URBAN FOREST MOVEMENT(S)

Movement as design method for experiencing nature and its beneficial effects in the city of Den Haag.

P5 Thesis

Emma Kannekens 4655613
Urban Forest Places Lab
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Mentors: René van der Velde, Machiel van Dorst
External Examinor: Herman Vande Putte

HEALTHY LIVING ENVIRONMENT, CITY MOVEMENT, RESTORATIVE NATURE, MENTAL HEALTH, STRESS, HEALING NATURE, SENSORIAL DESIGN, GARDEN CITY MOVEMENT, URBAN FORESTRY, LANDSCAPE DESIGN, MOVEMENT, DEN HAAG, BODILY EXPERIENCE, URBAN FOREST MOVEMENT

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FASCINATION, PROBLEM STATEMENT, RESEARCH QUESTION, METHODOLOGY

RESEARCH
HISTORIC OVERVIEW: CREATING HEALTHY LIVING ENVIRONMENTS, MOVEMENT AS RESTORATIVE GREEN STRUCTURE

URBAN FOREST MOVEMENT

ANALYSIS AND DESIGN
DEN HAAG AND REGION, VISION DEN HAAG
LINE: LOOSDUINSEWEG, MASTERPLAN LOOSDUINSEWEG
CEMETERY OUD AND NIEUW EYKENDUYNEN, ZOOM IN DESIGN: EYKENDUINEN PARK

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CONCLUSION AND REFLECTION

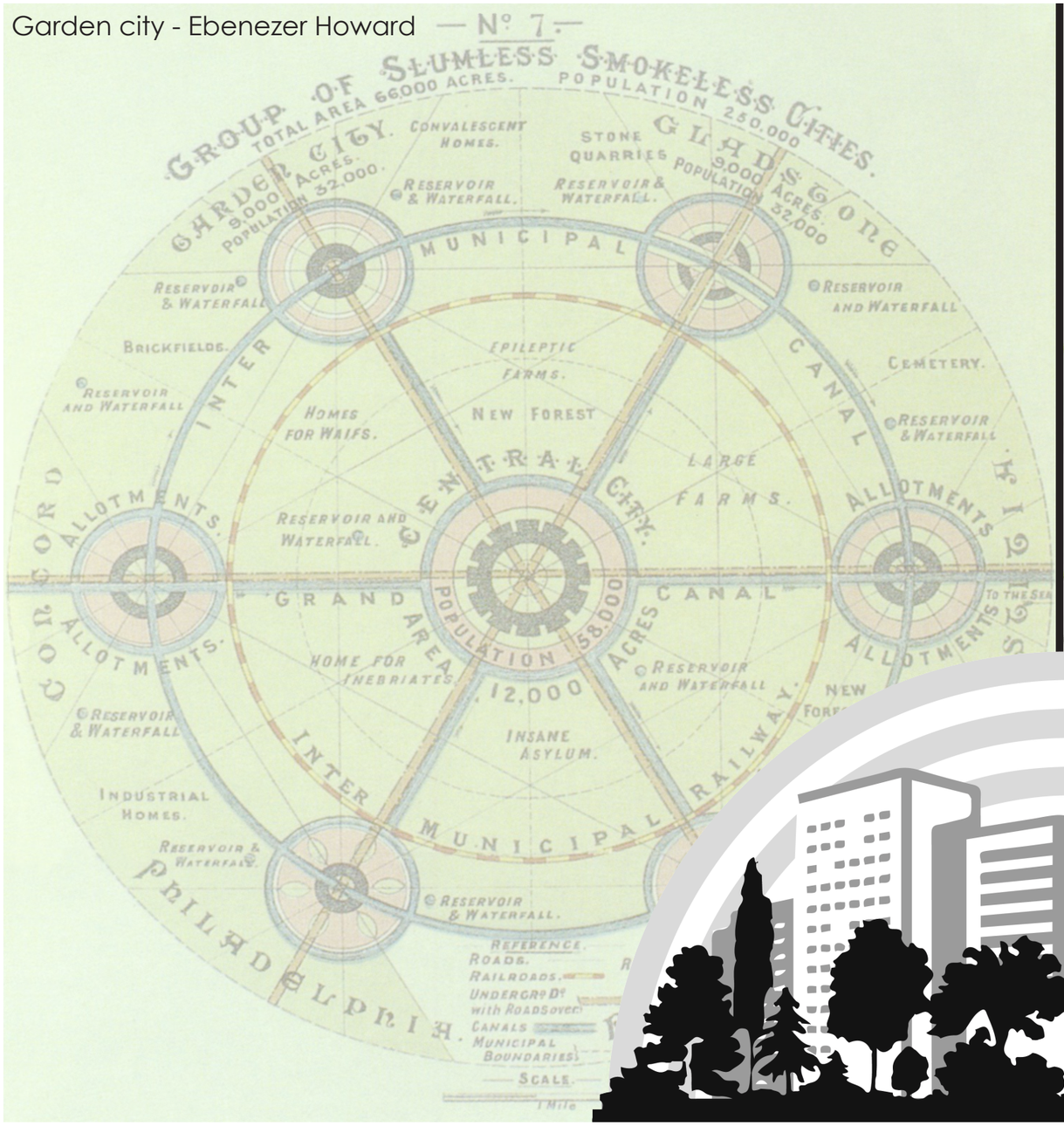
FASCINATION
Healing Nature



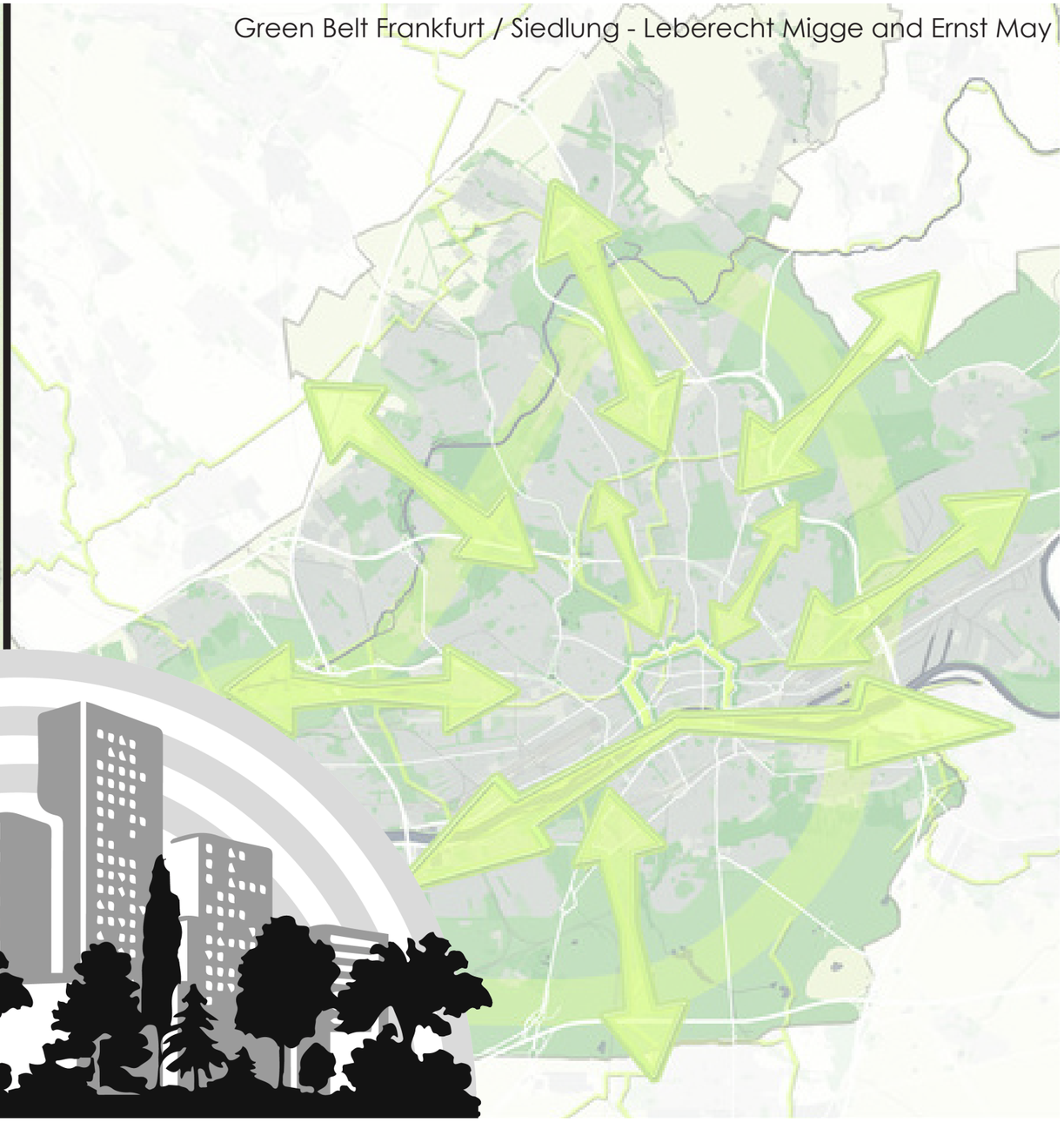
(Source: Mioblo (n.d.).CC BY-SA 3.0 nl, Retrieved from https://commons.wikimedia.org/w/index.php?curid=21591891) (Source: den Dikken, R. (31-07-2012).Landgoed Clingendael, Retrieved from https://www.tuincursus.com/landgoed-clingendael/) (Source: van Gulpen, P. (1849).Binnentuin gesticht Calvariënberg Maastricht, Retrieved from https://upload.wikimedia.org/wikipedia/commons/7/76/Binnentuin_gesticht_Calvari%C3%ABnberg_Maastricht%2C_Ph_v_Gulpen%2C_1849.jpg) (Source: Regiobodeonline. (25-06-2015). Moestuin voor cliënten van Beverode, Retrieved from https://www.regiobodeonline.nl/2015/06/25-06-2015-11-59-dieren-moestuin-voor-cli-nten-van-beverode/)

FASCINATION
Ideal city movements

Garden city - Ebenezer Howard



Green Belt Frankfurt / Siedlung - Leberecht Migge and Ernst May



(Source: Howard, E. (1902). British journalist. The Garden City Concept. Wikipedia, London. Retrieved from https://nl.wikipedia.org/wiki/Tuinstad#/media/Bestand:Garden_City_Concept_by_Howard.jpg)

(Source: (n.d.).Grün erleben in der Stadt: Korridore zum GrünGürtel. AS+P architecten/planners, Frankfurt. Retrieved from https://www.as-p.com/projects/project/frankfurt-fuer-alle-handlungsperspektiven-fuer-fr-56/show/)

PROBLEM STATEMENT AND RESEARCH QUESTION







Healing nature

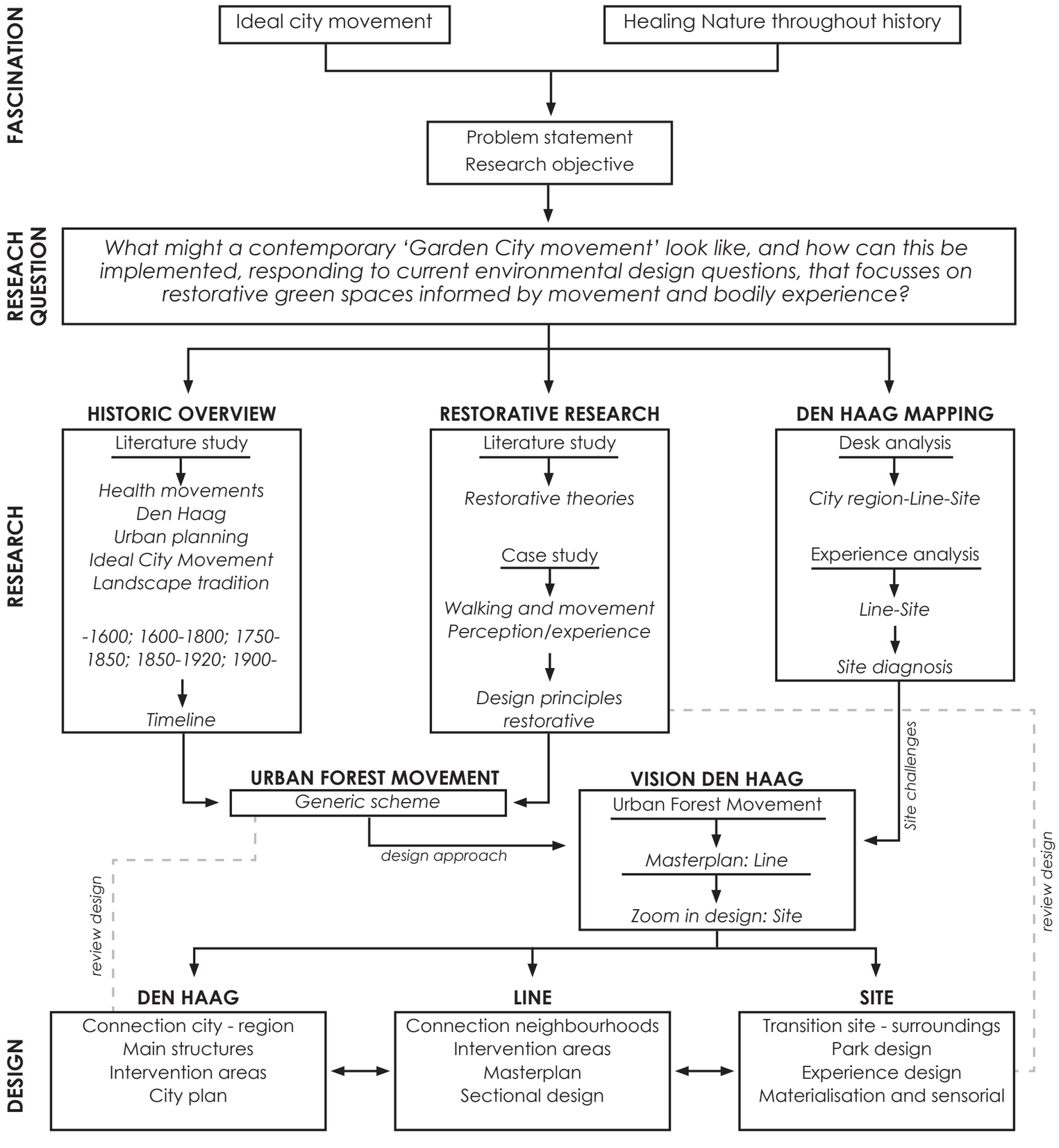
Current environmental design questions in the dense city

Ideal city movements - rethinking current cities

What might a contemporary 'Garden City movement' look like, and how can this be implemented, responding to current environmental design questions, that focusses on restorative green spaces informed by movement and bodily experience?

- What are the various ideas on creating a healthy living environment throughout history and how did it result in spatial designs in urban plans, landscape tradition and ideal cities?
- What are restorative nature theories and how can they be applied to design restorative landscapes?
- What is the Urban Forest Movement and what are the main design goals and principles that form the spatial structure of the plan?
- What are the main structures of Den Haag, how do these relate to the surrounding landscape and what are the main design questions of the city and the chosen site?
- How can the Urban Forest Movement be implemented in the chosen site and how can it be further elaborated on a detailed scale?

METHODOLOGY



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HISTORIC OVERVIEW: CREATING HEALTHY LIVING ENVIRONMENTS

DEN HAAG





URBAN PLANNING

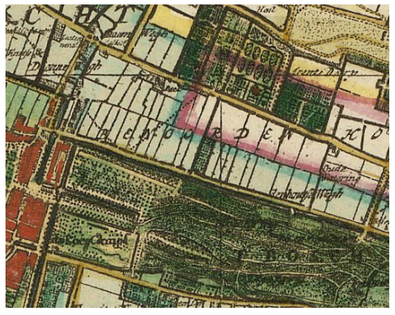
- GRID PARCELLATION (marketsquare)

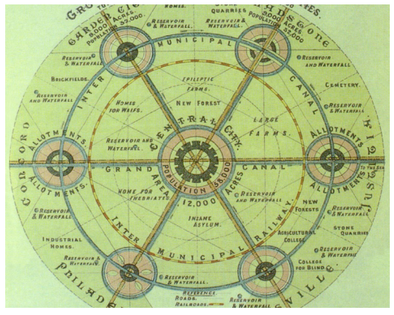
- CITY EXPANSION (city walls)
- RATIONAL PARCELATION

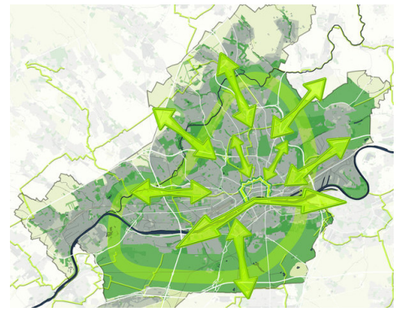
- VILLAPARK (green living environment)
- GARDEN CITY (community and private gardens, public parks)

- MONUMENTAL (community gardens)
- FUNCTIONAL (neighbourhood distinction because of green structures, Highrise to make space for public green, green is also program)
- STAMP (community gardens, public green)
- CAULIFLOWER (meandering green spaces)
- VINEX (protection naturel areas facing urbanization)

	-1600	1600-1800	1750-1850	1850-1920	1900-
LANDSCAPE TRADITION	**ORDER** - HOUTEN (leisure purposes) - COURTYARDS - (restorative, garden) - CITY WALLS - (fortification) - TREE PLANTING - (wood production) - URBAN GARDEN - (escape)	**FORMAL** - ESTATES - (escape, promenading, leisure purposes)	**ENGLISH/PICTURESQUE** - PARK CITY WALLS - (promenading, leisure purposes, experiencing nature (birds eye view) - BOULEVARDS - (promenading)	**ENGLISH** - CITYPARK - (escape, pastoral, promenading, leisure purposes)	**FORMAL/MODERN** - PUBLIC PARK - (promenading, leisure purposes, socialising, sport and play, education, gardening)
	- CULTIVATION - MEDITATION (sensorial nature)	- WALKING - ESCAPING (controlled nature, elites)	- WALKING - EXPERIENCING NATURE (elites)	- WALKING - ESCAPING	- ACTIVITIES IN NATURE
IDEAL CITY MOVEMENT		ESTATE LANDSCAPE		GARDEN CITY	SIEDLUNG
HEALTH MOVEMENTS	MEDICINAL PLANTS IMPROVE SANITATION: water supplies, garbage, sewage, food inspection (13th - 14th century)	WALKING (17th century) EXERCISES, GAMES, SPORTS (16th-17th century)	SWIMMING (19th century)		RESTORATIVE NATURE THEORIES (20th century)







Den Haag images (source: Gemeente Den Haag. (n.d.). Beeldcollectie. Retrieved from Haags Gemeentearchief, archief Leidschendam-Voorburg: https://haagsgemeentearchief.nl/mediabank/beeldcollectie)
Estate Landscape (source: Cruquius, N., & Cruquius, J. (1712). Kaart van het Hoogheemraadschap van Delfland. Cruquius hoogheemraadschap van Delfland. Hoogheemraadschap Delfland, Delft.)

Garden City (source: Howard, E. (1902). The Garden City Concept. Wikipedia, London. Retrieved from https://nl.wikipedia.org/wiki/Tuinstad#/media/Bestand:Garden_City_Concept_by_Howard.jpg
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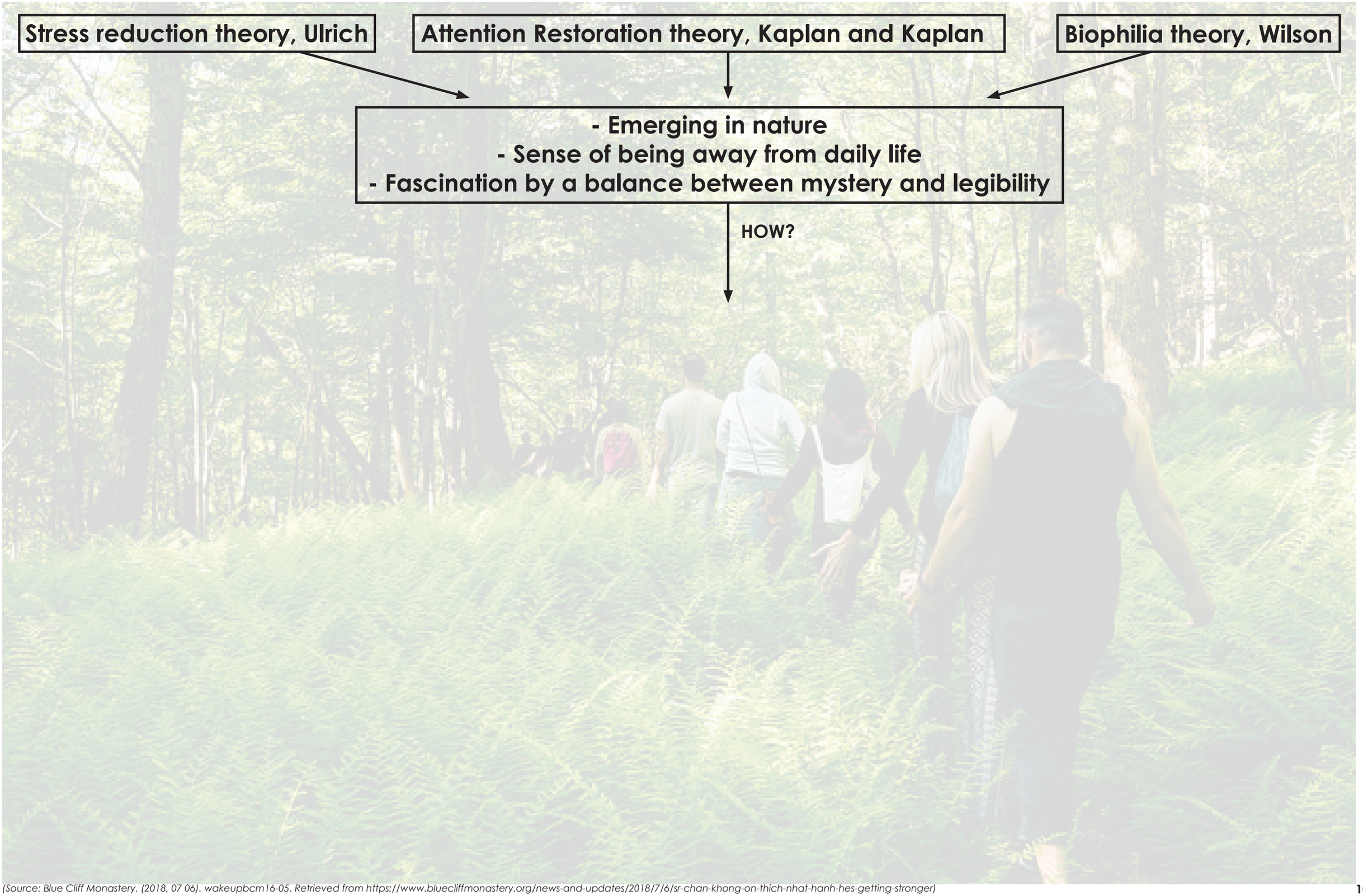
MOVEMENT AS RESTORATIVE GREEN STRUCTURE

Restorative effects of nature



(Source: Blue Cliff Monastery. (2018, 07 06). wakeupbcm16-05. Retrieved from https://www.bluecliffmonastery.org/news-and-updates/2018/7/6/sr-chan-khong-on-thich-nhat-hanh-hes-getting-stronger)

MOVEMENT AS RESTORATIVE GREEN STRUCTURE

Walking

Stress reduction theory, Ulrich

Attention Restoration theory, Kaplan and Kaplan

Biophilia theory, Wilson

- Emerging in nature
- Sense of being away from daily life
- Fascination by a balance between mystery and legibility

HOW?

Modes of walking (Hendrik Schultz)
- Flow mode
- Reflective mode.
- Discovery mode

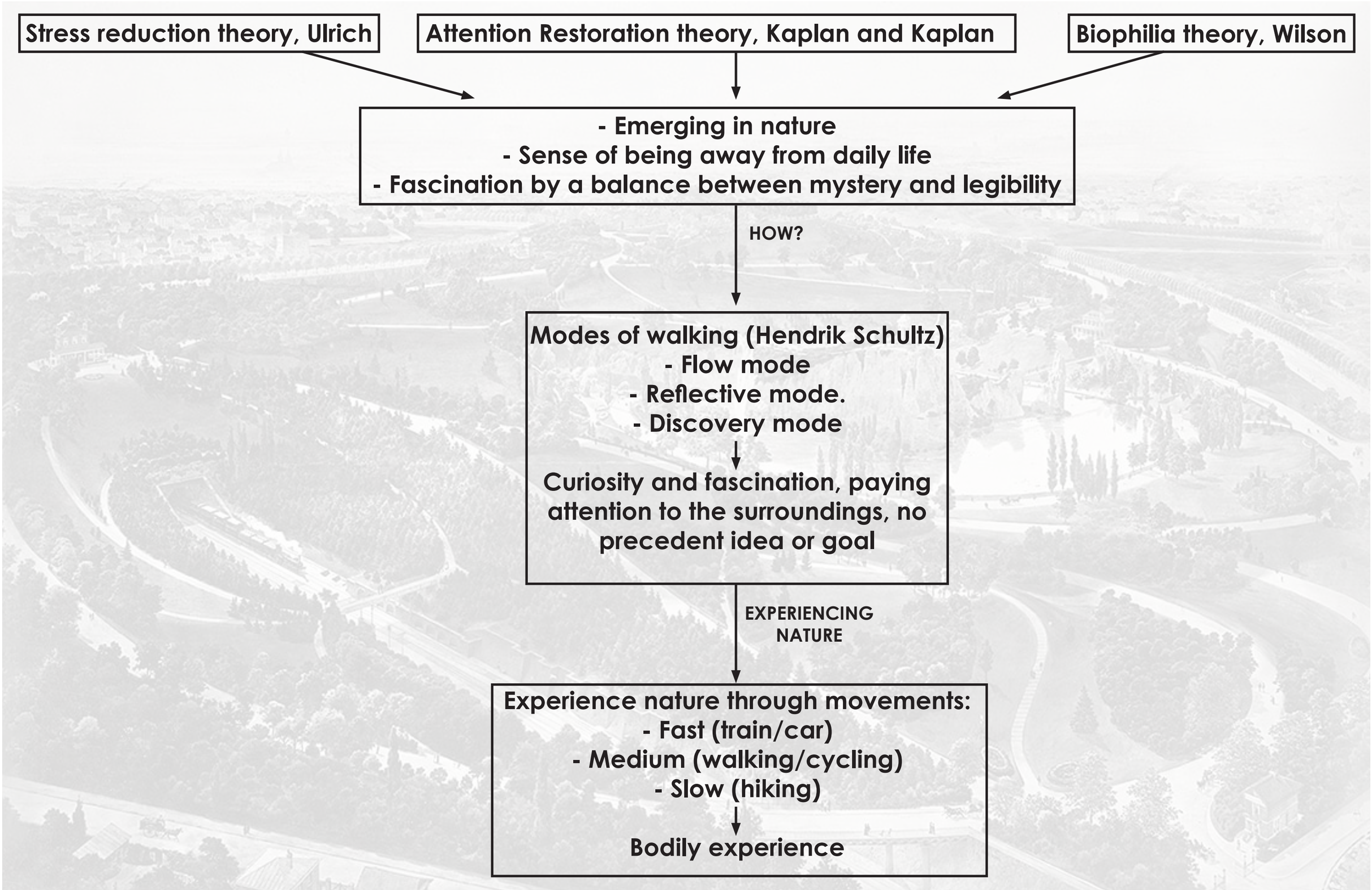
Curiosity and fascination, paying attention to the surroundings, no precedent idea or goal

EXPERIENCING NATURE

(Source: Stopendaal, D., & Leth, A. (1725). Gezicht op den Middelwegh of Muider Straet in de Nieuwe Plantagie naer de Muider Poort toe. Amsterdam: Stadsarchief Amsterdam. Retrieved from https://archief.amsterdam/beeldbank/detail/aedaf857-a02b-30d9-21ad-8f58e4cb948c)

MOVEMENT AS RESTORATIVE GREEN STRUCTURE

Movement



(Source: Parc des Buttes-Chaumont, Paris, France – Historic Drawing – Photo © Government of France / Wikimedia Commons Retrieved from https://upload.wikimedia.org/wikipedia/commons/3/37/Vue_du_parc_des_Buttes_Chaumont%2C_ca._1853%E2%80%9370.jpg)

MOVEMENT AS RESTORATIVE GREEN STRUCTURE

BODILY EXPERIENCE - MOVEMENT

Experiencing space

Near-sphere — **Far-sphere**

Walking links the spheres

↓

Tangible experiences + dimensions space

↓

- **Textured surfaces**
- **Changing depth of a space**
- **Sun and shade while walking**
- **Colours**
- **Sounds**
- **Smells**

Vegetation



(source: Lastorina, B. (2009, 11 03). La Villette - Jardin des Bambous. Paris. Retrieved from https://web.archive.org/web/20161014021817/http://www.panoramio.com/photo/28859379)

Materialisation



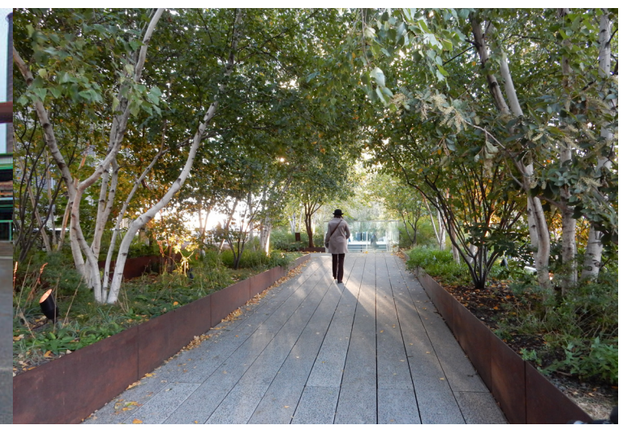
(source: Bennewies, T. (n.d.). Parc Buttes-Chaumont: From Sewer to Sweetheart. Paris. Retrieved from https://www.google.com/imgres?imgurl=https://whenenfranceeh.files.wordpress.com/2016/04/bc-04620.jpg%3Fw%3D584%26h%3D807&imgrefurl=https://whenenfranceeh.com/2016/04/10/parc-buttes-chaumont-from-sewer-to-sweetheart/&h=807&w=584&tbnid=YWv2LngtgK1uxM&tbnh=2)

Movement



(source: Rudowitz, U. (2019, 01 06). Piazza Metallica at Landscape Park Duisburg. Retrieved from https://www.360cities.net/image/piazza-metallica-at-landscape-park-duisburg

