Q2

Sustainable Urban Engineering of Territory

Research and Design Studio

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CONTENTS

Note: Section 1, Part B (Analysis and Patterns) and Part C (Technical Potential Map and Section) has been worked on together with Jeroen Stroetzel.
Section 3 - Economic Feasibility Essay has been worked on with Jeroen Stroetzel.

a- Sustainability Framework Essay

Sustainable design is at the forefront of discussion in almost every field today. It is an all-encompassing subject that requires attention to every detail. The United Nations defines sustainable development as *development that meets the needs of the present without compromising the ability of future generations to meet their own needs* (UN SDG, 2015). In September 2015, the UN put forward 17 goals as part of the new sustainable development agenda. These goals aim to harmonize three important aspects or pillars of sustainability: economic growth, social inclusion and environmental protection. Participation from all stakeholders is necessary to ensure the implementation of the set agenda. These are goals have been adopted by world leader in most of globe. Governments, the private sector and citizens action around the world is imperative if we want to move in the direction of sustainable development as a civilization.

As designers and professionals in the field, it is essential to understand the role we play in shaping our future environments. In recent decades, development has been occurring at a much faster pace than before. This can attributed to a number of events in history such as the industrial revolution, rise in population, mass production, technological advancements and the phenomenon of globalization. Cities no longer expand organically and slowly. Human intervention in the urban fabric in recent times is visibly drastic. By 2050, cities are expected to be the home of about 66% of the world's population (UN DESA, 2014). The globe has an urban future. *With this increasing trend, the more pressing question to be answered is – what kind of urbanism will prevail?*

Taking a step back in history, it is important to note that previously development was propagated by architects and engineers as when the need occurred. Hoomeijer (2014) said, 'The accelerating powers of industrialization were influencing technology, economics and society and urban form.' (p.161). The urban landscape had never been looked at as a whole until the beginning of the 20th century. 'Alongside traffic, building and water, a new element therefore appears in the urban network: public space.' Hoomeijer (2014) (p.121). In the 1900's the discipline of urban design and planning developed through the necessity of shaping cities that are desirable places to live and work in. In recent times, the exaggerated growth of cities in most of the world is putting urbanists face to face with complex and bigger challenges than ever before. The interaction between urban form, social exchanges, economic standpoint and governance outlook within cities around the globe are critical. The impact of our rapidly growing cities on the natural habitat is also a pressing issue of immediate concern. *Sustainable development frameworks in cities should take into consideration the interaction between social, economic and environmental systems within the urban fabric.*

'Our choices in Urbanism, will define not only the physical nature of our communities but will also prescribe our environmental footprint as well as frame our social opportunities and underwrite our economic future.' said Calthorpe (2010), (p.3). As Urbanists, we are at a pivotal point of bringing together a multidisciplinary team that can tackle the numerous pressing issues cities face today – erratic climate events, social upheaval, economic crisis etc. 'Yet, architectural and urban design are often missing from the proposed remedies for climate change, job growth, and environmental stress; it is the invisible wedge in the pie chart of green solutions.', adds Calthorpe. Energy transition, social opportunities and economic growth intersect in urban areas and can be addressed through designing a resilient urban form. Urbanism can be used as a tool to introduce a conservation mechanism in a city as well as impact a lifestyle change for its residents. As urban designers and decision makers, we have the opportunity to introduce solutions that are at this critical point of influence in the urban fabric. At the crux of it, the solutions that are able to sustain themselves over time and give back to the system they belong in, are those that are robust and adaptable.

Cities are also the place where natural systems interact with human system. This intersection occurs at various scales – street, neighborhood, city and region. Decisions in urbanism have a big impact on this interaction. As Urbanists, it is also our responsibility to be able to comprehend the natural system within the different scales and use it to make decisions that won't have a detrimental impact on nature. The natural system and human system should co-exist in harmony in any design intervention. Challenging the limits of current infrastructure to able to adapt to and include nature within its boundaries is the first step toward establishing a sustainable and long lasting relationship between the natural system and human system in cities. Social infrastructure and green-blue infrastructure should be given just as much importance as transportation infrastructure and energy infrastructure. For example, corridors in cities should be able to serve as multiuse infrastructure - supporting transportation, water channelization and areas for social infrastructure.

So how can we shape ethical design principles as urbanists keeping in mind the physical, social and economic dimensions in the city fabric?

'Against this modernist alliance of specialization, standardization and mass productions stands a set of principles rooted more in biology than in physics, more in ecology than in mechanics. These are the principles of diversity, conservation and the human scale.' says Calthorpe (2014), p.52.

Diversity is at the core of any rich and healthy ecological system. In urban design, it translates into have more mixed-use and inclusive communities. We should move away from the trend of superblocks and single zoned land uses. A diverse urban form can increase social connections and interactions within the community, improve economic opportunities and localize mixed uses within every community.

Conservation means that nothing is ever lost in the natural system. A zero waste ideology should be adopted. Any intervention in the natural system should be thoroughly examined to ensure that the output results in a necessary and efficient consumption. Existing resources should be recycled and re-used in the built environment – be it natural, social, infrastructure or architectural.

The human scale is the city's tendency towards detail and complexity. This principles brings people back into the built environment that is being increasingly shaped by vehicular movement. In economic principles this would translate into decentralization of economic activities and supporting local entrepreneurs and businesses. In community design it means to shape environments that encourage day-to-day interaction as a consequence of daily life.

An example of revitalized infrastructure that has been transformed into a social space is the High Line in Ney York City. A railway line abandoned for more than a decade was transformed into an attractive public realm. This is a successful example of renovating a neglected part of the city into a public park that is used by residents in the area and has also made it onto the list of tourist attractions in the city.

The principles of diversity, conservation and the human scale is applicable in the physical, social and economic realms of the urban fabric. Decision makers should strive to implement policies that are embedded in promoting frameworks that address the actual needs of people and support harmonious interaction between the natural system and the physical, economic and social realms of the built environments. Governance of cities and their regulations should be inclusive of citizen's opinions and needs. In fact we are already in the next era of design, where an increasing number of decision makers are realizing the potential and value of community participatory design. 'People cannot be held accountable if they were never given the responsibility to begin with' said Mr. Sanjay Sridhar (1). Equity in the decision making process is vital. Designing frameworks that can translates people's opinions into the existing urban fabric is essential to ensure the fluid working of any governance system.

Calthorpe (2010) says ‘At this critical juncture – when energy, environmental, fiscal, and national security challenged are converging – we cannot afford another generation of unsustainable growth.’ (p.119)

The intersection of the effects of climate change, urbanism and communal action provides an opportunity for architects and planners to reinforce the complex system of cities by challenging current norms and empowering residents with tools to influence spatial form that they interact with. Ultimately the city is a representation of what its people want. In our current landscape striving for mostly ‘iconic’ developments, planners and architects are challenged to change the way in which they work and implement ideas. In the face of pressing issues such as climate change, the refugee crisis, economic meltdowns and disappearing natural habitats, one wonders, how will city designers respond to our society’s need? Will we see a (much needed) radical transformation in our design approaches that can translate into a modest and contextually befitting urban vision that can adapt to the fast changing climate, economic and political conditions?

References

Calthorpe, P. (2010). Urbanism in the Age of Climate Change. Washington DC.

Hoomeijer, F. (2014), The Making of Polder Cities

United Nations Department of Economic and Social Affairs (UN DESA) and United Nations Sustainable Development Goals (UN SGD)

(1) C40 Regional Director of South and West Asia. Speech at Eco-City World Summit, October 2015, Abu Dhabi, UAE

b- Analysis and Patterns

1 - Archeology

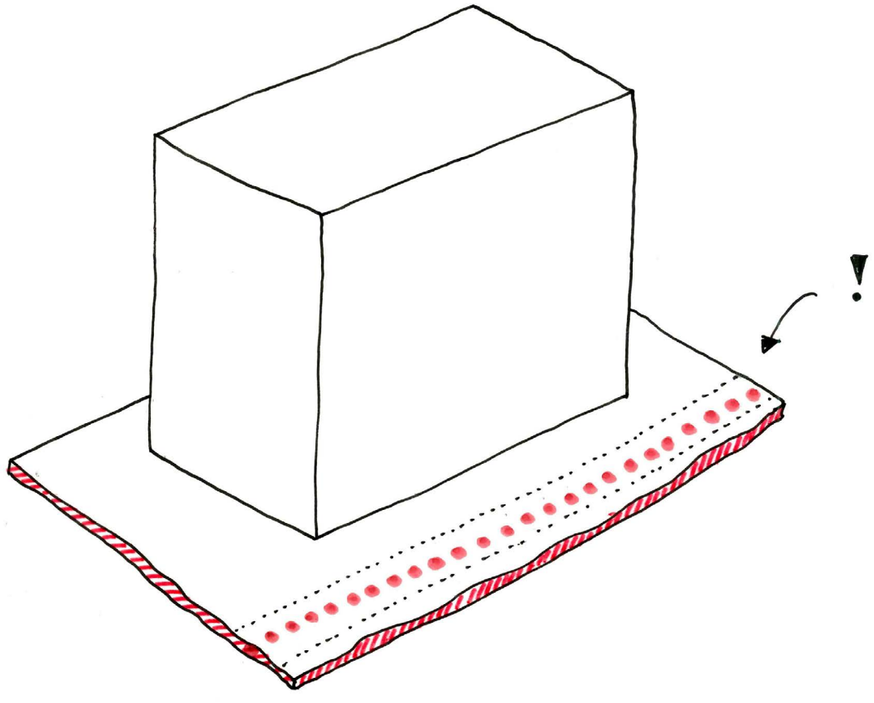
GIS Maps

Archeological Characteristics

Archeological Expectations

Wenspeilen

The archeological characteristic, archeological expectations and surface level needs to be taken into consideration while developing archeologically sensitive areas. Special attention to keep a buffer between sensitive areas and planned development is key to designing in harmony with nature and preserving archeological remains.



Pattern

Plan
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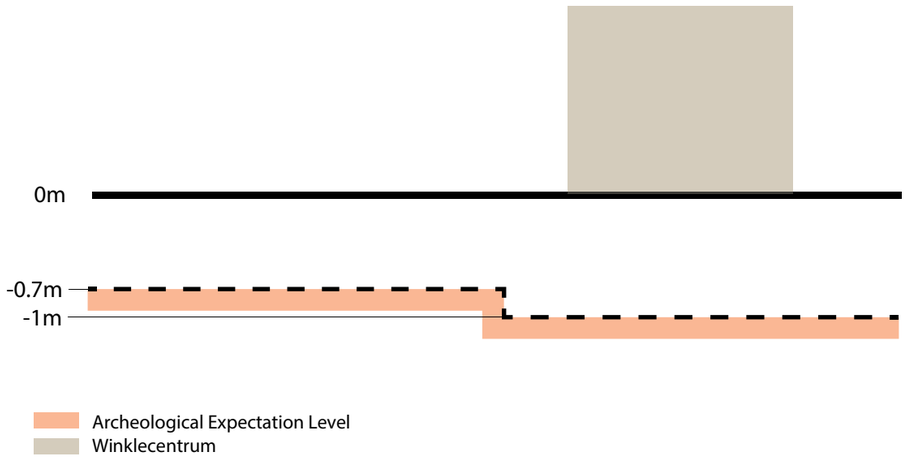

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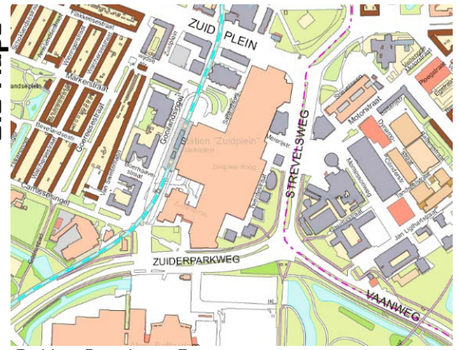
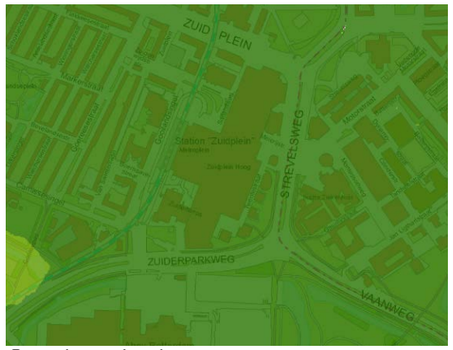
2- Building Foundation Typology

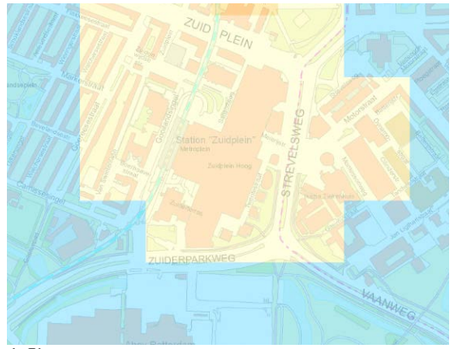
GIS Maps



Building Foundation Type



Groundwater Level



Infiltration

Plan
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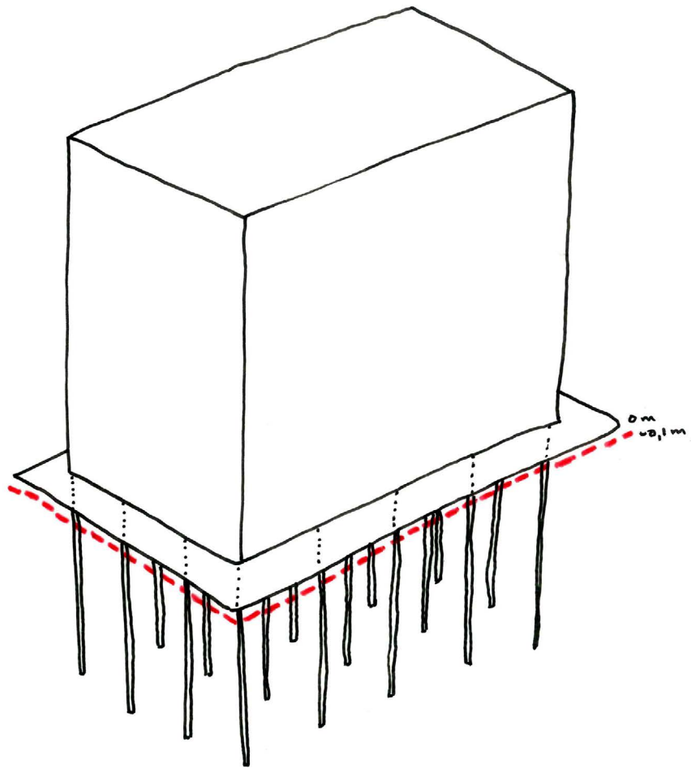
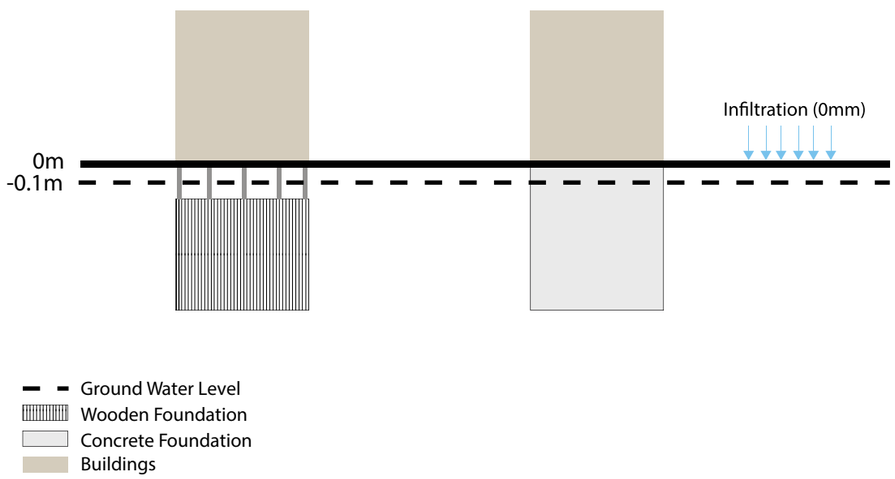


Pattern

Wooden foundations of buildings should be below the ground water level. If exposed to oxygen above the water level, the wooden foundations are likely to corrode. On the other hand, concrete pile foundations are not subject to corrosion in relation to the ground water level. Ground water level is also subject to change by surface water infiltration rates.

The area around Zuidplein, has a surface water infiltration rate of 0mm. Hence it can be estimated that the ground water level is not likely to change in the near future. While choosing foundation types for new constructions or renovations, wooden foundations that are submerged below the current ground water level is acceptable. Alternatively, concrete foundations can also be considered.



Section
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3 - Positioning Trees

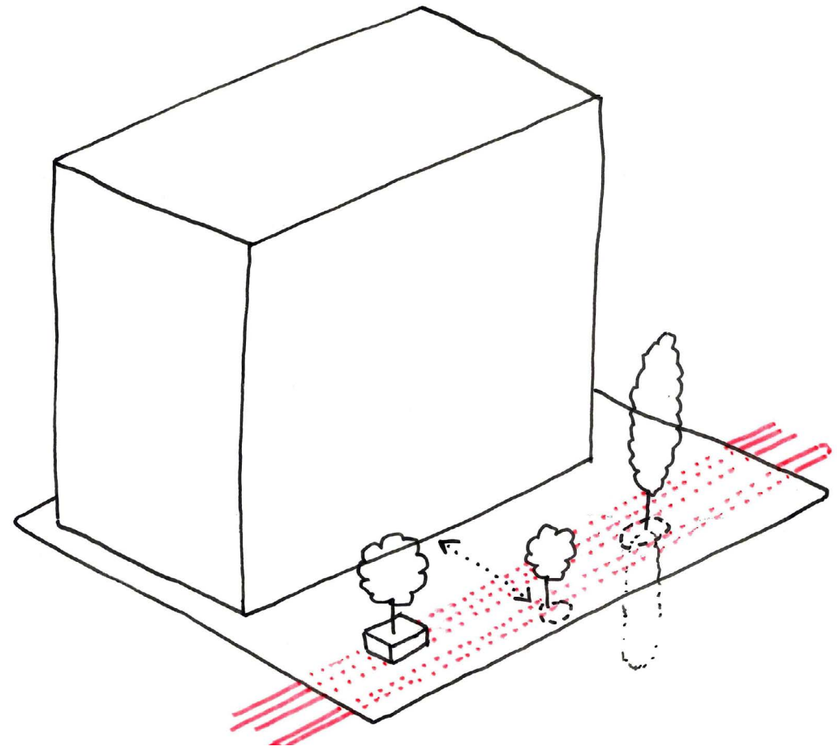
GIS Maps

Cables and Pipes

Trees

- District heating
- Water
- Gas
- Sewage
- Trees

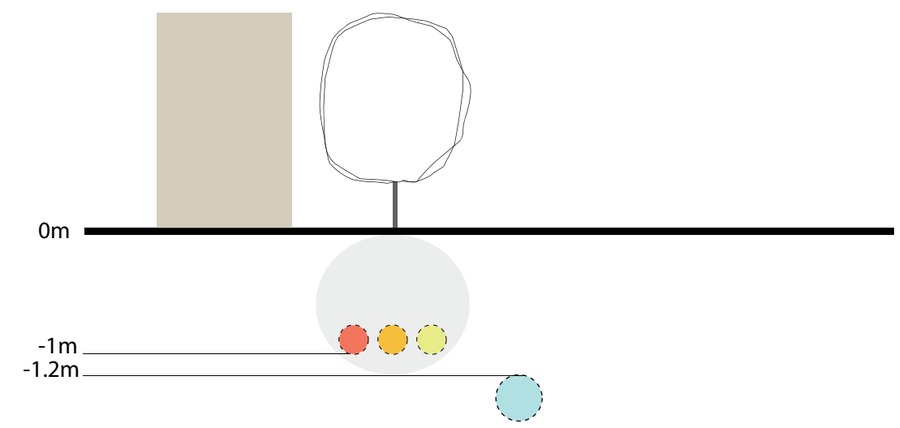
Plan
1:5000



Pattern

Buildings generally have all their supporting infrastructure such as cables and pipelines for gas, water district heating, electricity, telecom and sewage close to the building surface underneath the ground level. Gas, water and district heating pipelines are generally rigid and not easy to re-direct. They are present at a depth of approximately 1m below the ground surface. Electric and telecom cables can be relatively easily moved or re-directed. When we plant trees close to the building edge, the tree roots usually grow much deeper into the earth and intersect with these rigid pipelines. In such cases the roots are shortened or removed to make room for the underground infrastructure. This damages the tree roots, thus resulting the tree dying over the next 25-35 years.

This can be avoided by planting trees in 'crates' that can support the roots and provide room for it to safely grow. Alternatively, trees can be planted above the sewage drainage line as it is deeper (approximately 1.2-1.5m) and will not in come in the way of healthy trees and vice versa.



Section
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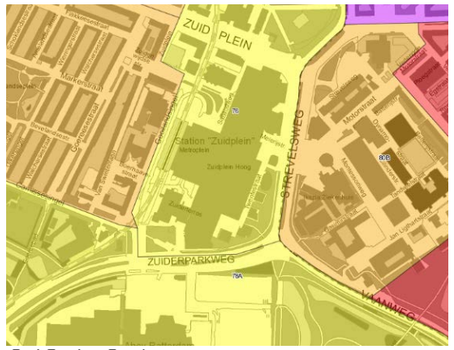
- Tree Roots
- Gas Pipeline
- Water Pipeline
- District Heating Pipeline
- Sewage Pipeline

4 - Conveyance of Water

GIS Maps

Cables and Pipes



Soil Quality 0m-1m

Soil Quality 1-2m

Plan
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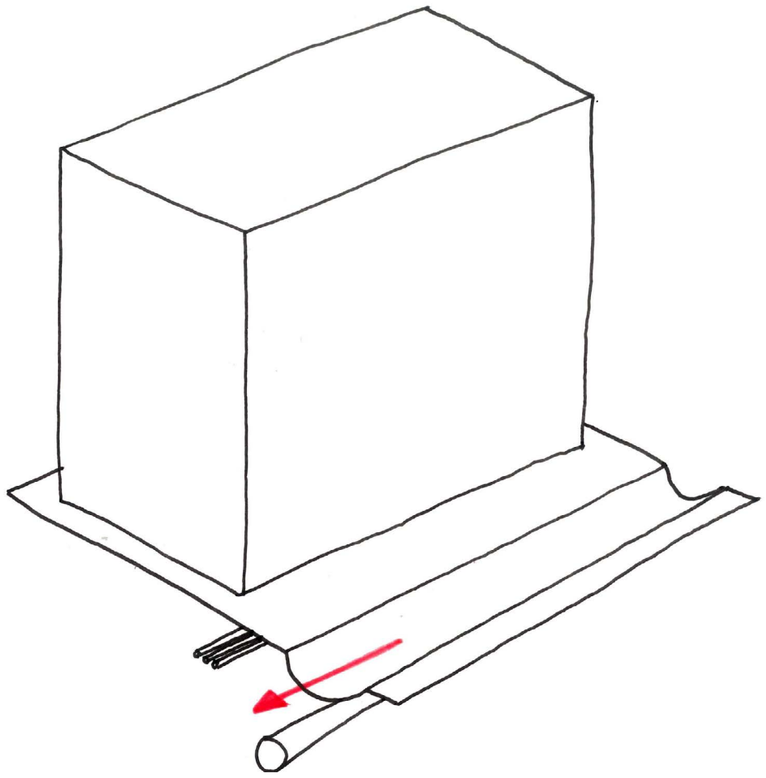
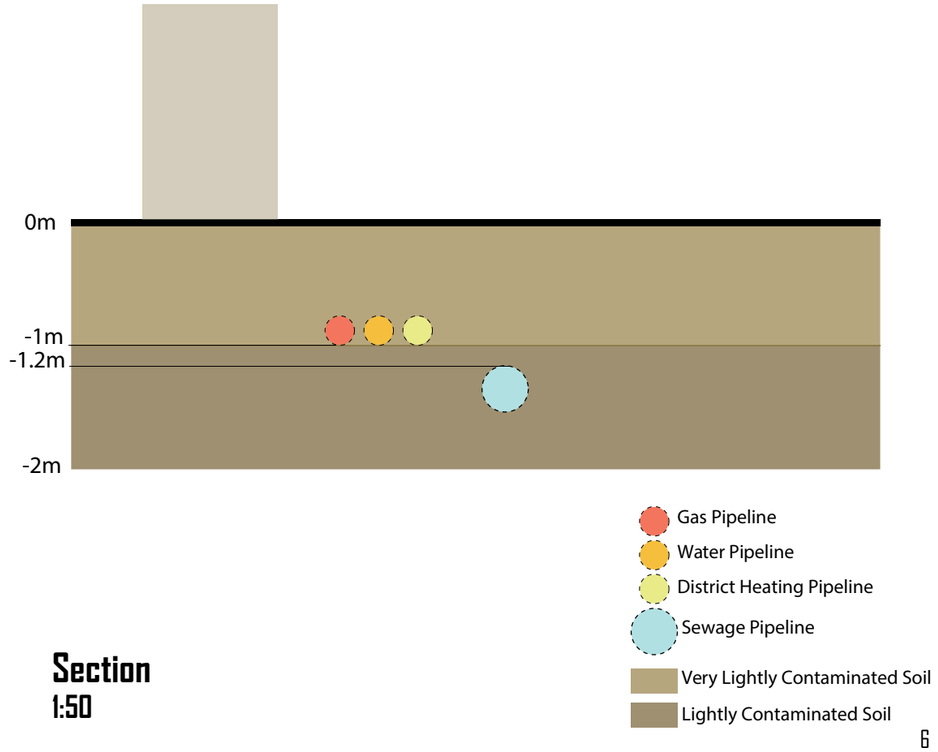


Pattern

Soil type and contamination levels are vital to make the choice between conveying or infiltrating water in any site. The soil contamination levels are increasing as the depth from the surface increases. The soil type in the area is largely clay with a mixture of sand. Both these factors lead to the conclusion that conveying water through the site should be the preferred option. In case of infiltration, the soil needs to be restored and periodically checked to ensure no contaminants drain into the ground water level.

