Dioptase Horizons

Envisioning a biophilic blueprint for Zwolle's future

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First mentor: Prof.ir. R.J. Dijkstra
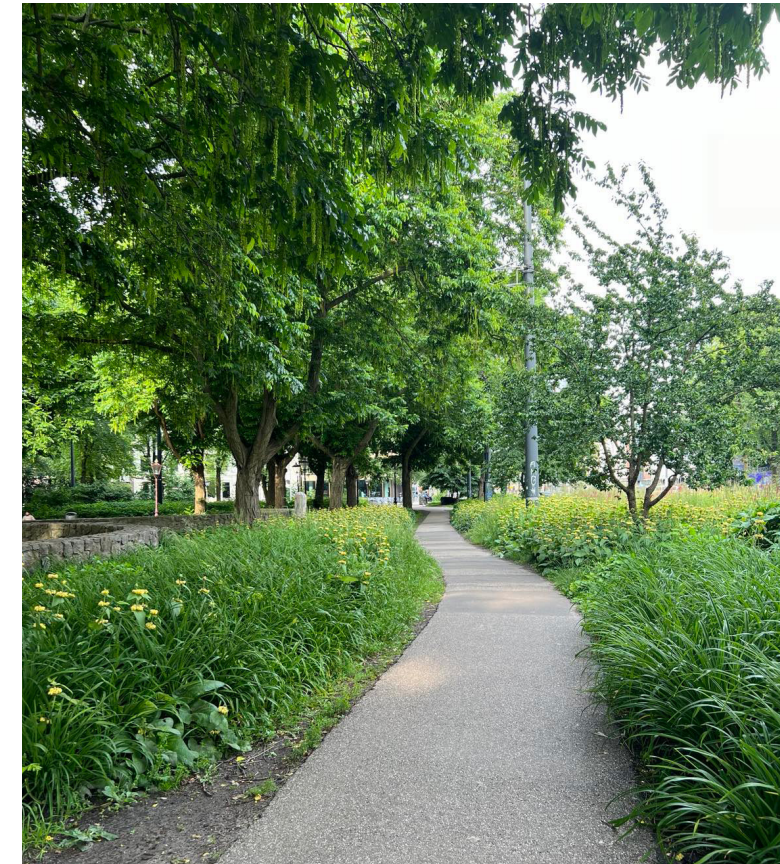Second mentor: Prof.ir. K.P.M. Aalbers
P5 Presentation

04/11/2024

A chain of reaction has started that unfolds globally, but at the same time every country has to face these difficulties in its unique context.

Climate change

- Deforestation & Land-use changes
- Greenhouse gas emissions
- Land Degradation
- Aerosols & Pollution
- Natural Causes (Solar Activity, Volcanic Eruptions, Ocean Currents and Atmospheric Circulation)

Population growth & Population shifts

Economic factors

Environmental factors

Political factors

Rapid urbanization

Economic opportunities

Social & Cultural Factors

Government Policies & Urban Planning

Technological Advances

Urban Sprawl & Suburbanization

Urbanization of Infrastructure & Services

Nature destruction

Agricultural Practices

Industrialization

Loss of Biodiversity

Overpopulation & Unsustainable Consumption

Housing crisis

Supply Constraints & Lack of Housing Development

Rising Housing Costs

Government Policies

Income Inequality

Demographic Changes

Zwolle

Leiden

Amsterdam

As Dutch cities continue to grow to accommodate rising populations the pressure to build more homes is immense.

However, the question arises: where is the room for nature in a city that urgently needs more housing?

Despite the growing awareness of these frameworks, the challenge remains: how can we effectively incorporate nature into urban design ?

Nature Based Solutions

- **Uses natural processes to address societal challenges** like climate adaptation and biodiversity preservation.

- Effective for **large-scale** environmental interventions.

- Can be more **abstract** and less directly relatable to individual urban residents.

- Involve **complex** planning and investment

Green Infrastructure Framework

- Prioritizes the creation of interconnected natural and semi-natural areas that provide ecosystem sevices like stormwater management and urban cooling.

- **Lacks the explicit focus** on human well-being that is central to Konijnendijk's rule.

- Emphasizes **broad-scale** connectivity.

Sustainable Development Goals

- Provide a **comprehensive, high-level** framework for addressing global sustainability challenges

- **Broad and ambitious**

- **Difficult to translate into practical**, local interventions.

Biophilic Design

- Focuses on integrating nature into the built environment to enhance well-being and productivity.

- Often remains **focused on aesthetic** or experiential aspects.

Problem statement

As Dutch cities continue to grow, the majority of stakeholders involved in the decision making when it comes to changes in the urban fabric, prioritize building over integrating nature, leading to little and fragmented green urban spaces throughout the city.

Urgency

A strategic plan needs to be created that prioritizes the nature-orientated design of the urban fabric, one that recognizes the importance of having more green public spaces and trees, and one that is easily understandable, appliable and transferable.

Design principles

Climate mitigation & adaptation

Preserve biodiversity

Equall accessibility to urban green spaces
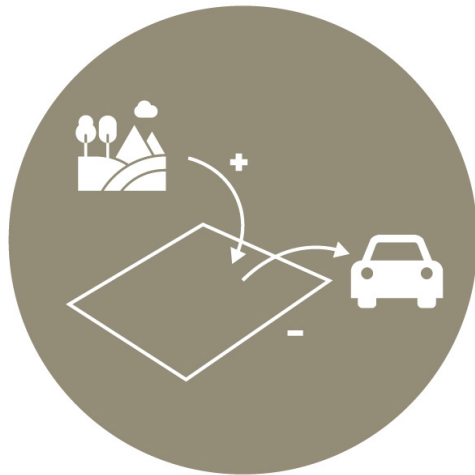
Reclaim the city space from cars, to give back to the nature

Prioritise walking

The rule

3 – 30 –300 by Cecil Konijnendijk's

30% tree canopy coverage

- Every resident can see at least 3 trees from their home

- Each neighborhood has at least 30% tree canopy cover, and

- No one lives more than 300 meters from a green space.
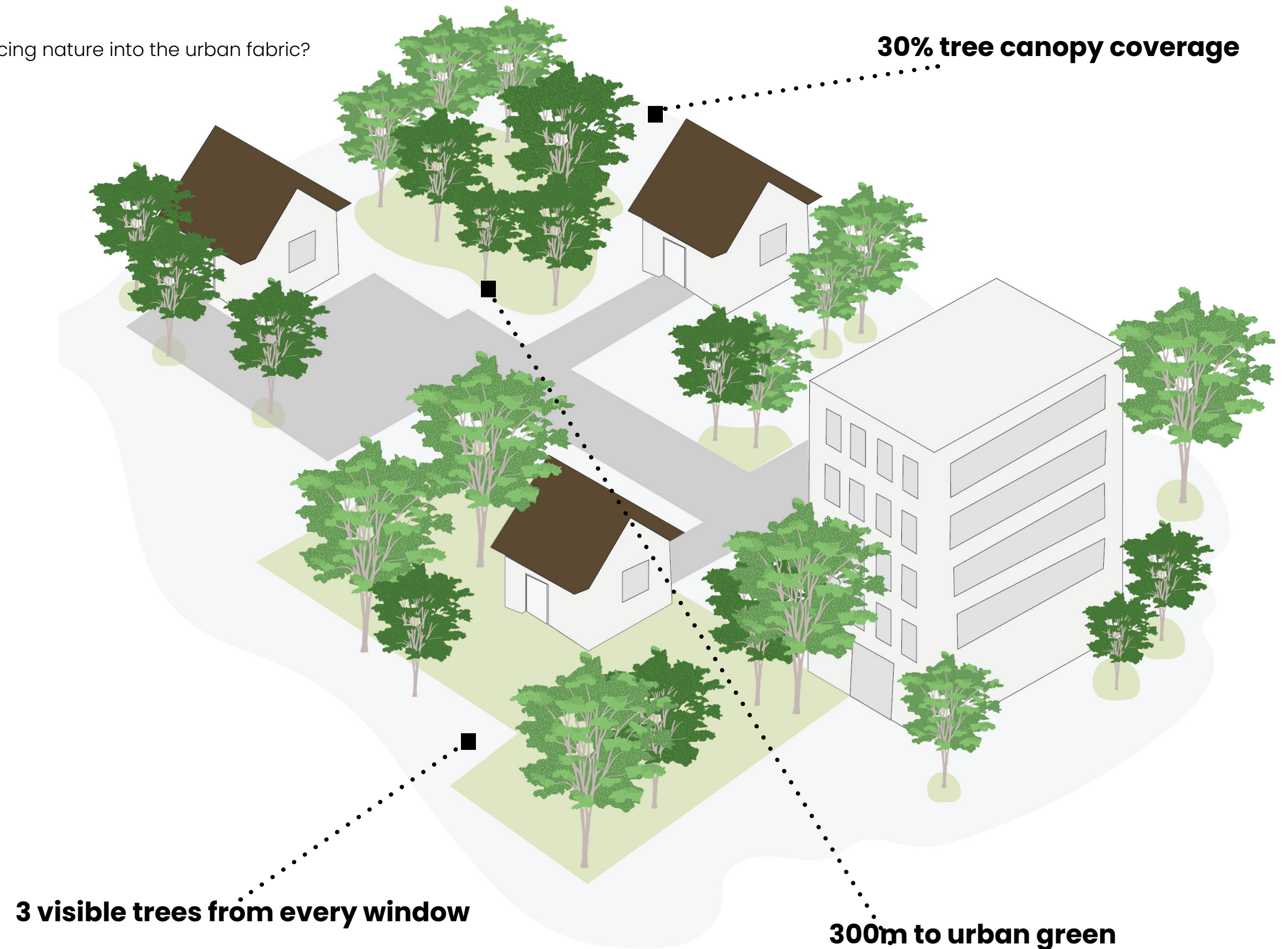
3 visible trees from every window

300m to urban green

Why Konijnendijk's Rule is usefull in design interventions

- Simple and Clear Targets

- Human Focus

- Measurable Outcomes

- Practical Design Integration

30% tree canopy coverage

3 visible trees from every window

300m to urban green

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3-30-300 rule

Focused on the **local** urban **context**.

Offers **simpler, community-level interventions** that can be more easily adopted by neighborhoods or cities with limited resources.

Provides more **tangible,** human-centered **targets**.

Relatable and easier to implement in urban planning **at the community level**.

Beyond **aesthetics** and provides a **functional approach** to integrating green infrastructure at the neighborhood and city level, with specific, measurable targets that impact entire urban ecosystems, not just individual buildings or spaces.

Case study

Zwolle, Overijssel

Understanding the tool and using it in a city specific context, whilst underpinning the importance of creating vibrant and greener spaces throughout the city has led to the development of the main research question of this project:

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"What if the biophilic design strategy of Dr. Cecil Konijnendijk would be implemented in the streetscape of Zwolle to improve the existing public space by 2100?".

Main research question

Understanding the tool and using it in a city specific context, whilst underpinning the importance of creating vibrant and greener spaces throughout the city has led to the development of the main research question of this project:

"What if the biophilic design strategy of Dr. Cecil Konijnendijk would be implemented in the streetscape of Zwolle to improve the existing public space by 2100?".

1. What is the current approach of introducing nature into the urban fabric?

2. What is the status quo of Zwolle's green spaces and their impact on the citizen's life?

3. How can the "3-30-300 rule" be applied to Zwolle's context in order to integrate more nature in the city's urban fabric?