Composition



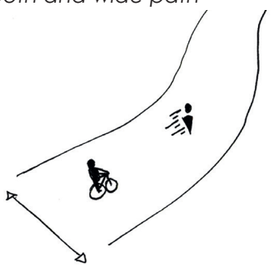
MOVEMENT AS RESTORATIVE GREEN STRUCTURE

TOOLBOX

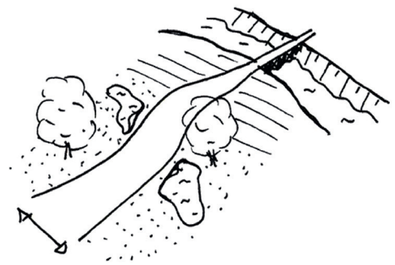
Speed of movement - Freytag

Fast - train

Smooth and wide path



Leveling landscape for smooth route

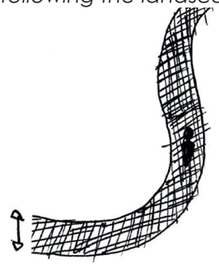


Senic views

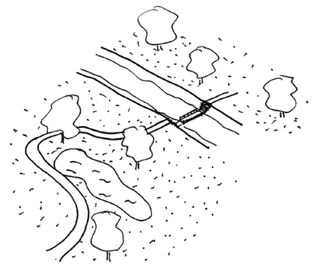


Slow - walking

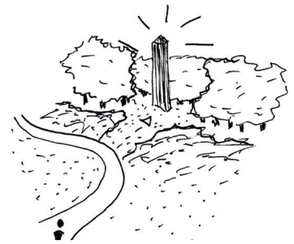
Path following the landscape



Textured and narrow path

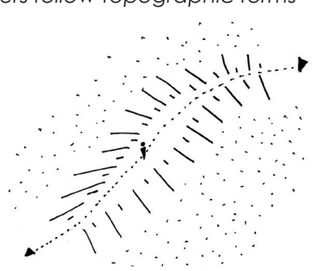


Sightlines by framing and curves

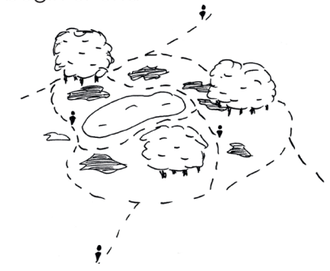


Creating fascination by walking - Schultz / Dixon Hunt

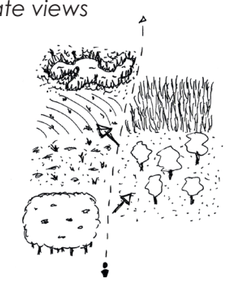
Hikers follow topographic forms



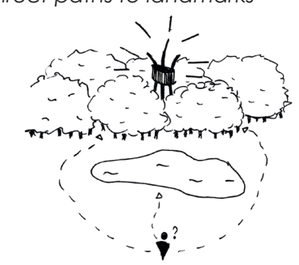
No begin or end



Seperate views



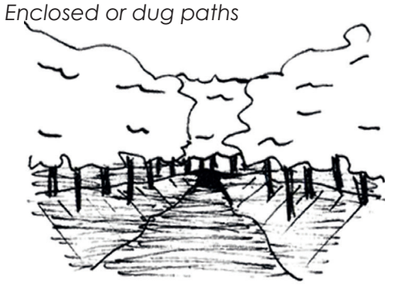
Indirect paths to landmarks



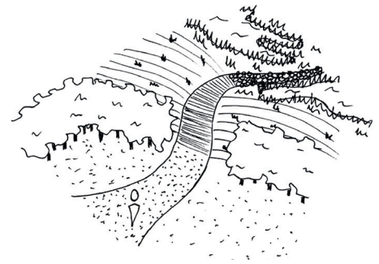
Bodily experience - Lassus / Velde

Movement

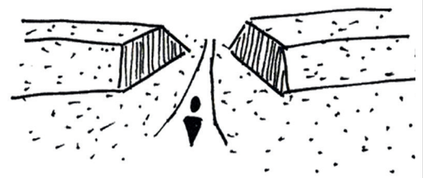
Enclosed or dug paths



Textures according to surroundings



Cut through elements

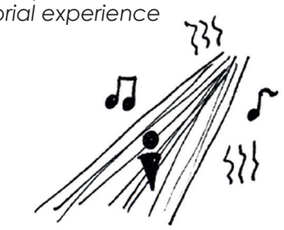


Sensorial

Blocking out views to emphasise other senses



Smooth path for ultimate sensorial experience



Smell, colour, textures and sound by different textures and vegetation



Smell, colour, textures and sound by different textures and vegetation



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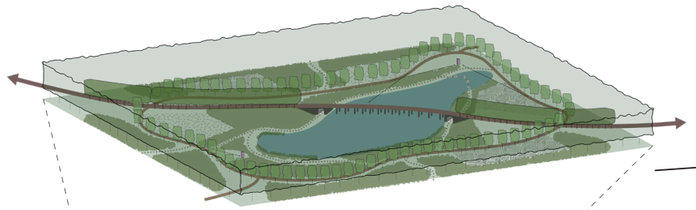
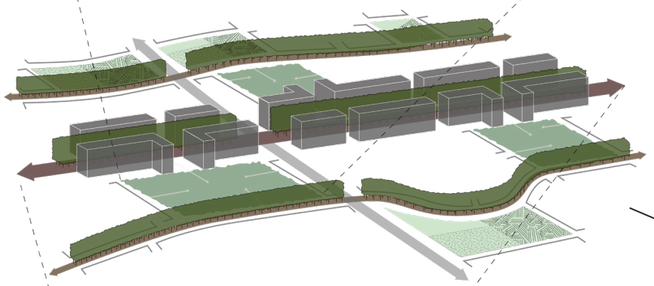
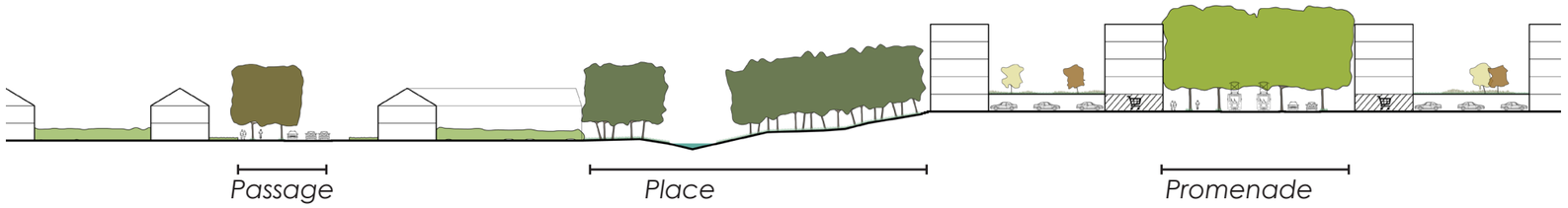
Movements



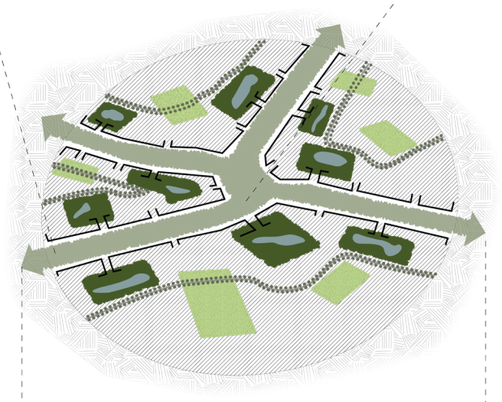


Structures

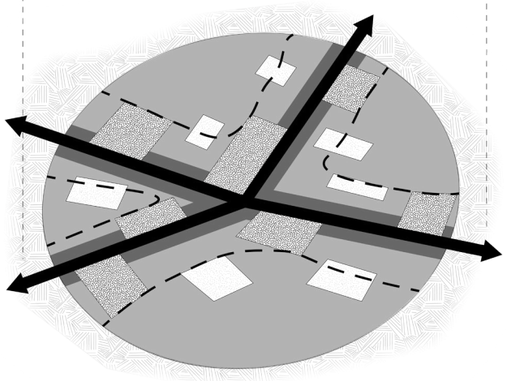


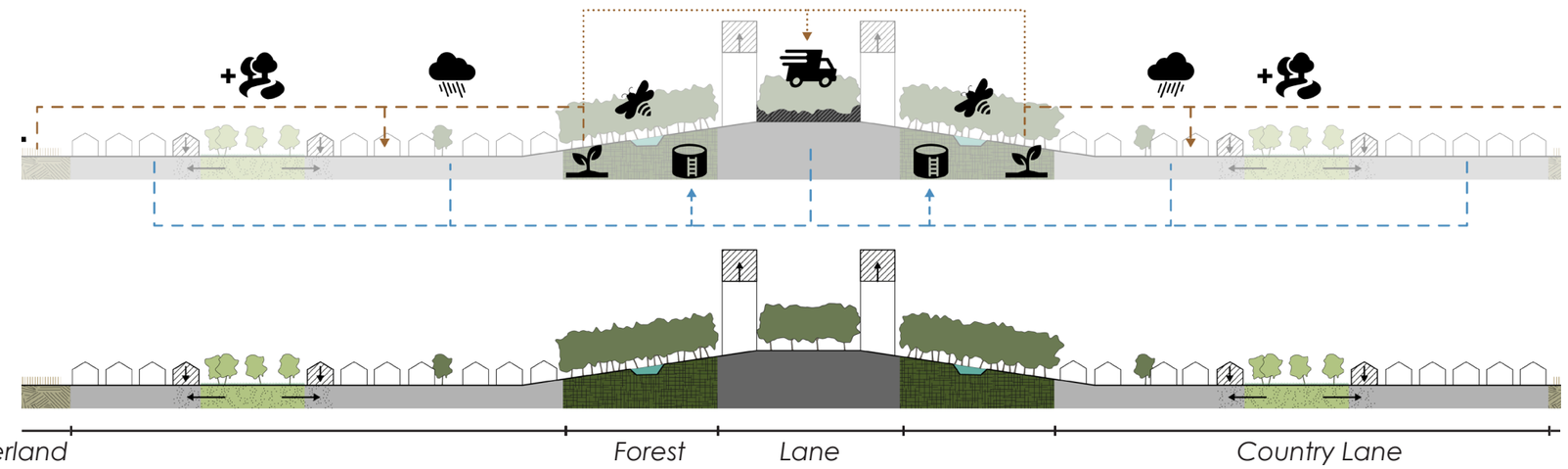


System and Planning



Urban Forest Movement





Main goals:
- healthy living environment with restorative nature in mind,
- spatial framework that responds to current environmental design questions,
- green spaces which can improve mental health by experiencing the beneficial effects of nature,
- increase biodiversity in the city through these green spaces,
- use bodily experience and movement as the main design principles.

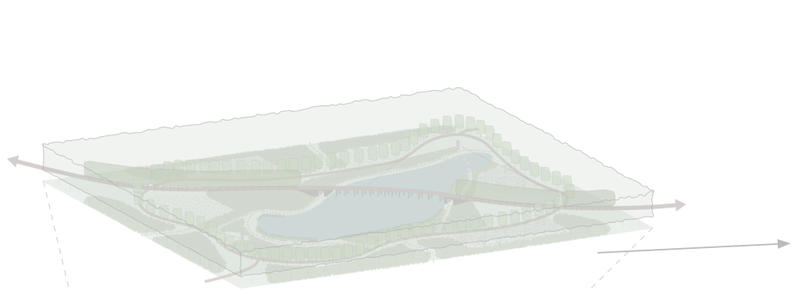
URBAN FOREST MOVEMENT - System and planning

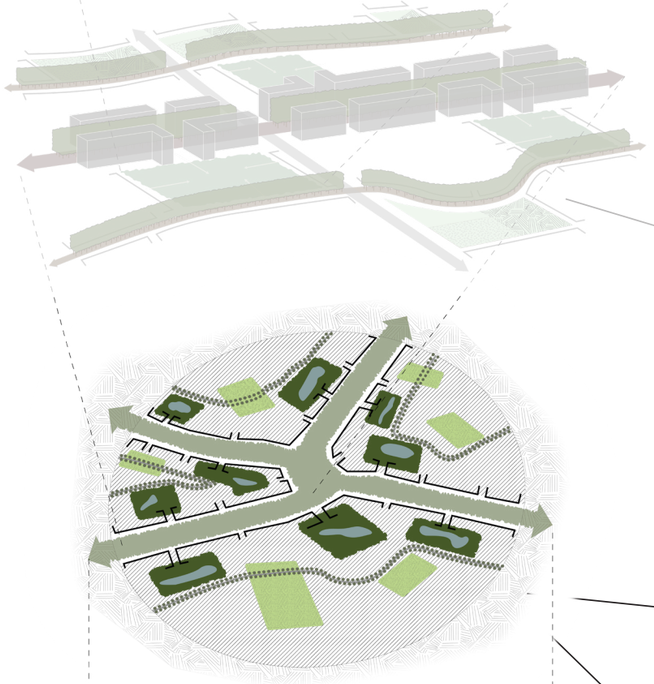
Movements

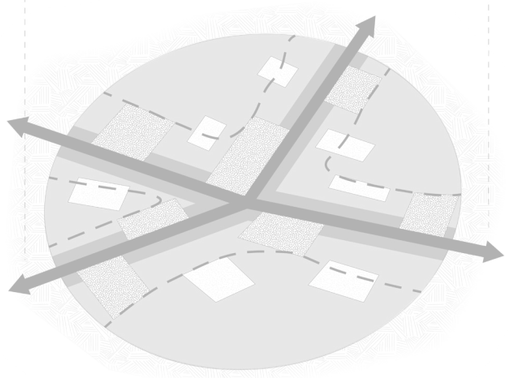
Structures

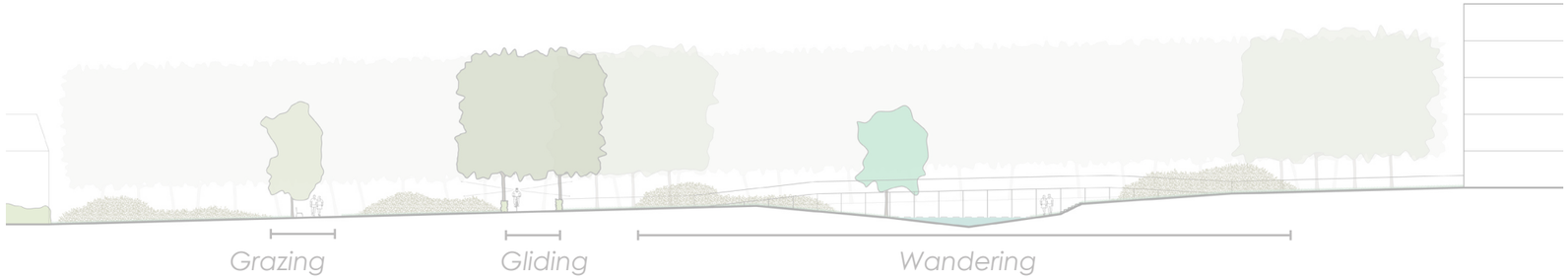
System and Planning

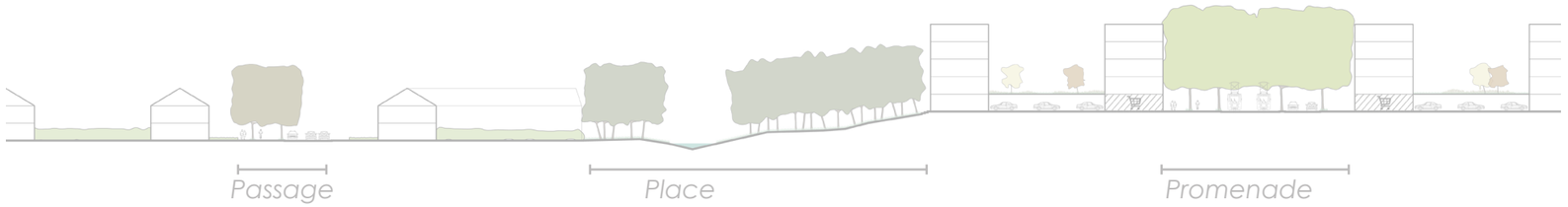
Urban Forest Movement

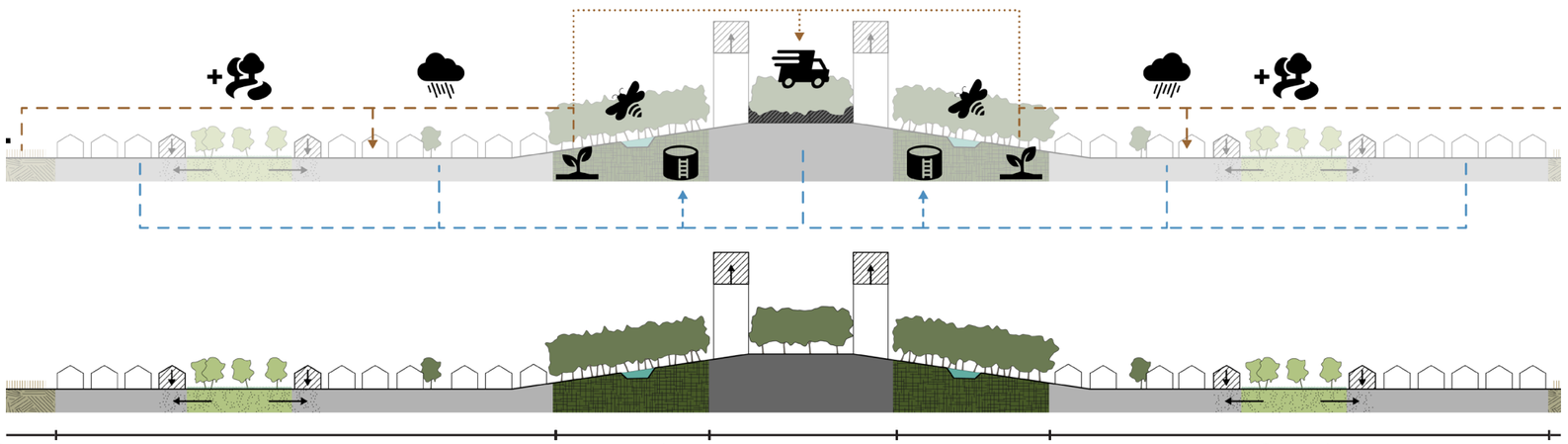












Hinterland

Forest
- *Water storage*
- *Food production*
- *Foresting parks*
- *Connect leisure and nature*
- *Increase biodiversity*

Lane
- *Transport flow*
- *Collecting food/waste/produce*
- *Densify along infrastructure*
- *Expand city through infrastructure*
- *Increase biodiversity*
- *Connect city to landscape*

Country Lane
- *Food flow*
- *Greening neighbourhoods*
- *Connect and add Leisure areas*
- *Transition park and neighbourhood*
- *Increase biodiversity*

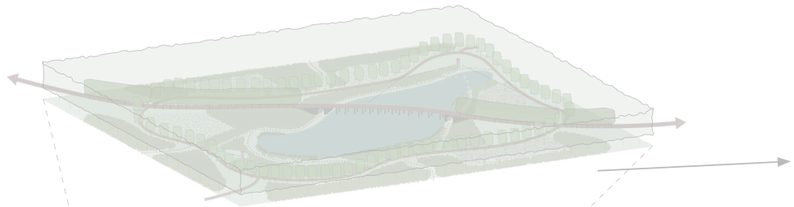
URBAN FOREST MOVEMENT - Structures

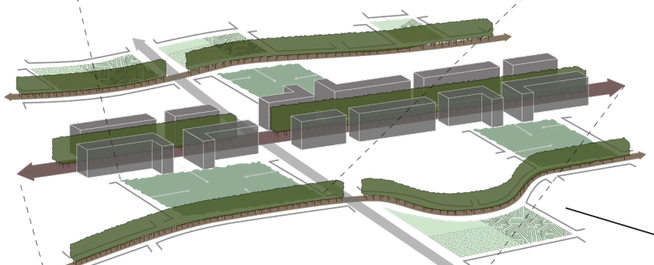
Movements

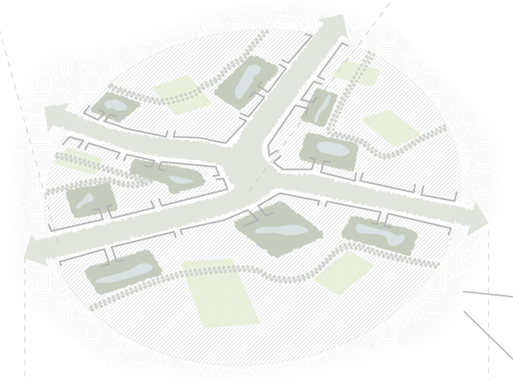
Structures

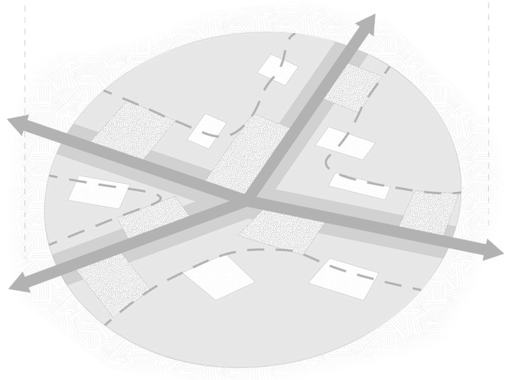
System and Planning

Urban Forest Movement

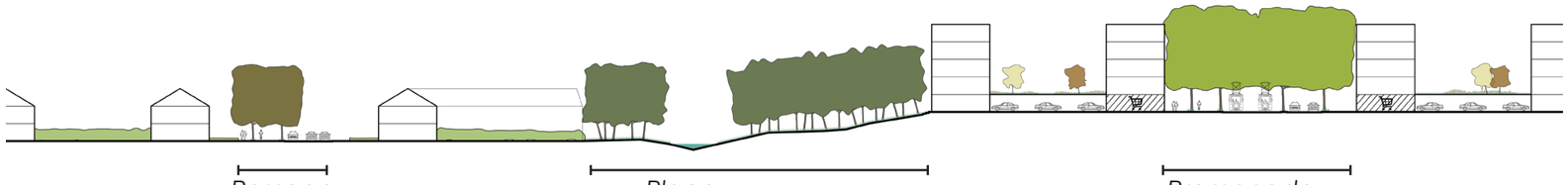












Passage

- *Front gardens*
- *Connecting program*
- *Increase biodiversity*
- *Slow traffic route*

Place

- *Enclosed by buildings*
- *Transition inside - outside*
- *Views in the site*

Promenade

- *Segregated movements*
- *Framing views on place*
- *Emphasis on crossings*
- *Parking in neighbourhoods (courtyards)*
- *Facilities in plinth*



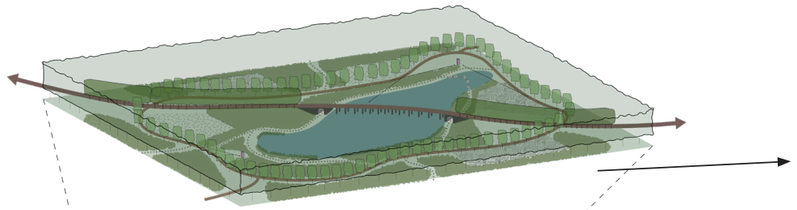
URBAN FOREST MOVEMENT - Movements

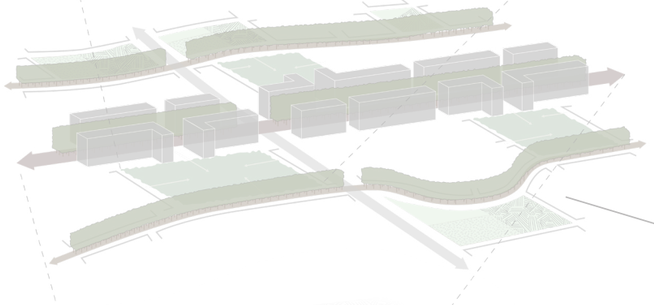
Movements

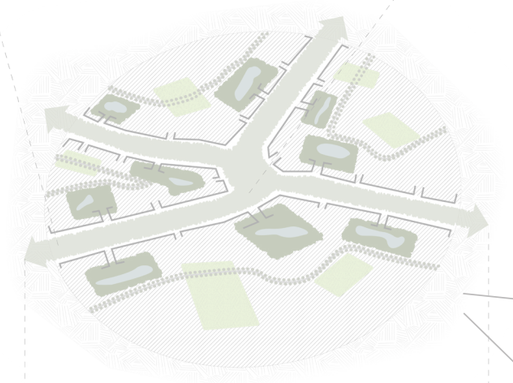
Structures

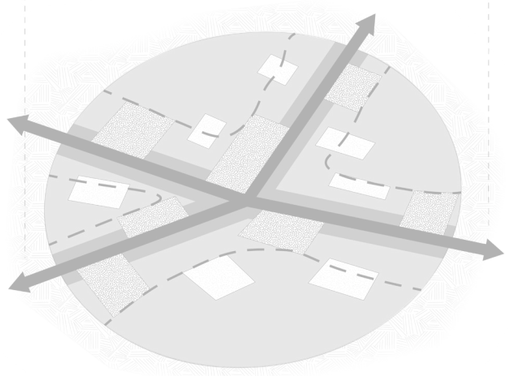
System and Planning

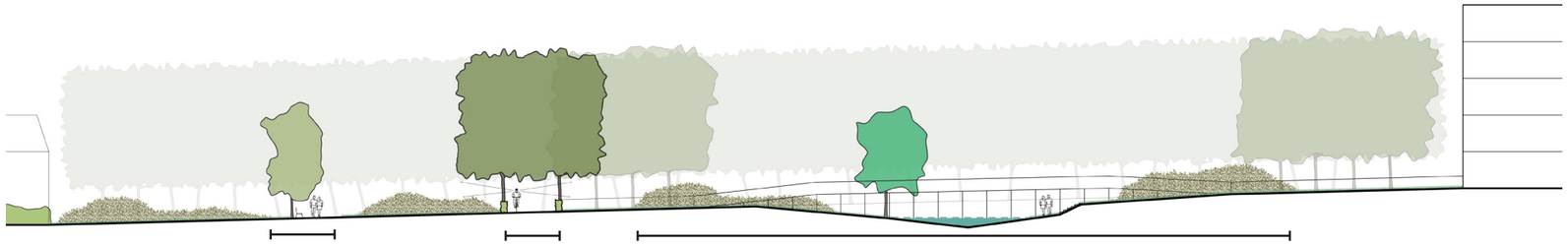
Urban Forest Movement











Grazing

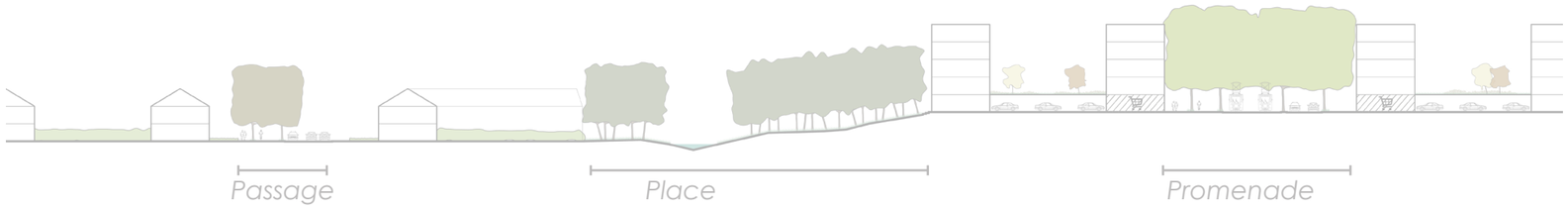
- *Materialisation follows surroundings*
- *Direct route to view*
- *3M wide*
- *Linking program and meeting spaces*

Gliding

- *Pastoral landscape*
- *Levelling landscape*
- *Long views*
- *4M wide*
- *Framing views*

Wandering

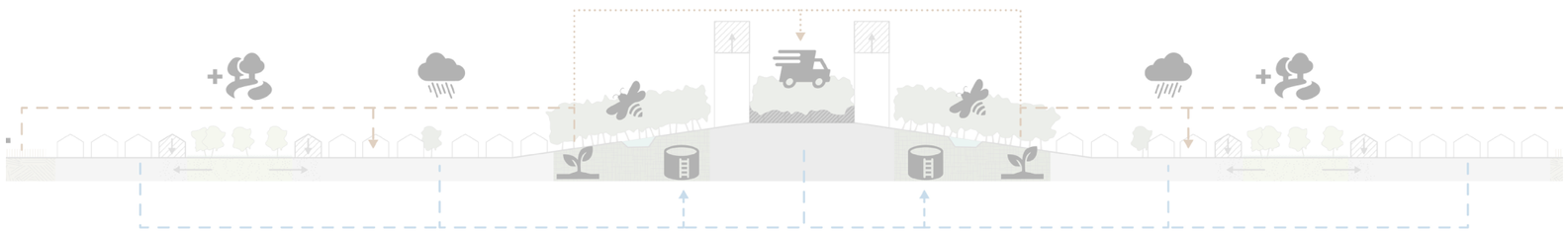
- *No defined path*
- *Kinesthetic and synaesthetic experience*
- *Following lines in the landscape*
- *Indirect routes to views*

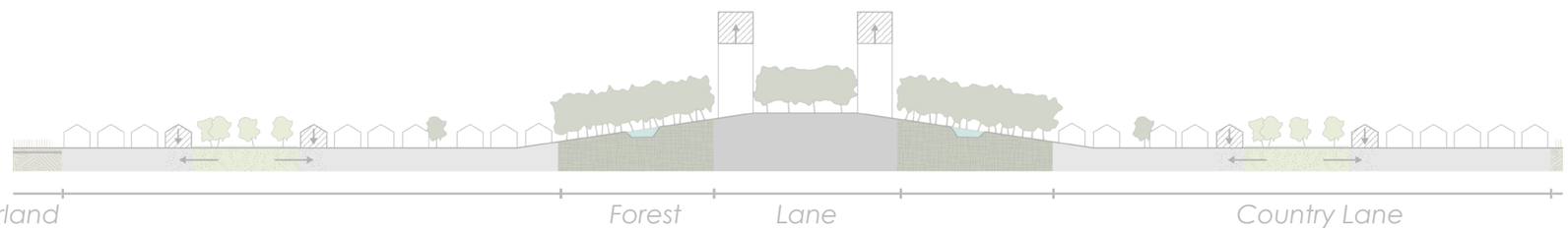


Passage

Place

Promenade





Hinterland

Forest

Lane

Country Lane

INTRODUCTION
FASCINATION, PROBLEM STATEMENT, RESEARCH QUESTION, METHODOLOGY

RESEARCH
HISTORIC OVERVIEW: CREATING HEALTHY LIVING ENVIRONMENTS, MOVEMENT AS RESTORATIVE GREEN STRUCTURE

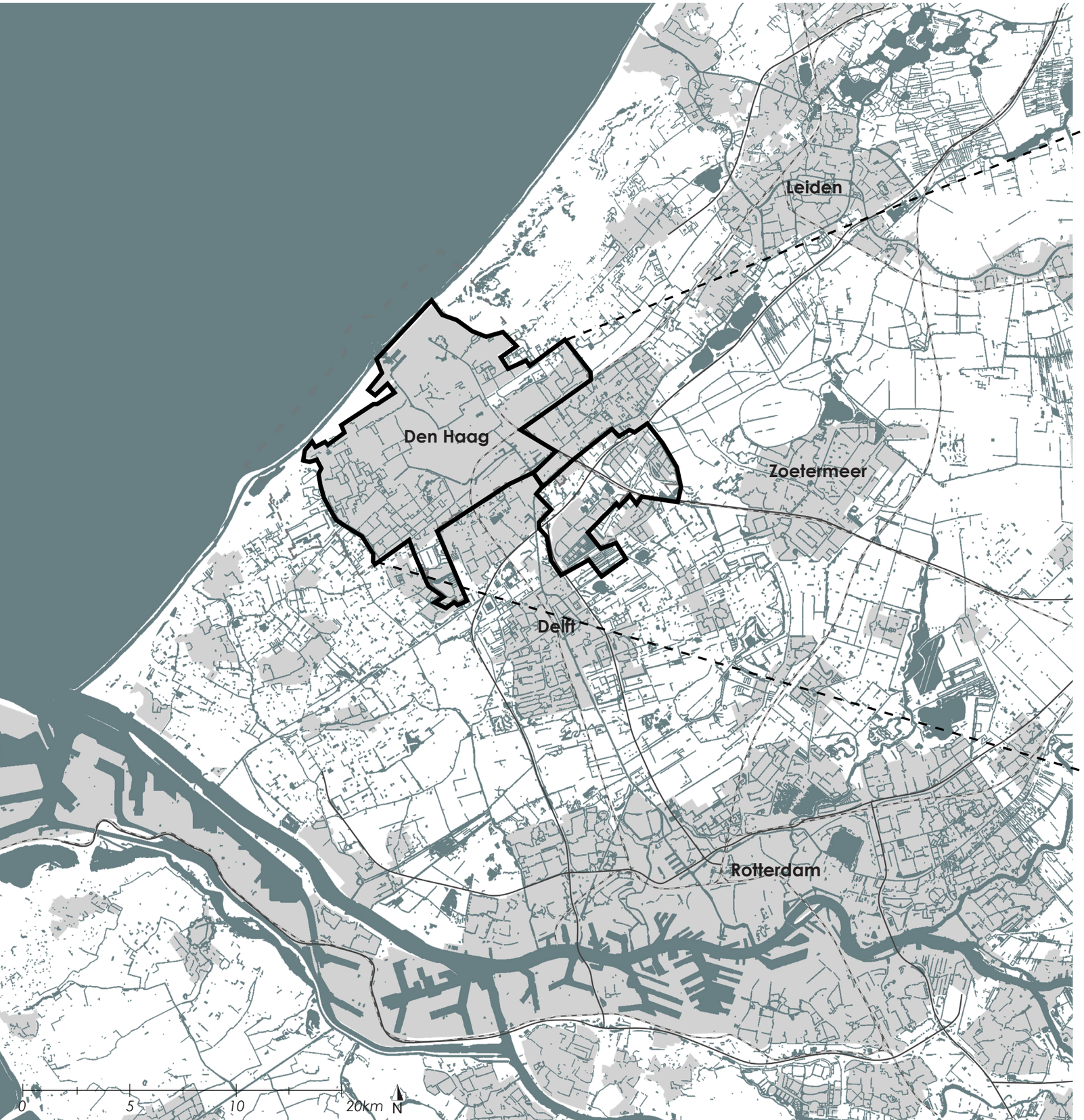
URBAN FOREST MOVEMENT

ANALYSIS AND DESIGN
DEN HAAG AND REGION, VISION DEN HAAG
LINE: LOOSDUINSEWEG, MASTERPLAN LOOSDUINSEWEG
CEMETERY OUD AND NIEUW EYKENDUYNEN, ZOOM IN DESIGN: EYKENDUINEN PARK

CONCLUSION AND REFLECTION

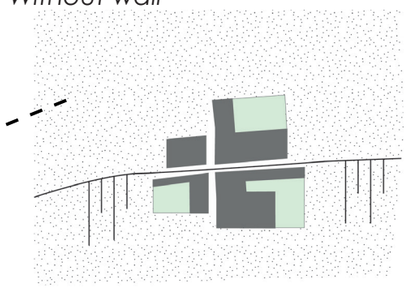
ANALYSIS - DEN HAAG AND REGION

City development and connection to the landscape - Why Den Haag?