Conveyance of water through designing a feature such as a bio-swale, is a way to design for exceedance during flooding. Excess water during heavy rainfall or a storm would have room to channelize through the site leaving the surrounding public realm and building safe from the effects of excess water. Such a channel should be placed along the sewage pipeline at the surface level. This way any excess water that infiltrates through can be collected in the existing pipeline.



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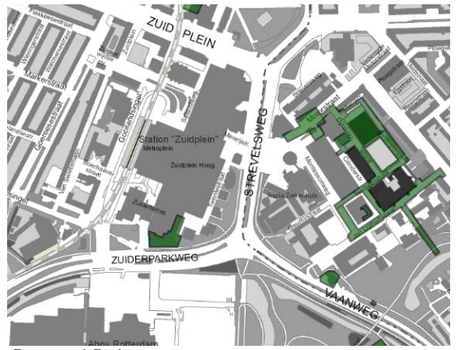
5 - Soil Quality

GIS Maps

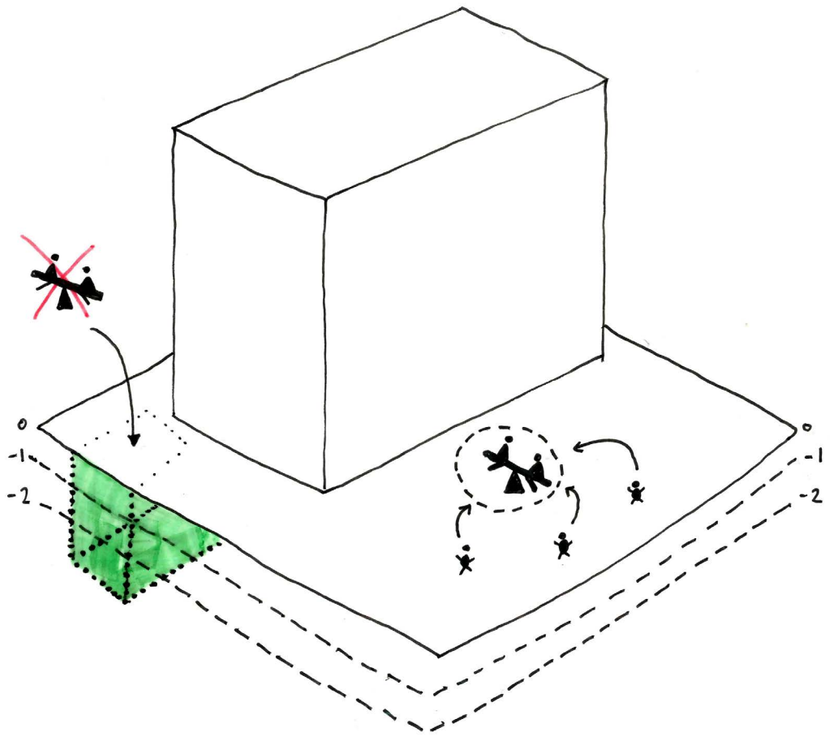
Soil Quality 0m-1m

Soil Quality 1-2m



Restored Soils

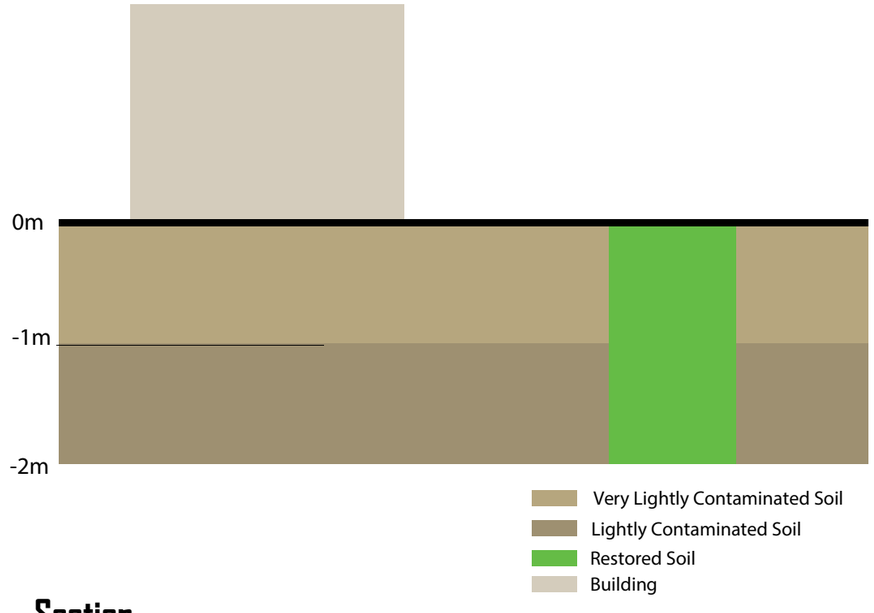
The soil quality in the area has very light contamination at a depth of 1m below the surface and light contamination between 1-2 m below ground level. Deciding the function above ground level keeping in mind the contamination level is essential while developing the area. For example, it is not ideal to place playgrounds directly above contaminated soil as this can present a safety hazards for its user, which are children. On the other hand, restored soils in such areas have a better potential to serve as recreational spaces including children's play area.



Pattern

Very lightly contaminated soil
Lightly contaminated soil
Restored soil
Playgrounds

Plan
1:5000



Section
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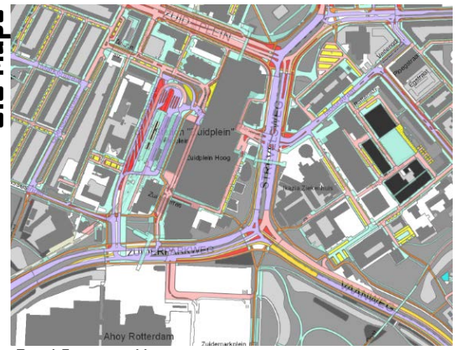
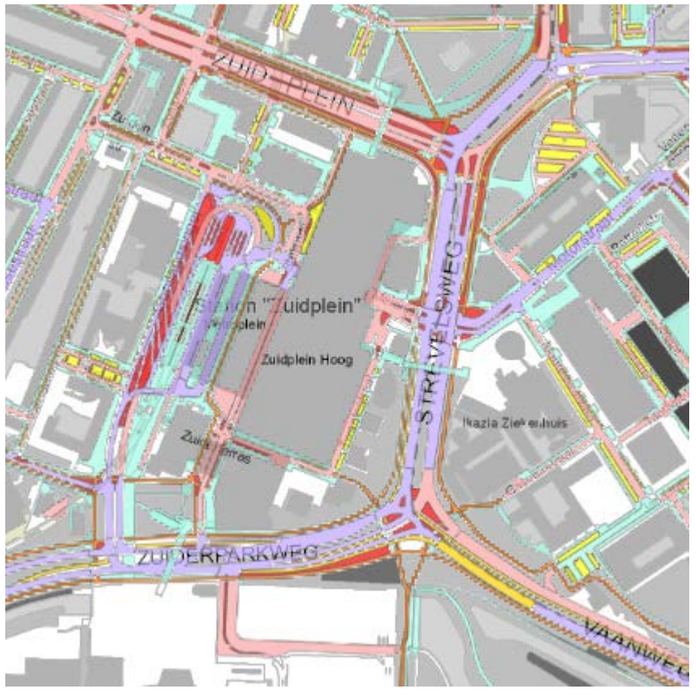
6 - Shared Space

GIS Maps

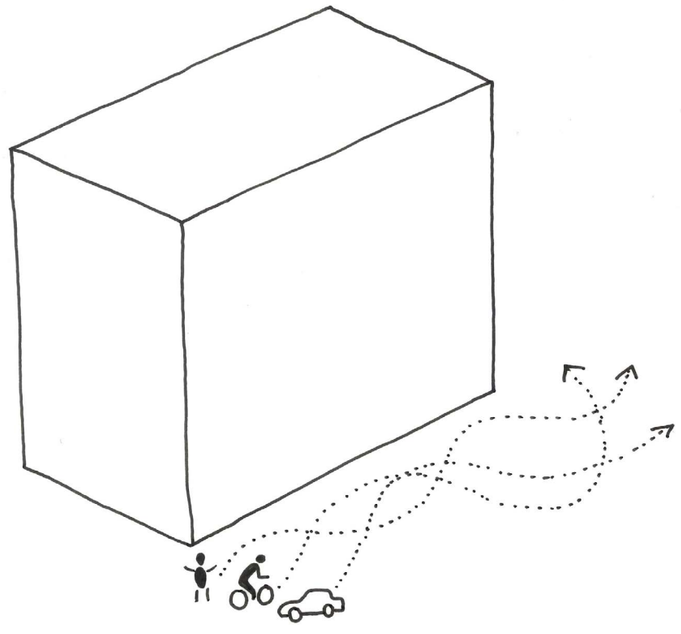


Road Function Map



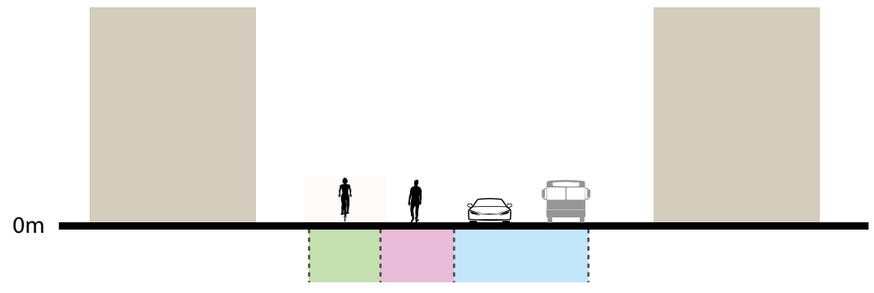
- Road
- Road and Bus route
- Pedestrians
- Bicycle path
- Parking
- Verge of the road

Plan
1:5000



Pattern

The current public realm has separated movement for pedestrians, cyclists and cars. Moreover, there is a lack of clarity about the boundaries of these movement patterns even though it is adjacent to each other. This aspect makes it unsafe for pedestrians. Instead a concept of 'shared space' can be introduced wherein the street is treated as a public space. Cars, cyclists and pedestrians would use the same street. This makes cars and cyclists more aware about being in the same zone as pedestrians and forces them to move slowly. The speed limit for cars is very low thus making it safer and increasing interaction between all modes of connections. This is also knows as a 'Woonerf' or a living street.



- Bicycle Pathway
- Pedestrian Pathway
- Vehicular Movement

Section
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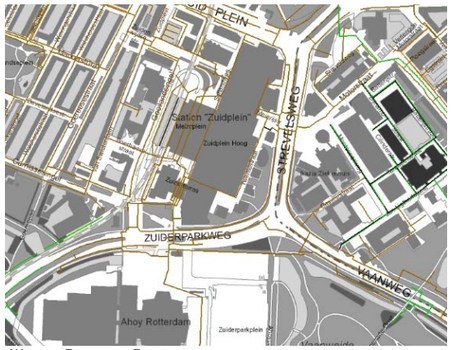
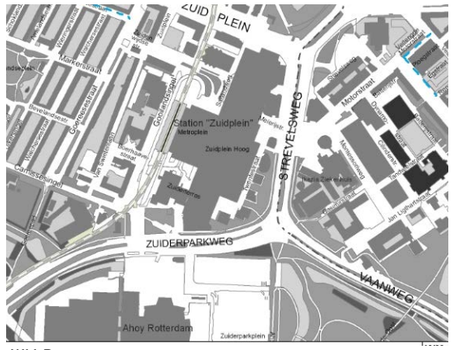
7 - Sewage System

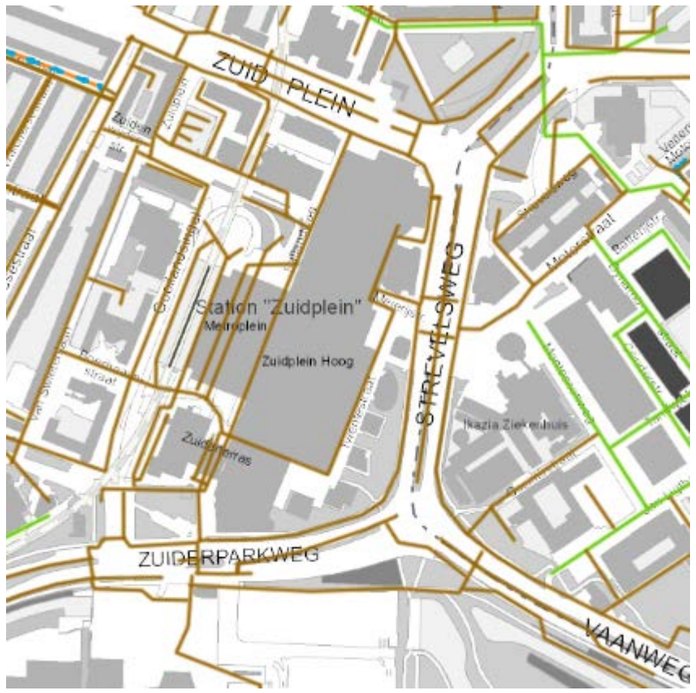
GIS Maps



Water Sewage System



WM Drains

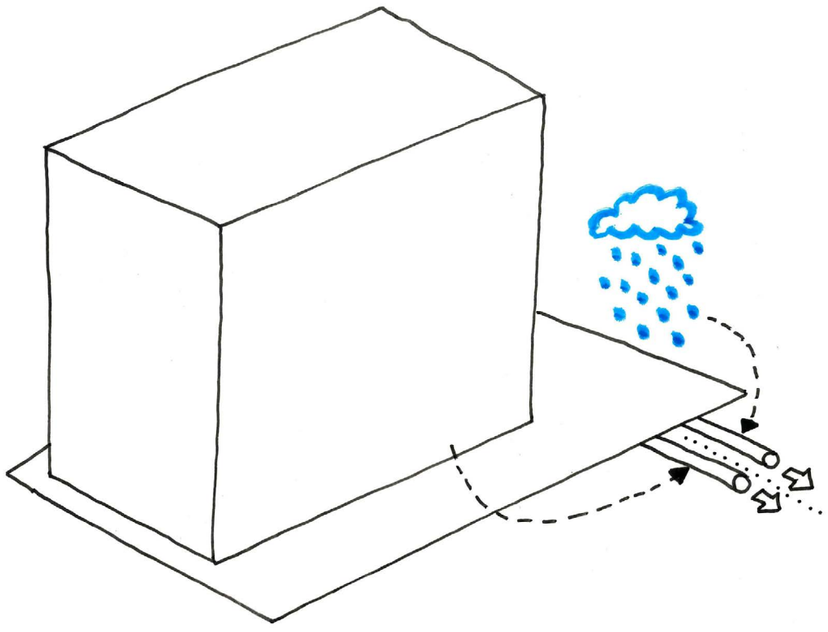


Shared Sewage System

Rainwater Sewage System

Groundwater Sewage System

Drainage



The current sewage pipelines immediately around Zuidplein are part of a combined sewage system. It collects black water from buildings as well as rain water. This is not an ideal situation. In case of excess surface water during heavy rainfall or flooding, it is possible that the water level exceeds the capacity of the pipeline thus resulting in an overflow. A better solution is to implement a separated sewerage system that collects storm water and black water in different channels. This way it also possible to use surface features such as a water square or retention ponds to store excess rainfall.

Pattern

Plan
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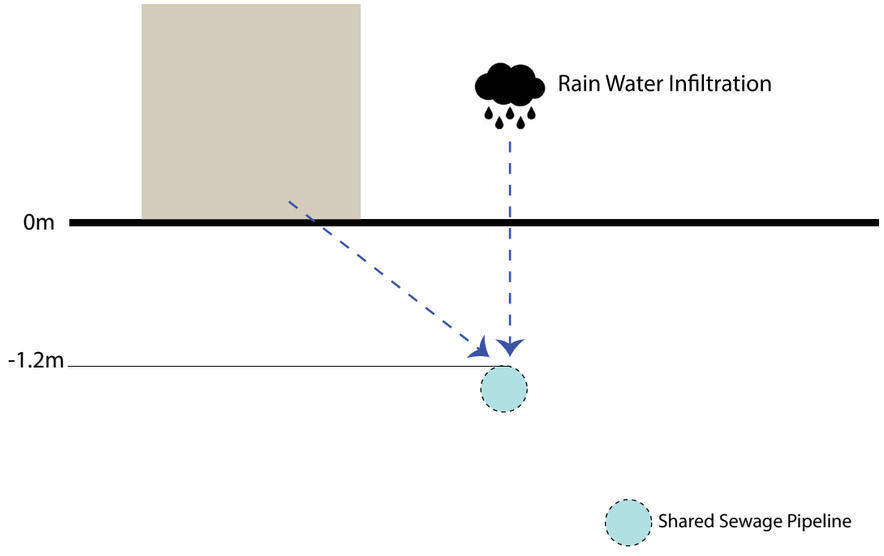

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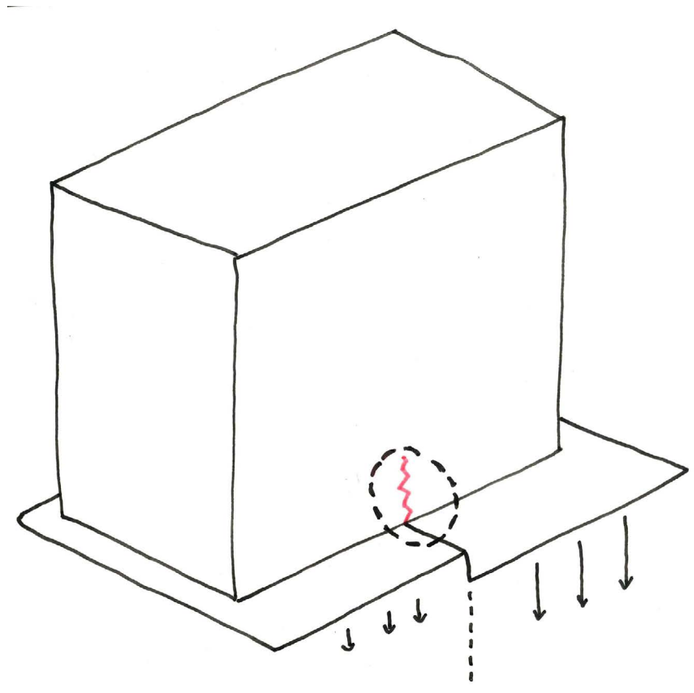
8 - Building Edge

GIS Maps

Soil Setting Level

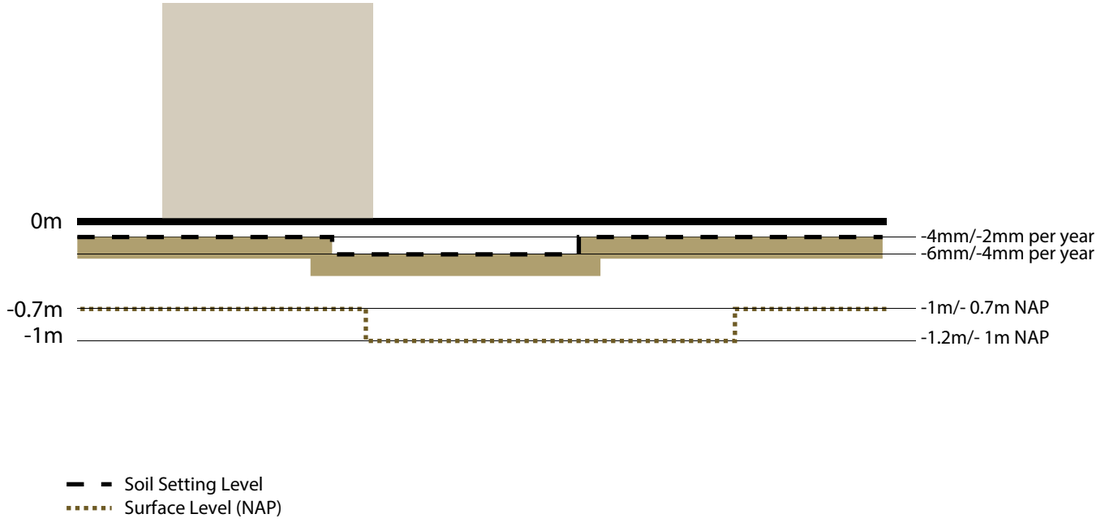
NAP Level

Plan
1:5000



Pattern

Soil stability is an important factor to study while choosing where to build on the site. The soil setting level needs to be studied in combination with NAP surface level. Building foundations should not be placed at the edge of two different soil setting conditions. As the soil in one settles faster than the soil in the adjacent area, the stability of buildings built at the edge of it can be compromised. Instead, building foundations should be fully within a single soil settling condition.



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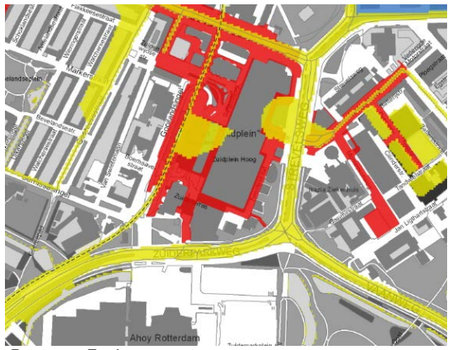
9 - Water Potential

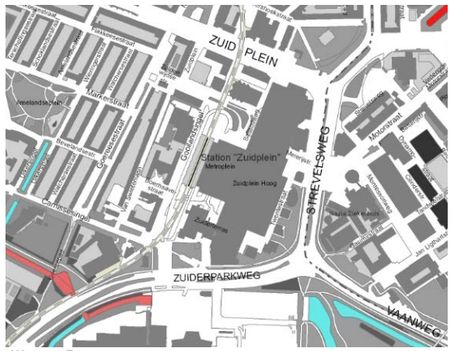
GIS Maps



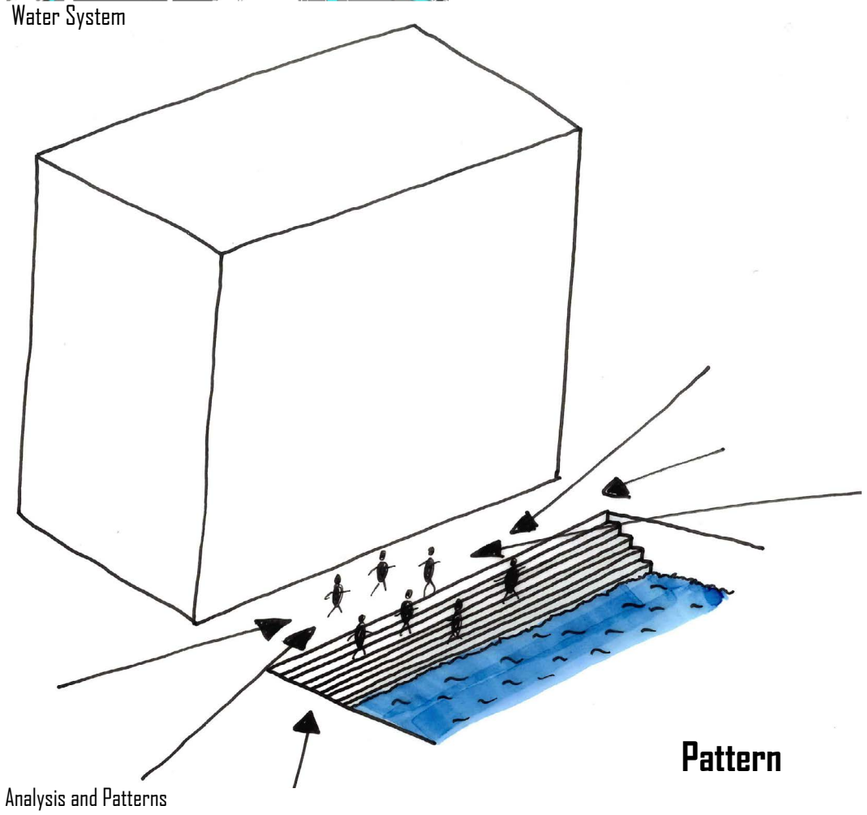
Greening Task

Infiltration

Water Sewage System



Water System

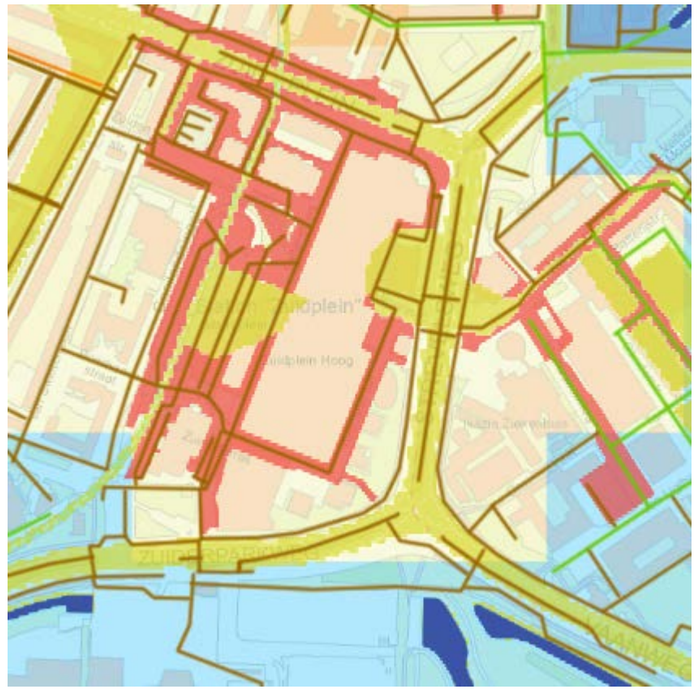


Analysis and Patterns

Pattern

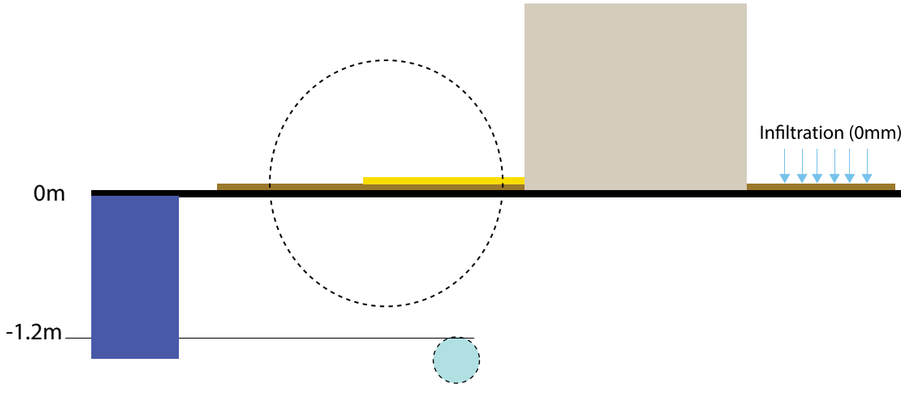
The relationship between surface landscape conditions, existing water system, infiltration and sewage system needs to be studied to understand the potential areas of designing with water features. Surface landscape conditions show the highly desirable areas for potential development within the public realm. Infiltration level can have an impact on surface and ground water level and should be taken into consideration before introducing water design elements. The nature of the sewage system (combined or separated) and existing water system will help in deciding the optimum location of a water element.

