MASTER'S THESIS 2016
GROUP 19. MSC04 URBAN DESIGN

THE MOVABLE LANDSCAPE

Nature in Motion

"[W]E MUST FOCUS MUCH MORE ON THE DESIGN OF **THE TRANSITIONS**, **THE CROSSINGS**, **THE CONNECTIONS** AND **THE IN-BETWEEN SPACES** THAN IN THE PAST. IT IS HERE THAT WE CAN IMAGINE PUBLIC-DOMAIN EXPERIENCES (CONFRONTATION WITH OTHERNESS, A CHANGE IN PERSPECTIVE, AN EXCHANGE)" (HAJER AND REIJNDORP 2001: 129)

- OLE B. JENSEN AND DITTE BENDIX LANNG, ***MOBILITIES DESIGN***

ABSTRACT

This master's thesis concerns the revitalization of an inactive industrial transport corridor through the city of Genk, Belgium, by using the space in question to introduce new modes of mobility in the form of public transport and material distribution that don't engage just social energies, but that incorporate the landscape and landscaping techniques.

To do this, a theoretical framework of Landscape and Mobility studies is created to guide the process and the story and to ensure that the research and design questions are answered. This two-sided framework is taken throughout all the steps of the thesis, from theory to strategic analysis and concept, from large scale design principles to small scale design proposals, from reconnecting the city with the larger landscape, to reconnecting neighbourhoods through social interaction.

Thus, the outlined strategic decisions in the first chapters of the thesis will be exemplified through a design proposal on one of the chosen sites of interest, one that offers a view on how a mobility and landscape oriented intervention can fit in the context of a city with high cultural diversity and rich industrial heritage.

TITLE SHEET

PROJECT TITLE

The Mobile Landscape
Nature In Movement

PROJECT COURSE

Master Thesis

PROJECT GROUP

MSc04 URB, Aalborg University
Group 19, Spring 2016

PROJECT PERIOD

February - May 2016, 13 weeks

PAGES

80 (98)

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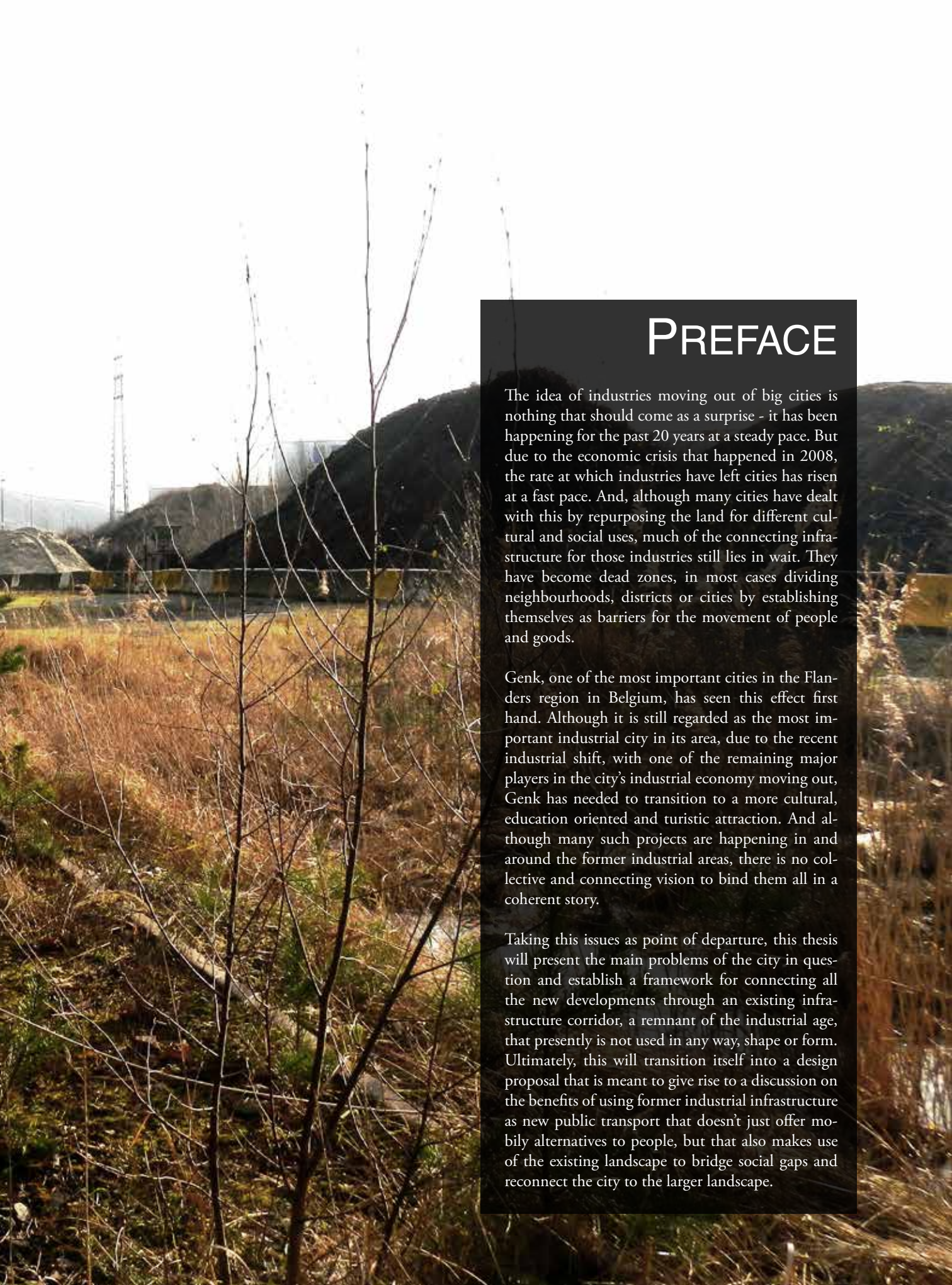


Preface

The idea of industries moving out of big cities is nothing that should come as a surprise - it has been happening for the past 20 years at a steady pace. But due to the economic crisis that happened in 2008, the rate at which industries have left cities has risen at a fast pace. And, although many cities have dealt with this by repurposing the land for different cultural and social uses, much of the connecting infrastructure for those industries still lies in wait. They have become dead zones, in most cases dividing neighbourhoods, districts or cities by establishing themselves as barriers for the movement of people and goods.

Genk, one of the most important cities in the Flanders region in Belgium, has seen this effect first hand. Although it is still regarded as the most important industrial city in its area, due to the recent industrial shift, with one of the remaining major players in the city's industrial economy moving out, Genk has needed to transition to a more cultural, education oriented and turistic attraction. And although many such projects are happening in and around the former industrial areas, there is no collective and connecting vision to bind them all in a coherent story.

Taking this issues as point of departure, this thesis will present the main problems of the city in question and establish a framework for connecting all the new developments through an existing infrastructure corridor, a remnant of the industrial age, that presently is not used in any way, shape or form. Ultimately, this will transition itself into a design proposal that is meant to give rise to a discussion on the benefits of using former industrial infrastructure as new public transport that doesn't just offer mobily alternatives to people, but that also makes use of the existing landscape to bridge social gaps and reconnect the city to the larger landscape.

GENK

...AND THE COLETRACKS

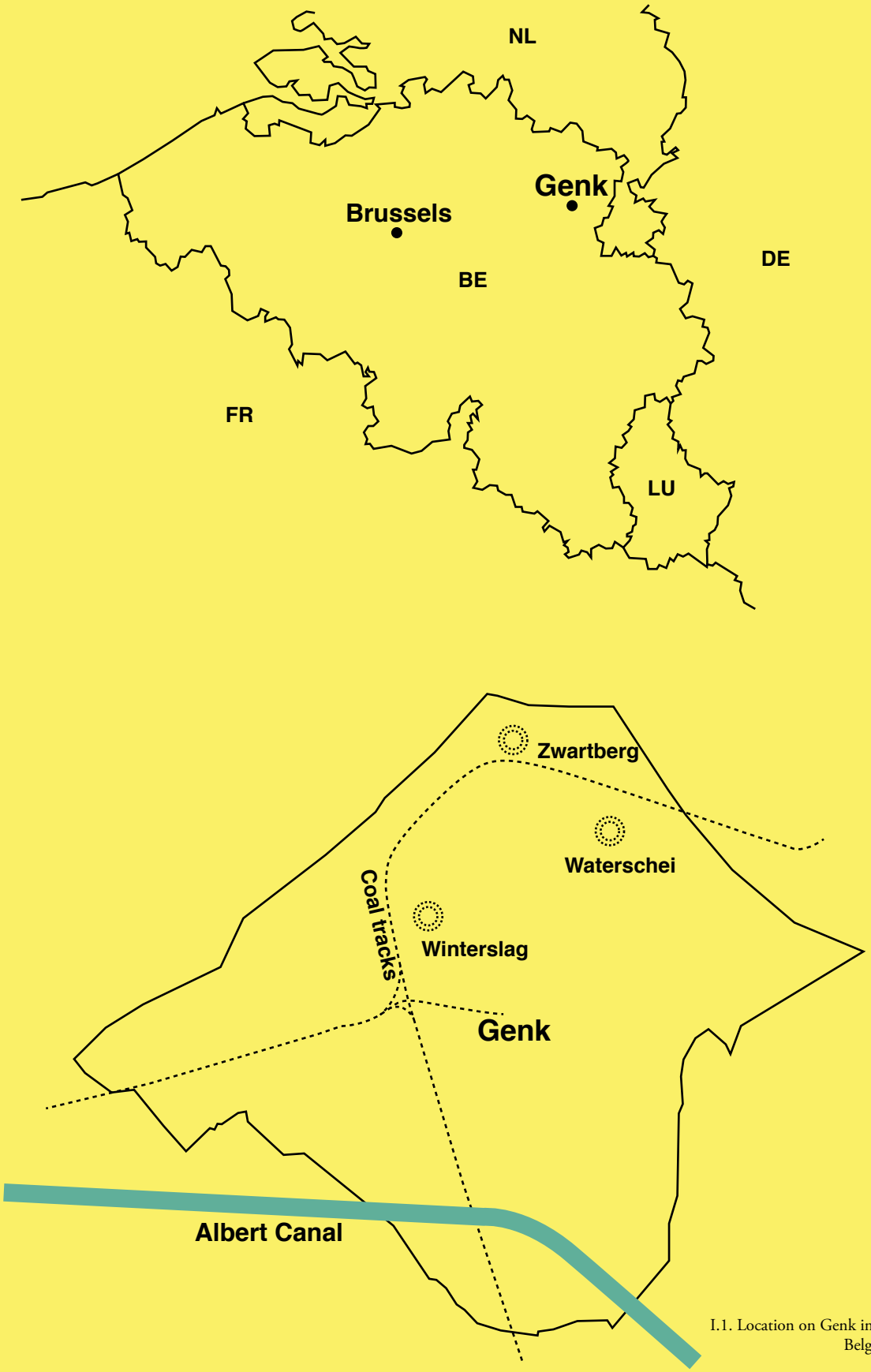
The municipality of Genk is located in the province of Limburg, the easternmost of the five provinces that make up the Region of Flanders, the Dutch-speaking part of Belgium. Regionally, it was held as one of the most important industrial cities due to the discovery and eventual mining of coal in the early 20th century. This led to a rapid development of the city, mainly around the three coal-mining sites, Zwartberg, Winterslag and Waterschei. Thus, all three of the mining sites had coresponding neighbourhoods built around them that followed the Garden City development principles of that time. Each neighbourhood was equiped with a school, a church (mine-churches), play and recreation fields, modest houses for the workers and larger, more expensive housing units for the management employees of the mines. This, in turn, created a migration boom for the region, resulting in a large quantity of both Belgian and foreign immigrants, raising the populace from around 2000 inhabitants at the turn of the century to 70.000 by the 1960s, thus creating the urban fabric that we see today.

After the Zwartberg coal mine closed in 1966, the city expanded its industrial range from only coal mining, to car and building material manufacturing, mostly distributed along the Albert Canal and the main road infrastructure corridors. Still, it would not be long before all the coal-mining activities in Genk would cease, as by the end of the 1980s, both the Winterslag and Waterschei coal mines would be closed as well. But, although other smaller industries would take their place, the city started to see a slow decline in industrial activities for the next 20 years.

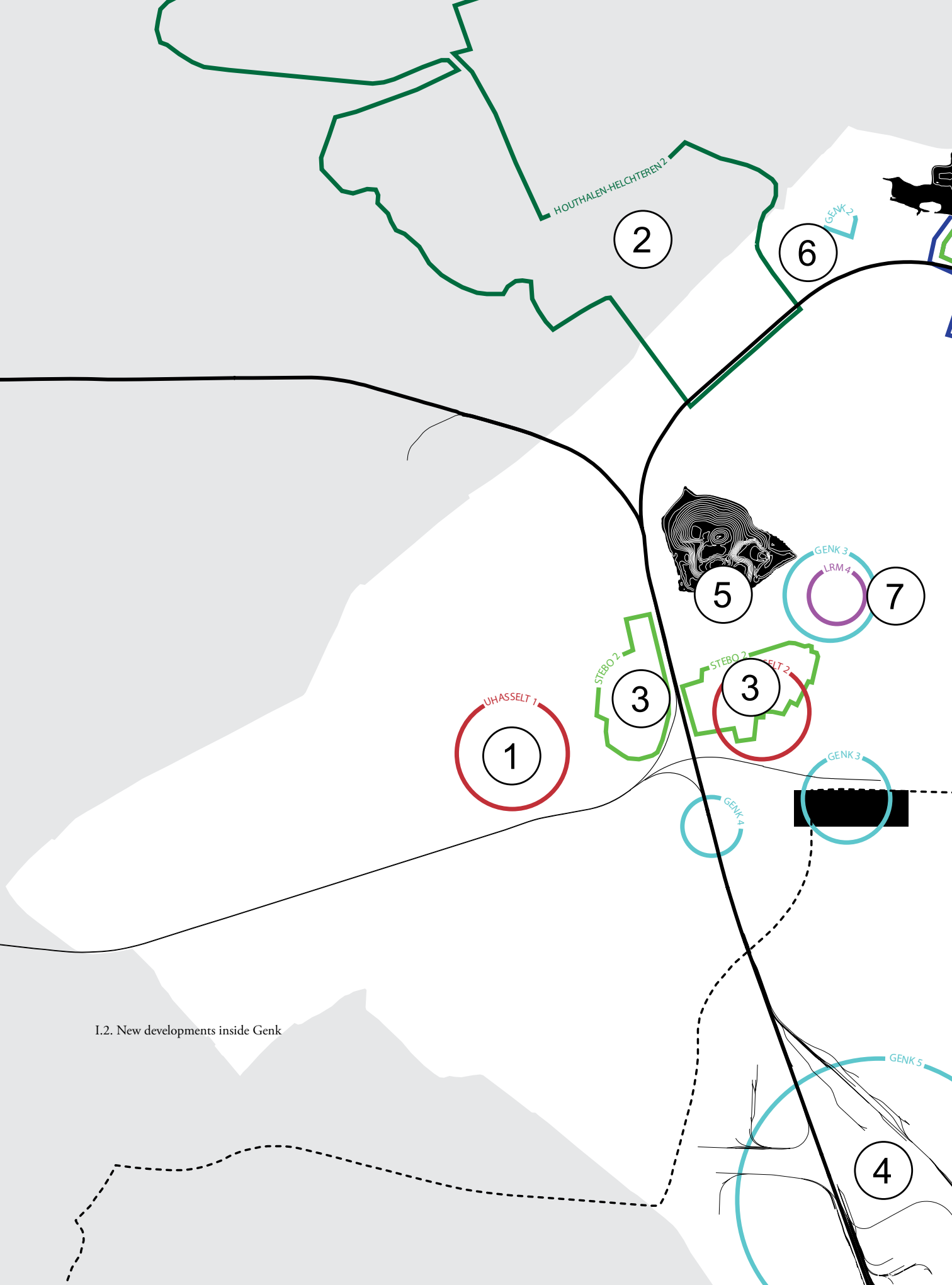
It was only after the economic crisis in 2008 that it became apparent that the city need to move from an industrial economy to a cultural, educational and touristic oriented one. As proof of this, most of the current projects today involve either using the existing built environment to create cultural attractions and venues (the transformation of Winterslag into the C-mine), or inserting new uses where the industry used to be (the technological and educational park, Thor park, where the Waterschei coal mine used to be). Either way, the old industries have started to give way to new, innovation and culture oriented uses.