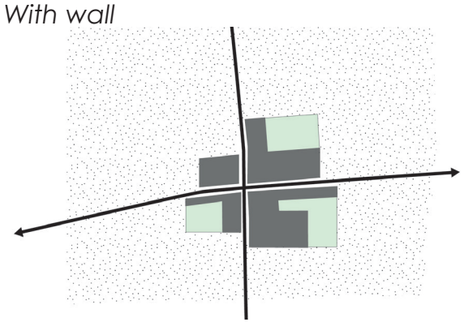


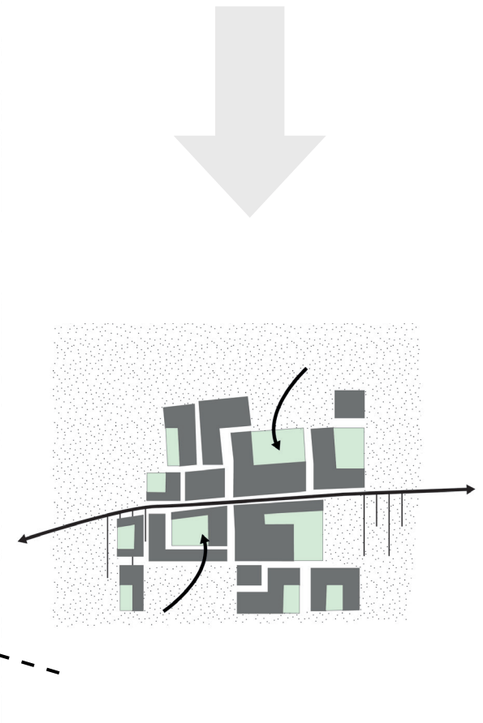
City growth development

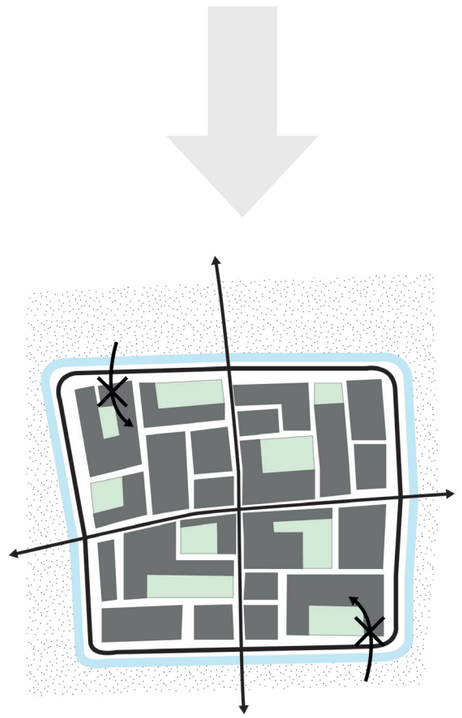
Without wall



With wall

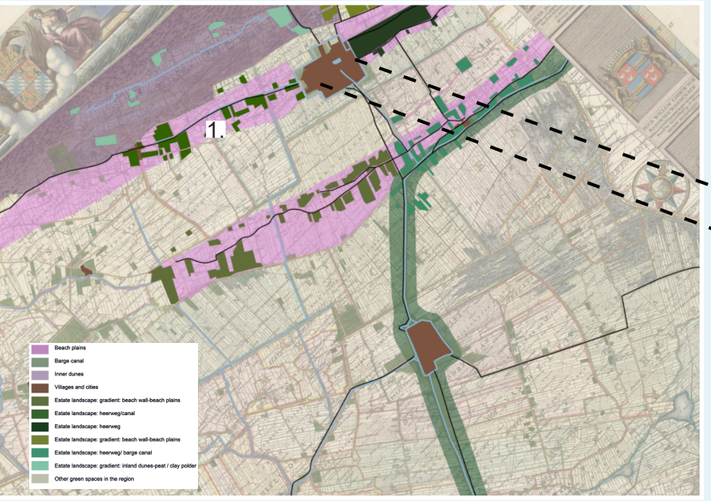




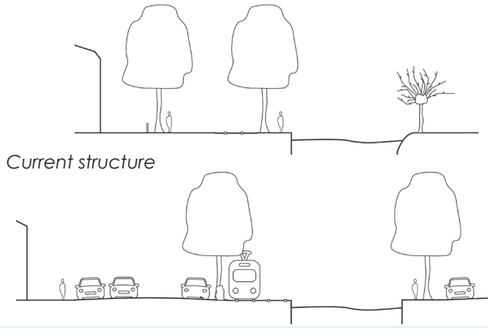


ANALYSIS - DEN HAAG AND REGION

Green structure Den Haag and surroundings

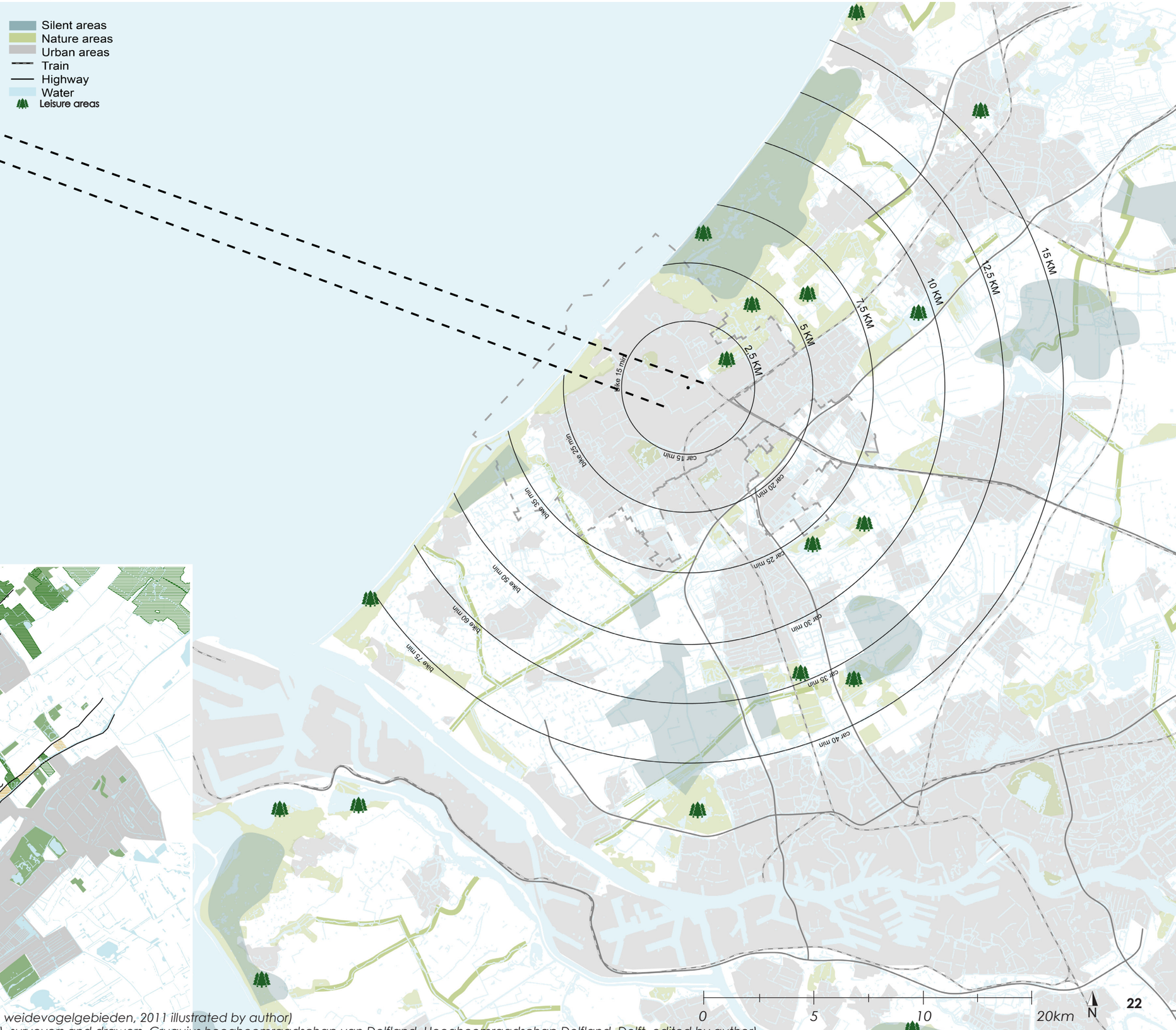


1. *Historic structure*





(Source: Ecologische hoofdstructuur en belangrijke weidevogelgebieden, 2011 illustrated by author)



(Source: Cruquius Cruquius, N., & Cruquius, J. (1712). surveyors and drawers. Cruquius hoogheemraadschap van Delfland. Hoogheemraadschap Delfland, Delft. edited by author)

ANALYSIS - DEN HAAG AND REGION

Conclusion Den Haag

- Beach
- Dunes
- Green spaces
- Cemetry, allotment garden, sport
- Historic lines
- Altered - unclear historic lines
- Missing link
- No vertical connection in city
- Lacking green areas

CHOSEN LINE

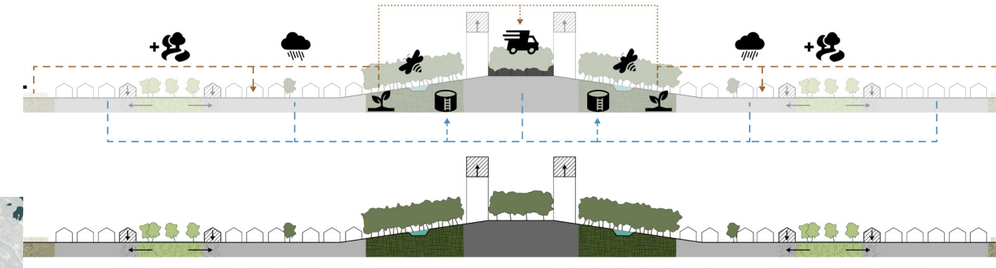
Densification needed before 2040 to solve the housing demand

Design brief:
- Historical lines as main structures of the city
- No defined ending of historical lines
- Missing link north and south
- No connection between secondary green spaces
- Housing demand
- Lacking green areas along historical lines
- Reduce water nuisance
- Reduce heat island effect

0 1,5 3km N

DESIGN - VISION DEN HAAG

Applied Urban Forest Movement - System and Planning



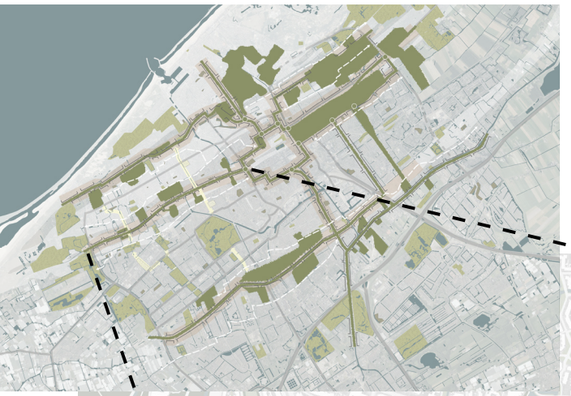


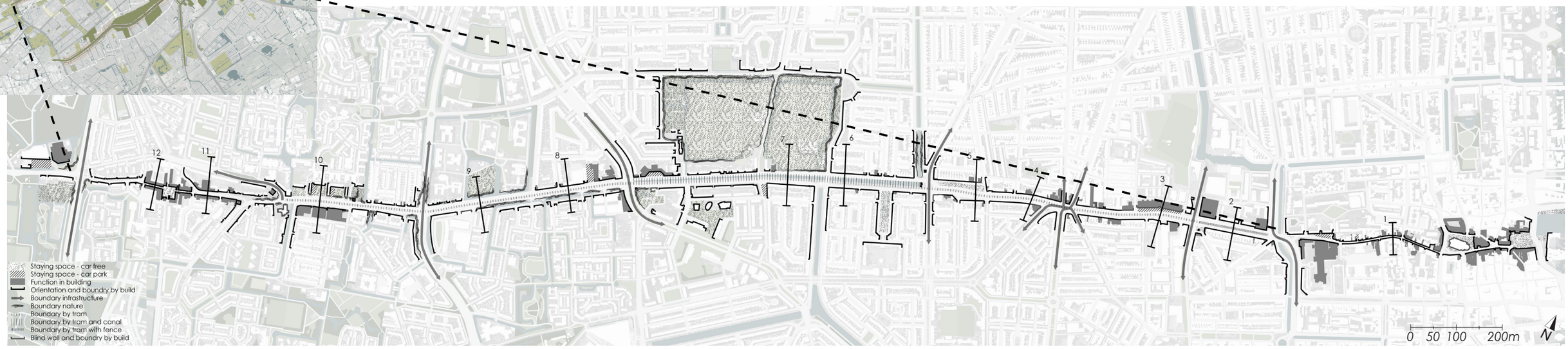


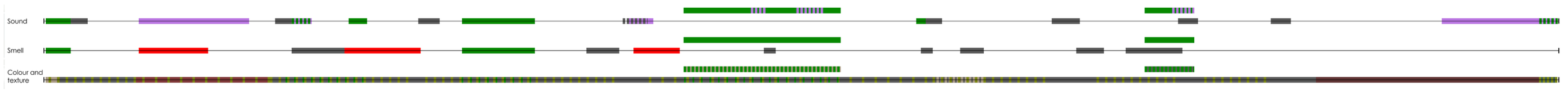
Crossing of Lane structures
Forest
Secundary green space
Courtyards
Lane
Country lane
Infrastructue
Water/sea
New green connection

ANALYSIS - LINE: LOOSDUINSEWEG

Spatial structure and experience along the structure







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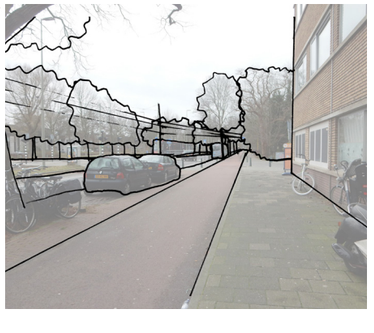
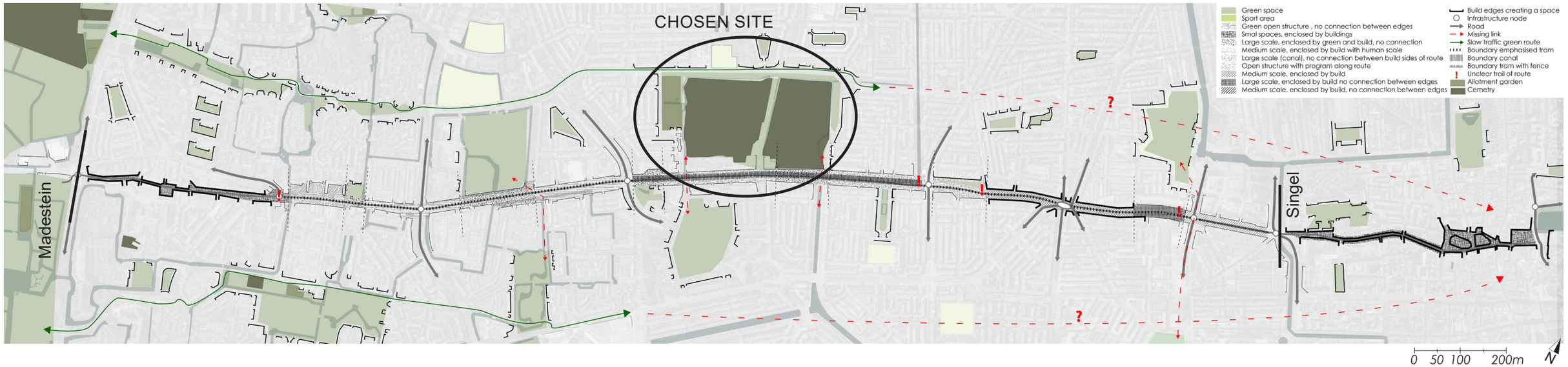


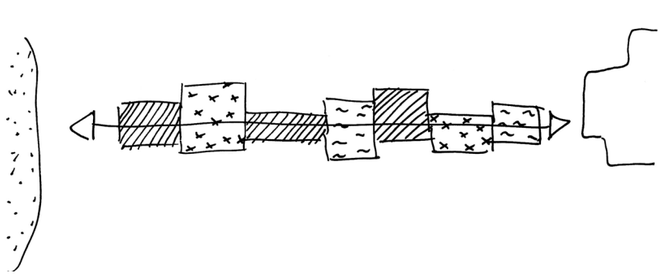
10


12

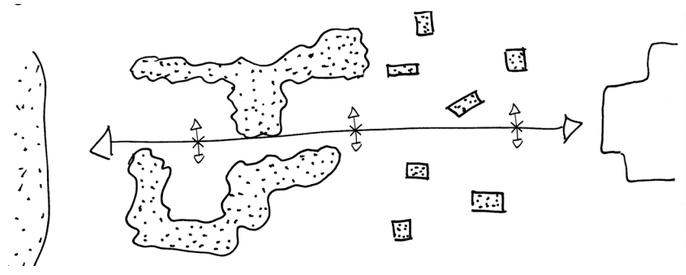

ANALYSIS - LINE: LOOSDUINSEWEG

Conclusion Loosduinseweg

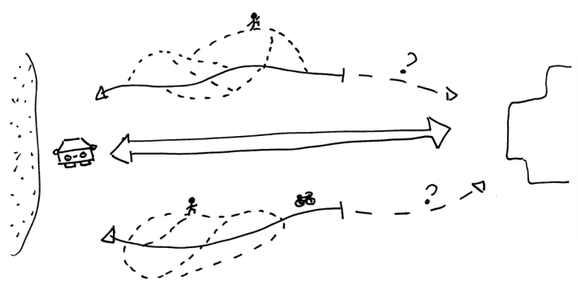




Patchwork along the route



Two different green structures along the route



Different speeds of movement related to structures, missing links

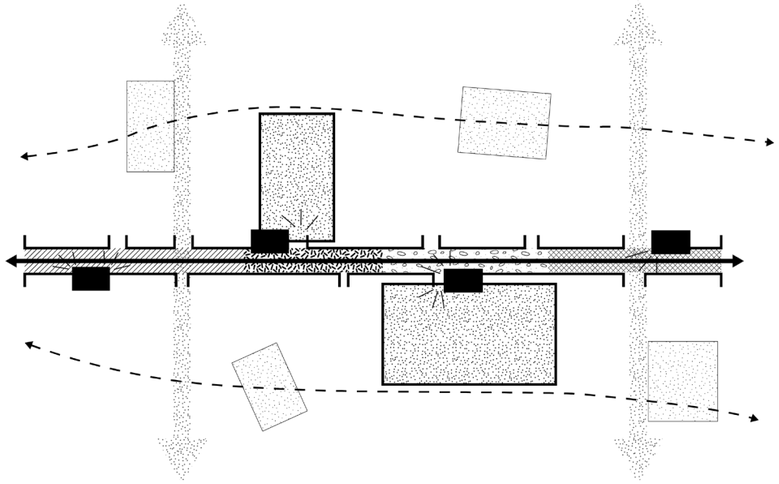


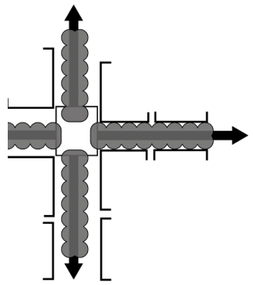
Confusing intersections for ongoing route

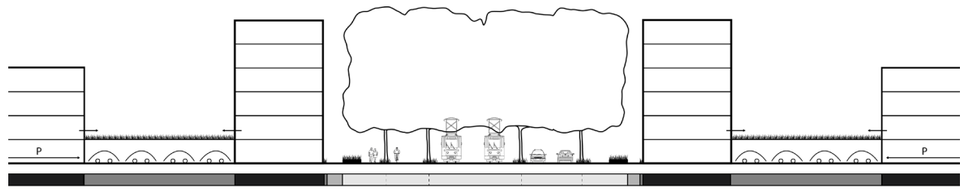
Design brief:
- Loosduinseweg is a patchwork
- Secondary route stops before reaching the city centre
- Two different green structures along the route
- No defined route for types of movement
- Cemetery could offer a new green space.
- Lacking connection between north and south
- Green spaces enclosed by boundaries, not accessible from route
- Boundaries on route such as tram, canal
- Lacking landmarks along the second part of the walk (west) leading to perceived long travel

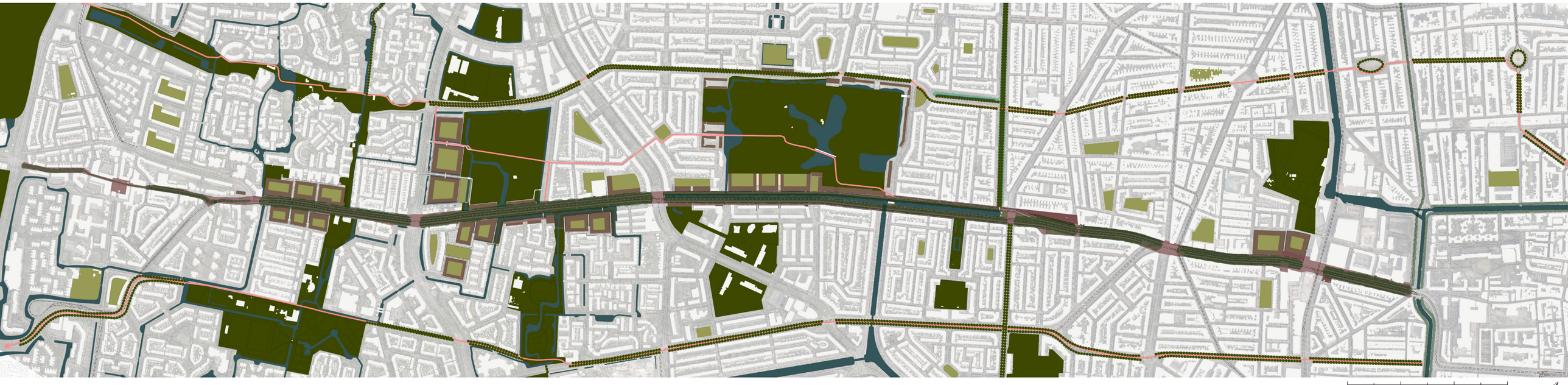
DESIGN - MASTERPLAN LOOSDUINSEWEG

Applied Urban Forest Movement - Structures



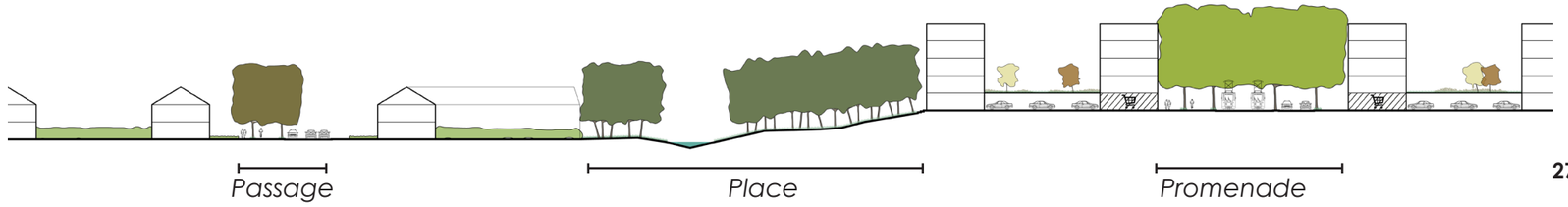






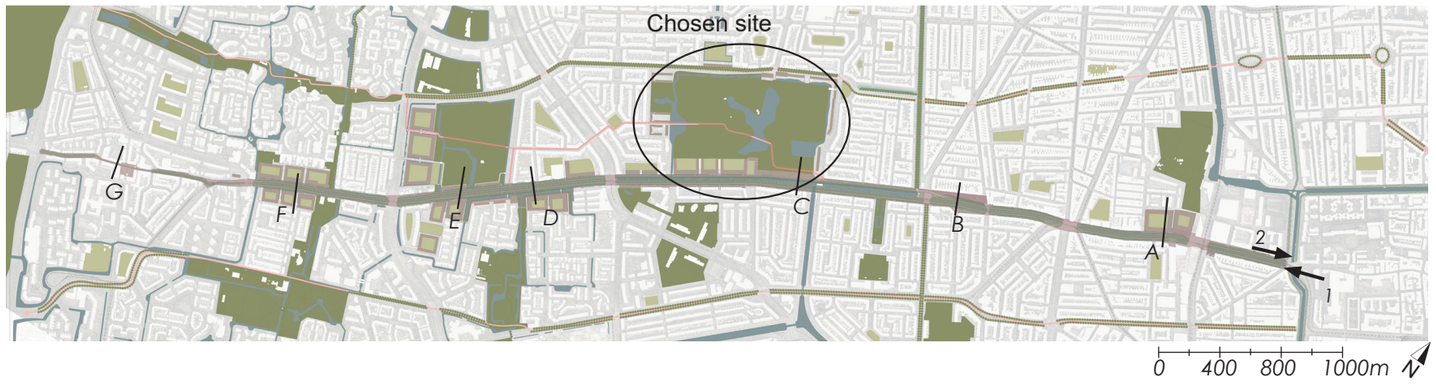
- *Forests*
- *Courtyards*
- *Water*
- *Passage*
- *New buildings*
- *Square*
- *Promenade*
- *Crossing*

0 400 800 1000m



DESIGN - MASTERPLAN LOOSDUINSEWEG

Masterplan and sectional design





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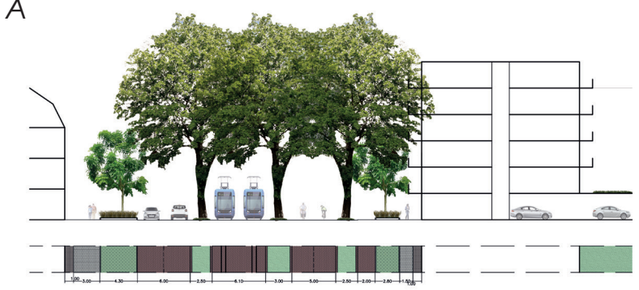
Platanus × hispanica

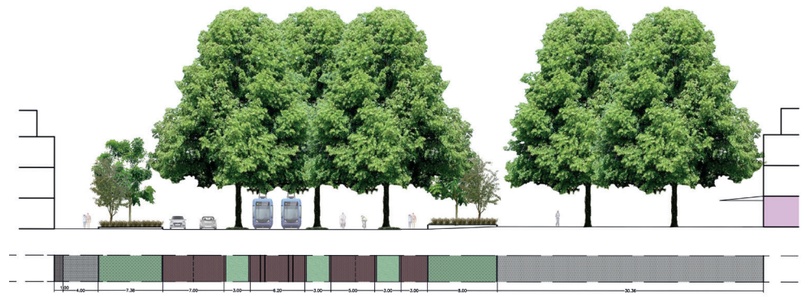
A



Styphnolobium japonicum
Pyrus calleryana 'Chanticleer'

Tilia × europaea

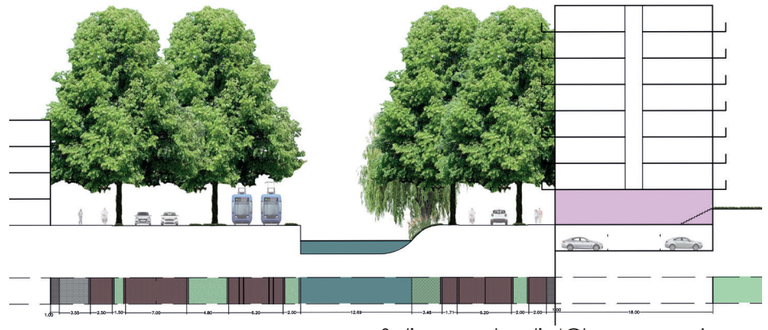
B



Styphnolobium japonicum
Pyrus calleryana 'Chanticleer'

Tilia × europaea

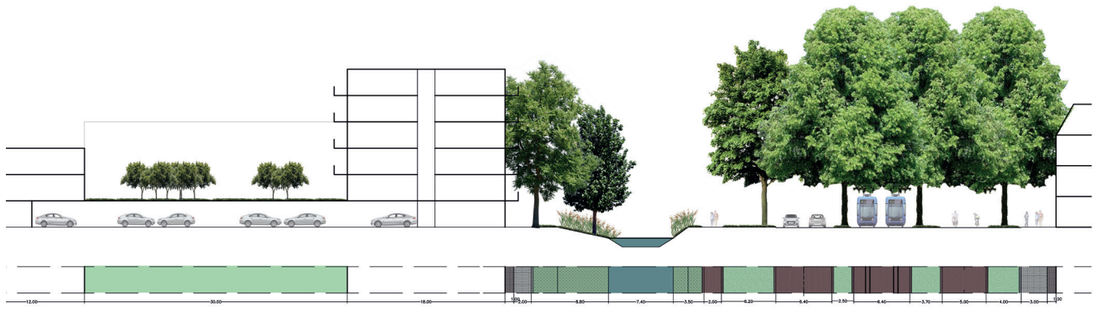
C



Salix ×sepulcralis 'Chrysocoma'

Tilia × europaea

D



Tilia × europaea

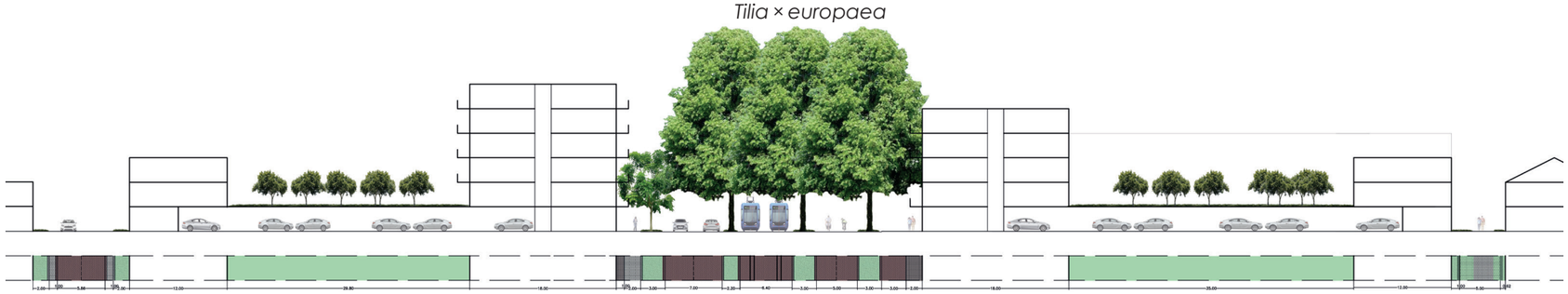
E



Styphnolobium japonicum
Pyrus calleryana 'Chanticleer'

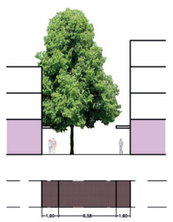
Tilia × europaea

F



Tilia × europaea

G



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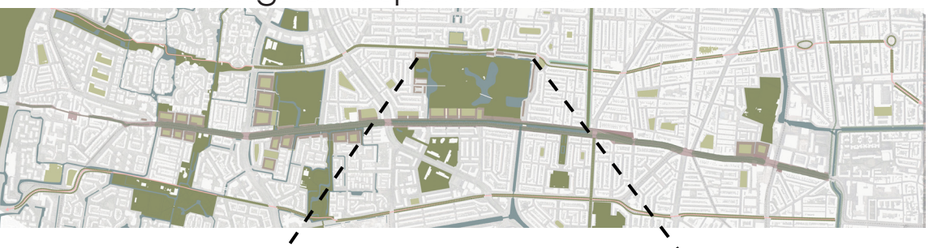
ANALYSIS SITE: CEMETERY OUD AND NIEUW EYKENDUYNEN