A comprehensive understanding of all these layers will help to determine a potential location of a water feature. Placing a water feature close to the building edge will provide access to pedestrians and create a landmark that can improve social interaction. Moreover locating this above the sewage system above the surface and within the realm of priority development areas is also necessary. Lastly, using this to connect the existing surface water system is favorable.



- Greening task
- Water task
- Child Friendly Task
- Current water system
- Shared sewage system
- Rainwater sewage system
- Groundwater sewage system
- 1 to 0.1 mm/day 'kwel' (water infiltration)
- 0 mm/day 'kwel' (water infiltration)

Plan
1:5000



Section
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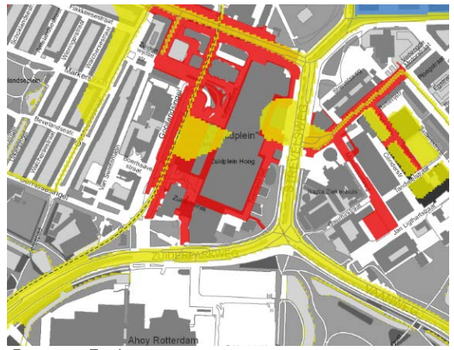
10 - Landscape Morphology

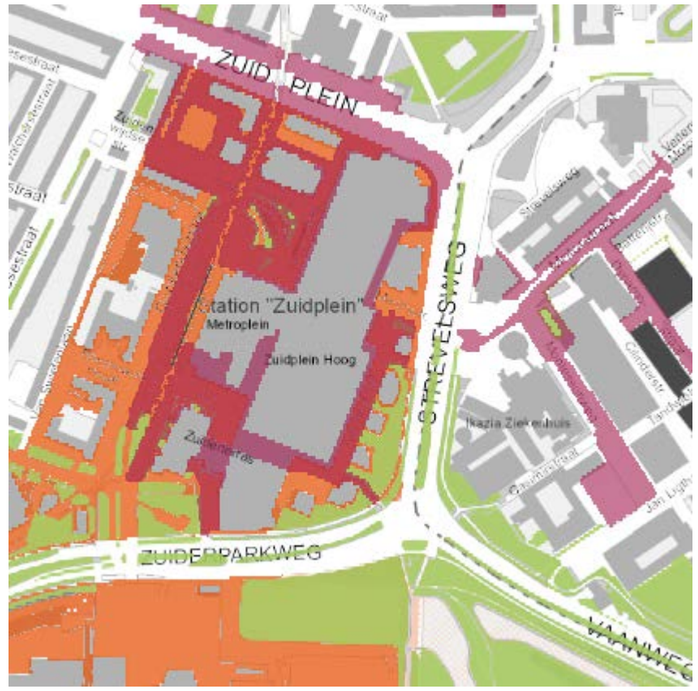
GIS Maps

Soil Setting Level



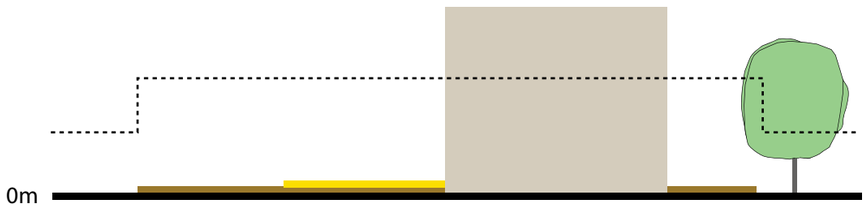
Greening Task

Materials Public Space



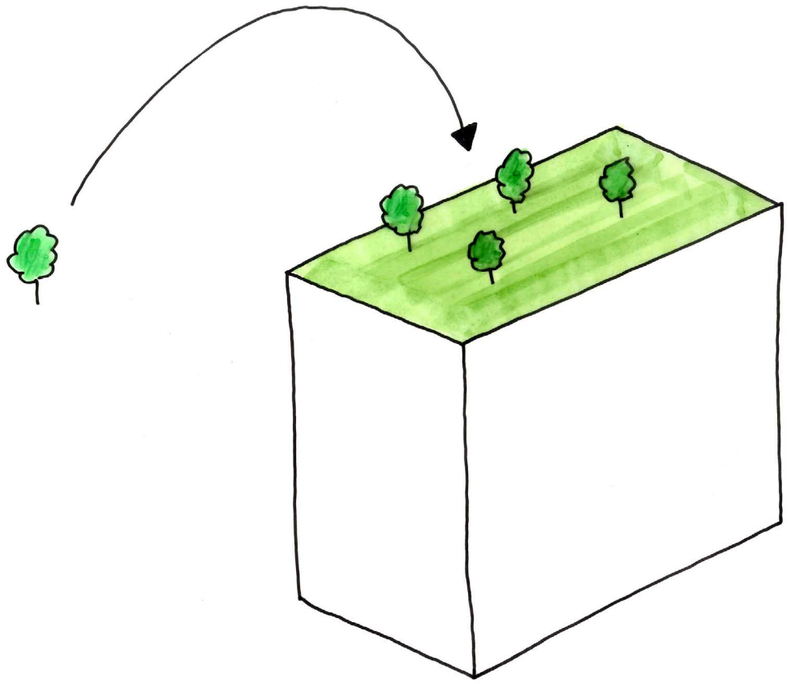
Existing green
Priority maintenance
Greening task

Plan
1:5000



Stone Flooring
Potential for childrens play area
Priority for development
Winklecentrum

Section
1:50

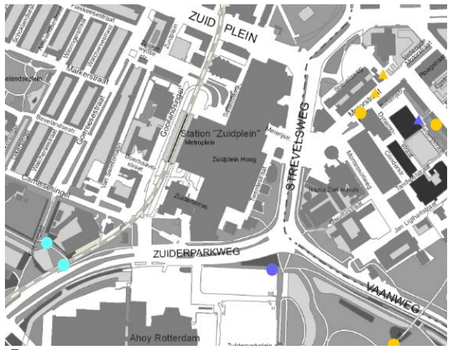


Pattern

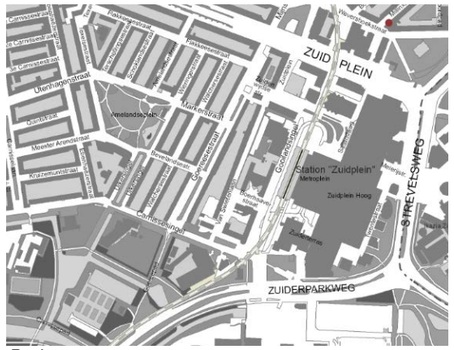
The existing landscape in the area, existing surface landscape conditions and priority development areas as prescribed by the Municipality of Rotterdam give a clear overview of the direction in which landscape should be designed within the site boundary. The priority development areas should be tackled first. Soft landscape elements like trees and shrubs should be aligned in a way to connect the existing green infrastructure. In case of a higher density of buildings and lack of space to plant more trees, green roofs can be used. Although not being at ground level, this can provide almost the same effect when it comes to rainwater absorption and air pollution.

11 - Green Facades

GIS Maps

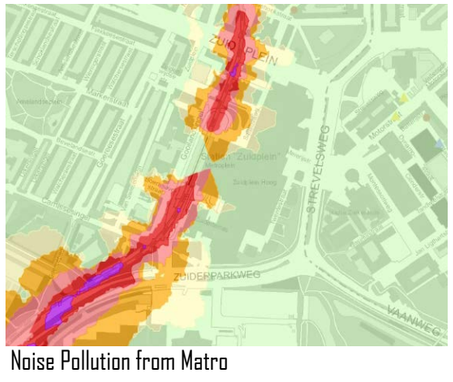


Bats



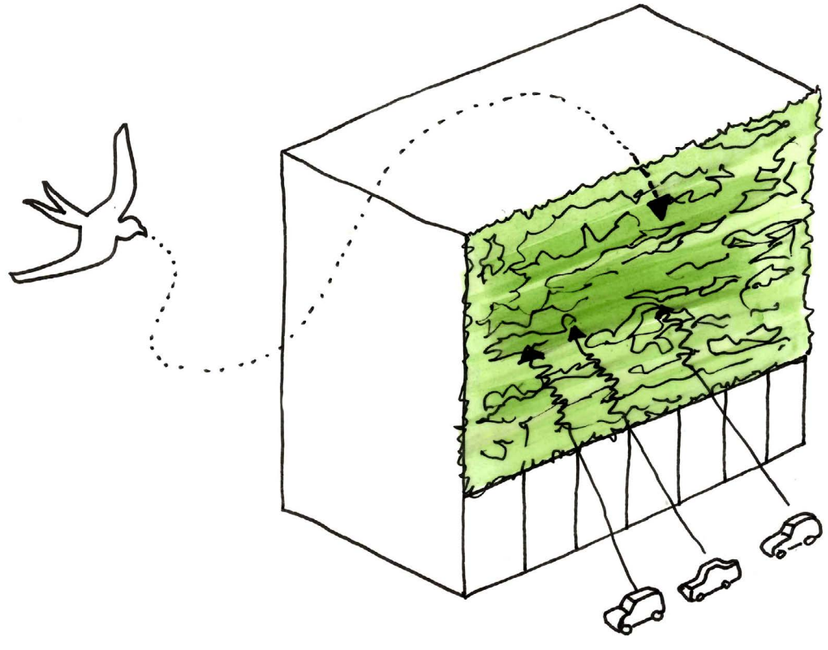
Birds

Noise Pollution from Road



Noise Pollution from Matro

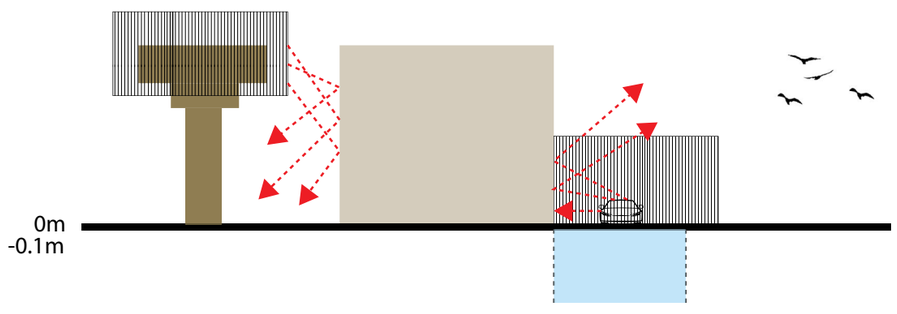
- Birds & Bats
- Noise Car & Metro: 70-75 dB
- Noise Car & Metro: 65-70 dB
- Noise Car & Metro: 60-65 dB
- Noise Car & Metro: 55-60 dB



Pattern

The effect of noise pollution surrounding the metro line and highway can be reduced by installing green facades on buildings. Green facades would absorb noise pollution and make it a better experience for the users of the space. Moreover, this provides an opportunity for fauna like small birds to interact with thus increasing the amount of natural habitats within the urban fabric. Such a solution can bring back green in dense areas as well.

Plan
1:5000

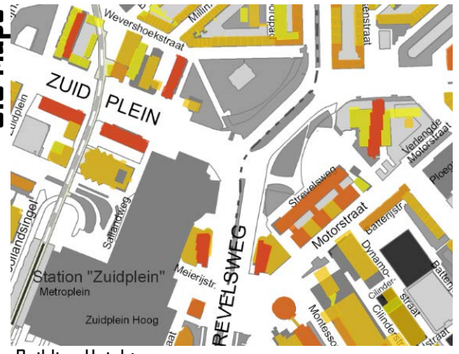


- Noise Waves Deflection
- Surrounding Noise Pollution
- Metro Line
- Winklecentrum
- Road

Section
1:50

12 - Human Scale

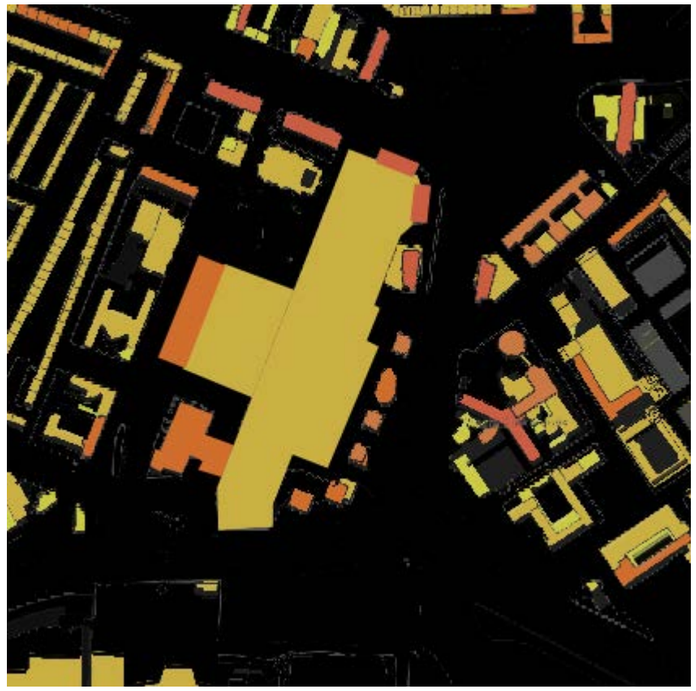
GIS Maps



Building Heights

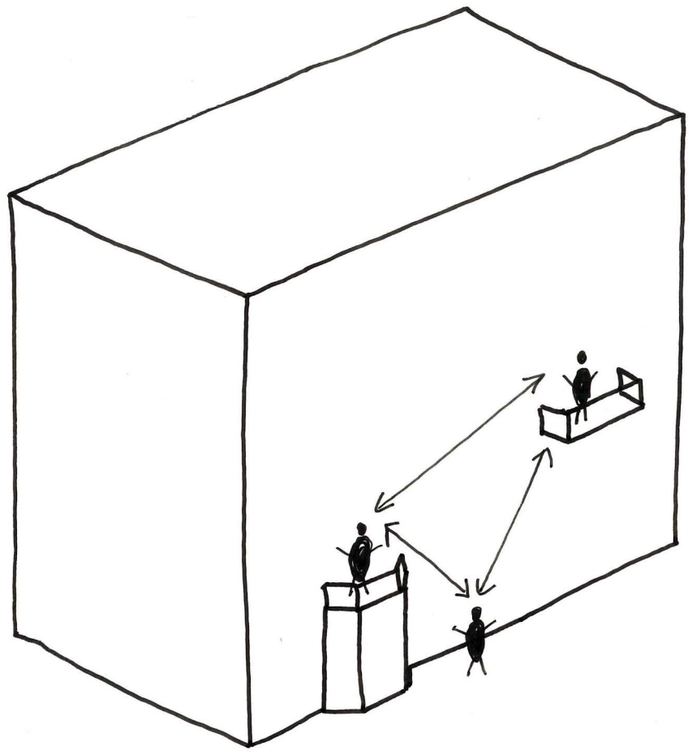
Building Heights

Materials Public Space



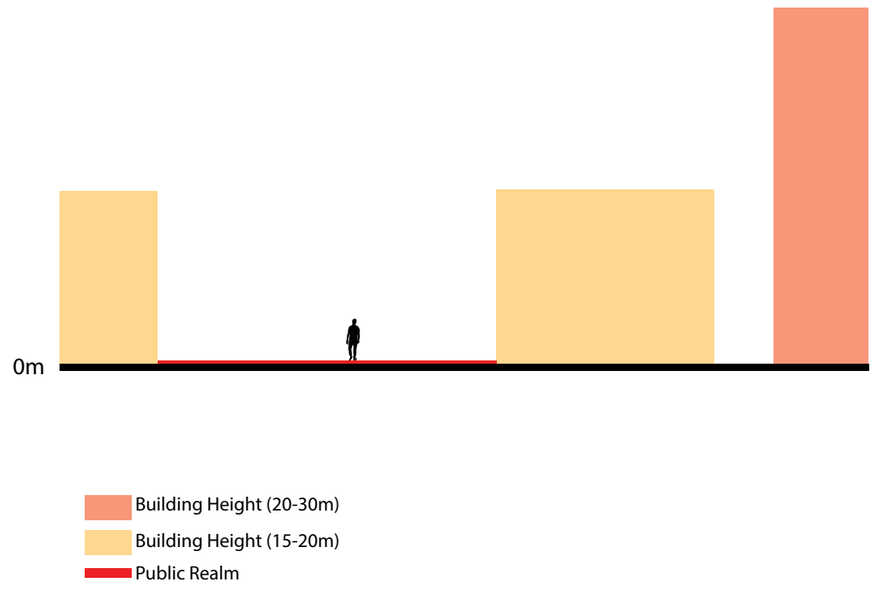
Open space
5 m - 15 m
15 m - 20 m
20 m - 30 m
30 m - 75 m

Plan
1:5000



Pattern

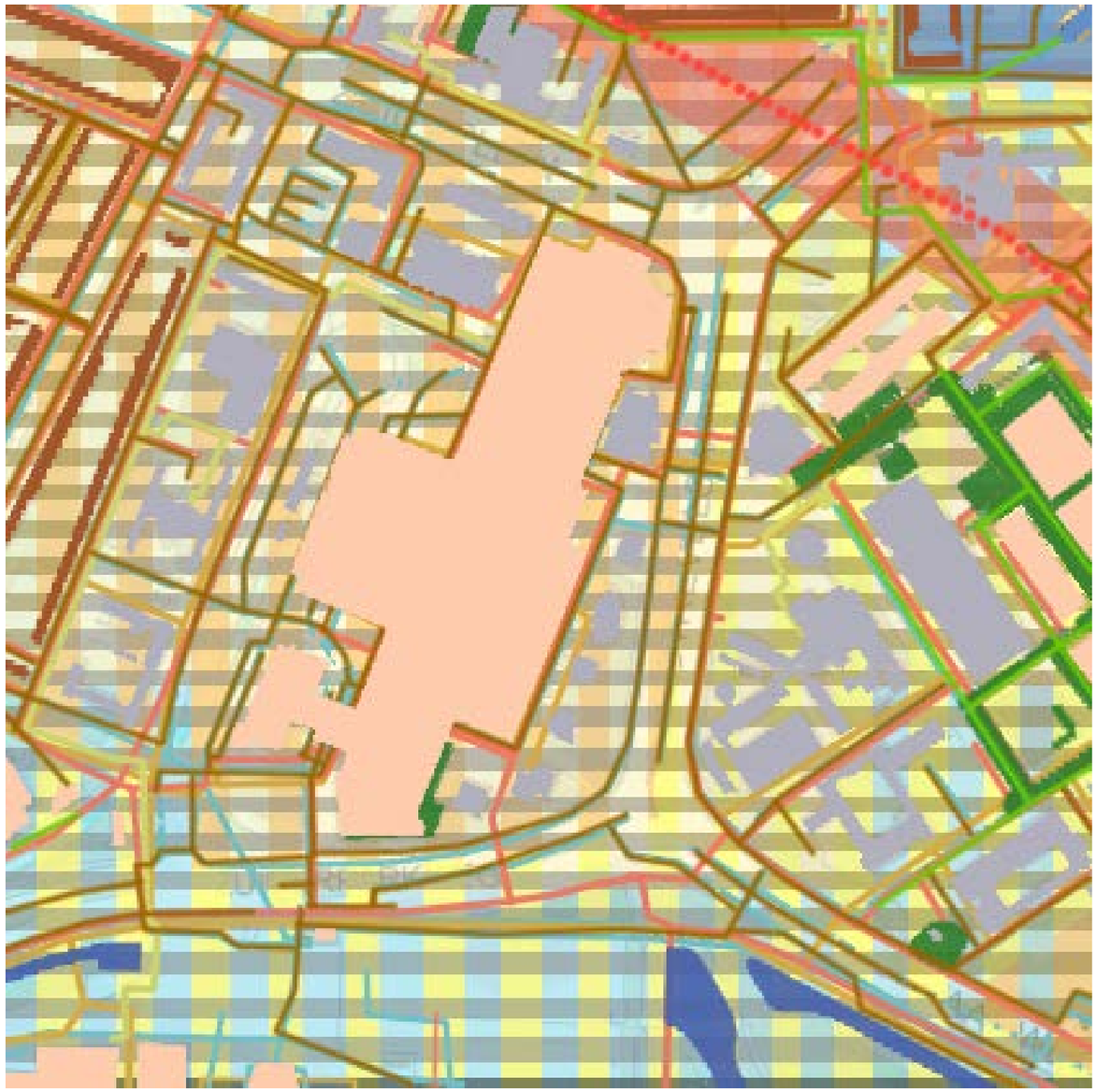
The human scale can be brought back by improving the visual experience of the users. Massive infrastructure is difficult to modify once already established. However, the distances can be made to 'feel' smaller and more relatable to human scale if design features to reduce the 'space' is introduced.