As this is a global trend, happening in most former-industrial cities, the interesting thing about Genk is that the coal-mining sites and subsequent industries were developed in a radial fashion, mostly due to the position of these sites relative to the city center. Seeing as they were far apart, the three sites needed some form of logistic connection to facilitate both the movement of people and the distribution of materials. This connection arose in the form of the coletracks, train tracks that facilitated the transport of the produced coal, as well as clearing out the debris caused by the mining activities. Due to the existance of this transport corridor, most of the industries that would be developed in the future also centered themselves around this infrastructure. But, when the mining sites closed down and because of the emergence of car transport systems as a cheaper and faster alternative for those specific industries, the coletrack lost their use, and slowly, became a space that acted as a barrier between the city center and the outer neighbourhoods, as it has been gradually taken over by nature.

Seeing as these industries that are now being transformed were located around the coletracks, the new developements, thus, will also have a strong connection to this former infrastructure corridor. This presents itself as an opportunity, as, if revitalized and transformed into something that plays an active role inside the city, the coletracks will not just become a bridge between the outer neighbourhoods and the city center, but will also work to connect all the new developments through potential new modes of public transport, as well as creating a new type of public space inside the city that the local inhabitants, as well as future visitors, can benefit from.



I.1. Location on Genk inside Belgium



I.2. New developments inside Genk

PROJECTS ALONG THE COLETRACKS

1. UHasselt allotment buildings
2. Recreation areas Hengelhoef, Molenheide and Kelchterhoef
3. Garden City Genk - STEBO inventory
4. Ford Genk Masterplan + Fast Track
5. C-mine cluster
6. Thor Park
7. LRM C-mine crib
8. LRM IncubaThor in Energyville
9. RLKM Natural Development Plan for Klaverberg (DELVA, 2015)

Methodology

Every Story Need Grounding

Although vaguely defined for the realm of Urban and Landscape Design, creating a methodology toolbox with which to keep a design, a story or an idea in check is key. In the following, the various techniques and methods applied to the *mobile landscape* are outlined as to give insights into how not just the thesis, but the process behind it has been brought from start to finish.

Problem Based Learning

As the name suggests, this method relies on establishing an initial or overarching problem to any given task - in this case, to a specific site or city. Contrary to other methods used that also start from a base problem, in the PBL methodology, the problem is center-stage, it being the driving force behind the initial discussion about the potentials of a site. This, in turn, influences every stage of the project, from initial analysis, to concept development and final design.

The problem outlined above usually translates, after carefull deliberation, into research or design questions that further help guide the hands of urban designers by pinpointing where the focus is needed. The process of establishing the right question or questions should not be a linear one, but should be on a constant loop, by adjusting and tweaking the initial inputs with the outcome of analysis or research outputs found along the way. This helps lead to a better, well-rounded result, through a dynamic process and a comprehensive narrative (Aalborg University, 2010).

Integrated Design Process

The integrated design process establishes the need for an interconnected and multilayered approach to a give design task, where all the stages, from mapping and analysis, to engineering, technical and aesthetic design techniques, are incorporated (Knudstrup, 2005: 13-29).

For *the mobile landscape*, this meant establishing clear phases for the process and iterating the task accordingly: analysis, conceptualization, design and presentation. All of the above mentioned phases were wrapped around the core principles of creating a comprehensive strategy, coupled with a design proposal that works based on that strategy, to showcase its values in a small scale environment. As is the case for the PBL method, this also meant looping around from strategy to design and back, to see both what works from a top-down approach, and how small-scale intentions affect strategic views.

Grounded Theory

The basis for grounded theory as a methodological framework is that it acts, to some extent, in reverse fashion to the positivist tradition of social science research (Wikipedia, 2016). Contrary to usual approaches, the idea behind a grounded theory method is that the user doesn't first search what he or she wants to study from a theoretical standpoint, but instead conduct sufficient analysis and conceptualization steps that, after combining the data, the theoretical toolbox is almost a given.

The process of applying the GT method means taking the research or design task through four stages: *data collection*, *analysis* (of both the task and the designed content), *memoing* (theorizing ideas and relationships as they come) and *sorting* (creating an outline of the emergeant theory from the memos) (Simmons, 2010). It should be mentioned, however, that there is a pre-design "stage", which simply implies that the person doing the research minimize preconceptions by establishing no preliminary literature (Strauss and Corbin, 1994).

Using the GT method of project development, assessment and presentation, *the mobile landscape*'s theoretical framework will be presented in a later chapter, after the strategic concept and design principles will be outlined through this thesis.

I.3. Methodological process diagram

Strategic Approach

Making Sense of The Bigger Picture

Statement and Vision

Defining The Outcome Through a Question

At present, Genk is a city that is striving to achieve a higher regional importance inside Belgiums' hierarchy, and it is doing so by changing the way in which the city is, or better yet has been perceived. Thus, it intends to transition at a rapid pace from an industry-oriented city to a culture-orietented one. To achieve this, it is turning almost all of its former industrial sites into cultural ones, either by converting existing environments or by developing new ones. The main example in this case is the Winterslag Coalmine which, through cultural transformation, became the attractive C-Mine site, though there are also future development proposals for at least one of the other two mine sites. But, in spite of this change, a singular, clear and strategic vision has yet to come with regards to how the city itself will be connected to these new developments or, as a matter of fact, how these developments will connect to eachother. There have been many proposals, but nothing substantial or finite.

Considering the morphology of the city, the main thing that comes to mind is the former coaltracks that used to connect all three mines sites. Although partially still in use, more than half of it is not being used in any way, shape, or form, and acts more or less as a barrier inside the city. The areas around it are mostly peripheral residential ones that, despite having beauty both in themselves and in their natural surroundings, are not visually or physically connected to the city. This "barrier" itself poses a challenge, as it is not so much about hindering movement, but about a lack of use of space, from a social and potentially economical point of view, as most spaces or places are seen as and become barriers due to lack of social and/or economical interactions.

This, in turn, translates to a lack of cohesion between the city and its peripheral neighbourhoods. Although physically connected by road infrastructure, the lack in material or social exchange between the city and these fringe-like areas is what creates this sense of seclusion. As a result, it would not be enough to change the qualities of the "barrier" itself, but other threads need to be sown to establish a true connection in this regard. These threads should not be seen as prosthetics, but as part of the actual morphology and should be organic. Thus, they would need to be integrated through both contextual framing, but also through the use of larger-scale elements. And this is where the use of a "bonding agent" would come into play.

This agent takes the form of the landscape, simply because of its relevance to the historical context of the city's development, but also due to the presence of these lush landscapes next to the fringe neighbourhoods. This would be an organic approach to creating the aformentioned connection because nature, in its primordial form, always has the tendency to reclaim what was once in its possesion. Enabling this would only help speed up the process, while also giving new qualities to the spaces that the "new nature" would inhabit.

How can landscape structures introduce city life in and around the coaltracks and make them an active entity?

How can infrastructure corridors be rethough to enhance the cityscape in fringe districts around Genk?

Vision

The vision is, thus, to create a STRATEGIC FRAMEWORK with which the former coletrack of Genk can become a vibrant ATTRACTION POLE than not only houses cultural developments, but facilitates them as well, through the use of CONTEXTUALLY INFORMED and EXPERIENCE DRIVEN mobility. The framework is LANDSCAPE ORIENTED, one that drives a MOBILITY-FOCUSED DESIGN approach, by introducing state-of-the-art transporation methods into zero-mobility zones.

This new transportation method, coupled with the use of landscaping techniques, will help infuse new SOCIAL QUALITIES to the coletracks and help break down the established barrier that they have become. To further cement this new social energy and to place it in context, a series of existing infrastructural corridors will be developed in the same manner to not only BRIDGE SOCIAL GAPS between the fringe and the city center, but also to allow landscape structures to RECONNECT to the city, carrying the energy of the new coaltracks inward.

LARGE SCALE AS A FRAMEWORK

THE NEED AND USE OF A STRATEGIC VIEW

As the vision for the coletracks of Genk states, key in implementing and achieving the desired outcome is to establish a solid stategic and planning framework to guide the process. But in doing so, questions could arise as to why such an approach is necesarry for a larger part of the city and not just the coletracks themselves. This is due to the nature of mobility as an interconnected field of study, in which one cannot determine the outcome of a design option without viewing the entire body that it affects.

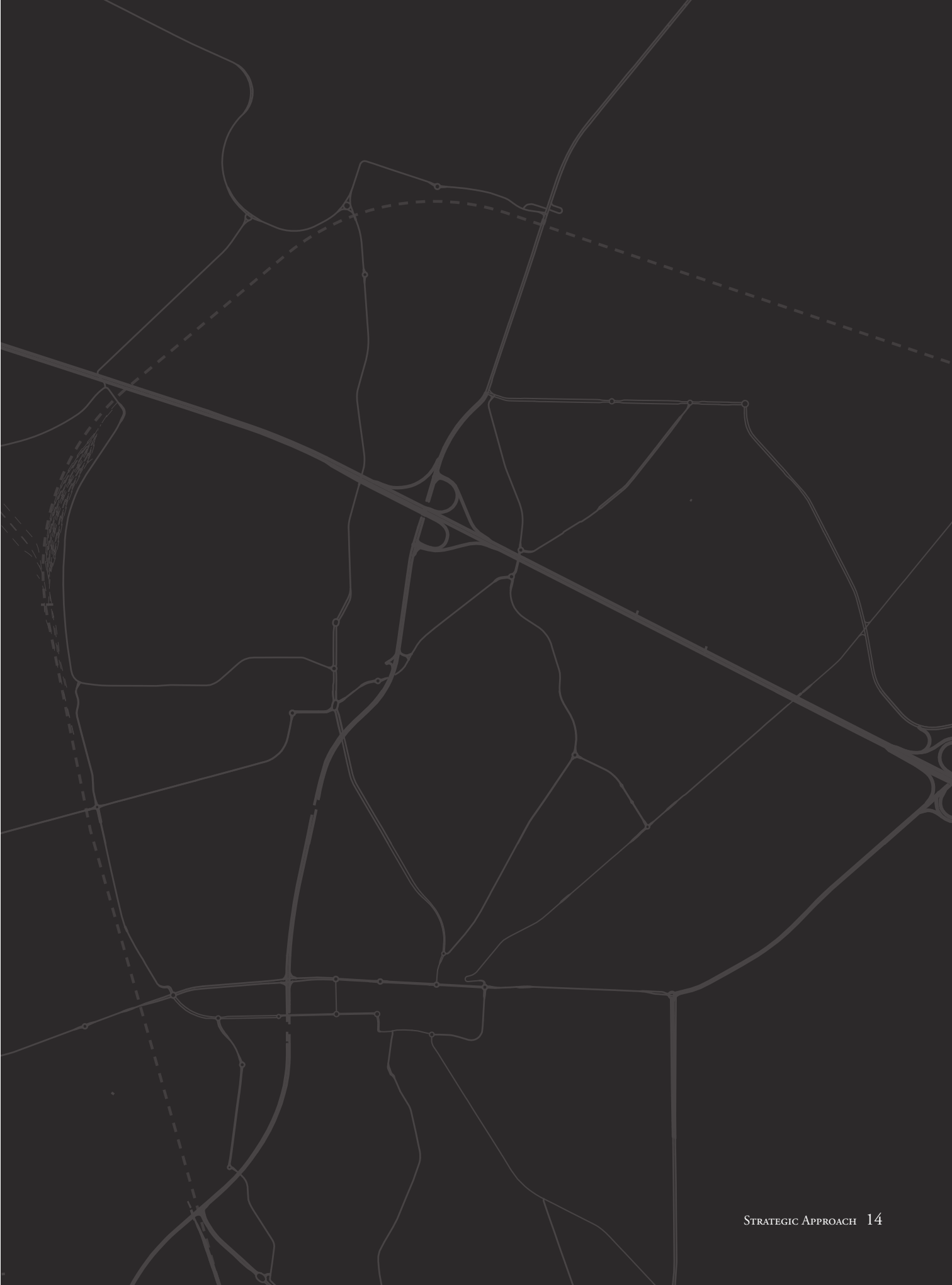
By this, it is meant to say that focusing on, for example, the design or redesign of an intersection does not mean that the problem has been solved by default. Only by consulting the overarching effects to traffic, people movement, social interactions and so on can one determine whether or not the design had a positive or negative impact. But approaching a task like this is innefficient, especially when dealing with larger areas that, in return, affect an even larger area. For mobility design, then, but also for urban design in general, this thesis proposes that having a strategic approach from the beginning is beneficial not just to the design, but to the overall real-world result.