Surroundings and spatial structure







Housing demand



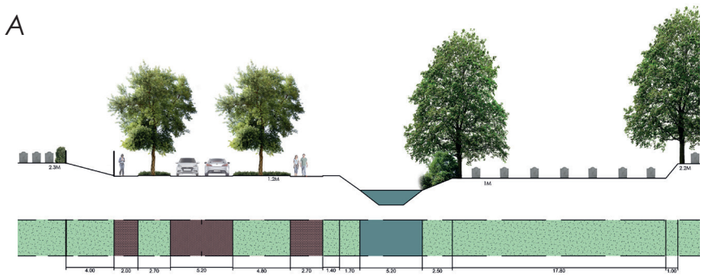
Water storage demand

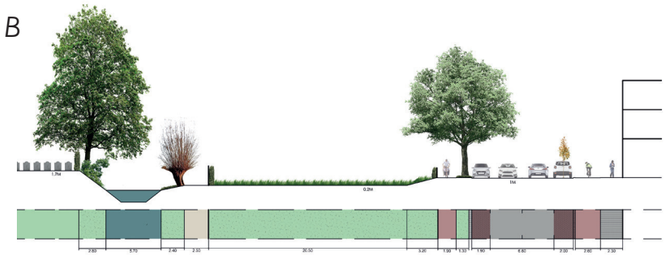


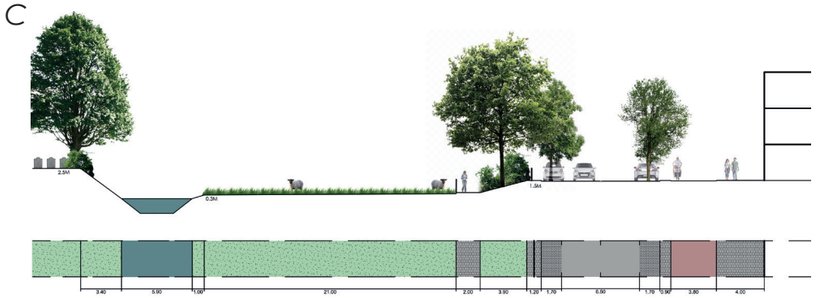
Green space demand

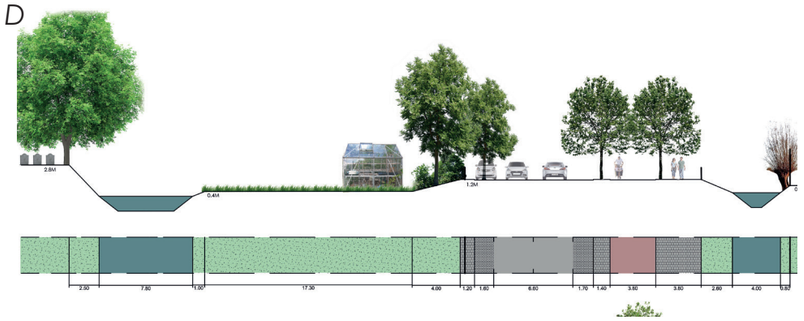


Urban farm demand

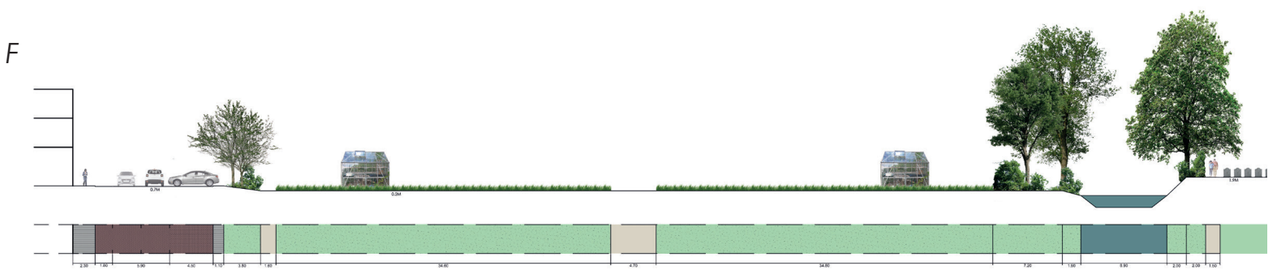


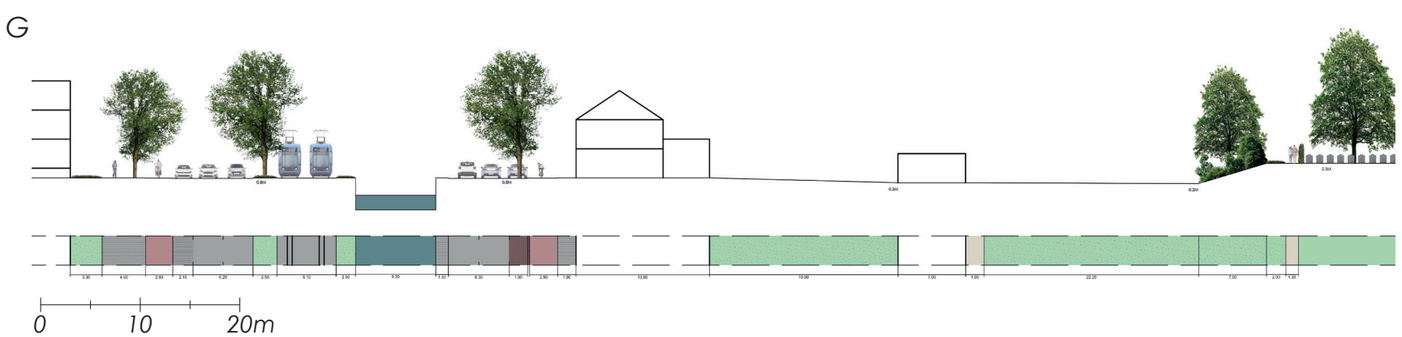












ANALYSIS SITE: CEMETERY OUD AND NIEUW EYKENDUYNEN

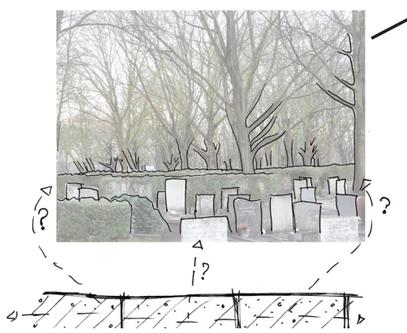
Experience of the site - atmospheres

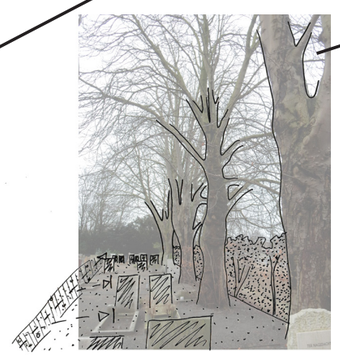




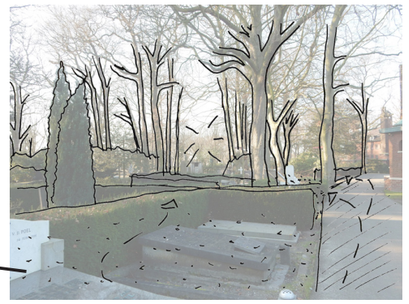






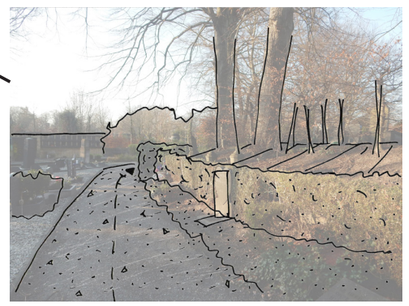






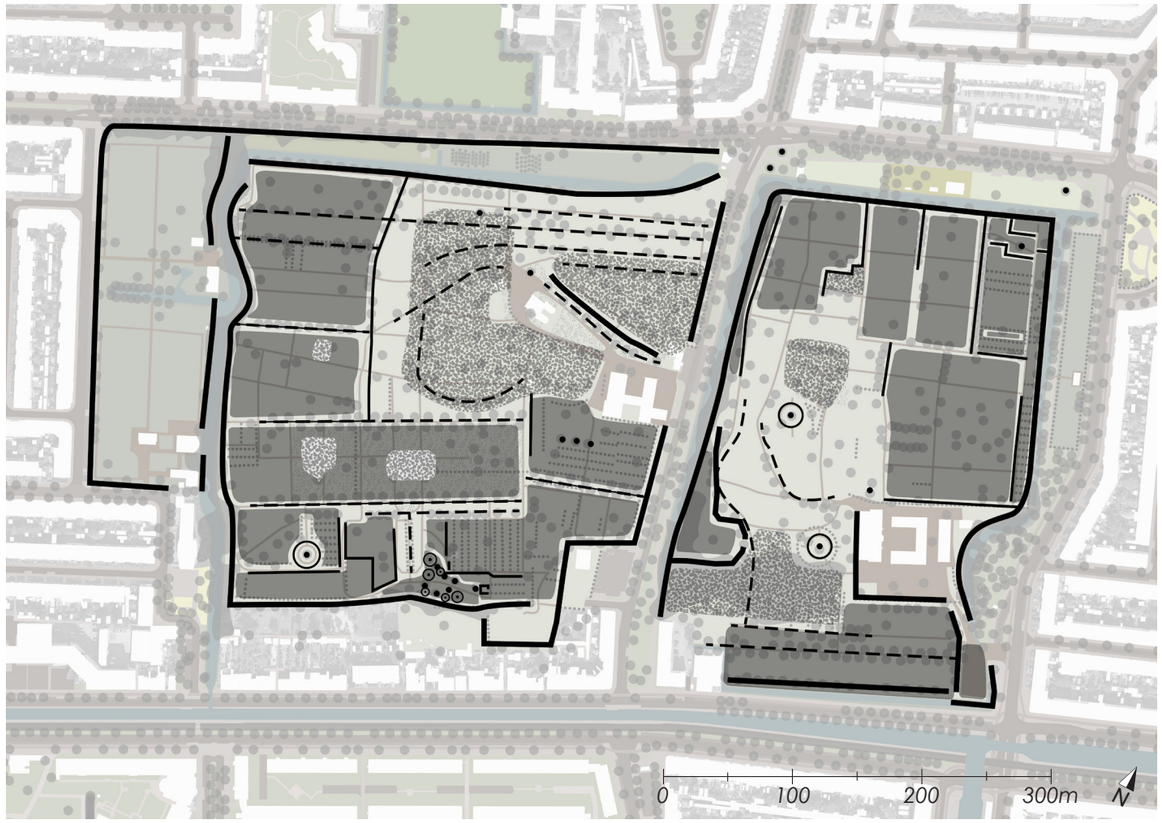




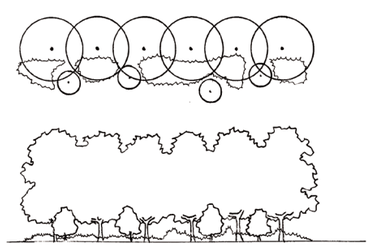


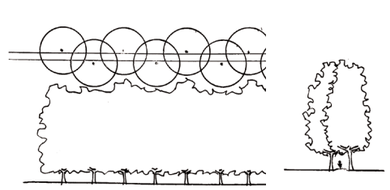
ANALYSIS SITE: CEMETERY OUD AND NIEUW EYKENDUYNEN

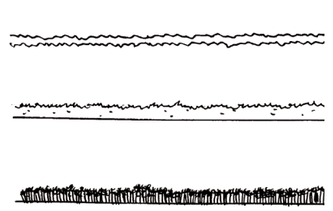
Vegetation on the site - planting principles - composition

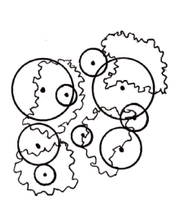


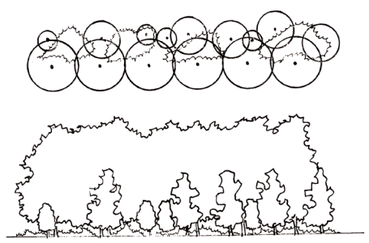
Tree roof
Room by structures
Hedges
Wall by vegetation
Tree line
Solitary tree
Tree structure

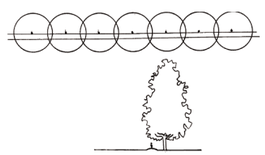


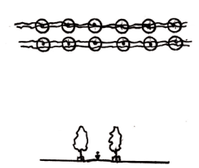


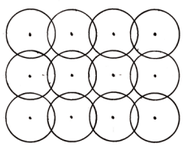


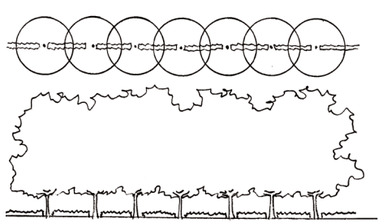


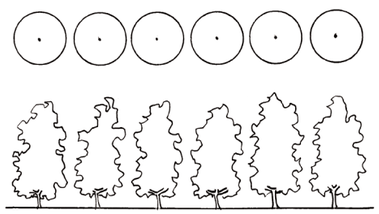
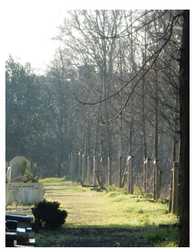
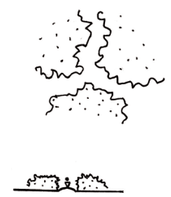


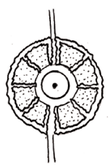






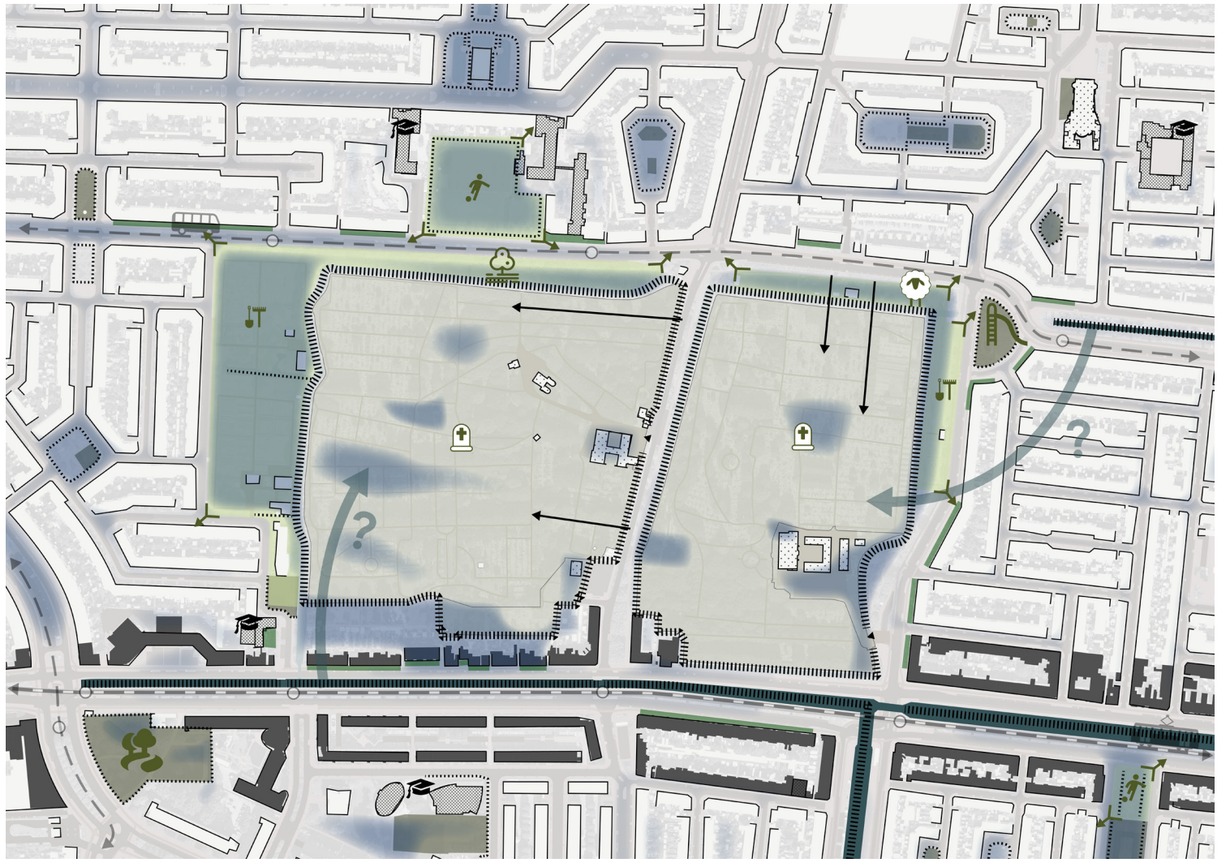





ANALYSIS SITE: CEMETERY OUD AND NIEUW EYKENDUYNEN

Conclusion Cemetery Oud and Nieuw Eykenduynen



- *Cemetery*
- *Water nuisance*
- *Allotment garden*
- *Orchard*
- *Demand for expanding*
- *Petting zoo / urban farm*
- *Playground*
- *Sportfield*
- *Sightline*
- *Front garden or Delftse stoep*
- *Church*
- *School*

Design brief:
- Demand for leisure and meeting areas
- Reduce boundaries
- Housing demand
- Create water storage to solve the water nuisance during heavy rains
- Create sightlines into the site

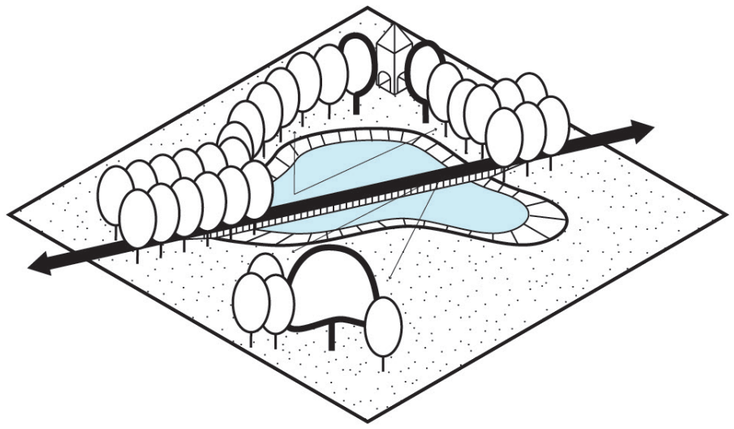


- *Tree roof*
- *Little vegetation, senses in room*
- *Room with vegetation, senses*
- *Tree roof with little senses*
- *High sensorial experience*
- *Hedges*
- *Boundary*
- *Tree line*
- *Fenced boundary*
- *View*
- *Tree structure*
- *Solitary tree*

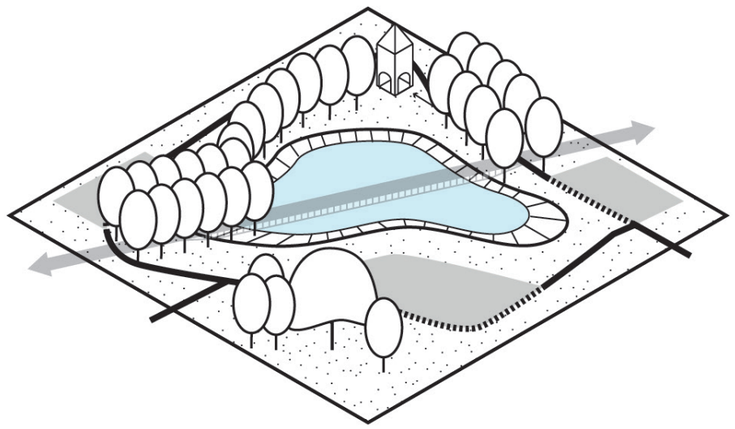
Design brief:
- Improve accessibility park
- Alternate spaces for interesting experiences
- Use current structure in the design
- Water storage has the added bonus of guiding movement
- Marked entrances
- Add program for the surrounding residents

DESIGN - ZOOMED IN SITE DESIGN

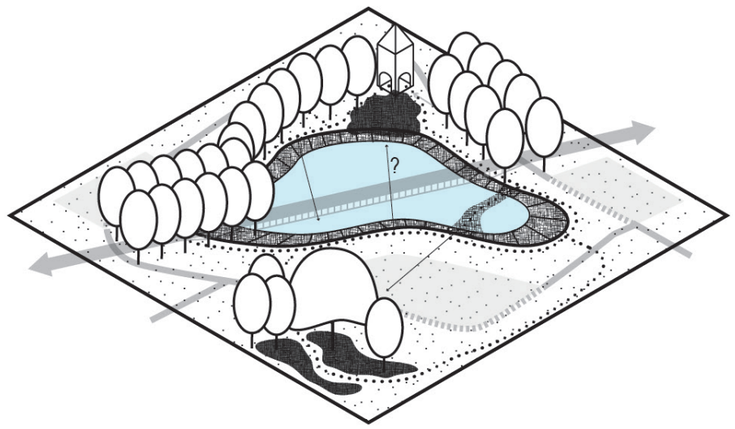
Applied Urban Forest Movement - Movements



Gliding



Grazing

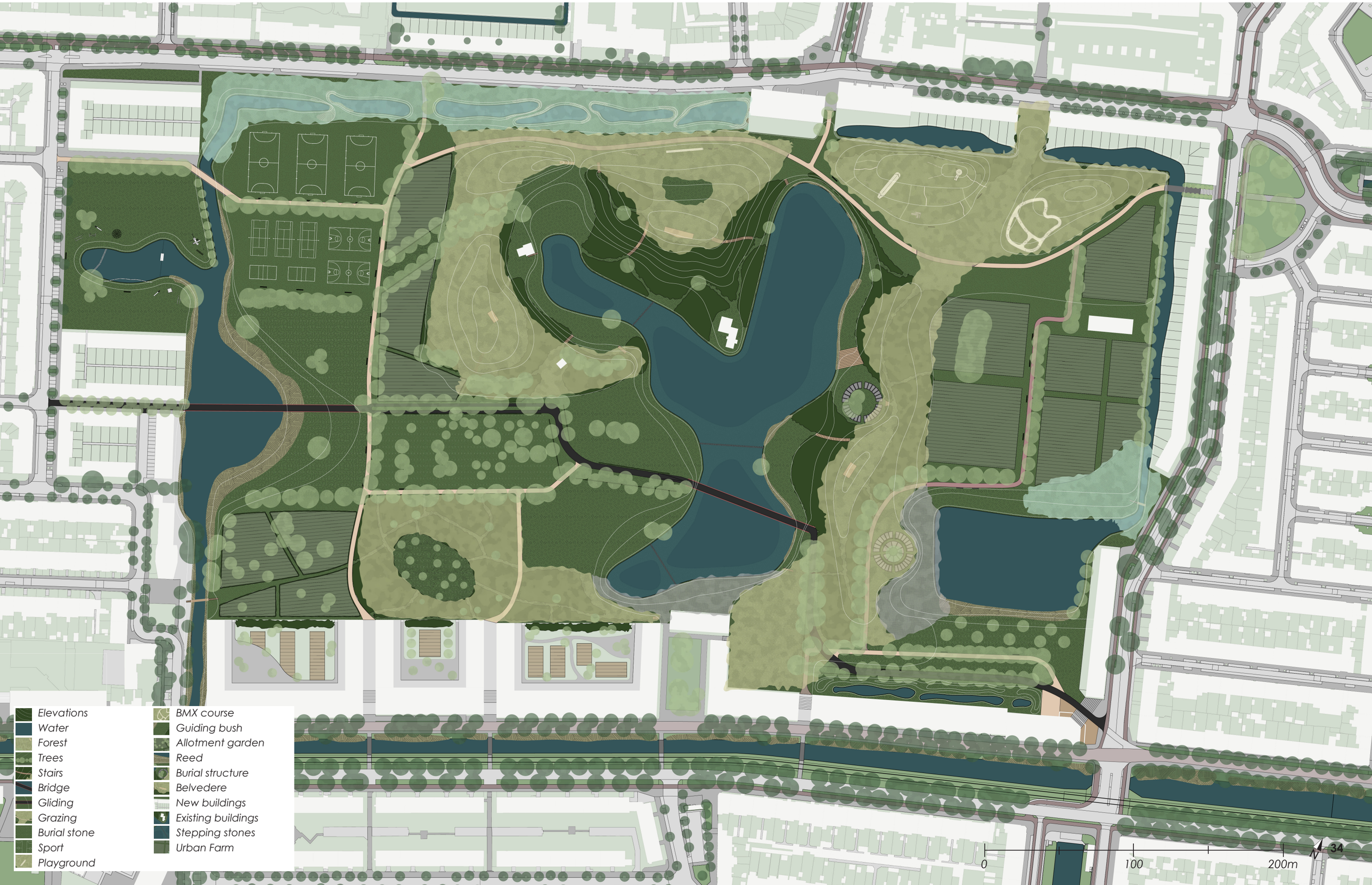


Wandering



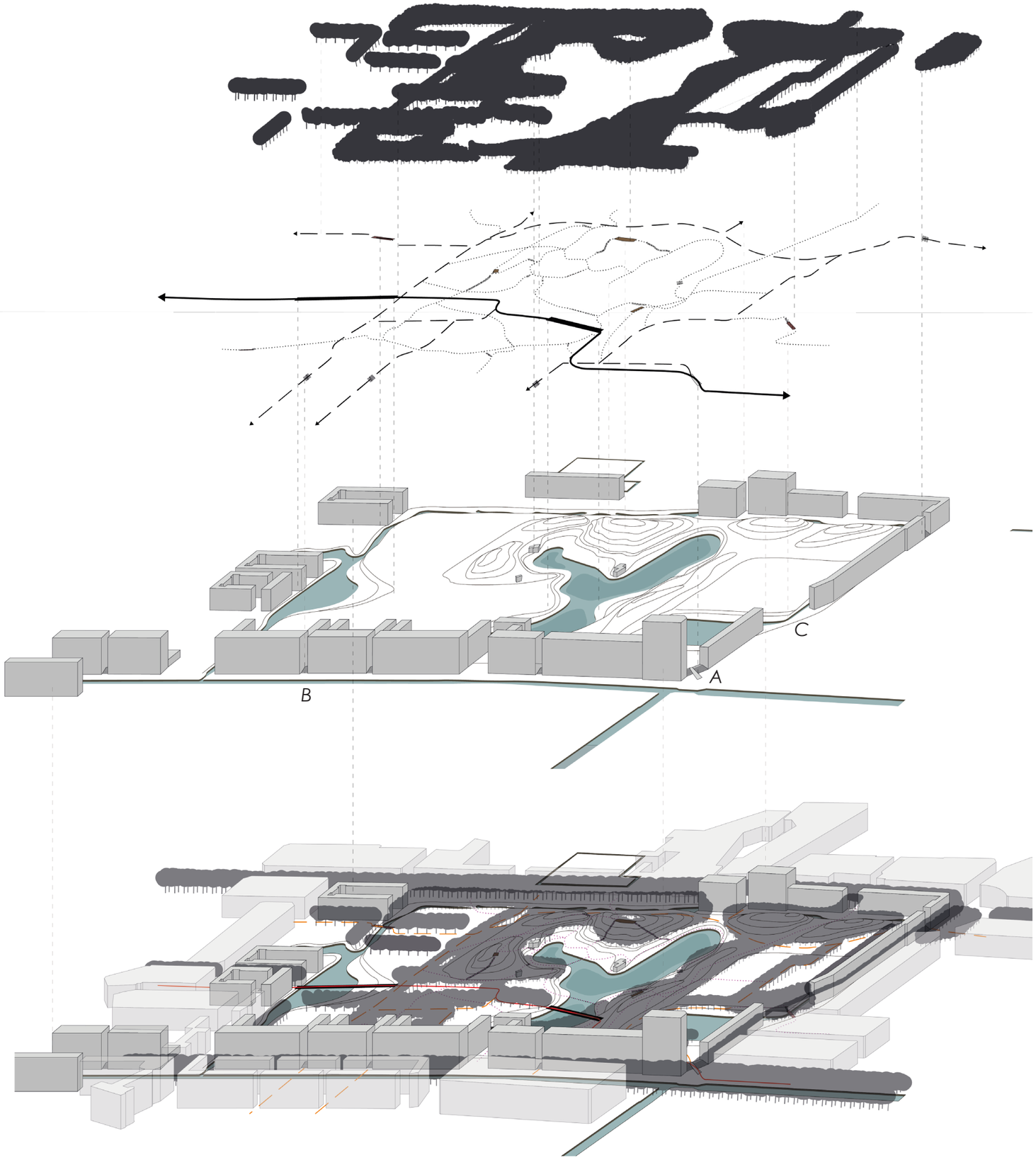
DESIGN - ZOOMED IN SITE DESIGN

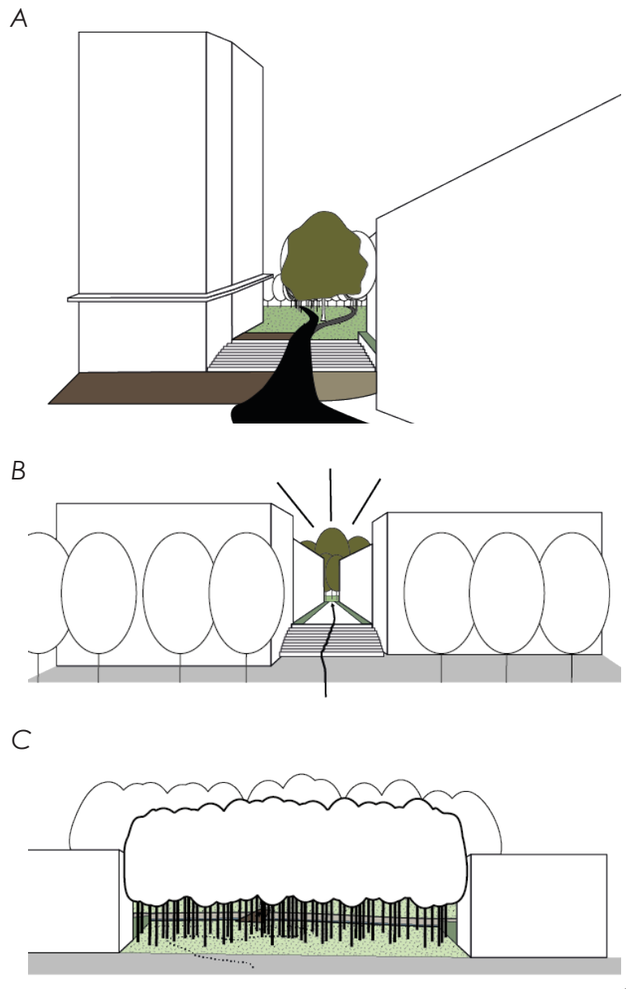
Eykenduinen Park



DESIGN - ZOOMED IN SITE DESIGN

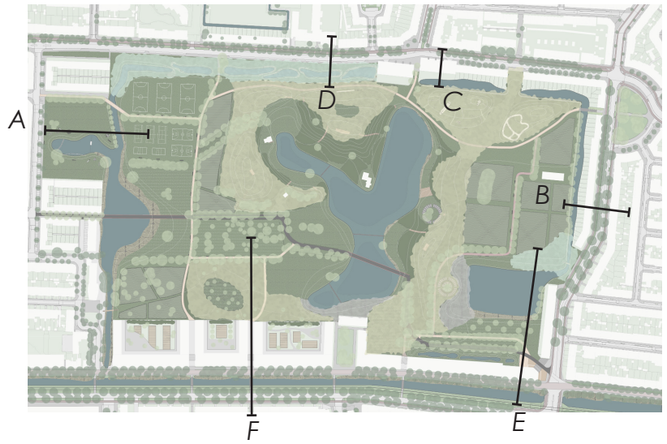
Connection park and surroundings (exaggerated vertical scale) - entrances





DESIGN - ZOOMED IN SITE DESIGN

Transition outside - inside the park - edges



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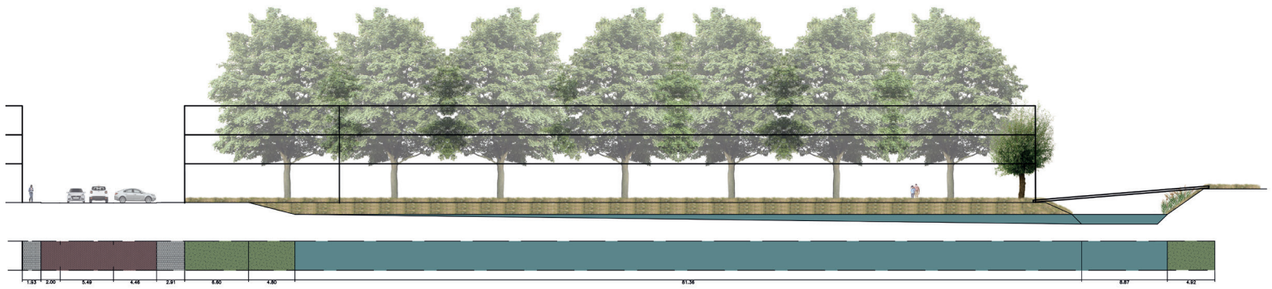