Section
1:50

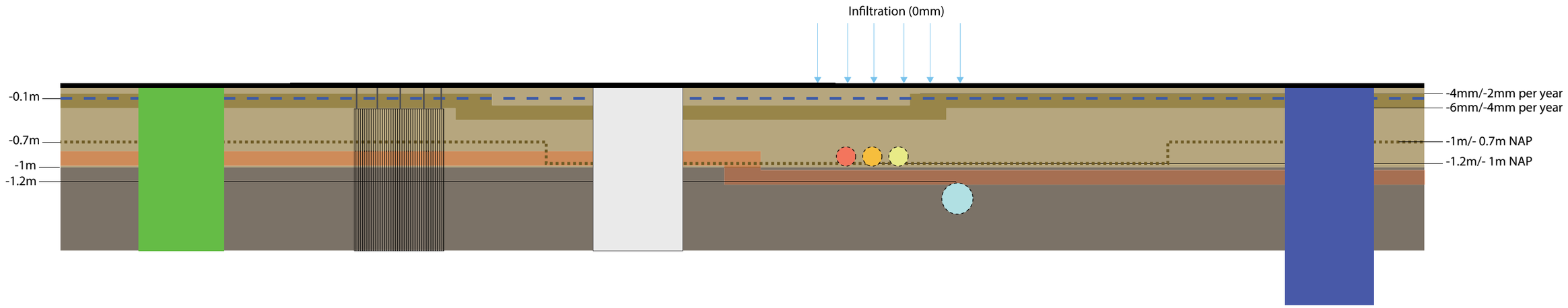
c- Technical Potential Drawings

Sub-Surface Potential Map



- Wooden foundation
- Concrete foundation
- Unknown foundation
- Water task
- Current water system
- shared sewage system
- rainwater sewage system
- 1 to 0.1 mm/day 'kwel' (water infiltration)
- 0 mm/day 'kwel' (water infiltration)
- Very lightly contaminated soil
- Lightly contaminated soil
- Restored soil
- District heating
- Water
- Gas
- Sewage
- -1,2 to -1 m NAP
- -1 to - 0,7 m NAP
- -0,7 to 0 m NAP
- -6 t/m -4 mm per year
- -4 t/m -2 mm per year
- High archaeological expectation
- Habitation from circa 1850

Sub-Surface Potential Section



- Very Slight Contamination
- Slight Contamination
- Restored Soils
- Existing Water Channel
- Wooden Foundation
- Concrete Foundation
- Archeological Expectation
- Soil Setting Level
- NAP Level
- Ground Water Level

- Gas Pipeline
- Water Pipeline
- District Heating Pipeline
- Sewage Pipeline

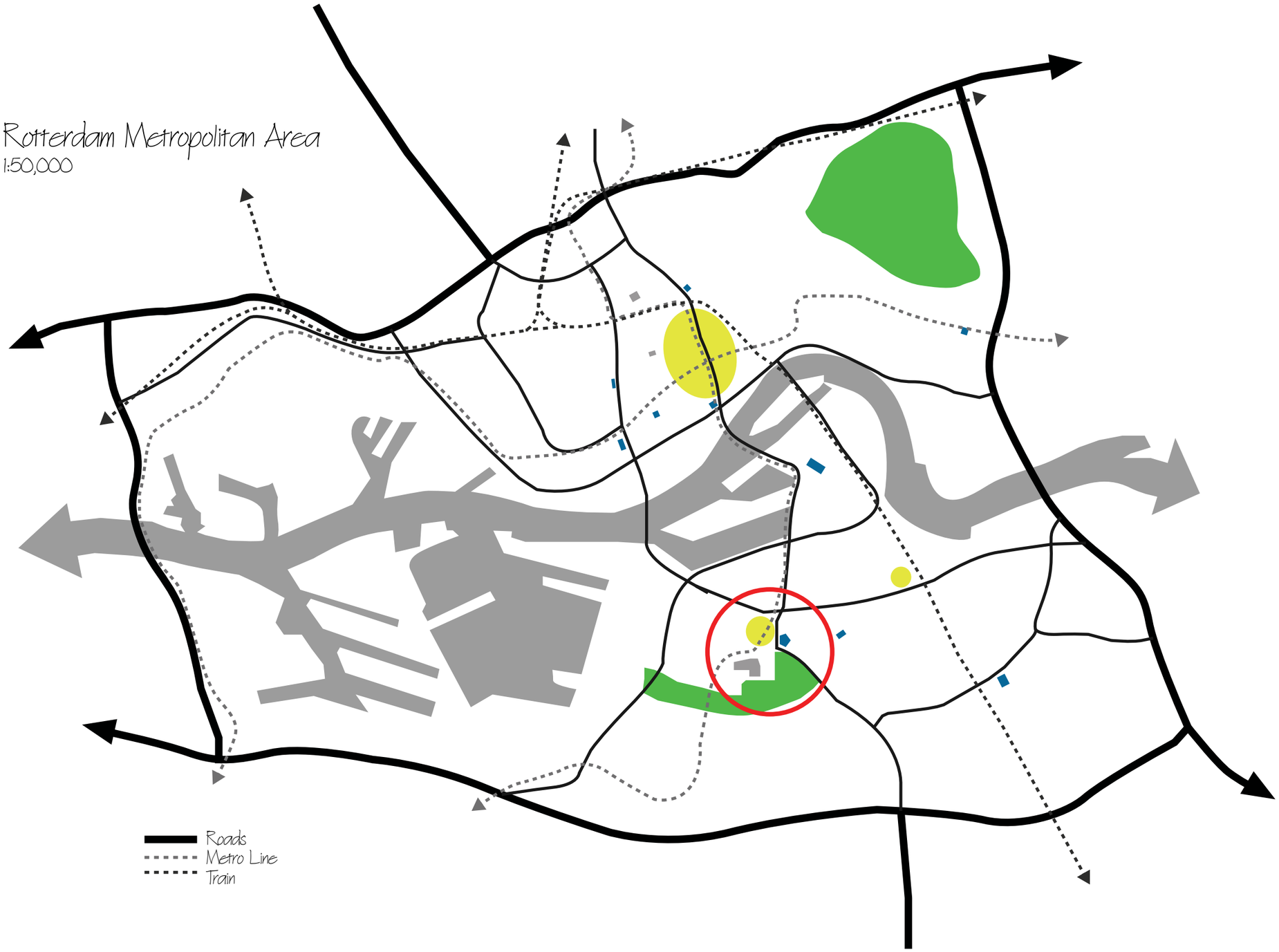
ZUIDPLEIN, ROTTERDAM

A case for activating the public realm

Hospitals — IKAZIA
Regional Parks — Zuiderpark
Shopping Areas — Winklecentrum
Zuidplein Metro Station
Conference Centers — Ahoy

Zuidplein, Rotterdam

Rotterdam Metropolitan Area
1:50,000



ZUIDPLEIN, ROTTERDAM
1:10,000

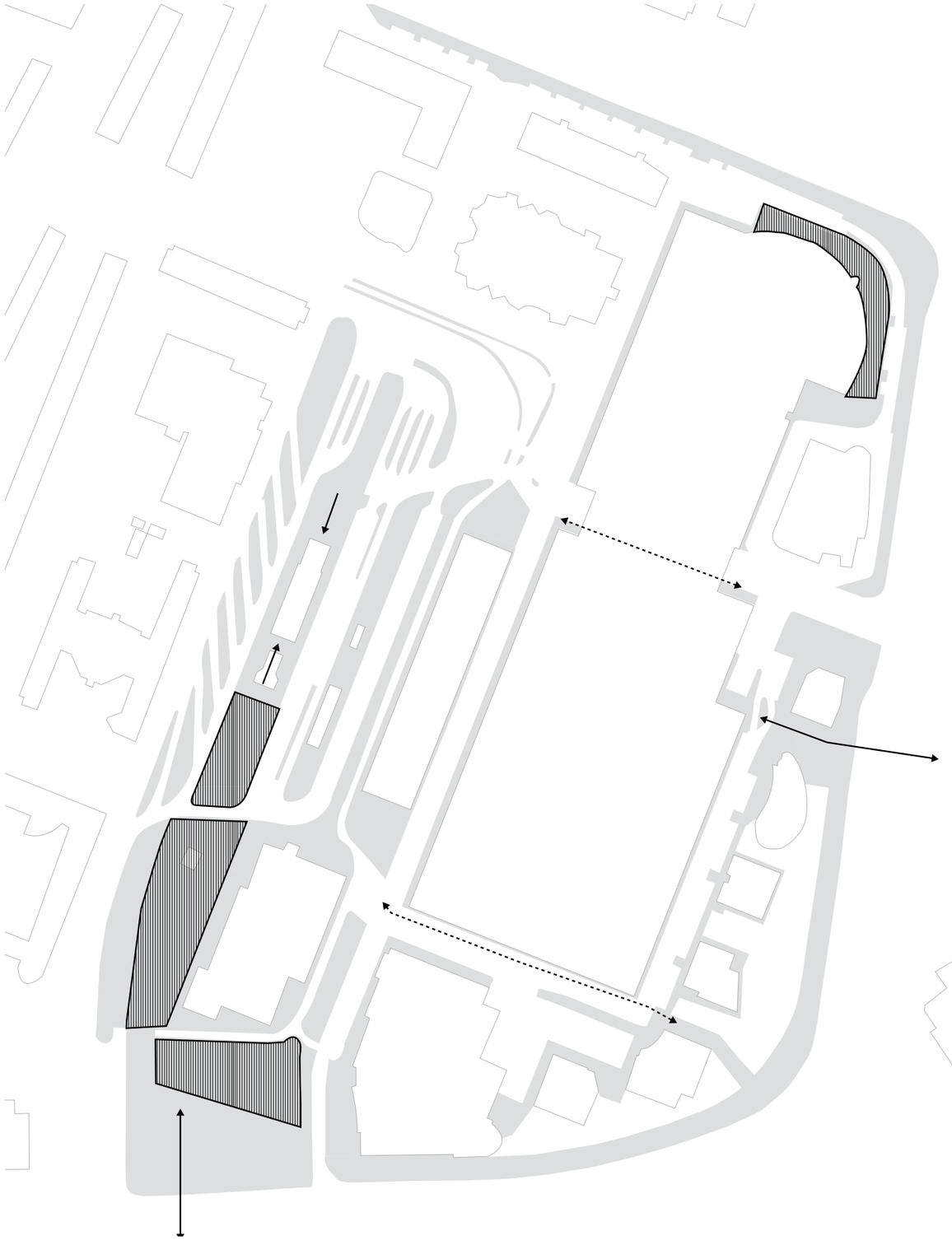
Zuidplein, Rotterdam is a major node in the city. For Rotterdam South, it is the hub that connects multiple uses that serve many surrounding neighborhoods. Zuidplein Metro station is also a major bus stop. Ikazia is one of the two hospitals of its size in South of Rotterdam. The Ahoy is known throughout the country as a popular destination to host conferences, both international and within the region. Zuiderpark is only recreational space of its size in the South of Rotterdam. As a shopping destination, Winkelcentrum supports the daily needs of nearby residents and is also one of the bigger shopping hubs in South Rotterdam.

What is strongly lacking in the area is a connected public realm. Currently, lack of legibility of the pedestrian pathways, roads, building entrance and bicycle paths has led to a disconnected and non-directed public realm.

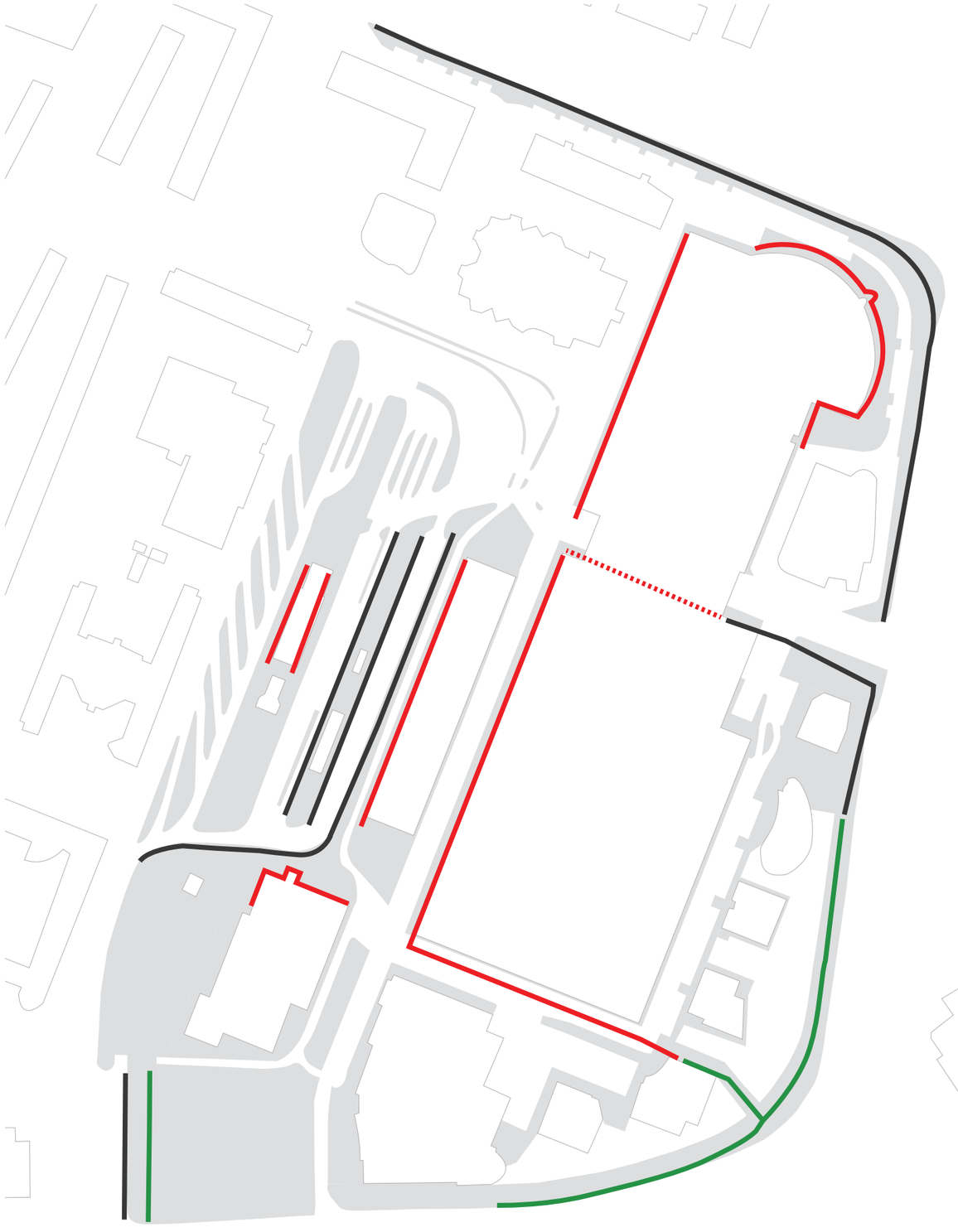
The plan is bounded within Zuidplein, Rotterdam and is focused on improving the connection between the major uses in that area . Zuidplein Metro station, Winkelcentrum, Ikazia, Zuiderpark and Ahoy. In one way, the design aims to emphasize the importance of a legible and improved public realm.

Walkable Pavements

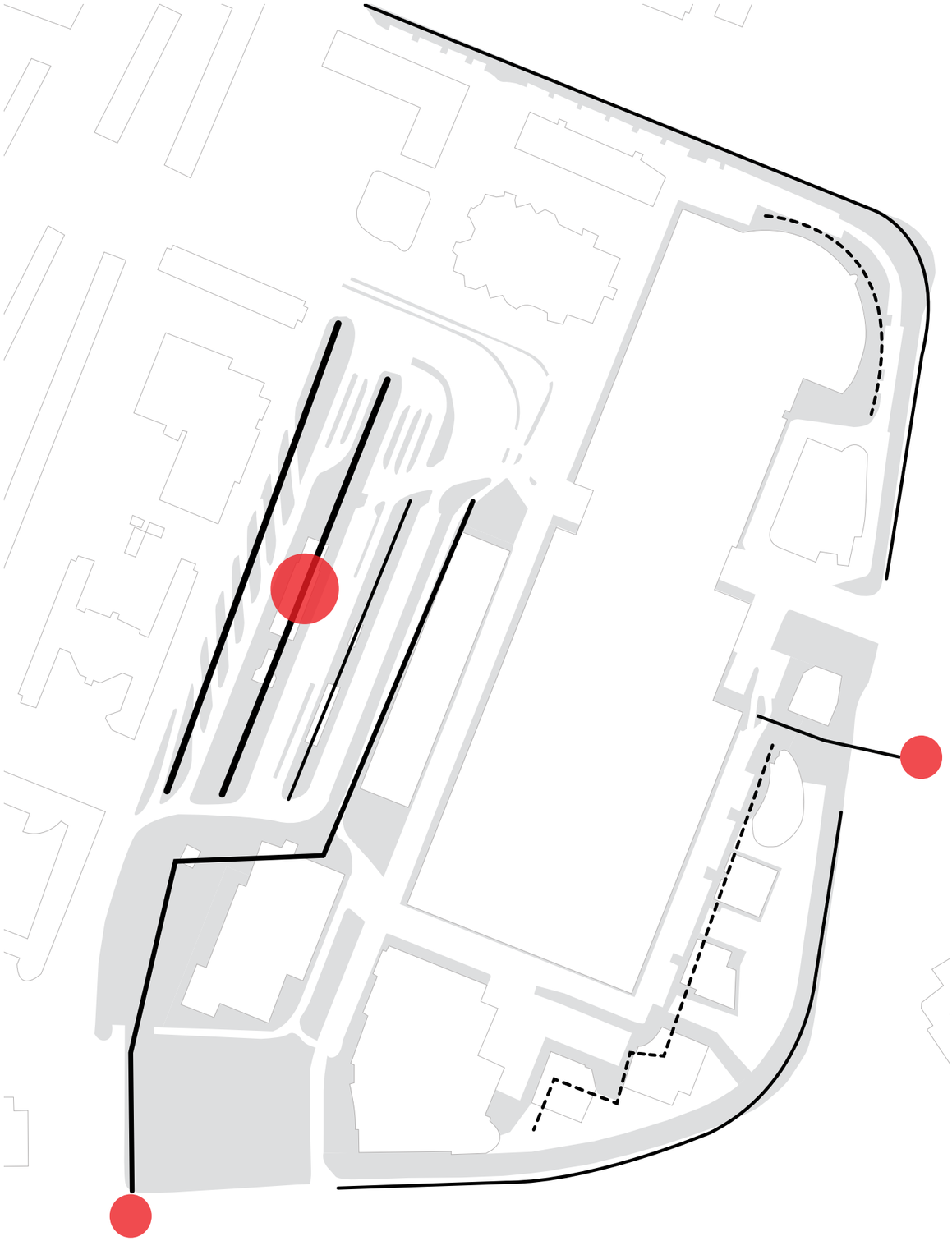
Studying the existing pedestrian network and its attributes is essential to designing an enhanced public realm. The pedestrian network connects activity nodes within Zuidplein that are supported by surrounding uses. Directionality and legibility of the public realm are suggested through how users perceive space and surrounding facade qualities. The area lacks a number of attributes that are desirable in a highly active urban public area such as Zuidplein. Lack of clarity of direction, leftover spaces, disconnected pedestrian network, large inactive plazas, more emphasis on cars and buses rather than the pedestrian, lack of green and soft landscape, not enough sittable space, no attractive landmarks or features.



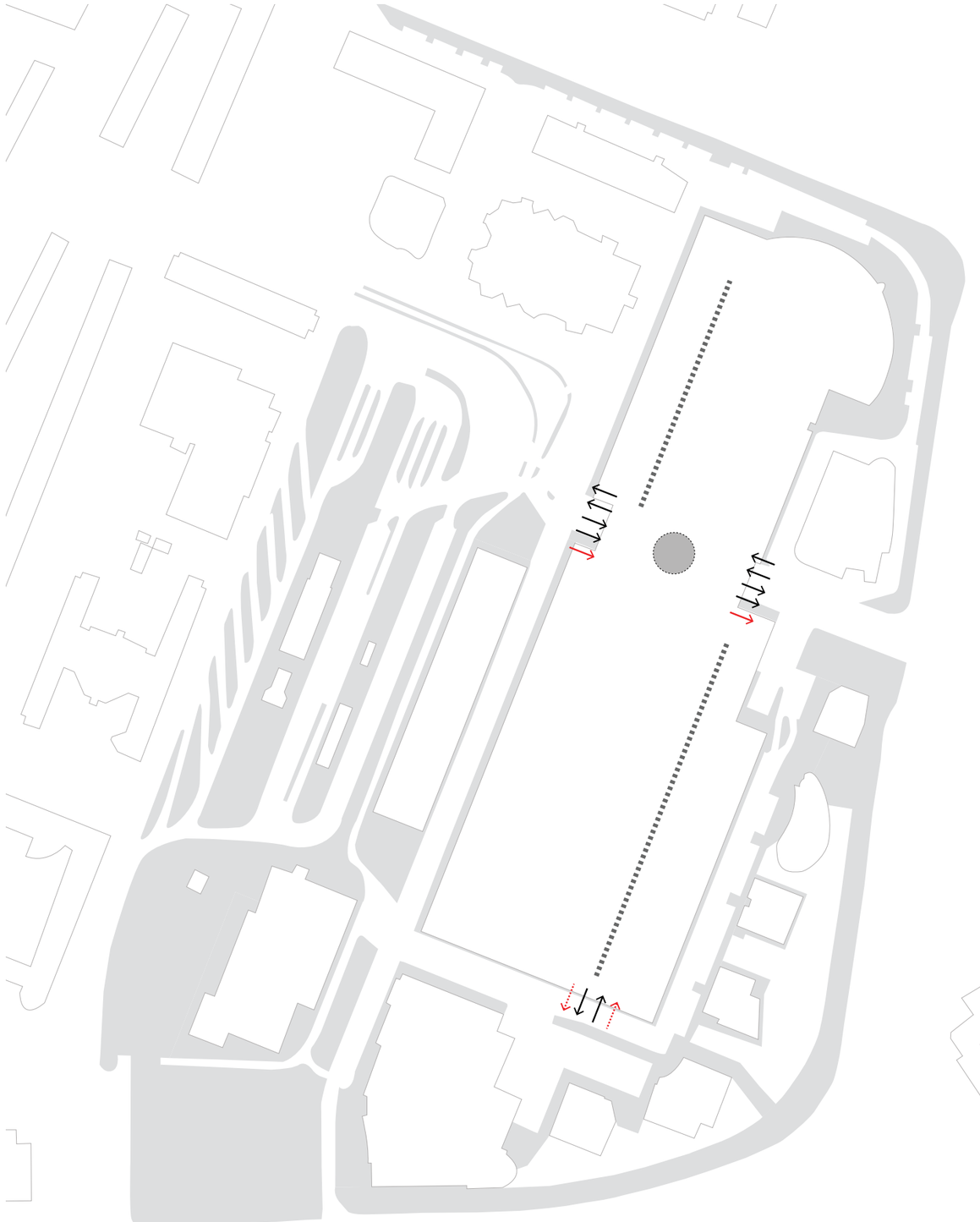
Directionality and Space



Adjacent Facade Quality



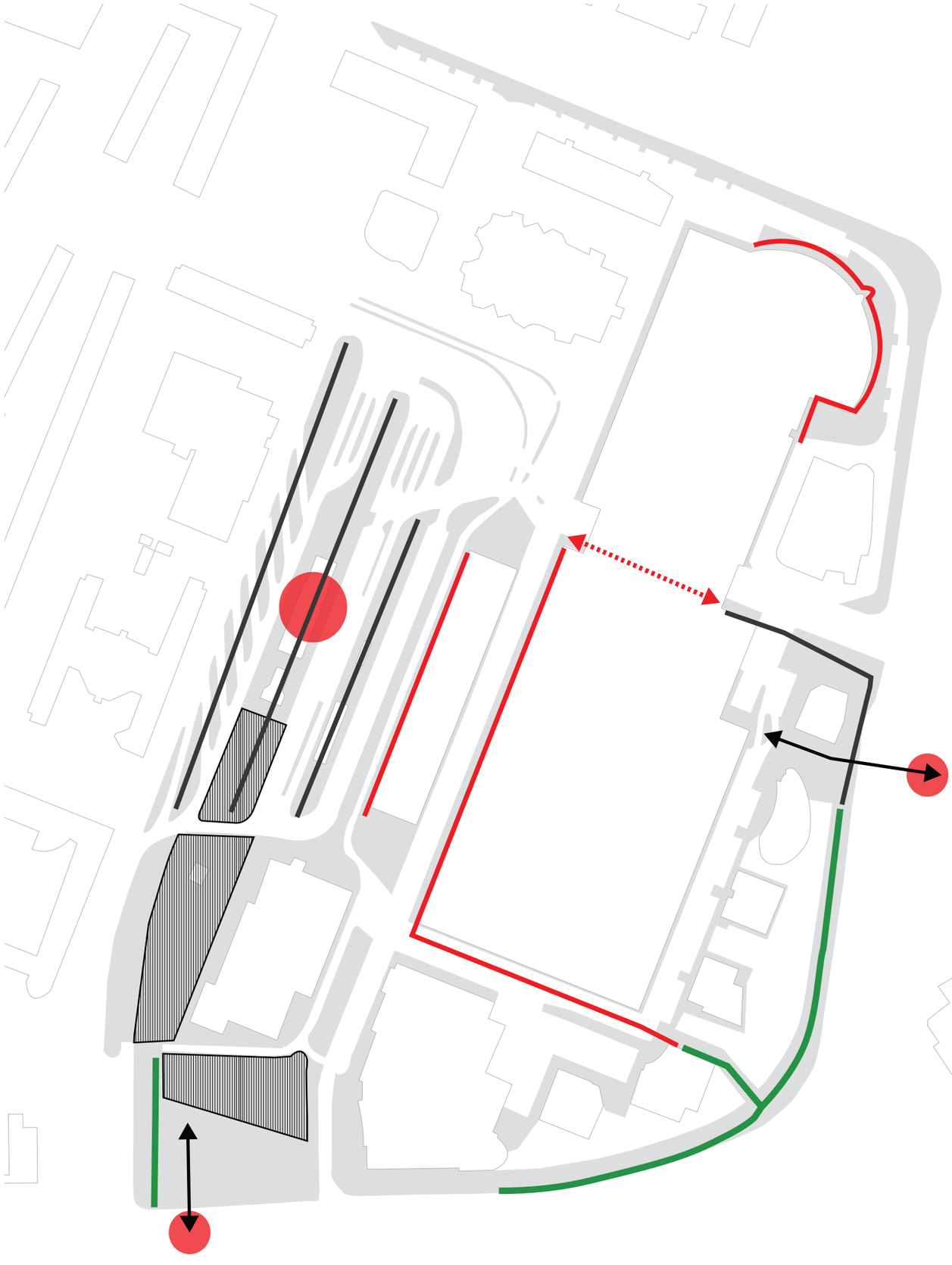
Pedestrian Network

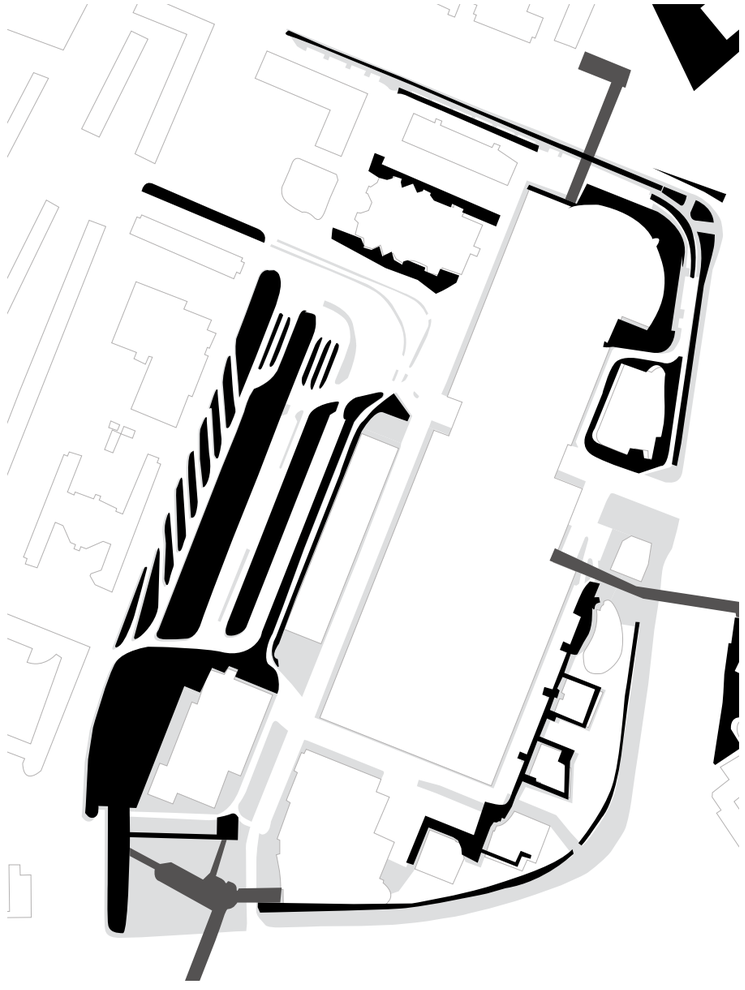


Entrances and Exits to Parking Lot

Exisitng Pedestrian Network Analysis

1:2000

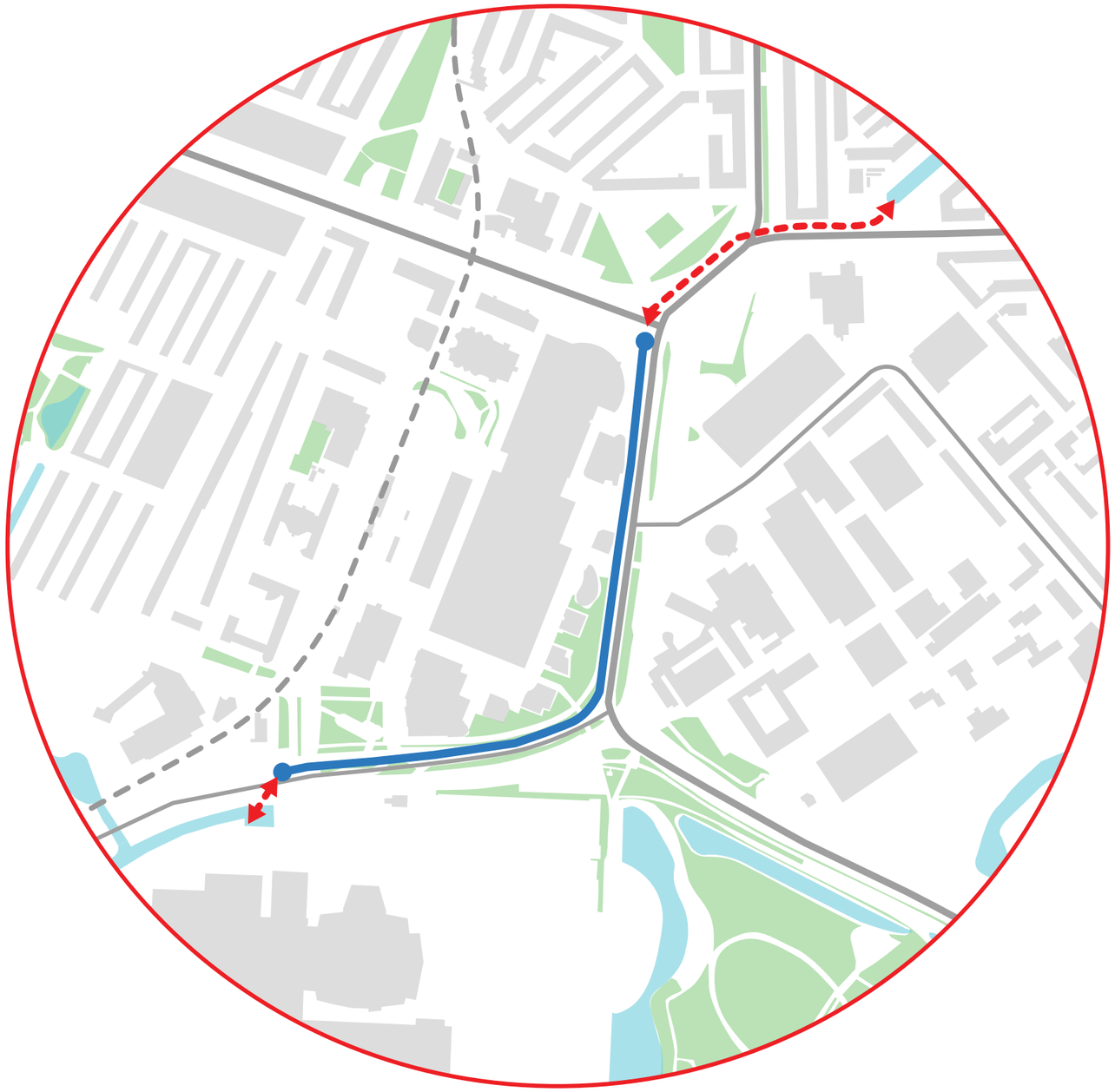




Pedestrian Movement Direction
Observed Pedestrian Movement
Building adjacent pathways
Landscape adjacent pathways
Road adjcent pathways
Large spaces
Activity nodes