Thus, through strategic thinking in mobility terms, one can plan out how the city will or can react to the problem-solving nature of the design. Consequently, a larger number of factors can be included in a strategic approach that potentially impact how, where and why a space takes the shape that it does and how one can change or tweak those to increase its qualities and diminish its weaknesses. By doing this, the result is not only relevant to its local context, but relates to and integrates itself in the larger spectrum of relations.

In the case of Genk, the coletracks present themselves as the space in question, while the issue of them acting as a social and quasi-spatial barrier is the weakness that needs to be improved. But to solve this issue, a local view is not enough. As previously stated, to break down a barrier one just has to insert activity inside that barrier, activity that often manifests itself as social interaction. This, in turn, relates not just to the local context, but to the city-wide one as well, as attractive spaces tend to bring in people from different neighbourhoods and districts, not just adjacent ones. This new flow of people should be addressed in a city-level concept that structures and gives hierarchy to where and how these people will enter and leave the new space, as well as what will happen inside the space itself.

From a design perspective, though, managing this type of flow and finding rime and reason for it requires heavy dependance on the contextual story. This time, the context does not reffer to local qualities, but the context of the city and what can be used to help guide this new found energy. For Genk, the element which most resonates with this type of approach is its natural landscape. Having vast reserves of it outside the built urban fabric and very specific types of landscapes in the form of the three coaltips - as well as a major ecological element running straight through the city in the form of the Steerbeek River valley - already frames how the design of the new coaltracks, as well as their radial connection to the city, will look like.

Thus, landscape and mobility can and should be threaded and interwoven to not only solve an extensive problem for a large part of the city, but actually connecting that part to the city and the city's context as well, thus acting as a sort of healing patch not just for the natural and built environment, but for the social and economical one as well. Only after coming to this type of conclusion can one then pinpoint which areas should be focused on with a much closer look and, in turn, this closer look would translate to a design that then correlates with the overall vision for the city.



City Concept

The Mobile Landscape

To weave the concept in such a way that it guides mobility design through a landscape framework, the landscape needs to play a significant part. Thus, a conclusion was reached in searching for the original layout of the landscape, a sort of "genius loci". Through historical mapping, it was determined that, before the industrialization period, the landscape was relatively flat, without fragmentation, and it flowed down to the Steernbeek River valley.

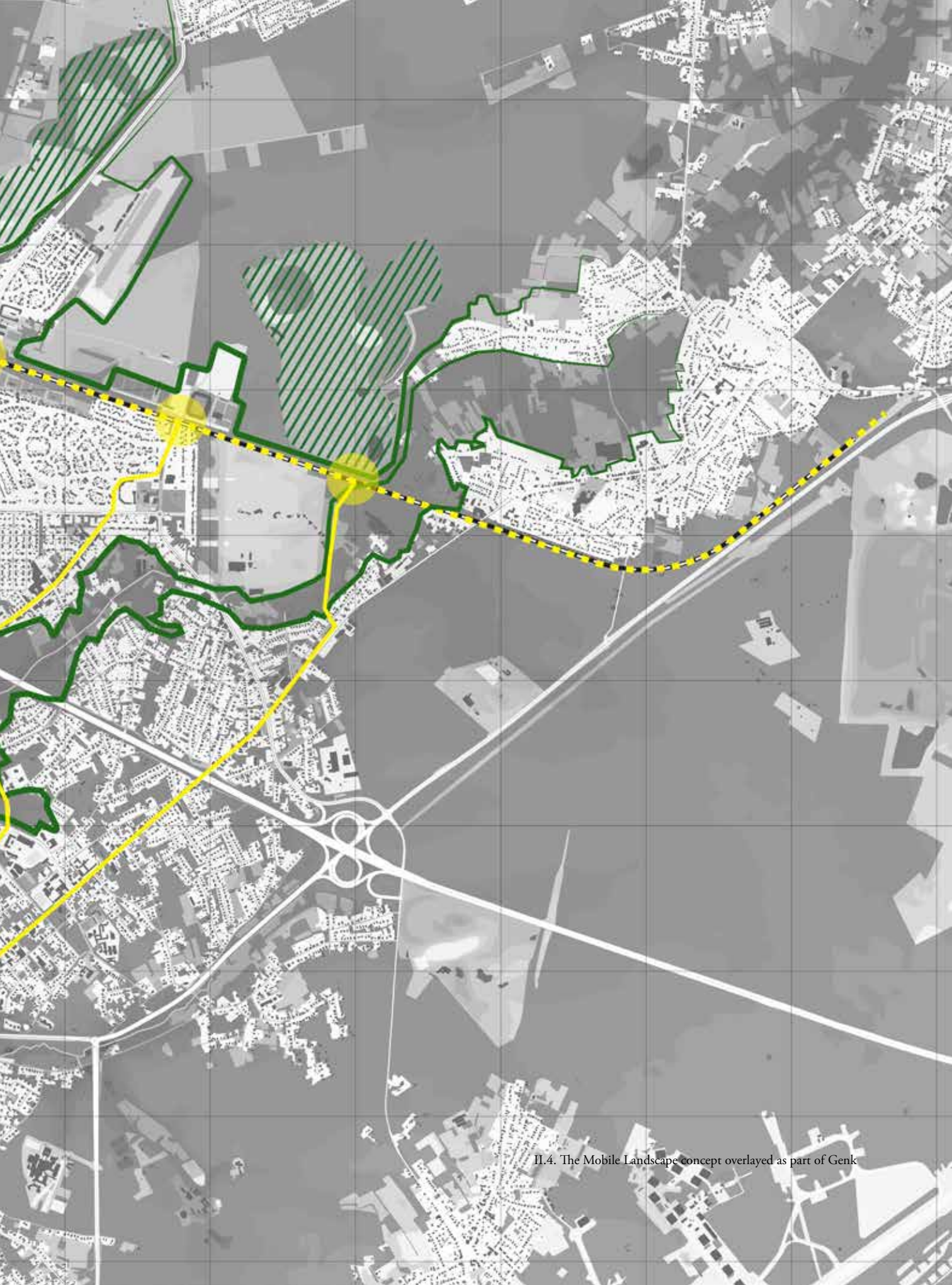
After coal was discovered in the area during the industrialization period, it was not long until the coaltracks appeared, in the same time, of course, as the mining stations and the mine-related developments (housing and churches, for example). Looking at it from a diagramatic point of view, it almost looks like the tracks have "pushed" the landscape away from the river.

Thus, the key element to this concept is bringing the landscape back to the river (and, consequently, the city center) through the use of threaded radials that connect to points along the coletracks, thus enabling the landscape qualities and social structures associated with them to flow inside, breaking down the established barrier through human activity and interraction

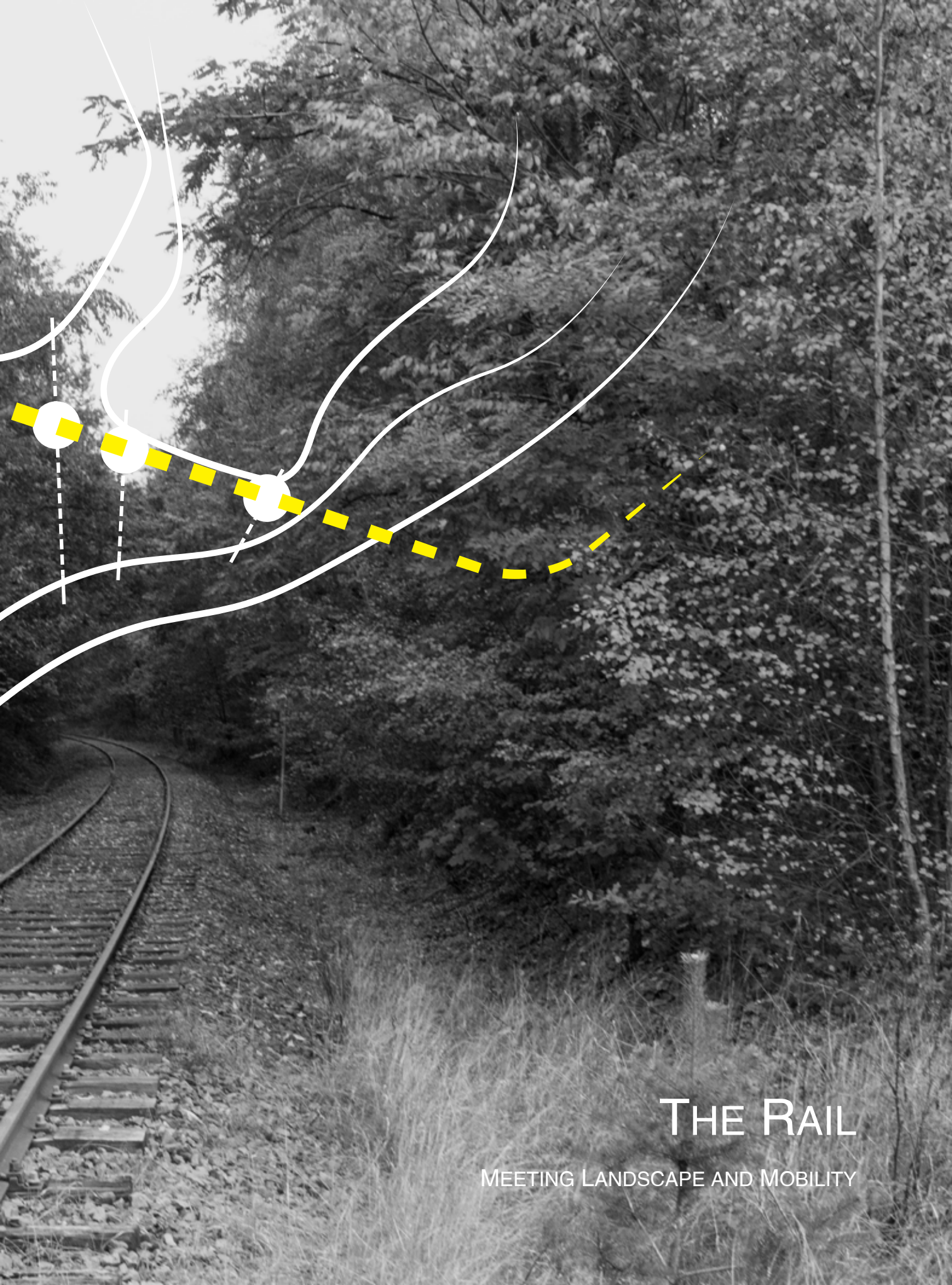
II.1. Past structure of the landscape

II.2. Present landscape structure determined by the coletracks

II.3. The Mobile Landscape



II.4. The Mobile Landscape concept overlayed as part of Genk



The Rail

Meeting Landscape and Mobility

Design Principles

Shaping The Coaltracks

Social Production

Genk, from a social standpoint, is a very multicultural city, housing various ethnicities inside its borders. The coletracks can, then, be a representation of this multiculturality by being both a receiver and enabler for social energy. By creating walkable, ridable and high quality spaces, people not just from the neighbouring area will want to experience it, but also people from around the city that, otherwise, would not visit it. Thus, once peripheral developments will be established along the coletracks, they will start acting as a bonding agent and actually create a cohesive rib for the city that holds all this new social energy in place by allowing it a place to flow through. And, in points where such new developments do not exist, the landscape, coupled with community owned gardens will attract the gaze of the people inhabiting the place.

Multi-Mobility

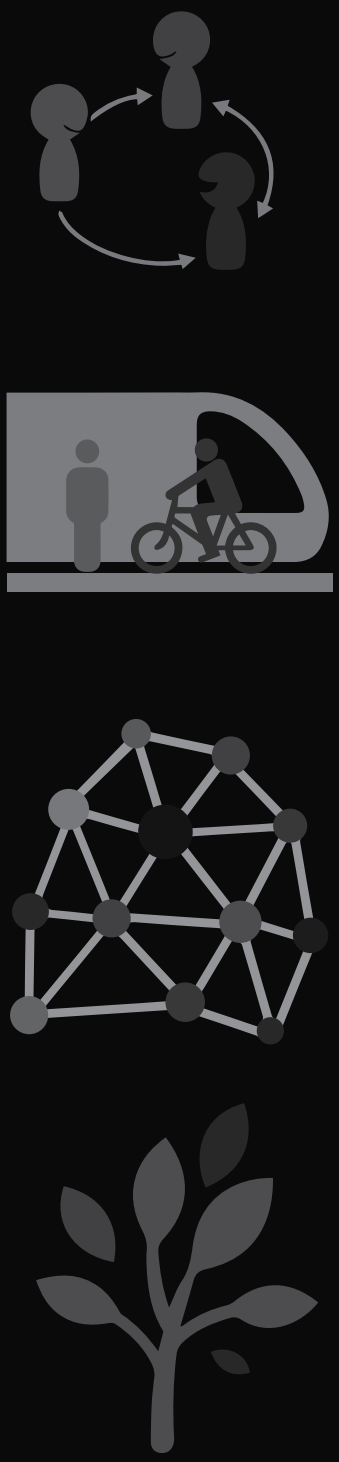
If not for anything else, the coletracks present a huge mobility issue in terms of connectedness. Their initial goal is no longer viable, neither from a physical perspective nor an economic one. Thus, repurposing them would seem like the logical step. But just having a solely aesthetic approach would be meaningless. Thus, introducing new mobility enablers along the way help not only reconnect the city radially, but also offers the possibility of generating new mobile situations that, in turn, facilitate social interactions. These new mobility enablers take the shape of both pedestrian walkways, bike paths, but also new public transport in the form of state of the art tram-like cars to offer the best possible variation for mobile embodiment. This does not only make the space more dynamic, but also gives it structure and constraints design-wise.

Smart Local Distribution

Often times, when talking about mobility, the mind automatically goes only to the transportation of people. But, in this case, the coaltracks can act as much more than just a human transportation systems. They can be the carriers for local and new, sustainable energies. This system would use the same tracks as the above mentioned public transport system, but would carry a different type of energy: building materials, building waste, household waste, into one of Flanders' biggest biofuel generators, the former coal plant Langerlo. This would generate a sustainable and circular system for energy production and would potentially reduce household spenditures significantly, as people would be able to ship their own waste to generate biofuel for the energy, thus sharing in the production and cutting down on costs.