4. How can the options, developed with the use of the 3-30-300 rule, be evaluated ?

The rule

Unpacking the 3 – 30 –300 rule

3 quality trees visible from every window

3 quality trees visible from every window

30% tree canopy cover within the neighbourhood

30% tree canopy cover within the neighbourhood

Source: Google Maps

Minstens 3 bomen zichtbaar: Ja

Op minder dan 300m van een publiek park: Ja

Meer dan 30% boomkruinbedekking: Ja

Source: https://thedatalab.be/330300/index.html?lang=nl

A public green space > 1ha within 300 meters of every home

Understanding the trees

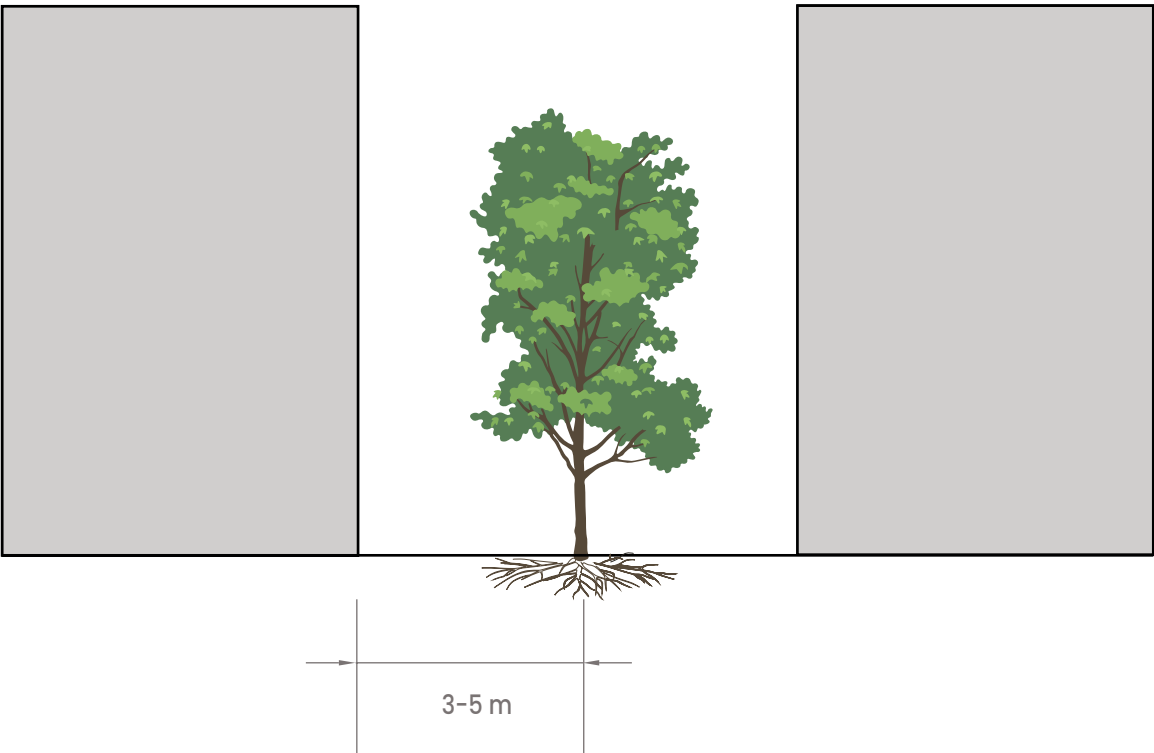# The 3 trees - the S(mall) tree

1,5 m

Tree canopy radius

up to 10 m

Average tree height

3-6 m

Average distance between trees when planting

3-5 m

Average distance between trees & buildings when planting

The 3 trees - the M(edium) tree

10-20 m

3 m

6-8 m

5-7 m
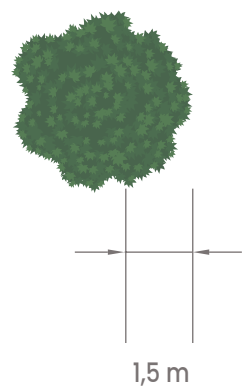
Tree canopy radius
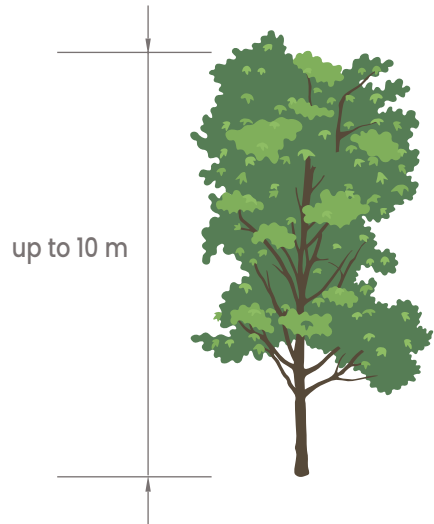
Average tree height
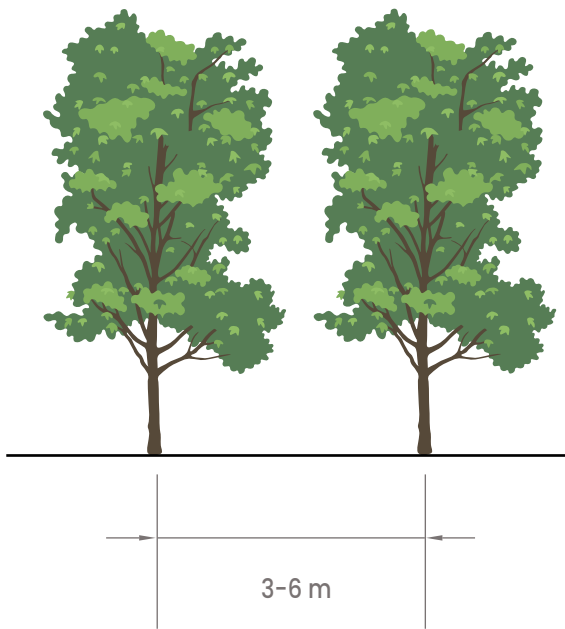
Average distance between trees when planting

Average distance between trees & buildings when planting

The 3 trees – the L(arge) tree

6-12 m

<20 m

7-10 m

10-15 m

Tree canopy radius

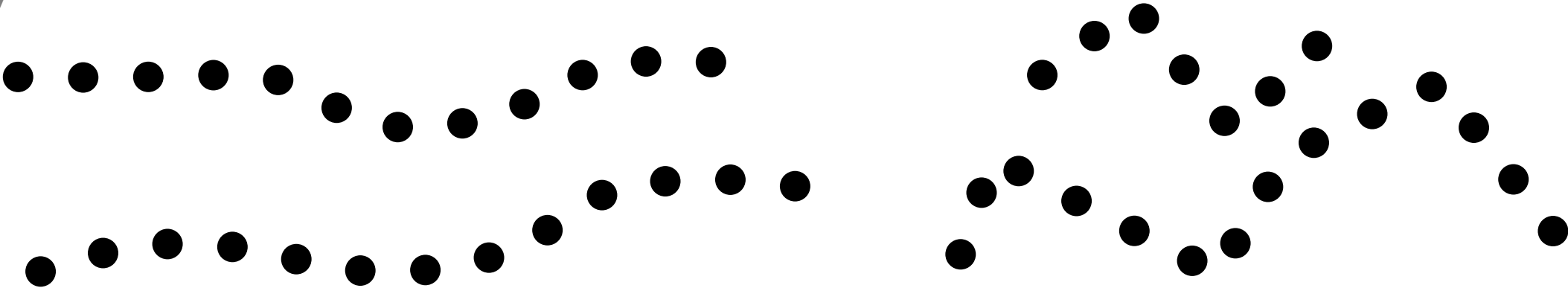Average distance between trees & buildings when planting

Average tree height

Average distance between trees when planting

1. What is the current approach of introducing nature into the urban fabric?
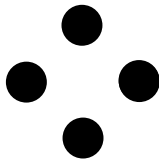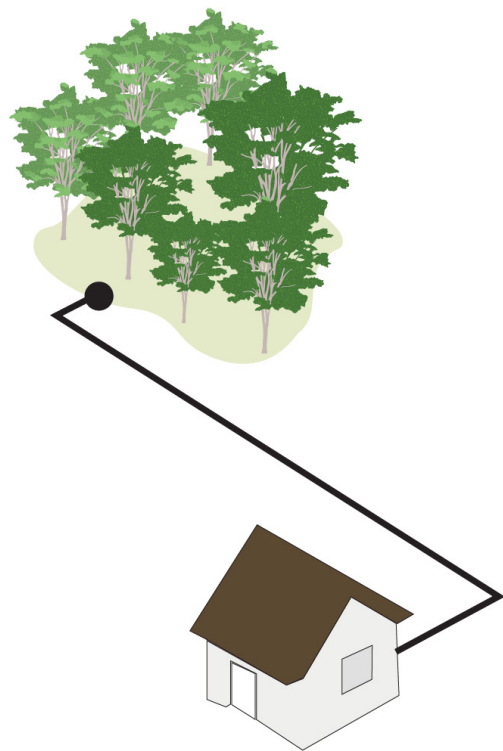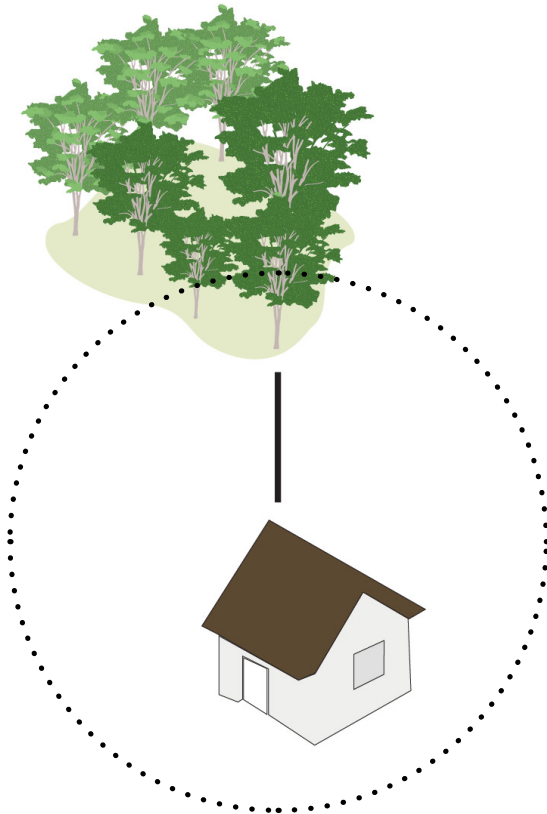
Rythmic

Non-rythmic

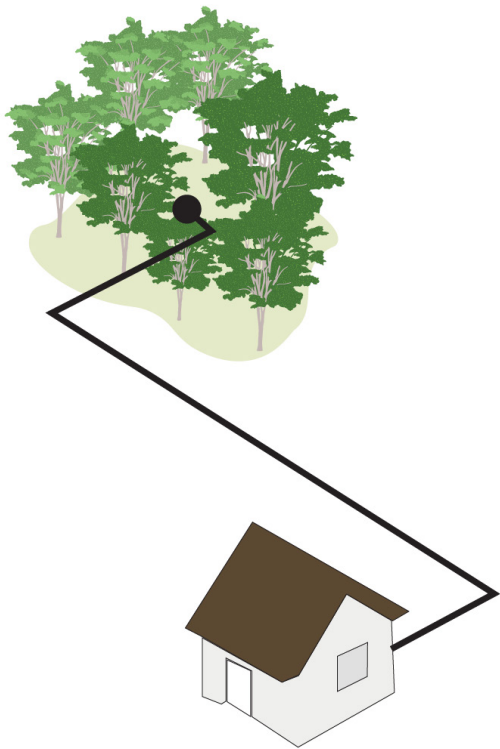Clusters

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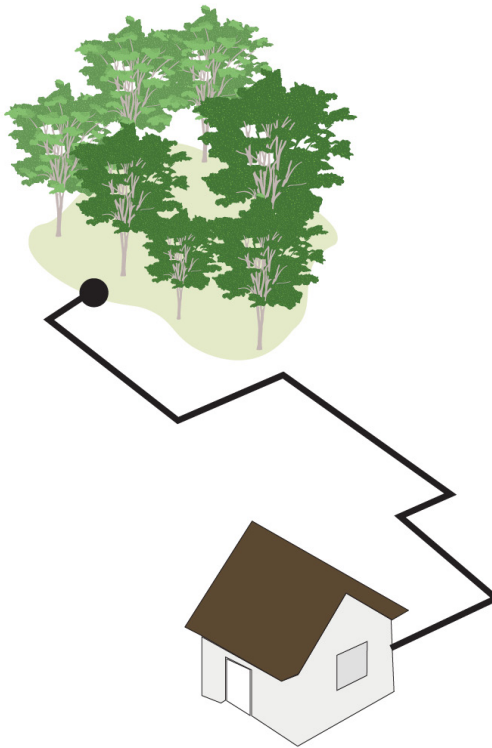

**Distance from home to urban green
space acess point**

The Euclidian distance

**Distance from home to urban green
space's centroid**

Along road netoworks

As a designer, how do you actually use this rule?

3. How can the "3-30-300 rule" be applied to Zwolle's context in order to integrate more nature in the city's urban fabric?

The 3 – 30 rule

3. How can the "3-30-300 rule" be applied to Zwolle's context in order to integrate more nature in the city's urban fabric?

Historic streets/Alleys

Commercial shared

Pedestrian only

Residential

Neighbourhood main street

Grand streets

Central one-way

Central two-way

Waterfront

Industrial

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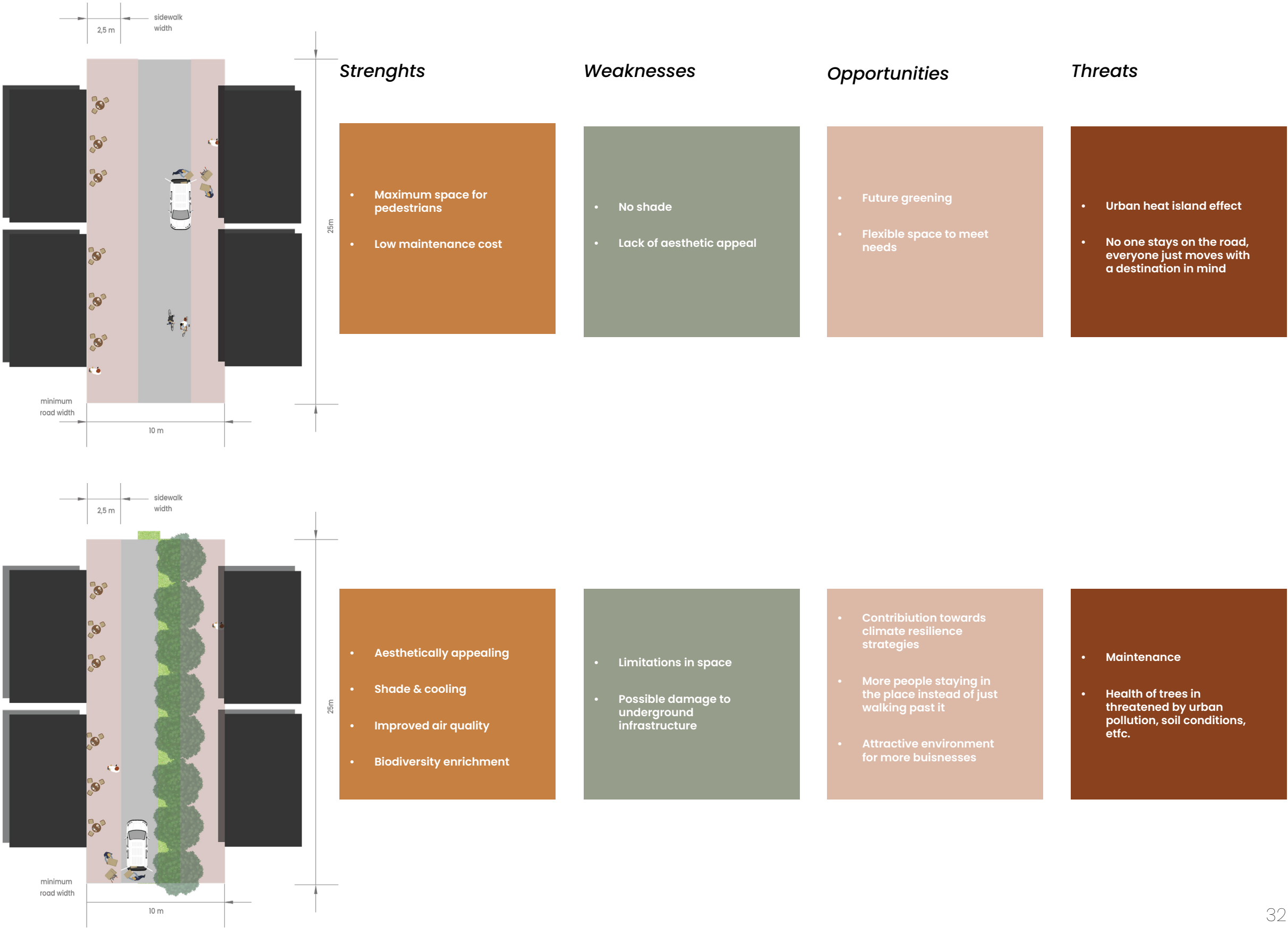*Nieuwe Markt, Zwolle*

