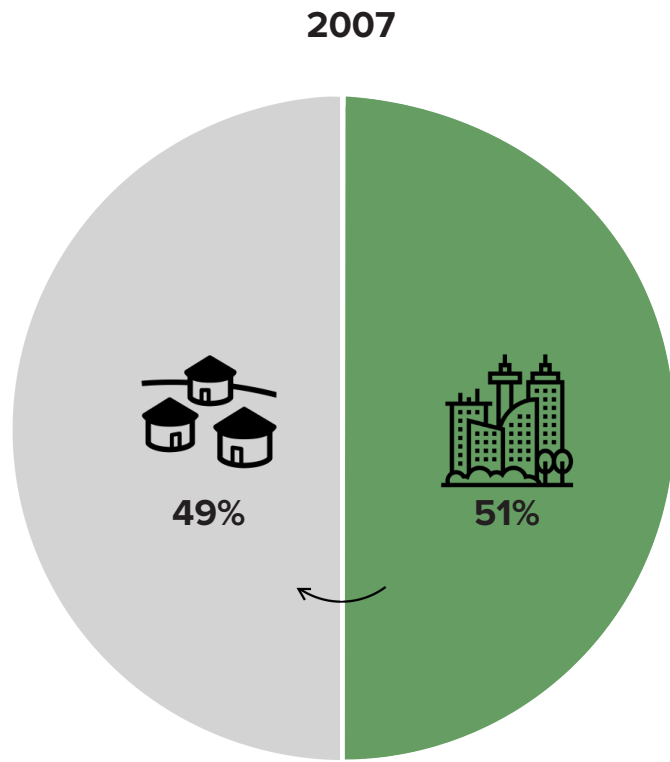


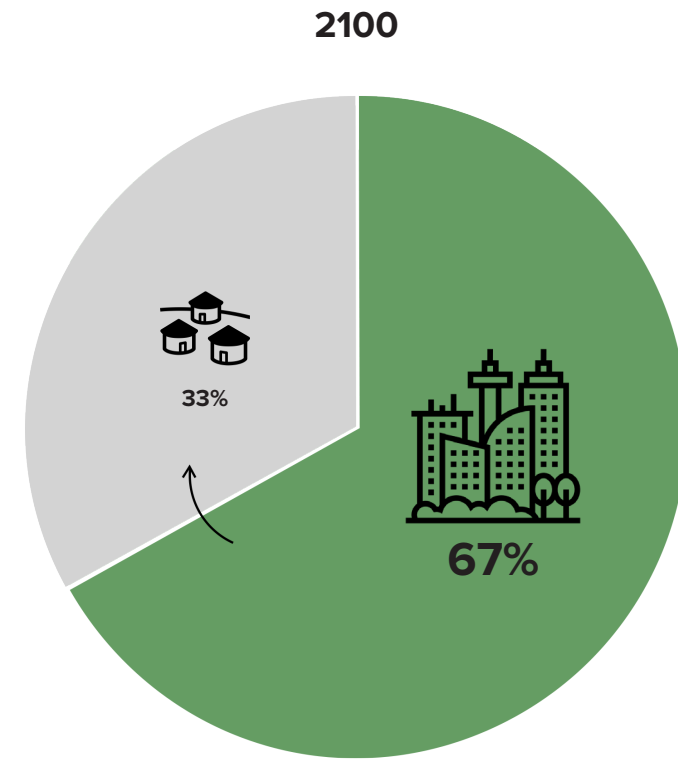
Stress Publica

P5 Presentation - Thursday June 19, 2025

Current global trend: urbanisation



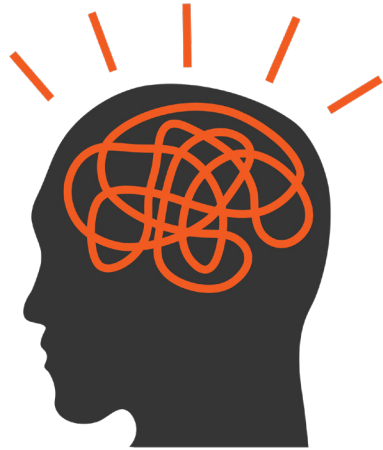
Historically, most people lived in rural areas. However, Since ~2007, most people worldwide live in cities



By ~2100, more than two-thirds of people worldwide will live in cities

>> Urban issues are more important than ever before and will continue to become more important in the future.

Urban issues



Mental health issues



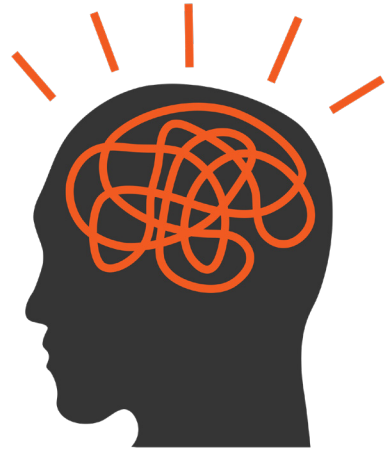
Car dominance



Climate change

Sources: Xu et al., 2023; Gruebner et al., 2017; Van den Berg & Schurink-van 't Klooster, 2023; Urban Fabric Development, 2006; Hahad et al., 2024; Betgen et al., 2024; Patz et al., 2014 Limaheluw et al., 2021

Urban issues



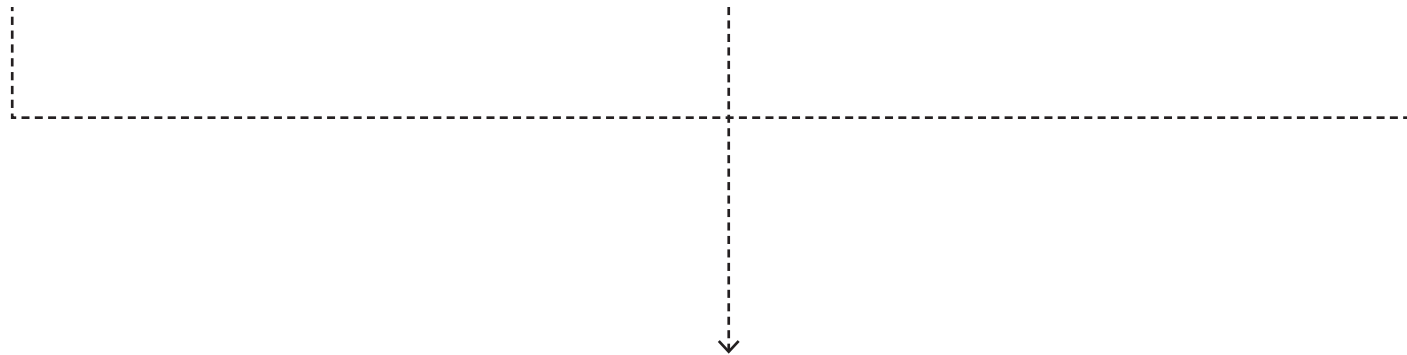
Mental health issues



Car dominance



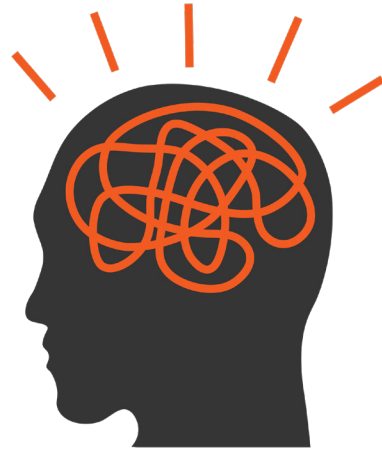
Climate change



URBAN STRESS

Sources: Xu et al., 2023; Gruebner et al., 2017; Van den Berg & Schurink-van 't Klooster, 2023; Urban Fabric Development, 2006; Hahad et al., 2024; Betgen et al., 2024; Patz et al., 2014 Limaheluw et al., 2021

Urban issues



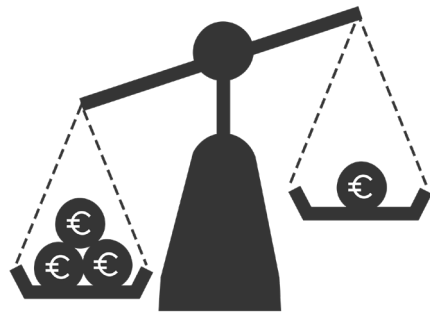
Mental health issues



Car dominance



Climate change



Low socioeconomic status

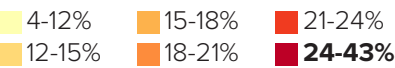
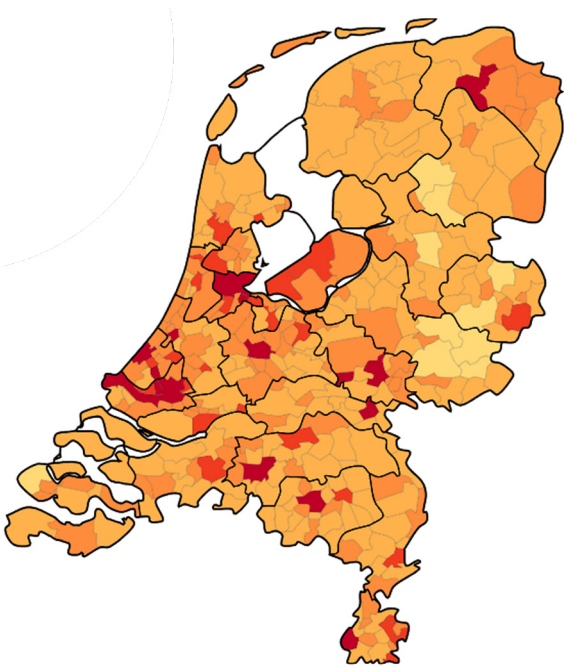
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URBAN STRESS

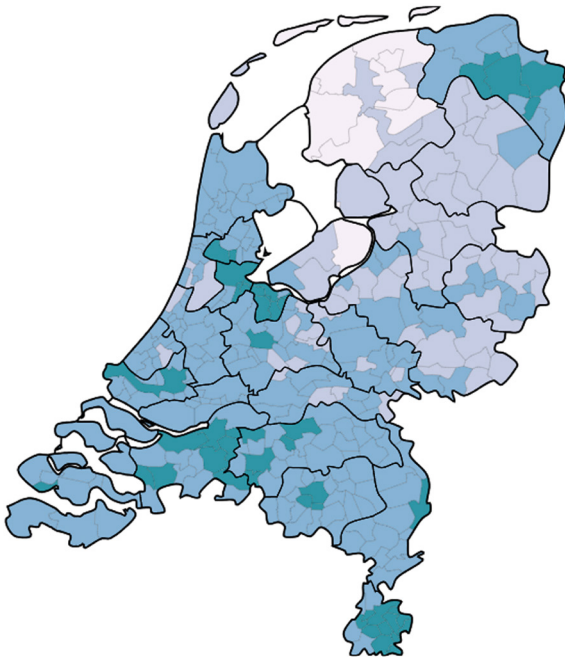
Sources: Xu et al., 2023; Gruebner et al., 2017; Van den Berg & Schurink-van 't Klooster, 2023; Urban Fabric Development, 2006; Hahad et al., 2024; Betgen et al., 2024; Patz et al., 2014 Limaheluw et al., 2021

Urban issues in the Netherlands

Severe stress



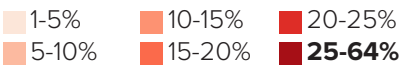
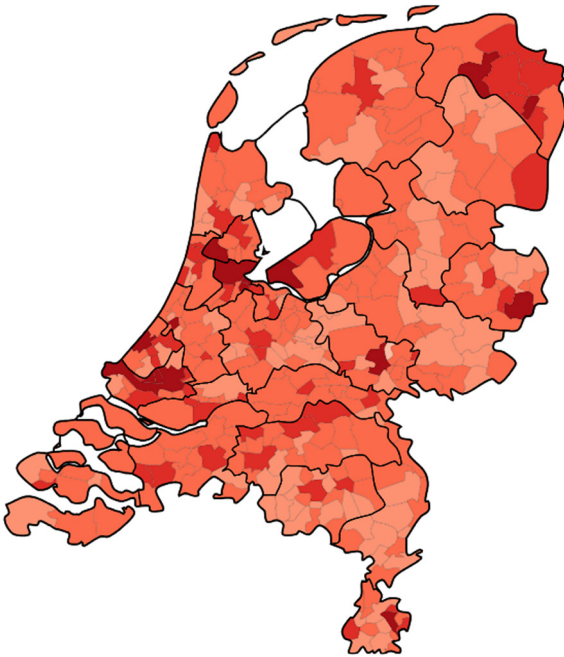
Traffic noise nuisance



Urban Heat Island effect



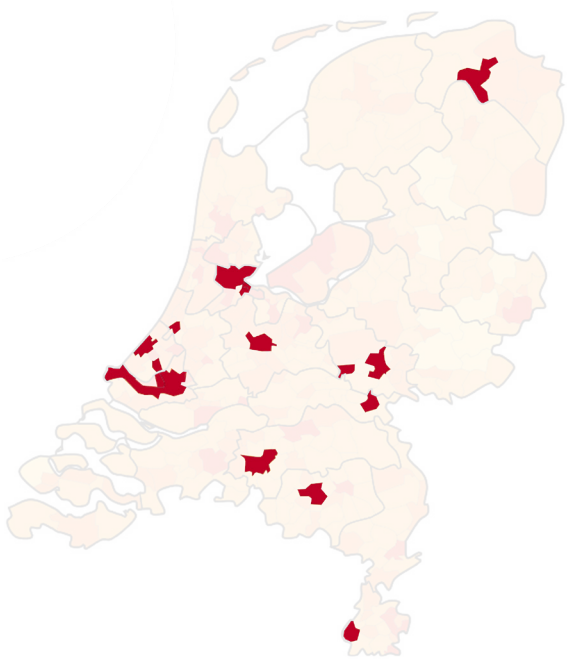
Trouble making ends meet



Sources: Buurtatlas, 2024; Atlas Leefomgeving, 2024

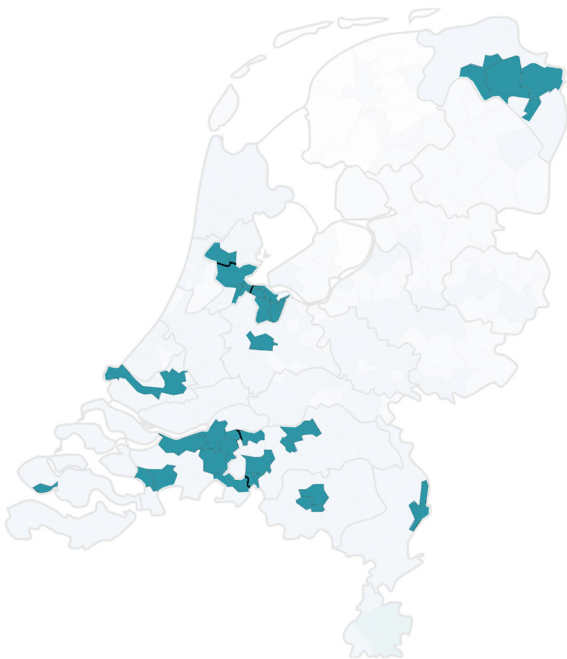
Urban issues in the Netherlands

Severe stress



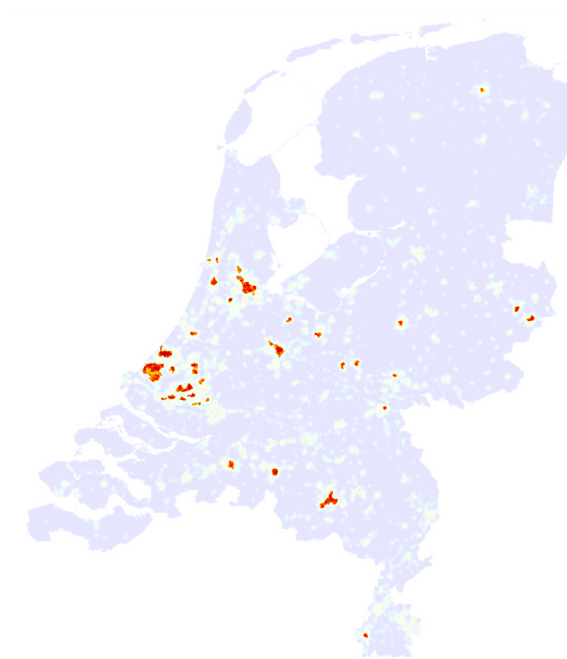
4-12%
12-15%
15-18%
18-21%
21-24%
24-43%

Traffic noise nuisance



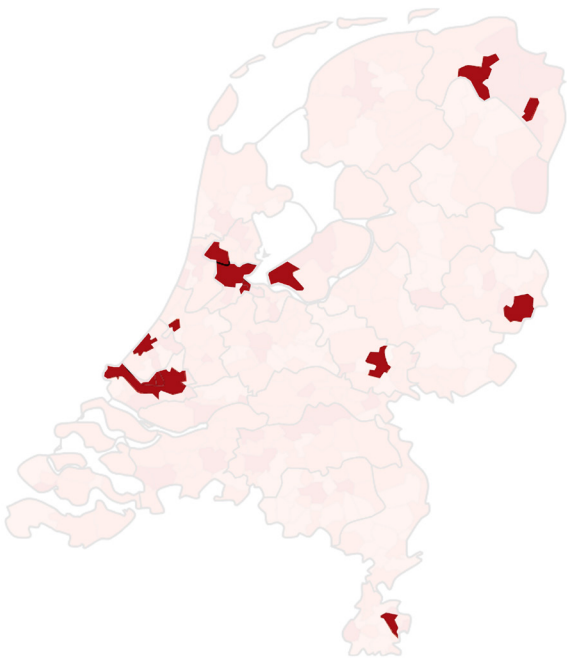
0-4%
4-6%
6-10%
10-15%
15-36%

Urban Heat Island effect



< 0,2
0,2-0,4
0,4-0,6
0,6-0,8
0,8-1,0
1,0-1,2
1,2-1,4
1,4-1,6
1,6-1,8
1,8-2,0
> 2,0

Trouble making ends meet



1-5%
5-10%
10-15%
15-20%
20-25%
25-64%

Sources: Buurtatlas, 2024; Atlas Leefomgeving, 2024

Vulnerable neighbourhoods

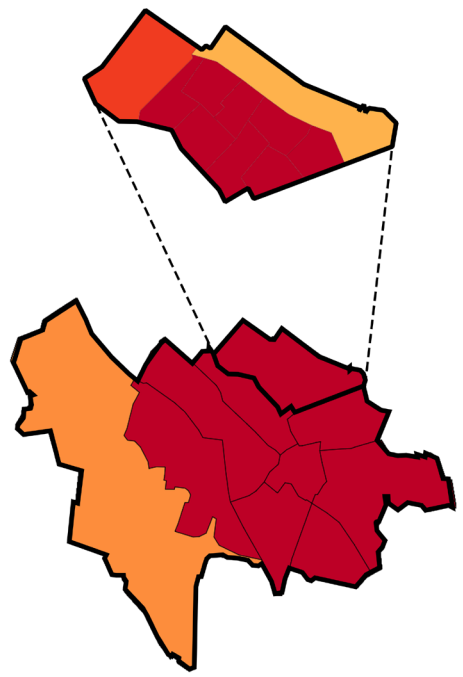
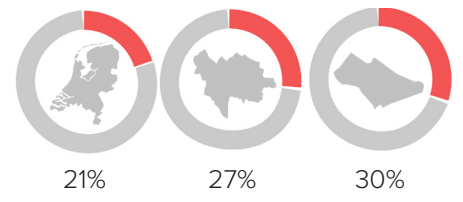
- 20 neighbourhoods
- Multiple issues related to different sectors
- *Nationaal Programma Leefbaarheid en Veiligheid* (National Program Liveability and Safety) since 2022



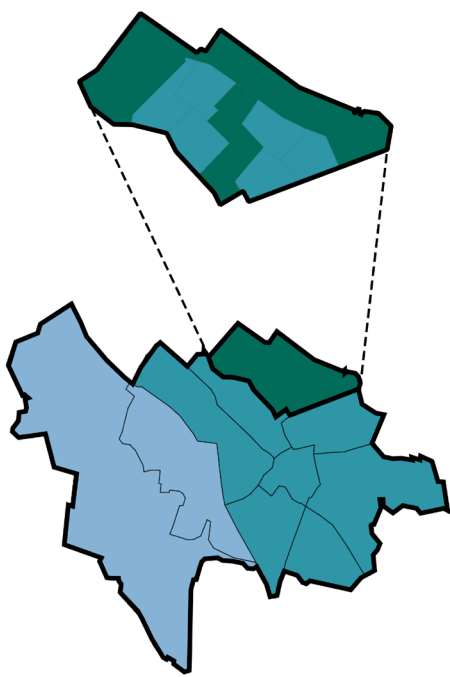
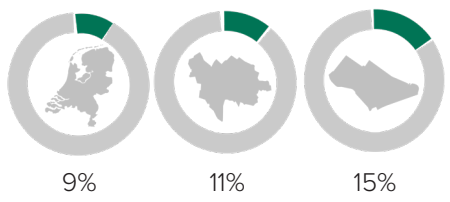
Sources: Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, 2022