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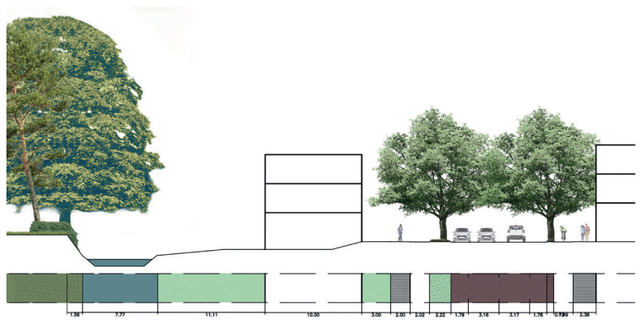

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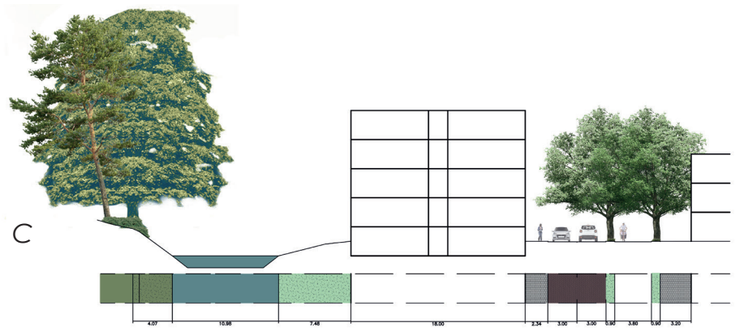

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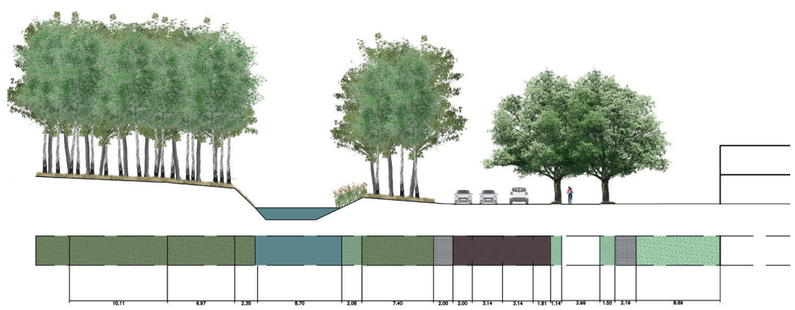

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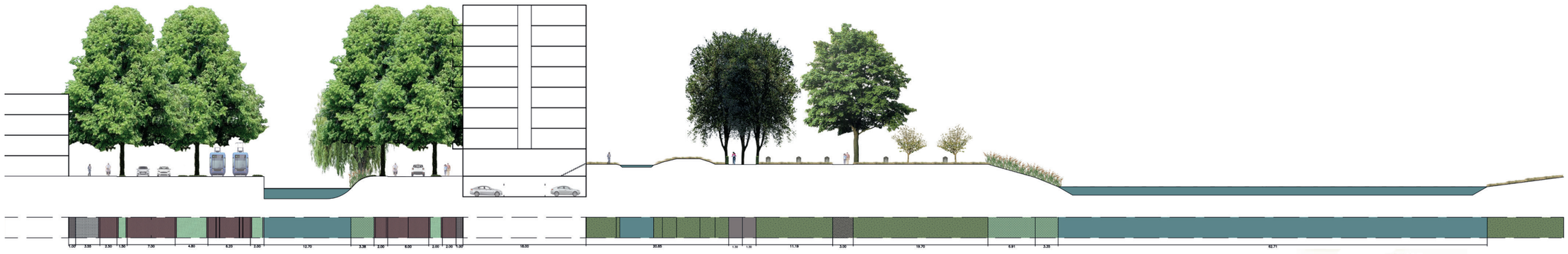

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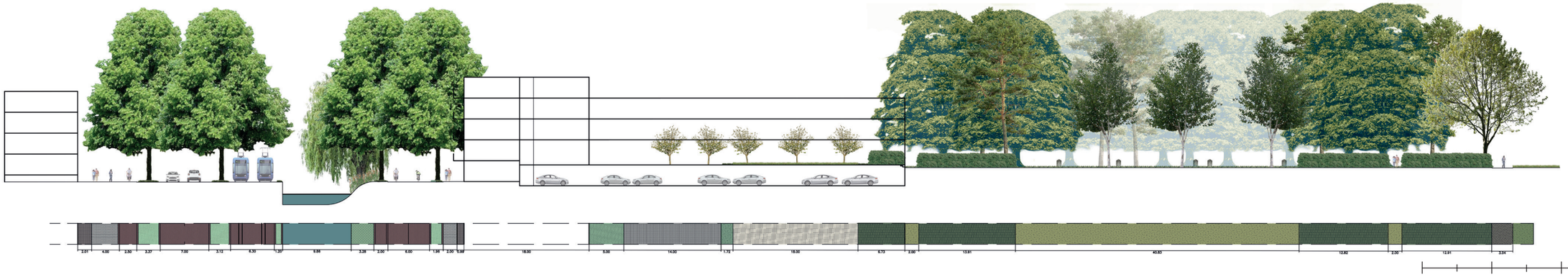
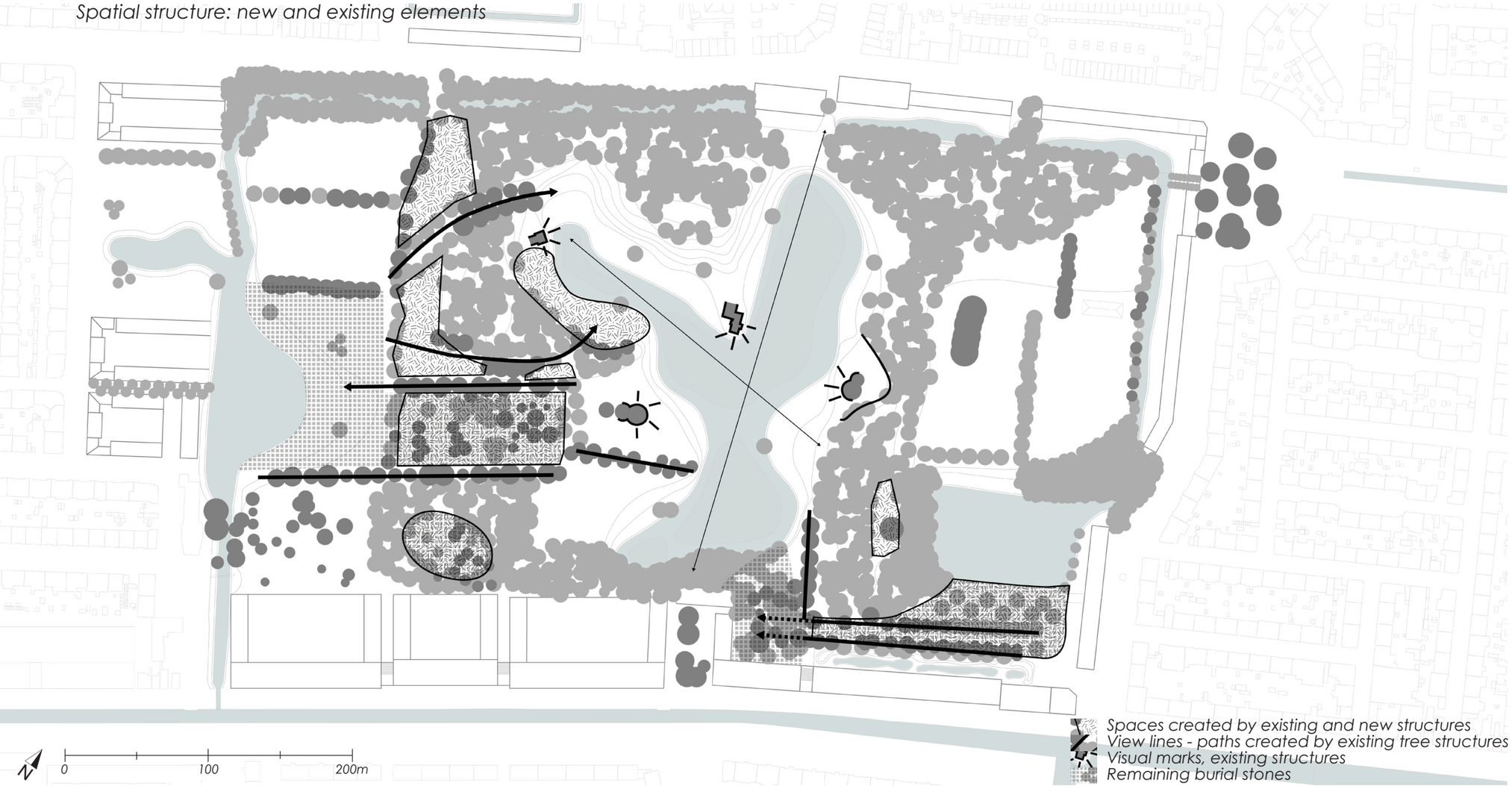


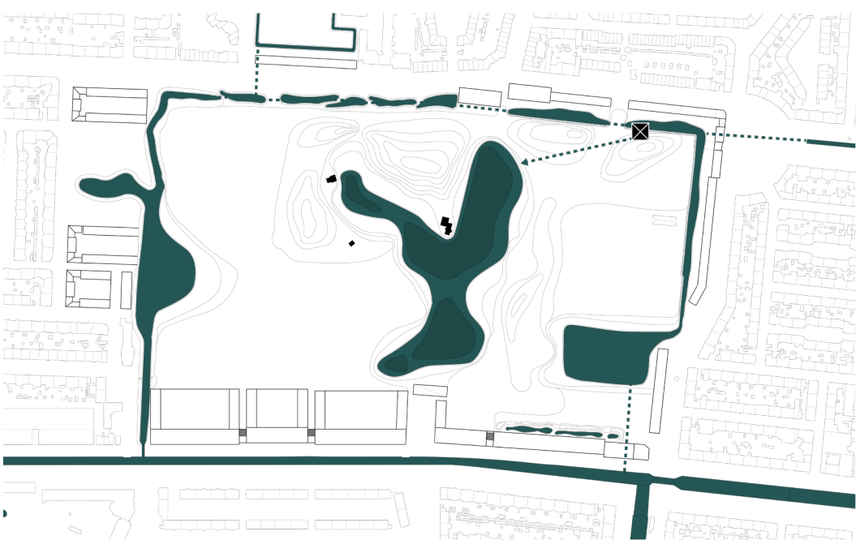
0 10 20 30m

DESIGN - ZOOMED IN SITE DESIGN

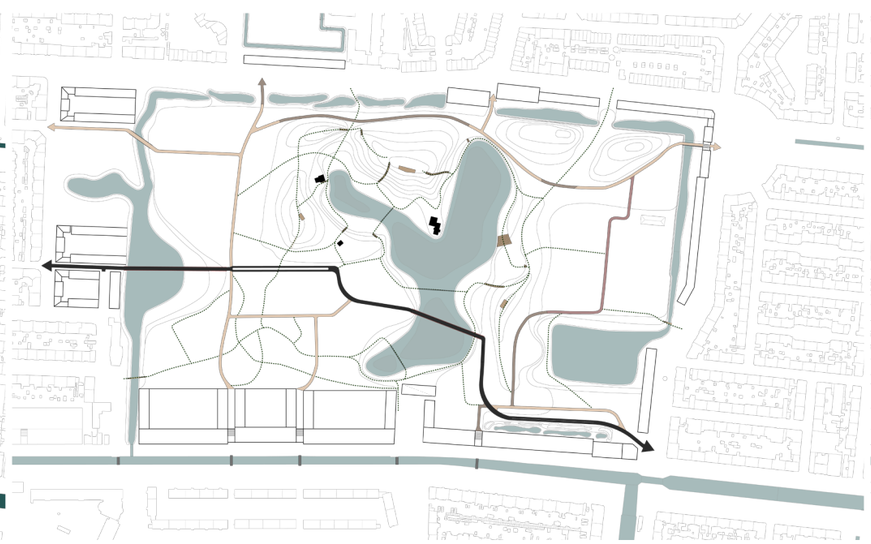
Layers of the plan

Spatial structure: new and existing elements

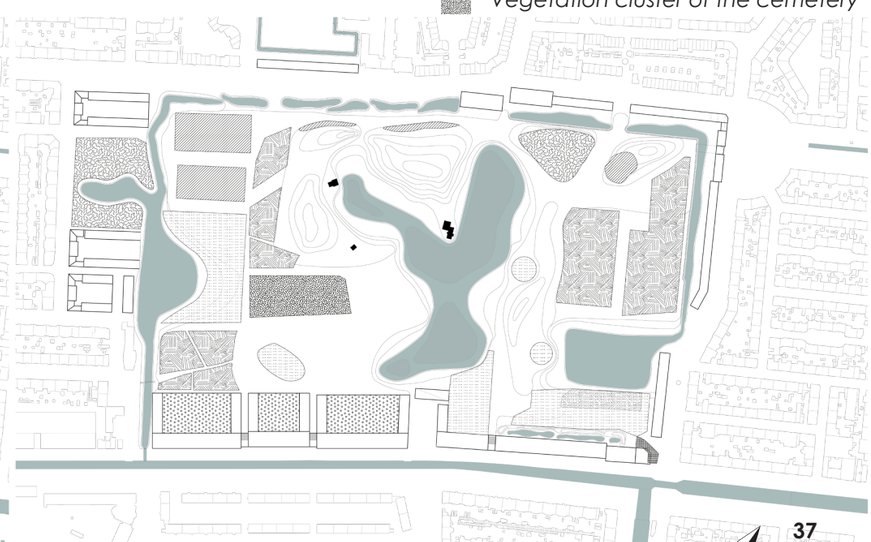




Waterstructure



Routing



Program

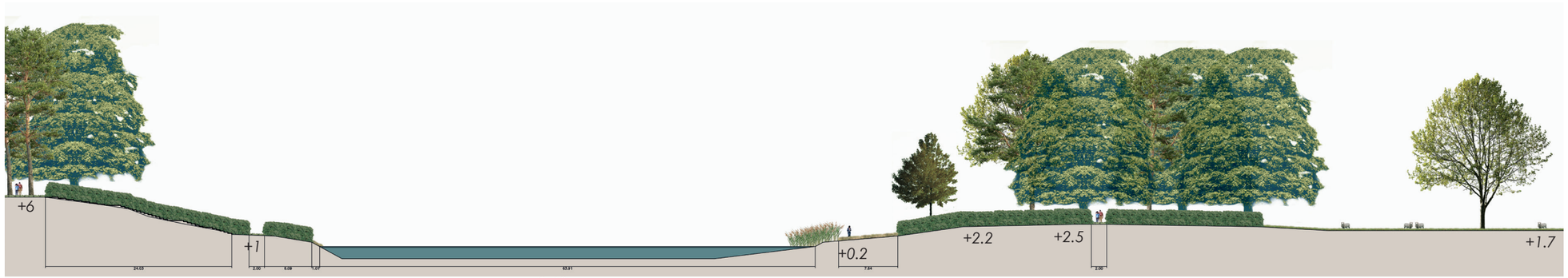
DESIGN - ZOOMED IN SITE DESIGN

Spatial structure park

A



B



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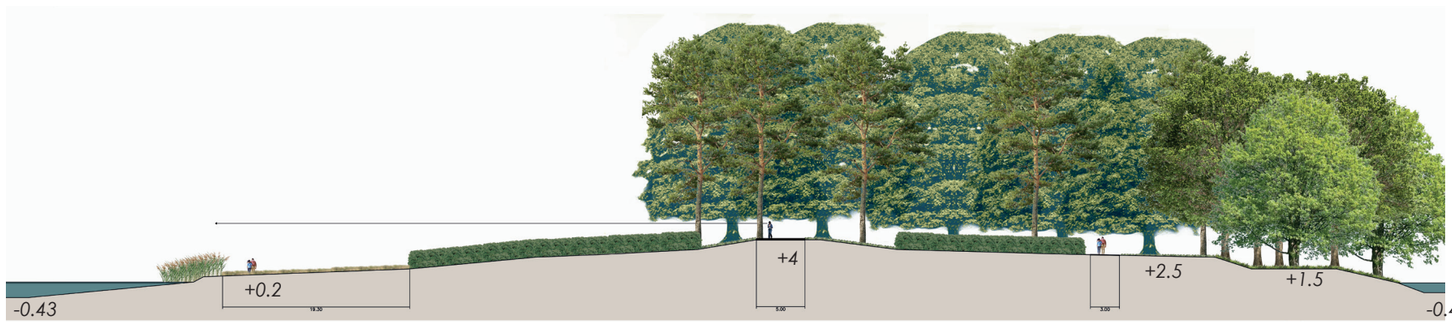

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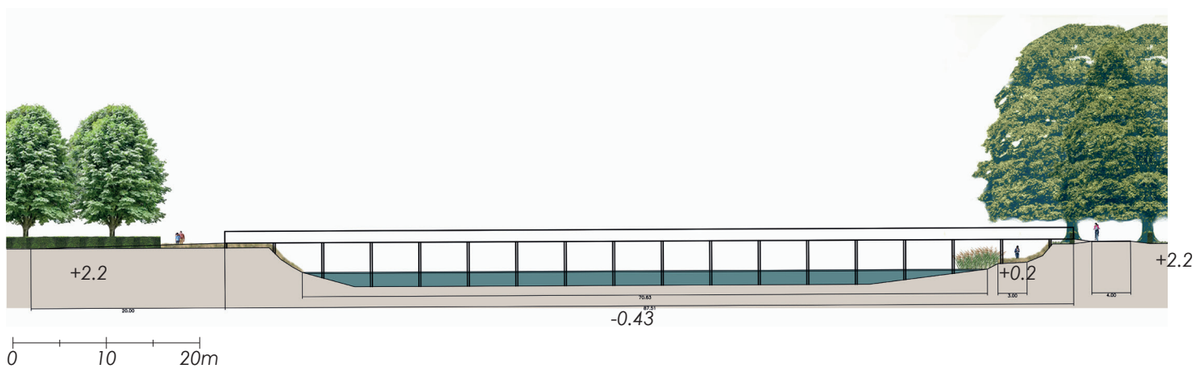

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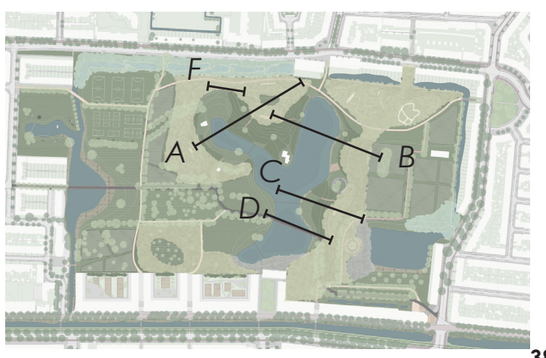
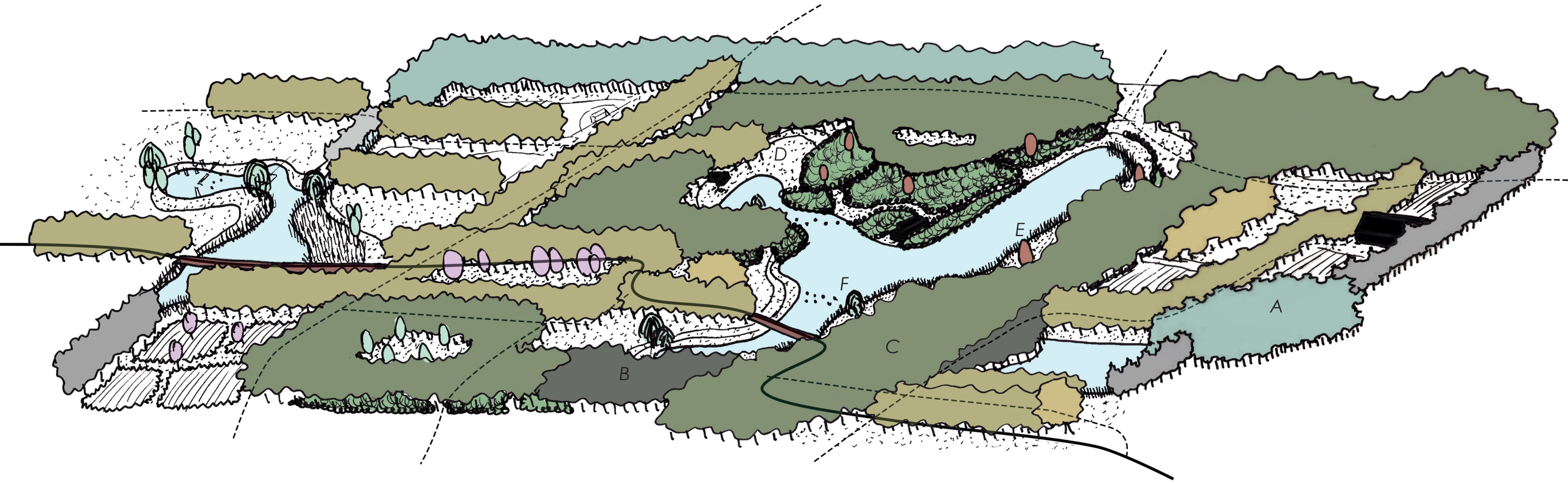


DESIGN - ZOOMED IN SITE DESIGN

Experience of the park: spaces and atmospheres



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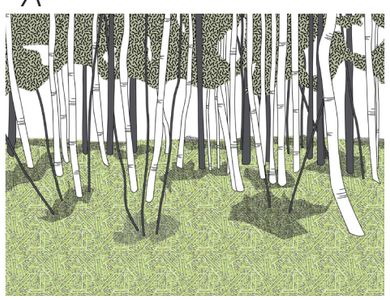




Swamp forest

B





Hornbeam and Ash forest

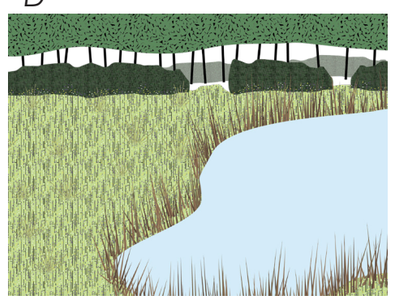
C





Pine, Oak and Beech forest

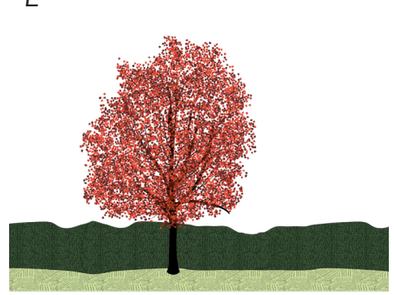
D





Flower meadow

E





Solitary tree - Colour

F

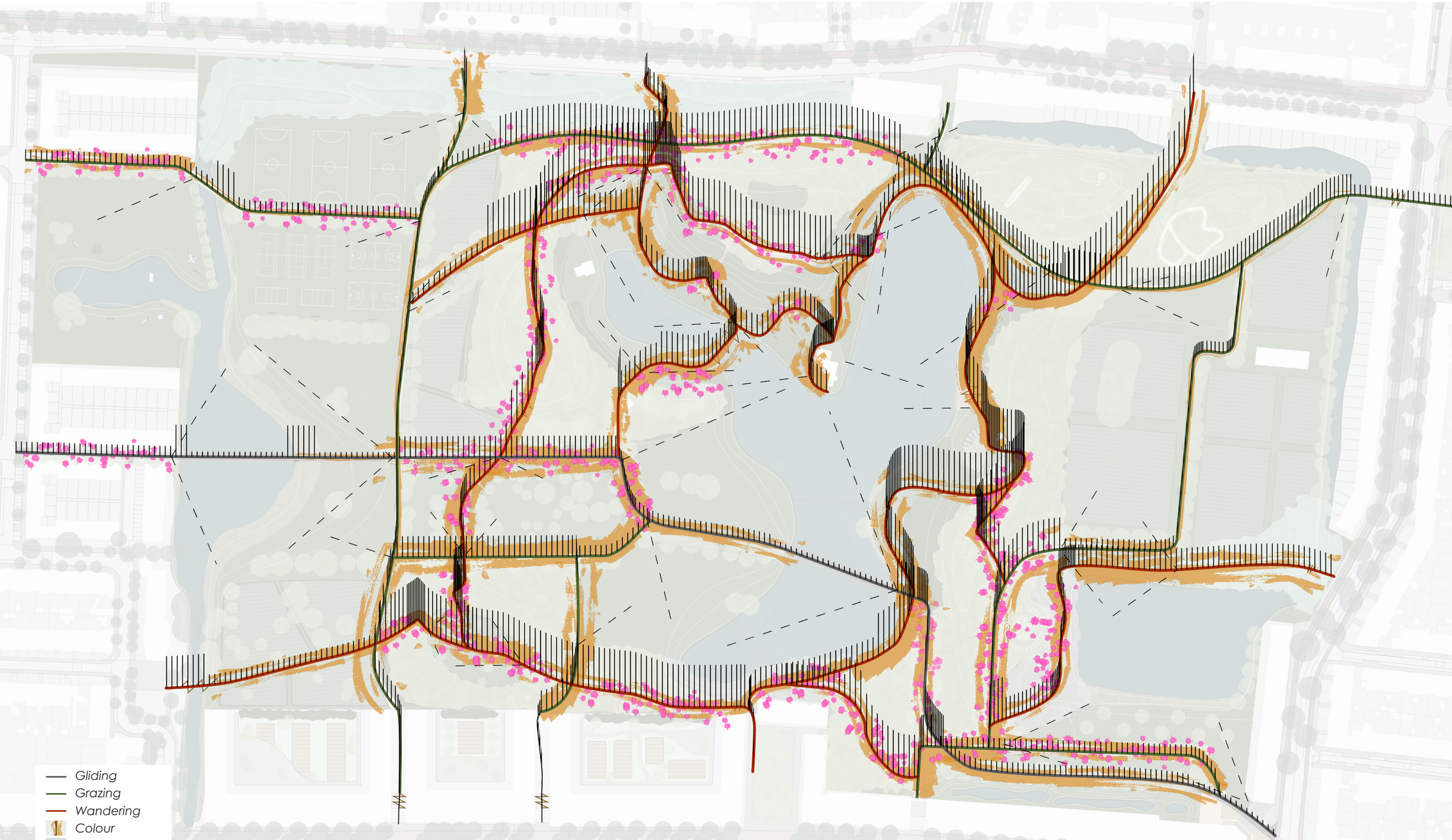




Solitary tree - movement

DESIGN - ZOOMED IN SITE DESIGN

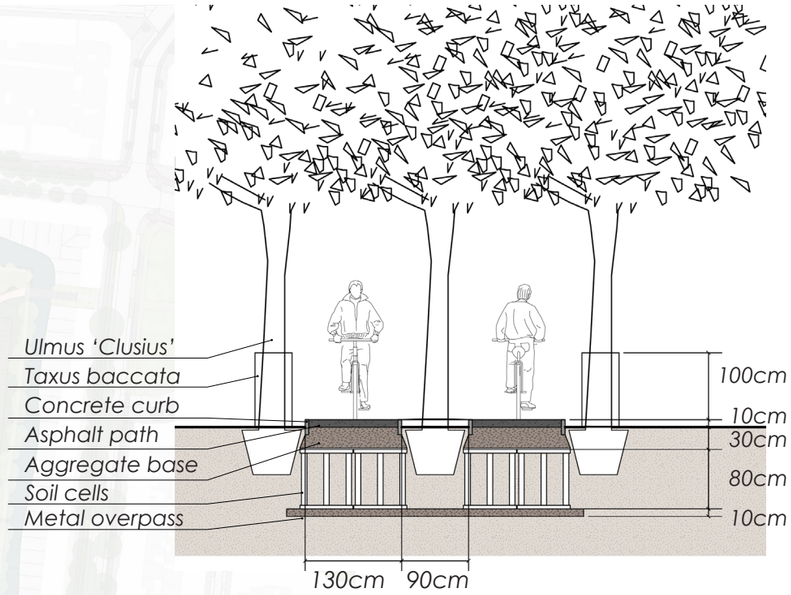
Experience of the park: sensorial experience - planting plan

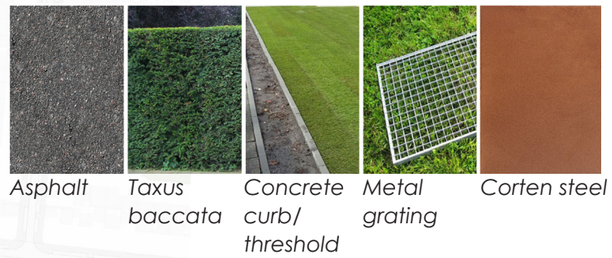


DESIGN - ZOOMED IN SITE DESIGN

Experience of the park and the three movements: Gliding

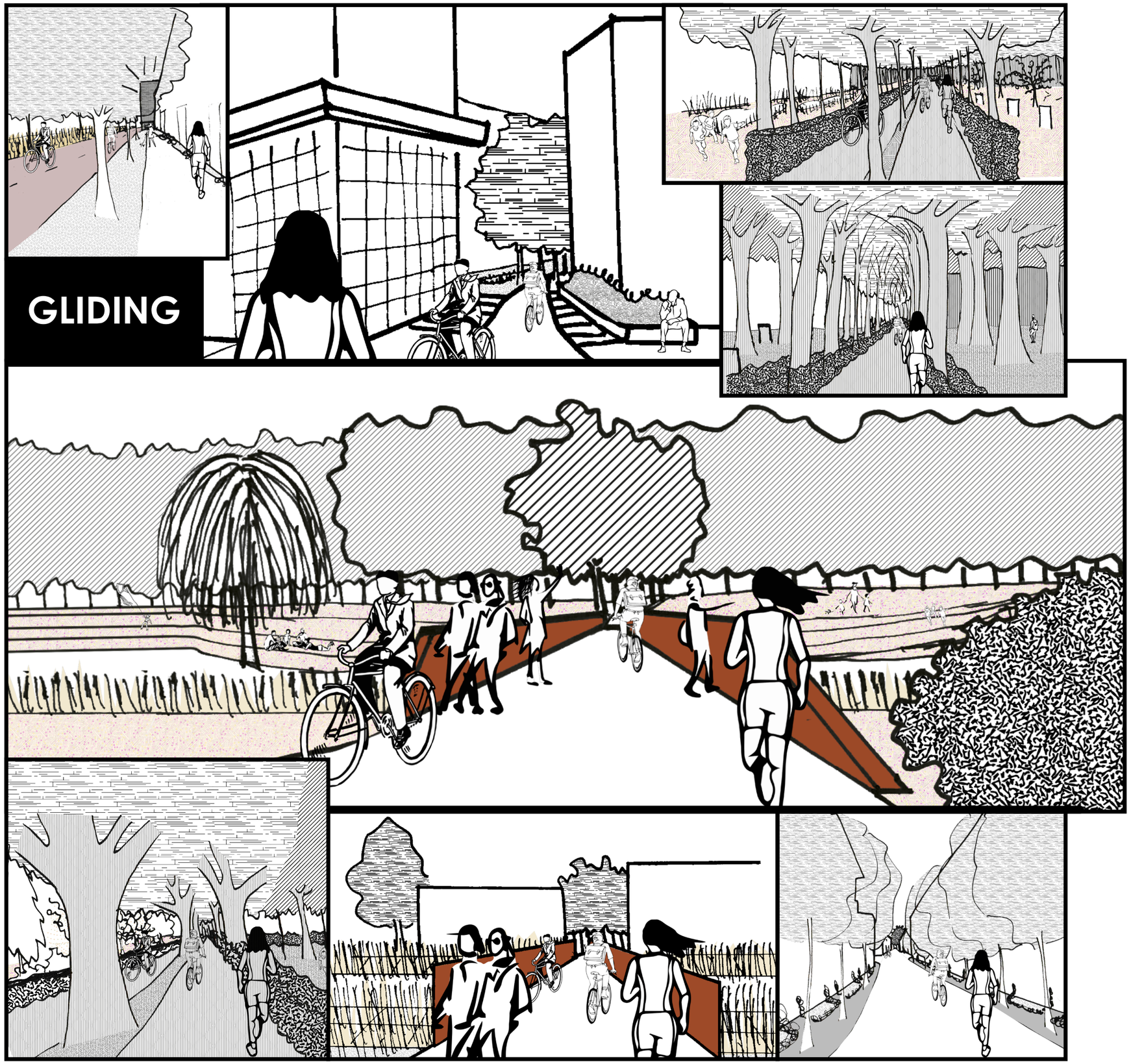






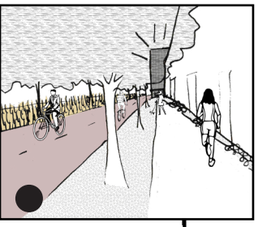
DESIGN - ZOOMED IN SITE DESIGN

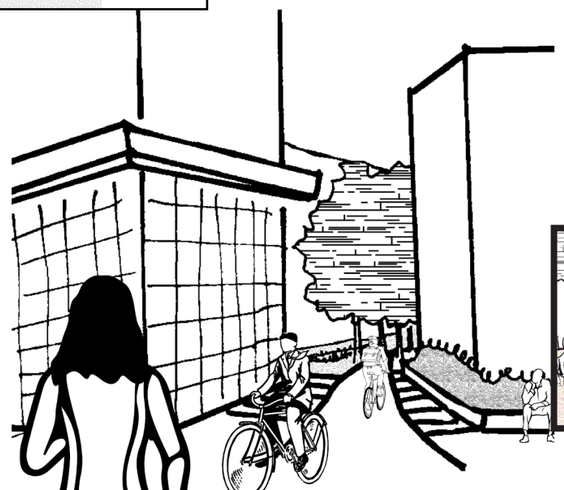
Strip eye level experience Gliding through the park