Ecological Space

The advantage that Genk has over other cities is its rich historical and natural backdrop. Due to this natural element, the areas around Genk present themselves with an almost pristine beauty. That, coupled with the fact that Genk presents the three very unique examples of man-made landscape, the coaltips, gives the coaltracks ample room to spread this green ecosystem along its length. Adding this ecological frame to the design benefits not only the aesthetics of the space by integrating it in its context, but also generates a natural funneling effect for this green energy to reenter the city and reconnect to the Steerbeek River valley, as it did in the past. But the coletracks themselves should adapt to the actual micro-contextual landscape and inherit its traits from there, thus ensuring a diverse quasi-natural system that brings the genius loci back to surface.



III.1. The four principles of The Rail

Social Production

Interaction Breaks Barriers

The notion of social and human interraction producing content that connects to the built and natural environment acts as an umbrella term for a wide array of spectrums - from the social production of habitat to the social production of information and knowledge (thus, from physical to abstract). But for the coletracks, this term refers to the social production of urban spaces and places, which could very well contain both physical and virtual elements. The physicality of things, however, and how these interractions either determine or inform the design of a space is what the focus will be geared towards.

As mentioned previously, Genk is a city filled with multiple layers of cultural and ethnical backgrounds. This type of social complexity needs an outlet to channel the potential energy towards a positive outcome. This outlet, thus, presents itself in the form of the coaltracks. Due to their location and superimposed barrier traits, they function only as a reminder that the city is divided. Before designing, before introducting functions, before thinking about mobility, the space first needs to open up to the citys' inhabitants to be able to transition from a mere space to a cohesive place. In this regard, not much investment needs to happen, but the outcome can be easily studied and happens relatively fast.

Interest towards such a space is already present from the neighbourhood, the allotment gardens acting as proof in this regard. These pieces of land are given from the municipality to interested parties that want to grow the land, either for food production or aethetic reasons. But these cases are scarce and far apart. What would happen, though, if more of the land were to be given to the people?

Should this happen, it would automatically start building a sense of stewardship for the landscape. People would invest more time and effort in preserving and maintaining what is around them, but it would also mean that the levels of social interaction in the actual coletrack space would rise. And through this accupuncture style approach, social energy would start to spread and encompass the entire lenghts of the tracks. And through this social energy, more than just interested parties, but people outside the area that would seemingly have no interest in the space would start to want to visit this place.

> "Places matter because they are the contexts in which people are socialised and create their world views." (as cited in Pawson, 1987)

To help maintain these levels of social energy and let them flourish, there is no shortage of modern temporary uses for these types of places: leftover spaces could be transformed into temporary playgrounds, walking path systems could be made out of extra pallets from the former and existing logistics and distribution companies, the gardening activities could transition into fresh markets with locally grown foods and plants. This, of course, should not be strictly programmed by outside or above forces. The people should be left to, more or less, produce their own place on the coaltracks. This would ensure not only a viable and sustainable environment, but also justifies the new cultural and technological investments happening at adjacent sites along the coaltracks. Thus, all these new developments can be connected fairly easily in the future by a place that has already become a landmark for Genk.

With this, the social production of urban space acts twofold. On one hand, the space acts as a container and enabler of social energy, producing social interaction through its contextual qualities. On the other hand, the local society produces the place by staging their own world and "designing" what they feel should best represent their wishes, thus engaging even more people to experience a space that, in the future, could become one of the most vibrant attractions in Genk.

III.2. Social production as part of the coletracks

Multi-Mobility

Motion Through Diversity

Often times, mobility is seen as mere transport, or transport infrastructure, and it usually brings to mind only one modality, be it car, bike, pedestrian or otherwise. Of course, this view is not shared by schollars of mobility studies, but is a consensum among the people for which mobility and mobile situations are designed. The goal is, then, to show these very same people that mobility does not refer to just one mode of movement, but to a wider array of elements that, when put together, act in a synergetic way, exponentially increasing mobile affordances.

Thus, by using different enablers of mobility, such as public transport combined with bike and pedestrian infrastructure, as a user you not only get a better and more varied sense of the space, but you also get to experience it at different speeds: on foot you have the most freedom for movement, on bike you have control over how fast your experiences happen, and on public transport you relinquish control and focus on the surroundings. Having all these different speeds and experiences combined through one space gives it a certain dynamic quality that today's cities are striving for. These multimodal mobilities and mobility theories make up most of contemporary strugles with regards to achieving sustainable urban transport systems that don't rely so much on cars anymore. Although it should be mentioned that, while less reliance is one thing, the idea of removing a mode of transport completely is just as damaging as having only one that dominates.

The coletracks of Genk, then, become the housing space for such a multimodal approach, for a number of reasons. From a spatial point of view, initially the space was part of the natural landscape, untouched by human-made environments, but during the industrial period, when cole minning was at its height, Genk became prime real-estate in this regard, especially on the Western and Northern parts. To connect these mine sites, a rail-based distribution system was created to both facilitate easy removal of unwanted product, but also to ship the extracted coal to other facilities. This changed the Genius Loci to what we see today, a space where landscape and, in a way, mobility are echoed. This is easily seen in the way in which the former coletracks seem to have become a part of the natural flow of the system.

Consequently, having such a dualistic space, it only makes sense that, to revive it, one must only reactivat the mobile aspects of it, and give them new meaning. Thus, the idea is to create a new public transport system based on driverless tram technologies that can operate in a sustainable way, possibly connecting not just the space in Genk, but enabling a connection further down the line, towards other neighbouring cities or towns. But, as previously mentioned, having only one mode of transport restricts the potential of the site. By making sure that people experience it as much as possible, integrating other movement options is key.

Due to the aesthetic qualities of the landscape and the guiding effect that they have for a viewer, coupling public transport with non-motorized transit to create a multi-modal spine is the best way to capitalize on the potentials that the coletracks have to offer. By using the landscape and the atmospheres it offers, pedestrian and bicycle movement can be framed for both fast movement, due to a corridor/guiding effect created by tall trees along each side of the coletracks, but can also be used to highlight certain unique traits and aspets of the connected landscape, by opening said corridors and offering a mobile viewpoint. In other words, while in this tree corridor, a passengers' vision is tunneled towards the space contained inside the tracks, but once such a space opens up to its surroundings, the view is automatically directed to this new opening, which is perceived differently depending on what mode of transport you are using, thus giving a dynamic effect, this turn, to the landscape.

III.3. Multi-mobility as part of the coletracks

Smart Local Distribution

Moving Objects, Not Just People

Mobility means more than just the transport and movement of people. It also implies the movement of materials, information, even abstract notions such as atmospheres. The coletracks of Genk could, then, potentially be used also for the transport of all these different qualities, although the possibilities of atmosphere movement will be talked in future chapters of this thesis. At the moment, the idea is to complement the above mentioned people oriented mobility with the mobility of materials and energies.

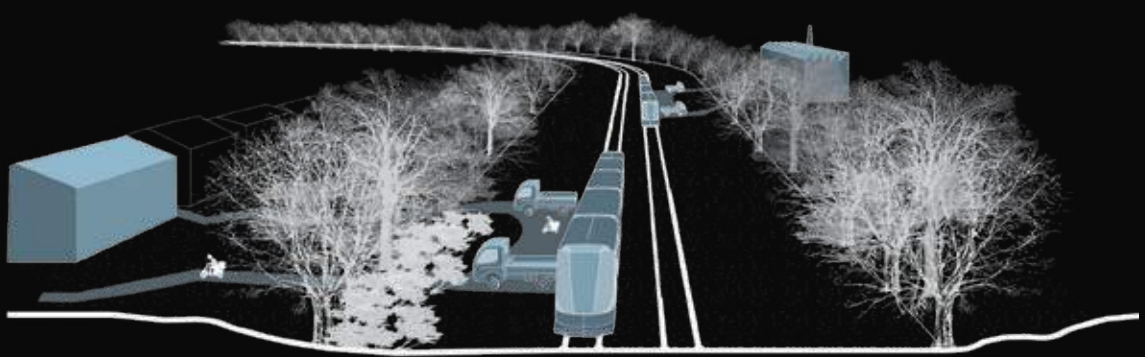
As previously stated, the coletracks provide a fertile ground for breeding new ways of extending mobile perceptions and embodied performances for people. But, in the same sense, they still hold the qualities of their initial creation: to transport materials from site to site. As a call-back to this type of function and as a reminder of the industrial values that Genk posseses, reinstating this character for the coletracks benefits the overall integration into both the local context and a potential global one.

Seeing as the world is moving towards more sustainable economies and systems, the idea of using alternate fuel and power-generating methods is not something novel. However, in Genk, there exists no such system that operates on a wider area. Thus, the idea is to create a biofuel center that operates by gathering the organic waste from businesses and households to produce energy both for the city, but also for the powering of the new public transport system. The idea for this also exists in the form of the conversion of the former cole plant Langerlo into of of Flanders' biggest biofuel based energy providers. Thus, sustainable power generation would no longer depend solely on climate conditions and optimizing energy grids, but could be something that uses the nautrally generated waste of businesses and household to return power to these very same entities.

By using the coletracks for transporting this waste material, the system would be made up of larger collection points located at key junctions in the coletracks, where local neighbourhoods could easily gather and store produced waste. At certain intervals, driverless track-based cars would take said waste towards the central biofuel processing plant, which in turn would provide more than enough energy for not just the powering of the new public transport, but for the entirety of Genk, as it is estimated that this plant could produce 400 megawatts of energy, enough for 850.000 families (34 times the size of Genk). Thus through such a system, Genk would become a major player not just in local energy production, but in the regional sense as well, thus connecting it on a larger scale and increasing its dynamics with other cities.

This new transport and distribution system does not have to limit itself to just waste management. Seeing as the surroundings of Genk are being developed and the former heavy industry areas are being transformed towards cultural and educational purposes, the coletrack could then be used to easily transport building materials from logistic destinations outside the city, to polycentric distribution hubs located in and arround the coletracks. This process, as well, can be automated so that the costs of maintanance are as low as possible.

With regards to the actual energy producesd a new type of energy grid should be introduces for distributing this energy, a smart grid, that ensures that the right amount of power goes to its respective destination, and that there are no power leakages along the way. The variety of operational and energy measures include smart meters, smart appliances, electronic power conditioning that not only control the biofuel generated energy, but also other renewable energy sources, such as solar and wind power. But, for the purposes of this thesis, diving deeper into the subject of energy transport will not be one of the main focuses, instead the actual biofuel and material distribution infrastructure will be in focus.



III.4. Smart local distribution as part of the coletracks

ECOLOGICAL SPACE

QUALITY OF LIFE THROUGH HEALTHY ENVIRONMENTS

This part of the design principles of the coletracks is not necessarily a standalone principle, as the others could very well be. Towards achieving the vision set out at the beginning of this chapter, ecology and ecological principles are enforced to ensure that both social production, multi-mobility and smart distribution networks act through a common framework of trying to both enhance the social health of the environment, but also to economically raise the potential of all the connected sites of the coletracks. This also ties in with the idea of designing with a larger scale strategy in mind because, as Jeb Brugmann puts it:

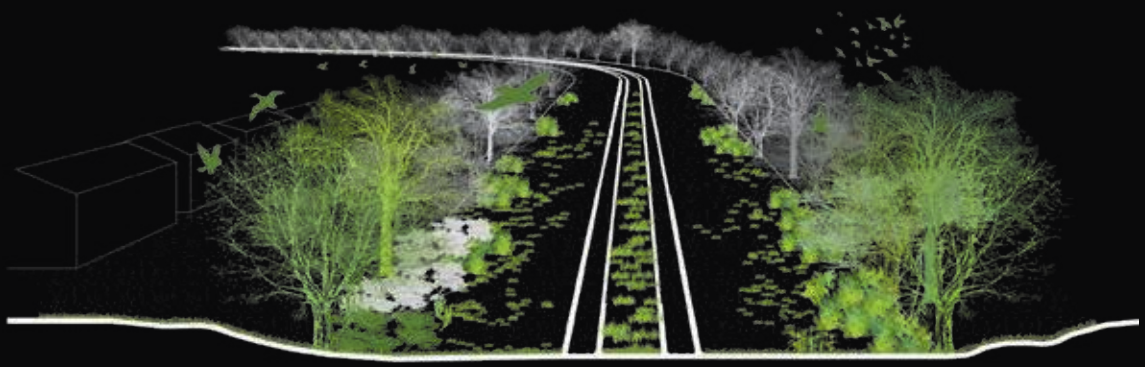
> "The first step towards ecological urbanism is increasing the energy and nutrient productivity within the city, but the only way to move sufficiently from extractive mode to a sustainable productive mode is to think, design, and develop at the scale of the City." (Brugmann, 2009)

Thus, ecology is used as a binding agent for the city-level, but also as an active component on site to ensure that the social, material, and mobile processes both integrate themselves in the larger landscape, but also work towards providing a healthier environment for all the parties involved in the exchanges, not just people. Thus, flora and fauna can be considered as design tool to help enrich social perceptions of the space.