Urban issues in Overvecht

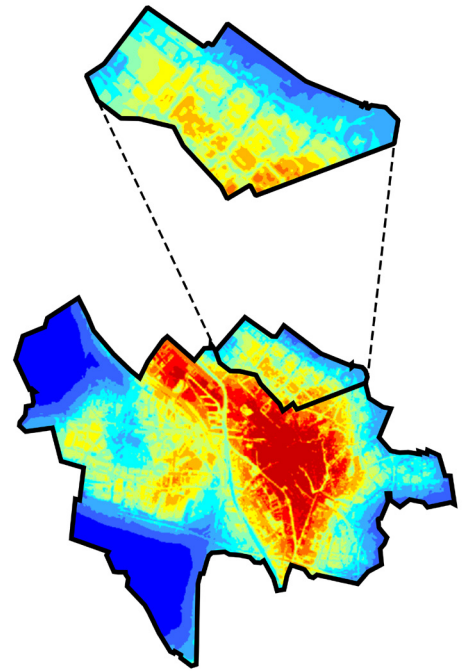
Severe stress



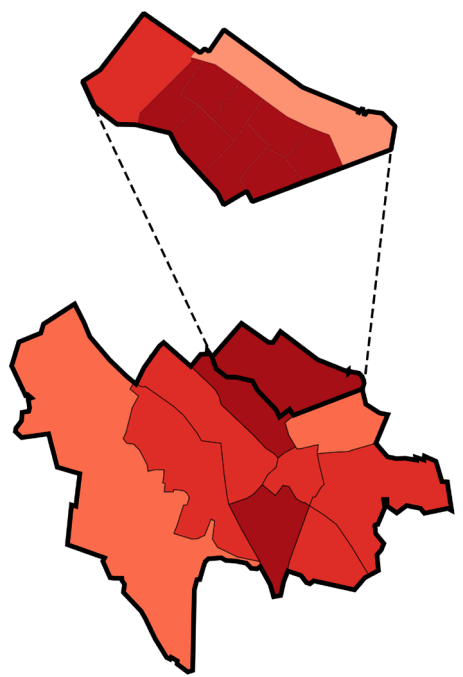
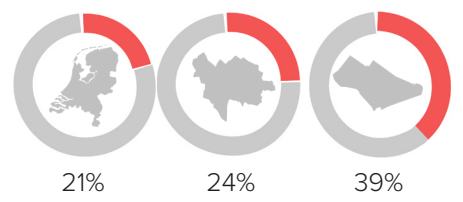
Traffic noise nuisance



Urban Heat Island effect

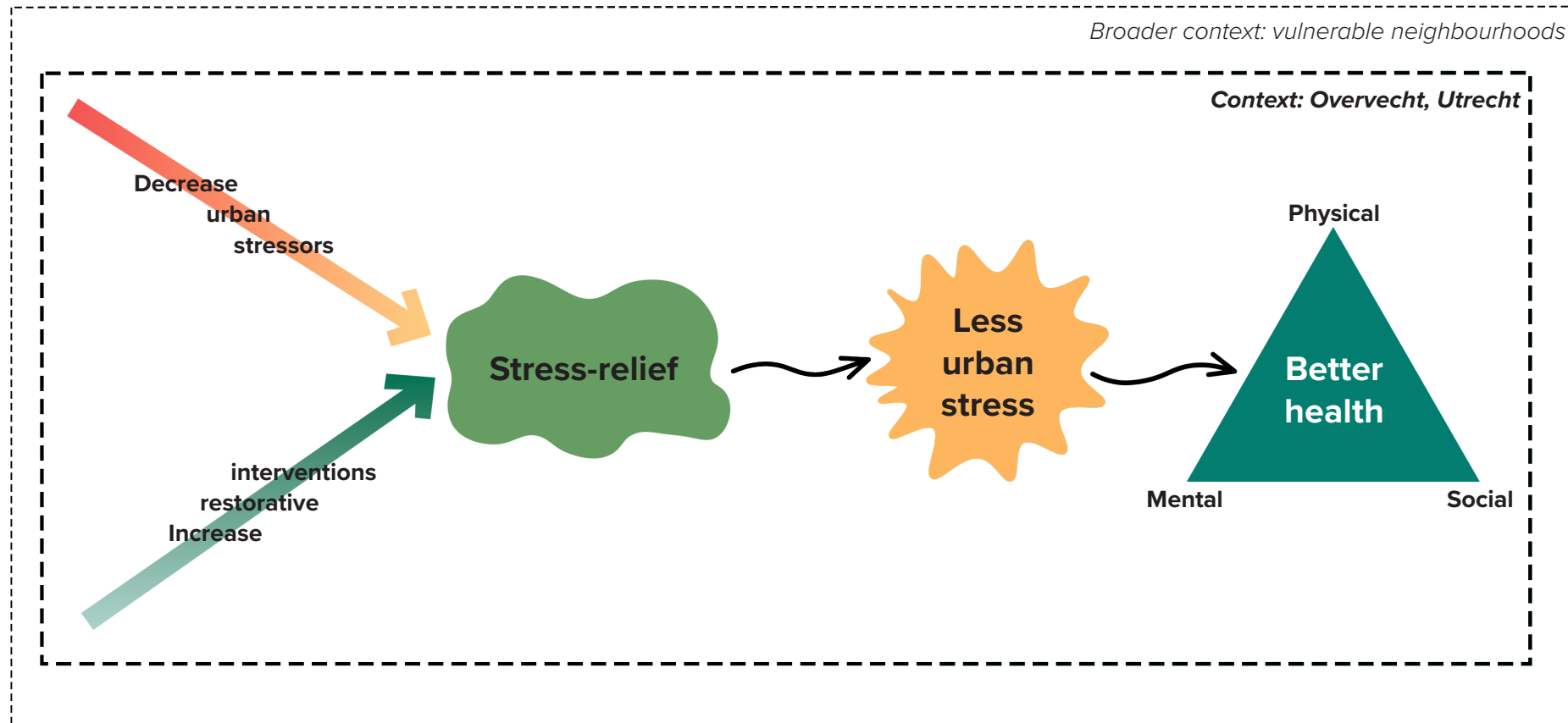


Trouble making ends meet



Sources: Buurtatlas, 2024; Atlas Leefomgeving, 2024

Design assignment & conceptual framework



- Design centred around the **relief of urban stress** in **vulnerable neighbourhoods**, with people with a **low socioeconomic status** as the main **target group**
- End goal: **improve** the **health** of the target group
- **Overvecht** as a **case study**, approach will be **transferable** to and **applicable** in **other vulnerable neighbourhoods** with similar circumstances

Research question

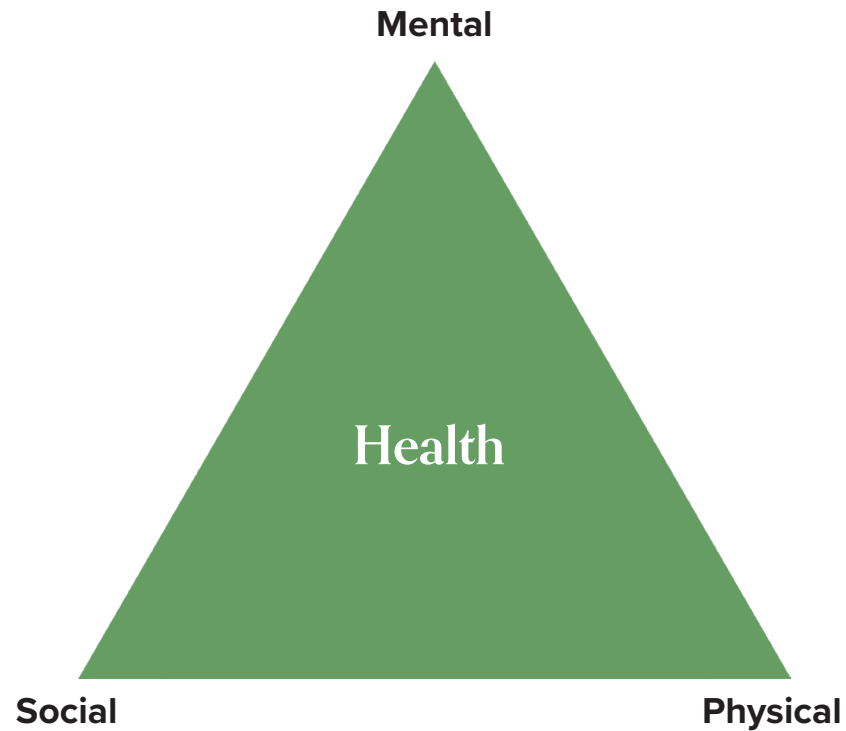
What **spatial design** elements can improve the **health** of residents of **vulnerable neighbourhoods** with a **low socioeconomic status** through **stress-relief**, based on the case study of **Overvecht, Utrecht**?

Definitions of health & urban stress

Health [helθ]

noun

“Perfect health is a state of complete **physical, mental, and social wellbeing** and **not** merely an **absence of disease or infirmity**”

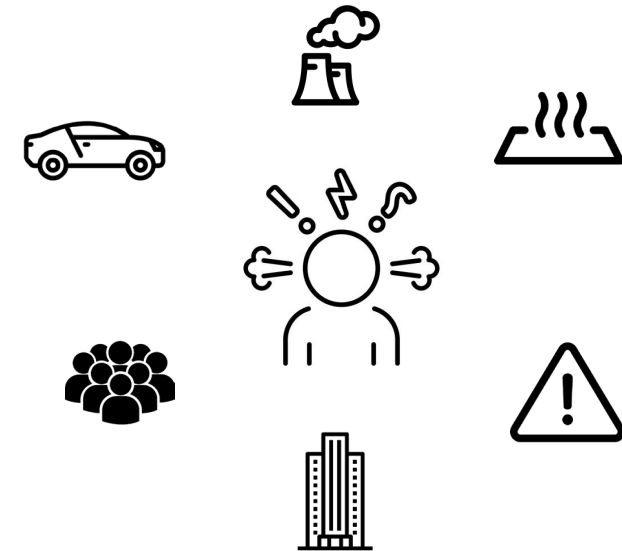


Urban stress [ur-buhn stres]

noun

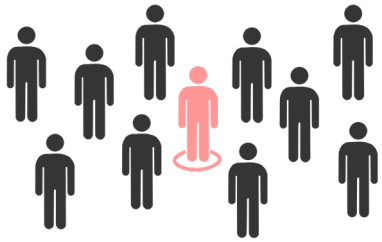
“A state of **bodily or mental tension** developed through **city living...**”

“Urban stress is the **cumulative stress** caused by the experience of **living in unfavorable conditions of the urban environment (...)** and if these conditions are **beyond the urbanite’s tolerance**, he will experience **urban stress**”



Sources: Schramme, 2023; European Environment Agency, n.d.; Jaliliasadabad et al., 2023

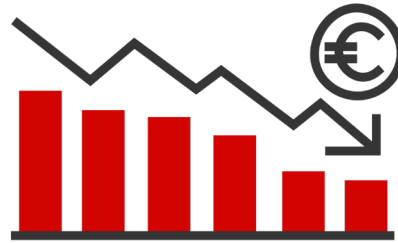
Urban stressors: STRESS framework



*Social deprivation
& overload*



*TRaffic & inactive
modes of transport*



*Economic deprivation
& disparity*



*Shortage of
diverse greenery*



*Sensory overload
& discomfort*

S

TR

E

S

S

Social deprivation & overload



**Social isolation
& deprivation**



Lack of eyes on the street



**Not enough space
of your own**



Crowding



Injustice

Urban stressors: STRESS framework



Social isolation & deprivation



Lack of eyes on the street



Not enough space of your own



Crowding



Injustice



Lack of physical activity



Lack of traffic safety



Traffic



Commuting



Bad quality housing



Deterioration



Poor educational opportunities



Unstable economic conditions



Violence/crime



Lack of (accessible) greenery



Lack of biodiversity



Illegible/unclear design



Lack of detail & distinction



Sharp edges/straight lines



Unsuitable use of colour



Air pollution



Heat



Light pollution



Noise pollution



Smell pollution

Urban stress-relief: RELAX framework



***Relationships &
social connections***

R



***Economic facilities &
opportunities***

E



Landscape

L



***Activity &
mobility***

A

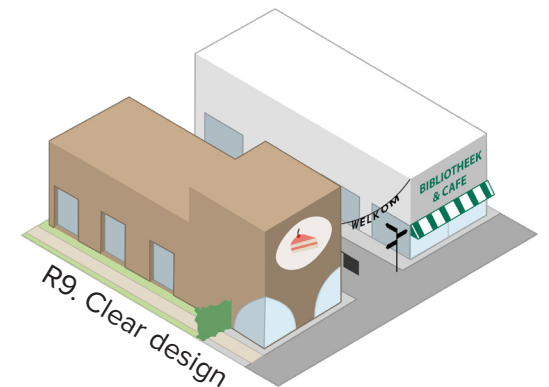
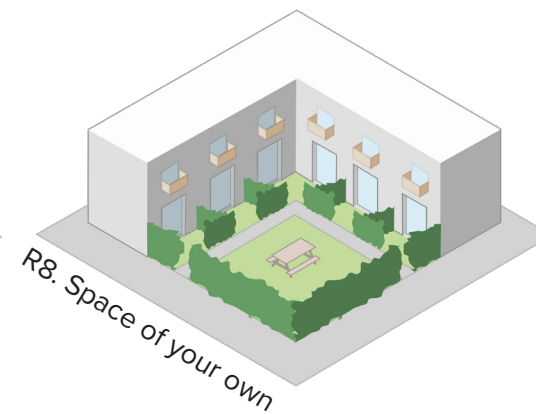
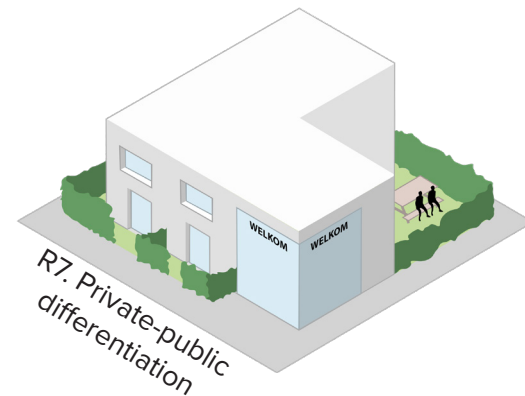
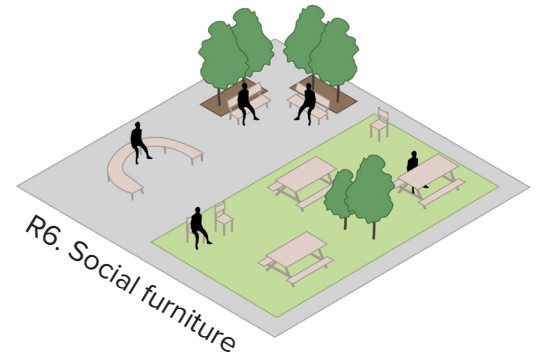
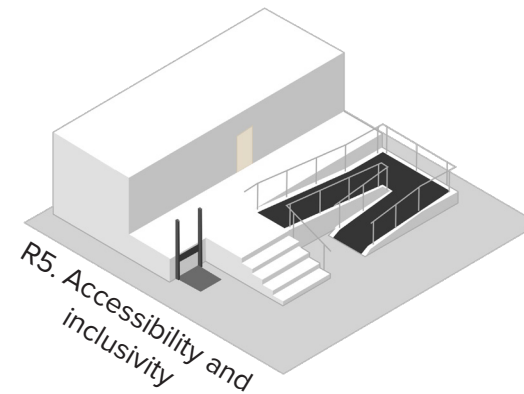
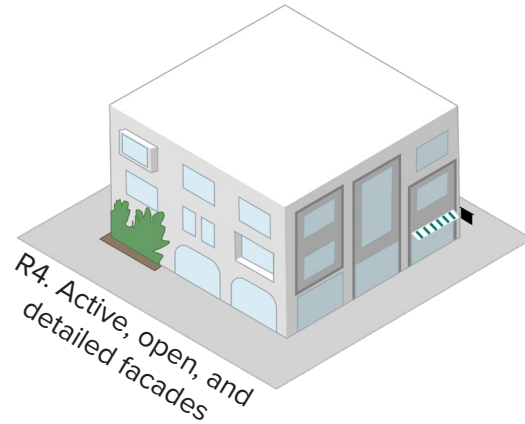
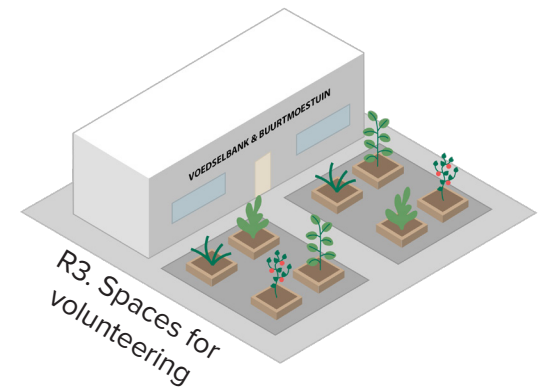
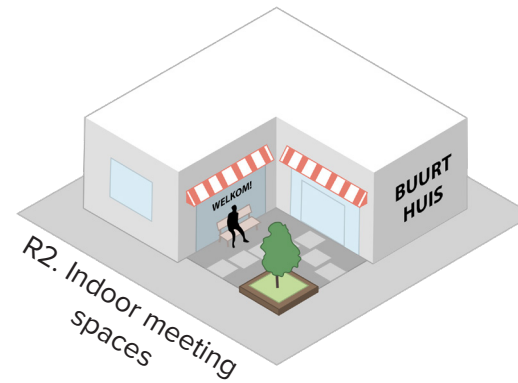
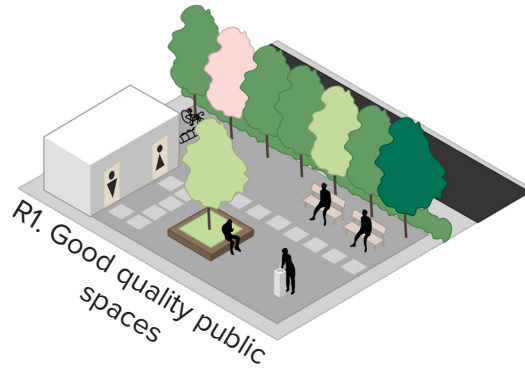


***Xperience &
comfort***

X

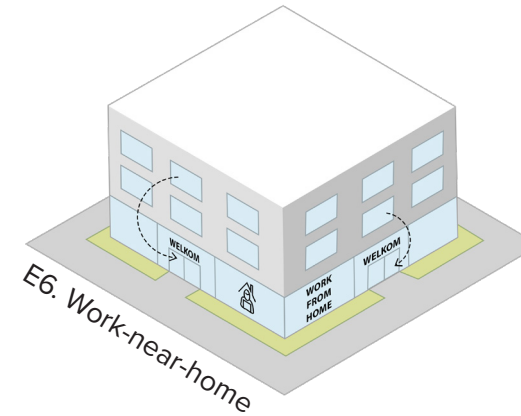
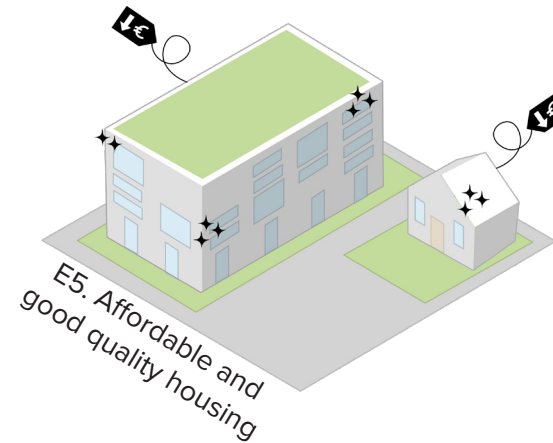
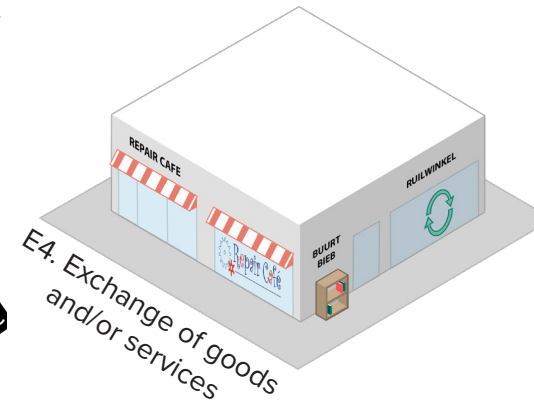
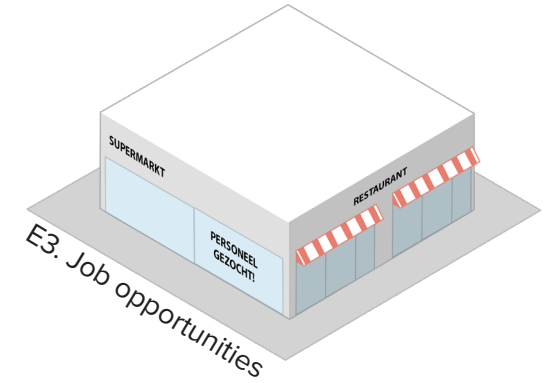
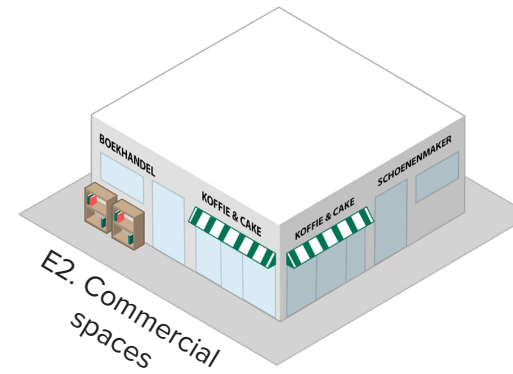
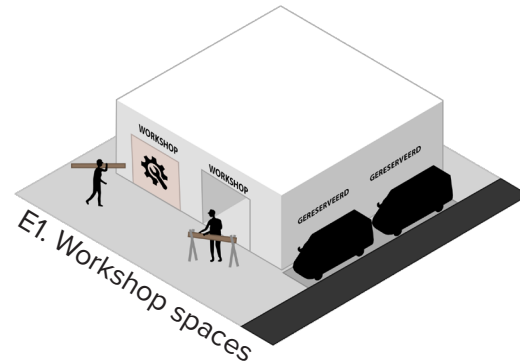
Relationships & social connections