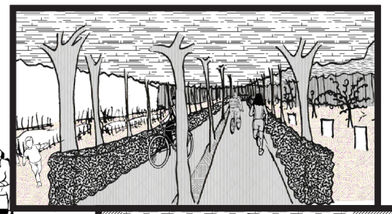


DESIGN - ZOOMED IN SITE DESIGN

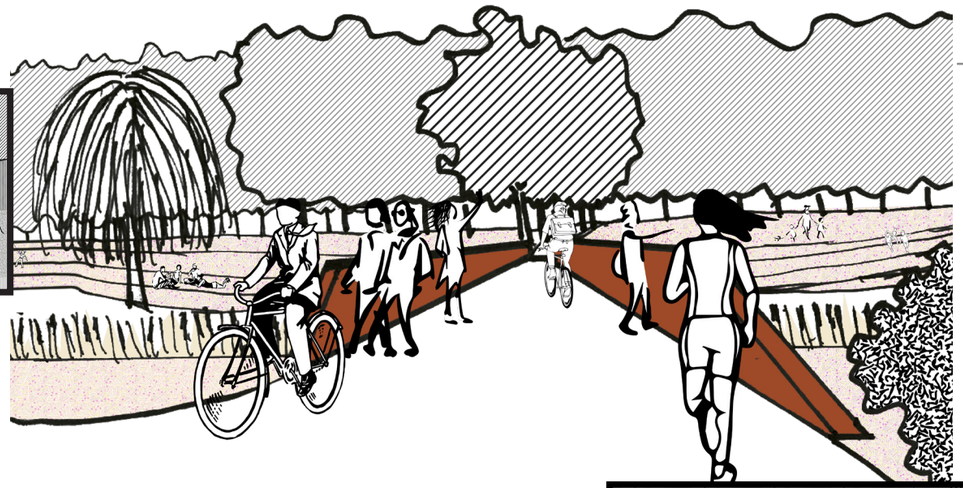
Spatial sequence in relation to distance Gliding through the park

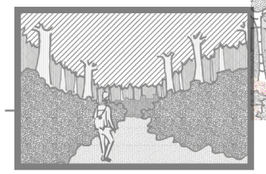


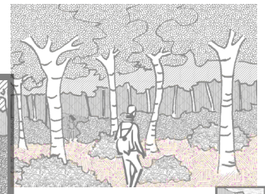




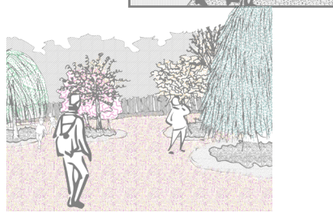




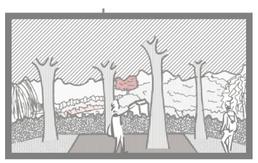


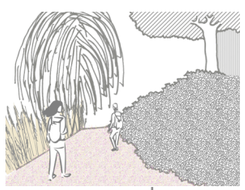


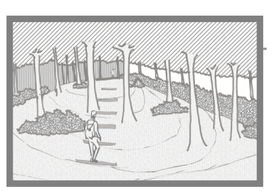










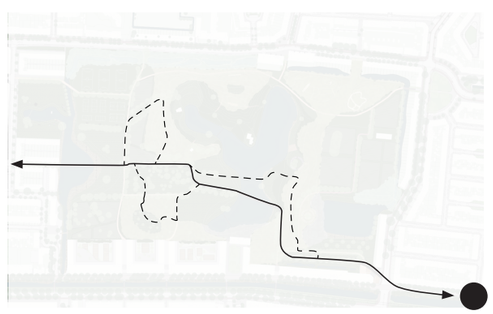


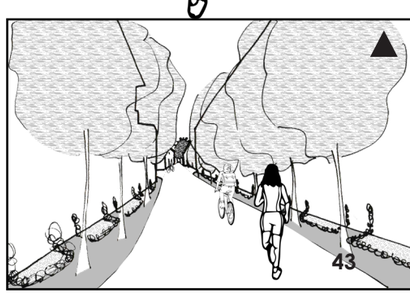






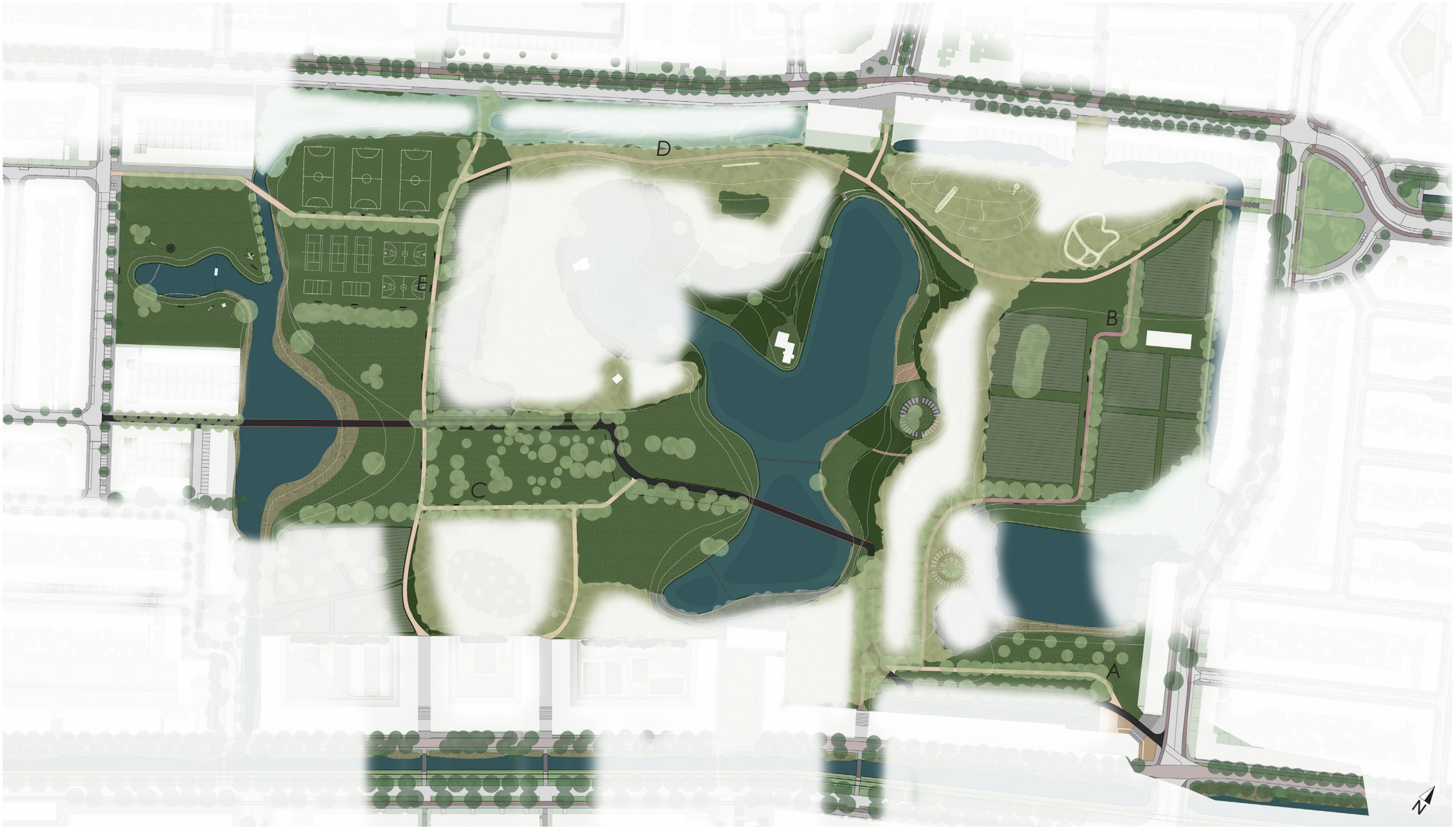






DESIGN - ZOOMED IN SITE DESIGN

Experience of the park and the three movements: Grazing

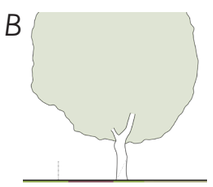


A



Fine gravel *Flower mixture*

B





Cobblestones *High grass mixture*

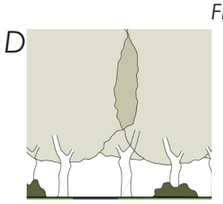
C





Fine gravel *Flower mixture* *Rhododendron ponticum* *Forest floor* *(grasses and groundcovers)*

D





Gravel *Rhamnus frangula* *Rubus fruticosus* *Sorbus aucuparia* *Forest floor* *(grasses and groundcovers)*

E

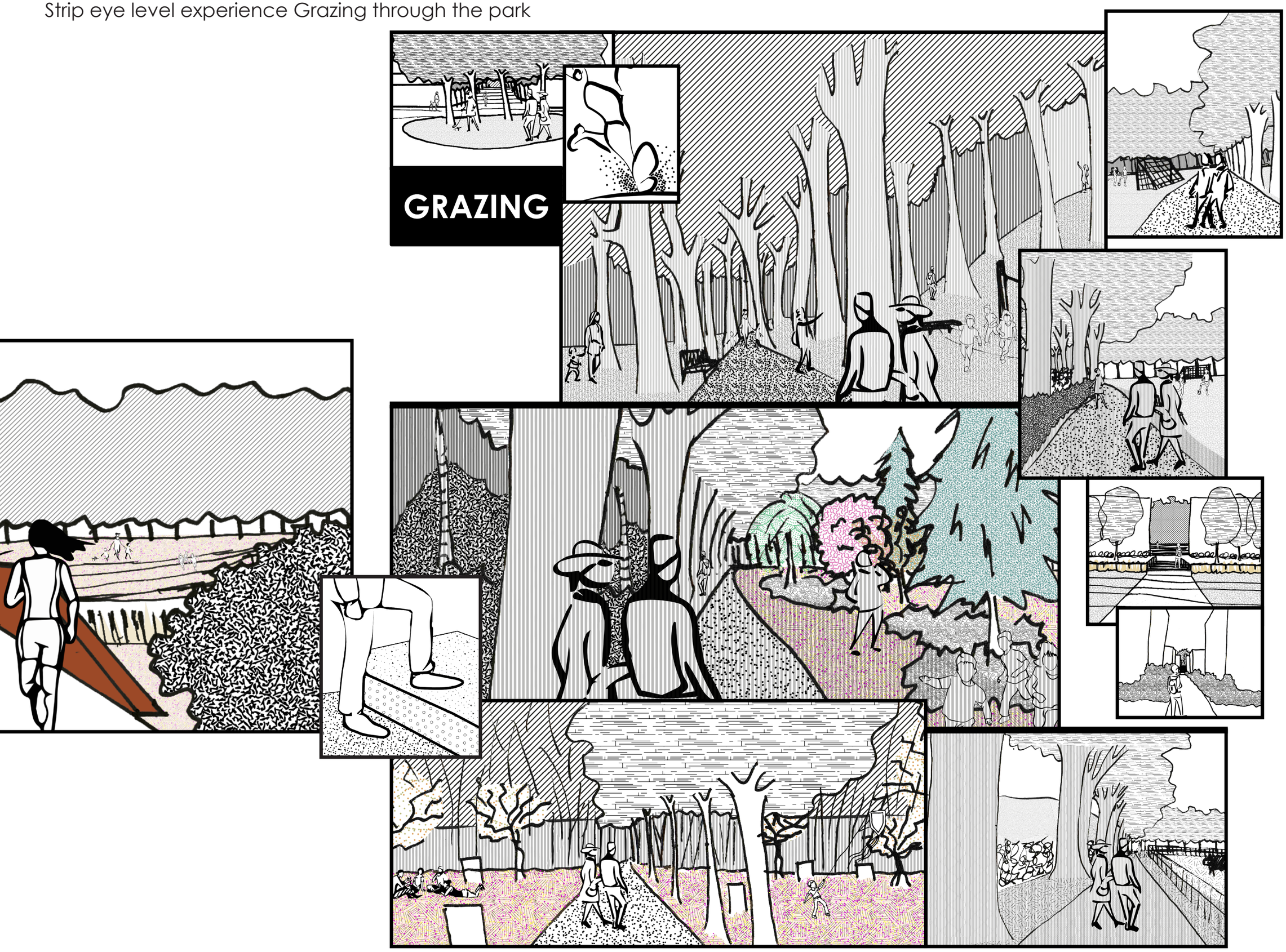




Fine gravel *High grass mixture* *Taxus baccata*

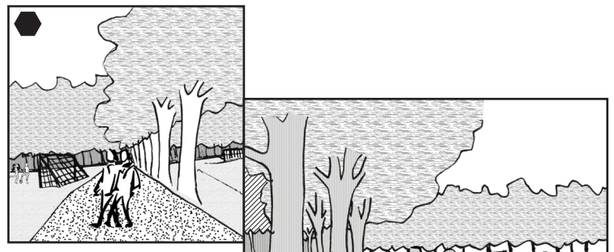
DESIGN - ZOOMED IN SITE DESIGN

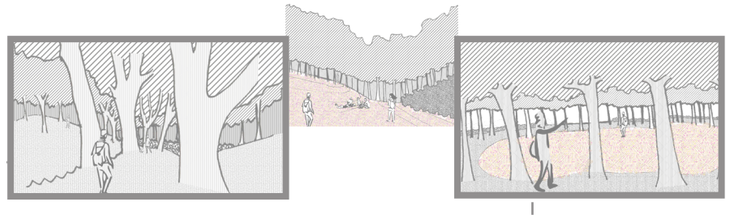
Strip eye level experience Grazing through the park



DESIGN - ZOOMED IN SITE DESIGN

Spatial sequence in relation to distance Grazing through the park

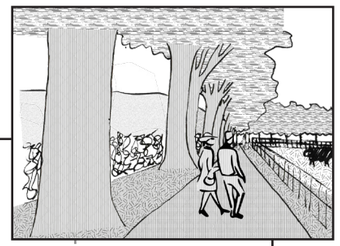




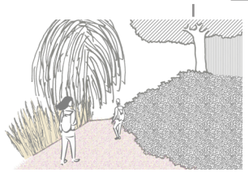


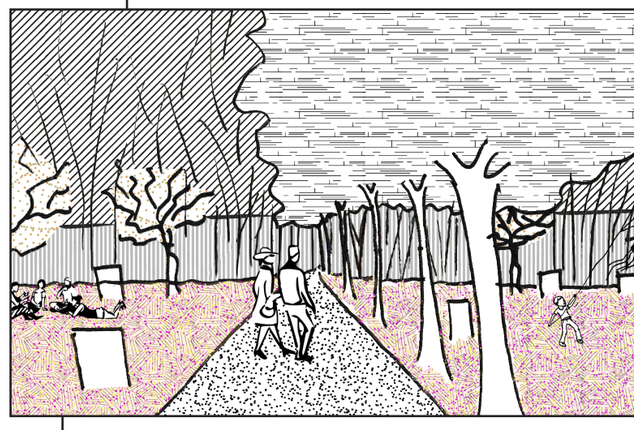


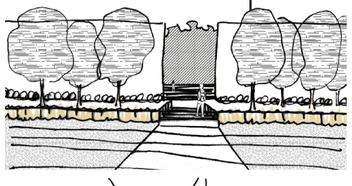


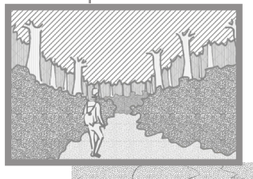


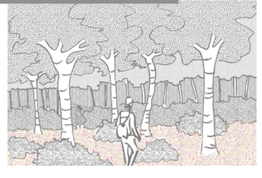


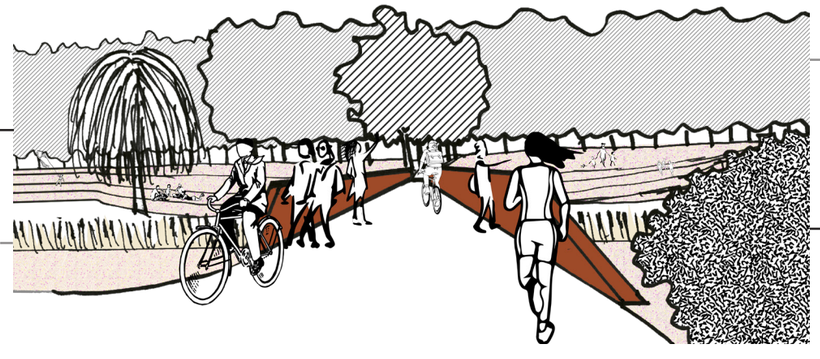


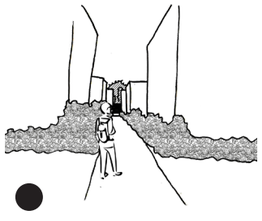


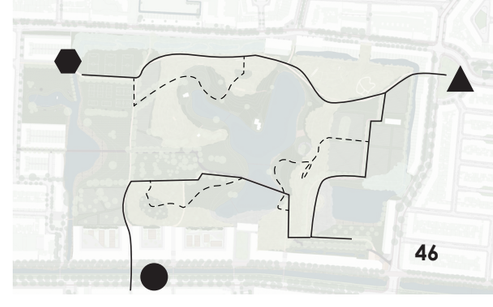






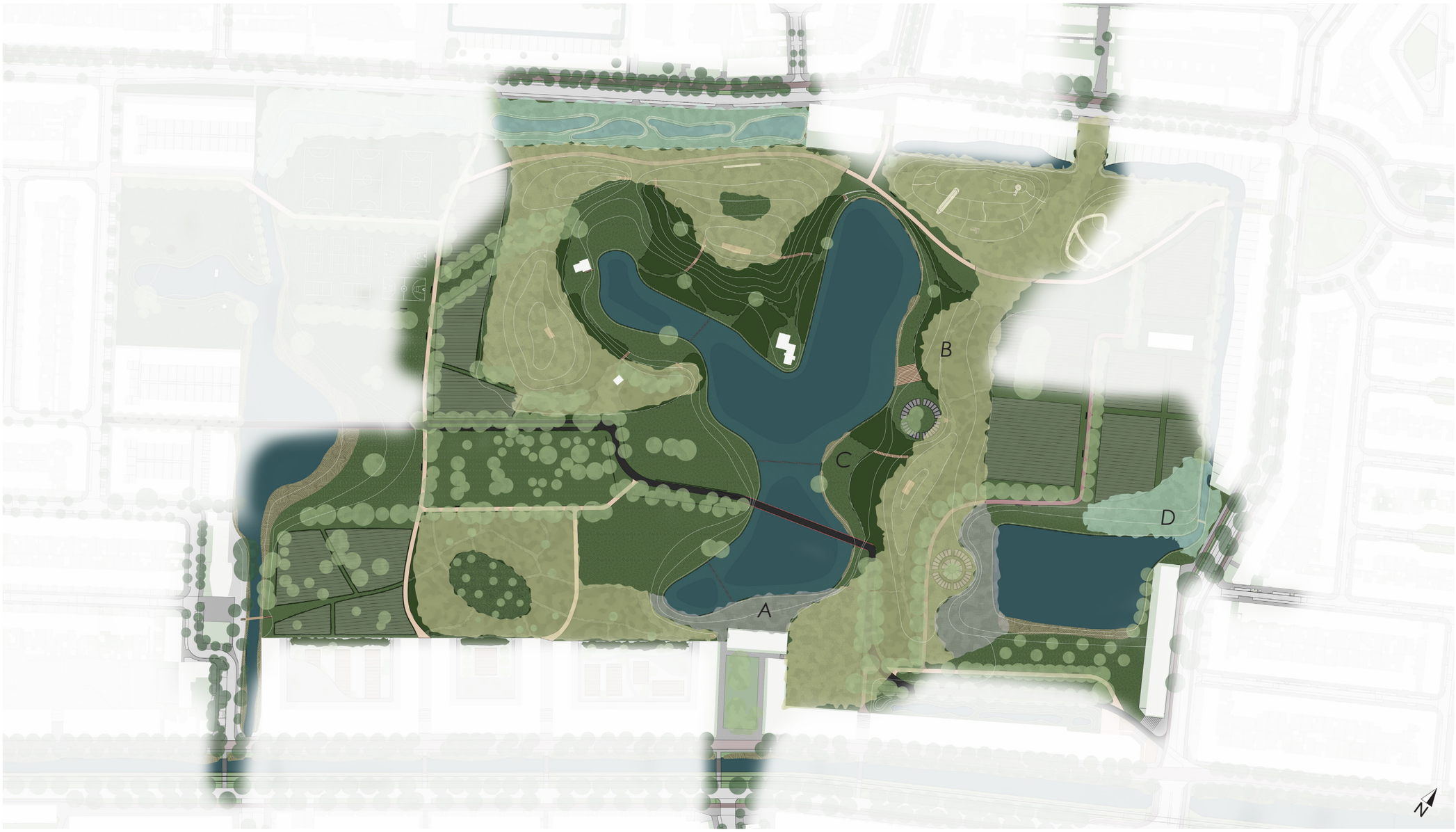






DESIGN - ZOOMED IN SITE DESIGN

Experience of the park and the three movements: Wandering



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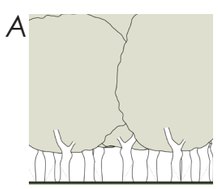
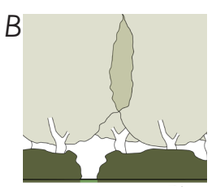


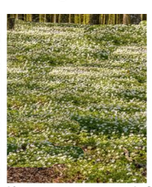


Forest floor (ferns and groundcovers)

B

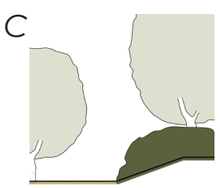






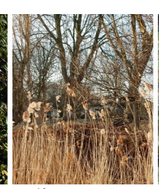
Rhododendron ponticum *Forest floor (grasses and groundcovers)*

C





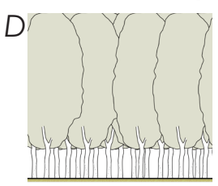


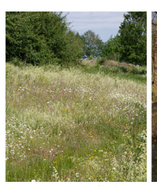




Flower mixture *Rhododendron ponticum* *Reed* *Wooden stairs* *Stepping stones*

D







Flower mixture *Wooden bridge*

DESIGN - ZOOMED IN SITE DESIGN

Strip eye level experience Wandering through the park

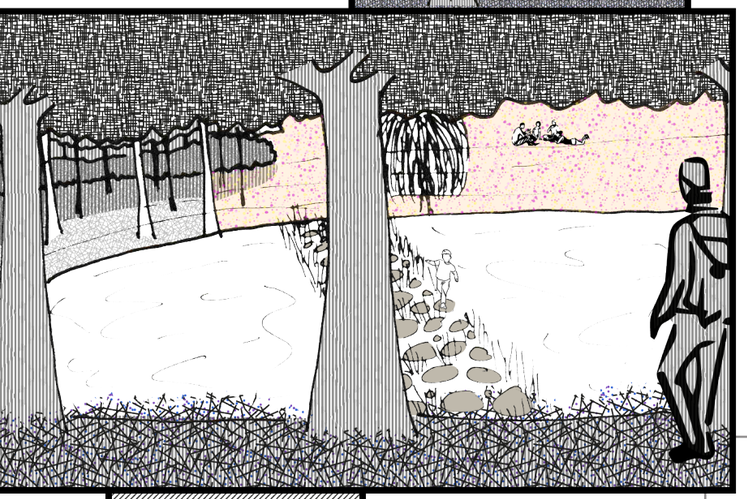


DESIGN - ZOOMED IN SITE DESIGN

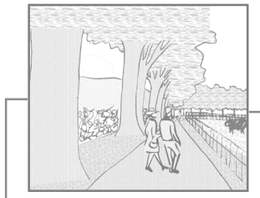
Spatial sequence in relation to distance Wandering through the park