Green-Blue Network Analysis

1:10,000



Existing Water Network

Proposed Bio-Swale within site boundary

Suggested connection to existing network

Existing Green Network

Soil type and contamination levels are vital to make the choice between conveying or infiltrating water in any site. The soil contamination levels are increasing as the depth from the surface increases. The soil type in the area is largely clay with a mixture of sand. Both these factors lead to the conclusion that conveying water through the site should be the preferred option. In case of infiltration, the soil needs to be restored and periodically checked to ensure no contaminants drain into the ground water level.

Conveyance of water through designing a feature such as a bio-swale, is a way to design for exceedance during flooding. Excess water during heavy rainfall or a storm would have room to channelize through the site leaving the surrounding public realm and building safe from the effects of excess water.

A bio-swale is used at the edge of the main road serving as a visual buffer as well as seamlessly connecting the existing water network. Pedestrians on the other side of the channel can also interact with it serving as a point for social interaction as well. Both cars and pedestrian share the same visual and green buffer thus reducing the disconnectedness of the major infrastructure highway that surrounds Zuidplein.

Green facades are also used as a design feature for renovation of certain building facades. This can help to reduce noise pollution caused by the metro and the main road. It provides an attractive viewpoint on the facade as opposed to the current dead concrete walls in the area. This feature can also help to attract birds and other smaller fauna in the area leading to the creation of a potential micro habitat within the city.

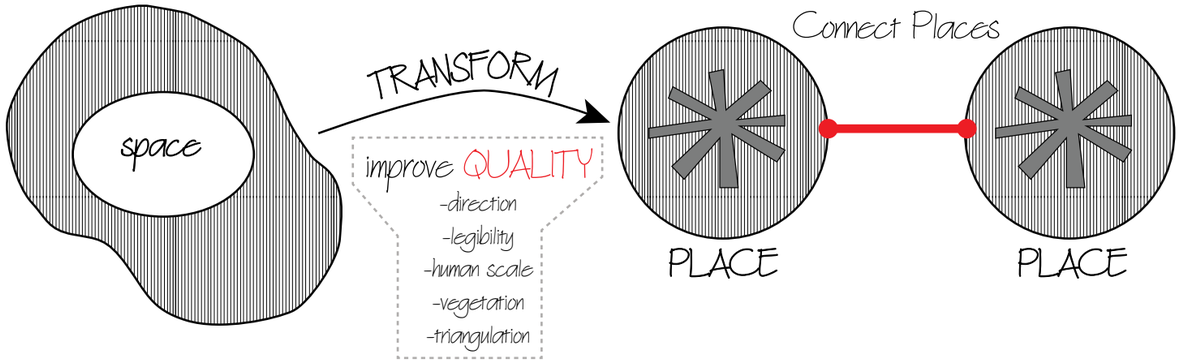
Refer to Page 32 for detailed section of Bio-Swale.

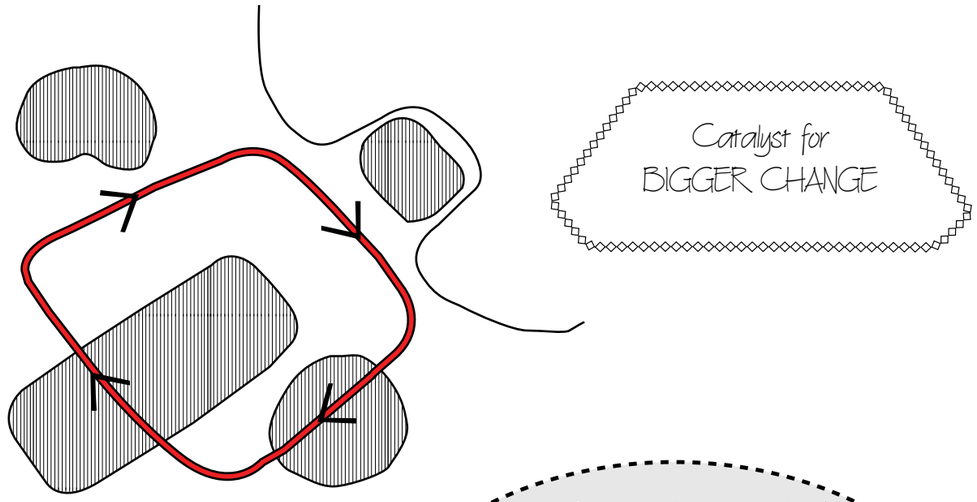
Soil Contamination

Soil Type

Convey or Infiltrate

SMALL CHANGE BIG IMPACT

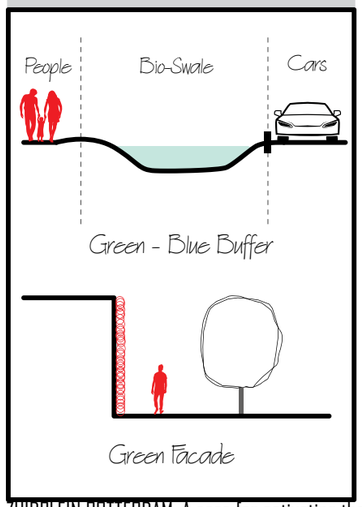




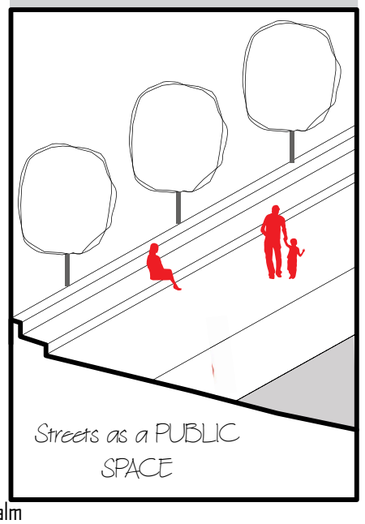
- QUICK WIN
- Connected and Legible Public Realm
- Desirable and Attractive
- Economically Viable

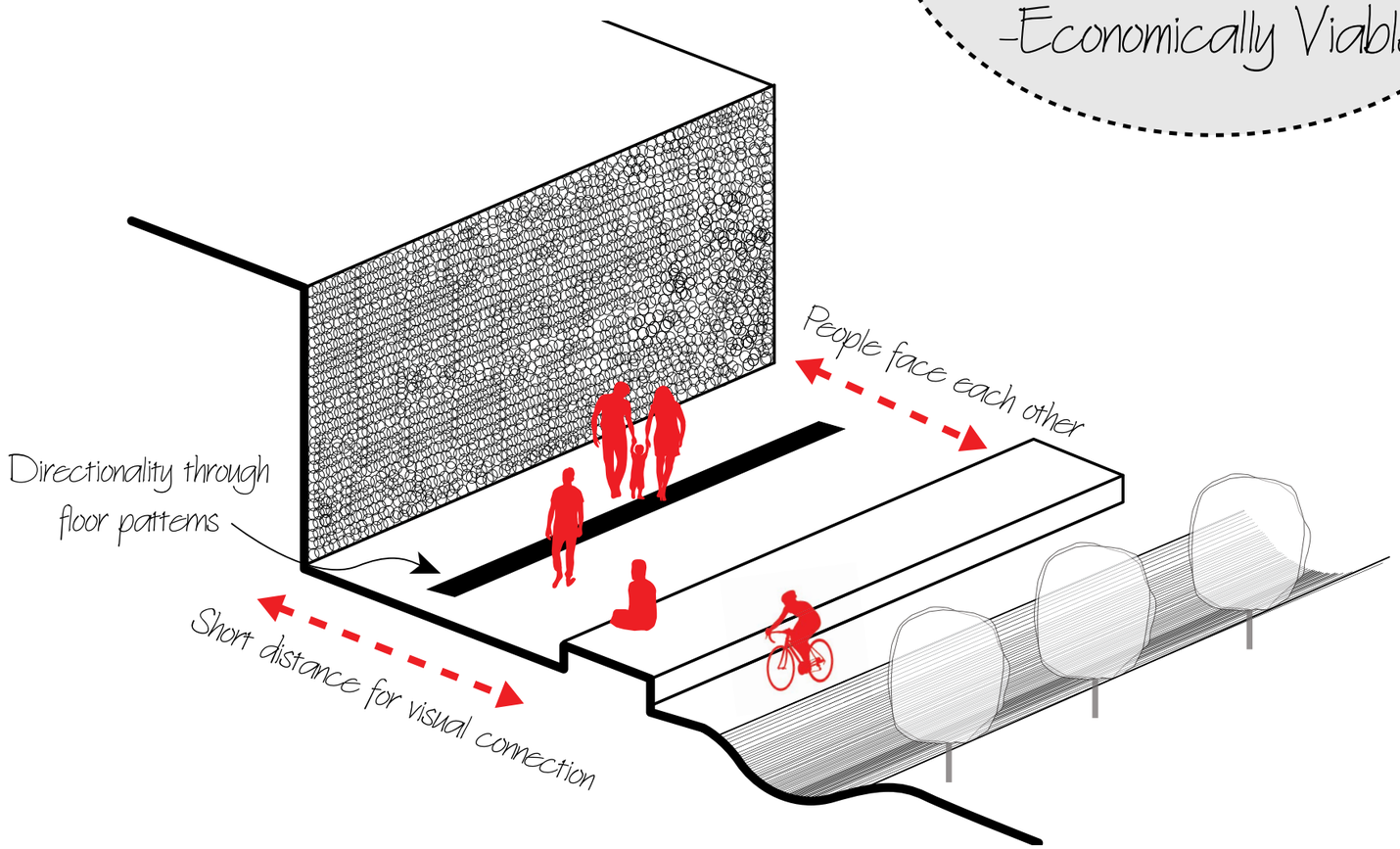
SOCIAL INFRASTRUCTURE

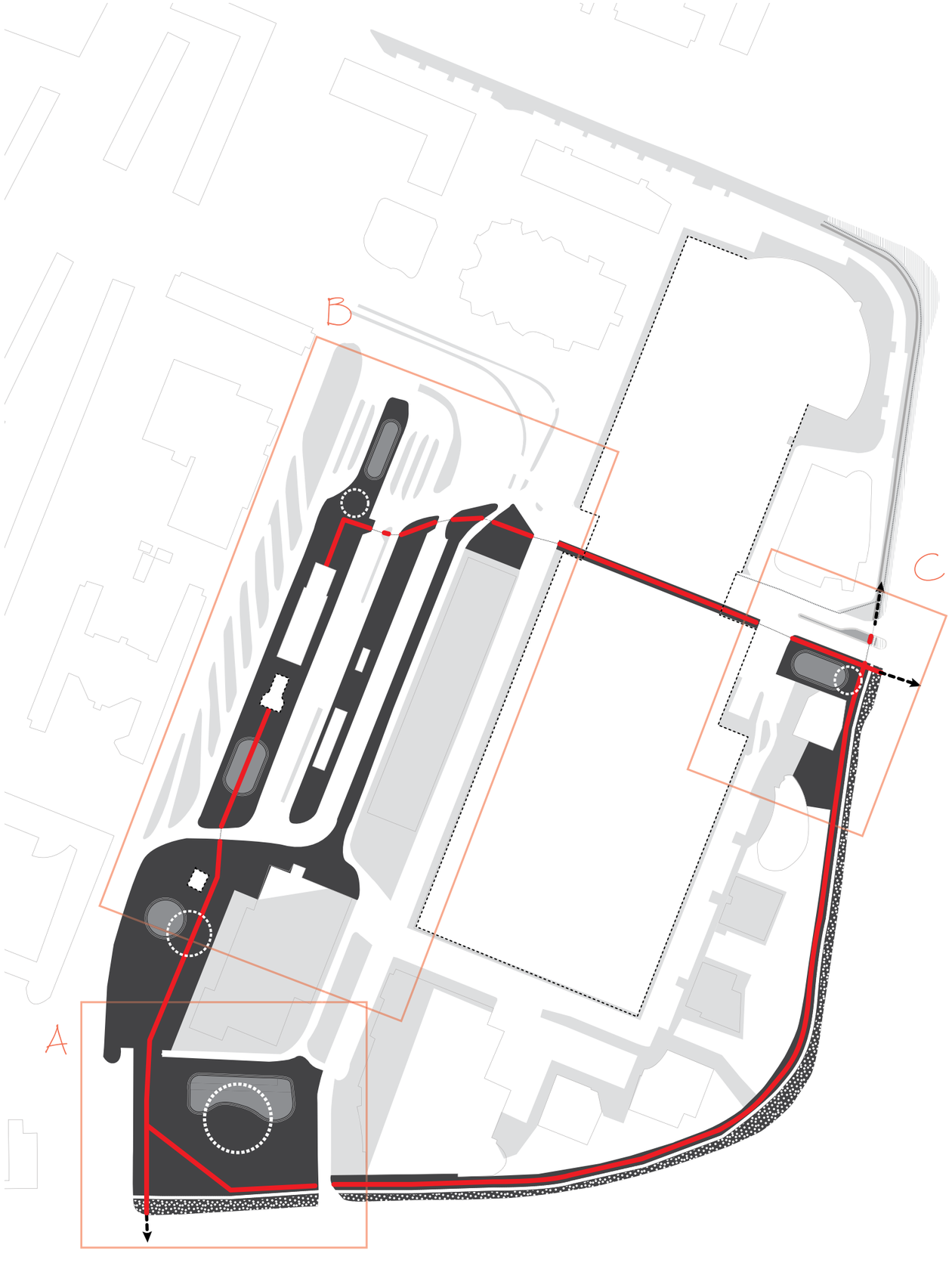
GREEN - BLUE INFRASTRUCTURE



TRANSPORTATION INFRASTRUCTURE





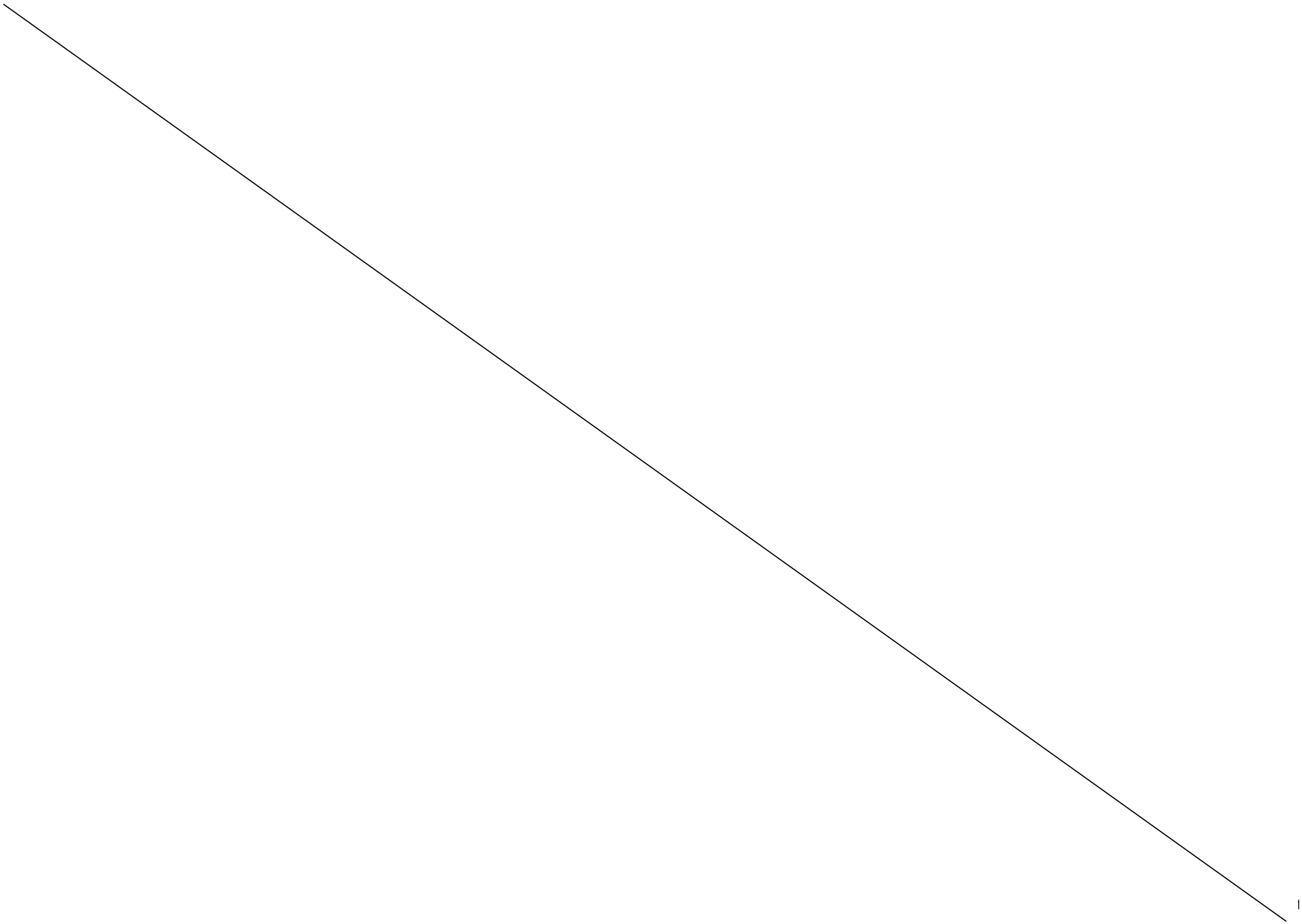


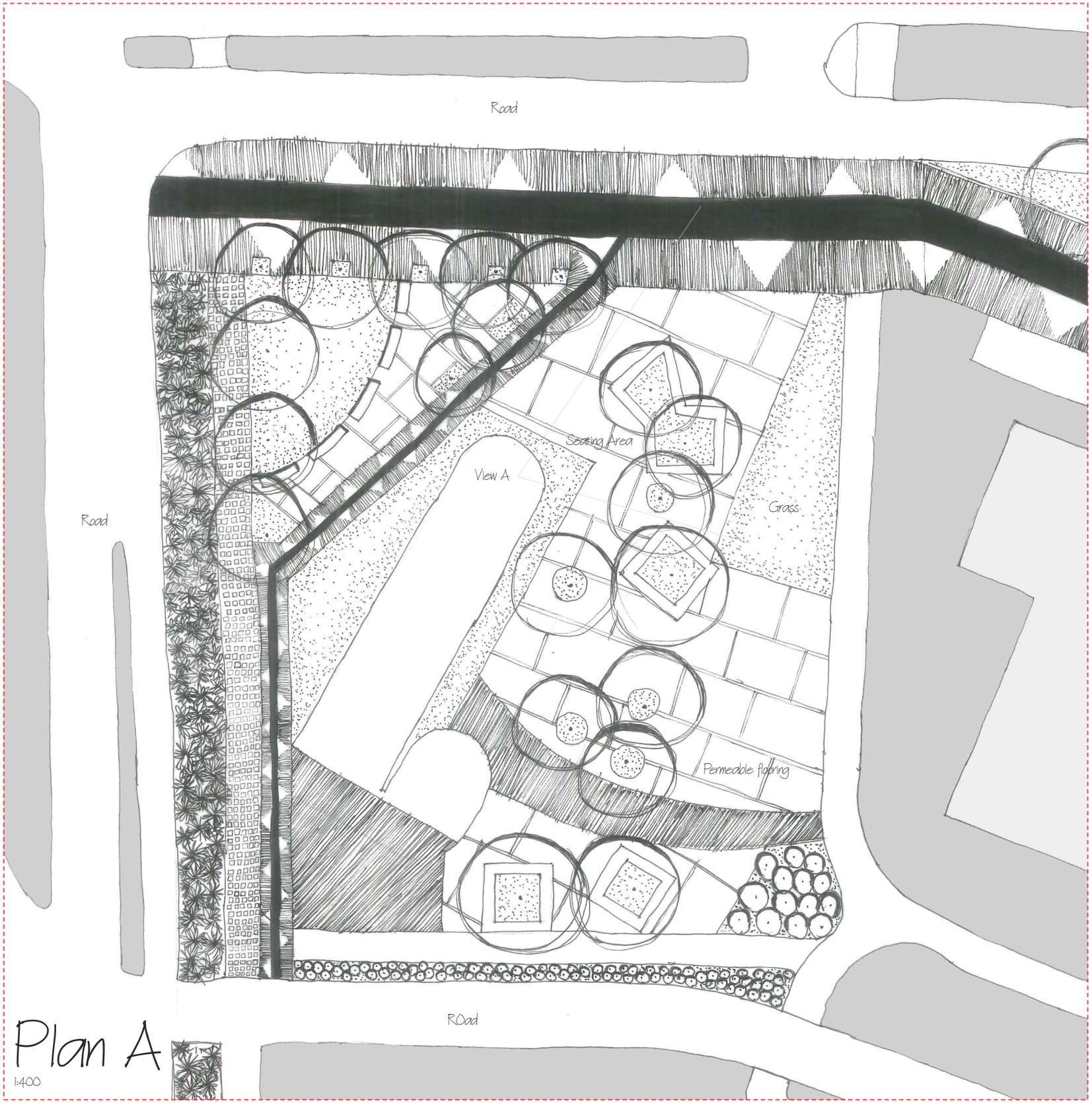
Master Plan

The project proposal takes into consideration the socio-economic status of the neighborhoods in Rotterdam Zuid and the recent debate (and resulting referendum) around demolition plans in the area. Demolition plans in the area would be economically heavy and cause a big change to residents and the overall urban fabric of the area. While the idea is radical and argues for big transformation to have a chance at rebuilding a better future for Rotterdam Zuid, we cannot be sure that such an intervention would have a positive social impact in the area. A counterargument to this is to explore the idea of implementing a small change that can trigger a bigger impact in the future. The project proposal explores this notion in two contexts - physical intervention and economic investment. The plan presents the potential of activating the public realm within Zuidplein. The project proposal focuses on improvement of the public realm on the ground and on linking Zuidplein metro station and Winklecentrum to Ikazia in the East and Zuiderpark and Ahoy in the South. The pedestrian pathway connecting these uses is emphasized upon and designed with an intention to improve the legibility between varying physical features and activities.

Enhancing the existing transportation and green-blue infrastructure in the area by relating it to the human scale, would be an opportunity for Zuidplein to capitalize on its current functions and improve the user experience. This way the leftover and undefined 'spaces' would get converted to 'places' with an intentional function and form. Thus, addition of social infrastructure in the area would be a consequence of developing the existing streets, green spaces and water channel. This would be the minimum physical intervention and economic expenditure that can have a meaningful impact on the residents and visitors of Zuidplein.