- *Social interactions & networks*
- *Safety*
- *Sense of belonging*
- *Privacy*



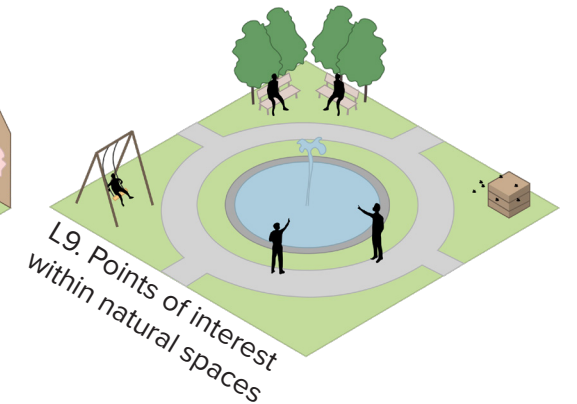
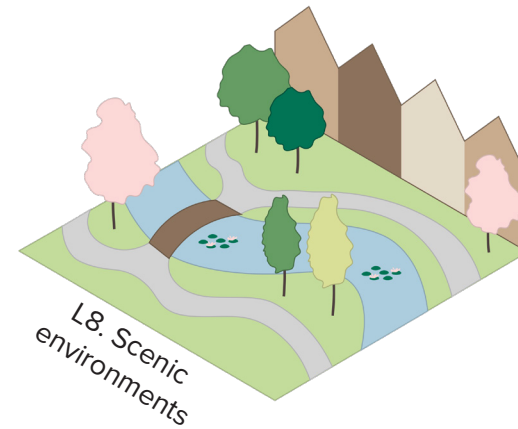
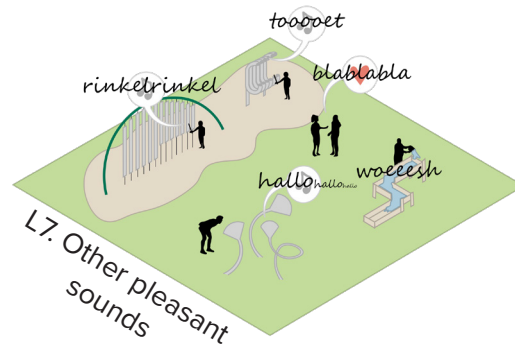
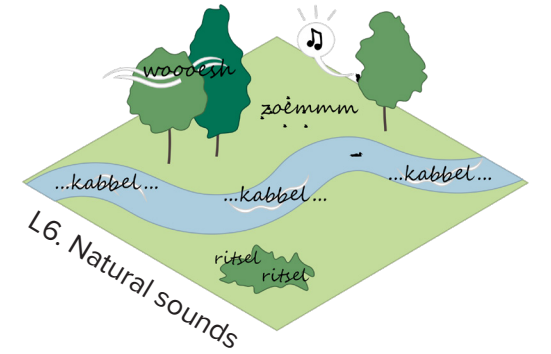
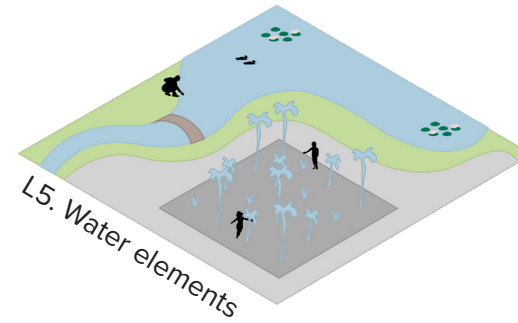
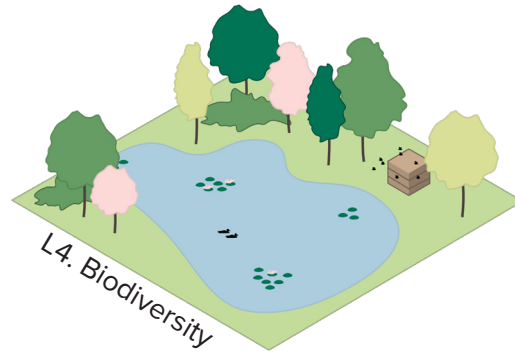
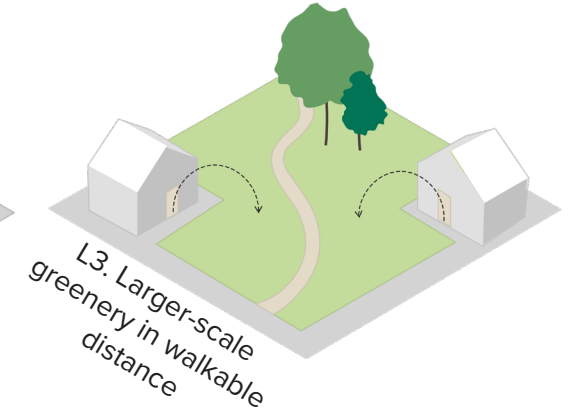
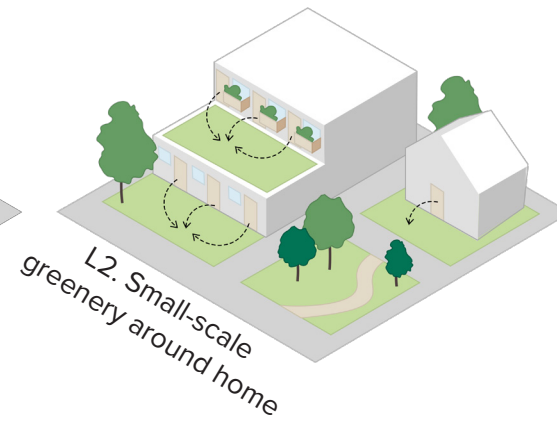
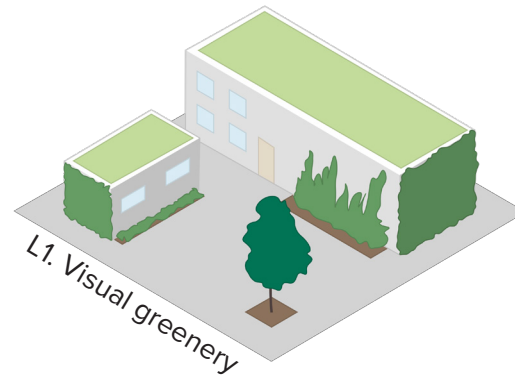
Economic facilities & opportunities

- *Economic opportunities*
- *Housing*
- *Facilities*
- *Diversity & variety*



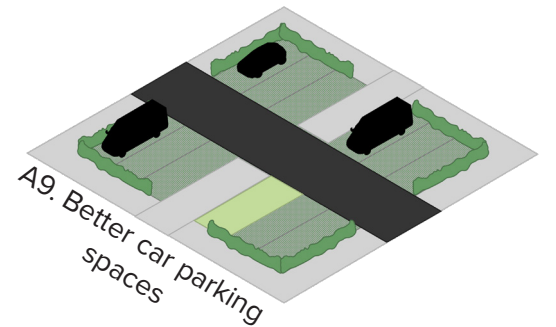
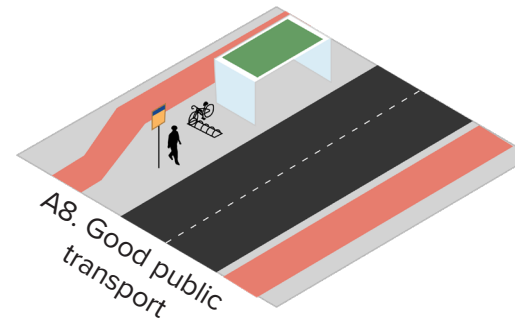
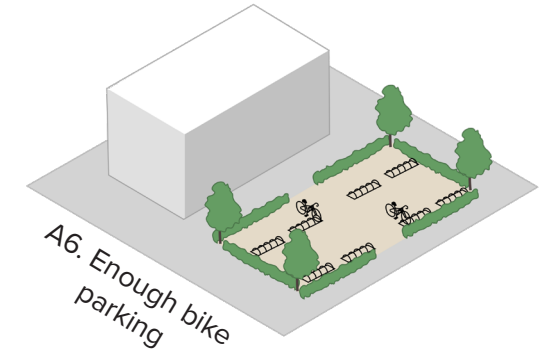
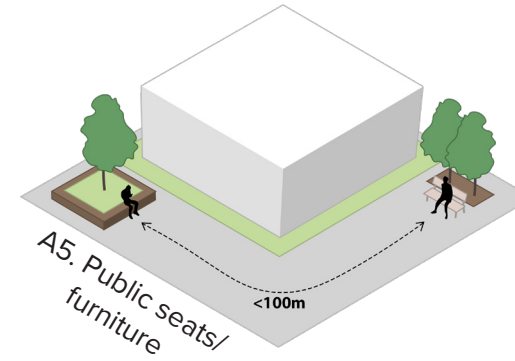
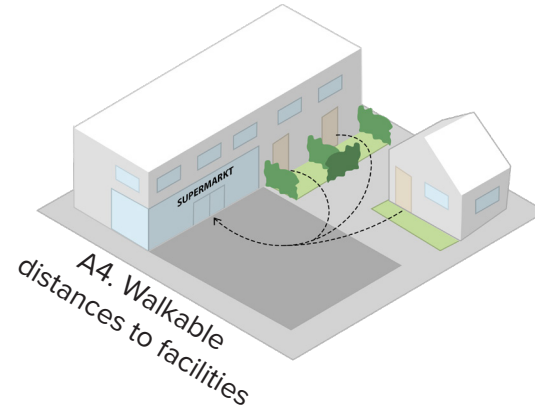
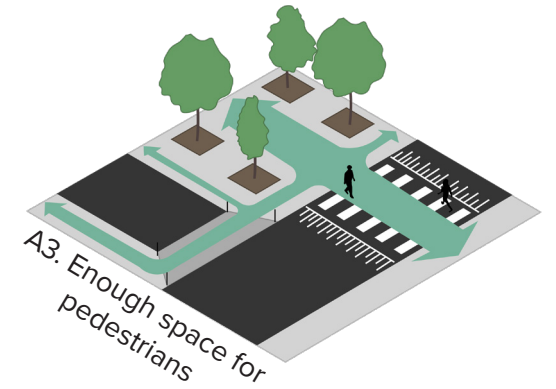
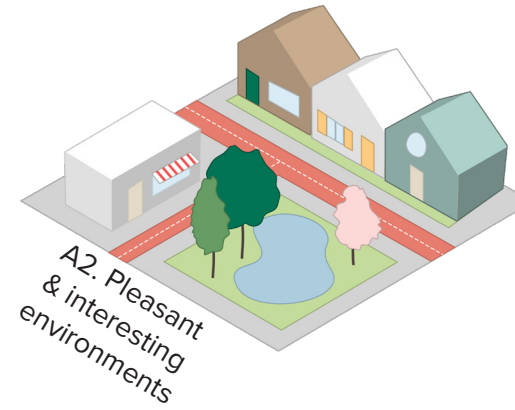
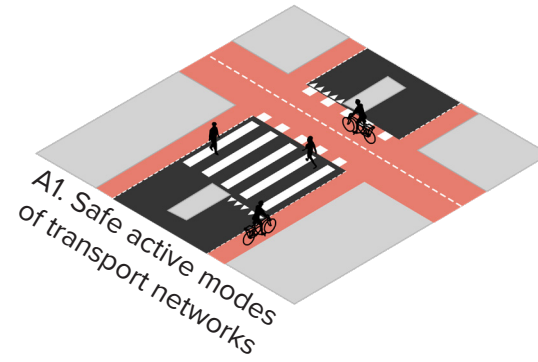
Landscape

- Green spaces
- Blue spaces
- Pleasant/natural sounds
- Scenic environments



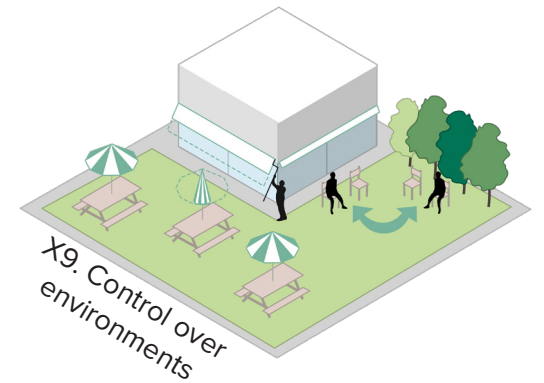
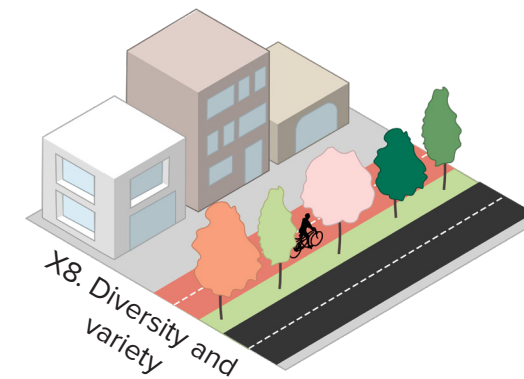
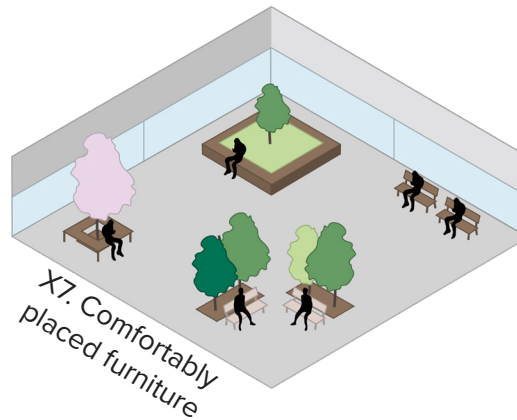
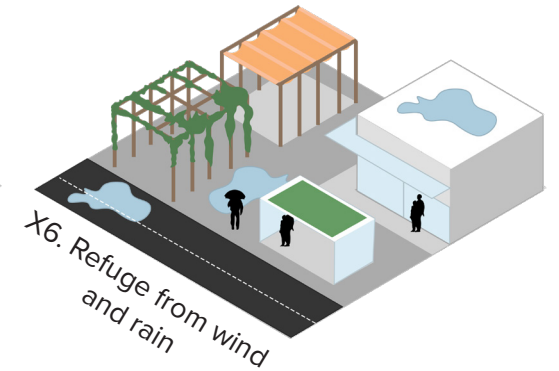
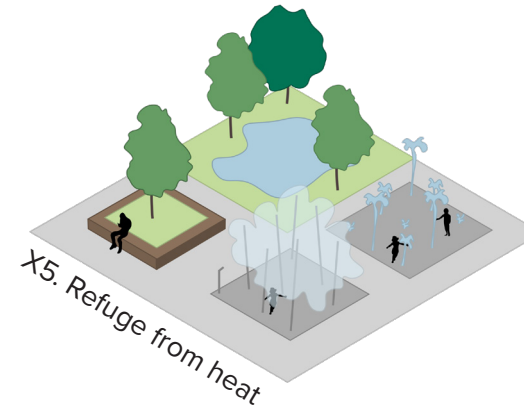
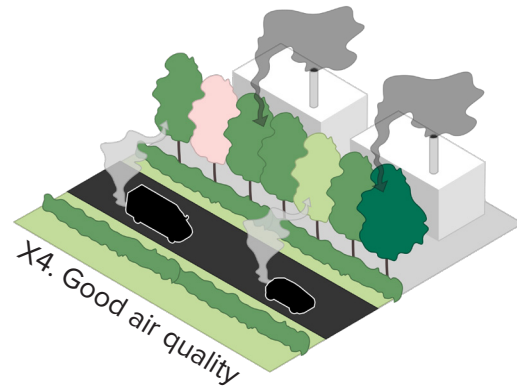
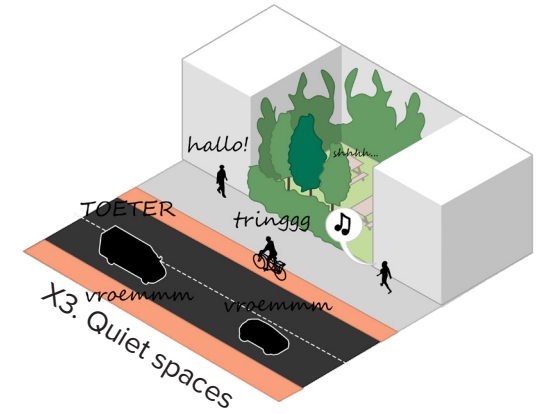
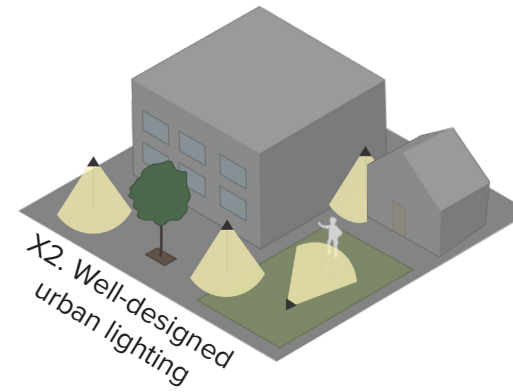
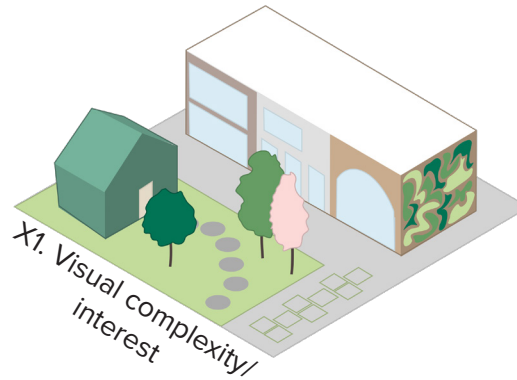
Activity & mobility

- *Active modes of transport networks*
- *Space for exercise/physical activity*
- *Public transport*



Xperience & comfort

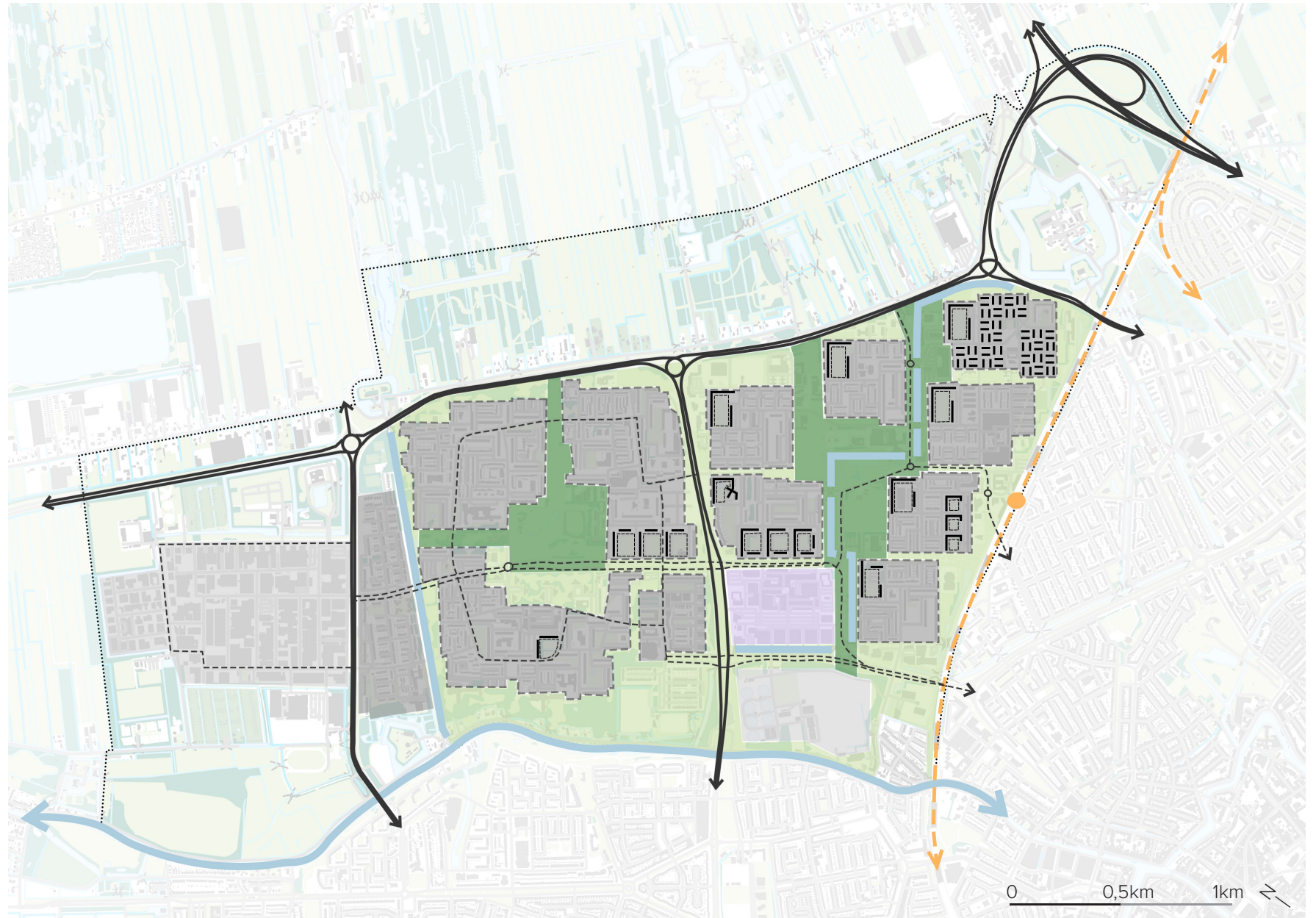
- Visual experience
- Auditory experience
- Climate and pollution
- Personal comfort