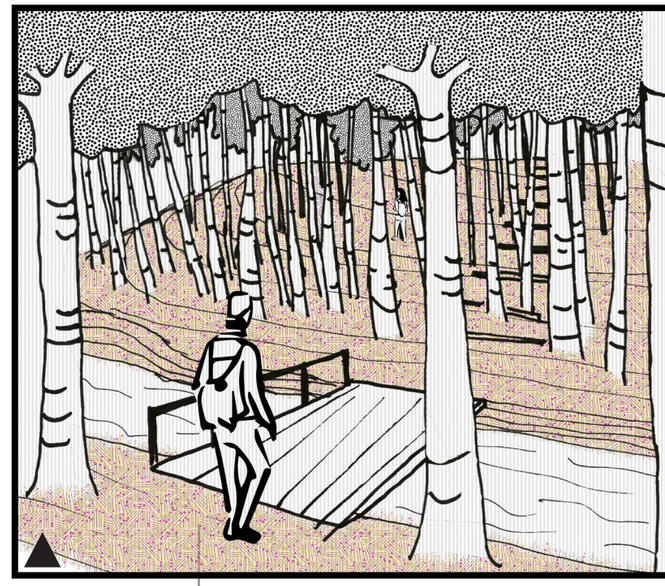


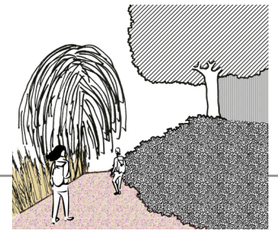




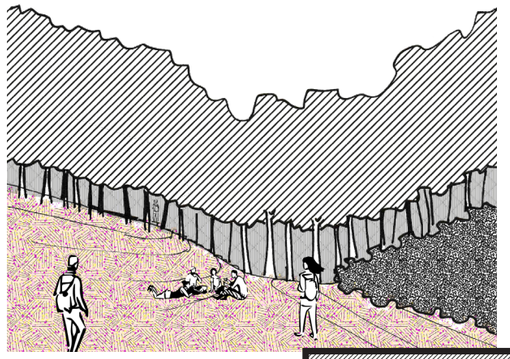


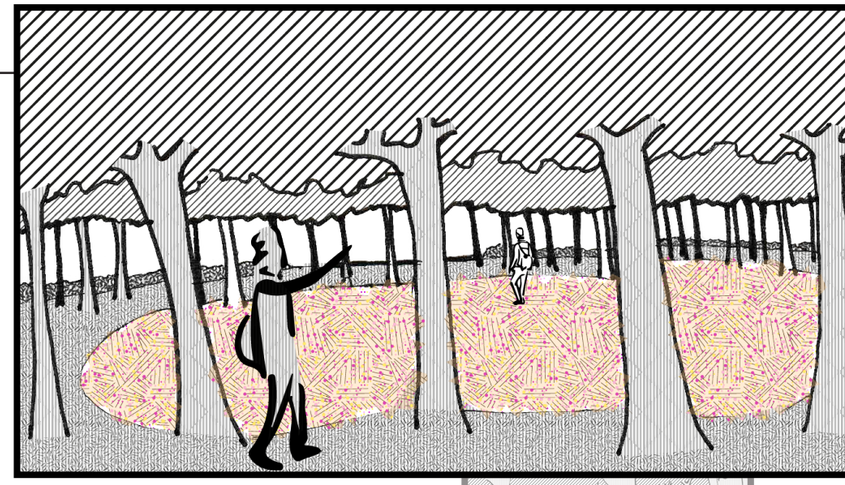




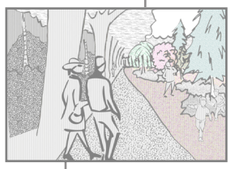






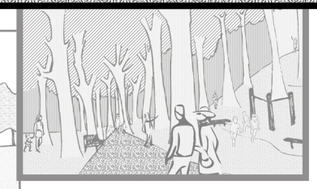








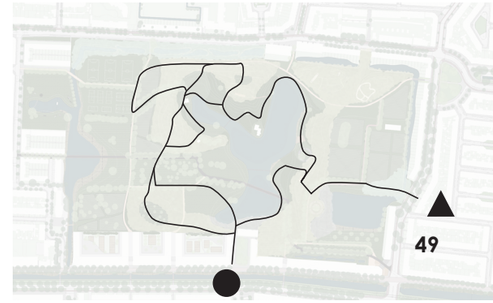












DESIGN - ZOOMED IN SITE DESIGN

Experiencing stepping of the path



DESIGN - ZOOMED IN SITE DESIGN

Experiencing stepping of the path



DESIGN - ZOOMED IN SITE DESIGN

Experiencing stepping of the path



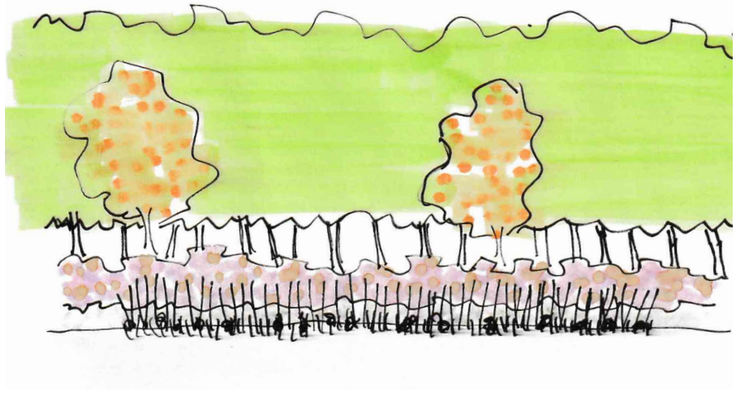
DESIGN - ZOOMED IN SITE DESIGN

Planting plan

Winter - remaining structures and plants



Spring - various colours



Summer - textures and density



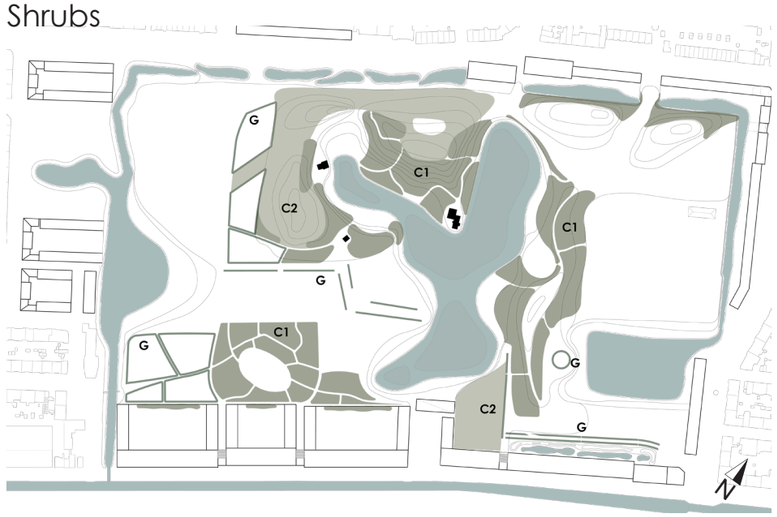
Autumn - colours and density



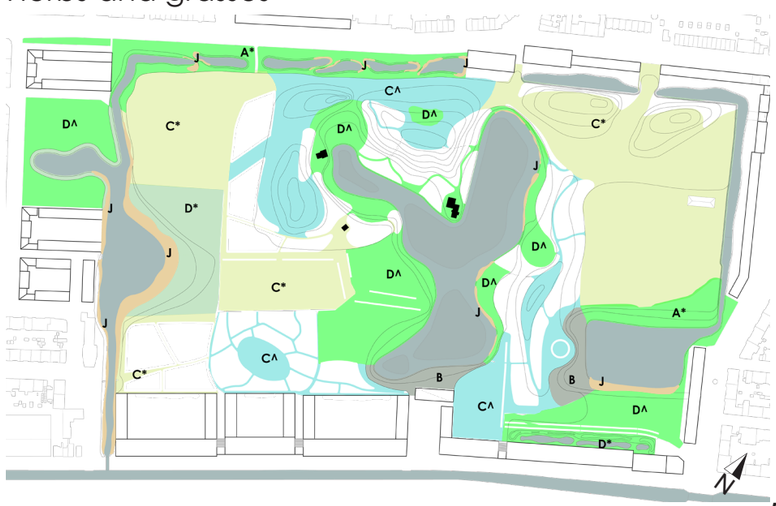
Woody species



Shrubs

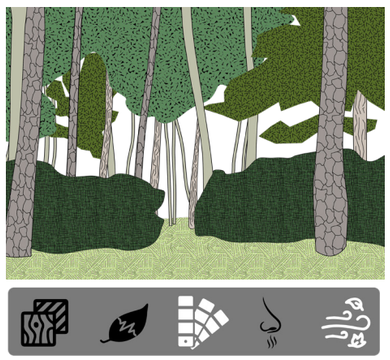


Herbs and grasses

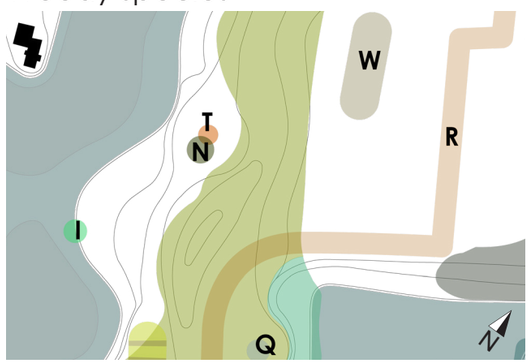


DESIGN - ZOOMED IN SITE DESIGN

Planting plan example - Pine, Oak and Beech forest



Woody species





Pinus sylvestris



Fagus sylvatica

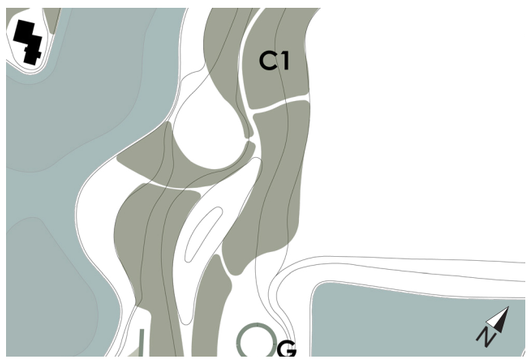


Quercus robur



Tilia cordata

Shrubs





Rhododendron ponticum

Herbs and grasses





Luzula pilosa



Anemone nemorosa



Trientalis europaea



Cornus suecica



Maianthemum bifolium



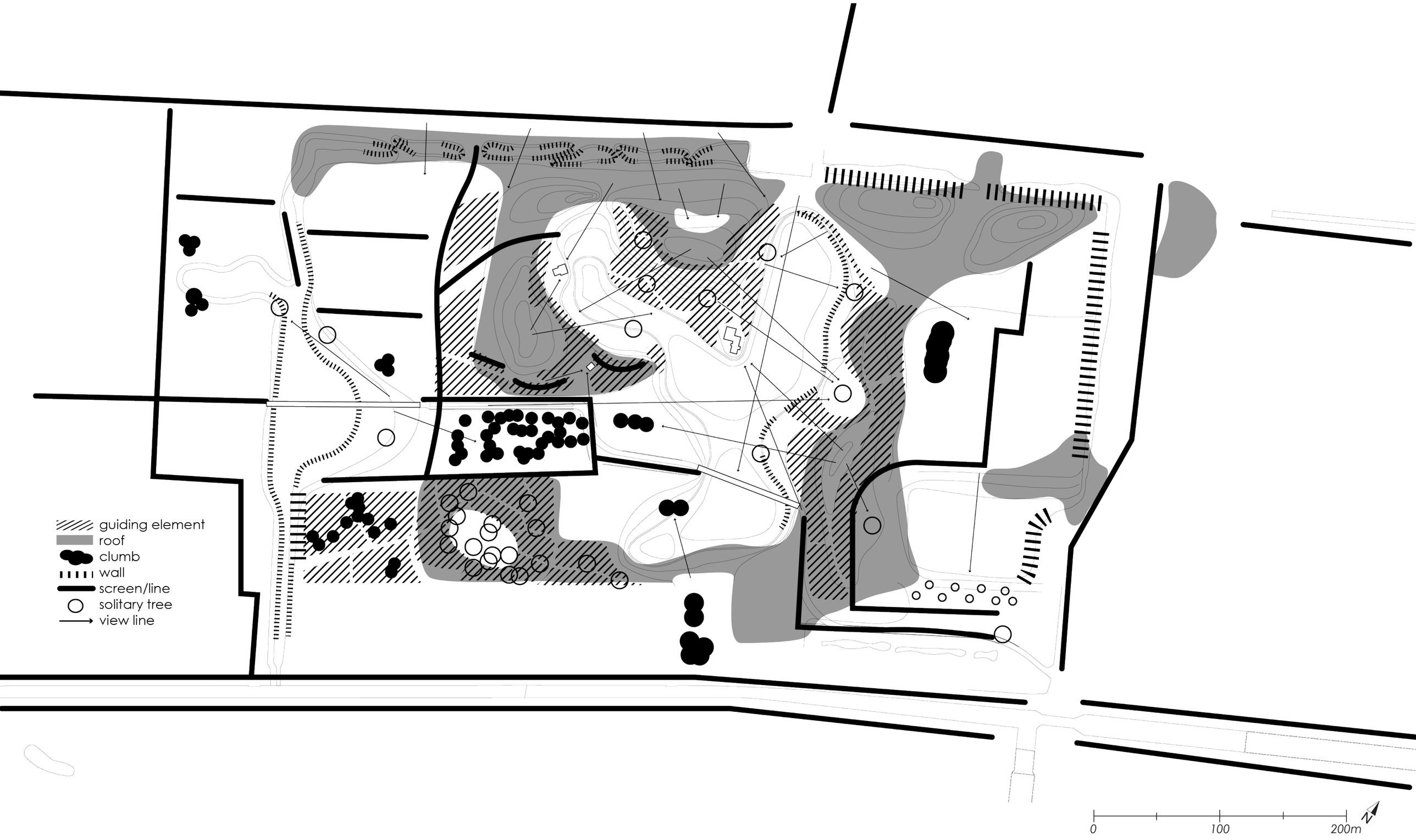
Huperzia selago

new or existing	Type of structure	Species of vegetation (woody)	Species of vegetation (shrubs)	Species of vegetation (grasses, herbs)	growth rate	spring	summer	autumn	winter	sensorial aspects
new **C**	**Pine, oak and beech forest** Semi transparant forest that has a rustling sound due to the wind. Texture differences between the different trees and shrubs, from dense to open and smooth to rigged. The forest is located on the higher and dryer parts of the park. Determined shrubs are used to guide movement.	• Pinus sylvestris • Quercus robur • Fagus sylvatica • Tilia cordata (after 25 years cut down to open up the forest to allow for more wind and sound)	Guiding shrubs in determined spaces **C1** • Rhododendron ponticum Spaces withouth program **C2** • Rubus fruticosus • Sorbus aucuparia • Rhamnus frangula	Spaces withouth program **C^** • Anemone nemorosa • Trientalis europaea • Maianthemum bifolium • Huperzia selago • Cornus suecica • Luzula pilosa Spaces with program **C*** • NGW2 grass mixture https://www.cruydthoeck.nl/winkel/grass mixtures/ngw2-middenschraal-grass mixture/p336	10-20 years (Pinus sylvestris, Tilia cordata) 20-50 years (Quercus robur) 50-60 years (Fagus sylvatica)	Purple (Rhododendron ponticum) White/pink (Rubus fruticosus, Anemone nemorosa) White (Sorbus aucuparia, Rhamnus frangula, Trientalis europaea, Maianthemum bifolium, Cornus suecica) Red/purple/white/green (NGW2 grass mixture)	Yellow (Tilia cordata) White/pink (Rubus fruticosus) White (Rhamnus frangula, Trientalis europaea) Red/purple/white/green (NGW2 grass mixture)	Leaf yellow (Tilia cordata) Leaf yellow/red (Quercus robur, Fagus sylvatica) Red/purple/white/green (NGW2 grass mixture)	Evergreen (Pinus sylvestris, Rhododendron ponticum, Rubus fruticosus)	Sound of vegetation (Pinus sylvestris, Fagus sylvatica, Luzula pilosa, Luzula pilosa,) Fragnant flowers (Tilia cordata, Anemone nemorosa, Maianthemum bifolium)

(Source: Wilde planten in Nederland en België, n.d. Retrieved from https://wilde-planten.nl/)
(Source: Plant en bestel, n.d. Retrieved from https://plantenbestel.nl/bamboes-en-grassen/luzula-pilosa.html)
(Source: Willaert Boomkwekerij, n.d. Retrieved from https://www.willaert.be/nl/plantengids)
(Source: van den Berk Boomkwekerijen, n.d. Retrieved from https://www.vdberk.nl/bomen/)
(Source: plantenkweker.be J.van Dyck, P van Dyck, n.d. Retrieved from https://www.plantenkweker.be/nl/catalogus/RHPONTIC-rhododendron-ponticum.html)

DESIGN - ZOOMED IN SITE DESIGN

Composition - planting plan



DESIGN - ZOOMED IN SITE DESIGN

Process - phase 1: planting and existing structures



DESIGN - ZOOMED IN SITE DESIGN

Process - phase 2: 10 years



DESIGN - ZOOMED IN SITE DESIGN

Process - phase 3: 20 years



DESIGN - ZOOMED IN SITE DESIGN

Process - phase 4: 35 years - removing some pioneer species to create space for the climax species and to open up the forest



DESIGN - ZOOMED IN SITE DESIGN

Process - phase 5: 60 years - replacing structures



DESIGN - ZOOMED IN SITE DESIGN

Process - transformation



Current site



Framing the create entrances



Realise the spatial structure, the elevations, water structures, tree structures and routes



Facing it out the cemetery over time



Program



Realised design

DESIGN - ZOOMED IN SITE DESIGN

Scenarios

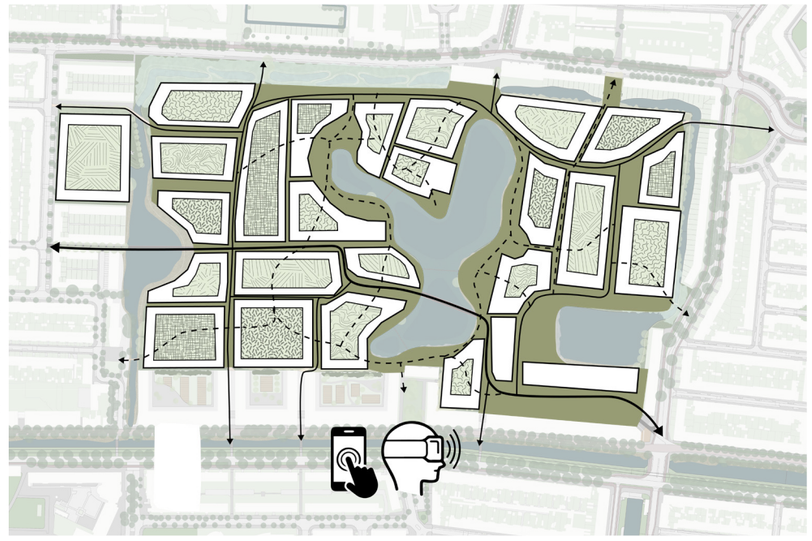
Production forest



Greening cemetery



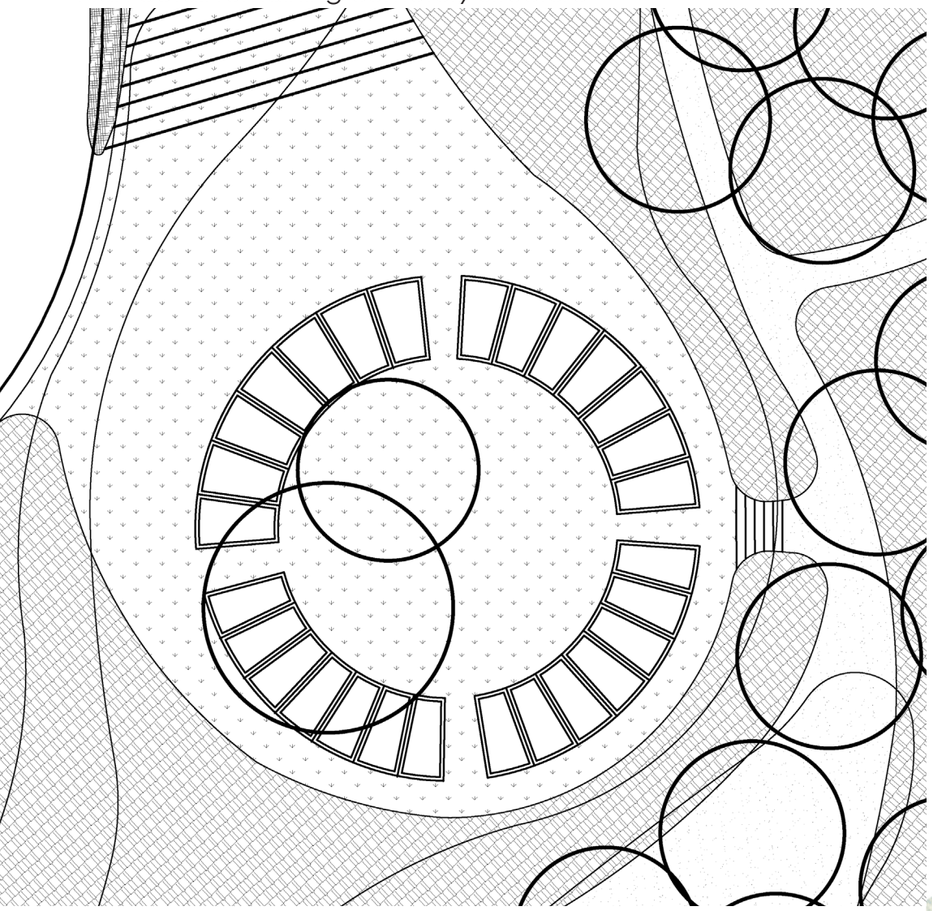
Building experience path



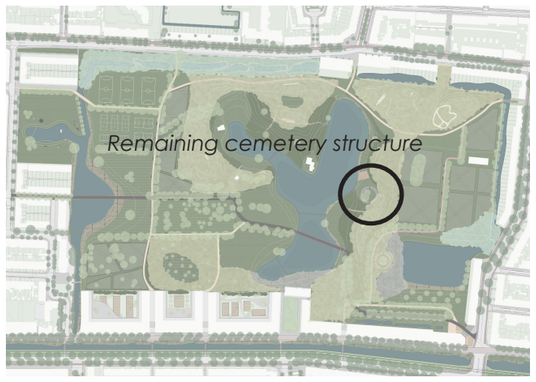
DESIGN - ZOOMED IN SITE DESIGN

Detail remaining cemetery structure

Plan detail remaining cemetery structure



- *Rhododendron ponticum*
- *Wooden stairs*
- *Wandering*
- *Grass/flower mixture*
- *Burial stones*
- *Heightlines*



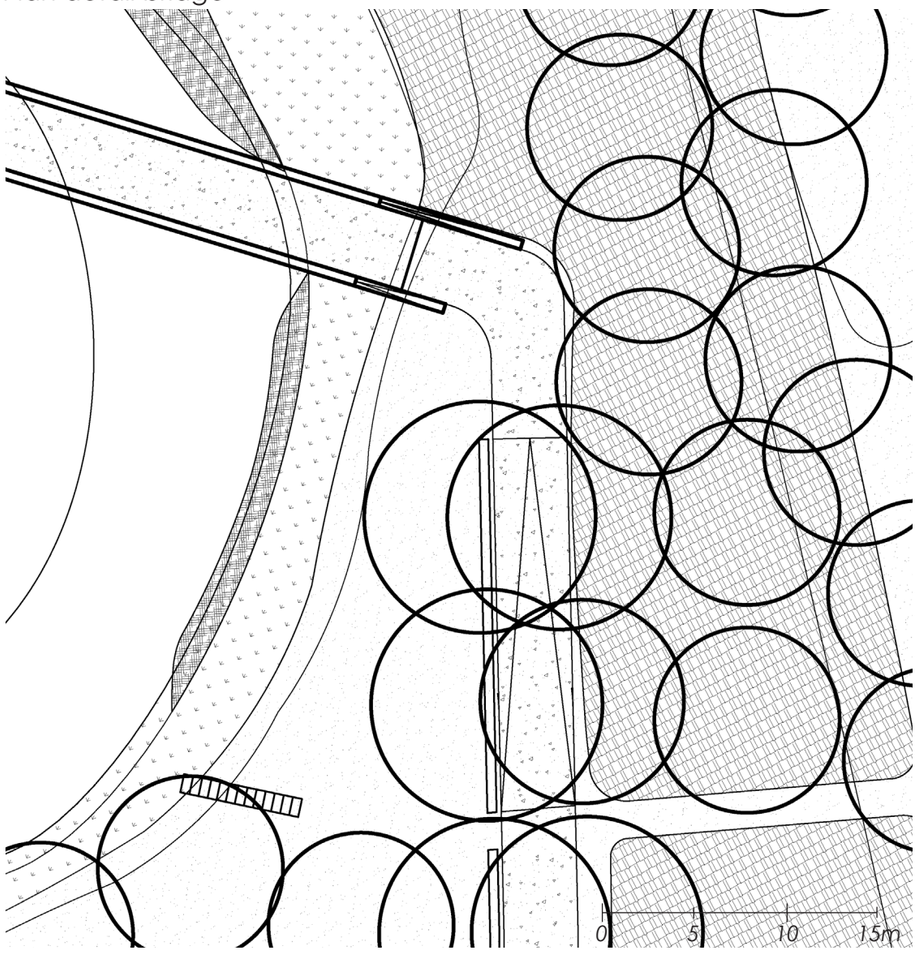
Section detail remaining cemetery structure

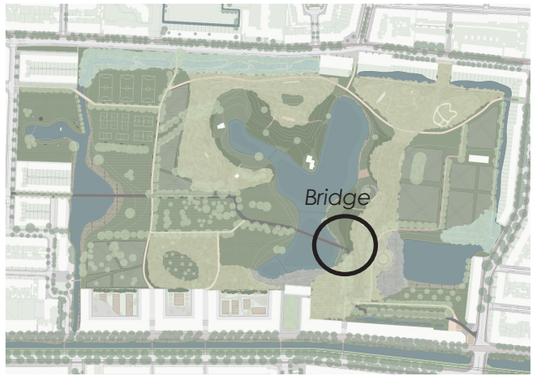


DESIGN - ZOOMED IN SITE DESIGN

Detail bridge

Plan detail bridge



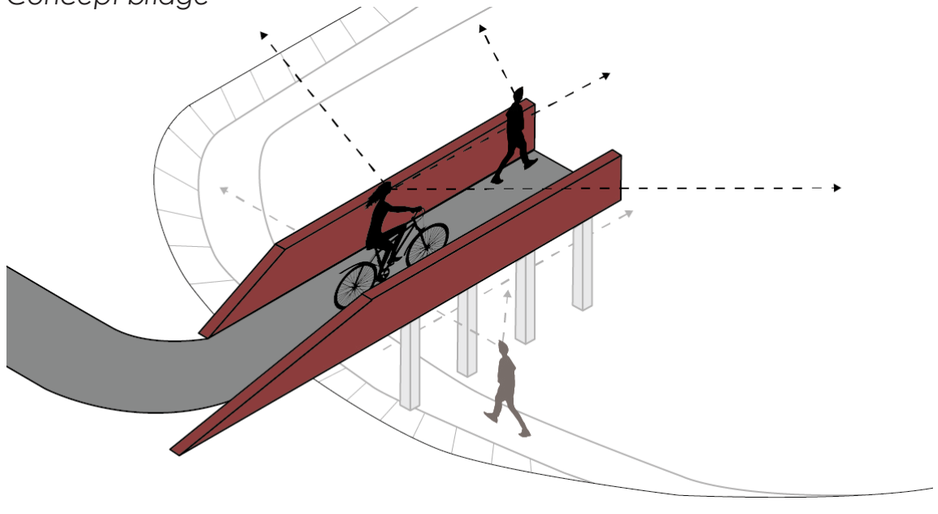


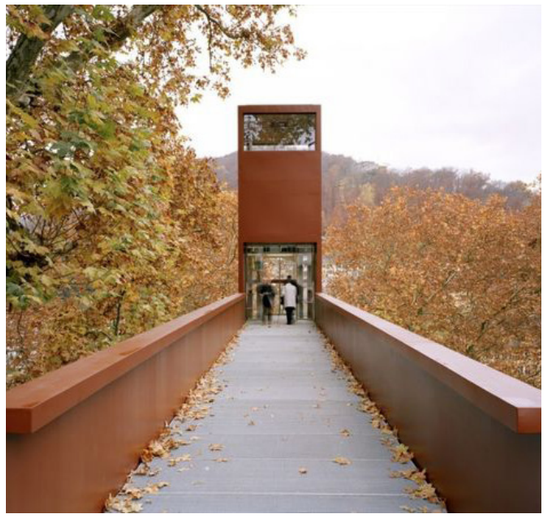
Gliding - asphalt
Bridge
Hedge
Rhododendron
Elevation
Grass mixture
Wandering

Section detail bridge



Concept bridge

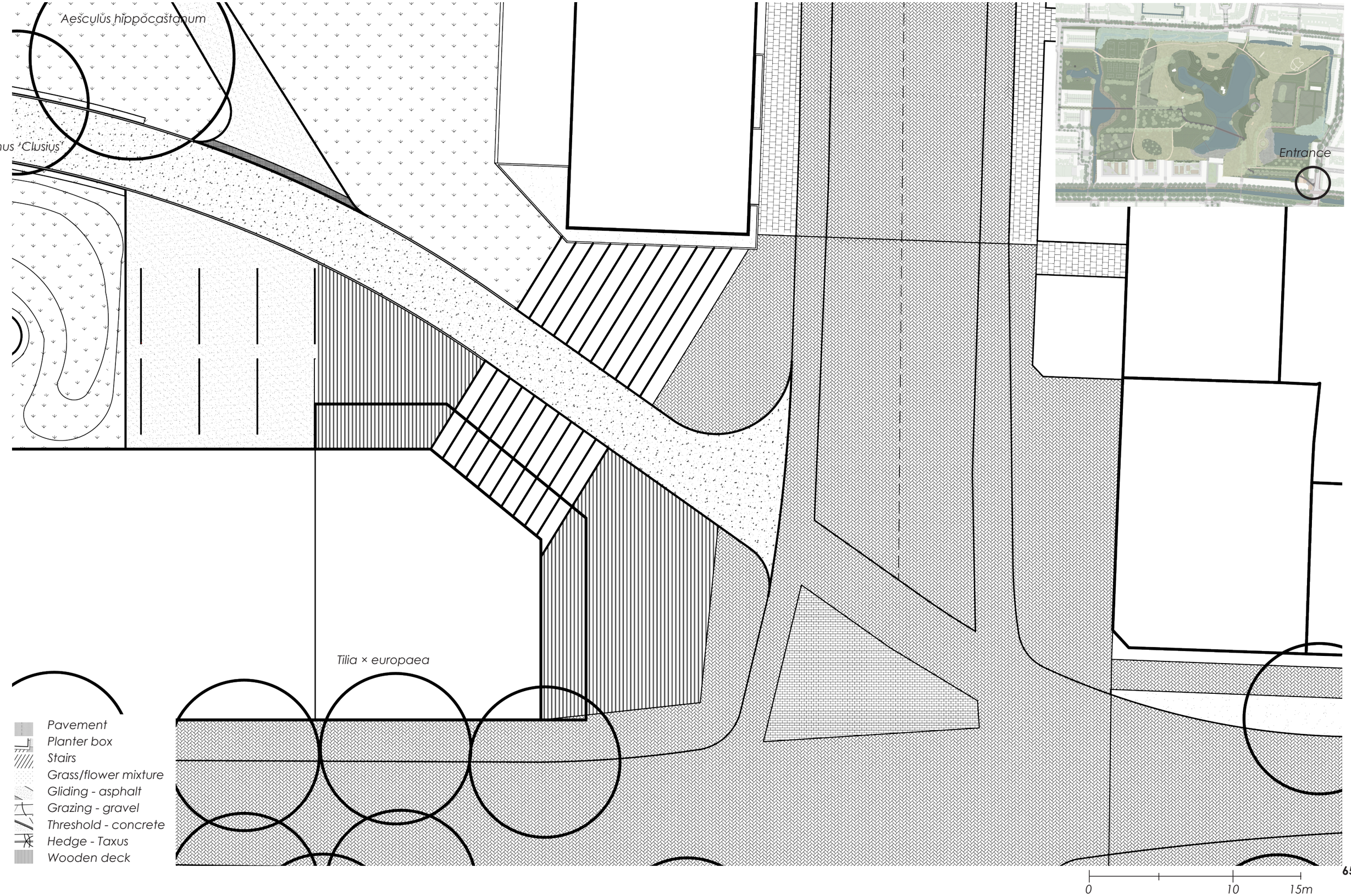




Reference bridge (source: Frei, R. (n.d.). Promenadenlift Passerelle. Archdaily, Ennetbaden. Retrieved from https://www.archdaily.com/323143/limmat-footbridge-and-promenade-lift-leuppi-schafroth-architekten/51004988b3fc4b1aa5000023-limmat-footbridge-andpromenade-lift-leuppi-schafroth-architekten-photo?next_project=no)

DESIGN - ZOOMED IN SITE DESIGN

Detail entrance



INTRODUCTION
FASCINATION, PROBLEM STATEMENT, RESEARCH QUESTION, METHODOLOGY

RESEARCH
HISTORIC OVERVIEW: CREATING HEALTHY LIVING ENVIRONMENTS, MOVEMENT AS RESTORATIVE GREEN STRUCTURE

URBAN FOREST MOVEMENT

ANALYSIS AND DESIGN
DEN HAAG AND REGION, VISION DEN HAAG
LINE: LOOSDUINSEWEG, MASTERPLAN LOOSDUINSEWEG
CEMETERY OUD AND NIEUW EYKENDUYNEN, ZOOM IN DESIGN: EYKENDUINEN PARK

CONCLUSION AND REFLECTION

URBAN FOREST MOVEMENT(S): CONCLUSION

What might a contemporary 'Garden City movement' look like, and how can this be implemented, responding to current environmental design questions, that focusses on restorative green spaces informed by movement and bodily experience?

Research:
- Garden City movement: generic scheme
- New movement: The Urban Forest Movement
- Restorative nature: levels of emerging in nature
- Movement and bodily experience as design tools

Design:
- Applying: generic movement - specific design brief, designing through the scales
- Emerging in nature through movement and bodily experience:
    - Gliding
    - Grazing
    - Wandering
- Topographic forms, water structures, visual marks, framed views and buildings guide movement
- Planting plan creates different bodily experiences through smells, colours, sounds and textures

Definition Urban Forest Movement:
- Generic spatial framework
- Green spaces, healthy living environment, restorative nature
- Current environmental design questions
- Movement and framed views generate fascination
- Experiencing green space through bodily experience and movement
- Sensorial experience, various species of trees, shrubs and grasses

URBAN FOREST MOVEMENT(S): REFLECTION

- Fascination to wider subject
- Movement and bodily experience
- Substantiate and further detail the design choices with literature
- Reflecting on conclusions found in literature research through the design
- Scenarios used to further elaborate the design

Outlook:
- Further develop scenarios for the design, multiple scales
- Applying the Urban Forest Movement to other sites to test and elaborate it
- Exploring new design methods such as virtual reality
- Soil research for site design and planting plan