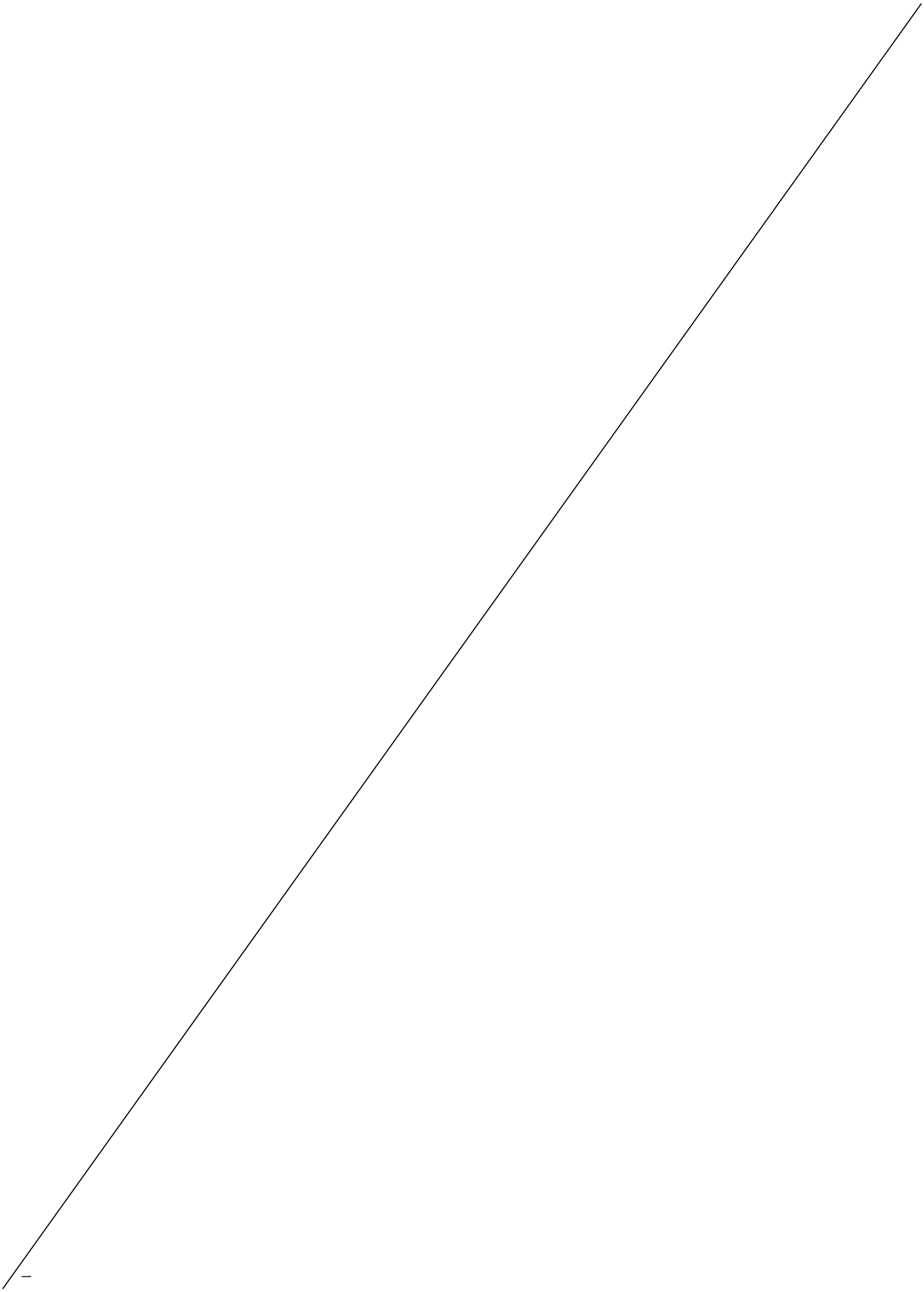
Project Boundary
Prominent Pedestrian Route
Facade Improvement (Green Facade)
Sittable Spaces
Creation of new activity zones
Bio-Swale

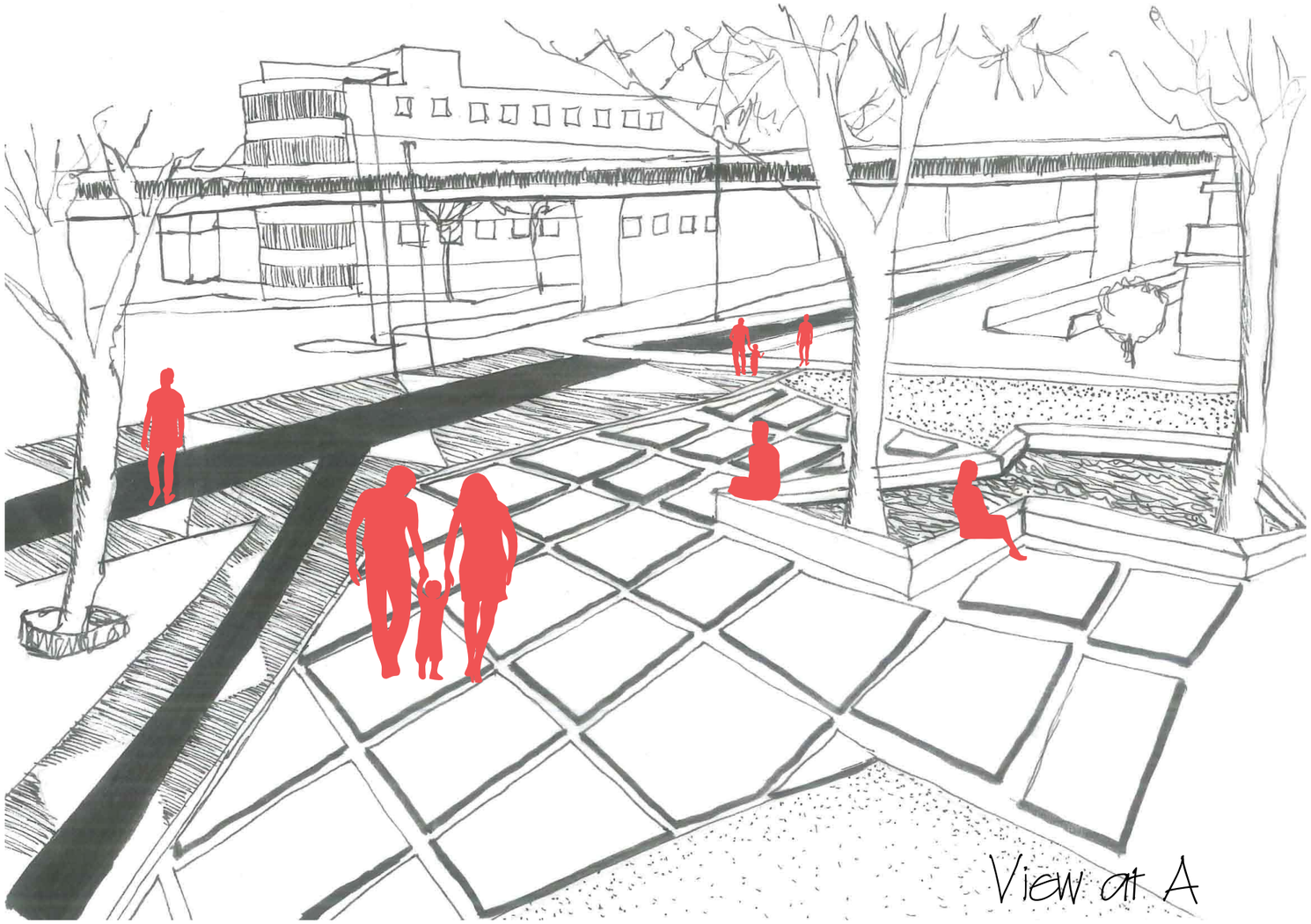


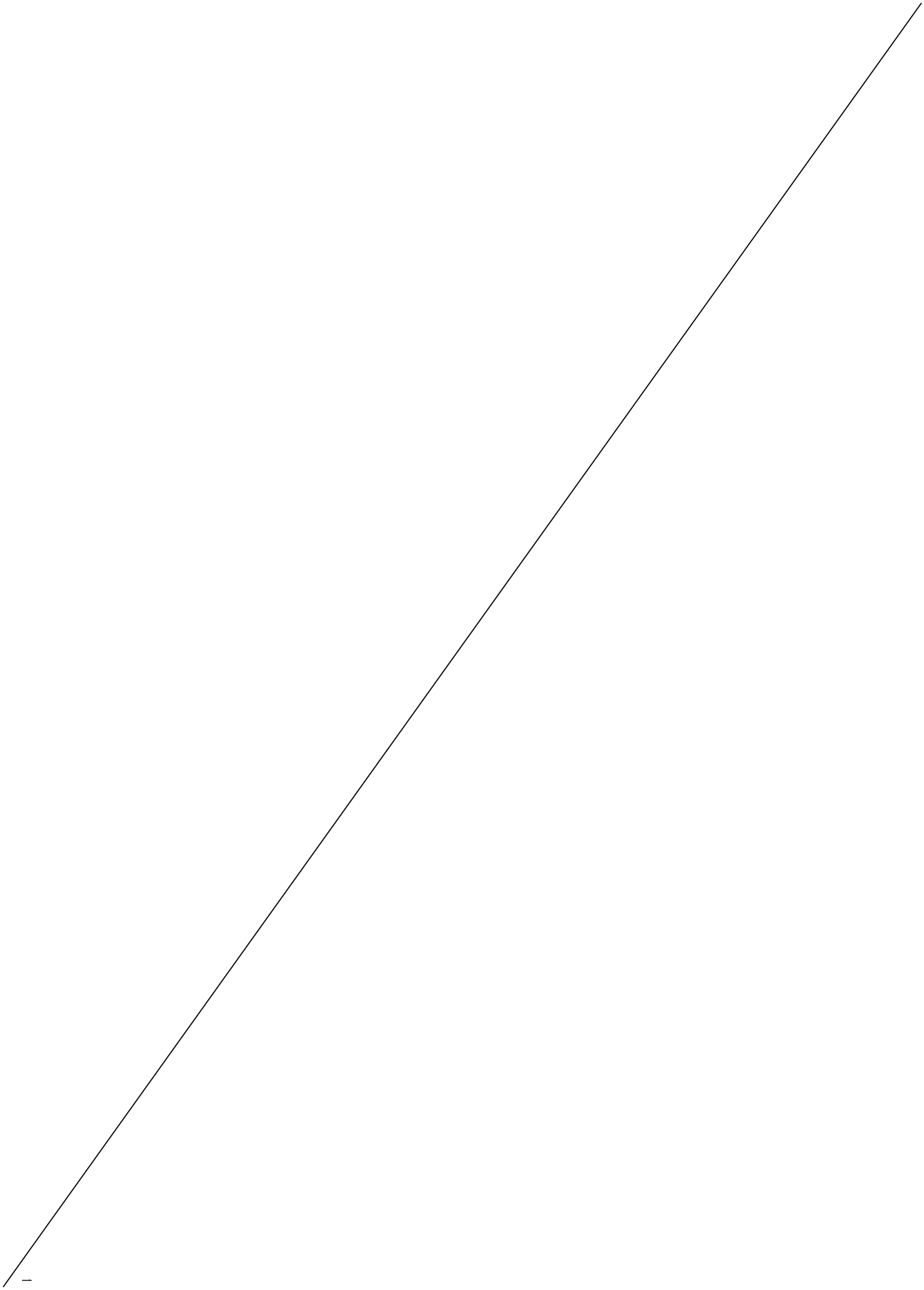

Road
Seating Area
View A
Grass
Road
Permeable flooring
ROad

Plan A

1:400

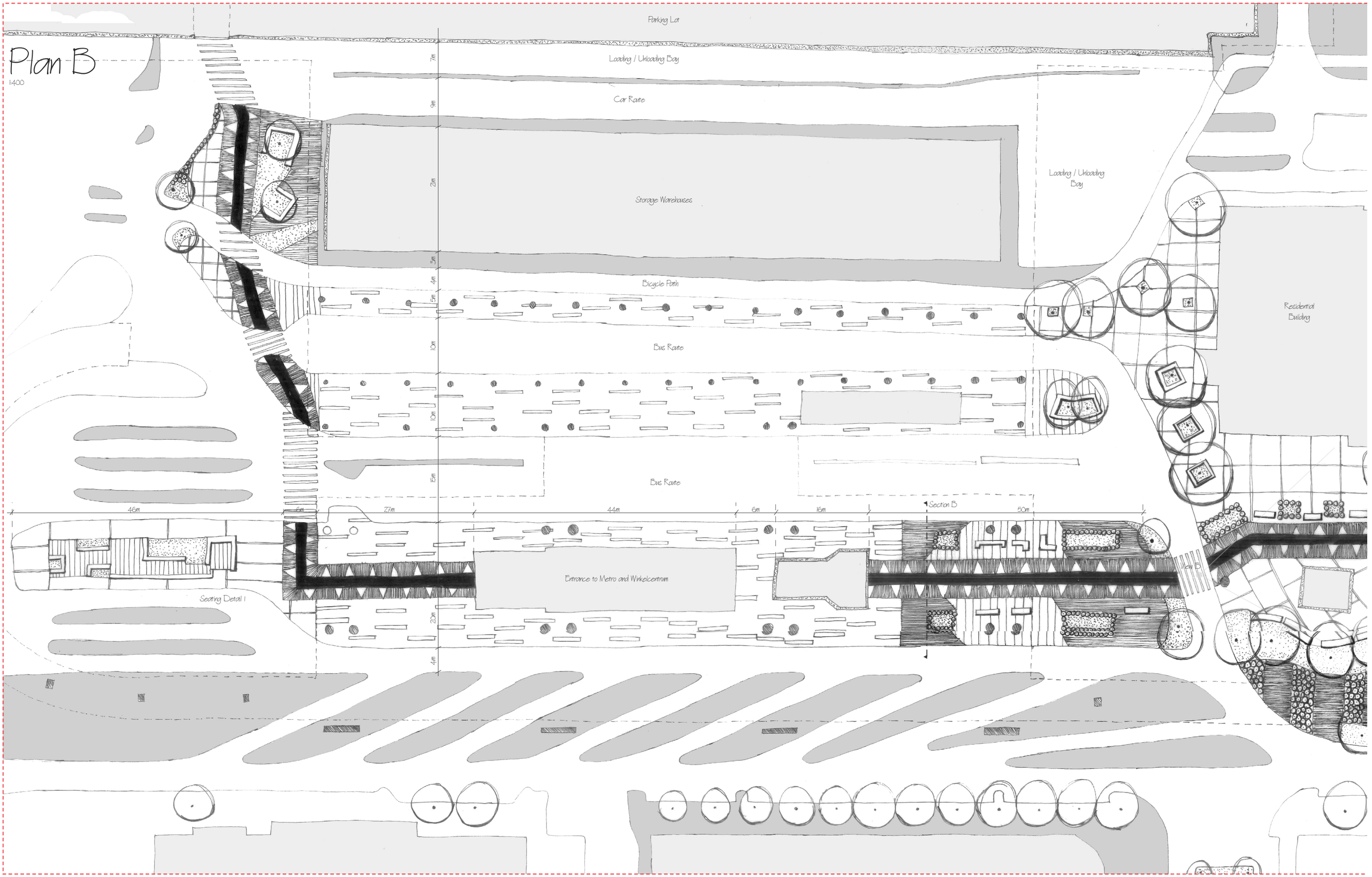


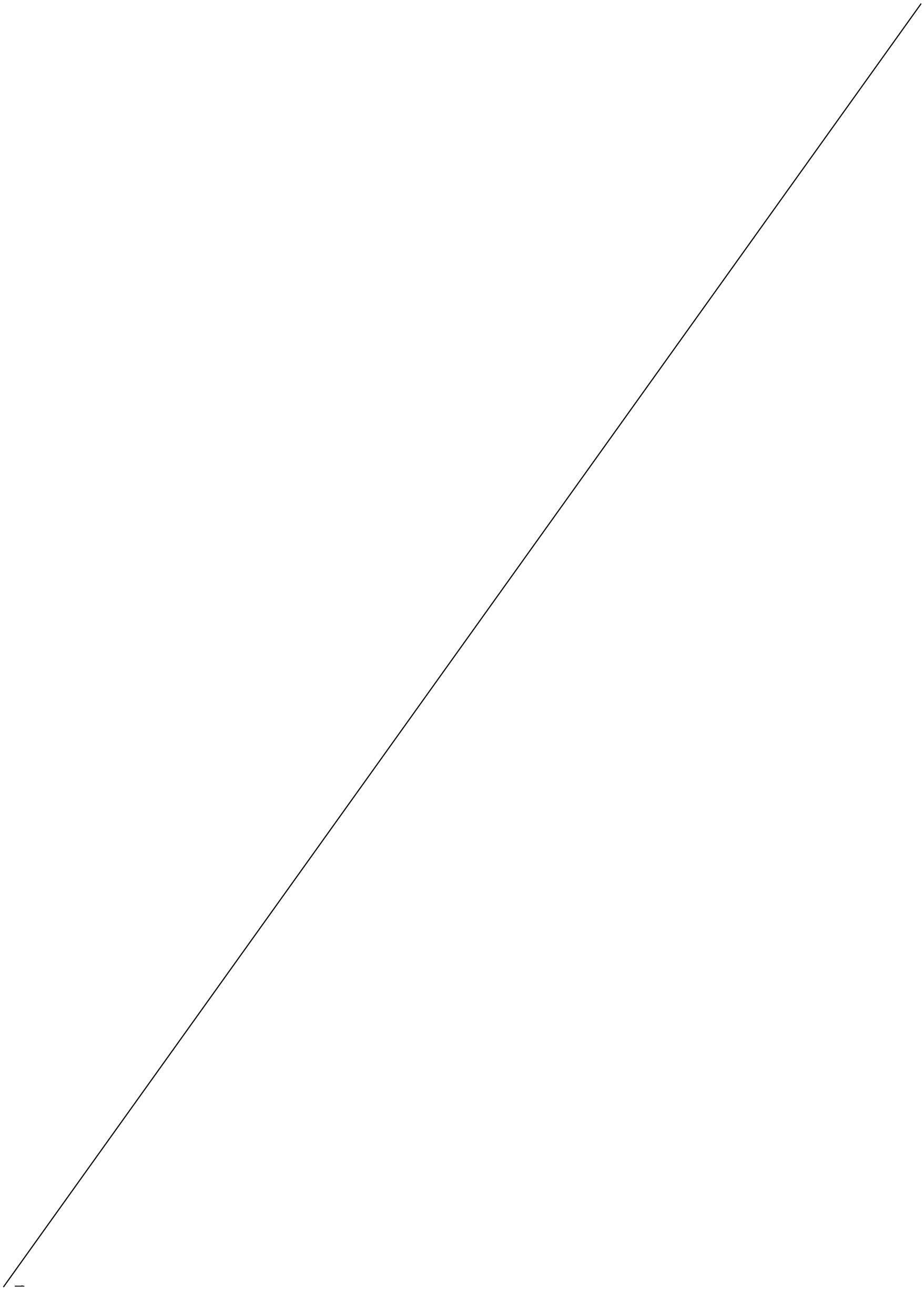

View at A

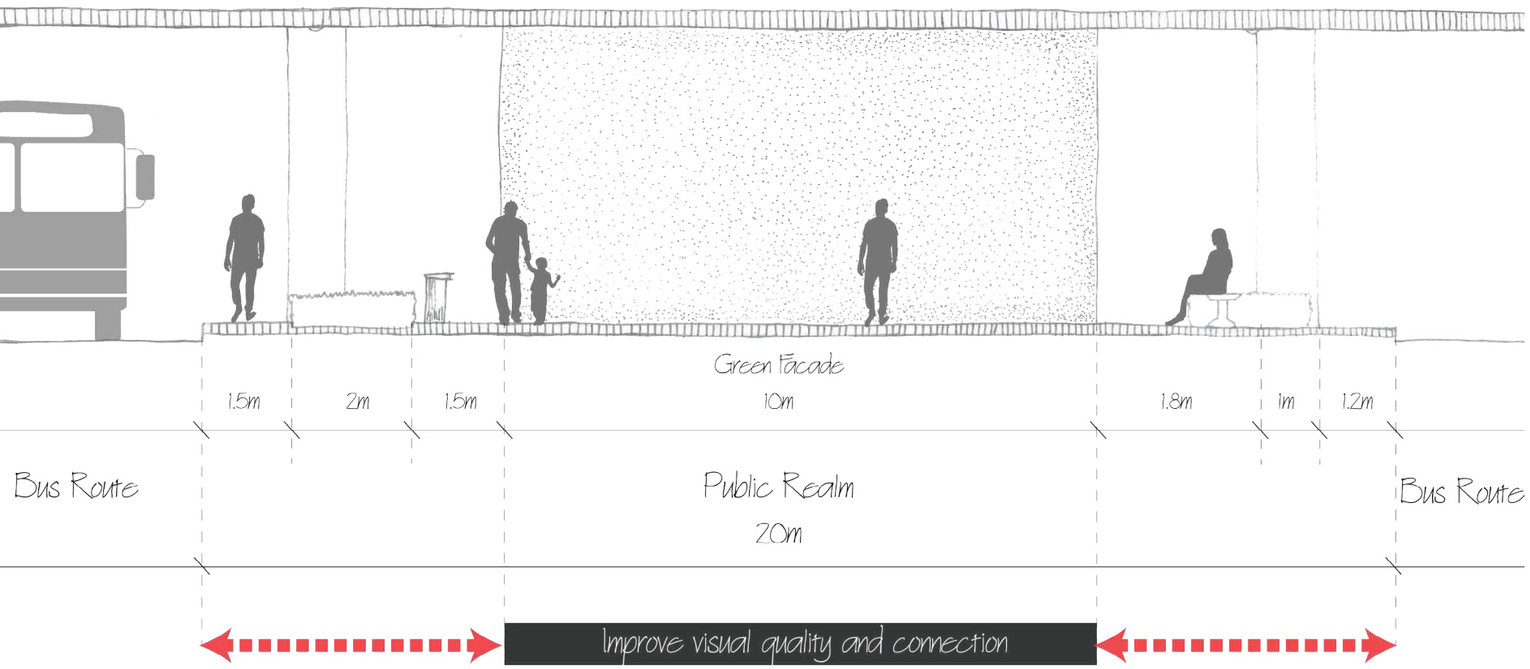


Plan B

1:400


Parking Lot
Loading / Unloading Bay
Car Route
Storage Warehouses
Loading / Unloading Bay
Residential Building
Bicycle Path
Bus Route
Bus Route
Section B
View B
Seating Detail I
Entrance to Metro and Winkelcentrum
7m
9m
21m
3m
4m
1.5m
10m
10m
15m
20m
4m
46m
6m
27m
44m
6m
16m
50m