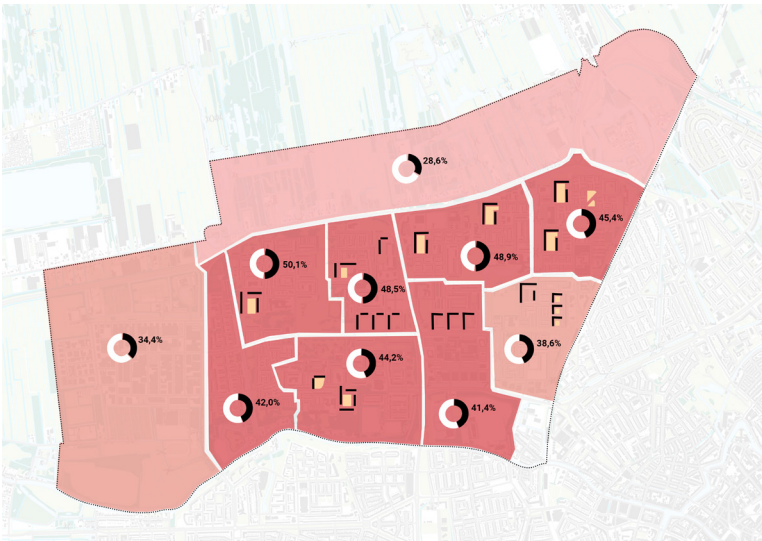
Status quo in Overvecht

- Clear **structure: clusters** with **green framework**
- **Repeating** elements
- **Monofunctional** clusters

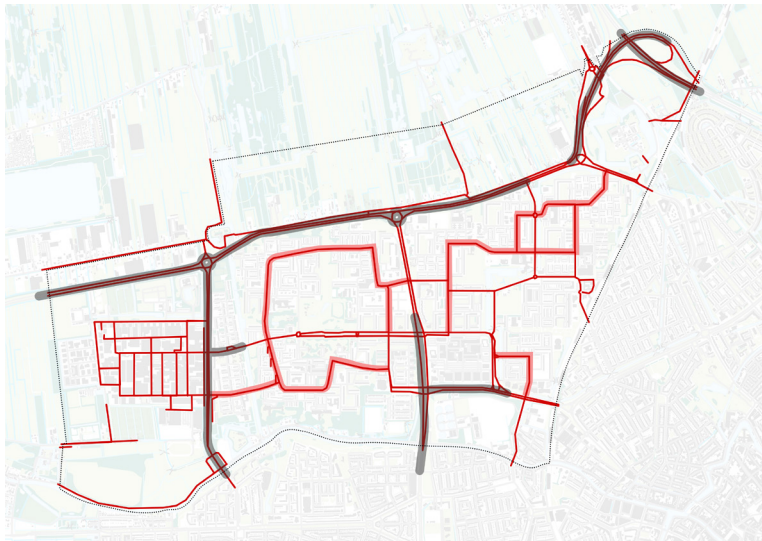
- Repeating elements
- Residential clusters (original design)
- Residential clusters (other)
- Commercial cluster
- Industrial cluster
- Green framework
- Parks within green framework
- Water
- Main roads
- Other important roads
- - - Train track
- Train station



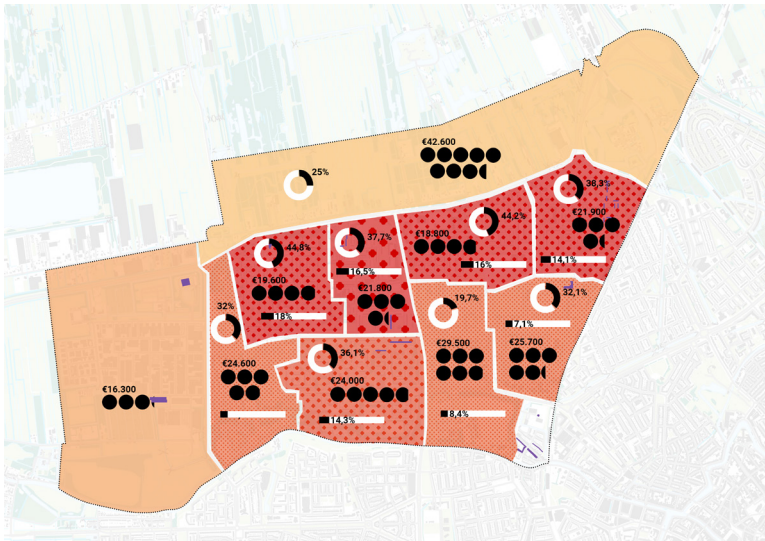
Urban stress in Overvecht



Social deprivation & overload



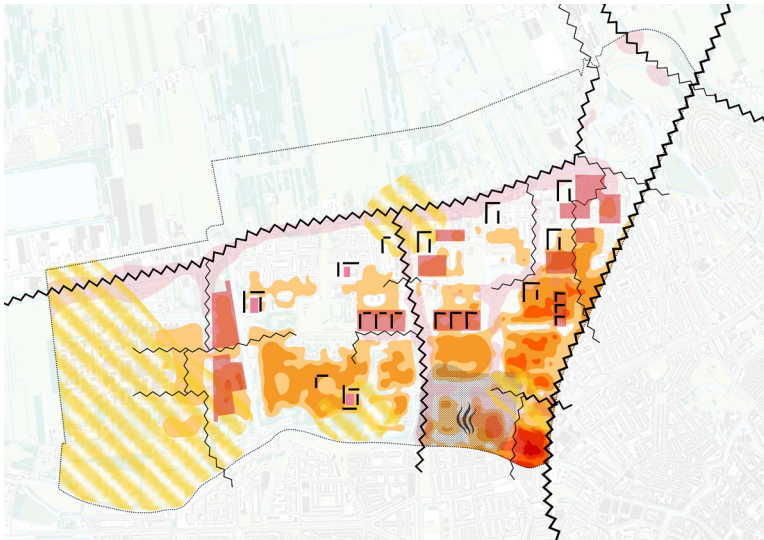
Traffic & inactive modes of transport



Economic deprivation & disparity

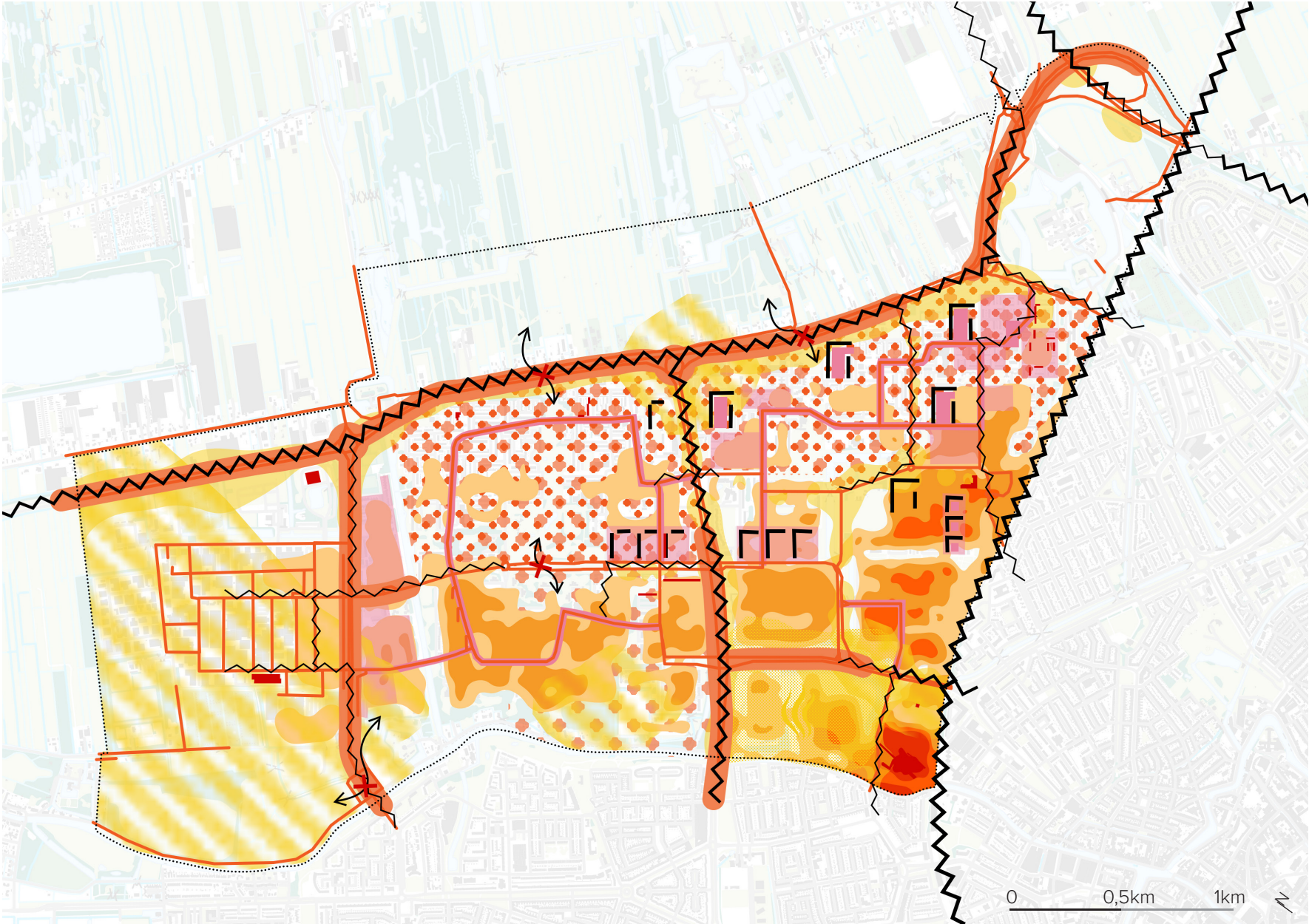
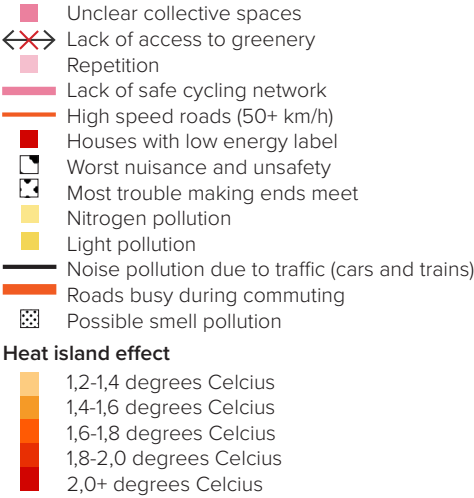


Shortage of diverse greenery



Shortage of diverse greenery

Overall urban stress

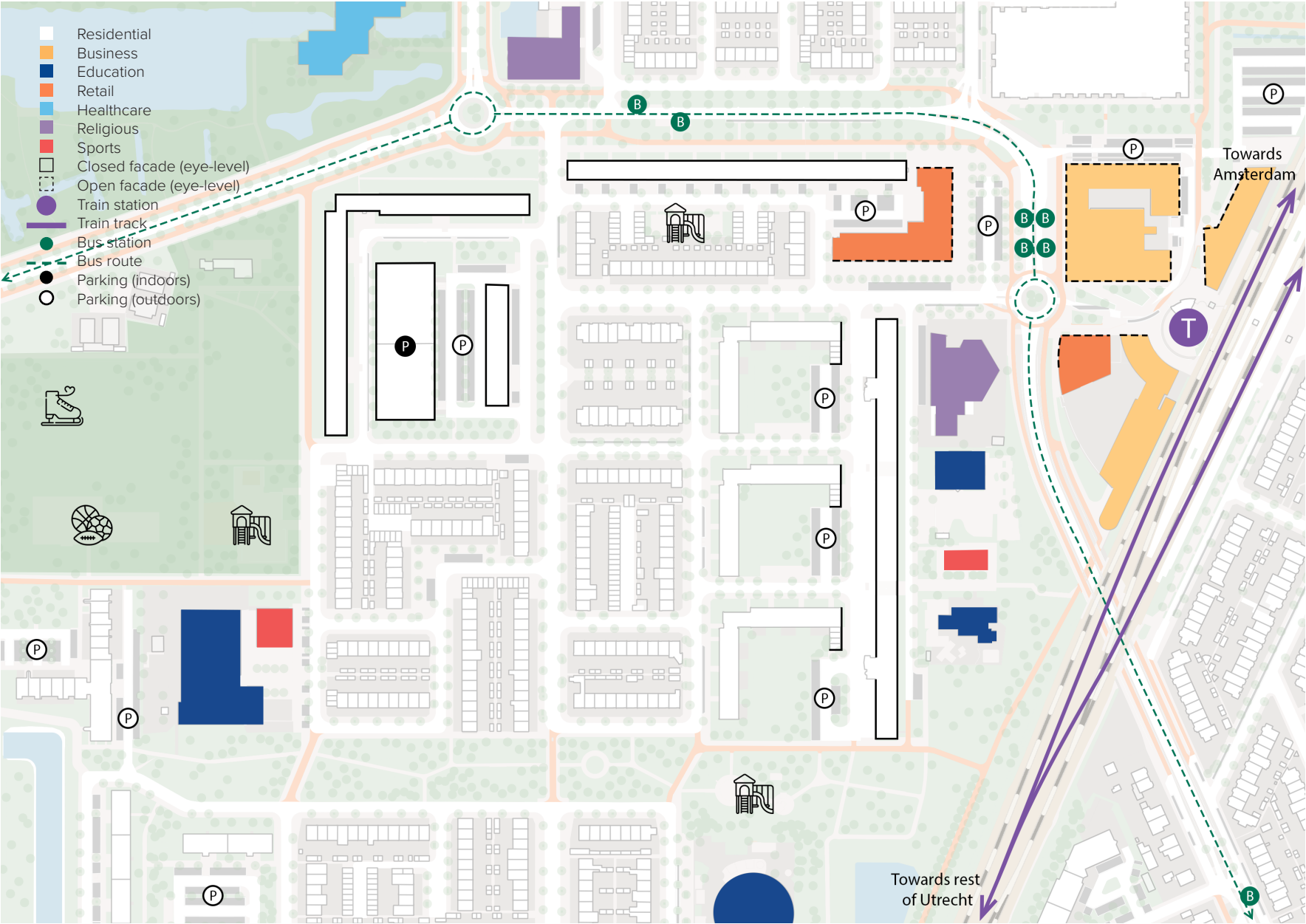


Overall urban stress

- Unclear collective spaces
 - Lack of access to greenery
 - Repetition
 - Lack of safe cycling network
 - High speed roads (50+ km/h)
 - Houses with low energy label
 - Worst nuisance and unsafety
 - Most trouble making ends meet
 - Nitrogen pollution
 - Light pollution
 - Noise pollution due to traffic (cars and trains)
 - Roads busy during commuting
 - Possible smell pollution
- Heat island effect**
- 1,2-1,4 degrees Celcius
 - 1,4-1,6 degrees Celcius
 - 1,6-1,8 degrees Celcius
 - 1,8-2,0 degrees Celcius
 - 2,0+ degrees Celcius