Commercial shared

Characteristics

Width: 10 - 18m wide

Function: Mixed-use

Pedestrian & Bicycle friendly

Limited access to cars

Dense & compact

Strenghts

- Maximum space for pedestrians
- Low maintenance cost

Weaknesses

- No shade
- Lack of aesthetic appeal

Opportunities

- Future greening
- Flexible space to meet needs

Threats

- Urban heat island effect
- No one stays on the road, everyone just moves with a destination in mind

Strenghts

- Aesthetically appealing
- Shade & cooling
- Improved air quality
- Biodiversity enrichment

Weaknesses

- Limitations in space
- Possible damage to underground infrastructure

Opportunities

- Contribiution towards climate resilience strategies
- More people staying in the place instead of just walking past it
- Attractive environment for more buisnesses

Threats

- Maintenance
- Health of trees in threatened by urban pollution, soil conditions, etfc.

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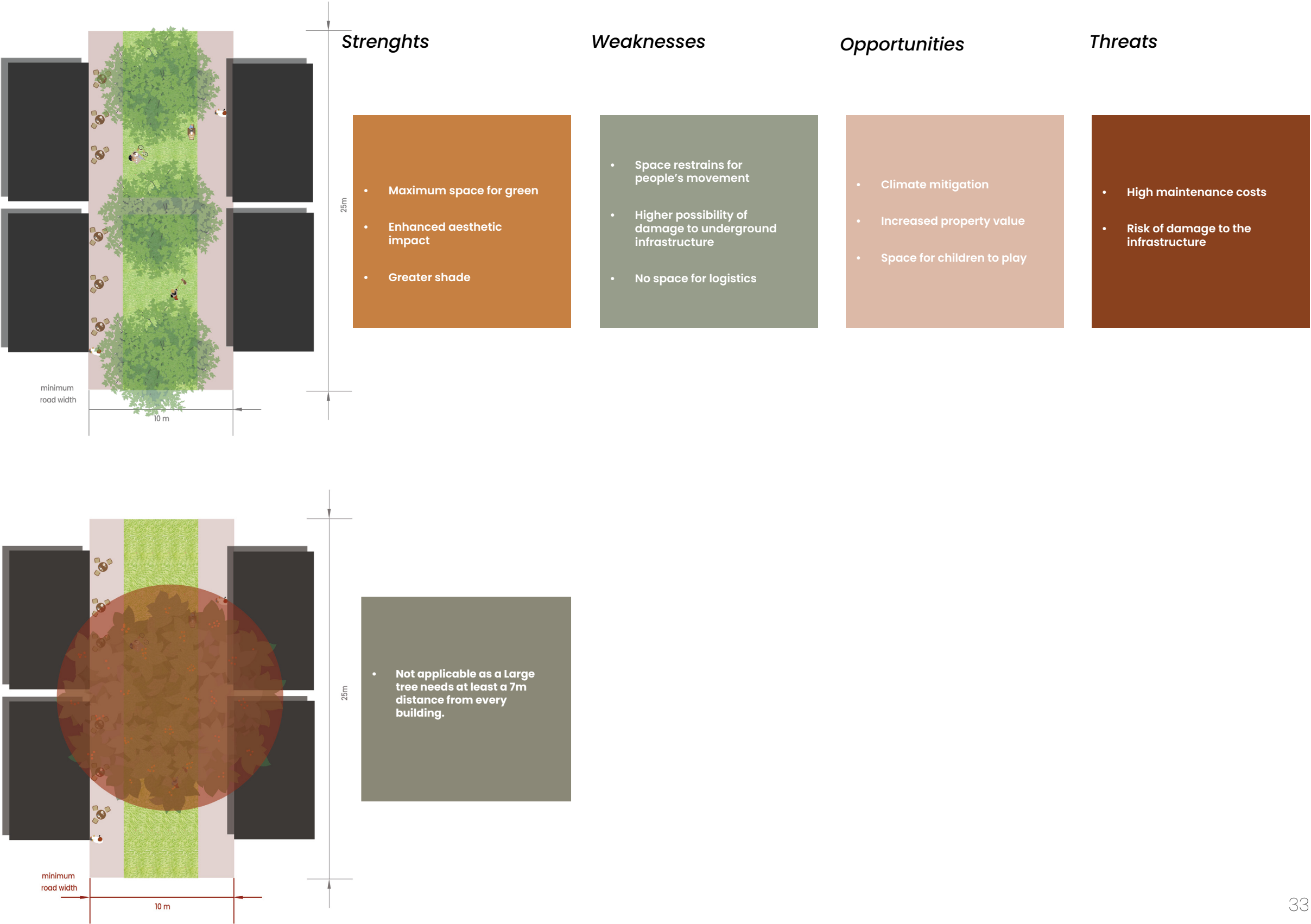
Limited access to cars

Dense & compact

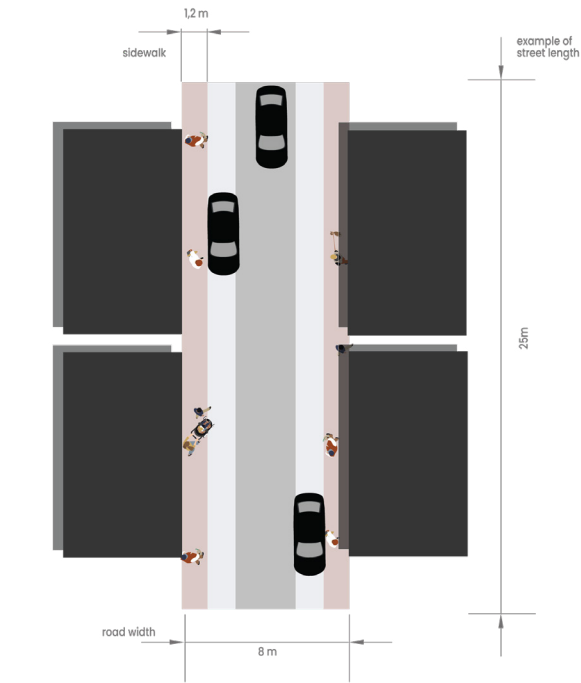minimum road width

10 m

Strenghts

- Maximum space for green
- Enhanced aesthetic impact
- Greater shade

Weaknesses

- Space restrains for people's movement
- Higher possibility of damage to underground infrastructure
- No space for logistics

Opportunities

- Climate mitigation
- Increased property value
- Space for children to play

Threats

- High maintenance costs
- Risk of damage to the infrastructure

minimum road width

10 m

- Not applicable as a Large tree needs at least a 7m distance from every building.

3. How can the "3-30-300 rule" be applied to Zwolle's context in order to integrate more nature in the city's urban fabric?

Borneostraat, Zwolle

Residential

Characteristics

Width: 8-10m

Function: Residential

Shared street for both cars and bicycles, if no bicycle lane

Car-oriantated

Parking space on one or both sides of the road

Narrow sidewalks

Strenghts

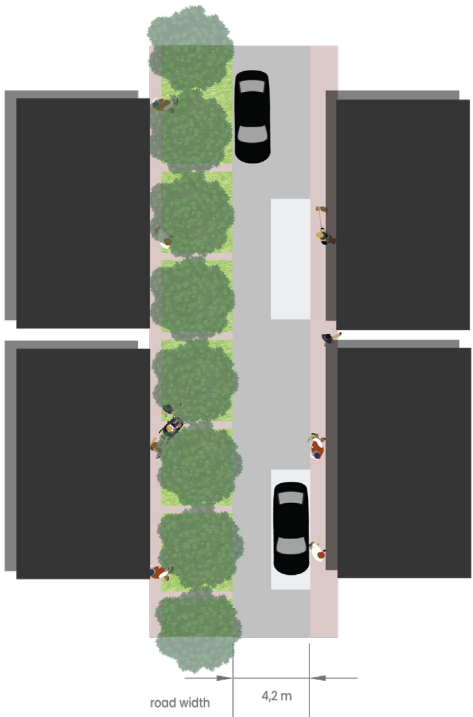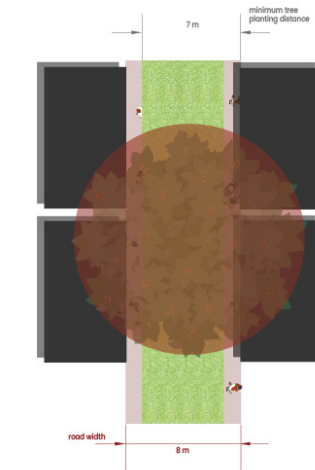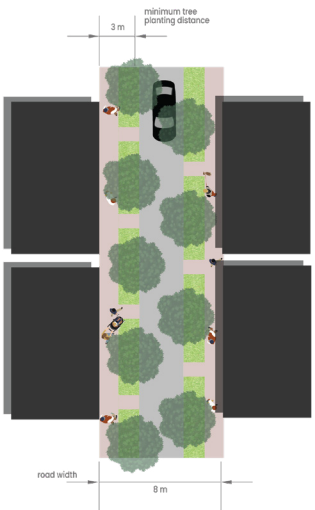- Maximum space for cars
- Low maintenance cost

Weaknesses

- No shade
- Lack of aesthetic appeal

Opportunities

- Future greening
- Transformation opportunities

Threats

- Reduces quality of life with no green
- Urban Heat Island Effect
- Poor air quality

Strenghts

- Aesthetically appealing
- Shade & cooling
- Improved air quality

Weaknesses

- Limitations in space for cars
- Possible damage to underground infrastructure

Opportunities

- Contribution towards climate resilience strategies
- Enhanced livability
- Creation of habitats for species

Threats

- Maintenance
- Damage to infrastructure

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Strenghts	*Weaknesses*	*Opportunities*	*Threats*
• Characteristic aesthetic • Shade & cooling • Improved air quality	• Uneven shade patterns • Non-rythmic planting can lead to disorderly feeling of the street	• Engaging streetscape due to creative design • This planting option supports diversity microhabitats	• High maintenance & complexity • Space inefficiency • Possible lack of space for emergency vehicles

| • Aesthetic enhancement

 • Significant shade & cooling

 • Improved air quality | • Limitations in space for cars & parking

 • Possible damage to underground infrastructure | • Climate mitigation

 • Community engagement opportunities | • High maintenance costs

 • Damage to infrastructure

 • Possible lack of space for emergency vehicles |

• Not applicable as a Large tree needs at least a 7m distance from every building.

3. How can the "3-30-300 rule" be applied to Zwolle's context in order to integrate more nature in the city's urban fabric?

Beukenstraat, Zwolle

Neighbourhood main street

Characteristics

Width: 10-20m

Function: Residential

Shared street for both cars and bicycles, if no bicycle lane

Car-oriantated

Parking space on one or both sides of the road

Narrow sidewalks

Strenghts

- Maximum space for cars
- Low maintenance cost

Weaknesses

- No shade
- Lack of aesthetic appeal

Opportunities

- Future greening
- Transformation opportunities

Threats

- Reduces quality of life with no green
- Urban Heat Island Effect
- Poor air quality

Strenghts

- Aesthetically appealing
- Shade & cooling
- Space efficiency

Weaknesses

- Limited Canopy Coverage
- Lower Biodiversity Impact

Opportunities

- Improved Livability
- Flexibility

Threats

- Maintenance
- Vulnerability to Weather

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Narrow sidewalks

Strenghts

- Significant Shade
- Aesthetically appealing
- Climate Mitigation

Weaknesses

- Space Constraints
- Potential Infrastructure Interference

Opportunities

- Biodiversity support
- Increased property value

Threats

- Higher Maintenance Needs
- Risk of Damage

Strenghts

- Extensive shade
- Strong visual presence
- Environmental benefits

Weaknesses

- Space restrictions
- Infrastructure risk

Opportunities

- Urban cooling
- Increased property value
- Biodiversity support

Threats

- Higher Maintenance Needs
- Risk of Damage

3. How can the "3-30-300 rule" be applied to Zwolle's context in order to integrate more nature in the city's urban fabric?