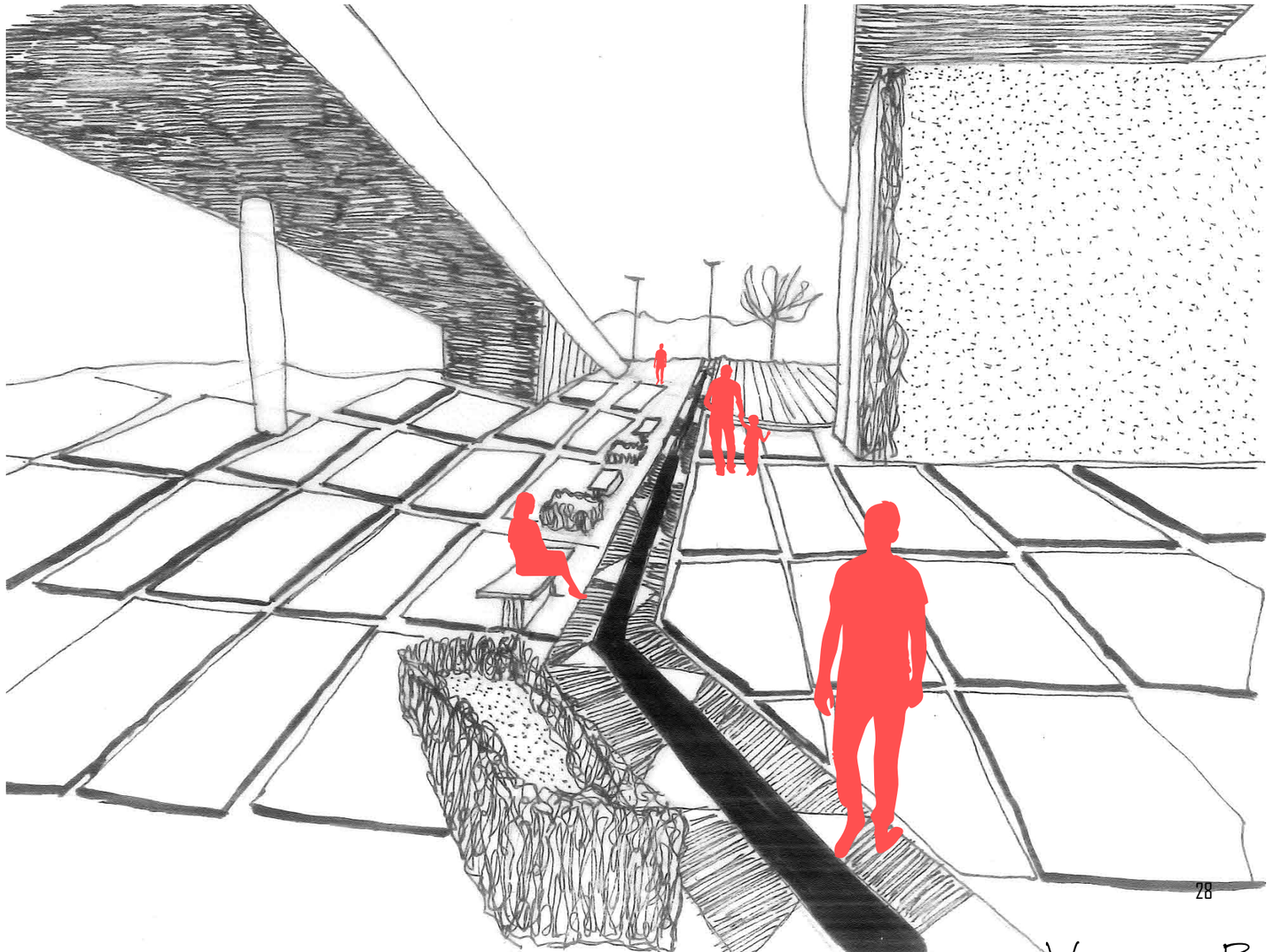


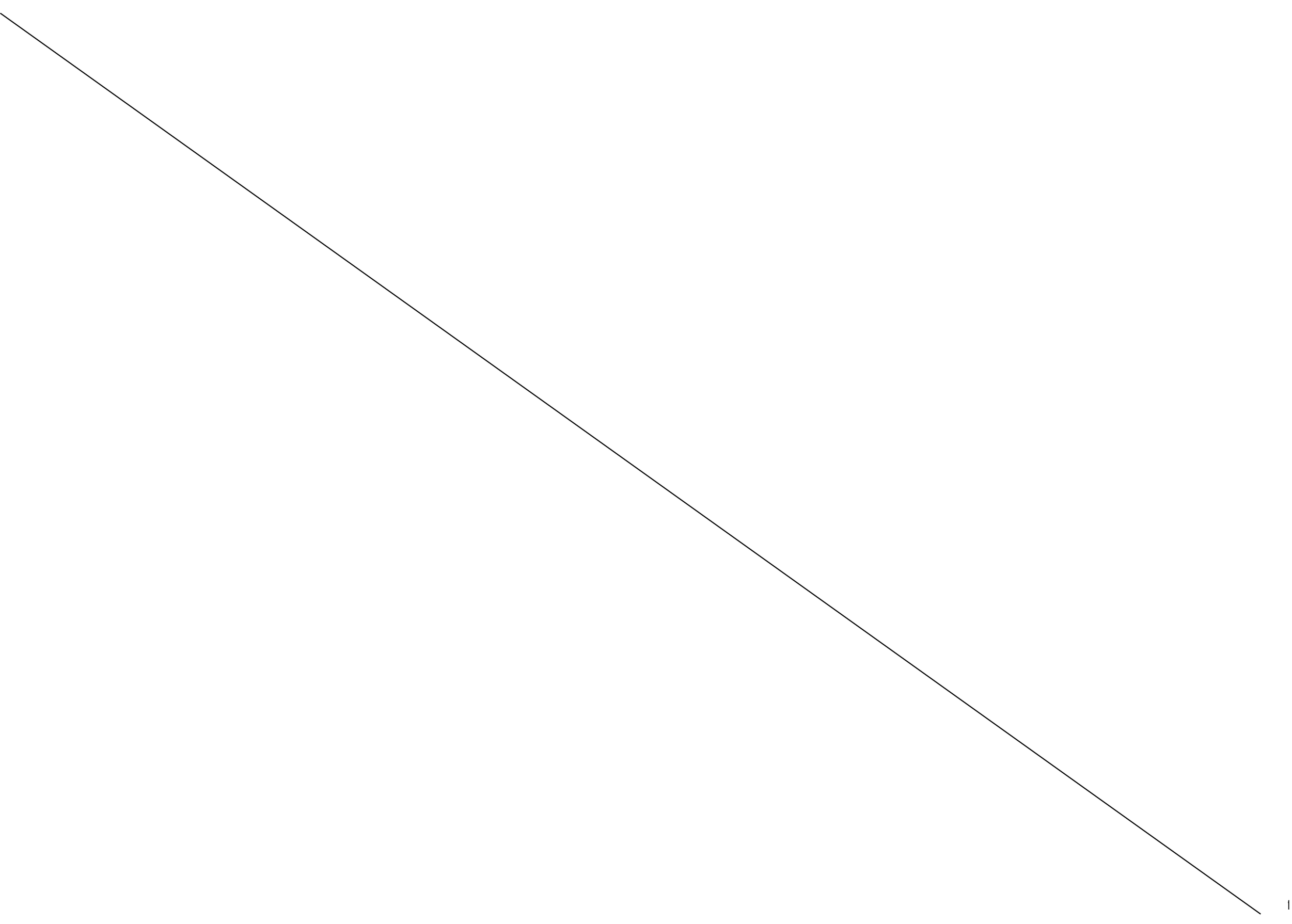


Section B

1:100

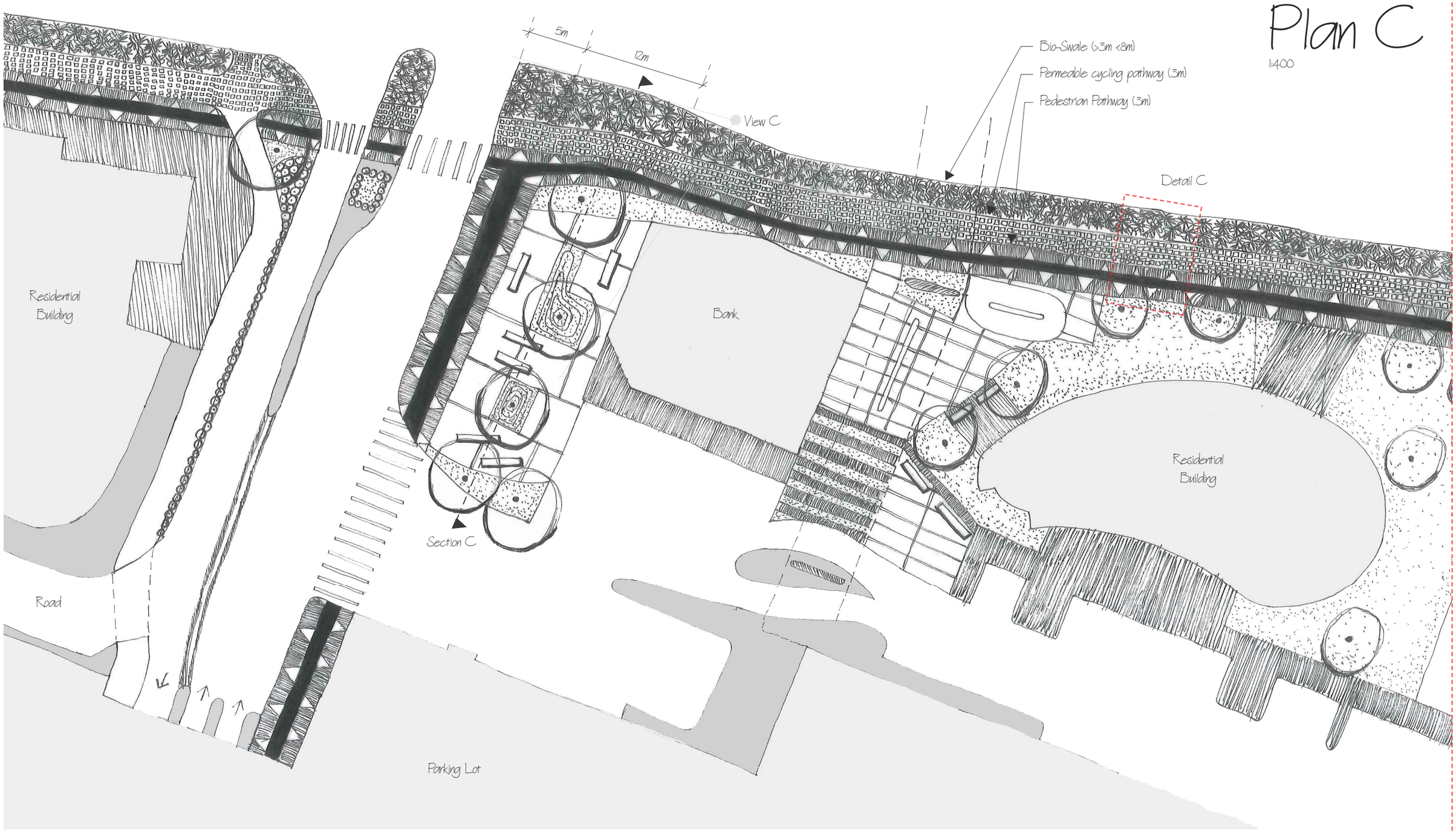
View at B

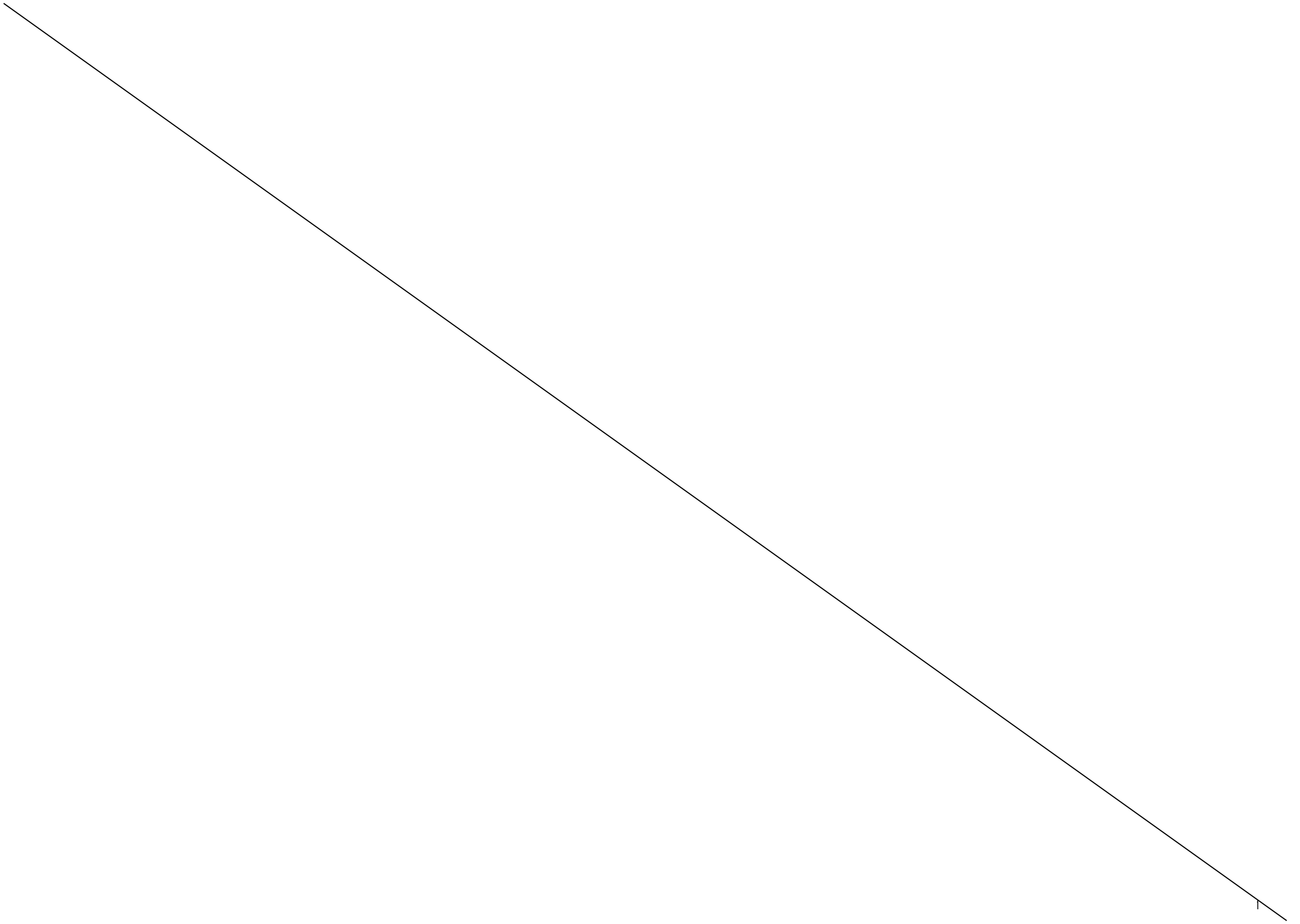




Plan C

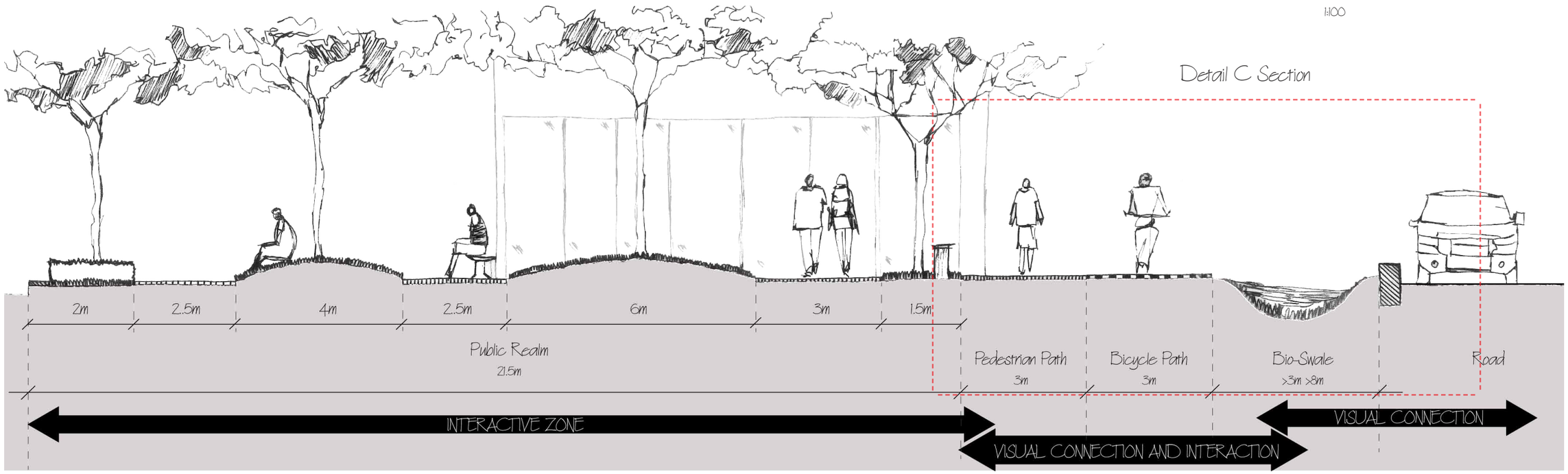
1:400

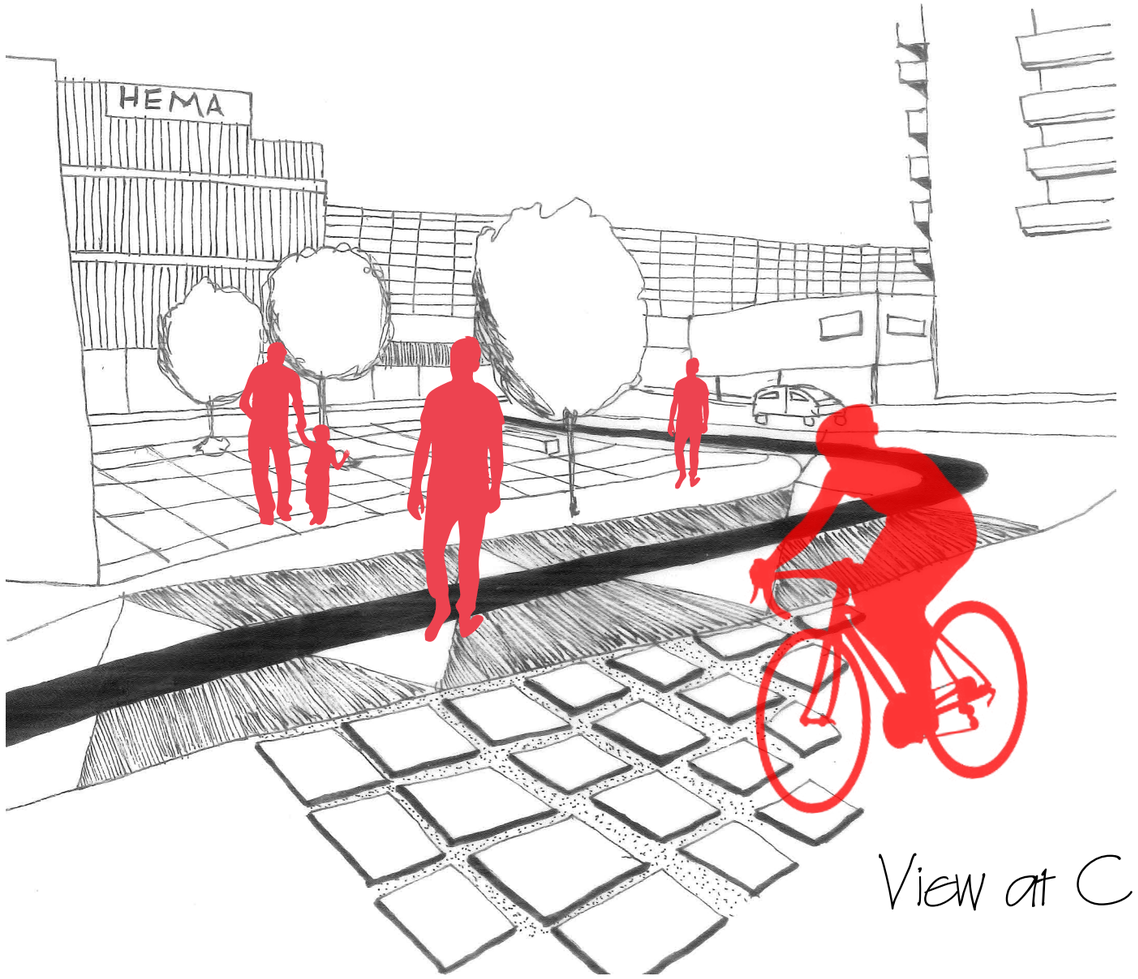

5m
12m
View C
Bio-Swale (>3m <8m)
Permeable cycling pathway (3m)
Pedestrian Pathway (3m)
Detail C
Residential Building
Bank
Residential Building
Section C
Road
Parking Lot



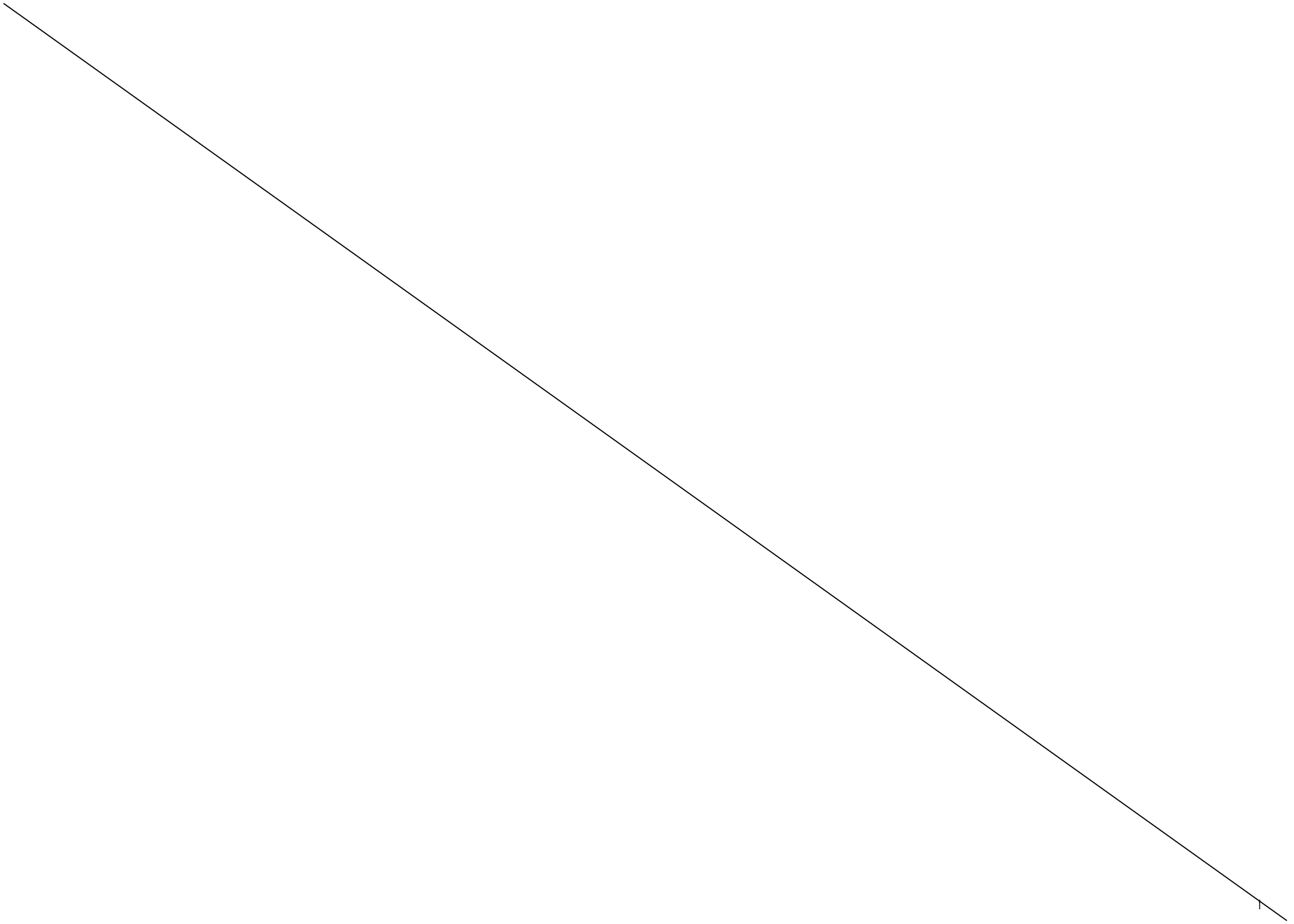
Section C

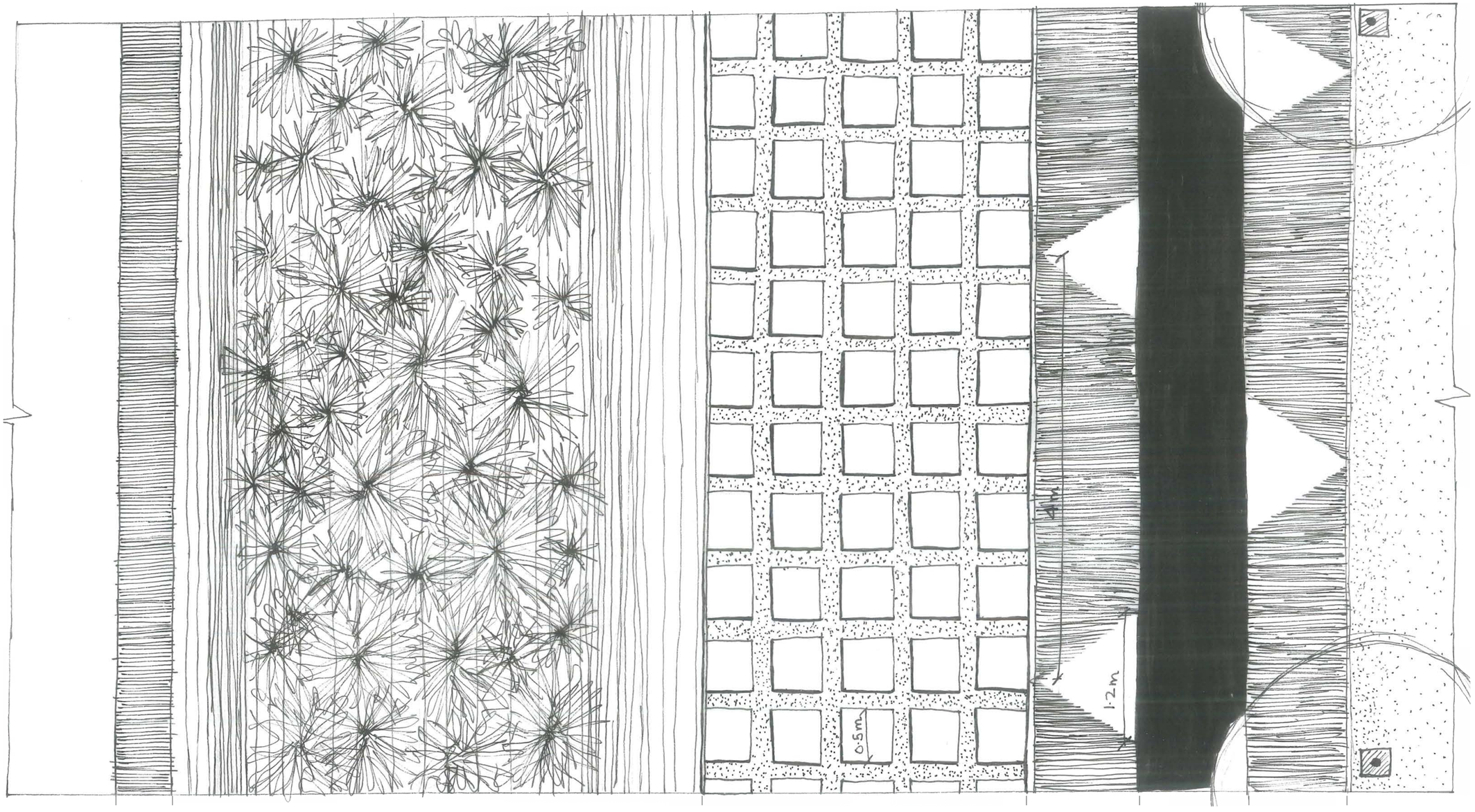
1:100





View at C





Road

Retaining Wall
0.5m

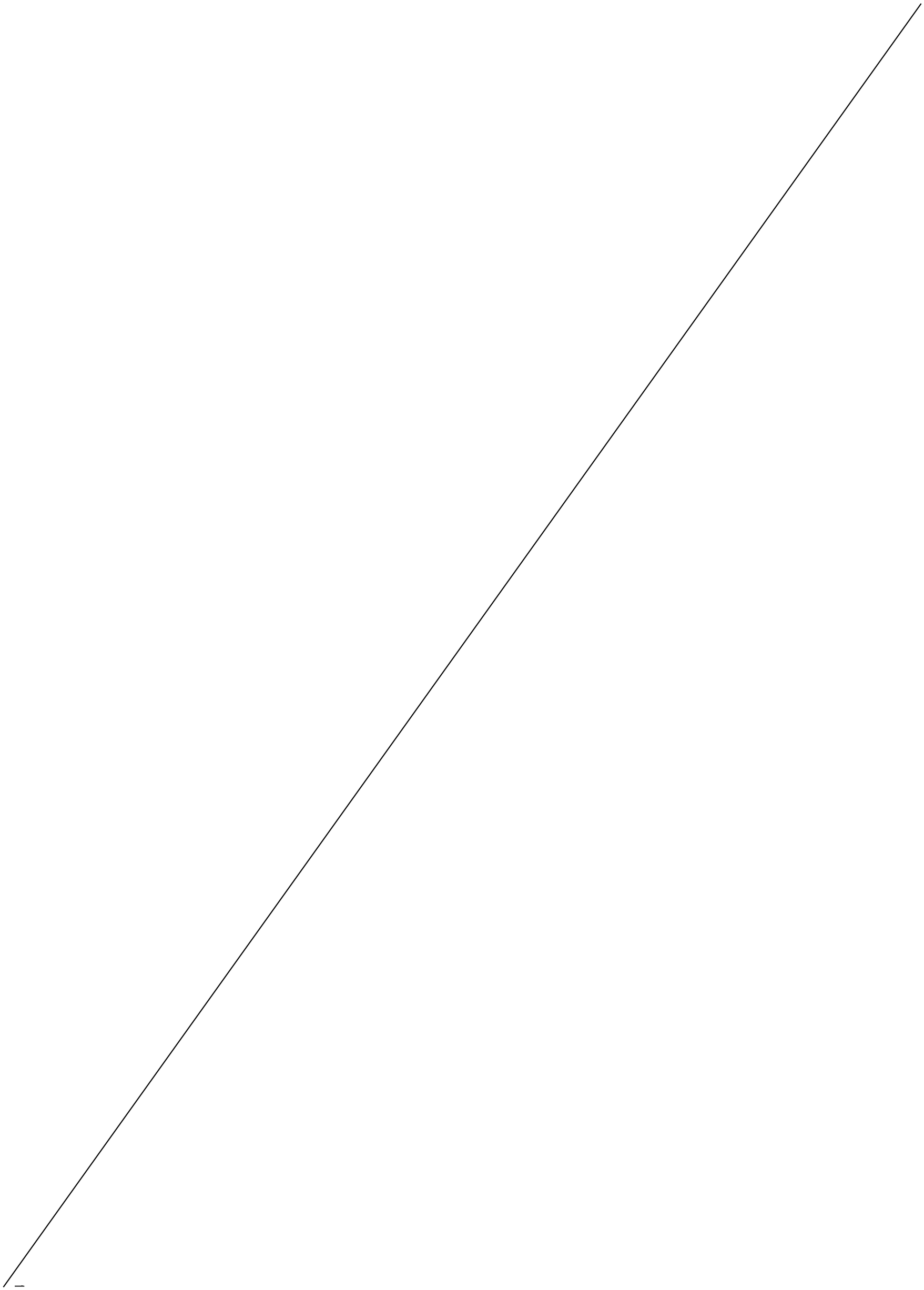
Bio-Swale
(<3m >8m)