Rubicondreef neighbourhood





Lack of space of your own



Lack of eyes on the street



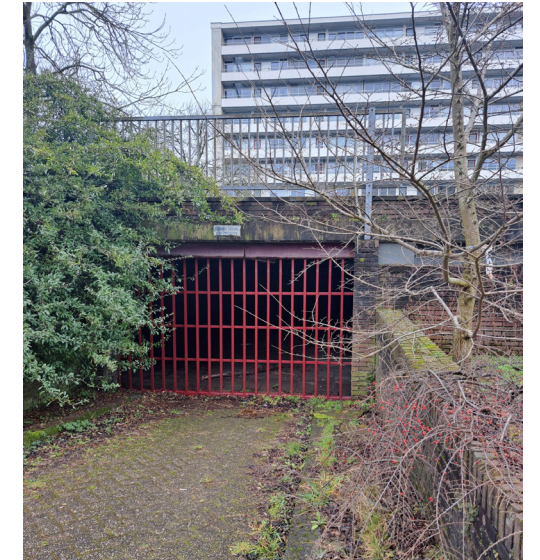
Parking all along & on the street



Undefined & unclear collective spaces

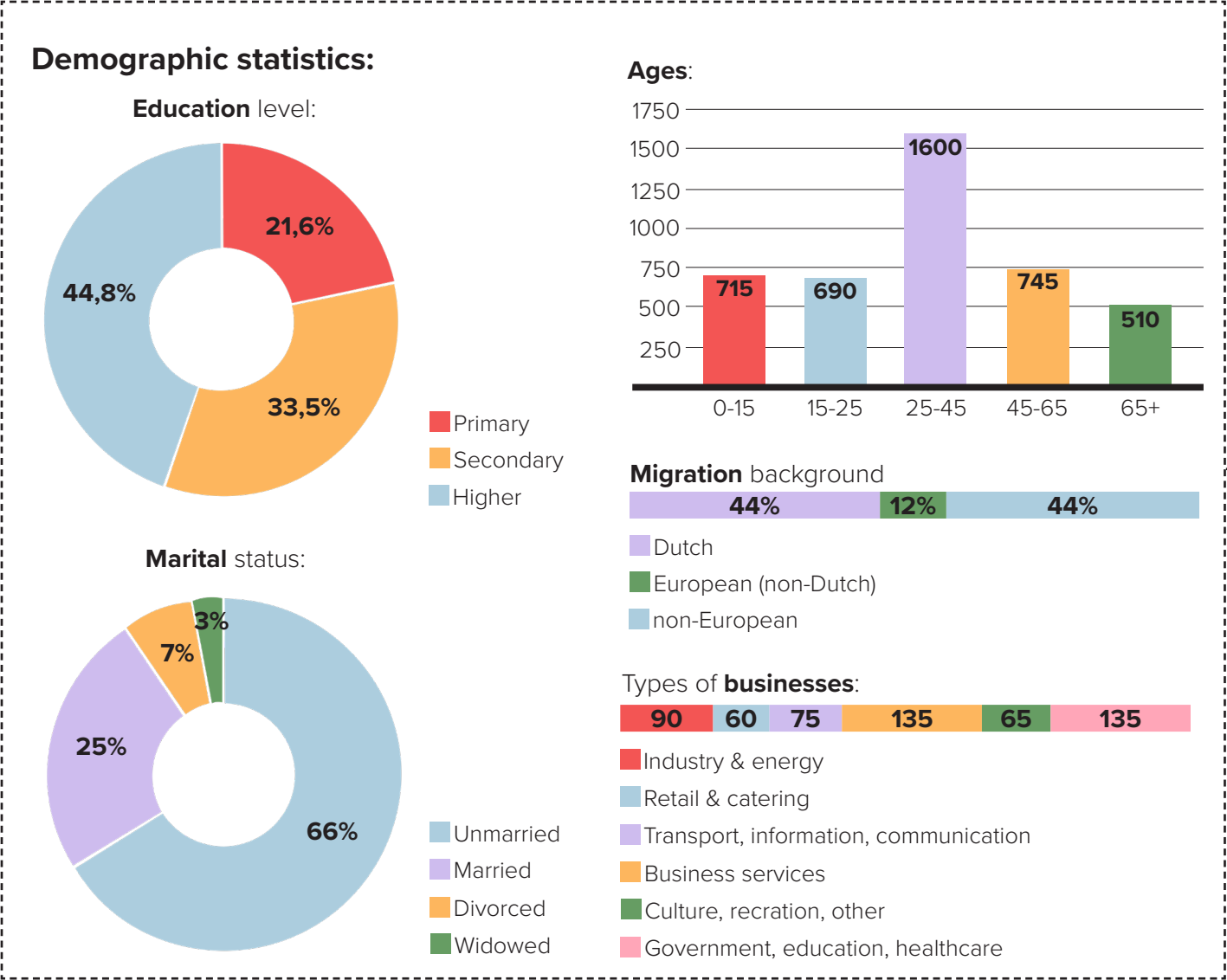


Low biodiversity & lack of interest

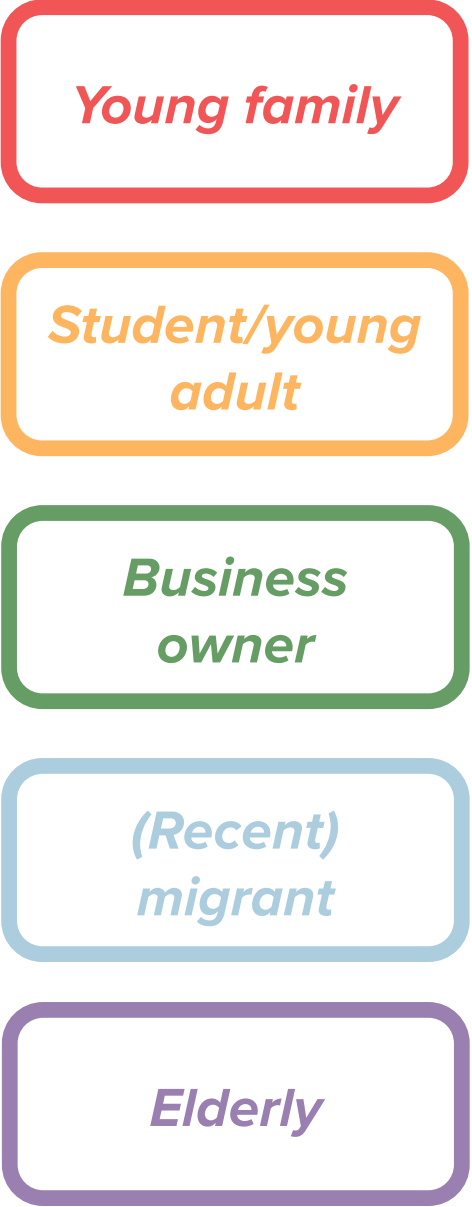


Empty parking garage

Personas



Source: AlleCijfers, 2025



STRESS map: young family

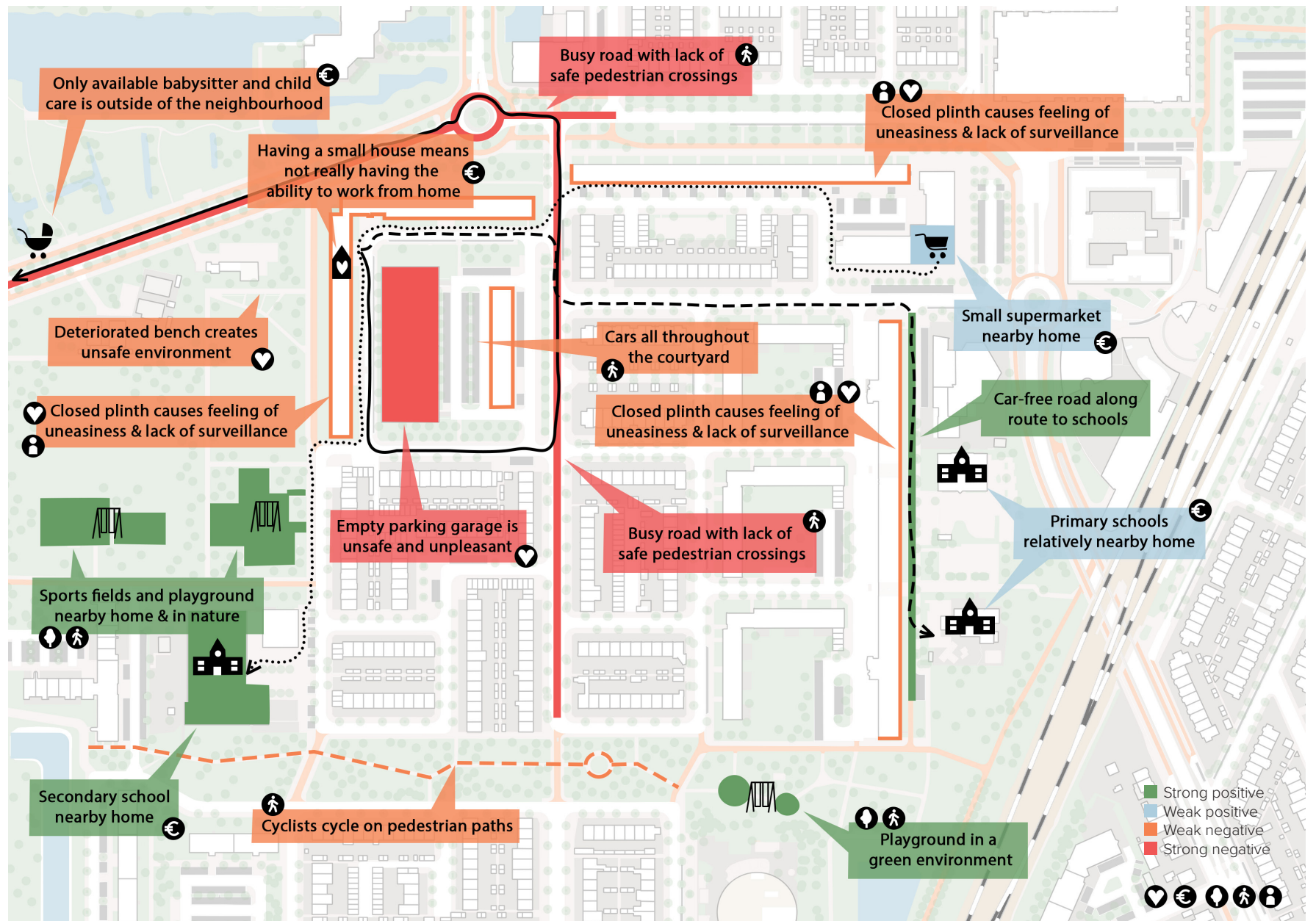
Social: ● ● ● ● ● ●

Economic: ● ● ● ● ●

Natural: ● ●

Activity: ● ● ● ● ● ● ●

Experience:

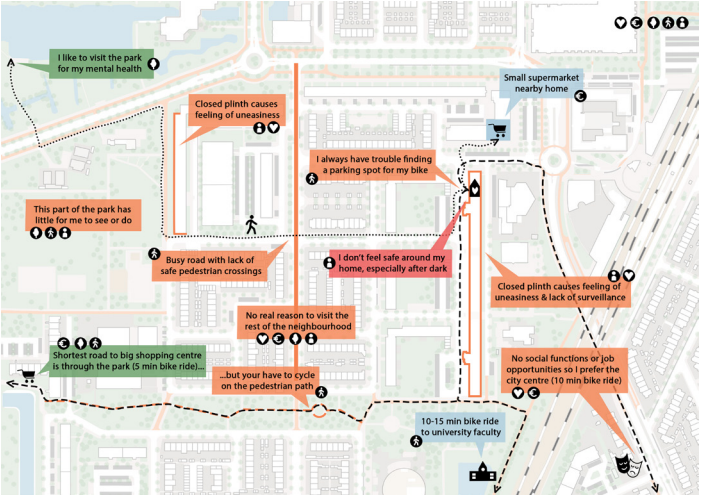


STRESS maps: all personas

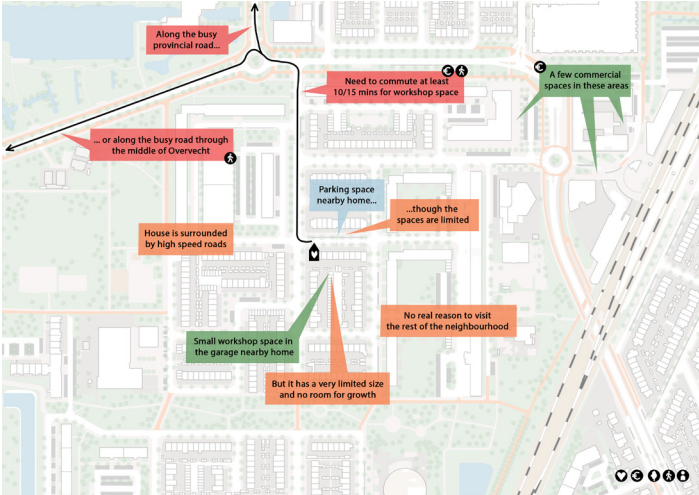
Young family



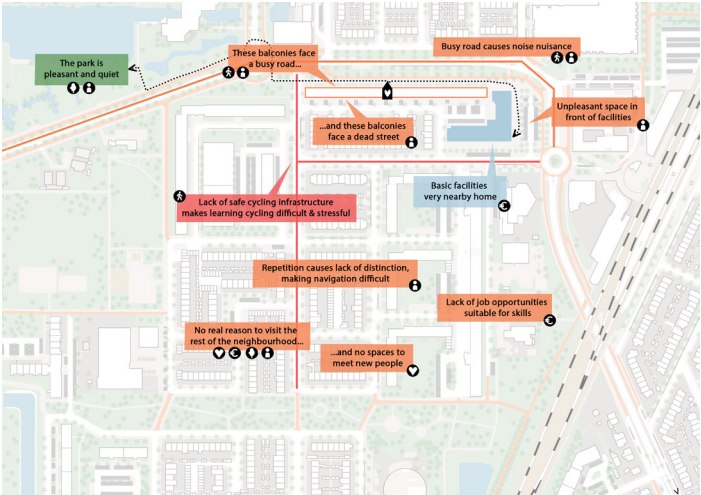
Student/young adult



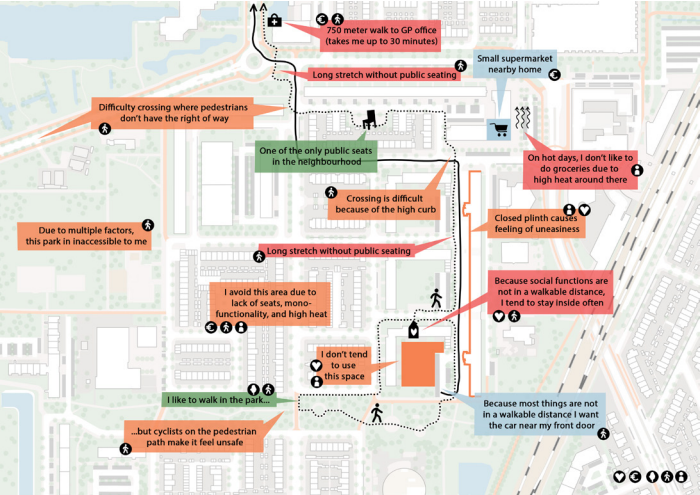
Business owner



(Recent) migrant



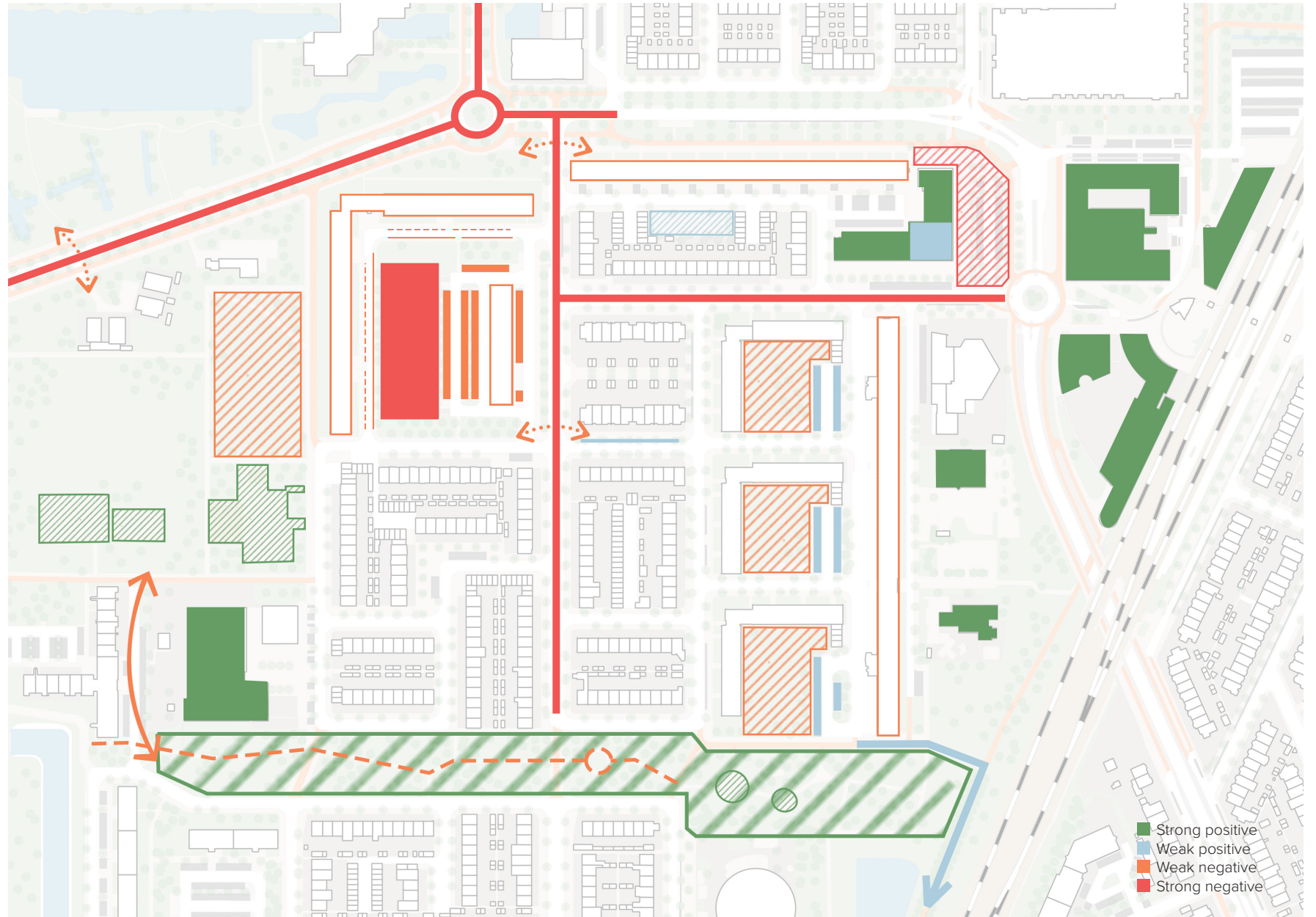
Elderly



SWOT analysis

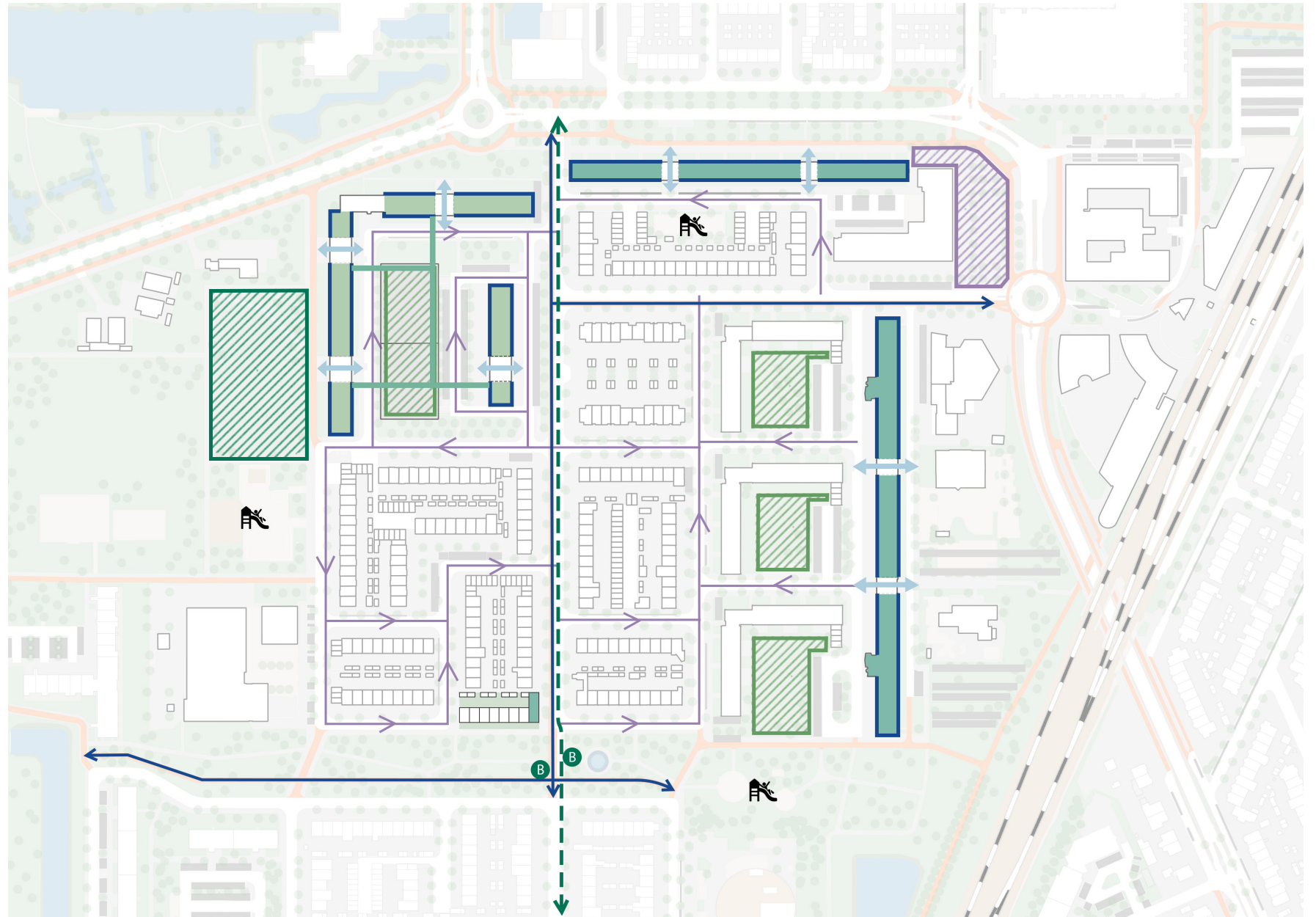
Weaknesses not mapped:

- The need to commute
- Lack of job opportunities & workspaces
- Lack of meeting spaces, social functions & cultural facilities
- Lack of healthcare facilities
- Lack of childcare facilities
- Lack of public seats/social furniture

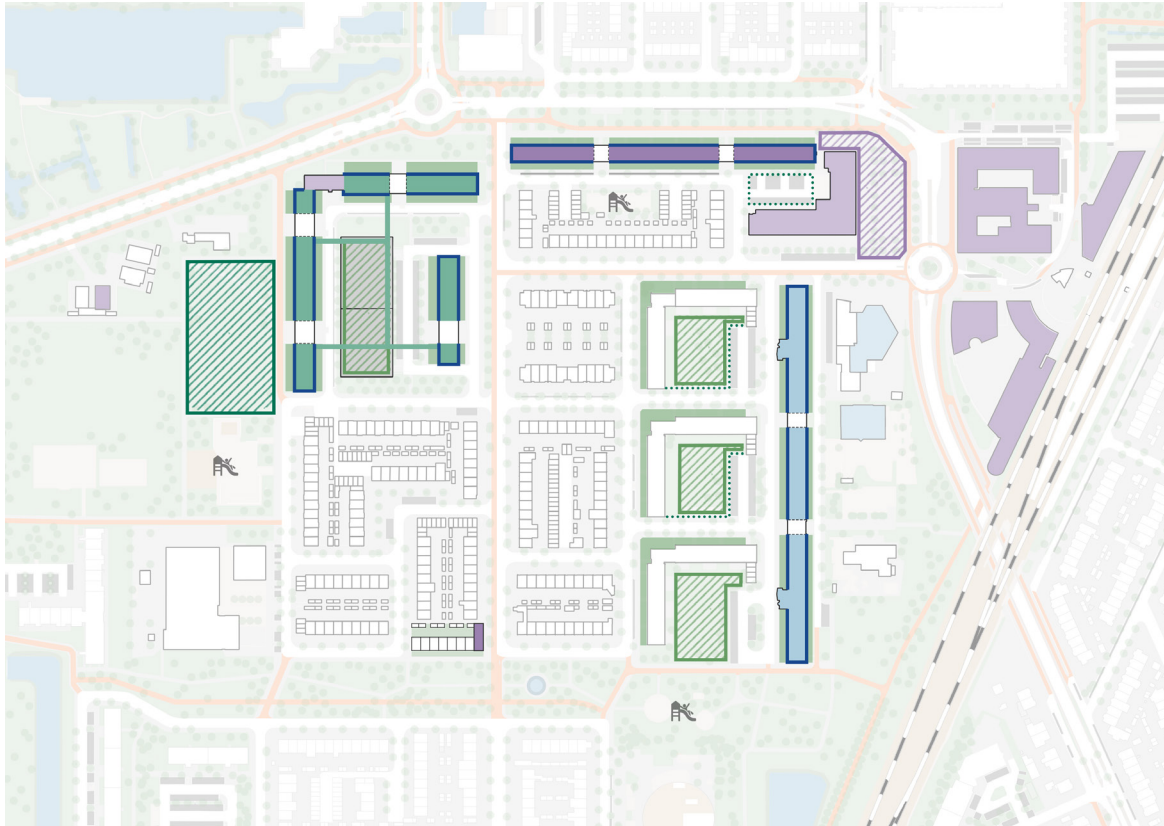


Neighbourhood design

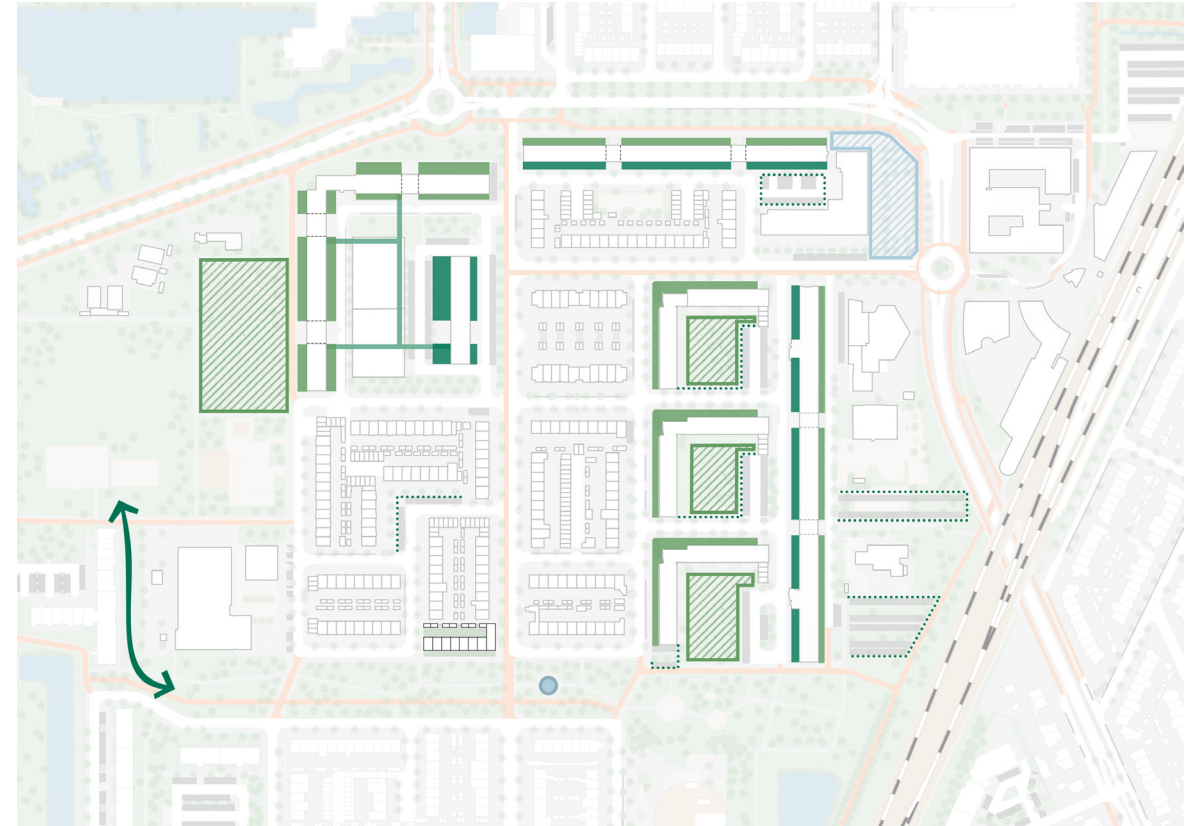
- Added functions to buildings (dead plinths)
- Added functions to outside spaces
- Increase in natural features & biodiversity
- Changes to car network, cycling network, public transport network, pedestrian network