Thank you for listening

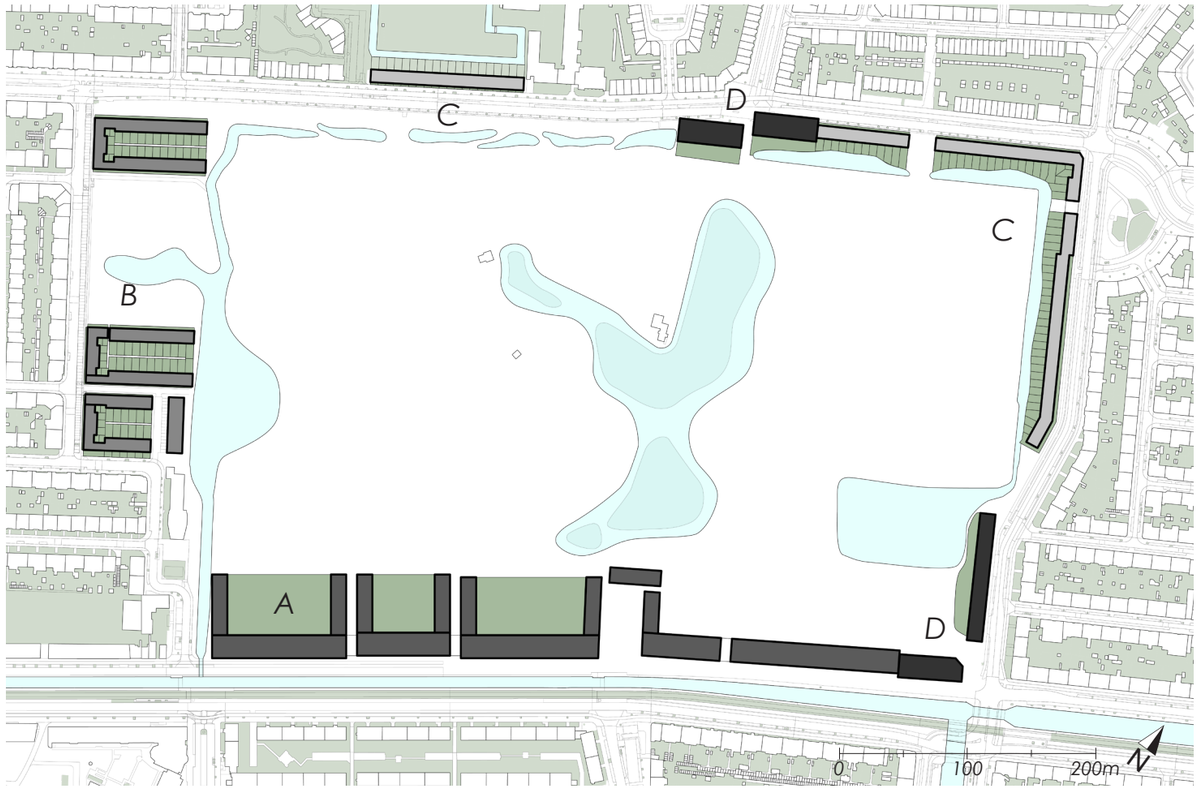
DESIGN - ZOOMED IN SITE DESIGN

Planting table

new or existing	Type of structure	Species of vegetation (woody)	Species of vegetation (shrubs)	Species of vegetation (grasses, herbs)	growth rate	spring	summer	autumn	winter	sensorial aspects
new A	**Swamp forest** Dense forest of young trees planted on a transition from wet to dry ground. Surface planted with low to mid high grass and flower mixture.	Wet: • Betula pendula, • Alnus glutinosa Dry: • Betula utilis var. Jacquemontii, • Alnus ×spaethii 'Spaeth'		A* • Flower mixture G3 (wet and moist soil) https://www.cruydthoeck.nl/winkel/mengsels-voor-bloemrijk-grasland/Flower mixture-g3-voor-jaarrond-natte-tot-vochtige-gronden/p83	10-20 years	White, purple, yellow (Flower mixture G3)	White, purple, yellow (Flower mixture G3)			Colour of bark (Betula pendula, Betula utilis var. Jacquemontii) Movement of vegetation through wind (Flower mixture G3)
new B	**Hornbeam and Ash forest** Dark forest cosisting of trees with a dense crown. Different textures on the ground surface showing harsh differences, saturated green plants in contrast to the dark forest. Forest sited on a wet part of the park. Only herbs to keep the viewlines on the water.	• Carpinus betulus • Fraxinus excelsior • Acer platanoides • Ulmus minor		• Hedera helix • Dryopteris filix-mas • Dryopteris dilatata • Ajuga reptans • Galium odoratum • Eurhynchium striatum • Plagiomnium undulatum • Actaea simplex 'White Pearl' • Aconitum napellus • Anaphalis triplinervis • Saxifraga urbium • Thalictrum delavayi	10-20 years (Ulmus minor, Fraxinus excelsior, Acer platanoides) 50-60 years (Carpinus betulus)	Yellow/green (Fraxinus excelsior, Acer platanoides) - yellow/green Red (Ulmus minor) Purple/blue (Ajuga reptans) White (Galium odoratum)	Blue (Aconitum napellus) White (Anaphalis triplinervis, Saxifraga urbium) Purple/pink (Thalictrum delavayi)	Leaf yellow (Carpinus betulus, Fraxinus excelsior, Acer platanoides) Yellow (Hedera helix) White (Actaea simplex 'White Pearl')		Fragnant flowers (Acer platanoides, Galium odoratum, Ajuga reptans, Actaea simplex 'White Pearl')
new C	**Pine, oak and beech forest** Semi transparant forest that has a rustling sound due to the wind. Texture differences between the different trees and shrubs, from dense to open and smooth to rigged. The forest is located on the higher and dryer parts of the park. Determined shrubs are used to guide movement.	• Pinus sylvestris • Quercus robur • Fagus sylvatica • Tilia cordata (after 25 years cut down to open up the forest to allow for more wind and sound)	Guiding shrubs in determined spaces C1 • Rhododendron ponticum Spaces withouth program C2 • Rubus fruticosus • Sorbus aucuparia • Rhamnus frangula	Spaces withouth program C^ • Anemone nemorosa • Trientalis europaea • Maianthemum bifolium • Huperzia selago • Cornus suecica • Luzula pilosa Spaces with program C* • NGW2 grass mixture https://www.cruydthoeck.nl/winkel/grass mixtures/ngw2-middenschraal-grass mixture/p336	10-20 years (Pinus sylvestris, Tilia cordata) 20-50 years (Quercus robur) 50-60 years (Fagus sylvatica)	Purple (Rhododendron ponticum) White/pink (Rubus fruticosus, Anemone nemorosa) White (Sorbus aucuparia, Rhamnus frangula, Trientalis europaea, Maianthemum bifolium, Cornus suecica) Red/purple/white/green (NGW2 grass mixture)	Yellow (Tilia cordata) White/pink (Rubus fruticosus) White (Rhamnus frangula, Trientalis europaea) Red/purple/white/green (NGW2 grass mixture)	Leaf yellow (Tilia cordata) Leaf yellow/red (Quercus robur, Fagus sylvatica) Red/purple/white/green (NGW2 grass mixture)	Evergreen (Pinus sylvestris, Rhododendron ponticum, Rubus fruticosus)	Sound of vegetation (Pinus sylvestris, Fagus sylvatica, Luzula pilosa, Luzula pilosa,) Fragnant flowers (Tilia cordata, Anemone nemorosa, Maianthemum bifolium)
New D	**Flower meadow** Open spaces on transitions between the water structures and the higher parts of the park. High flowers and grasses showing wind and colour.			• Miscanthus sacchariflorus • Miscanthus sinensis • Molinia caerulea High flower meadow D^ • Flower mixture G3 (wet to moist soil) https://www.cruydthoeck.nl/winkel/mengsels-voor-bloemrijk-grasland/Flower mixture-g3-voor-jaarrond-natte-tot-vochtige-gronden/p83 • Stipa tenuifolia • Stipa calamagrostis High grass and flower meadow D* • NGW1 Swamp grass mixture + Flower mixture G3 (wet to moist soil) https://www.cruydthoeck.nl/winkel/grass mixtures/ngw1-moerasschraal-grass mixture/p337		White, purple, yellow (Flower mixture G3)	White, purple, yellow (Flower mixture G3) Bronze (Molinia caerulea)	Red/brown (Miscanthus sacchariflorus) Pink (Miscanthus sinensis) Bronze (Molinia caerulea)	Remains in winter (Miscanthus sacchariflorus, Miscanthus sinensis, Molinia caerulea, Stipa tenuifolia, Stipa calamagrostis)	Vegetation catches sunlight (Miscanthus sacchariflorus, Miscanthus sinensis, Molinia caerulea) Movement of vegetation through wind (Miscanthus sacchariflorus, Miscanthus sinensis, Molinia caerulea, Stipa tenuifolia, Stipa calamagrostis)
new (exisitng structure extended) E	**Hedgerows** Densly planted wall with different textures shielding the gardens from the park. Structure planted on a bank near the water.	• Populus nigra 'Italica' • Populus × canadensis • Salix alba • Alnus glutinosa			10-20 years (Salix alba, Alnus glutinosa, Populus × canadensis) 20-50 years (Populus nigra 'Italica')					Sound of leaves (Populus × canadensis)
new F	**Coppice** Transparant screen shielding the sportfields. Planted on a bank, with a high grass/flower mixture.	• Salix alba			10-20 years					
new G	**Articulation** Low wall enclosing/framing a space. Hedge textured rigid.		• Taxus baccata							
new H	**Solitary tree** Eye catching tree that can survive on semi wet and dry soil. Striking color in the fall and summer.	• Acer rubrum				Red (Acer rubrum)		Leaf red (Acer rubrum)		Fragnant flowers (Acer rubrum)
new I	**Solitary tree** Eye catching tree that can survive on wet soil, with an outstanding texture and structure.	• Salix × sepulcralis 'Chrysocoma'								
new J	**Screen** Semi transparant screen next to the water enclosing a space. Mix of high transparant reed on wet soil that moves in the wind and keeps its structure during the winter			• Miscanthus sacchariflorus • Miscanthus sinensis • Molinia caerulea			Bronze (Molinia caerulea)	Red/brown (Miscanthus sacchariflorus) Pink (Miscanthus sinensis) Bronze (Molinia caerulea)		Movement of the wind through vegetation (Miscanthus sacchariflorus, Miscanthus sinensis, Molinia caerulea) Vegetation catches sunlight (Miscanthus sacchariflorus, Miscanthus sinensis, Molinia caerulea)
new K	**Orchard** Orchard with mown out paths in a grass field. Mixture of species of fruittrees on dry soil.	• Malus sylvestris • Prunus avium			Fast 10-20 (Prunus avium) Medium 20-50 (Malus sylvestris)	White/pink (Malus sylvestris) White (Prunus avium)		Leaf yellow/red (Prunus avium)		
new L	**Clump** Group of trees	• Betula pendula								
existing structure (extended) M	**Line**	• Aesculus hippocastanum				White (Aesculus hippocastanum)		Leaf yellow/orange (Aesculus hippocastanum)		
existing structure (extended) N	**Wall - line**	• Acer platanoides				Yellow/green (Acer platanoides)		Leaf yellow (Acer platanoides)		Fragnant flowers (Acer platanoides)
existing structure O	**Clump** Various present species of trees	For example • Arbutus unedo							Evergreen (Arbutus unedo)	
existing structure (extended) P	**Solitary tree**	• Betula utilis var. Jacquemontii								
existing structure Q	**Solitary tree**	• Cedrus libani							Evergreen (Cedrus libani)	
existing structure (extended) R	**Line**	• Fagus sylvatica						Leaf yellow/red (Fagus sylvatica)		Sound of leaves (Fagus sylvatica)
existing structure (extended) S	**Line - screen**	• Fagus sylvatica • Ulmus 'Clusius'						Leaf yellow/red (Fagus sylvatica) Leaf yellow (Ulmus Clusius')		Sound of leaves (Fagus sylvatica)
existing structure T	**Solitary tree**	• Fagus sylvatica 'Pendula'						Leaf yellow (Fagus sylvatica 'Pendula')		Sound of leaves (Fagus sylvatica 'Pendula')
existing structure U	**Clump**	• Ilex aquifolium • Abies nordmanniana • Picea abies							Evergreen (Ilex aquifolium, Abies nordmanniana, Picea abies)	Fragrant flowers (Abies nordmanniana)
existing structure V	**Clump**	• Pterocarya fraxinifolia						Leaf yellow (Pterocarya fraxinifolia)		
existing structure W	**Line**	• Platanus x hispanica				Yellow (Platanus x hispanica)		Leaf yellow (Platanus x hispanica)		
existing structure X	**Screen - line**	• Tilia cordata					Yellow (Tilia cordata)	Leaf yellow (Tilia cordata)		Fragrant flowers (Tilia cordata)
existing structure (extended) Y	**Line - screen**	• Ulmus 'Clusius'						Leaf yellow (Ulmus 'Clusius')		

DESIGN - ZOOMED IN SITE DESIGN

Parcel passport



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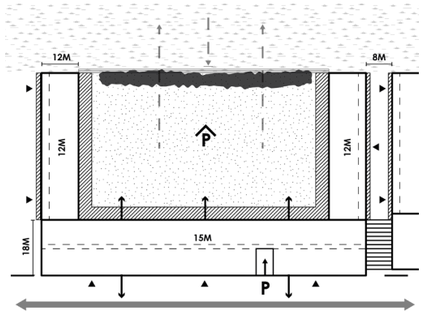





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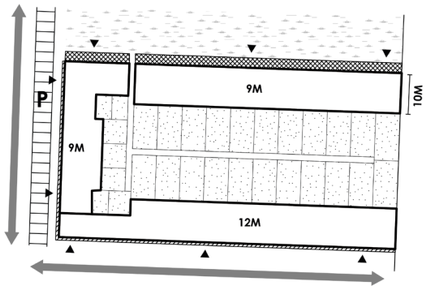





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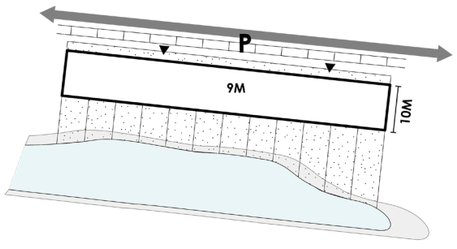





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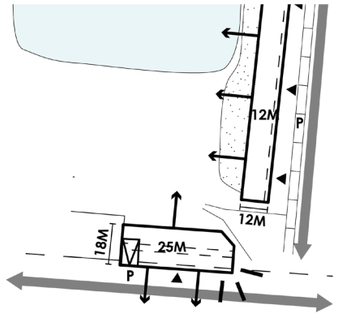
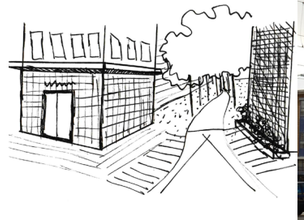
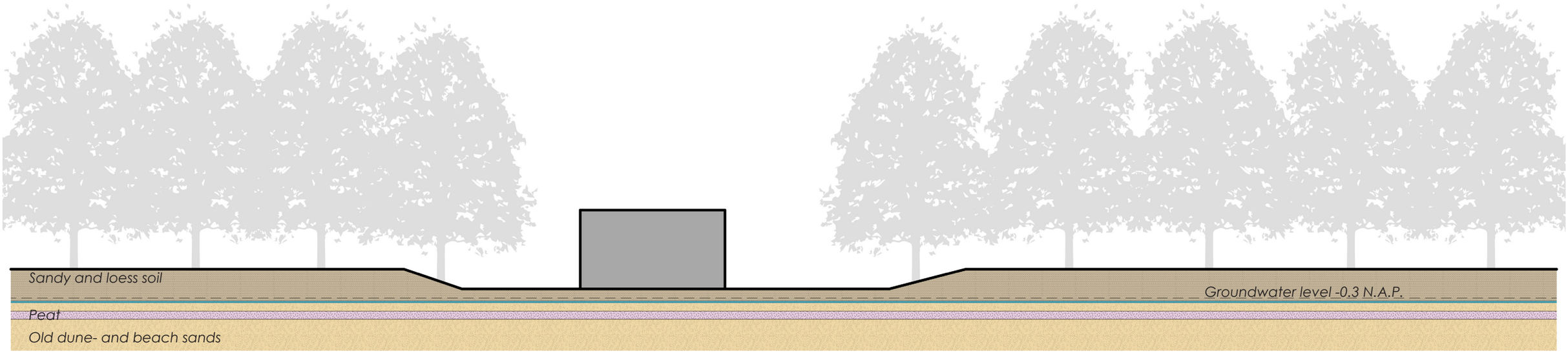


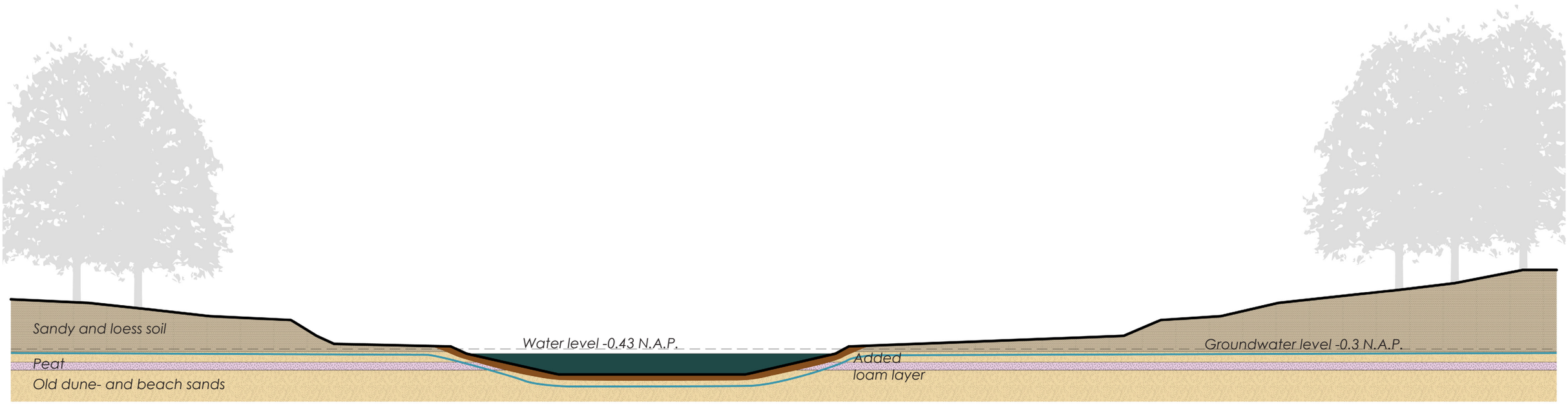




DESIGN - ZOOMED IN SITE DESIGN

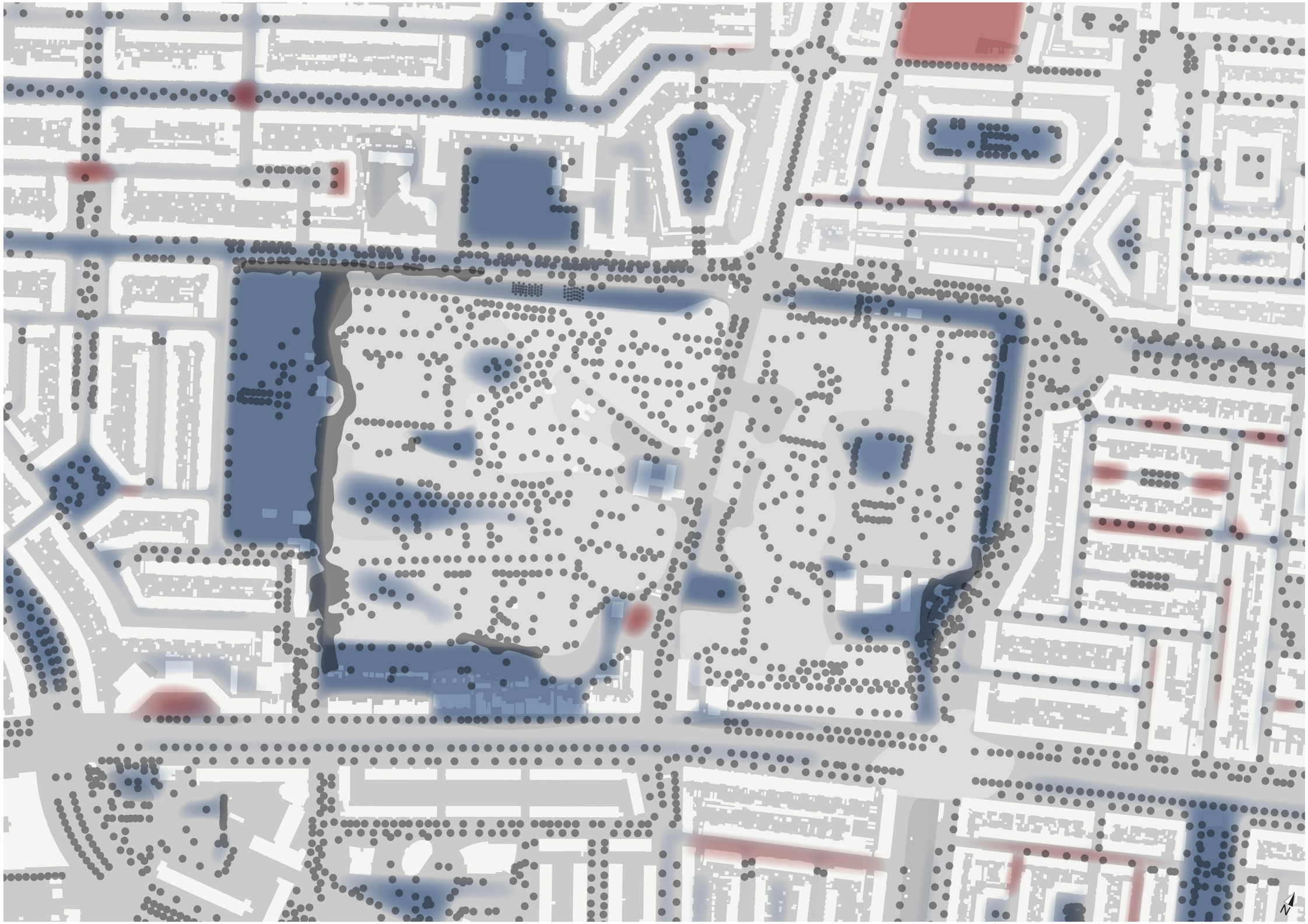
Soil section





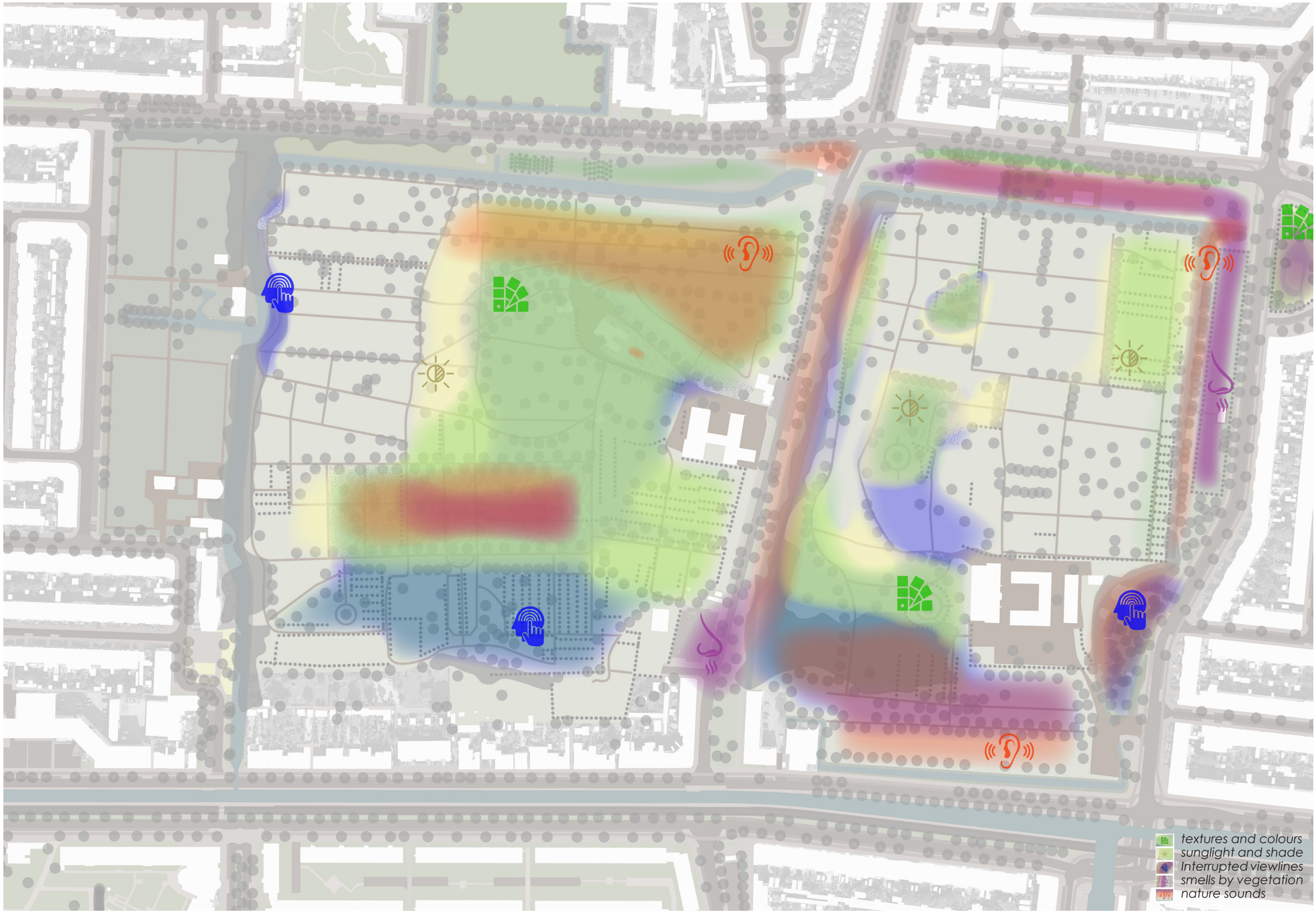
ANALYSIS SITE: CEMETERY OUD AND NIEUW EYKENDUYNEN

Water nuisance and heat islands



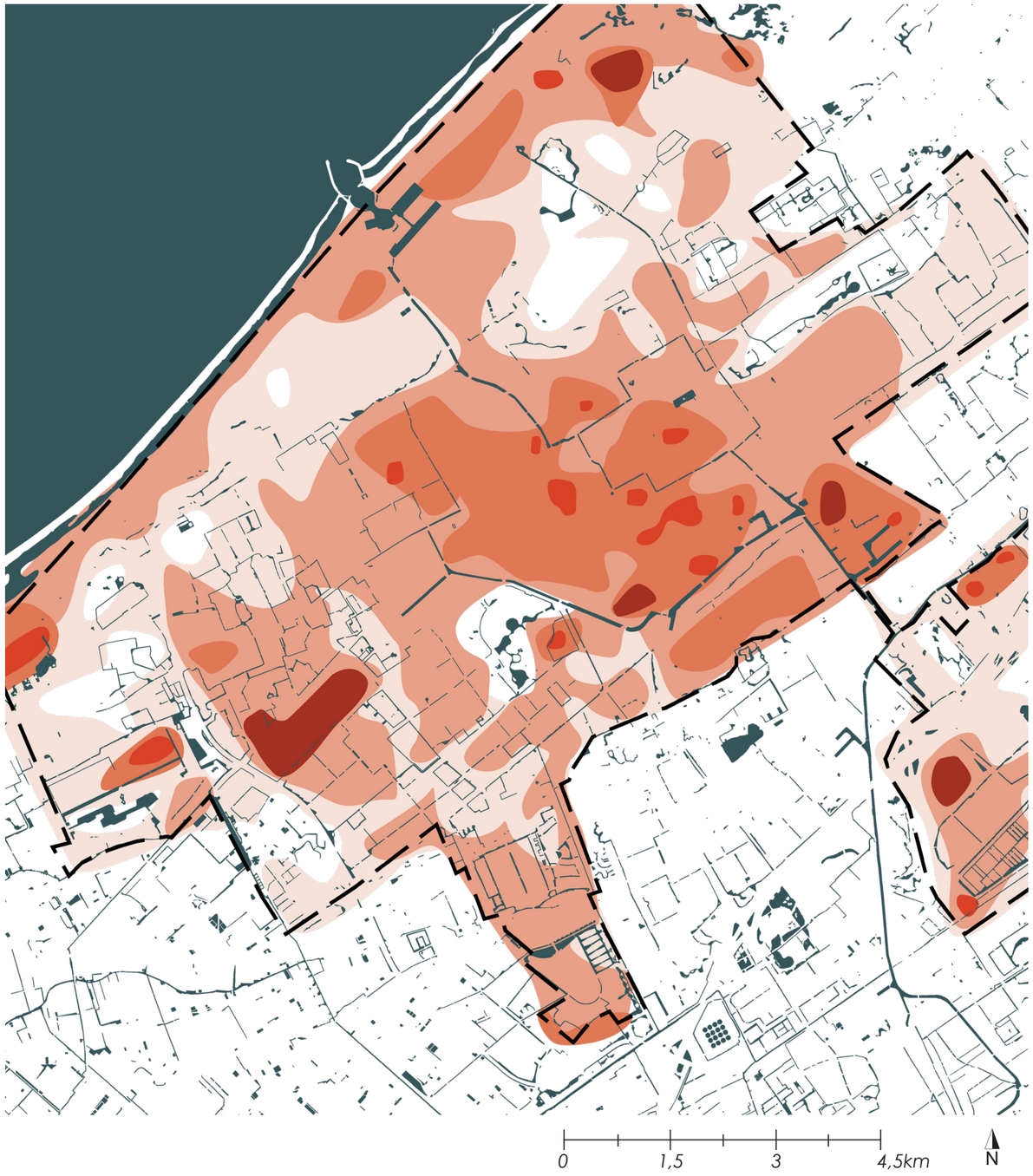
ANALYSIS SITE: CEMETERY OUD AND NIEUW EYKENDUYNEN

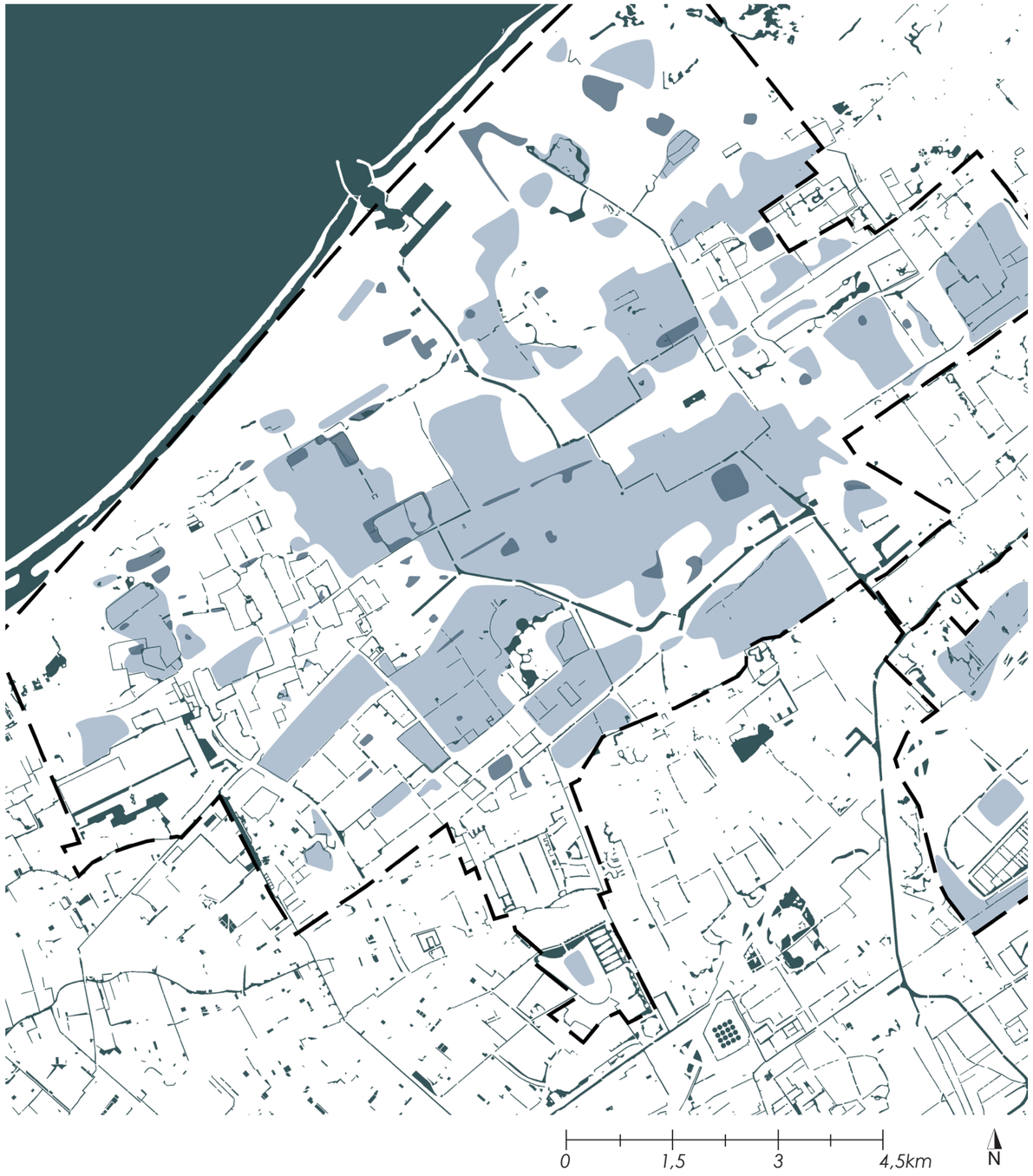
Experience of the site - sensorial



ANALYSIS - DEN HAAG AND REGION

Climate issues in Den Haag





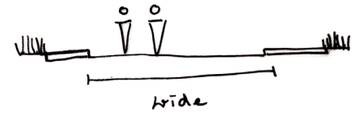
URBAN FOREST MOVEMENT(S)

Case study - Buttes-Chaumont

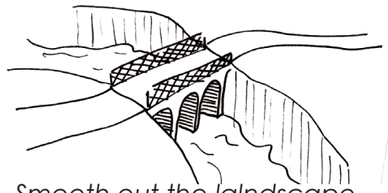


- Forested area
- Building
- Entry
- Belvedere
- Elevations
- Water
- Fast movement carriage
- Medium movement walking
- Bridge
- Slow movement hiking
- Train

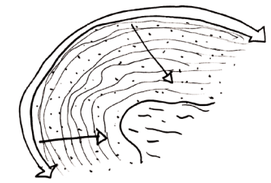
Movement 1 carriage



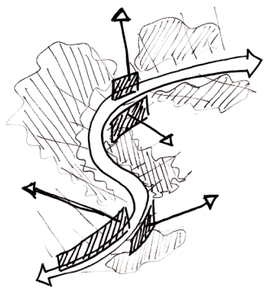
Wide path



Smooth out the lalndscape

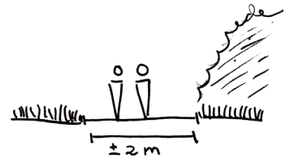


Panoramic view along route

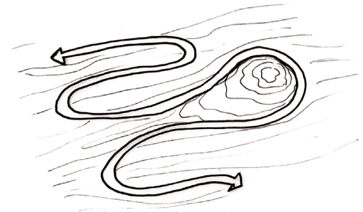


Pastoral landscape

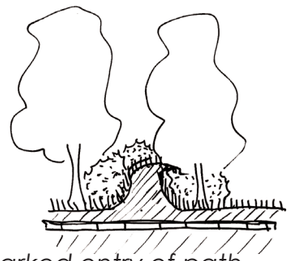
Movement 2 walking



Path

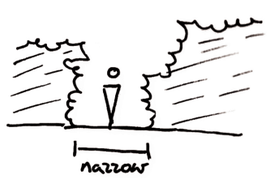


Path following the landscape by creating sloped paths

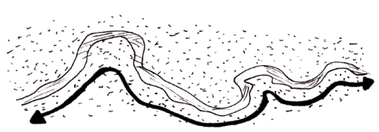


Marked entry of path

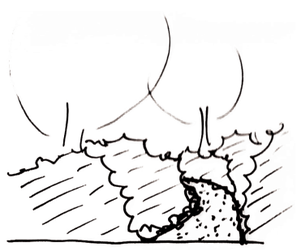
Movement 3 hiking



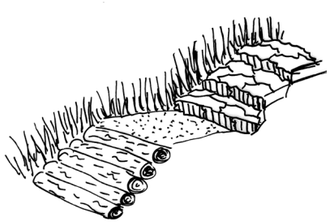
Narrow path

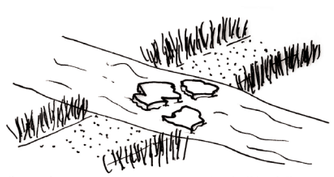


Path following lines in the landscape



Enclosed entry to path





Experiencing the elements of the landscape