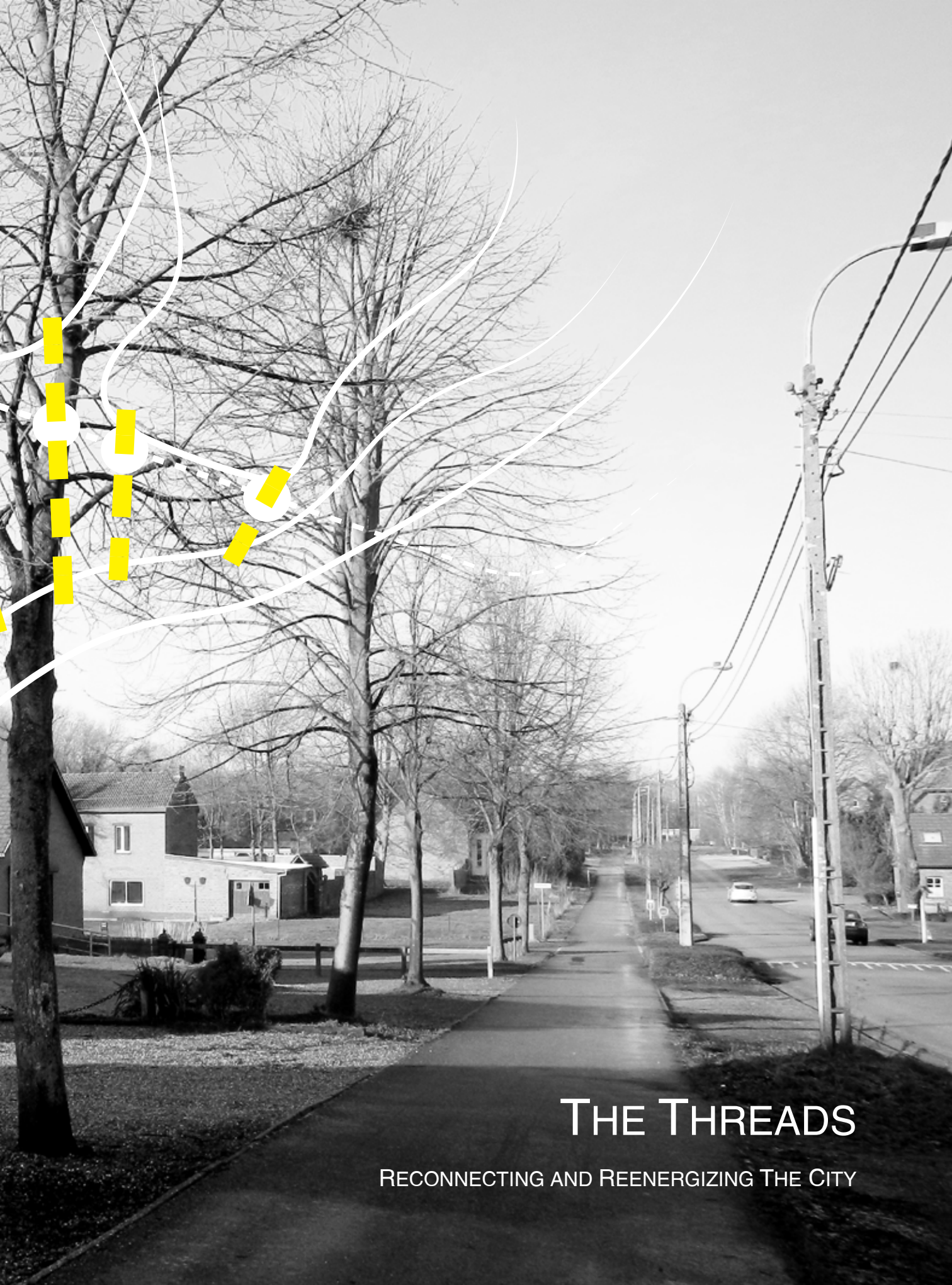
By using this type of ecological energy, it is then easier to create connections to the surrounding landscapes and enhance the design options one can take to create strong connections in the system. And due to the connected nature of the strategic concept, this green energy could potentially overflow towards The Threads that connect the larger landscape of Genk to it's inner cityscape. Thus, these elements can act both as cleansing mechanism for the city, bringing fresh air into the city, but can also act as social catalysts for activities along the Threads (but more on that in the next chapter).

Although much has been discussed in term of Ecological Urbanism in the past few years, there is some pushback with regards to this theory, in the sense that it is often presented in the form of eye-catching projects that have the intent to sell ecology to a city and justify local and regional investments in ecology without addressing a possible globally applicable approach to such solutions. It is through this thesis that this divide between local and global implications could be studied, as the system developed through this stategy would imply that the ecology (and, automatically, the landscape) of the city could be brought into effect and have active implications for the city through the use of mobility as a conduit, creating not just places filled with natural, plant based life, but actual holistic approaches to city design through the integration of social aspects, movement options and opportunities, green spaces and economic values.

Only through such integration and use it is felt that ecology can truly become "a branch of science concerned with the interrelationship of organisms and their environment". The organisms, in this case, being not just plant and wild-life, but social, human life as well, while the environment does not only refer to something purely natural, but the actual environment of today's cities, where the built form and the natural form should synergize and not oppose eachother.



III.5. Ecological space as part of the coletracks



THE THREADS

RECONNECTING AND REENERGIZING THE CITY

Design Principles

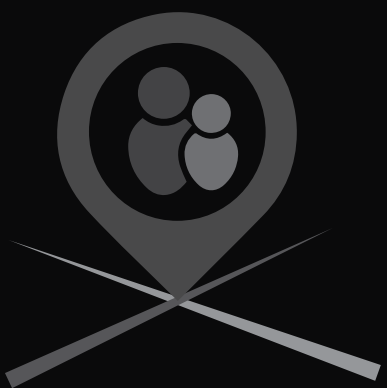
Shaping The Threads

Placemaking

Due to the hundred-year long rapid industrialization, suburbization and urban renewal period, major cities around the world, not just Genk, had forgotten the people-centered town planning principles that made them great in the first place. Although ideas and seminal works came about to reassert these principles in the 1960s, from urban thinkers like Jane Jacobs, Kevin Lynch and William Whyte, it is only in the past decade that cities have trully started to see the benefits of having community oriented developments and remodelling the public space for social use, and not purelly for cars or shopping areas. This is where the notion of "placemaking" comes in, a bottom-up type of approach to urban spaces that lets the community dictate how it wants to live by offering a voice in the design and redesign process of their environment.

Diversity Through Activity

A street scape is not just about the built or social environment that frames it. It is also about the activities housed in such structures. One of the drawbacks that smaller cities like Genk have in regards to this is that most of the active components are house either in the city center or in clusters of importance. Contemporary cities have started to spread their social and economic uses over a wider area, as evidence by the reemergeance of shopping streets in the past decade. But streetscapes should not just house commercial activities. They can be breeding grounds for a larger array of uses, ranging from cultural and educational, to recreational and, to some extent, production based. This would not only ensure that the street itself will act as an active economic component for the city, but would provide a radial diversity for the people actually using the space.



Walkable Neighbourhoods

Before cars and bicycles were mass-produces, walking was the main for of transport inside a city. Due to a rapid economic growth in the 1930s, automobile manufacturing became affordable and mainstream. But the past decade of urban development has started to show the detrimental effects that car usage has not only on the built and natural environment, but also towards social interactions happening at the street level. Even though bicycle culture has rapidly started to develop in response to these problems, it is still a culture that focuses on transit from one place to another, putting focus again on larger actors and not on local communities. Walkability, in this regards, and walkable neighbourhoods, come as a response to this transit oriented lifestyle and can help create more healthy and socially productive places through the benefit of embodied actions.

Wayfinding

A fundamental human experience and interaction is how one navigates his surroundings. Before the advent of GPS technologies, people oriented themselves in a space by the use of signs, landmarks and cultural coding. Reintroducing wayfinding, thus, not only as mere way-signage, but in the form of interactive and multisensorial experiences helps a person perceive their surroundings in a clearer way and could potentially enable the extension of his or her desired walkable radius. Having information provided through different medium can, consequently, raise the permeability of certain neighbourhoods and can influence people not just to move radially, but to explore surrounding neighbourhoods that can offer different social experiences. This would raise the affordances of singular places, and in turn act as a connected web of affordance systems.

IV.1. The four principles of The Threads

PLACEMAKING

FROM SPACES TO PLACES

As with most cities of its size and radial configuration, Genk is confronted with issues regarding the social aspects of its neighbourhoods. These are characterized by a degree of residential development that does not account for social interaction at the neighbourhood level. Most residents, thus, only use their own plots or gardens for local outdoor activities and prefer not to engage with the community. This does in no way help build sustainable and, most importantly, healthy neighbourhoods. To ensure envolment and stewardship of their environments, people need to be actively engaged in the processes that shape their world.

"More than just promoting better urban design, Placemaking facilitates creative patterns of use, paying particular attention to the physical, cultural, and social identities that define a place and support its ongoing evolution." (PPS, 2015)

It is in this way that placemaking, as a principle and as a tool, can help designers create spaces that, through social involvement and interaction, become places. But even though placemaking is not a new concept, oftentimes the focus has been placed to much on the *place* and not as much on the actual community discussion and the act of *making*. In short, placemaking thus need to "transcend the "place" to forefront the "making"". (DUSP, 2013)

IV.2. Placemaking as community involvement

When designing with placemaking in mind, the focus should be on the actual process of placemaking over its actual products. It is through this process that the community can be envolved in the decision making acts, leading to an increased sense of ownership and leadership for their neighbourhood. It is here that parallels can be drawn to the social production aspects of The Rail. Through community involvement, the same type of interrelated cycle can be seen in placemaking efforts, where the community starts to transform its space into a place, which in turn starts to then transform the community.

By employing placemaking actions, the social aspects of the concept of The Mobile Landscape are introduced in a circular loop, where not only does The Rail produce green and dynamic energies that charge the city, but The Threads also charge the cole-tracks with social capital through civic engagement. This further enforces the need for the social activation advocated by *the mobile landscape* concept. And while social production is best served in areas considered as barriers, placemaking helps energize urban neighbourhoods and streets through creating a connected, conscious and willed interest towards making a place their own.

The drawback, though, in a culture focused on rapid, righ-now results, is that placemaking takes time: it is a process that depending on the actual community, could take years, not just to make a great place but also to create an engaged neighbourhood. Because of this aspect, it is and will always be an iterative and adaptive process.

IV.3. Placemaking as a street principle

Diversity Through Activity

Shape The Economy, Not Just The City

Activity is the main actor in pursuading people to move. Be it in the form of cultural destinations, work places, recreation spaces or commerce affordances, the journey from ones' home to this destination is what drives people to use one mobility situation or another (be it walking, biking or taking public transport). But due to the monocentric characteristics that Genk presents, most of the activities of this nature are focused towards the city center, leaving further away neighbourhoods little mobile options to reach such places, leading ultimately to a transit dependant mentality. To help reduce travel distances and encourage walking, having a land use mix for these types of neighbourhoods not only reduces the need for motorized transport, but also helps build stable communities through offering a high degree of diversity in what people can do.

"An area where diverse land use exists typically offers more non-residential destinations for walking journeys, and thus may facilitate more transport-related physical activity by residents and reduce the risk of chronic diseases." (Duncan et al, 2010)

Having a diverse land use, though, does not just have social or health benefits. In relation to the economics of the city, a higher degree of active spaces means a higher degree of human movement, as studies have shown, and thus translates to a higher

IV.4. Land Use Mix together with Mobility

movement of financial and social capital inside the city. This would then reflect on the built environment in the form of quality developments and on increased attractivity towards these areas. Although this could influence housing prices in the future, it also creates an opportunity for gradually raising density levels on these "threads".

In terms of design possibilities, the newly introduced land uses do not have to be grandiose in scale or aesthetics. Relating to the previous discussion about placemaking, the community should take part in the decisions regarding what and where, because, at least initially, it will be the local community that will benefit mostly from a mix of land use. Through this thesis, a snapshot of what a potential mixed land use approach could look like will be provided, but it is that - just a snapshot. Actual zoning should be done in close relation to what a neighbourhood desires, with input from professionals in regards to what it may lack. In this regards, the land use mix is simmilar to placemaking, in that it involves an iterative process: people need certain activities, but new people may require new options. To better frame this, the new proposals for land use need to take into account a temporary option of usage, having both places that will become local or city-wide landmarks of activity, but also spaces that covet themselves to the processual approaches of temporality.

IV.5. Street activity in a residential area

Walkable Neighbourhoods

Encouraging People to Explore More

Walking is the most basic means of human transit and interacting with our environment. Only while moving can a person truly grasp his or her surroundings. But, due to an increase in the past 100 year of motorized car movement, much of our environment goes by too fast for us to experience it, thus lowering our interest in the spaces that, for the most part, we frequent daily. Entire streets, consequently, become transit corridors where the edges are blurred and meshed together in an almost homogeneous mix. This is especially true for cities like Genk, that have developed through an urban fabric of radial movement: from the edges to the center, and back - the city level. But by bringing the focus back to the neighbourhood level and encouraging walking, we can not only bring focus back towards the public space, but to the actual health of the people using it.

"Construction of a walkable community provides the most affordable and equitable transportation system any community can plan, design, build and maintain. Walkable communities return urban environments to scale, pattern and mix for sustainability of resources (both natural and economic). They lead to more social interaction, physical fitness, diminished crime, and increased wellness, addressing many social and economic problems." (Walkable, 2016)

IV.6. Walkability as a way of life, not an alternative

Designing with walkability in mind does come with its own set of challenges. It is both parts creating awareness towards the benefits of walking and creating a walkable environment, filled with active elements and social interaction. To this extent, this calls back to the previously mentioned chapters on placemaking and land use mix. Through a multitude of studies (Frank et al, 2006; Leslie et al, 2007), three key elements of "highly walkable" neighbourhoods have been outlined: high street connectivity, high land use mix and high residential density. This should be the main starting point in creating walkable neighbourhoods inside Genks' radial street network. While the streets themselves pose varying degrees of connectedness, the actual intersections of these streets are not highlighted either visually or functionally, thus reducing the walking attractiveness of that space.

But, again, it is the actual people that will, in the future, determine the walkability of a space. Designers can only accommodate and encourage people to walk their neighbourhood through the design, but only after the street and public space is brimming with social interaction can desirable places to spend ones' time in can be created.

"What attracts people most, it would appear, is other people."