Strenghts

1,5 m
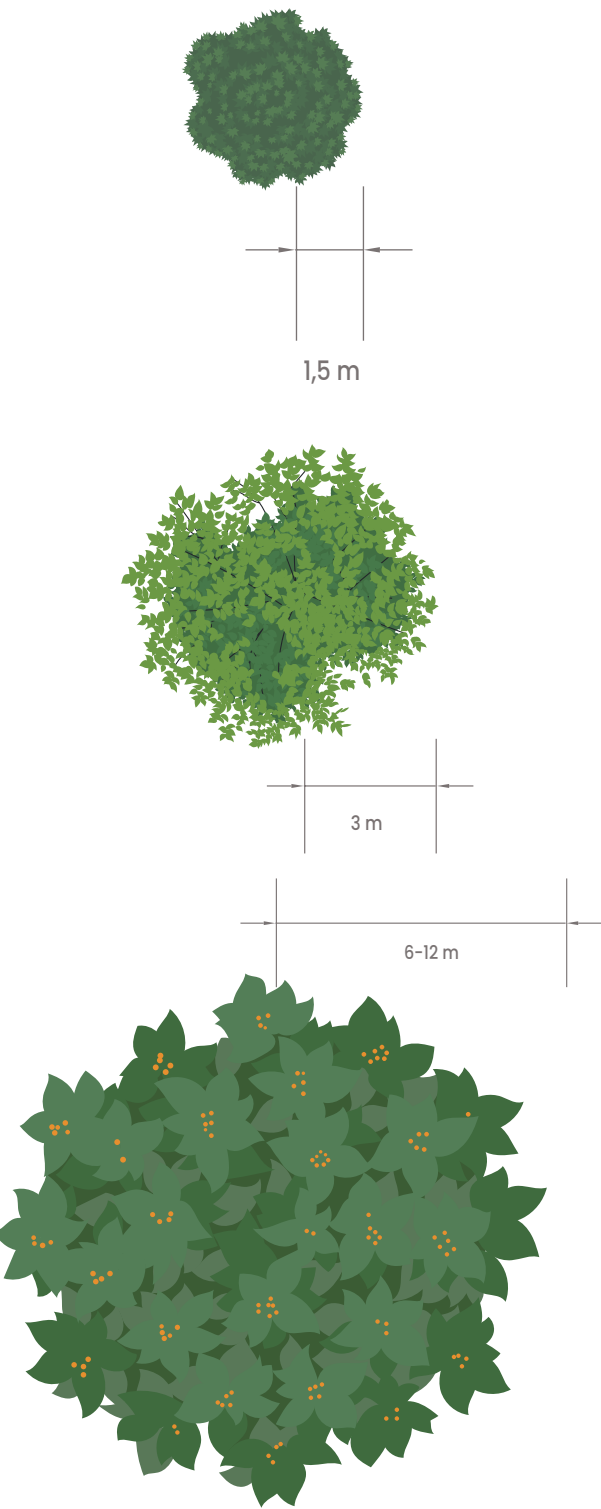
- Space Efficient
- Low Maintenance
- Aesthetic Improvement

Weaknesses

- Limited Environmental Impact
- Reduced Canopy Coverage

Opportunities

- Increased Flexibility
- Biodiversity support

Threats

- Urban Stress
- Growth Limitation

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3 m

6-12 m

Strenghts

- Adequate Shade and Cooling
- Moderate Aesthetic Impact
- Environmental Benefits

Weaknesses

- Space Requirements
- Maintenance

Opportunities

- Improved Livability
- Biodiversity Support

Threats

- Root and Infrastructure Interference
- Weather Vulnerability

Strenghts

- Significant Shade and Cooling
- High Environmental Impact
- Aesthetic Value

Weaknesses

- Space Constraints
- High Maintenance

Opportunities

- Climate Mitigation
- Increased property value
- Biodiversity support

Threats

- Vulnerability to Storms
- Risk of Damage

3. How can the "3-30-300 rule" be applied to Zwolle's context in order to integrate more nature in the city's urban fabric?
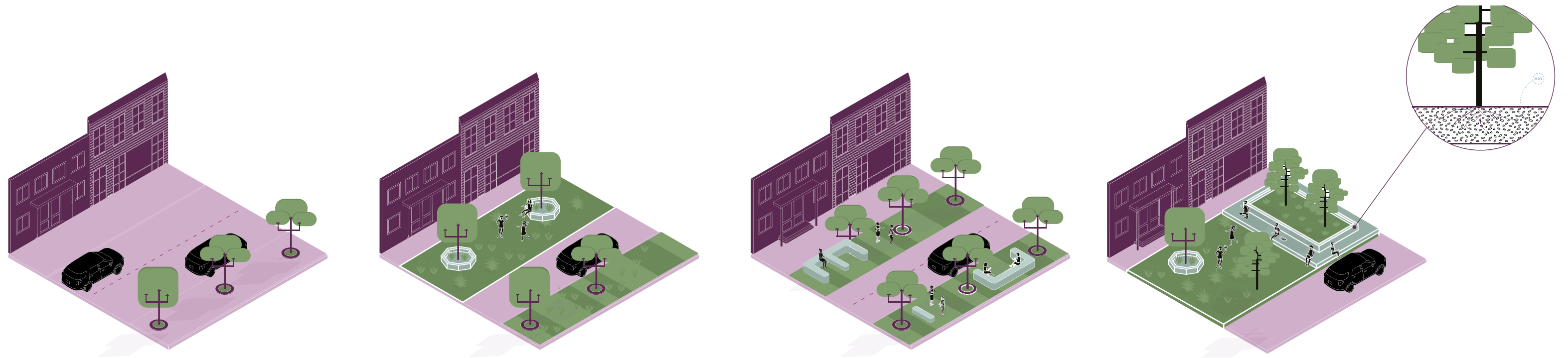
Quality public spaces are a necessary extension of the 3-30-300 rule, addressing the interconnected goals of urban resilience, social cohesion, and public health.

Case study: Zwolle

The 300m rule

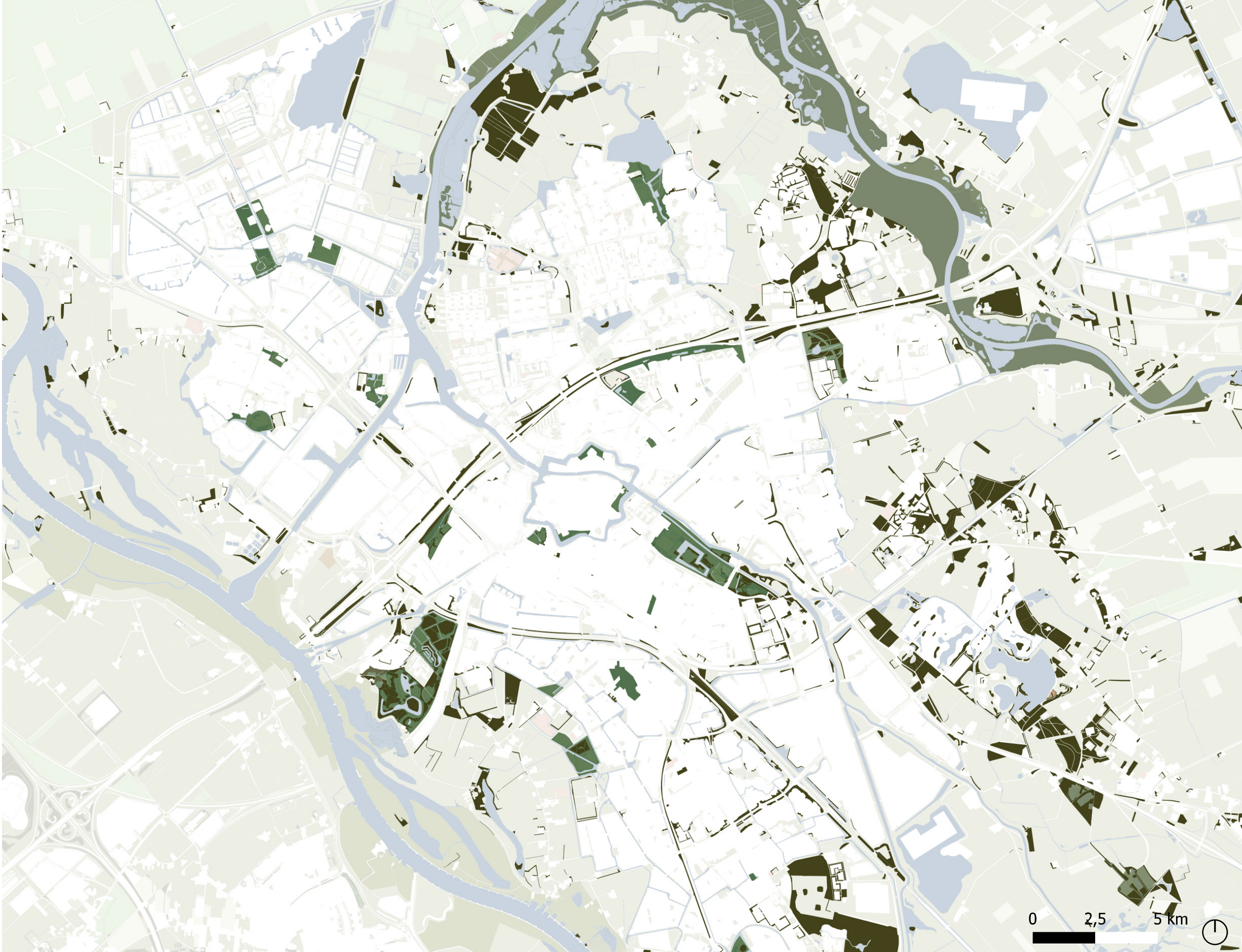## 2. What is the status quo of Zwolle's green spaces and their impact on the citizen's life?

Legend

- Water
- Urban fabric
- Park
- Nature reserve
- Recreation ground
- Forest
- Farmland
- Farmyard
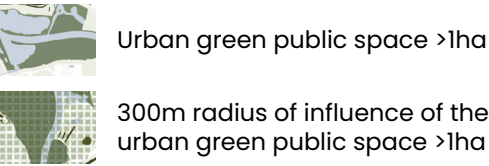- Allotments
- Grass
- Meadow
- Orchard
- Scrub

Dioptise Horizons

0   2,5   5 km

2. What is the status quo of Zwolle's green spaces and their impact on the citizen's life?

Urban green public space >1ha

Green public space > 1 ha

0   2,5   5 km

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Urban green public space >1ha

300m radius of influence of the urban green public space >1ha

Green public space > 1 ha and the 300m radius of "influence"

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Urban green public space >1ha

300m radius of influence of the urban green public space >1ha

Areas on the outscirts of possible ecological value

Green space > 1 ha outside the city, of quality

0   2,5   5 km

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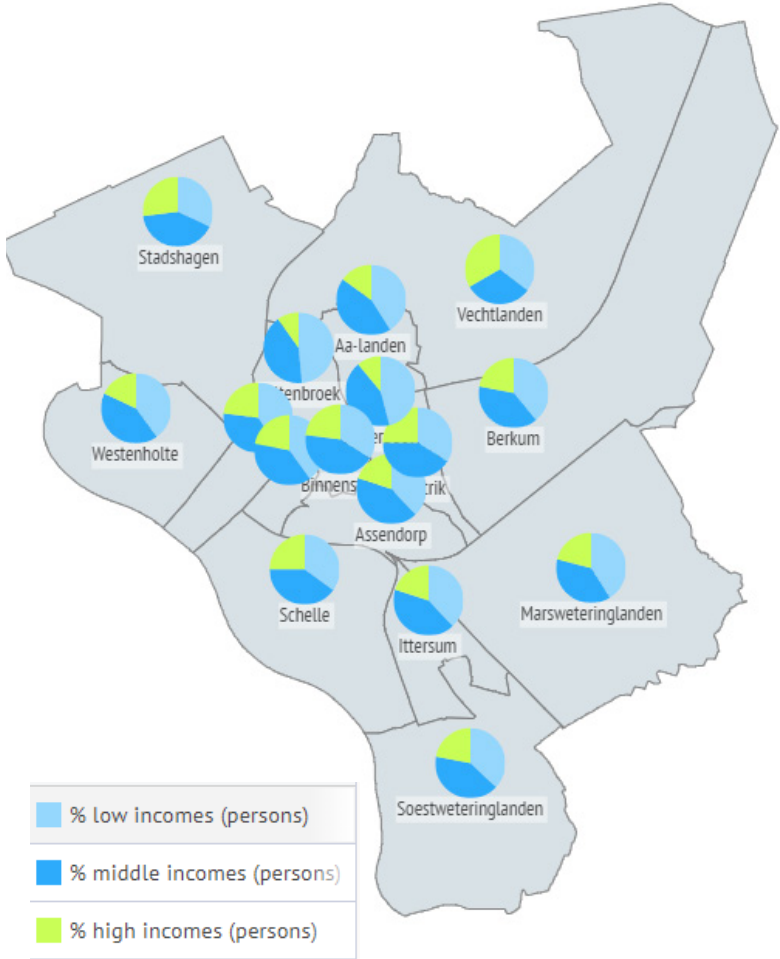
Dioptise Horizons

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- Urban green public space >1ha
- 300m radius of influence of the urban green public space >1ha
- Areas on the outscirts of possible ecological value
- 300m radius of influence of the areas on the outscirts of possible ecological value
- Areas outside of the 300m influence

Spaces without a > 1 ha green public space

Dioptise Horizons

0   2,5   5 km

2. What is the status quo of Zwolle's green spaces and their impact on the citizen's life?

Building footprint

Areas outside of the 300m influence

% low incomes (persons)

% middle incomes (persons)

% high incomes (persons)

