEO
It's much easier to wait for the bus, and the new access to the metro line is so convenient
w I can hang on
h my friends in
station.
THEO
ANNA
AMENITIES
School
Study spaces, co-working
Open library
Playground, playscape
Spaces for the community
Metting space
Event space
Café
Restaurant





BIBLIOGRAPHY

Architectuurgids. (n.d.). Stedenbouwkundig plan Pendrecht, Lotte Stam-Beese, Rotterdam. http://www.architectuurgids.nl/project/item/prj_id/291

Bloomberg Philantropies & The Aspen Institute. (n.d.). Initiative on Cities and Autonomous Vehicles. Avsincities. https://avsincities.bloomberg.org/global-atlas/europe/nl/rotterdam-nl

BOdG Ruimtelijk Advies B.V. (2019, November). RUIMTELIJKE ONDERBOUWING TIENGEMETEN MIDDEN, PENDRECHT. https://repository.officiele-overheidspublicaties.nl/externebijlagen/exb-2020-41049/1/bijlage/exb-2020-41049.pdf

Bouwen aan Rotterdam. (2022). Bouwkaart. https://www.bouwenaanrotterdam.nl/bouwkaart#/

CBS. (2021). Kerncijfers wijken en buurten 2021 [Dataset]. CBS. https://opendata.cbs.nl/statline/#/CBS/nl/dataset/85039NED/table?ts=1647008735916

Gemeente Rotterdam. (2018). OV-visie Rotterdam 2018–2040. Samen slimmer reizen. Wat Doet de Gemeente. https://www.watdoetdegemeente.rotterdam.nl/begroting2020/programmas/verkeer-en-vervoer/openbaar-vervoer/OV-visie-Rotterdam-2018-2040.pdf.

Kraaij Akoestisch Adviesbureau. (2020). Akoestisch Onderzoek Verkeerslawaai Herontwikkeling Papendrechtstraat en Halsterenstraat (PapHal) Te Rotterdam. https://repository.officiele-overheidspublicaties.nl/externebijlagen/exb-2020-41057/1/bijlage/exb-2020-41057.pdf

MOVES. (2022, February 22). Een slimme, duurzame oplossing voor reizen in en rondom grote steden. https://www.moves.nl/over-moves/

NPRZ. (2015). Handelingsperspectief. https://www.nprz.nl/over-nprz/onze-documenten/handelingsperspectieven

Onderzoek 010. (2021). Feitenkaart 2020. Gemeente Rotterdam. https://onderzoek010.nl/documents/Werk-en-inkomen

Oosterhof, H. (n.d.). Lotte Stam-Beese en de wederopbouw van Rotterdam. Platform Wederopbouw Rotterdam. https://wederopbouwrotterdam.nl/artikelen/lotte-stam-beese-en-de-wederopbouw-van-rotterdam

RIGO Research & Advies. (2014). Leefbaarometer 2.0: Instrument ontwikkeling. https://doc.leefbaarometer.nl/resources/Leefbaarometer%202.0%20Instrumentontwikkeling%20CONCEPT.pdf

RIVM. (2020). Gezondheid per gemeente, wijk en buurt. https://www.rivm.nl/media/smap/stress.html?gemeente=Rotterdam

Rotterdam in kaart. (2022). Historical maps [Map]. Rotterdam in Kaart. https://www.rotterdaminkaart.nl/?overlayBar=%2Fkaarten%2Fhistorische-kaarten%2F&overlay=%2Fkaarten%2Fhistorische-kaarten%2F1850-1900%2F

Steenhuis, M. (2019, November 23). Rotterdam Zuid- een onbegrepen utopie. Sculpture International Rotterdam. https://www.sculptureinternationalrotterdam.nl/essays/rotterdam-zuid-onbegrepen-utopie/

Toyota Nederland. (2018, October 30). Toyota e-Palette is hypermoderne SRV-wagen. https://www.toyota.nl/over-toyota/toyota-world/toyota-e-palette.json

Vestia. (2020). Jaarverslag 2020. https://www.vestia.nl/Media/71f25b09-d086-470c-828e-86fb0c626695/original/stichting-vestia_jaarverslag-2020.pdf/

Wijkprofiel. (2022). Wijkprofiel 2022. Wijkprofiel Gemeente Rotterdam. https://wijkprofiel.rotterdam.nl/nl/2022/rotterdam/charlois

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Kjai is an urban designer at DeZwarteHond and teaches at the TU Delft Architecture. The office is specialized in tackling complex urban projects and combines the disciplines of architecture, urbanism and strategy. Kjai works in all scales; translating ambitions from regional/urban plans/visions into meaningful and realized places (station areas in particular).

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