Functions (RE) & natural elements (L)

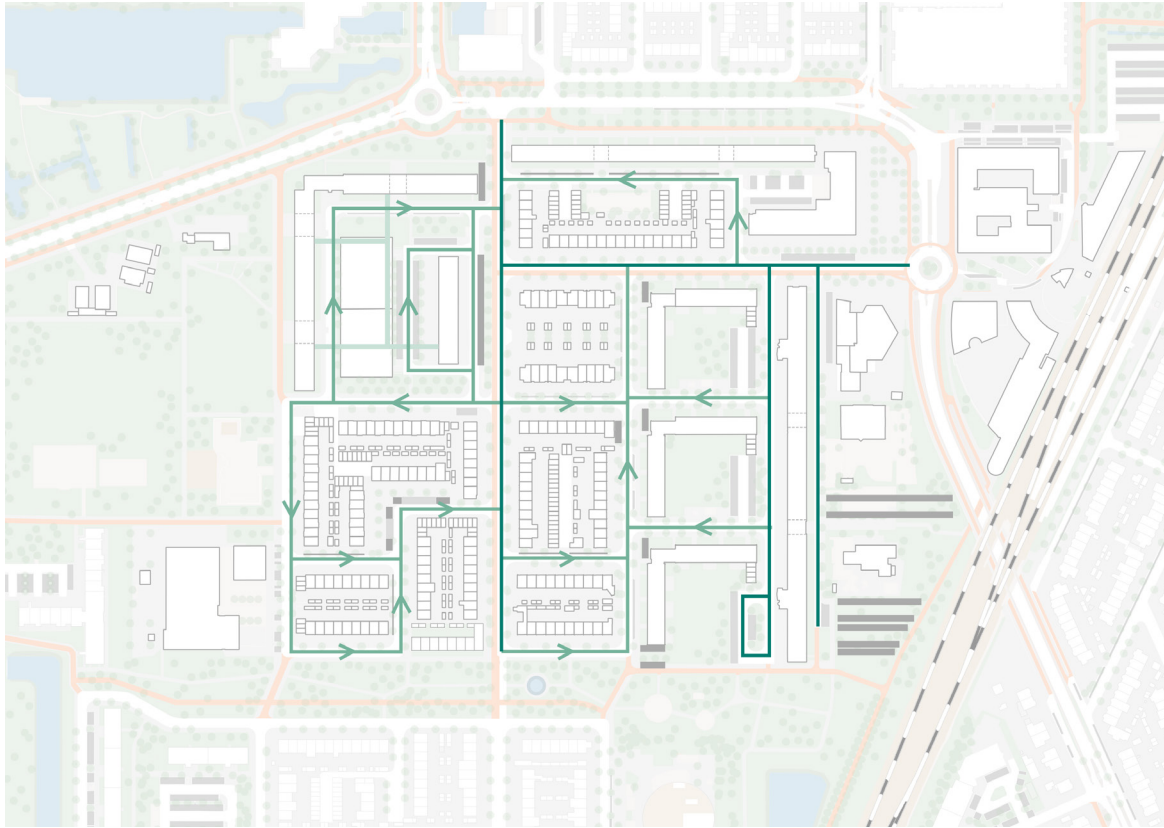


- Collective/public functions in blind & inactive plinths
- Housing & shared collective spaces
- Public facilities, healthcare
- Public facilities, commercial
- Public square
- Public-private buffer

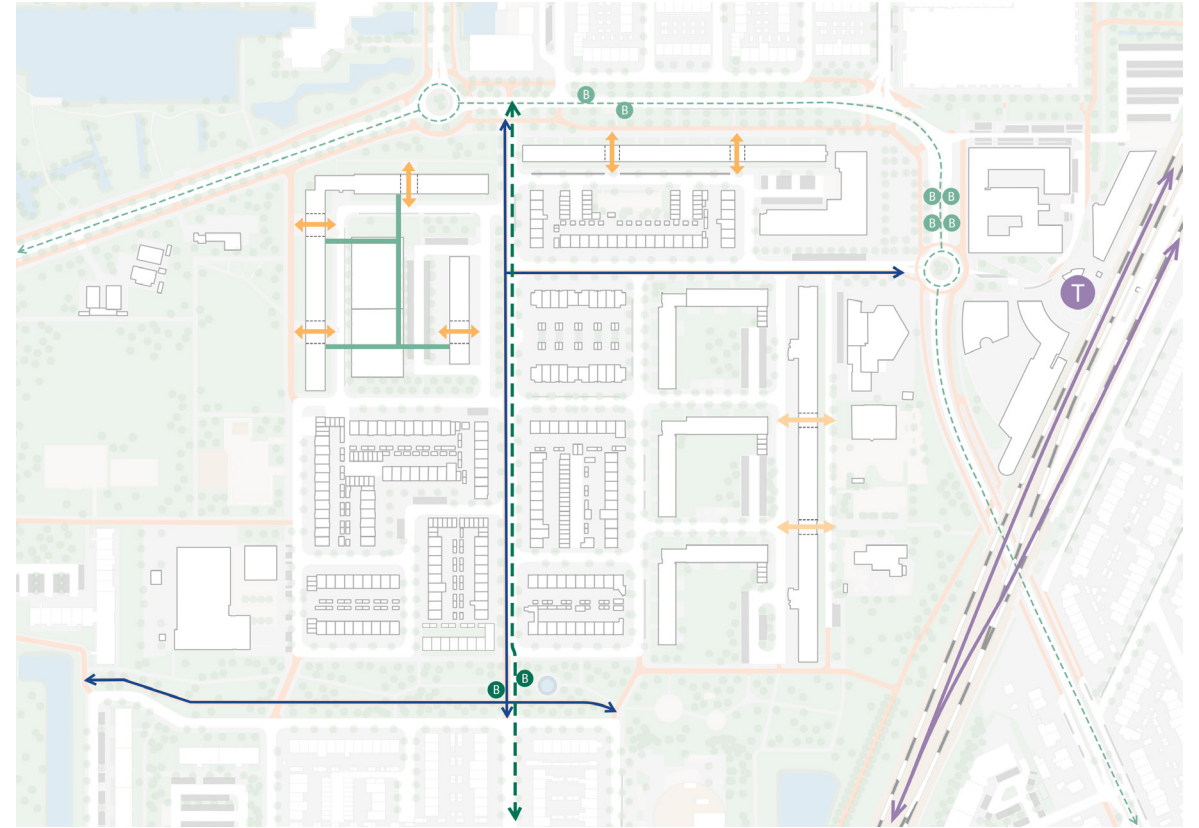


- Improved biodiversity (native species)
- Points of interest in natural spaces
- More water features in neighbourhood

Mobility (A): Car and car-alternatives

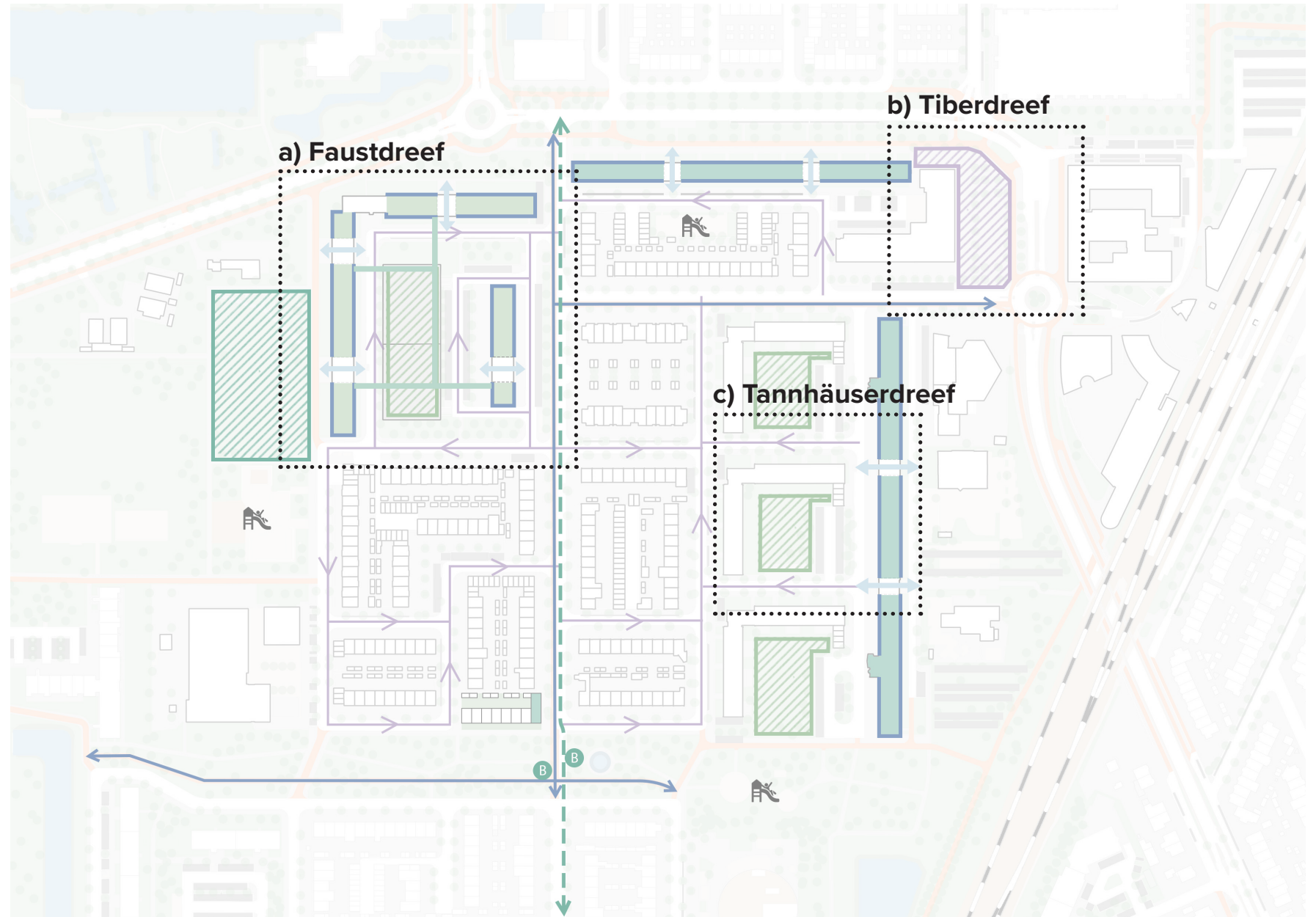


- One-way roads where possible & suitable
- Added parking to relieve parking pressure from street



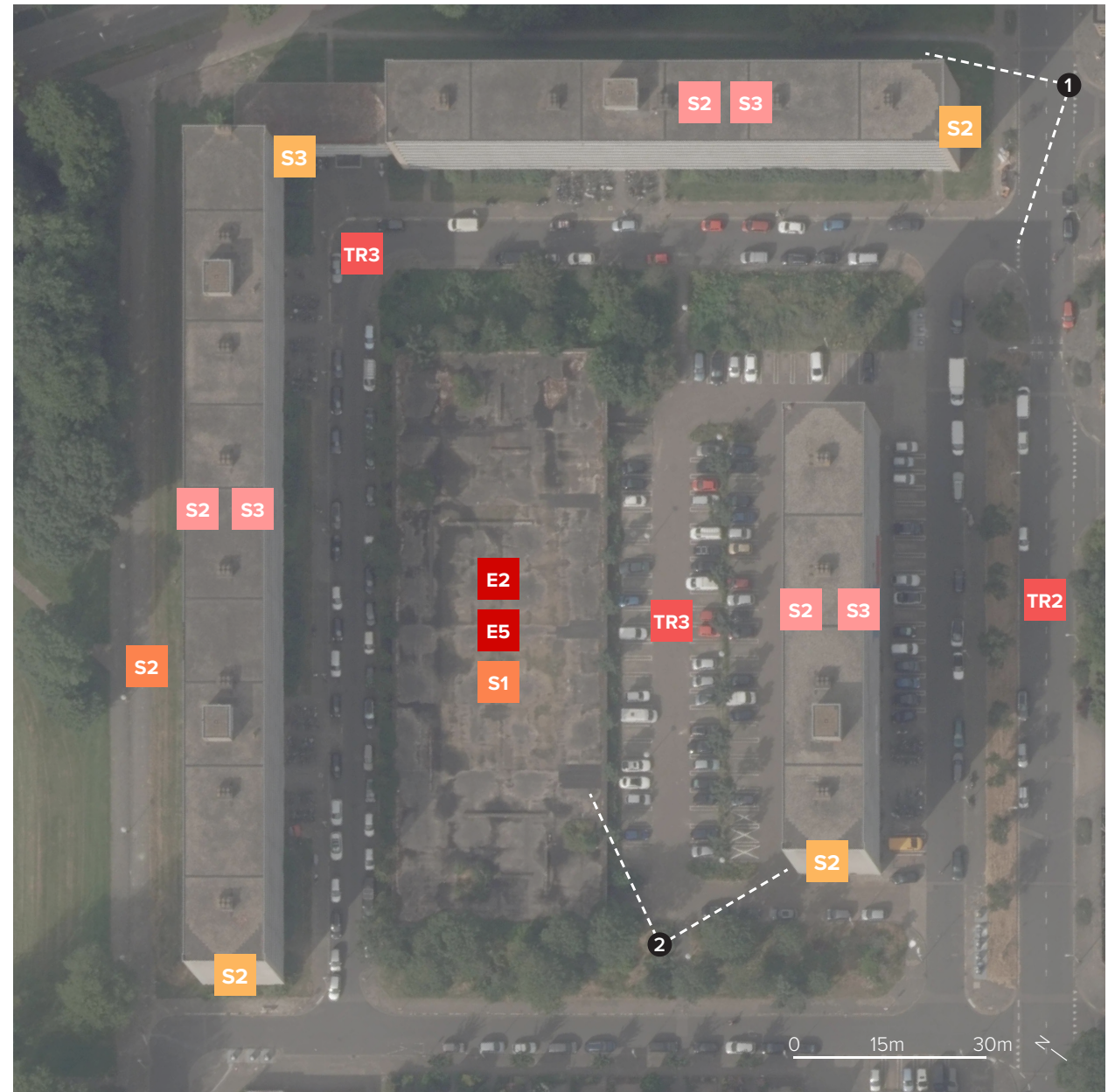
- Bus re-routed through neighbourhood & added bus stop in park (with bus trap)
- Expanded cycling network through neighbourhood & park
- Increased connectivity through long buildings

Zooming in



a) Faustdreef: status quo

- S2** Lack of eyes on the street
- S3** Not enough space of your own
- TR2** Lack of traffic safety
- TR3** Traffic
- E2** Deterioration
- E5** Violence/crime
- S1** Lack of (accessible) greenery
- S2** Low biodiversity
- S2** Lack of detail & distinctions
- S3** Sharp edges/straight lines