Stadshagen

Vechtlanden

Aa-landen

Westenholte

Berkum

Binnens

Assendorp

Schelle

Ittersum

Marsweteringlanden

Soestweteringlanden

Source: https://cijfersoverzwolle.nl/

Dioptise Horizons

0   2,5   5 km

Areas without >1 ha green public space

300m radius
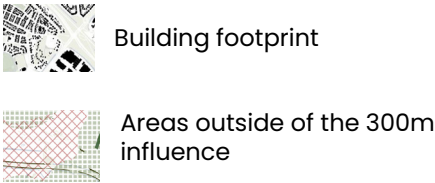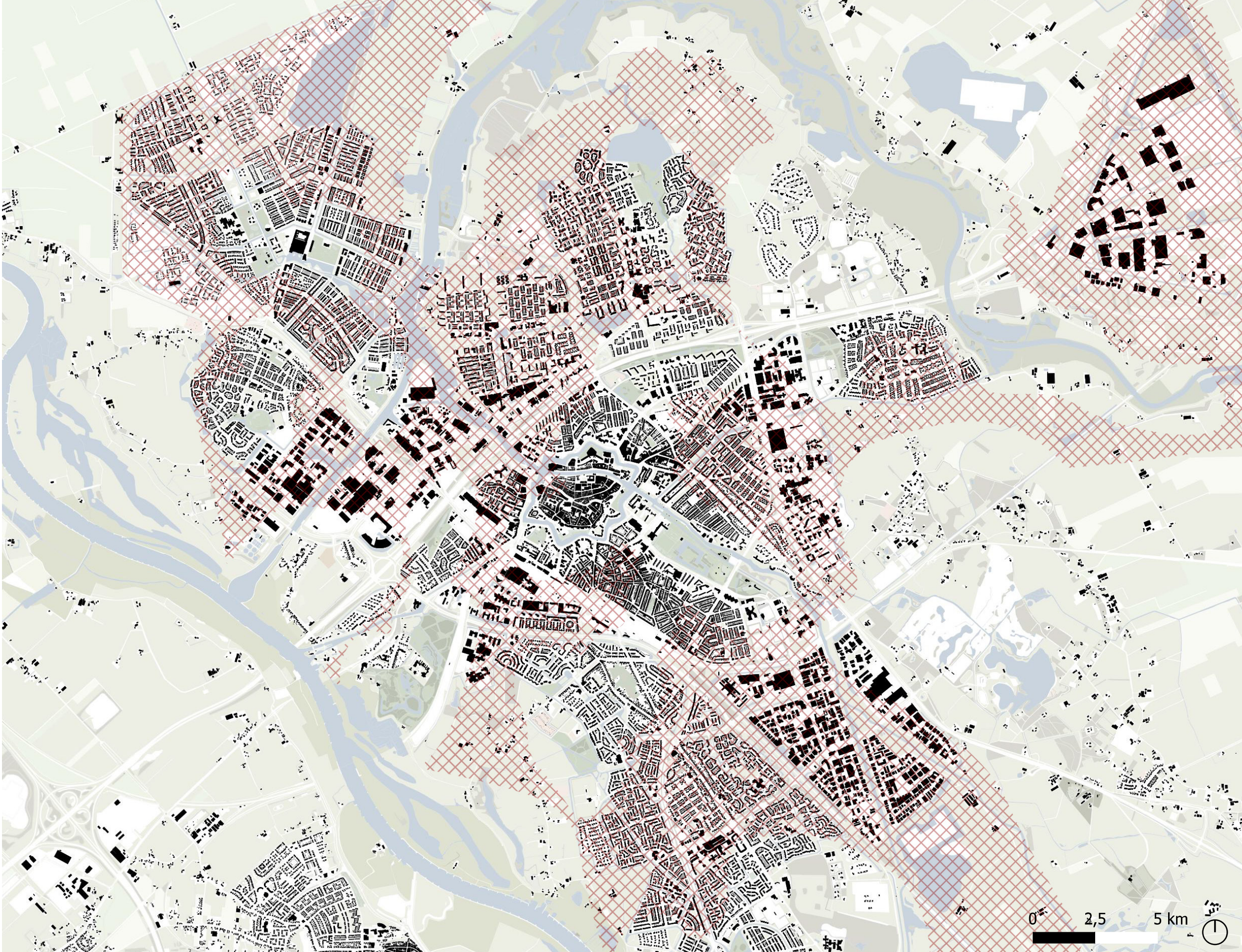
Public green space

Unequal distribution of urban greenery across neighborhoods of varying socioeconomic status
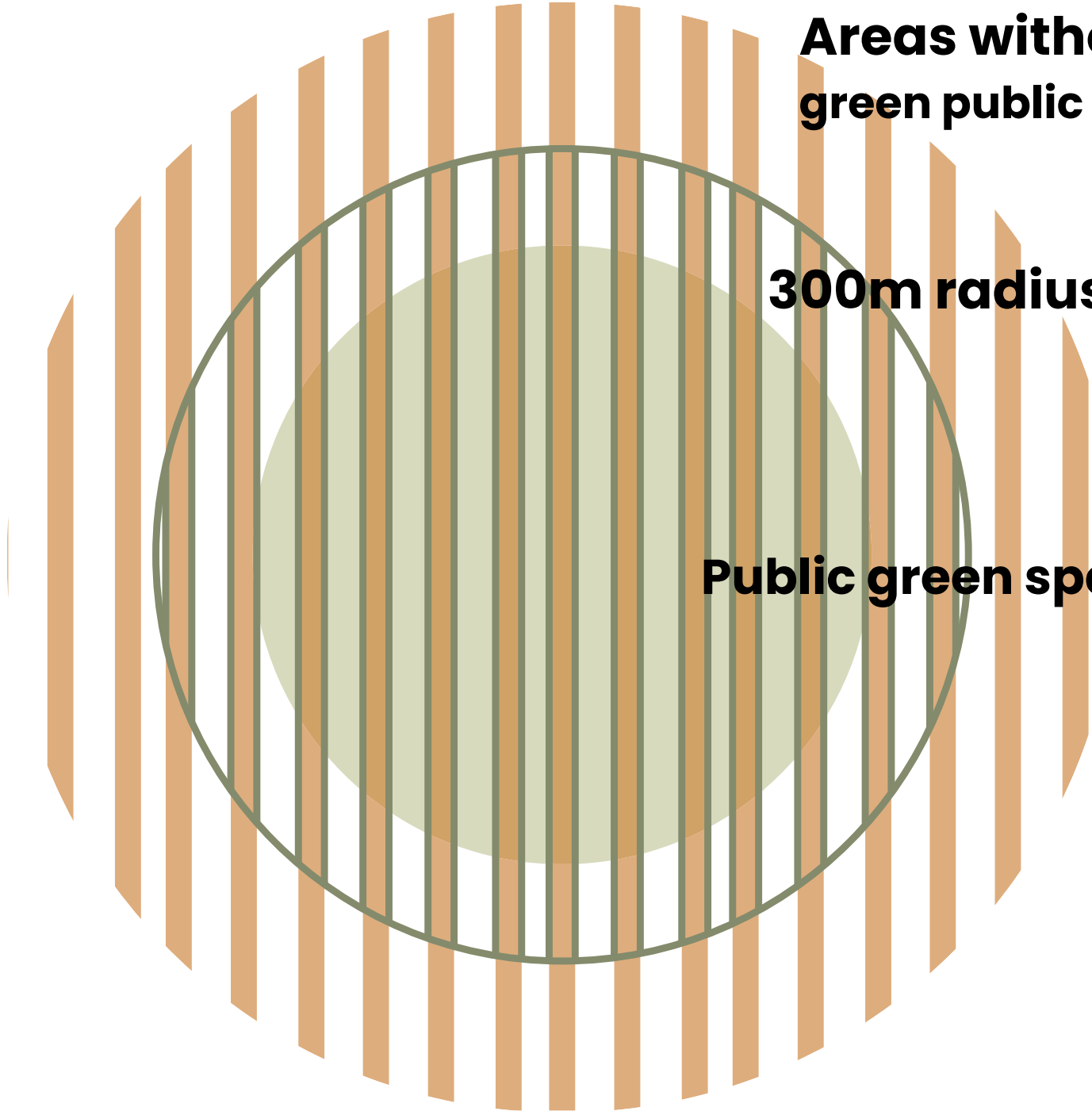
Equitable Distribution of Green Spaces