William H. Whyte

IV.7. LUM influencing walkable neighbourhoods

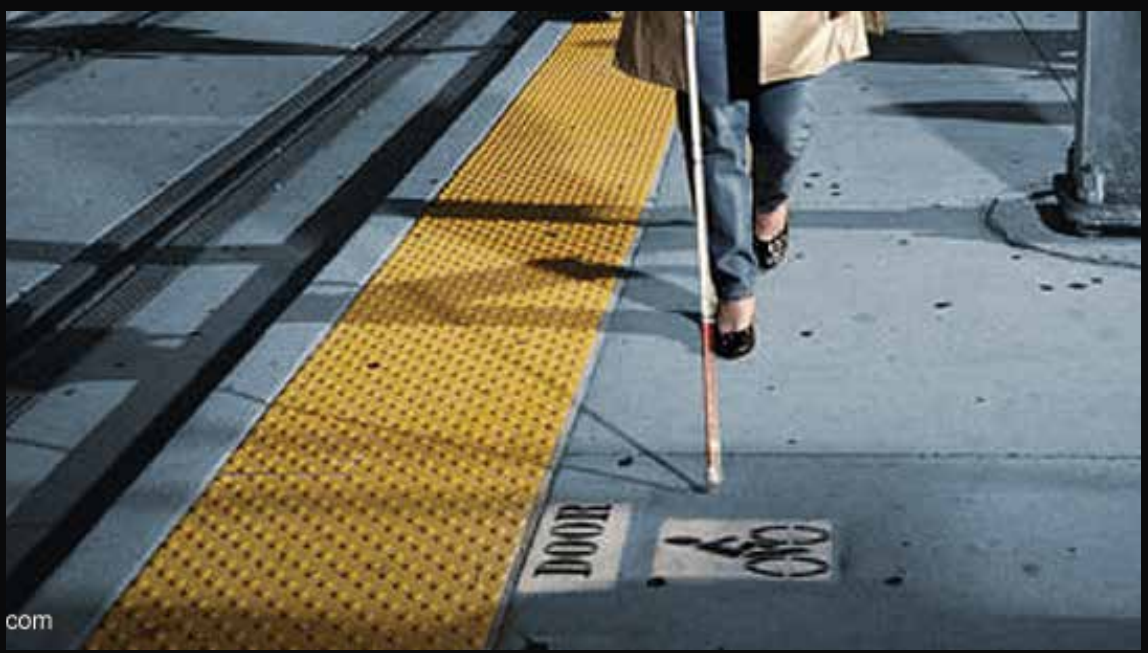
Wayfinding

Clear Directions Make For Permeable Places

Be it getting to work, going shopping, reaching a health care clinic or simply wanting a recreational activity, getting lost or disoriented while searching for different activities is a frustrating experience for travellers or visitors. This frustration generally translates to a negative attitude towards that specific setting: no one will appreaciate the design if they are too busy finding their way around. This affects an areas' attractiveness towards visitors and travellers, people wanting to avoid places where they feel they will get lost. Thus:

"For successful travel, it is necessary to be able to identify origin and destination, to determine turn angles, to identify segment lengths and directions of movement, to reorganize on route and distant landmarks, and to embed the route to be taken in some larger reference frame." (Golledge, 1998)

It is not enough to show a person the way he can navigate a space through just signage or maps, because apart from a few, most people are not that used to reading a map how a designer intends it to be read. It is, thus, the designers job to design a wayfinding system that takes into account people's behaviour in the real setting (Passini, 1996). These behaviour can materialize in the form of on-site de-



IV.8. Wayfinding by way of tactile pavement for visually impaired

cisions for people new to the area or memory-based actions, from past experiences and using cognitive maps. To enforce this idea, designing an urban setting in which people can orient themselves doesn't rely just on way-signage or providing maps of use. It involves a process of using as many of the five senses in design as possible: tactile-diverse surfaces, visual corridors or landmarks, the use of water as a sound-guidance system, using certain plantlife to create particular smells that assist in the cognitive mapping process and so on. By encorporating multiple senses in design, not just the visual, people gain a clearer sense of the space that they are in, they get comfortable with their surroundings, and, in turn, are driven to move from place to place at a much more relaxed pace. This sense of security gives users, then, the opportunity to explore more of what they cannot see directly in front of them, adding to a higher degree of permeability not just for public spaces in general, but for entire neighbourhoods as well. This, in return, would not only increase the sense of community for the people residing in the area, but would also create an easily understandable street system for people new to these neighbourhoods.

IV.9. Technological systems that come in aid of wayfinding

The Mobile Landscape

Wraping The Approach Through Theory

Throughout the course of the Strategic Approach concerning Genk's coletracks, coupled with insight gained by applying the Grounded Theory methodology, two main theoretical players rose out as creating the main framework for this task: *landscape studies* and *mobility studies*. They became relevant once the analysis and problem statements of the project were defined, and were studied accordingly throughout the strategic process. But a clear definition of their involvement and the impact that they had on the strategy, as well as the impact that the strategy had on the specific take on these two subjects could only be given once the scope of the thesis was clear enough, at least from a strategic sense.

Mobility as More than "Just Mobility"

As we delve deeper into the late 2010s, more and more people seem to be aware of what *mobility* is, not necessarily as a core concept in city-development and design, but, at the very least, as a term used to describe the day-to-day travel, using mostly public transport, as "the built environment and our habitual movements within this is at one time a mundane and very ordinary life frame and stage for all of us" (Jensen and Lanng, 2016). Despite this emerging awareness, citizens still consider it as a means to an end, a movement from A to B, and very few actually take the time to enjoy the actual trip. This is mainly due to the fast paced lifestyle that we have become accustomed to. And, to some extent, this is what, in a theoretical sense, this thesis aims to address: how to make people consciously perceive their surroundings so that they become more inclined to stay the next time around?

Although much discussion can be had on the topic, to narrow it down to Genk's case, the strategy outlined in the previous chapters actually helped guide the theoretical grounding. Through analysis, it had become apparent the Genk was, for the most part, a mono-nuclear city, in which most of the activities happen in a 2-3 km radius of the center. This leaves most of the neighbourhoods outside this radius with little in terms of street activity.

This brings in the concept of Land Use Mix, which is by no means a new theory in regards to urban sciences, but one which is hard to take in by non-academics due to its sometimes overtechnical nature. This can be easily seen in Duncan's (2010) report, in which he discusses methods of making LUM measures more accurate in regards to the impact on societal behaviour and personal health, but in which the more nuanced implications of the results for a neighbourhood are not thoroughly explained. Through this thesis it is brought forward that, based on such research, having a more diverse, or better spread of land uses in and around the city can lead to better social environments for the people. Trips would no longer have to happen radially, towards the city center, distances thus being much shorter to traverse and, ultimately, favoring walking as a viable alternative to even biking.

This is supported by official, quantifiable data, in which many have tried to establish a clear corelation between the diversity of usage patterns and the frequency of human walking patterns. Christian, et al. (2011) found that after factoring in specific types of LUM into the establishment of a Walkability Indices, people living in those types of neighbourhoods were twice as likely to walk for transport than people in neighbourhoods with a low LUM score. Thus, a close relationship between LUM patterns and mobile culture can be established, one that furthers the idea that "the built environment typically consists of urban design (...), land use patterns (...), and transportation system infrastructure (...)." (Duncan, et al., 2010). Building upon this idea, by creating environments where people are more likely to walk to their destination, one can start talking about what happens along that specific trip. And to this extent, a number of solutions and options can be pointed out, but the ones that resonated the most with the core of this thesis have already been

detailed in their respective chapters in the strategy.

Staging Mobilities

While talking about mobilities needing to be "something more", the need for a multilateral approach seems almost natural. As the scope of mobilities range greatly from case to case, from a small intersection to a city-wide strategy, only approaching it from an infrastructural point of view seems to diminish mobility significance, both as a theory and as a design practice. In his book on staging mobilities, where the mobilities turn is laid out, together with the need for rethinking mobilities for the network city, Jensen (2013) points out that "contemporary mobilities thinking need grounding in a cross-disciplinary understanding of the flow in cities and between cities". But to be able to incorporate such a cross-disciplinary approach, a wider scale need to be considered, where a key role in this is the balance between "staging from above" and "staging from below" (Jensen, 2013).

Although the "staging from below" aspect of mobilities is shown later on in this thesis, at least to some extent, the focus in this chapter will gear towards the "staging from above" aspect and its role in delivering a clear path for what mobilities can and should be. By "staging from above", the focus is shifted to the processes that happen at higher levels of practice, and here included are urban masterplanning and urban development strategies, political and economical factors, as well as wider social paradigms that need addressing. This, in relation with the cross-disciplinary approach that mobility studies should include, narrows down the focus to urban strategies and their indispensable need in today's global economies.

"Urban strategy therefore has a very clear purpose: to ensure that the many necessary practices of an evolving urbanism can be consistently advanced and ultimately consolidated in the face of external trends and powerful, competing interests. The proposition is simple. Much as military and diplomatic strategy are required to advance the interests of nations, and much as corporate strategy is required to establish and maintain market position in an extending City economy, urban strategy is required to advance the interests of our cities, and our common interest in the global City." (Brugmann, 2009)

In his book on the "Urban Revolution", Brugmann (2009) puts forward three main examples of good urban strategies, from Barcelona, Chicago and Curitiba, each with their own set of "best practices". But for the purpose of this thesis, the ideas set forwards about using urban strategies are pin-pointed towards mobilities and the mobility turn. Through this, it is wished that light be shed on how just by improving the quality, availability or the aesthetics of mobilities can drastically enhance quality of life not just for adjacent neighbourhoods, but for an entire city's system.

The "staging from above" aspect of "Staging mobilities" is, to some extent, given more importance through this, but, when talking about a strategy that impacts the city first and foremost, this should be the case. Staging from below, then, comes as a complementary action for the mobile strategy. While Jensen (2013) notiones that "from below" refers to the "importantly acted out, performed and lived" mobilities, that the users themselves stage, at a certain level it is also the job of the designers to think about this human interaction with mobile culture and foresee at least some of the possible outcomes of the designed mobility and how people will stage it. Thus, the mobile strategy gets reinforced by mobile design, which can act at a more local, zoomed in level, while, at the same time, retaining the principles of the overall strategy. Departing from the academic and theoretical medium, this would mean that, for real-world cases, a strategy that has been but in play can create a series of design competitions and delegate its design task to a large number of designers, not just one or too, ensuring both design diversity and, at the same time, that the umbrella created by the strategic approach maintains its principles and goals.

Mobilities Design

As previously mentioned, mobility as a term has started to gain awareness with city inhabitants as of late. While that may be the case, the issue has been heavily discussed in academic crowd, there being a number of representative researches done in the field. But, one of the main drawbacks of these studies is that they tend to focus too much on the social aspects, leaving the actual design options open for debate, with two main examples of this being John Urry's "Sociology Beyond Societies" (2000) and Tim Cresswell's "Towards a politics of mobility" (2010). But recently, studies on actual mobile and mobility cases with a clear focus on mobility design have started to emerge, one of the most notable ones being Ole B. Jensen's "Designing Mobilities" (2014) in which the author sets out to answer some of the design relate questions that his predecessors have put forward by offering case studies on the subject, and, in the same time, connecting them with the larger theoretical framework of "Staging Mobilities".

While the purpose of this chapter is not to explain the autor's theories and/or ideas regarding mobility design, this thesis sets out to establish that, while mobility design in itself is a field of study than can vary in scale from large infrastructure systems, to small tunnels or crossings, the idea is that, once the scale gets large enough, the social aspects of the mobility turn start to dilute considerably and become mere conceptualizations. And when talking about the social aspects of cities, especially where mobility design is concerned, with the idea that people stage and form their own mobility culture, conceptualizing to a too broadened scope can have the reverse effect. Thus, mobilities design needs to have a counterpart in the larger city-scale range, in the form of mobile strategies. In this way, the design of mobility can then take on a much less romaticised approach and it can focus on the practicalities and pragmatism of dealing with the balance between users, the wider public and the inherent aesthetic and technical qualities of design.

"Posing, pondering, and practicing the *What if …?* Question is one of the most important questions in mobilities design. This line of reflection evokes issues realted to abduction, creativity, and thought experiments – hallmarks of 'designerly ways of thinking' that informs the emergent field of mobilities design, and a set of ideas deeply rooted within pragmatism." (Jensen and Lanng, 2016)

Landscape as a Lens for The City

In an increasingly urbanized world, the poetics of the romantic landscape have started to give way to a sort of pragmatic view on what the role of landscape is inside a city and how, if possible, can its role be more clearly defined so that it can be understood by inhabitants. Thus, over the past 50 years, a series of theories regarding the landscape have emerged, all with their qualities and critics. But what all of them have in common is their reference to the social implications and effects of the landscape inside the city.

The "-scapes"

When talking about nature and landscapes, especially from a social standpoint, it is important to mention the role that urbanism has had on the development of spaces that *include* landscape and nature. The emphasis on the word "include" is made because, even today, true integration, which is what is needed to introduce nature to the city, is something that is only theorized and discussed, and is rarely seen in real-life cases.

"Nature in the city must be cultivated and integrated with the varied pursuits and purposes of human beings; but first it must be recognized, and its power to shape human enterprises appreciated." (Spirn, 1984; 64)

Nature and landscape are, thus, structures in need of integration with city life. People living in mostly urban environment cannot deny the pull that landscape structures have towards them. But in a city-wide sense, from this point of view, one can justify that the term cityscape, although inherently refering to the anthropic elements of urban life, can best be used to describe the integration process of landscape with urban, at least in a theoretical sense. It is a more well rounded term, implying all the elements that make up a city, not just the build, social or natural. It is a descriptive structure that best represents the movements and desires of the 21st century, by calling for a holistic view of all thing urban and creating a lens through which the city can be experienced as a functioning ecosystem.