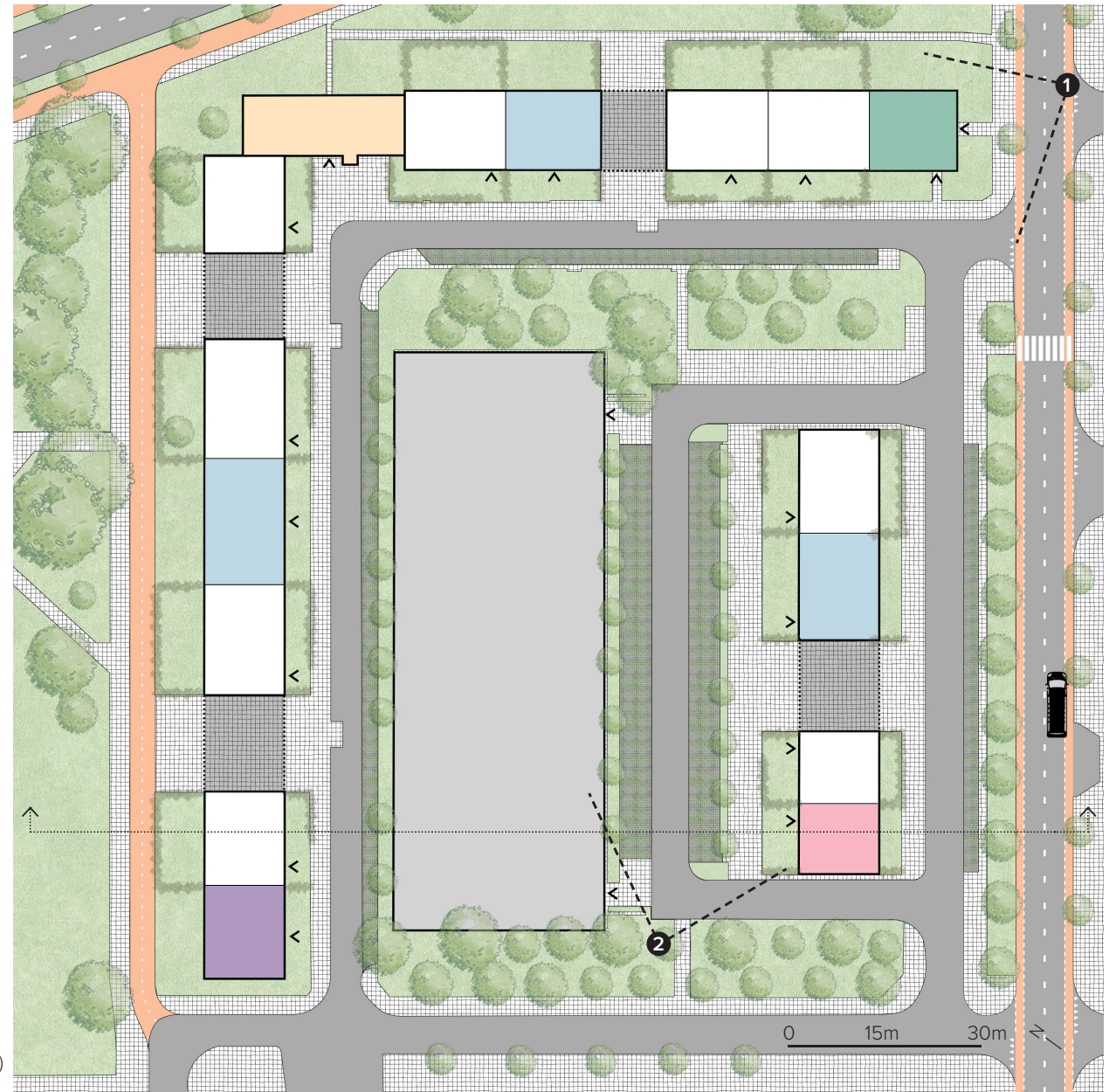


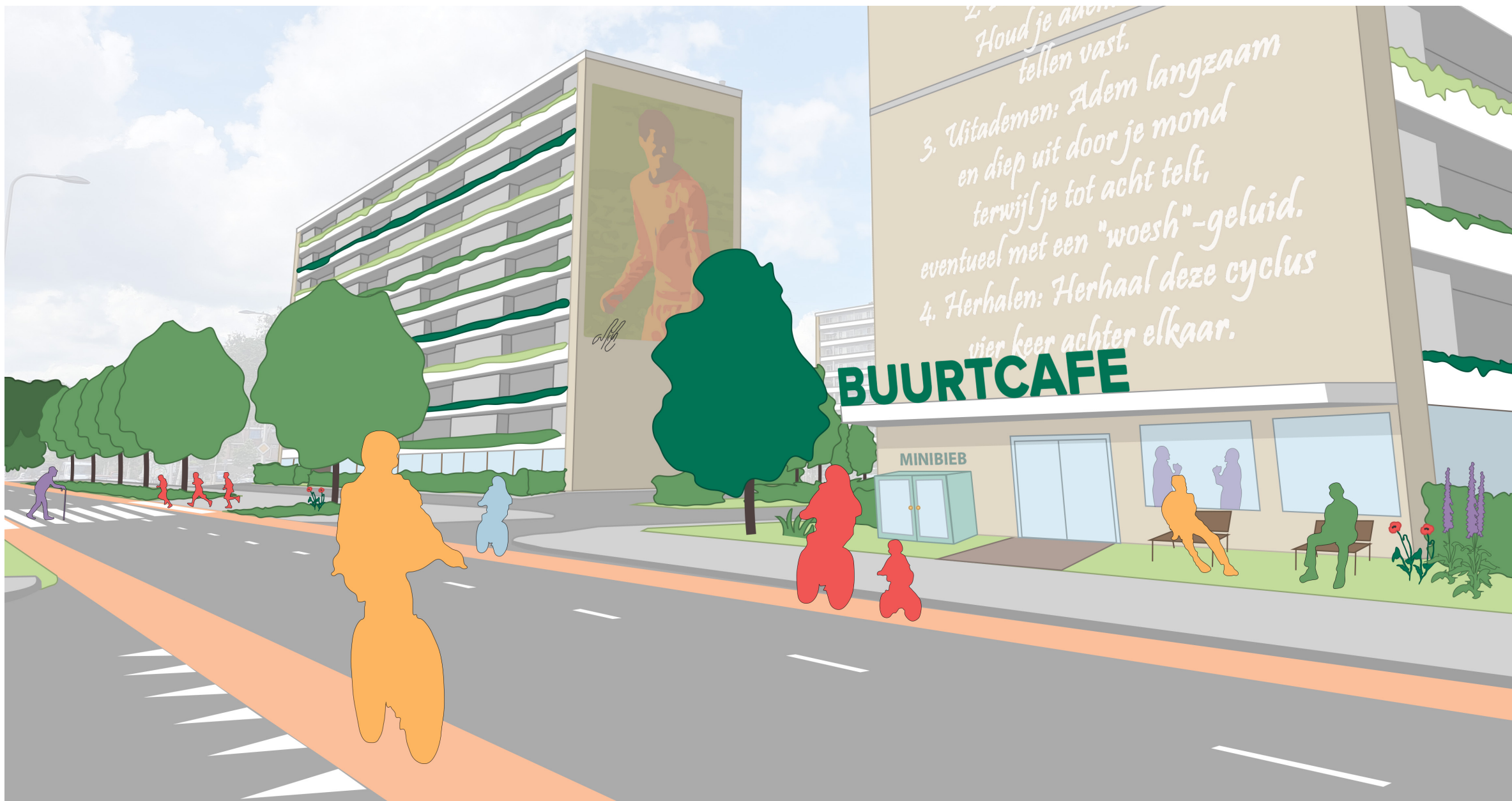
a) Faustdreef: design

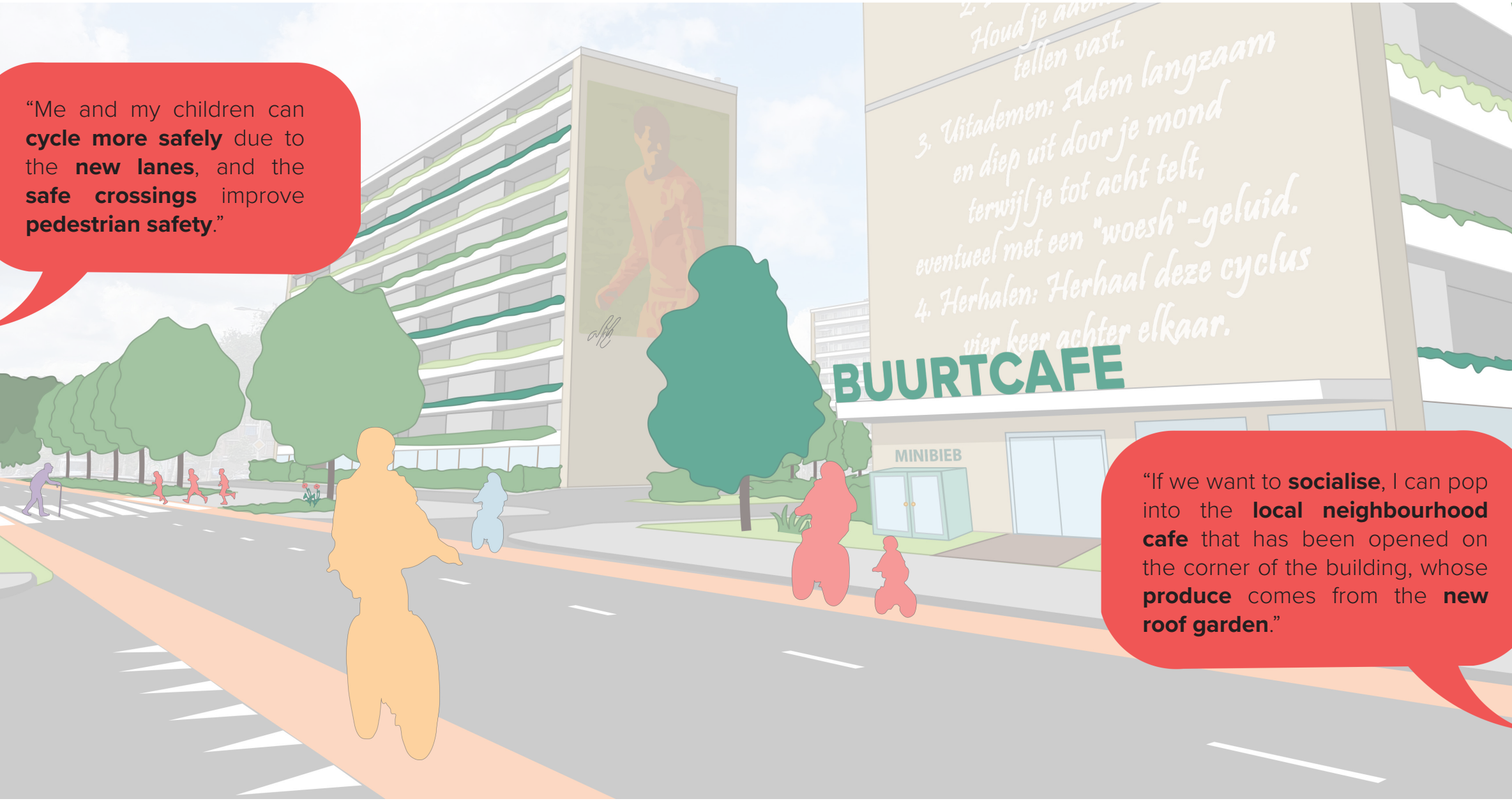
- R2 Indoor meeting spaces
- R4 Active, open, and detailed facades
- R7 Private-public differentiation
- R8 Space of your own
- R9 Clear design
- E4 Exchange of goods and/or services
- E6 Work-near-home
- L1 Visual greenery
- L2 Small-scale greenery around home
- L4 Biodiversity
- A1 Safe active modes of transport networks
- A3 Enough space for pedestrians
- A4 Walkable distance to facilities
- A8 Good public transport
- A9 Better car parking spaces

> Legend

- Work near home space (new)
- Child care (new)
- Neighbourhood cafe (new)
- Repair shop (new)
- Offices (existing)
- Parking garage (back into use)
- Apartment (new)



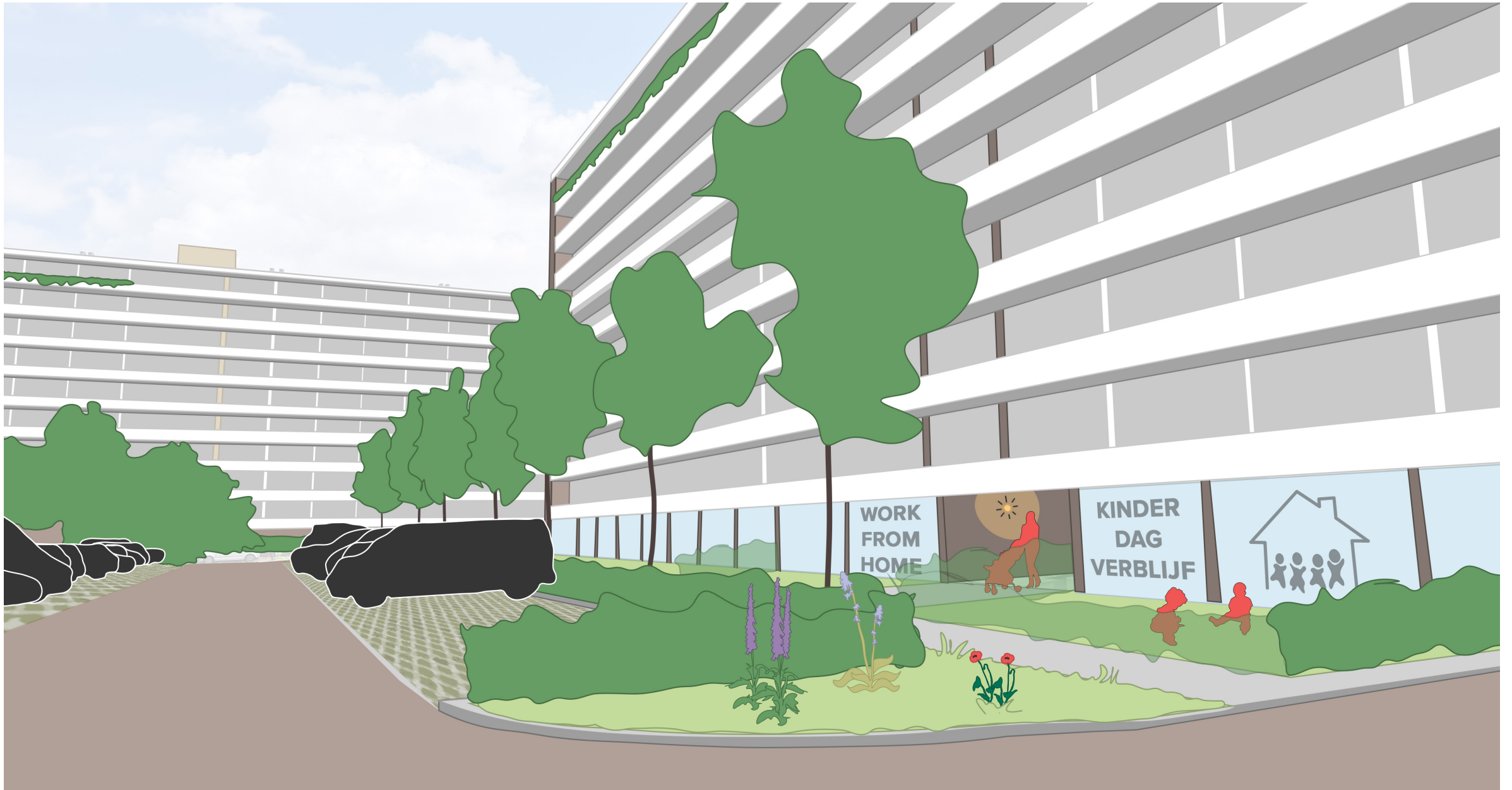


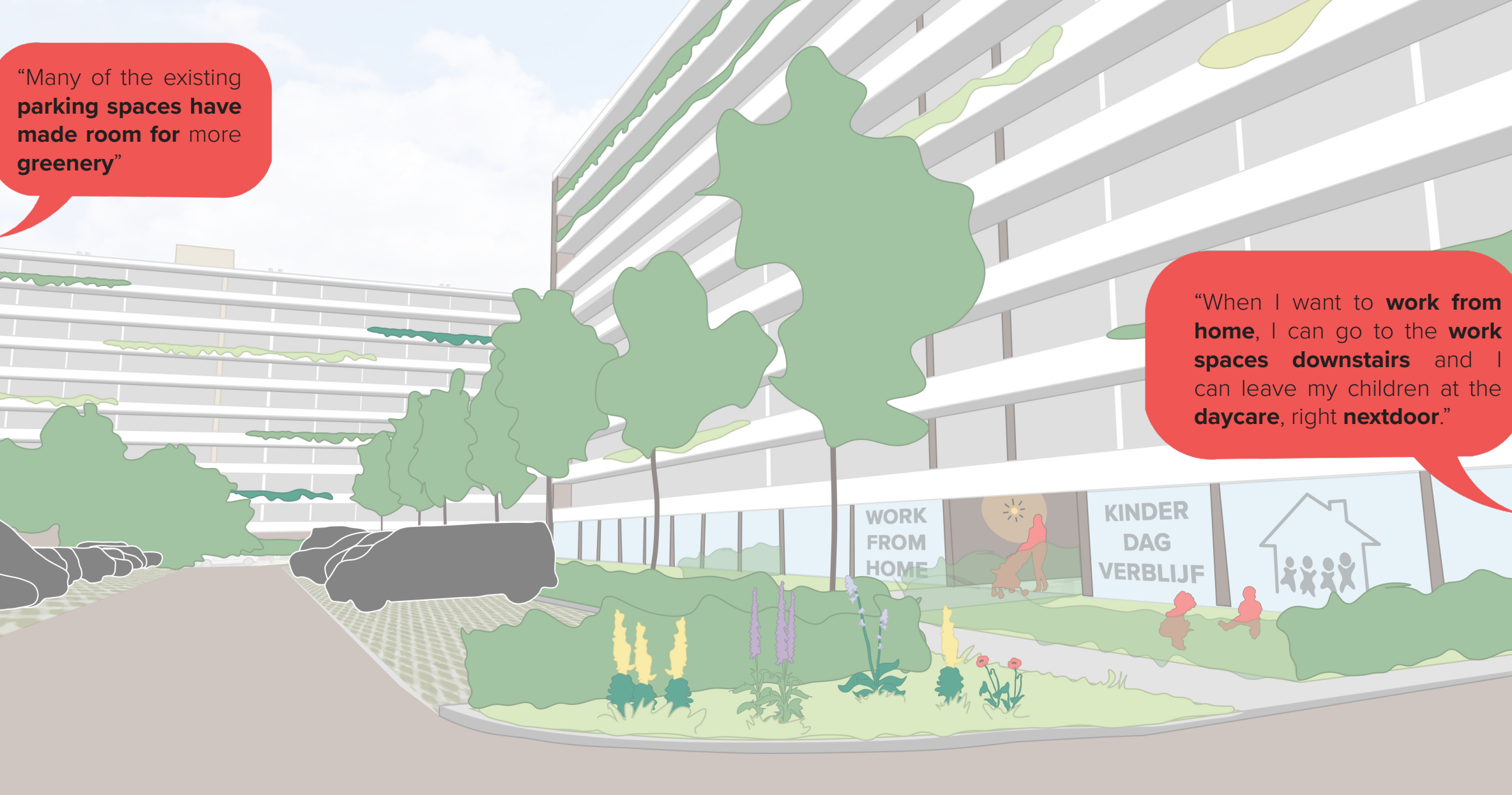


“Me and my children can **cycle more safely** due to the **new lanes**, and the **safe crossings** improve **pedestrian safety**.”

BUURTCAFE

“If we want to **socialise**, I can pop into the **local neighbourhood cafe** that has been opened on the corner of the building, whose **produce** comes from the **new roof garden**.”



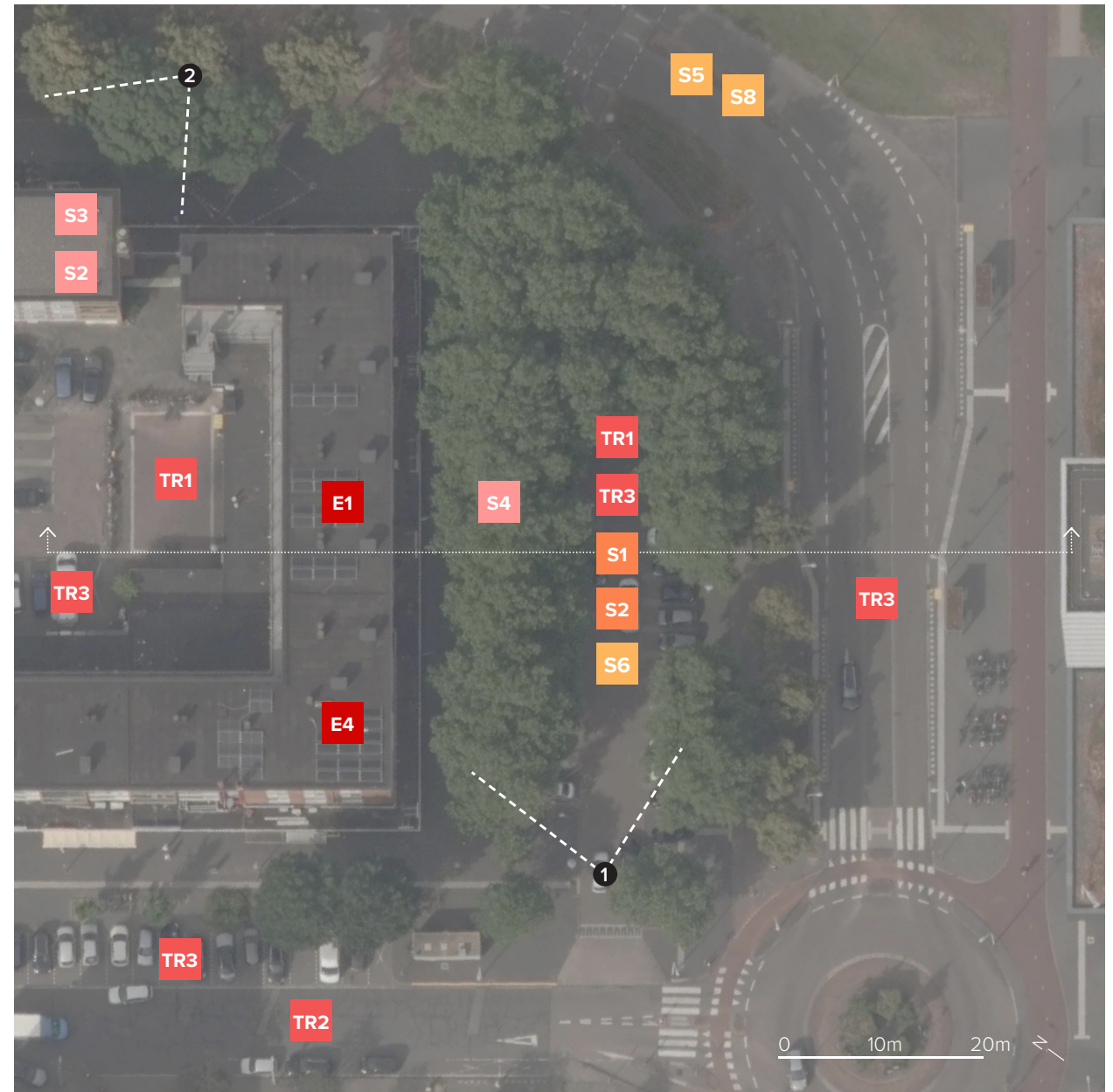
An illustration of a modern, multi-story building with a series of horizontal white balconies or walkways. The building's roof is covered in greenery, with various shades of green plants and trees growing along its length. In the foreground, there is a landscaped area with green grass, several trees of different sizes, and a row of colorful flowers (yellow, purple, and red). A paved path leads from the bottom left towards the building. Two red speech bubbles are overlaid on the image, containing text about greenery and work-from-home spaces. The sky is light blue with some white clouds.