Prioritizing Underserved Communities

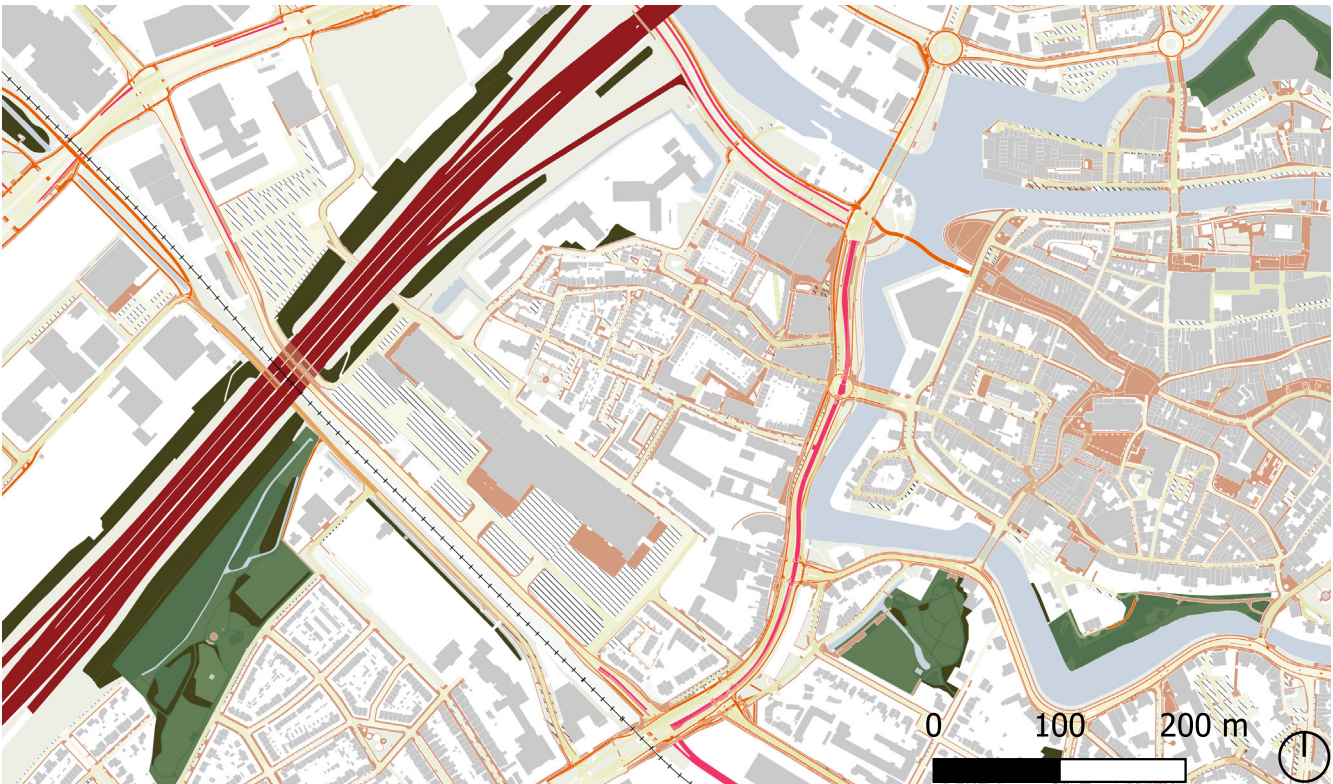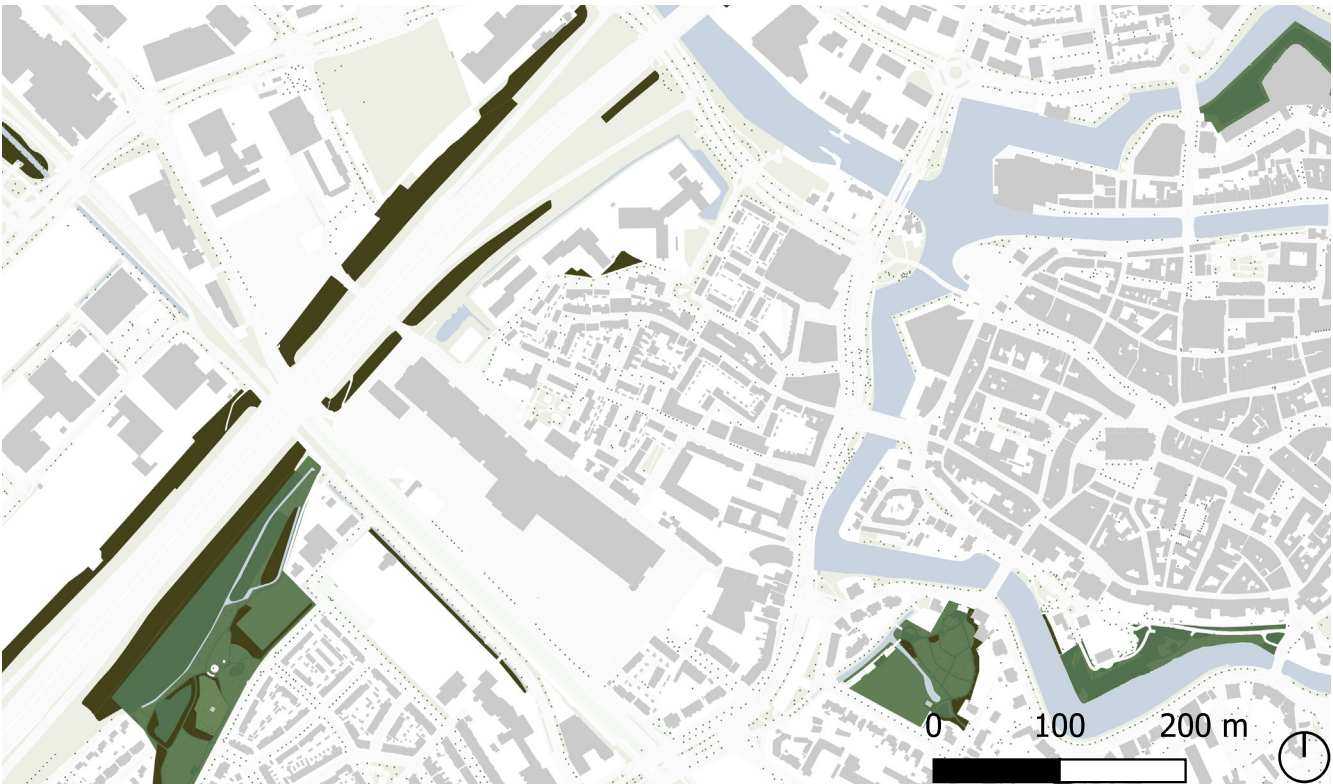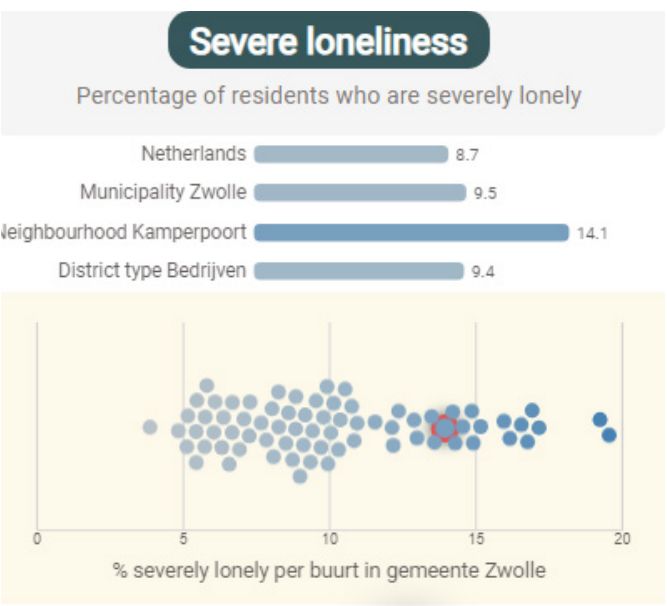2. What is the status quo of Zwolle's green spaces and their impact on the citizen's life?
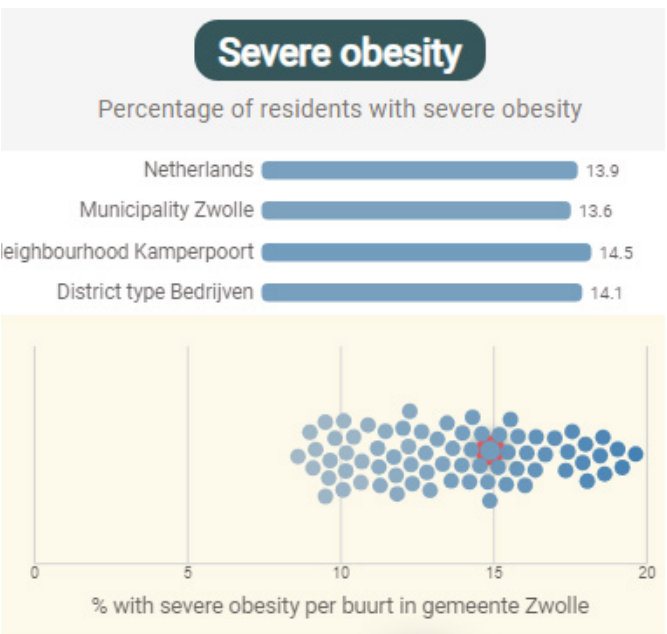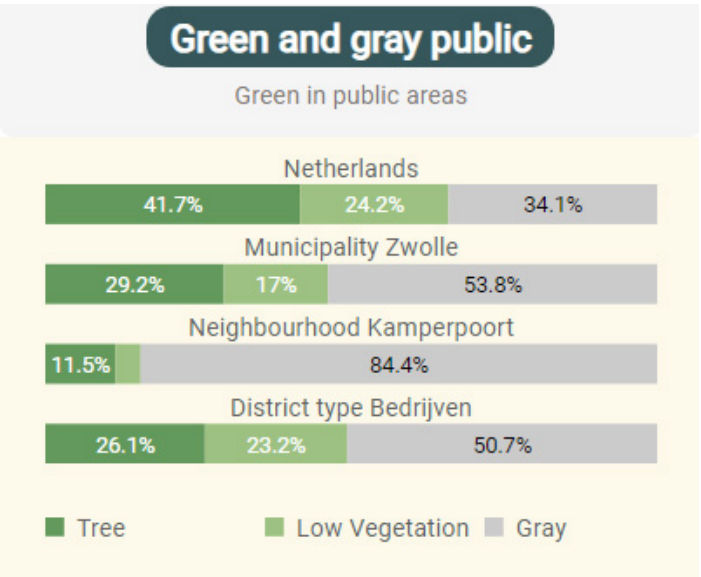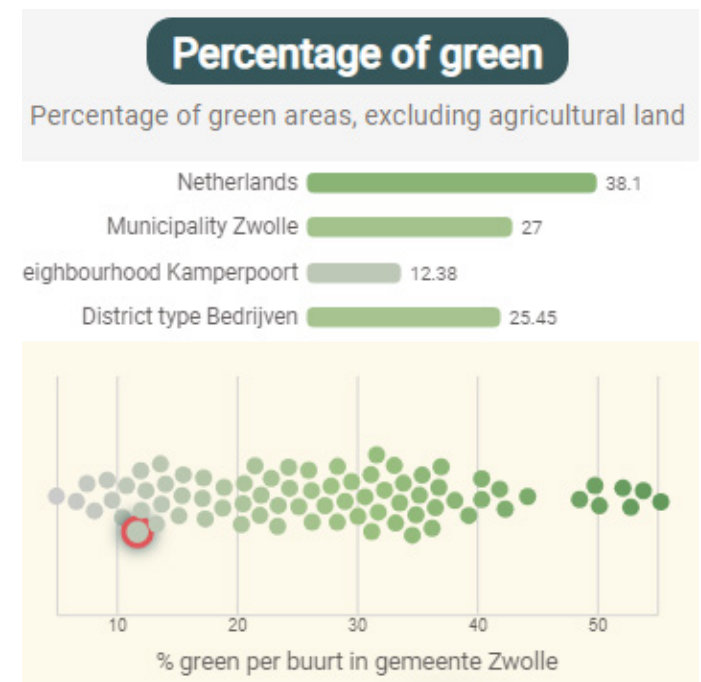
Urban Heat Island Effect

Flooding probability by 2050

Building footprint

Kamperpoort neighborhood

Vulnerable neighbourhoods : The case of Kamperpoort
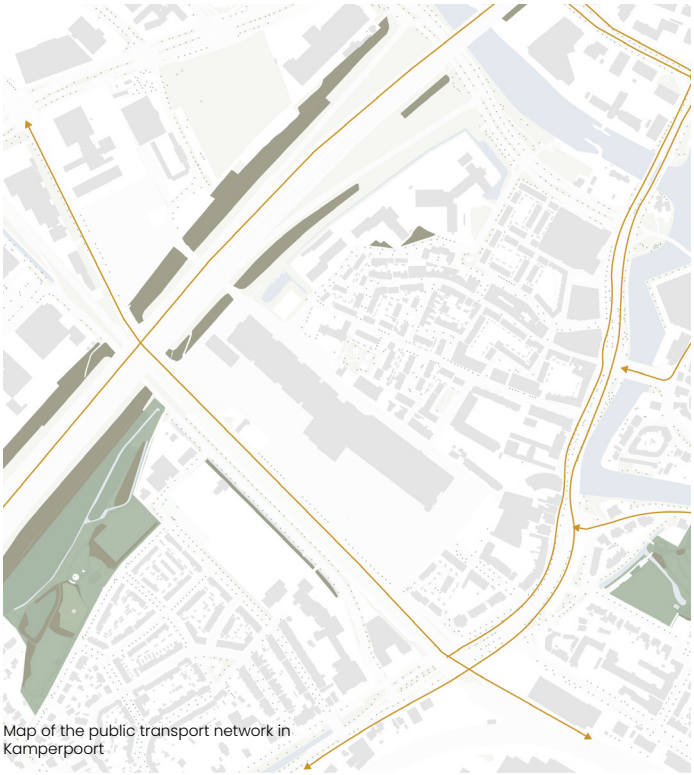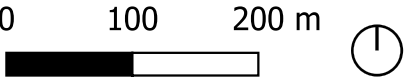
Dioptise Horizons

0   2,5   5 km

3. How can the "3-30-300 rule" be applied to Zwolle's context in order to integrate more nature in the city's urban fabric?

Tree placement indicators

Existing urban green

Parking place

Primary road network

Secondary road network

Public transport network

Bicycle network

Pedestrian network

Buildings

Railway

Percentage of green

Percentage of green areas, excluding agricultural land

Netherlands	38.1
Municipality Zwolle	27
Neighbourhood Kamperpoort	12.38
District type Bedrijven	25.45

% green per buurt in gemeente Zwolle

Severe obesity

Percentage of residents with severe obesity

Netherlands	13.9
Municipality Zwolle	13.6
Neighbourhood Kamperpoort	14.5
District type Bedrijven	14.1

% with severe obesity per buurt in gemeente Zwolle

Green and gray public

Green in public areas

Netherlands

41.7%	24.2%	34.1%

Municipality Zwolle

29.2%	17%	53.8%

Neighbourhood Kamperpoort

11.5%	84.4%

District type Bedrijven

26.1%	23.2%	50.7%

■ Tree   ■ Low Vegetation   ■ Gray

Severe loneliness

Percentage of residents who are severely lonely

Netherlands	8.7
Municipality Zwolle	9.5
Neighbourhood Kamperpoort	14.1
District type Bedrijven	9.4

% severely lonely per buurt in gemeente Zwolle

3. How can the "3-30-300 rule" be applied to Zwolle's context in order to integrate more nature in the city's urban fabric?

0   100   200 m

Map of the public transport network in Kamperpoort

Map of the entrance point towards Kamperpoort

Map of the main masterplans in the making

Map of the 300m influence of green in the masterplans

Map of the main pedestrian routes

Map of the secondary pedestrian routes
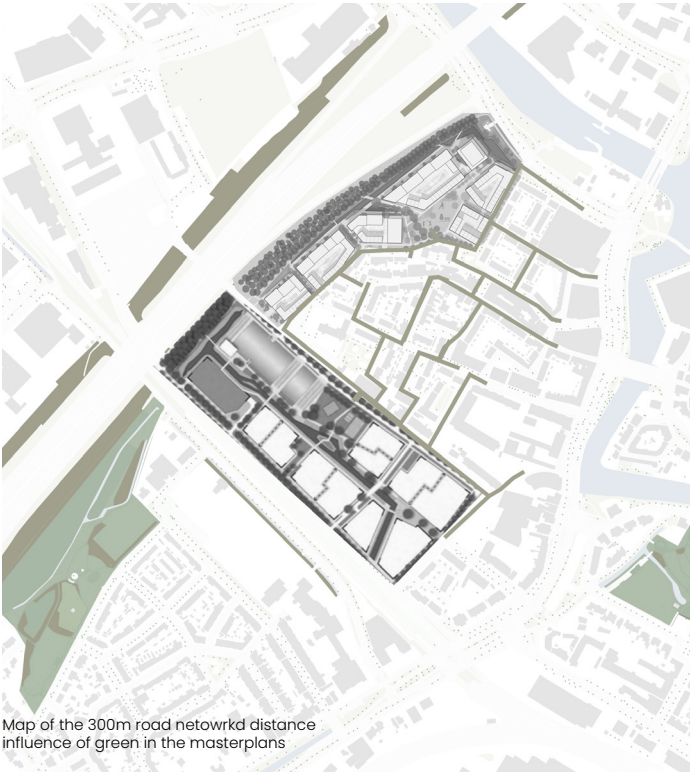
Map of the 300m road netowrkd distance influence of green in the masterplans
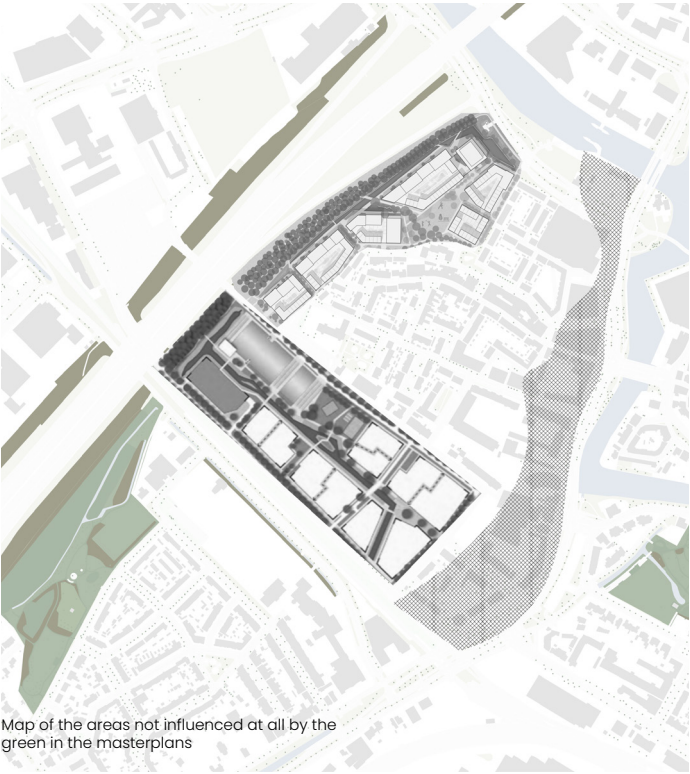
Map of the areas not influenced at all by the green in the masterplans

0   100   200 m

Green strategy for Kamperpoort

Kamperpoort Bloom!