Landscape Urbanism

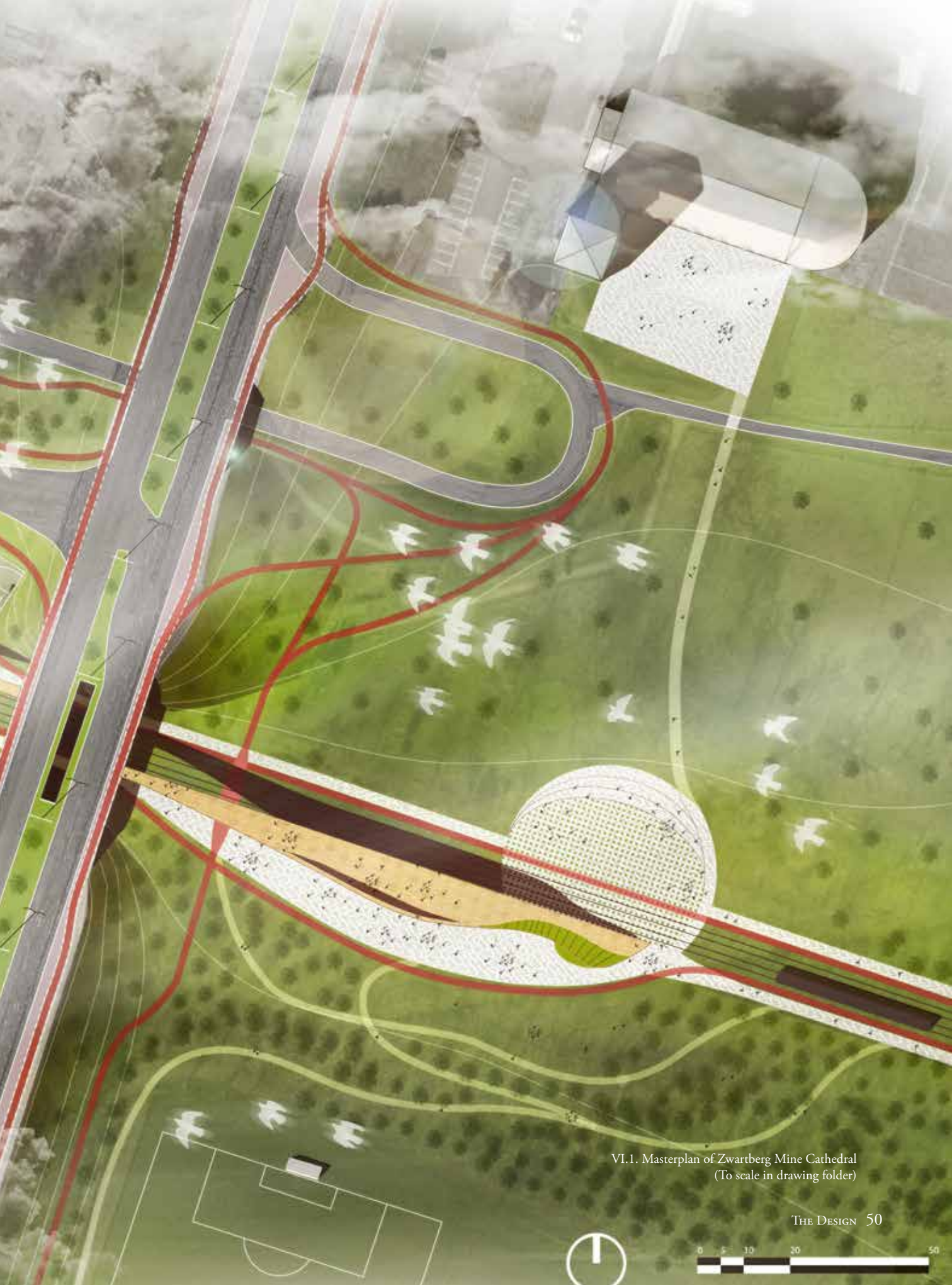
This integration process is best seen in the urban planning theories introduced in the mid 1990 concerning a new, more connected way of viewing the city: *landscape urbanism*. Among its many "fathers", James Corner's views best resonate with the underlying reasoning behind using landscape as a framework for mobility, because "[we] have yet to understand cultural, social, political, and economic environments as embedded in and symmetrical with the "natural" world. The promise of landscape urbanism is the development of a space-time ecology that treats all forces and agents working in the urban field and considers them as continuous networks of inter-relationships". (Corner, 2006)

For Genk, the landscape is used both as a guiding element for the people experiencing the coletracks and their attractions, but also as a cleansing stream of green energy that can flow through the city. Of course, this is meant in a metaphorical or conceptual sense, but depending on the varying degrees of interest, both from the community and from the municipality, a green strategy that goes in tandem with a mobile one could be implemented to better enforce the idea of *a mobile landscape*.

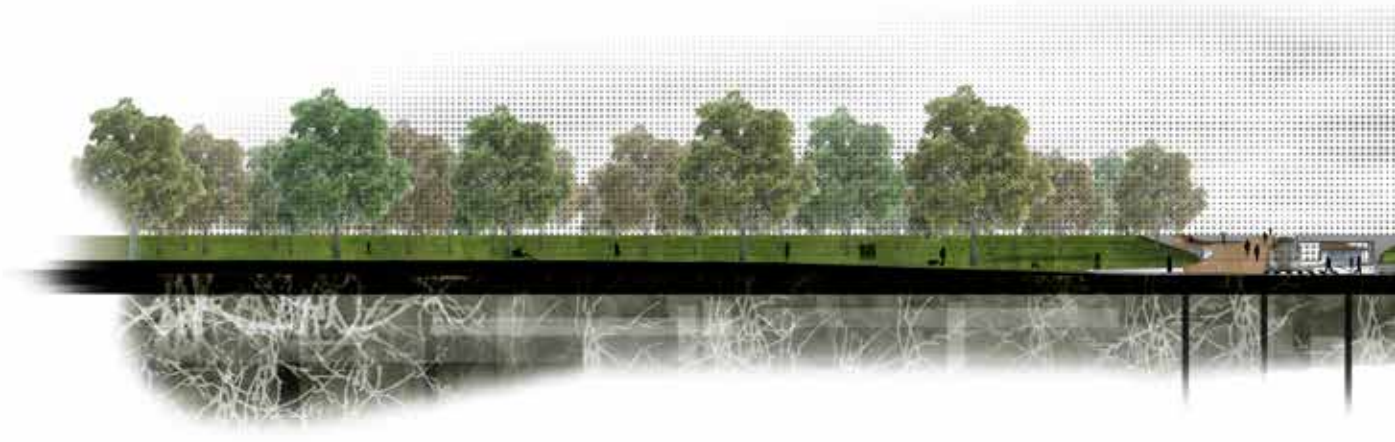
V.1. Theoretical framework diagram

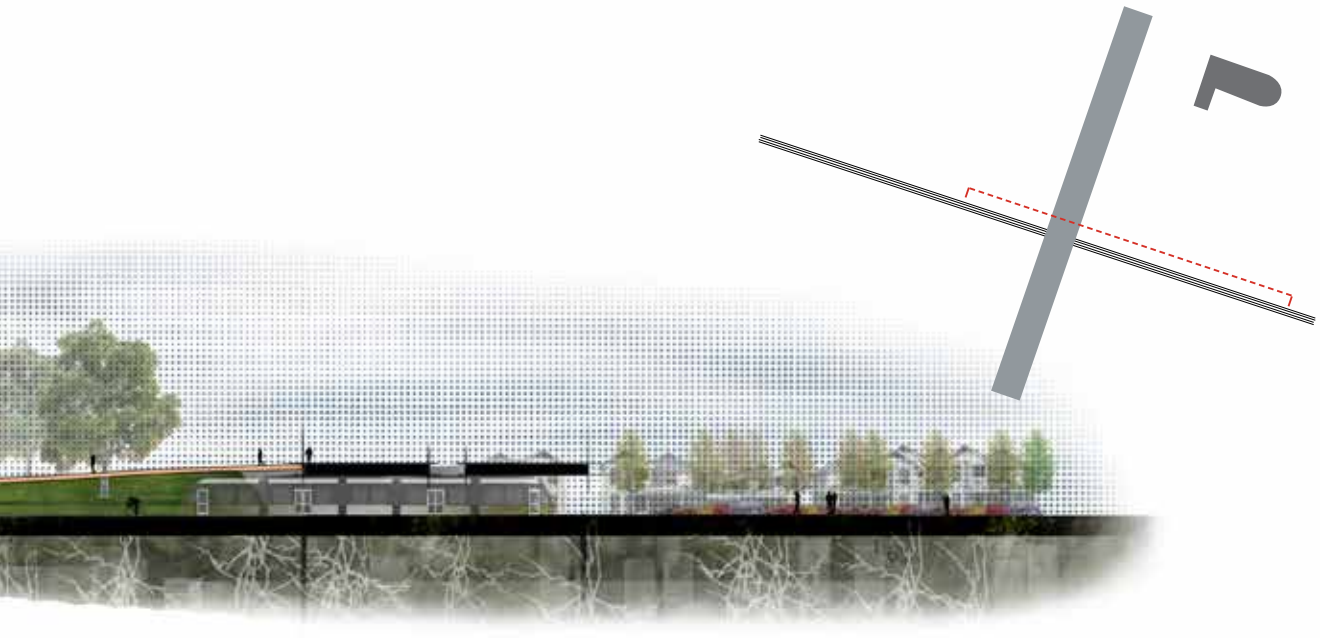
The Design

Applying The Principles of a Mobile Landscape



VI.1. Masterplan of Zwartberg Mine Cathedral
(To scale in drawing folder)





VI.2. Transverse section. Station (left), levels accessibility, food garden (right)
(To scale in drawing folder)

VI.3. Longitudinal section. The Enriched Forest (left), station (middle), The Meadows and St. Albertus (right)
(To scale in drawing folder)

Critical Point Selection

Every Story Needs a Protagonist

To be able to showcase how *the mobile landscape* strategy acts at a lower scale, one that is easier to understand by non-professionals, but also to be able to design the mobilities and their environments mentioned through the thesis up until this point, an area that can best represent it had to be chosen. Again, the mobile strategy helped to narrow this search significantly.

Out of the strategic concept, two main *sub-concepts* were outlined: The Rail and The Threads. Although detailed with design principles, they, in fact, refer to a specific space inside the city. Thus, at the intersections of these two elements is where the most relevant sites are, to show both how the proposed mobility works in an urban and designerly sense, but also to showcase how it can influence, affect and guide human scale interaction. Consequently, we get six such critical points of intersection, each with their own qualities and ways to showcase *the mobile landscape* through design elements. And while each deserves separate study through design in their own right, the purpose of this phase is to showcase how the mobile strategy can work when applied to a smaller area of study.

After careful consideration, the study site for the exemplification was chosen next to the former Zwartberg mining site. One of the main reasons for chosing this was its context: out of all six sites, this was the only one that had one of the famous Mine Cathedrals next to it, offering both a visually and a historically dominant element. This cathedral, St. Albertus, is an extremely important element not just for the area, but for the city of Genk as well, but due to its position in relationship to the city center, it is fairly hard to reach. But by enhancing its visibility and accessibility through the new public transport connections and by offering new ways of using the land around it, it not only gets shown in a new light, but it also helps to structure the experience of a mobile user of this particular area and becomes a landmark inside *the mobile landscape*

Keeping with the idea of the built environment and the context it provides, one of the other questions that the design of this area answers is how the strategic concept reacts when it is interwoven with a relatively dense built context. Both the North-Western and South-Western sides of the area are represented by single family housing of different household incomes. The main problem with these areas is that their connection to public transport is limited and people frequently use the car to get to the city center. Aside from this, the natural areas next to them, those of the coletracks, are unusable because nature has recaptured the space and block almost all human usage. This is another area in which the principles of The Rail come as a benefit, by offering not only increased mobility and accessibility, but increased public usage in the form of social involvement and interaction.

The last of the reasons is the presence of all three types of mobility options available to Genk, packed inside this bridge-type intersection. This does not only offer the option of relating the proposed mobility to existing mobile structures, but also helps with the potential redesign of the existing on site connections, especially the bicycle wrap-around.





VI.4. The Critical Points

Site Concept

It's All About Mobility

Position

The coletracks come as a guiding element through the site, and as such determine first hand the position of each of the stations - one for each direction. The displacement of the stations is relative to the position of the bridge, as the idea is that, once a person gets off, they should enter an area where it is clearly visible what interactions are available, thus the need for moving the stations from under the bridge. Consequently, they are on opposite sides due to the fact that having them on the same section of the coletracks would focus too much attention on that specific side and leave the rest as filler-space.

Extrude

By extruding the total surface of the station, the idea is to create a volumetric shape that acts as a mobility landmark, but in the same time to ensure that activities can be housed inside this volume without the need of fragmentation or floor-planning. This also offers the opportunity to use the roof of the volume as a secondary space meant for engaging with the area from multiple levels, thus enhancing the performative nature of not only the volume itself, but also the way in which people use it.

Slope

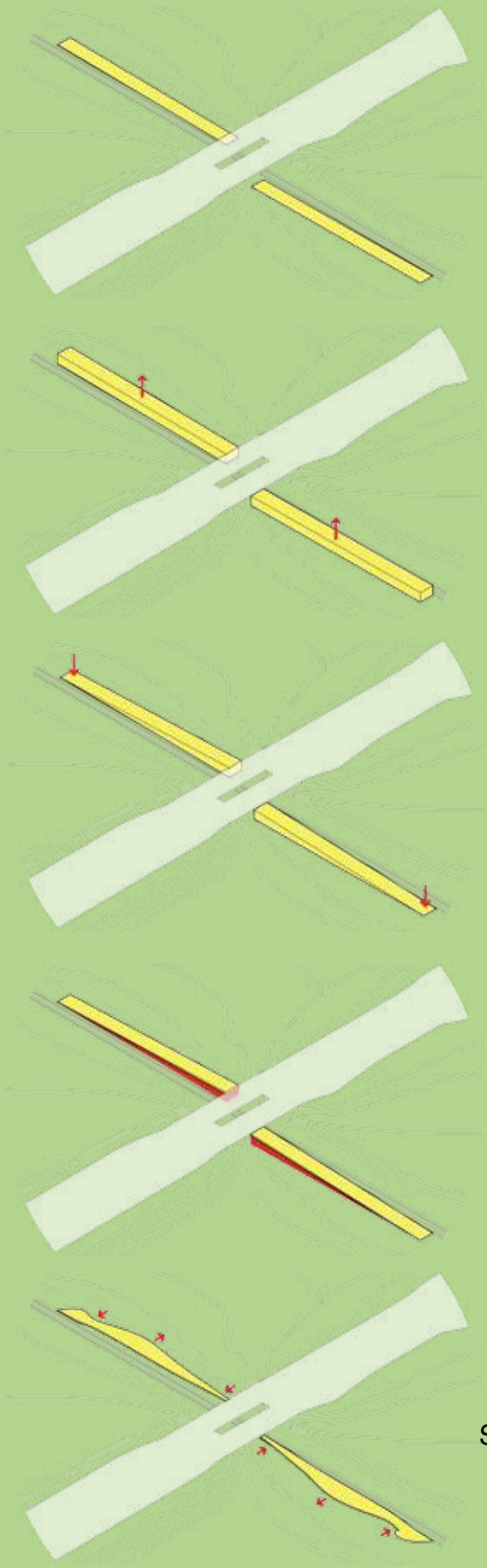
Because creating the volume offers a connection point from the station's roof to the street level, sloping it at the other end furthers this connection by enabling people to walk up from the coletracks level to the street level. This again enhances the level of functional integration of the actual station to its surroundings and also enables a better connection for all the mobilile options present in the area, ensuring that no matter the path taken to reach this point in the journey, one can always reach all the destinations that he or she desires.

Subtract

By subtracting the lower part of the volume, space is created under the roof to shield the waiting passengers or the passengers getting off from weather conditions, be they rain, snow or wind. By doing this, space is also created to house different uses under the roof of the station, for either ticket points, information desks, or possibly cafes. The resulting shape, then, has the added benefit of being a much less imposing structure, while at the same time, due to its thinner shape, becomes something of a wayfinding tool, better showing the possible path that people can take in and around the station.