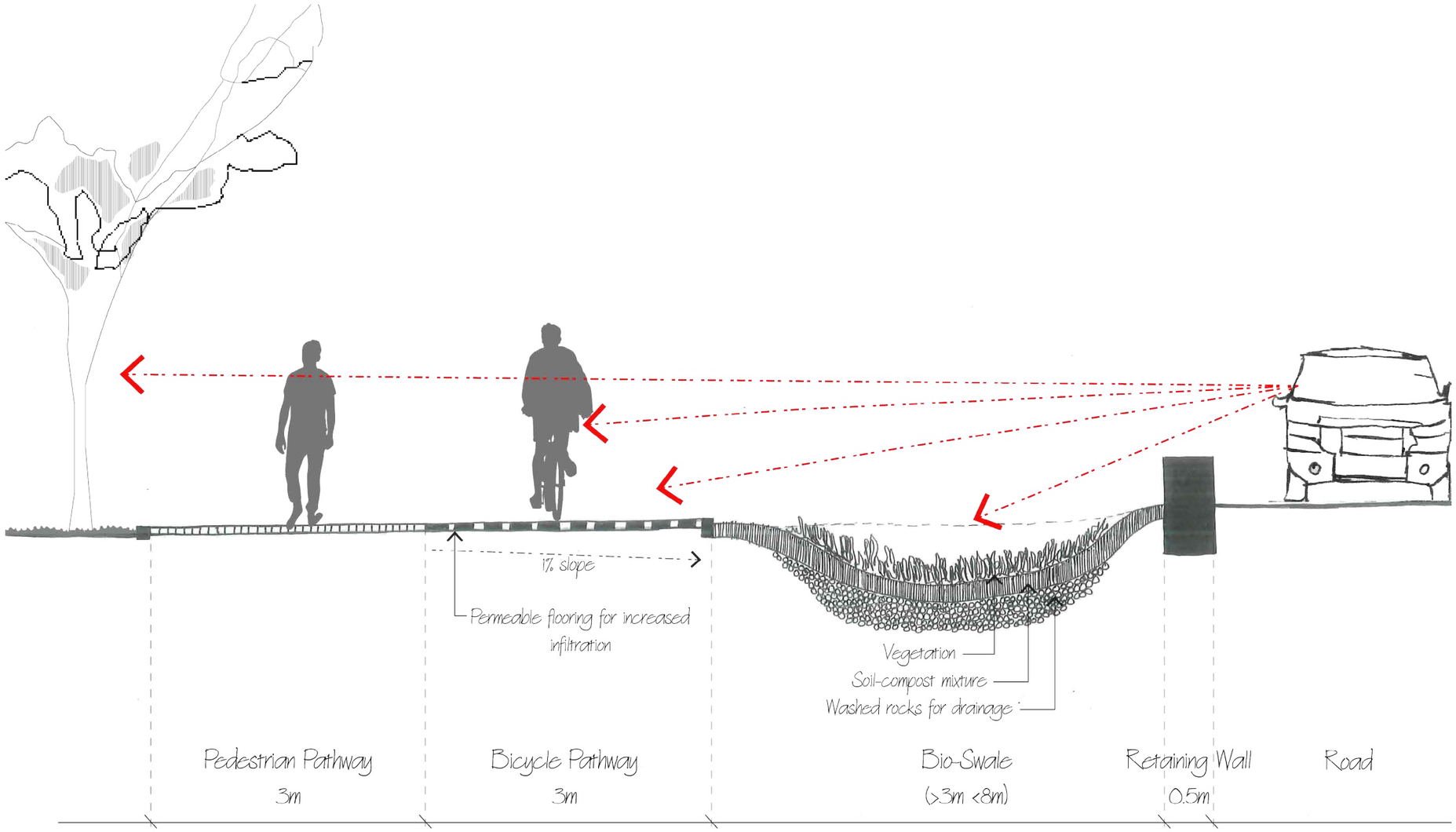
Bicycle Pathway
Permeable Flooring
(Material : Concrete)
(3m)

Pedestrian Pathway
(Material : Stone)
(3m)

Detail C

1:100





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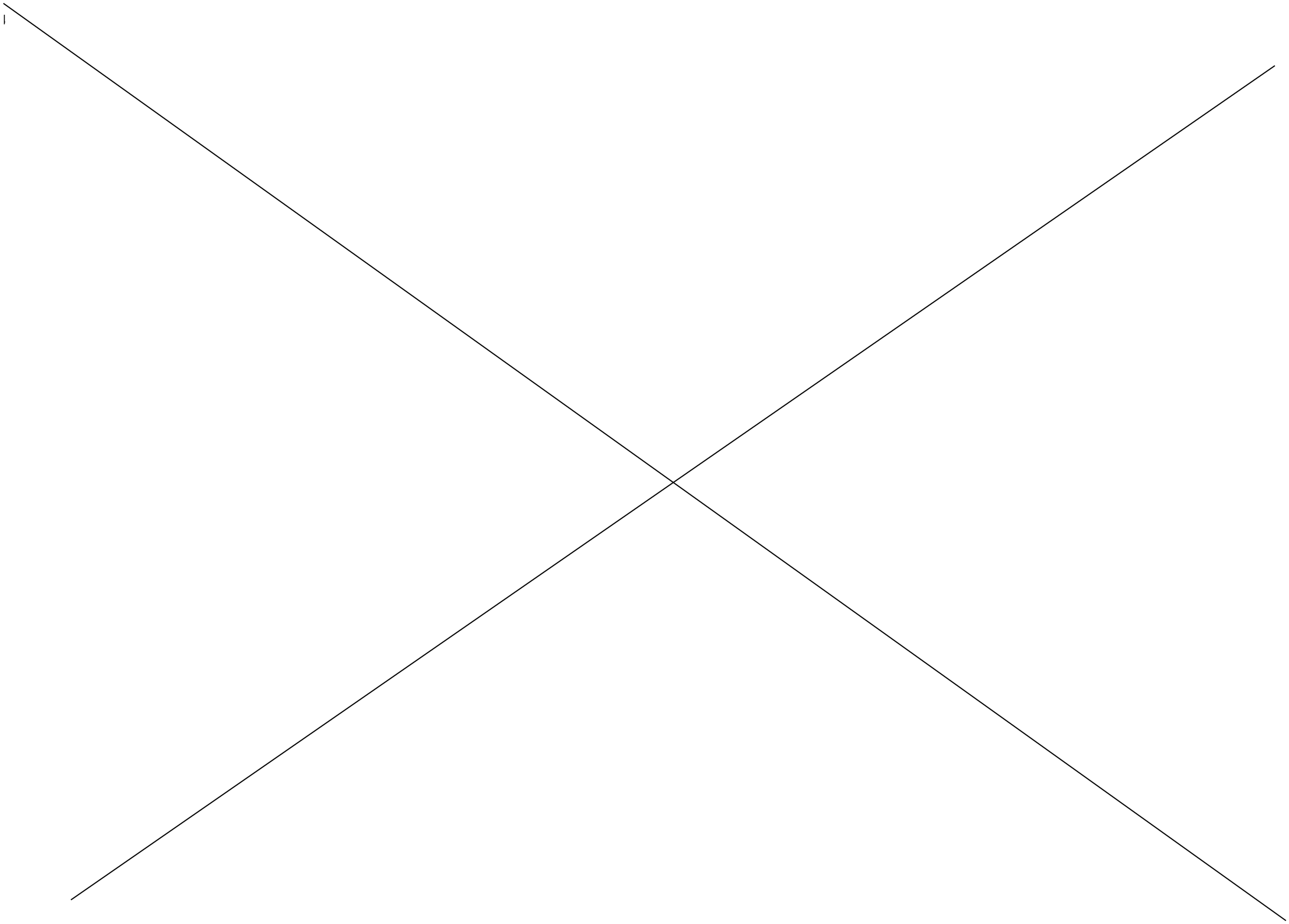

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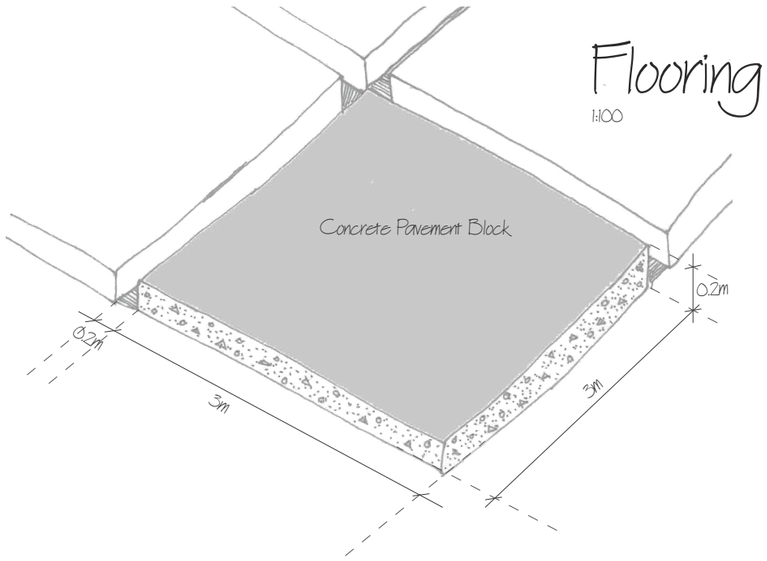

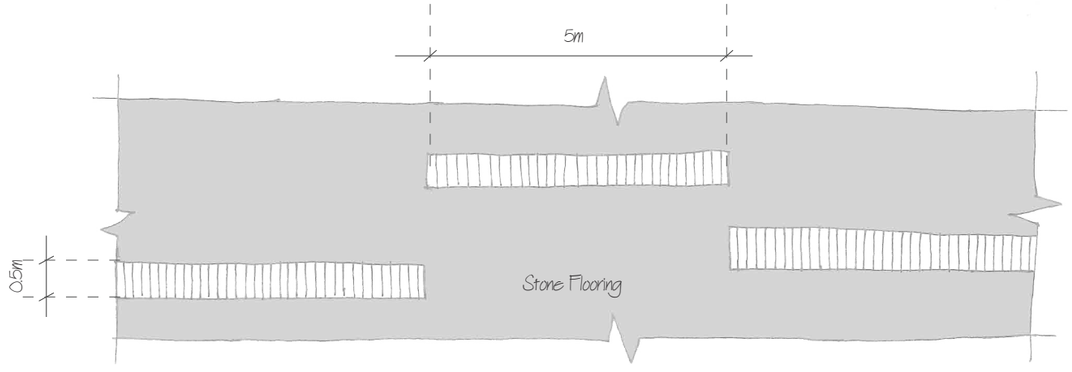

Seating Detail 1

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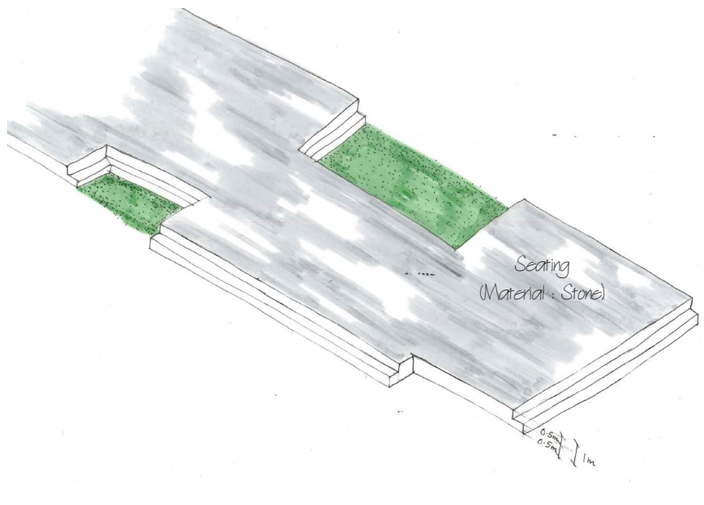

3- Socio-Economic Feasibility Essay

Introduction

After a visit to Zuidplein, Rotterdam it is evident that the location is well connected due to it being a major public transportation node and along a major car connection between the city center of Rotterdam and the highway. A lot of people pass through Zuidplein, Rotterdam on their daily commute between work and home as it is the second largest metro and bus station in the Netherlands. Despite having a highly important position in the transportation network regionally, Zuidplein lacks in accessibility. The municipality of Rotterdam has introduced a Structuurvisie for Rotterdam Zuid, with an ambition to revitalize the South. However, there is a lack of addressing the quality of public space within Rotterdam Zuid.

Both the projects proposals are bounded within Zuidplein, Rotterdam and have attempted to address issues related to the public realm in the area. The project proposals have been described in detail followed by a comparison and conclusion of their salient features.

Project A: A case for activating the public realm
By Karishma Asarpota

Zuidplein, Rotterdam is a major node in the city. For Rotterdam South, it is the hub that connects multiple uses that serve many surrounding neighborhoods. Zuidplein Metro and bus station serves the surrounding neighborhoods and is a major connector for Rotterdam Zuid. Ikazia is one of the two hospitals of its size in South of Rotterdam. The Ahoy is known throughout the country as a popular destination to host conferences, both international and within the region. Zuiderpark is only recreational space of its size in the South of Rotterdam. As a shopping destination, Winkelcentrum supports the daily needs of nearby residents and is also one of the bigger shopping hubs in South Rotterdam. Approximately 12 million people visit the mall every year. What is lacking in the area is the absence of an active public realm. The current interaction between the pedestrian pathways, roads, building entrance and bicycle paths has led to a disconnected and non-directed public realm. As a pedestrian there isn't enough clarity on the legibility and direction that one can walk in.

Directionality and legibility of the public realm are suggested through how users perceive space and surrounding façade qualities. The area lacks a number of attributes that are desirable in a highly active urban public area such as Zuidplein. Lack of clarity of direction, leftover spaces, disconnected pedestrian network, large inactive plazas, emphasis on vehicular movement, lack of green and soft landscape, not enough sittable space, no attractive landmarks or features are the physical features that contribute to the perceived fragmentation of the public realm. The large concrete structures in the area are overpowering to the user and do not relate to the human scale.

The project proposal takes into consideration the socio-economic status of the neighborhoods in Rotterdam Zuid and the recent debate (and resulting referendum) around demolition plans in the area. Demolition plans in the area would be economically heavy and cause a big change to residents and the overall urban fabric of the area. While the idea is radical and argues for big transformation to have a chance at rebuilding a better future for Rotterdam Zuid, we cannot be sure that such an intervention would have a positive social impact in the area. A counterargument to this is to explore the idea of implementing a small change that can trigger a bigger impact in the future. The project proposal explores this notion in two contexts– physical intervention and economic investment. The plan presents the potential of activating the public realm within Zuidplein. The project proposal focuses on improvement of the public realm on the ground and on linking Zuidplein metro station and Winklecentrum to Ikazia in the East and Zuiderpark and Ahoy in the South. The pedestrian pathway connecting these uses is emphasized upon and designed with an intention to improve the legibility between varying physical features and activities.

Enhancing the existing transportation and green-blue infrastructure in the area by relating it to the human scale, would be an opportunity for Zuidplein to capitalize on its current functions and improve the user experience. This way the leftover and undefined 'spaces' would get converted to 'places' with an intentional function and form. Thus, addition of social infrastructure in the area would be a consequence of developing the existing streets, green spaces and water channel. This would be the minimum physical intervention and economic expenditure that can have a meaningful impact on the residents and visitors of Zuidplein.

Project B: Transformation of the Urban Form of Zuidplein
By Jeroen Stroetzel

Zuidplein is often called 'The heart of the South' because of its centre function for the South of Rotterdam. Although this might be true in terms of public facilities and economic activity, but the area of Zuidplein doesn't give the look and feel of this title as 'heart of the South'. The project area is located as an isolated island in its surroundings, while paradoxically being its economic force with Ahoy, the hospital and shopping mall within the project area. The lack of human scale in the area of Zuidplein, in combination with the absence of focal points, unattractive public space and anonymous and closed facades, doesn't make the area inviting if you don't necessarily need to be there. The municipality of Rotterdam has made a Structuurvisie for Rotterdam South, in which the ambition and the strategy to revitalise the South is formulated. In my opinion the Structuurvisie doesn't improve the South of Rotterdam enough to guarantee a resilient and sustainable future. Because of the great potential of Rotterdam Zuidplein due to its location I chose for a transformation of the existing shopping mall and its immediate surroundings. The area between the Goereesestraat and Strevelsweg, Zuidplein and Zuiderparkweg will be included in the project area. The aim of this transformation will be to improve the role of Zuidplein on a regional scale and make it more accessible on a local scale.

Improving the role of Zuidplein on a regional scale will be done by adding housing and cultural program to the area, and by connecting existing green and water structures surrounding the project area. To make the project area more accessible on a local scale, the existing shopping mall will be transformed so it fits the urban typo morphology of the area. By cutting the building in four pieces, the connection of Zuidplein with its immediate surroundings will be improved. Additionally to make the shopping mall more accessible on a local scale, the shops are placed on street level, and the parking facilities will move to the first and second floor of the building. In this way, lively street life is encouraged to make the project area more attractive for people to transfer on their daily commute, to meet and to stay.

The idea behind connecting Zuidplein to its immediate surroundings and making it more accessible comes from observations and research about the neighbourhood of Carnisse. The socio economic conditions of the neighbourhood are bad and an intervention is needed to avoid the situation getting worse. Paradoxically the current economic force of the area, including the shopping mall, Ahoy and the hospital, are located adjacent to the neighbourhood. Instead of doing a small intervention as temporary solution, the area needs structural changes to approach this situation, and these need to be done on several scale levels. By adding cultural program to the project area, the current economic force of the area is strengthened by making it less dependent of the three existing economic forces. Adding culture to the area will be a costly operation, but the municipality of Rotterdam is already willing to make this investment, as the Structuurvisie for Rotterdam Zuid shows. To make the area exploit the opportunities of the plans of the Structuurvisie, the public space around the cultural additions should also be redesigned. Making attractive public spaces is costly, especially with the use of beautiful and sustainable materials. In order to make the investments legitimate, existing green and water structures are connected in the urban design through parks, public green, canals, adding trees, green roofs and facades and a water square, for temporary water storage after heavy rainfall. On local scale, the urban design opens up the

economic heart of the area to Carnisse and public spaces and functions are located on the edge of Carnisse and Zuidplein, so that a border will be created out of a boundary.

The transformation of public space in the area is guided by different spatial qualities as pedestrian friendly spaces, public green, shop fronts or facade activity, places to gather, sit down, play and stay, the presence of a human scale and a guided serial vision. This guided vision will be created by the addition of residential towers that are carefully located as landmarks along sight lines, guiding people through the area. The addition of residential units will not only lead to more people being present in the streets, but also more eyes on the street for a feeling of being safe in the area. By adding residential units it is possible to create a social mix of people and it will also make the plan more affordable. In this way, public and private investments can be attracted to integrally transform the area of Rotterdam Zuidplein. The increasing demand for housing in Rotterdam in the current situation and in the future, in combination with the recent debate about demolition plans for existing social housing in Rotterdam Zuid is the reason for adding residential units. By tackling the mono-functionality of the project area, in combination with the socio spatial interventions, greening of the project area and making it climate change proof, the transformation will guarantee a resilient and sustainable future for the shopping mall and the surrounding area.

Comparison

Both projects start at the same point of highlighting the lack of connectedness and dead public space around Zuidplein. The lack of proper accessibility to Zuidplein despite having strong functions around it such as the metro, shopping mall, Ahoy and Ikazia (hospital) is the point of take-off for both proposals. The need for public realm improvement is also evident. These problems have been tackled in different approaches and scales resulting in a different vision of the urban form, treatment to blue-green infrastructure and required economic investment.

Vision of the Urban Form

In Project A, the urban form has been retained as it is. The approach of modifying the public realm has been adopted to create a clear and legible public realm. The ideology behind this to capitalize on the current functions in Zuidplein and transform the public realm to improve connectivity and legibility of what already exists. Project B aims at transforming the urban form and user interaction in a major way in Zuidplein. The modification includes reducing the size of the urban form and activating the ground floor uses by introducing shops and places to gather. The vision is guided by the notion of reintroducing the human scale, increasing social interaction and having eyes on the street.

Treatment to Blue-Green Infrastructure

In Project A, the existing water network has been connected through introducing a bio-swale along the main road that can channelize water. This also provides a natural buffer between the main road and the public realm around Zuidplein while maintaining a pleasant visual connection. This design element can contribute to both – infrastructure connection as well as social opportunities and viewpoints. In project B, water canals, trees, green roofs and green facades are used to seamlessly connect surrounding water network and landscapes areas. Social opportunities are also introduced through infrastructural design elements. A water square is used as a landmark for gathering and recreation, and also serves as a way to collect excess surface water if required.

Economic Investment

Project A has followed the concept of ‘small change, big impact’. This is transferred to the economic investment as well. Enhancing the public realm is an economically viable option to improve the immediate legibility and connectivity around Zuidplein. Although the gains from this initially less heavy economic spending will be large, periodic investment will be needed in the future for increased enhancement and maintenance. However, it is a stepping stone for bigger change in the future. Project B explicitly states the heavy economic expenditure required for implementation of the proposal. It argues that since the Municipality of Rotterdam is already willing to make this investment (as demonstrated in the Structuurvisie for Rotterdam Zuid), there needs to be a bigger emphasis on the public realm and connectivity to surrounding neighborhoods of Zuidplein. A complete transformation will also improve the image of Zuidplein at the regional level and provide an outlet for the neighborhood to profit from this transformation.

Conclusion

Project A is a ‘quick win’ project that is intended to be a stepping stone for bigger changes in the future. By improving the experience for residents and visitors of Zuidplein, more people can be attracted to visit the place in the future. It is a project designed to be a catalyst for the much needed enhancement of Zuidplein. Project B aims to radically change the urban form of Zuidplein thus strongly improving the connection to the human scale, increasing social activities and making the public realm more attractive.

The scale of intervention and design approach adopted in both projects varies considerably. The proposals aim to enhance Zuidplein and make it a desirable destination for visitors in the surrounding neighborhoods as well improve the regional image of Rotterdam Zuid. Both the proposals include aspects of connecting blue-green infrastructure but vary significantly when it comes to economic investment and transformation of urban form. The proposals for Rotterdam Zuidplein show that a similar starting point and vision can lead to completely different approaches and interventions on different scale levels.