0 100 200 m

Retail center

Mobility Hub

Sports association

Assisted living facility
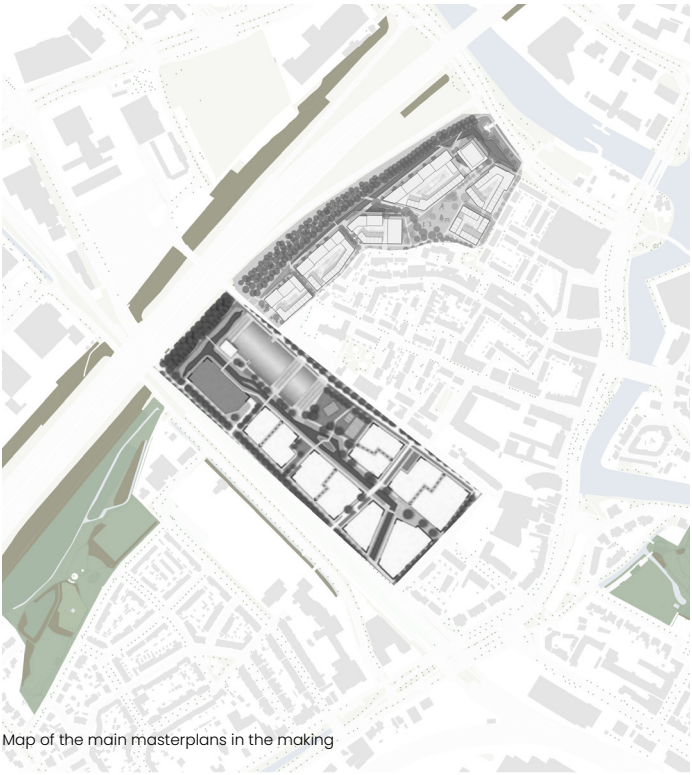
Assisted living facility

Car rental

Mobility Hub

Supermarket

3. How can the "3-30-300 rule" be applied to Zwolle's context in order to integrate more nature in the city's urban fabric?

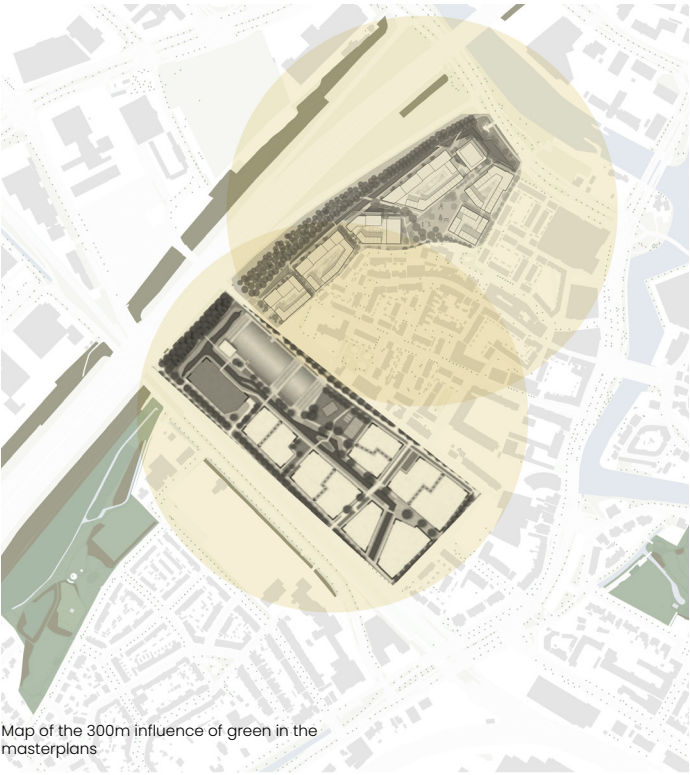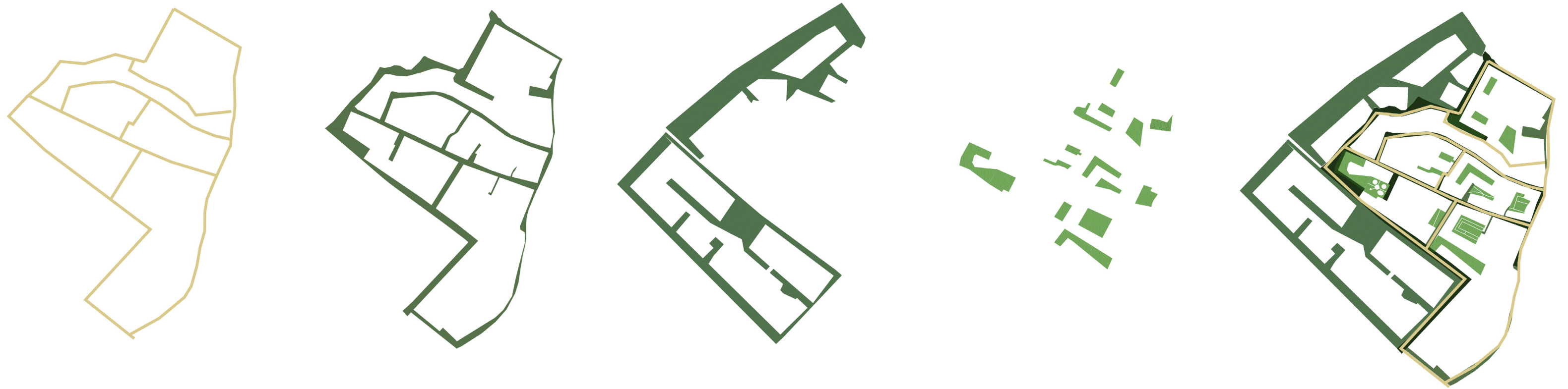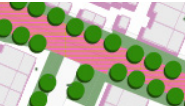**Main pedestrian street, with medium tree planting. It is important that although the car comes last, it still has access to the street.**

Main pedestrian street, with small trees only on one side planted. Still room for car to pass, but mainly pedestrian oriantated and then the bicycle. Purpose of the street is to feel free in front of your house.
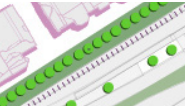
Areas that are currently under development (within masterplans) of the Municipality. These areas are going to contribute for 15-20% of the tree canopy coverage of the neighbourhood.
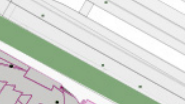
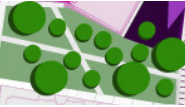**Large trees that are planted according to the parameters introduced in Chapter 5.**

Medium trees that are planted according to the parameters introduced in Chapter 5.

Small trees that are planted according to the parameters introduced in Chapter 5.

Areas with just grass, flexible to be used by the citizens according to their needs.

Urban small public green space, functions as a mini plaza.

Playgrounds for children within the urban greenery.

Mobility hubs as a turning point for the usage of private cars. In collaboration with the parking garage and the car rental agency, the mobility hubs can become an economic opportunity for the neighbourhood, and replace the privately owned cars.

The parking garage, as we step into 2100, will be less crowded, as there is a shift happening already towards shared mobility. The parking garage can be used as a shell to accomodate not only private vehicles but also shared mobility vehicles.

The assisted living facilities are an important epicenter of Kamperpoort, because many old people that live there tend to feel lonely or unhappy. It is important to provide also for them an environment where they can interact, feel part of the community and benefit from the urban green.

The outdoor space of the sports association, which is mainly paved, can be used to create a vibrant green urban ennvironment, where children can play and exercise at the same time.
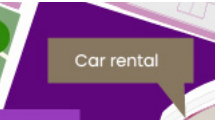
The car rental facility can be used, in collaboration with the parking garage and the municipality to become part of the shared mobility initiative, and slowly help people replace their individual car with a shared one.

The supermarket plays a big role in a neighborhood, as it is a place where people tend to interact daily, and therefore, it should be part of the urban greening strategy.
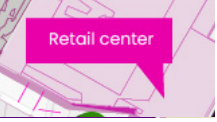
The retail center, being located on the edge of the neighborhood, is a starting-point for all resident both the neighourhood and the ones comming from the city center. People should be able to sit outside and enjoy their time, while taking a breathe under trees.
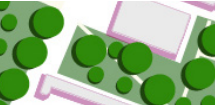
Cortyard urban green, where people can also be part of the preservation of greenery.

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Zoom in

Hoogstraat

Lijnbaan

Retail center

Mobility Hub

Parking garage

Sports association

Assisted living facility

Assisted living facility

Car rental

Mobility Hub

Dioptise Horizons

Street design: Lijnbaan

1,90m 4,6m 3m 5 m 3m 3m 1,90m

0 2 4m

1,90m 4,6m 3m 5 m 6m 1,90m

0 2 4m

0 12 24m
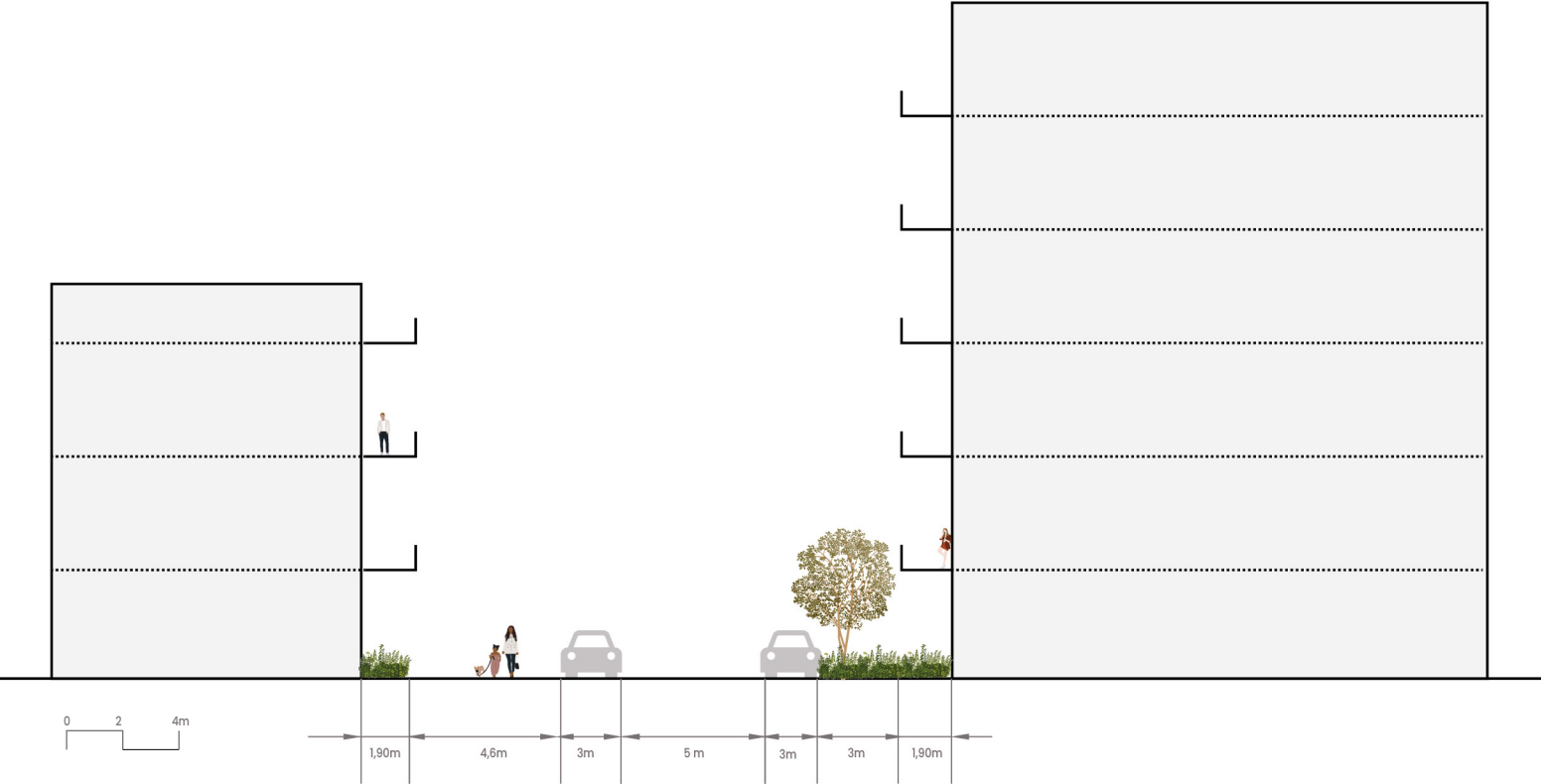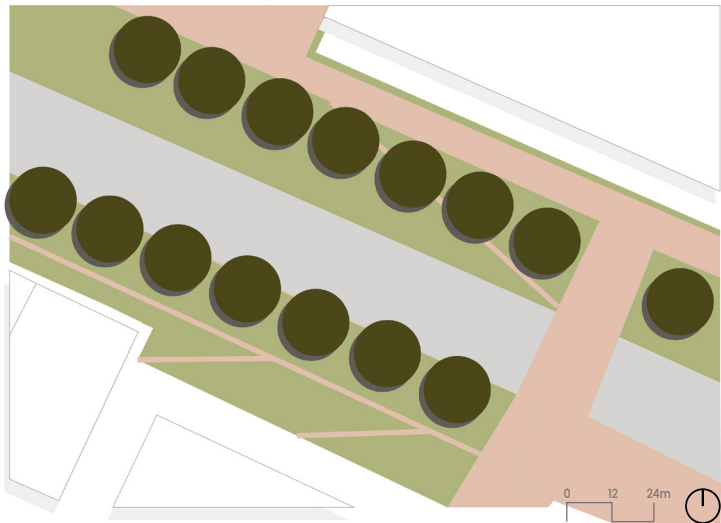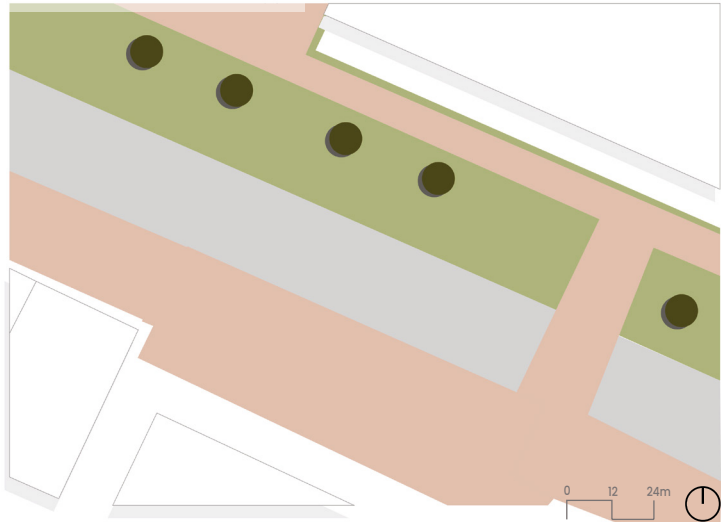
Street design: Hoogstraat