“Many of the existing parking spaces have made room for more greenery”

“When I want to **work from home**, I can go to the **work spaces downstairs** and I can leave my children at the **daycare**, right **nextdoor**.”

b) Tiberdreef: status quo

- S2** Lack of eyes on the street
- S3** Not enough space of your own
- TR1** Lack of physical activity
- TR2** Lack of traffic safety
- TR3** Traffic
- E1** Bad quality housing
- E4** Unstable economic conditions
- S1** Lack of (accessible) greenery
- S2** Low biodiversity
- S5** Air pollution
- S6** Heat
- S8** Noise pollution

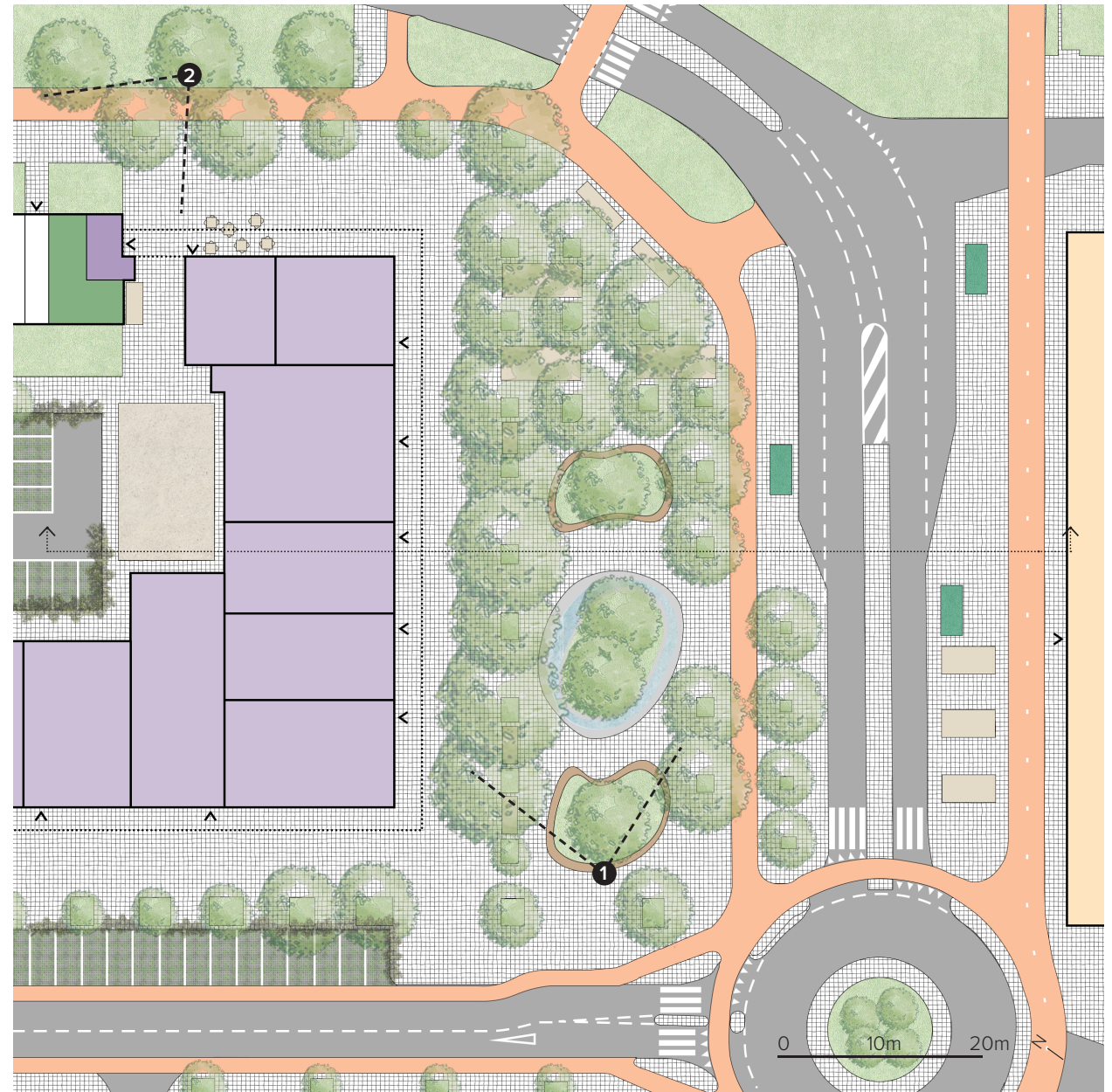


b) Tiberdreef: design

- R1 Good quality public spaces
- R4 Active, open, and detailed facades
- R7 Private-public differentiation
- R8 Space of your own
- R9 Clear design
- E1 Workshop spaces
- E2 Commercial spaces
- E4 Exchange of goods and/or services
- L1 Visual greenery
- L4 Biodiversity
- L5 Water elements
- L6 Natural sounds
- A1 Safe active modes of transport networks
- A2 Pleasant & interesting environments
- A3 Enough space for pedestrians
- A5 Public seats/furniture
- A6 Enough bike parking
- A9 Better car parking spaces
- X1 Visual complexity/interest
- X5 Refuge from heat
- X7 Comfortably placed furniture
- X8 Diversity & variety

> Legend

- Workshop space (new)
- Commercial space/shop (new)
- Commercial space/shop (existing)
- Offices (existing)
- Apartment (new)





An illustration of a public park space. In the center is a circular fountain with a light blue rim and a green lawn inside. Several stylized trees with green foliage are scattered around the fountain. People are depicted as colorful silhouettes: a green person walking in the foreground, a red person standing near the fountain, and a blue person walking on the right. There are also some plants and flowers, including purple and red flowers. A speech bubble is in the top left, and another is in the bottom right. The background shows a street with a white van and some buildings.

“This **nice public space** has increased the **time** I want to **spend outside**, (...) increasing my **sense of belonging** here!”

“On **hot summer days**, people gather around the **fountain** to **cool off**, and the **different** types of **plants** offer a **varied experience**.”





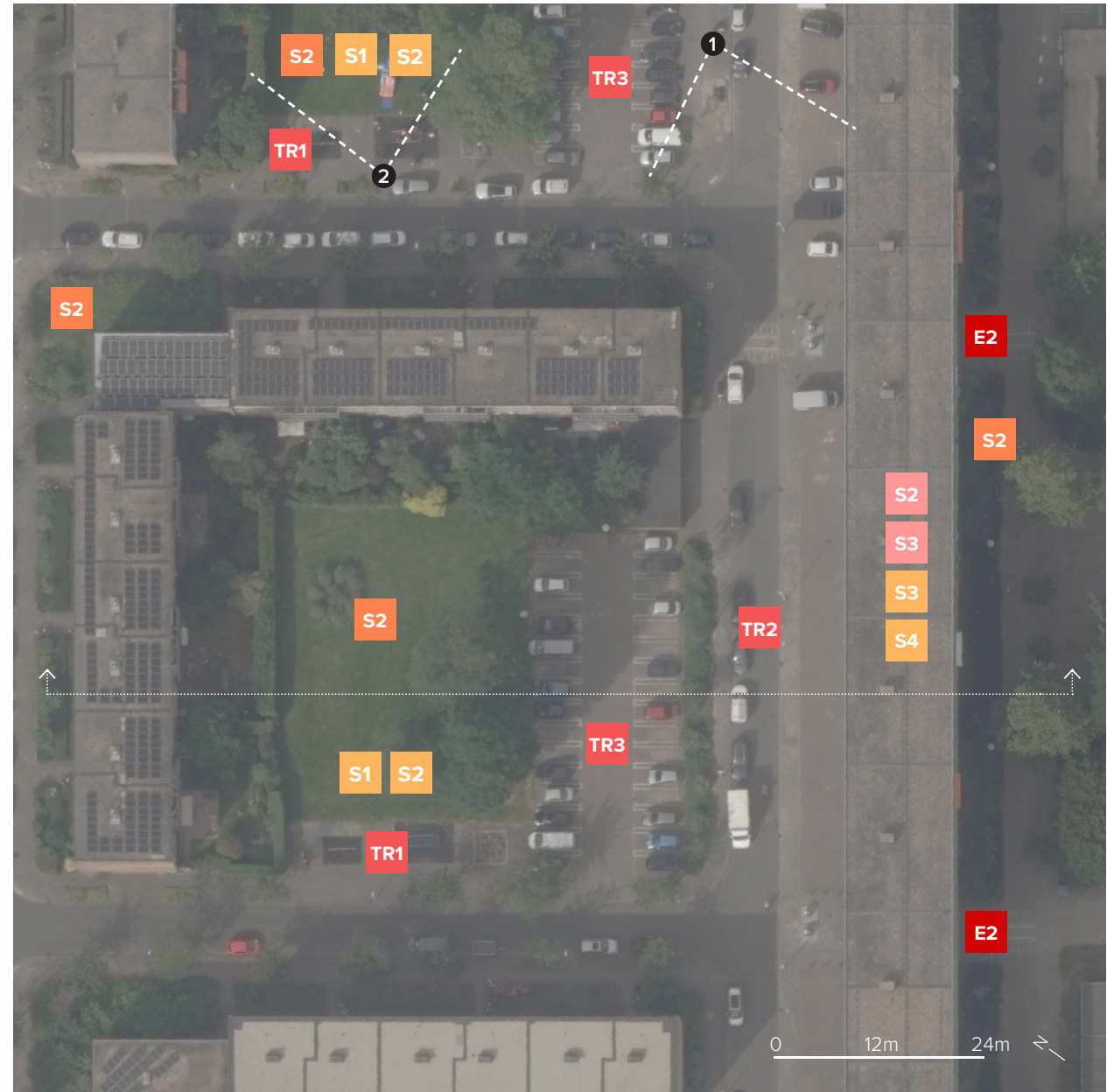
“...And in the newly added **commercial area**, I can **sell** my handmade products **right nextdoor.**”

The illustration depicts a modern urban environment. In the foreground, a purple silhouette of an elderly person with a cane, a red silhouette of an adult, and a red silhouette of a child are walking. The adult is pointing towards a building. To the left, there is a small garden with purple flowers and a wall with a wavy pattern. In the background, a city skyline is visible. To the right, a building with large windows and a sign that reads 'HANDGEMAAKTE PRODUCTEN' is shown. Inside the building, a green silhouette of a person is working at a workbench with a hammer. Outside the building, a blue silhouette of a person is walking. A balcony with a green railing and two orange silhouettes of people is visible above the workshop. The scene is set in a modern urban environment with a mix of residential and commercial spaces.

“In the newly added **workshops**, I can **practice** my craft **without having to drive** all the way **to the industrial area...**”

c) Tannhäuserdreef: status quo

- S2** Lack of eyes on the street
- S3** Not enough space of your own
- TR1** Lack of physical activity
- TR2** Lack of traffic safety
- TR3** Traffic
- E2** Deterioration
- S2** Low biodiversity
- S1** Illegible/unclear design
- S2** Lack of detail & distinctions
- S3** Sharp edges/straight lines
- S4** Unsuitable use of colour



c) Tannhäuserdreef: design

- R2 Indoor meeting spaces
- R4 Active, open, and detailed facades
- R7 Private-public differentiation
- R8 Space of your own
- R9 Clear design
- E6 Work-near-home
- E7 Modifiable/multi-use spaces
- L2 Small-scale greenery around home
- L4 Biodiversity
- L8 Scenic environments
- L9 Points of interest within natural spaces
- A2 Pleasant & interesting environments
- A3 Enough space for pedestrians
- A4 Walkable distance to facilities
- A9 Better car parking spaces
- X1 Visual complexity/interest
- X2 Well-designed urban lighting
- X3 Quiet spaces

> Legend

- Neighbourhood cafe (new)
- General practioner (new)
- Yoga studio (new)
- Work from home (new)
- Garage (existing)
- Apartment (existing and new)







“The garages being replaced by **open facades** with **public functions** behind them **make** the **street** feel a lot more **pleasant and safe.**”

“The **new functions** allow me to **take care of** my **overall health:** mental, social, and physical.”





"I enjoy **meeting** all of my **neighbours** in this **shared garden**."

"The **empty grass field** behind my house now **finally has a purpose**: it has become a **meeting space** for all of the apartment **building residents**"

Broader applicability & implications: similar contexts



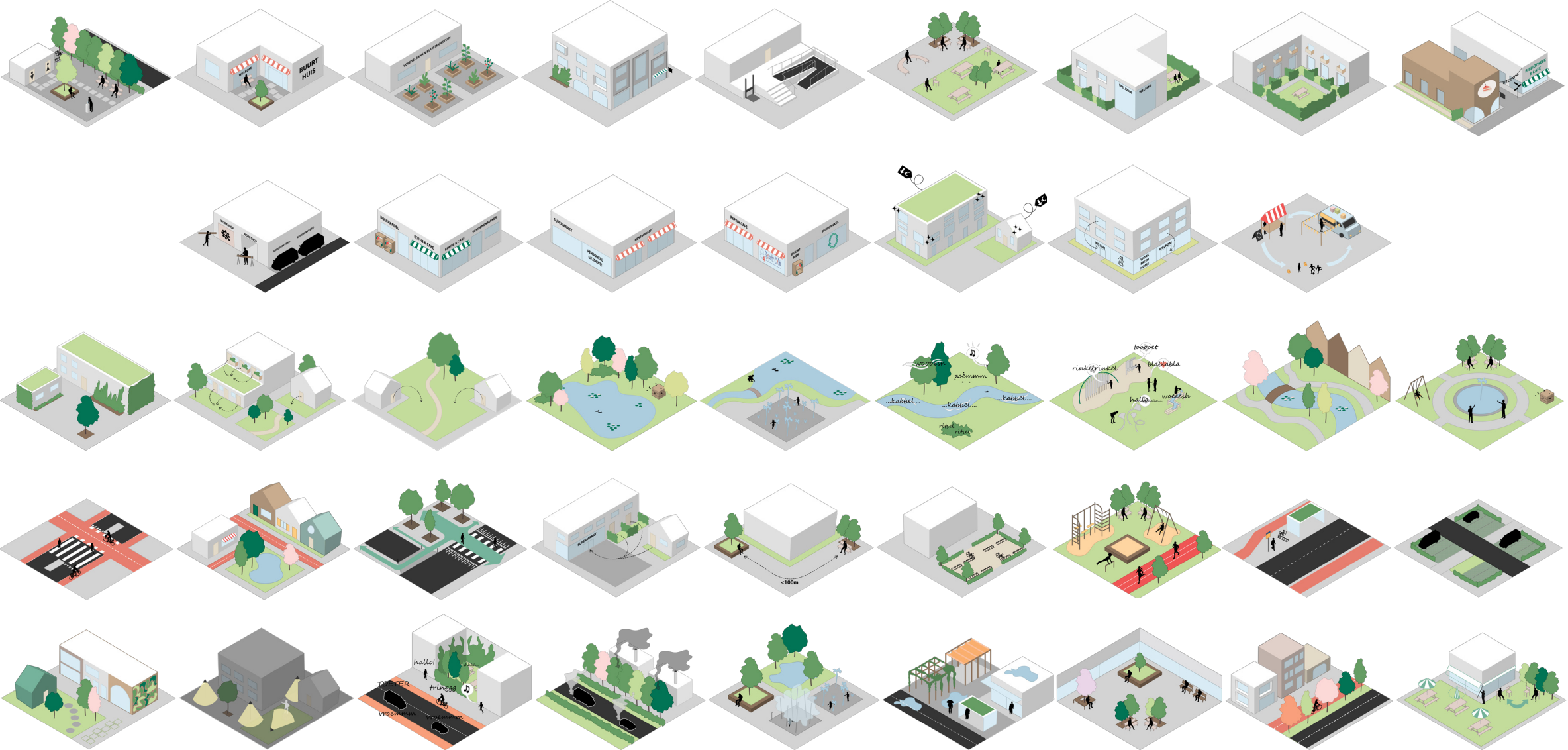
Vulnerable neighbourhoods



Post-war neighbourhoods

Sources: *Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, 2022; Koöperatieve Architecten Werkplaats, 2020*

Broader applicability & implications: RELAX framework



Stress Publica

Bibliography

Betgen, C.D., Boekhold, S., Boomsma, C., Van Dijk, A., Hall, E.F., Hagens, W., Limaheluw, J., Ruysseenaars, P., Van der Ree, J., Versteeg-de Jong, A. (2024). Gezondheidseffecten van klimaatverandering. Actualisatie van de huidige klimaatrisico's voor gezondheid. Rijksinstituut van Volksgezondheid en Milieu. Retrieved on October 25, 2024, from <https://www.rivm.nl/publicaties/gezondheidseffecten-van-klimaatverandering-actualisatie-van-huidige-klimaatrisicos-voor-gezondheid>

European Environment Agency (n.d.). *Urban stress*. Retrieved on December 2, 2024, from <https://www.eea.europa.eu/help/glossary/gemet-environmental-thesaurus/urban-stress>

Hahad, O., Kuntic, M., Al-Kindi, S., Kuntic, I., Gilan, D., Petrowski, K., Daiber, A., & Münzel, T. (2024). Noise and mental health: evidence, mechanisms, and consequences. *Journal Of Exposure Science & Environmental Epidemiology*. Retrieved on October 25, 2024, from <https://doi.org/10.1038/s41370-024-00642-5>

Jalilisadrabad, S., Behzadfar, M., & Rahimi, K. M. (2023). *Stress Relief Urban planning*. <https://doi.org/10.1007/978-981-99-4202-2>

Limaheluw, J., Vreman, B.J., Van der Meulen, S., Belgers, D., Bruijns, A. (2021). Stedelijke Waterkwaliteit, Klimaat en Adaptatie. Nationaal Kennis- en Innovatieprogramma Water en Klimaat. Retrieved on November 21, 2024, from <https://klimaatadaptatienederland.nl/kennisdossiers/stedelijke-waterkwaliteit/invloed-klimaat-ecologische-waterkwaliteit/>

Ministerie van Binnenlandse Zaken en Koninkrijksrelaties (2022). Nationaal Programma Leefbaarheid en Veiligheid. Retrieved on October 29, 2024, from <https://www.rijksoverheid.nl/documenten/rapporten/2022/07/01/nationaal-programma-leefbaarheid-en-veiligheid>

Patz, J.A., Frumkin, H., Holloway, T., Vimont, D.J., Haines, A. (2014). Climate Change: Challenges and Opportunities for Global Health. *JAMA*, 312(15), 1565-1580. Retrieved on November 21, 2024, from <https://doi.org/10.1001/jama.2014.13186>

Schramme, T. (2023). Health as Complete Wellbeing: The WHO Definition and Beyond. *Public Health Ethics*, 16(3), 210–218. Retrieved on November 13, 2024, from <https://doi.org/10.1093/phe/phad017>

United Nations (2018). *68% of the world population projected to live in urban areas by 2050, says UN*. Retrieved on December 4, 2024, from <https://www.un.org/development/desa/en/news/population/2018-revision-of-world-urbanization-prospects.html>

Urban Fabric Development (2006). *Cultuurhistorisch onderzoek en ruimtelijke analyse Utrecht NaOorlogse wijken: Overvecht*. Retrieved on November 18, 2024, from <https://erfgoed.utrecht.nl/onderzoek-en-publicaties-over-erfgoed/rapporten-cultuurhistorie/cultuurhistorisch-onderzoek-en-ruimtelijke-analyse-van-10-naoorlogse-wijken>

Van den Berg, S.W., Schurink-van 't Klooster, T.M. (2023). Duiding daling in voldoen aan Beweegrichtlijnen tussen 2019 en 2022. Rijksinstituut van Volksgezondheid en Milieu. Retrieved on October 25, 2024, from <https://www.rivm.nl/publicaties/duiding-daling-in-voldoen-aan-beweegrichtlijnen-tussen-2019-en-2022>

Xu, J., Liu, N., Polemiti, E., Garcia-Mondragon, L., Tang, J., Liu, X., Lett, T., Yu, L., Nöthen, M. M., Feng, J., Yu, C., Marquand, A., Schumann, G., Walter, H., Heinz, A., Ralsler, M., Twardziok, S., Vaidya, N., Serin, E., Ogoh, G. (2023). Effects of urban living environments on mental health in adults. *Nature Medicine*, 29(6), 1456–1467. Retrieved on December 4, 2024, from <https://doi.org/10.1038/s41591-023-02365-w>

Images

All images not mentioned here, are made by the author.

- Slide 2: Graph of rural vs. urban residents
Made by author, based on data from United Nations (2018). 68% of the world population projected to live in urban areas by 2050, says UN. Retrieved on December 4, 2024, from <https://www.un.org/development/desa/en/news/population/2018-revision-of-world-urbanization-prospects.html>
- Slide 6: Map “Severe stress”
Made by author, based on Ministerie van Volksgezondheid, Welzijn en Sport (2022). Buurtatlas: stress. Retrieved on October 29, 2024, from https://buurtatlas.vzinfo.nl/#heel_veel_stress_afgelopen_weken
- Slide 6: Map “Severe nuisance due to traffic noise”
Made by author, based on Ministerie van Volksgezondheid, Welzijn en Sport (2022). Buurtatlas: ernstige geluidshinder door wegverkeer. Retrieved on October 29, 2024, from https://buurtatlas.vzinfo.nl/#ernstige_geluidhinder_door_wegverkeer
- Slide 6: Map “Urban Heat Island effect”
Made by author, based on Rijksinstituut voor Volksgezondheid en Milieu (2020). Atlas leefomgeving: Stedelijk hitte-eiland effect (UHI). Retrieved on January 15, 2025, from <https://www.atlasleefomgeving.nl/kaarten>
- Slide 6: Map “Trouble making ends meet”
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- Slide 7: Map hotspots of “Severe stress”
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- Slide 8: Images from Nationaal Programma Leefbaarheid en Veiligheid.
Ministerie van Binnenlandse Zaken en Koninkrijksrelaties (2022b). Nationaal Programma Leefbaarheid en Veiligheid. Retrieved on October 29, 2024, from <https://www.rijksoverheid.nl/documenten/rapporten/2022/07/01/nationaal-programma-leefbaarheid-en-veiligheid>

- Slide 9: Map “Severe stress” Overvecht
Made by author, based on Ministerie van Volksgezondheid, Welzijn en Sport (2022). Buurtatlas: stress. Retrieved on October 29, 2024, from https://buurtatlas.vzinfo.nl/#heel_veel_stress_afgelopen_weken
- Slide 9: Map “Severe nuisance due to traffic noise” Overvecht
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- Slide 18: Photograph “Air pollution”
Autovisie (2018). *Gezondheidsschade door uitlaatgassen is 4000 euro per auto* [Photograph]. Retrieved on May 13, 2025, from <https://www.autovisie.nl/nieuws/gezondheidsschade-uitlaatgassen-4000-euro-per-auto/>
- Slide 18: Photograph “Light pollution”
Alblasserdam Nieuws (2025). *Onbekenden verdraaien felle lantaarns langs nieuw fietspad Oost-Kinderdijk* [Photograph]. Retrieved on May 13, 2025, from <https://www.alblasserdamsnieuws.nl/wordpress/2019/01/25/onbekenden-verdraaien-felle-lantaarns-langs-nieuw-fietspad-oost-kinderdijk-gemeente-neemt-maatregelen/>
- Slide 18: Photograph “Noise pollution”
Gemeente Amsterdam (n.d.). *Proef digitale borden tegen lawaaiige voertuigen* [Photograph]. Retrieved on May 13, 2025, from <https://www.amsterdam.nl/leefomgeving/geluid/proef-geluidsoverlast-voertuigen/>
- Slide 31: Demographics of Taag- en Rubicondreef
AlleCijfers (2025). *Statistieken buurt Taag- en Rubicondreef en omgeving*. Retrieved on May 12, 2025, from <https://allecijfers.nl/buurt/taag-en-rubicondreef-en-omgeving-utrecht/>
- Slide 54: Map “Vulnerable neighbourhoods”
Ministerie van Binnenlandse Zaken en Koninkrijksrelaties (2022b). Nationaal Programma Leefbaarheid en Veiligheid. Retrieved on October 29, 2024, from <https://www.rijksoverheid.nl/documenten/rapporten/2022/07/01/nationaal-programma-leefbaarheid-en-veiligheid>
- Slide 54: Map “Post-war neighbourhoods”
Koöperatieve Architecten Werkplaats (2020). Ruimte zat in de stad. Retrieved on October 9, 2024, from <https://www.kaw.nl/projecten/onderzoek-ruimte-zat-corporatievastgoed/>