0   12   24m

0   12   24m

0   2   4m

1,80m   2m   3,30m   1,80m

0   2   4m

4,45m   2,65m   1,80m
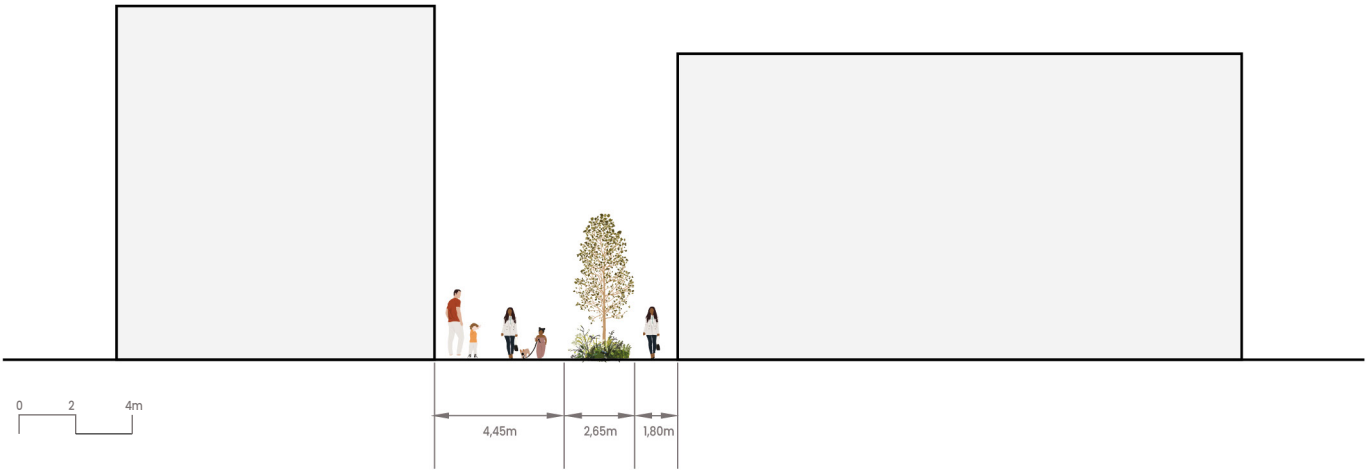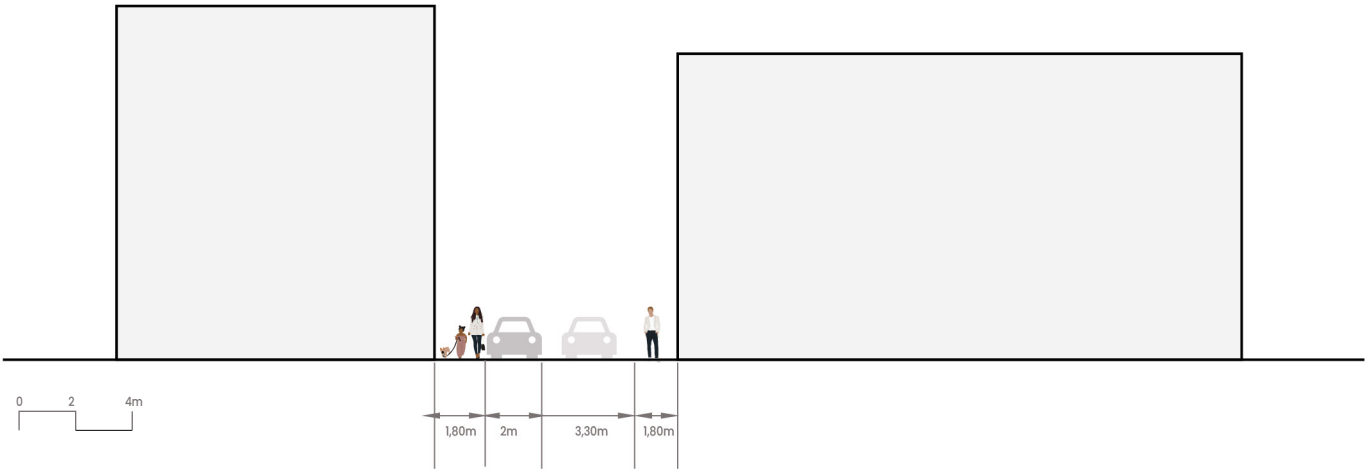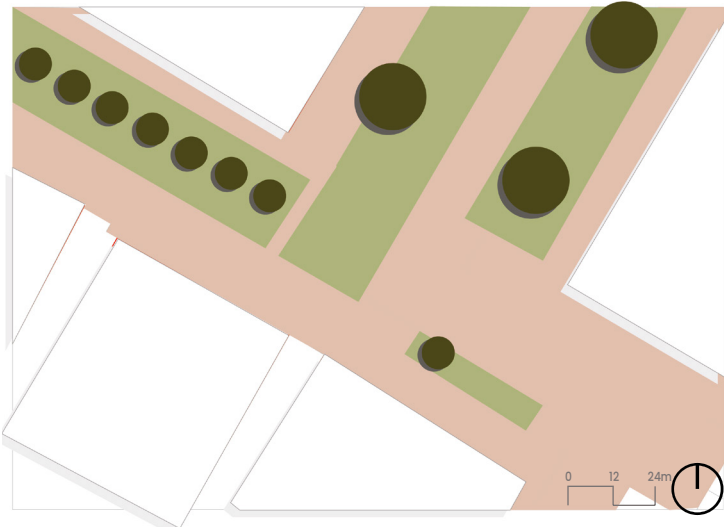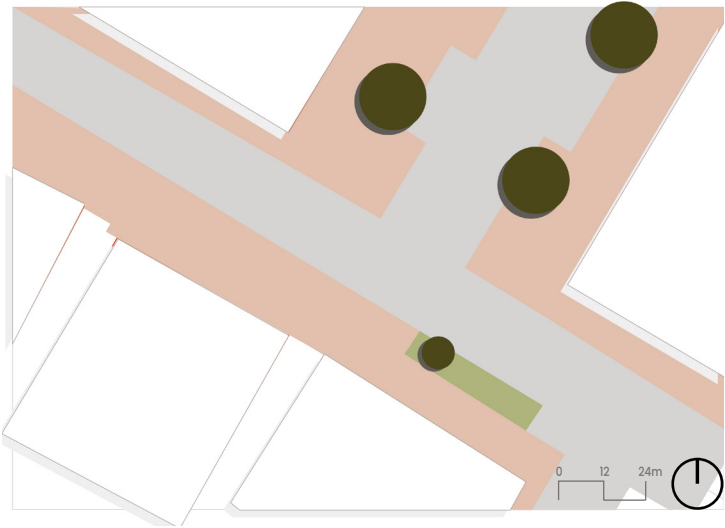
...but where will I park my car?

"As we move towards 2100, society's view on cars needs to change".

– Author

Number of shared cars per 100 households per municipality

0.00	– 0,01
0,01	– 0,02
0,02	– 0,06
0,06	– 0,12
0,12	– 0,22
0,22	– 0,39
0,39	– 0,47
0,47	– 0,47

Evaluation

Design principles	Components	Direct impact on	Criteria	Scoring criteria

Design principles

Reclaim the city space from cars, to give back to the nature

Prioritise walking

Climate mitigation & adaptation

Preserve biodiversity

Equall accessibility to urban green spaces

Components

Visual access to 3 trees

30% tree canopy coverage

300m from urban green

Direct impact on

Accessibility

Ecological value

Helath and Wellbeing

Climate resilience

Equity & Social cohesion

Criteria

1. Measuring the 3-30-300 rule to help cities meet nature access thresholds (Browning et al., 2024)

2. Urban green spaces and health 2016, (WHO, 2016)

3. A global analysis of the impacts of urbanization on bird and plant diversity reveals key anthropogenic drivers, (Aronson et al., 2014)

4. Ecosystem Services and valuation of urban forests in China, (Jim & Chen, 2009)

5. The health benefits of the Great Outdoors: A systematic review and meta-analysis of greenspace exposure and health outcomes, (Twohig-Bennett & Jones, 2018)

6. Adapting cities for climate change: The role of the green infrastructure, (Gill et al., 2007)

7. Designing for climate resiliency + adaptation, (FAIA, 2018)

8. Who benefits from nature in cities? social inequalities in access to urban green and blue spaces across Europe, (WHO, 2023)

9. Social Interactions in urban parks: Stimulating social cohesion?, (Peters et al., 2010)

Scoring criteria

Score	Explanation
0	No consideration or evidence of the criteria
1	Very minimal or poor considerationof the criteria
2	Some consideration, but significant gaps in the implementation of the criteria
3	Moderate inclusion of the criteria, but with some weaknesses
4	Strong inclusion of the criteria, with minor gaps
5	Excellent and comprehensive inclusion of the criteria

3 trees	▮▮▮▮▮	every windows facing the street can see 3 trees
30% canopy coverage	▮▮▮▮	30% canopy coverage is achieved in the street section re-designed
300m from urban green	▮▮▮▮	300m from urban green of small size
Accessibility	▮▮▮▮	immediate accessibility to green
Ecological value	▮▮▮	Creation of habitats for insects, animals & plants. Depends on the species of the tree, their maintainance and health.
Helath & Wellbeing	▮▮▮▮	Can only be measured and assesed after interviews and/or questionairs
Climate resilience	▮▮▮	Achieves some cooling and shading, whilst the rainfall catchement depends on the soil depth and tree species
Equity & Social cohesion	▮▮▮	Equally acessible urban green space on the street, tho it is not guranteed that social cohesion will be achieved immidiately.

3 trees	▮▮▮▮▮	every windows facing the street can see 3 trees
30% canopy coverage	▮▮▮	30% canopy coverage is partially achieved in the street section re-designed
300m from urban green	▮▮▮▮	300m from urban green of small size
Accessibility	▮▮▮▮	immediate accessibility to green
Ecological value	▮▮▮	Creation of habitats for insects, animals & plants. Depends on the species of the tree, their maintainance and health.
Helath & Wellbeing	▮▮▮	Can only be measured and assesed after interviews and/or questionairs
Climate resilience	▮▮▮	Achieves some cooling and shading, whilst the rainfall catchement depends on the soil depth and tree species
Equity & Social cohesion	▮▮▮	Equally acessible urban green space on the street, tho it is not guranteed that social cohesion will be achieved immidiately.

Assisted living

Assisted living facility

3 trees	▓▓▓	every windows facing the street can see 3 trees
30% canopy coverage	▓▓▓▓	30% canopy coverage is achieved in the street section re-designed
300m from urban green	▓▓▓▓	300m from urban green
Accessibility	▓▓▓▓▓	immediate accessibility to green
Ecological value	▓▓▓	Creation of habitats for insects, animals & plants. Depends on the species of the tree, their maintainance and health.
Helath & Wellbeing	▓▓▓▓▓	Can only be measured and assesed after interviews and/or questionairs
Climate resilience	▓▓▓▓	Achieves some cooling and shading, whilst the rainfall catchement depends on the soil depth and tree species
Equity & Social cohesion	▓▓▓▓	Equally acessible urban green space on the street, tho it is not guranteed that social cohesion will be achieved immidiately.

Guidelines for future applications of the 3-30-300 rule

■ *Contextual Adaptation*

■ *Integrating with the existing/ future Urban Infrastructure*

■ *Strategies regarding Climate Equity in the distribution of urban greenery*

■ *Tree planting*

■ *Community Involvement*

■ *Long-term Maintenance and Assesment*

■ *Integration with Urban Planning*

■ *Economic Incentives*

■ *Cost-Benefit Analysis Resilience*

Conclusions

"What if the biophilic design strategy of Dr. Cecil Konijnendijk would be implemented in the streetscape of Zwolle to improve the existing public space by 2100?".

Reflecting

Societal value

Improved Public Health: Access to nature has been shown to reduce stress, enhance mental health, and encourage physical activity, leading to healthier populations.

Stronger Communities: Green spaces foster social interaction and community engagement, helping to build social cohesion.

Environmental Benefits: Trees reduce urban heat islands, improve air quality, and support biodiversity, contributing to sustainability and climate resilience.

Increased Livability: A greener city is more attractive, potentially boosting economic activity and property values.

Trasferability

The 3-30-300 rule is highly **adaptable,** making it relevant to various cities regardless of their size or geographical location.

The principles of integrating green spaces, improving livability, and enhancing sustainability **are universal,** meaning that other cities facing similar challenges can implement the strategies I developed.

Ethical considerations

Equity and Accessibility: Ensuring that all communities, including marginalized or low-income groups, have equal access to green spaces and nature.

Environmental Justice: Balancing development needs with ecological protection, preventing displacement of ecosystems and local populations.

Sustainability: Making sure that the project supports long-term environmental sustainability without compromising resources for future generations.

Community Involvement: Engaging local residents in the design and planning process to ensure their needs and voices are heard.

Thank you for your attention.