Shape

From a design perspective, shaping the roof into something more organic, that has a more fluid motion in its lines, helps integrate the resulting structure with the surrounding landscape and also helps define access points towards the roof, but also enables the creation of a wider stretch along it which can house a secondary public space containing seating options oriented towards important elements that can be seen from that specific level.



Station Position Based on Coletracks

Extrude to Create Volume

Slope to Create Connection

Subtract to Create More Space

Shape to Integrate with The Landscape

VI.5. Step diagram of the site concept

Landscape Programming

Multiple Means Movement

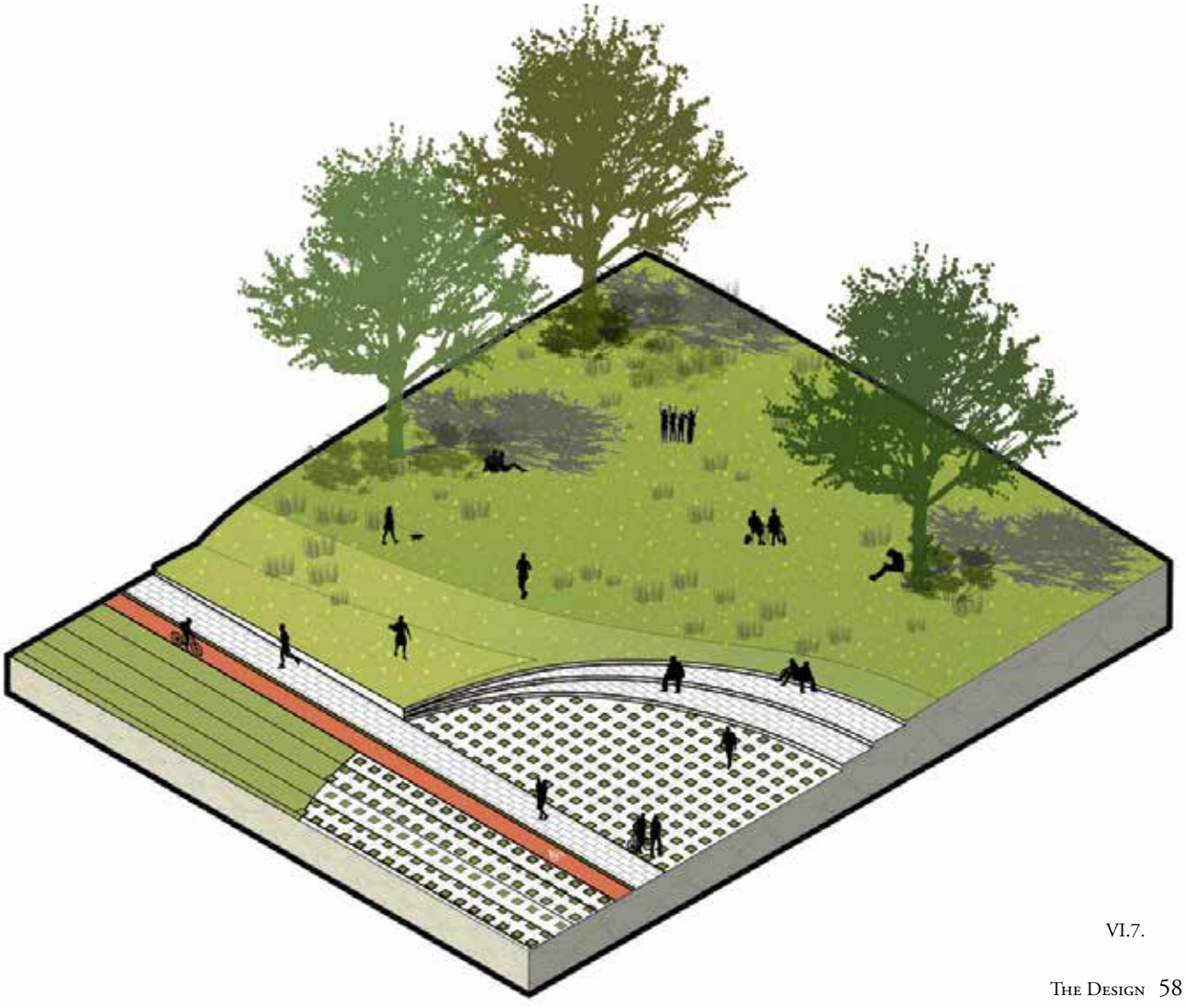
The Enriched Forest

As each of the four sides defined by the coletracks and the bridge should have their own specific, relatively unique qualities, the landscape on the South-Eastern part of the site is meant to evoke the dense forest atmosphere that can be found on the outskirts of Genk. This type of landscape is densely populated with tall trees, offering an intimate space, while at the same time showing hints of what lies beyond. Small paths of gravel are loosely defined to help guide people in some way around the forest, but the idea is that people can move around and explore freely, without being chained to a certain path or way of walking. This enables a truly unique feeling of both being inside unobstructed nature, while at the same time having a clear connection to the urban element of public transport.

VI.6.

The Meadow

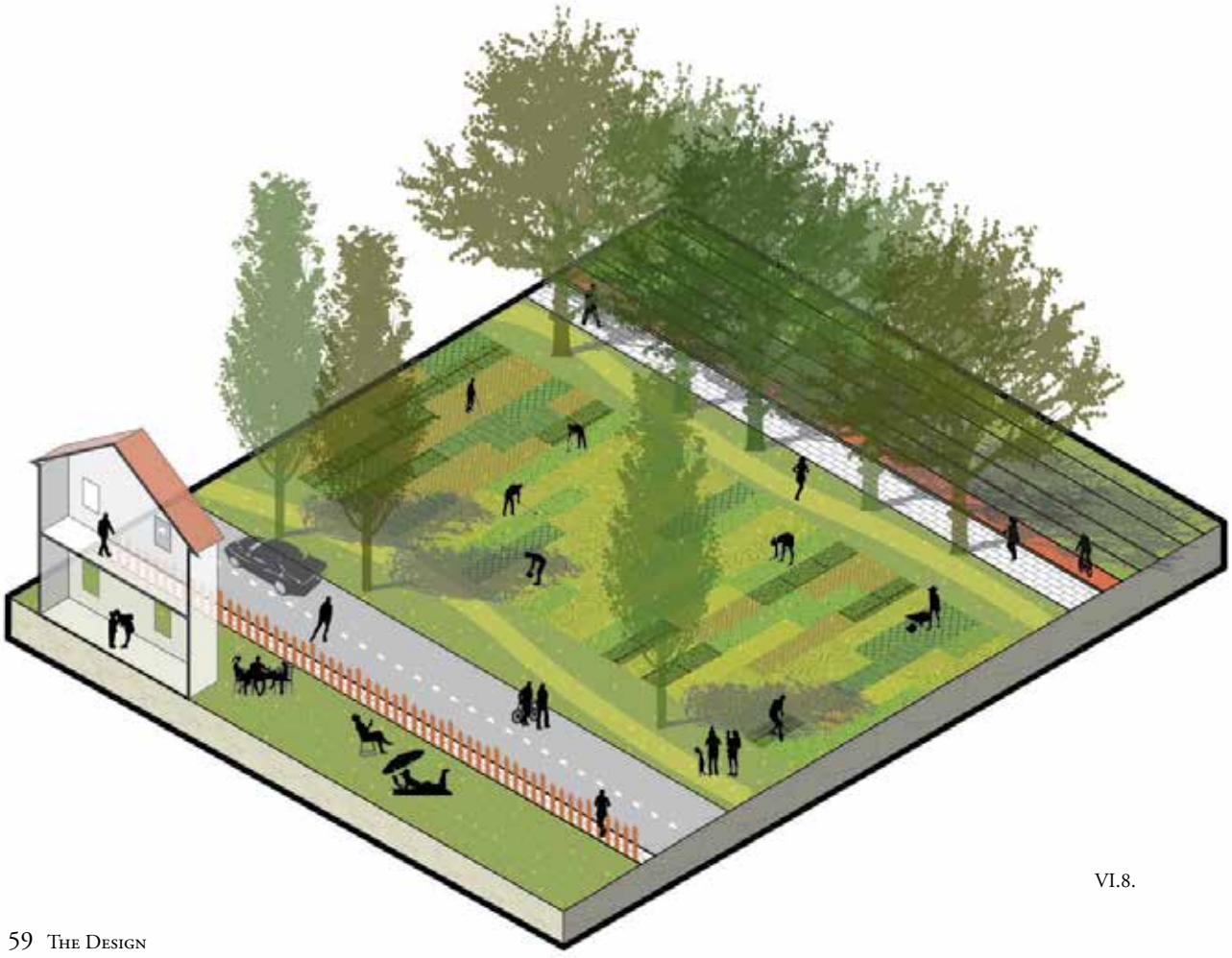
The North-Easter side of the coletracks is represented by the feeling of open fields with little trees to block vision. It is meant, in some ways, as a contrasting element to the enriched forest, offering a different way of using the landscape. Thus the space is open both towards the station, but also to the cultural landmark represented by the St. Albertus Church, thus ensuring that not only culture is put in focus in the area, but also mobility. In the lower part of the meadow, the one closest to the station, an amphytheater-type space was created to offer a transitional space between the station and the landscape, a space that can also host different cultural, open air events that cannot take place in or next to the church. This space is, then, connected with the church square with an ondulating path emulating the preverbial *stairway to heaven.*



VI.7.

The Food Gardends

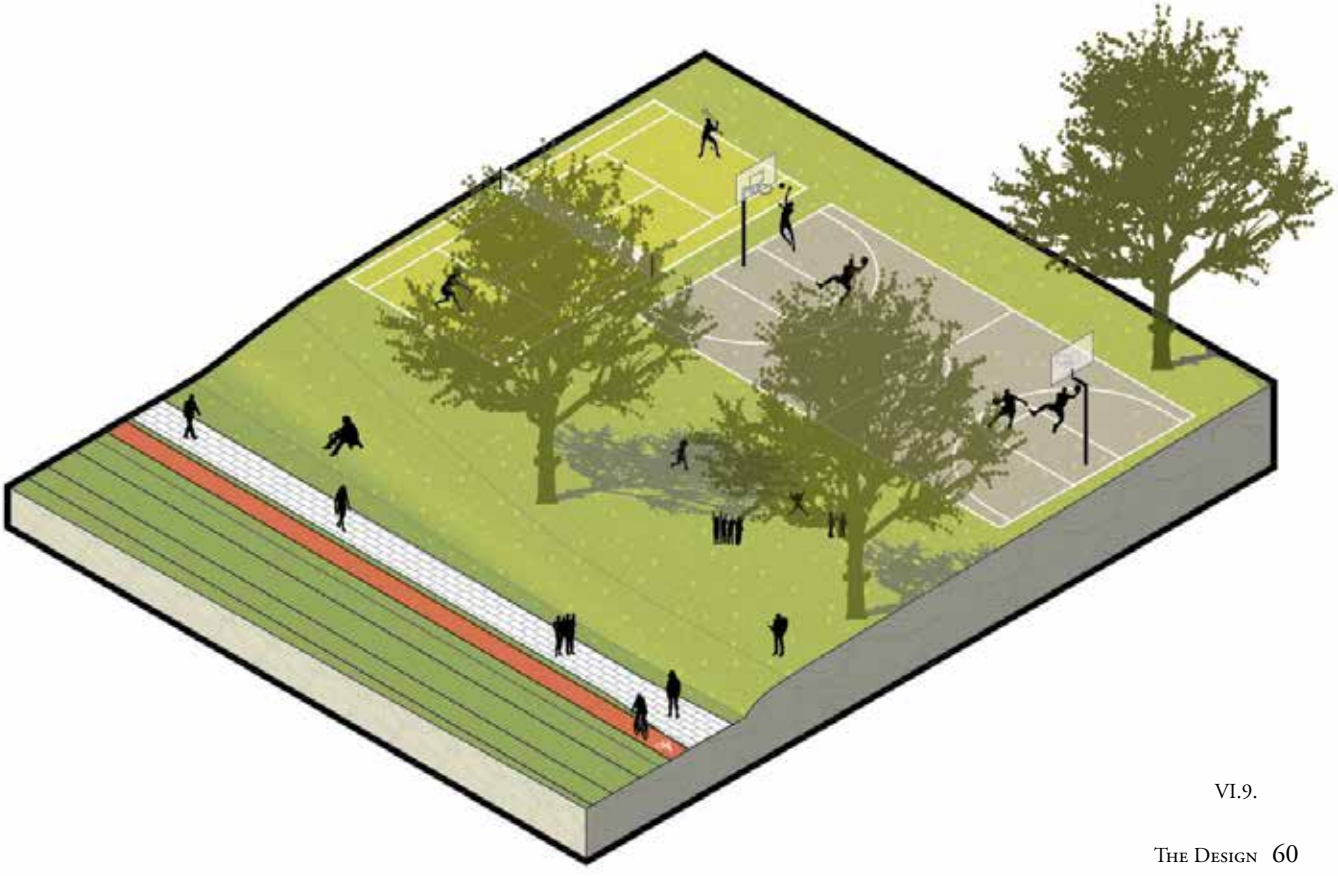
On the South-Western part of the site, the one which is closest to the residential area, the landscape is the one that is altered the most. Although most of the existing vegetation is preserved and the treeline guiding the coletracks is maintained, in the middle space gardens are provided for the people of the neighbourhood that are interested in urban gardening. As interest has been shown in this area towards this kind of activity, the plots are then given to the people in the form of allotments, and in return the people grow their own food inside each specific lot. The idea is, thus, to also have vegetation and plant types that people have managed to create and transform into food, enlarging the biodiversity of plantlife and possible insect life present in the area. The product of this urban agriculture can, then, either be used for household use or certain food markets can be created along the coletracks to sell fresh, locally grown vegetables.



VI.8.

The Community Fields

The North-Western landscape is meant to be a breeding ground for social activity and leisure, it being intended as the balance between urban activities and natural surroundings. Much like an activity park, it is filled with different types of play fields, from basketball to tennis, which can be used by people in the neighbourhood, but also by visitors wanting this specific type of experience. The area is also closely connected with its respective station, thus enhancing the dynamic nature of the social interactions associated with mobility. Playgrounds for children are also provided to ensure every age group can benefit from the area's affordances.



VI.9.

Presentation

Showing The Qualities of The Design

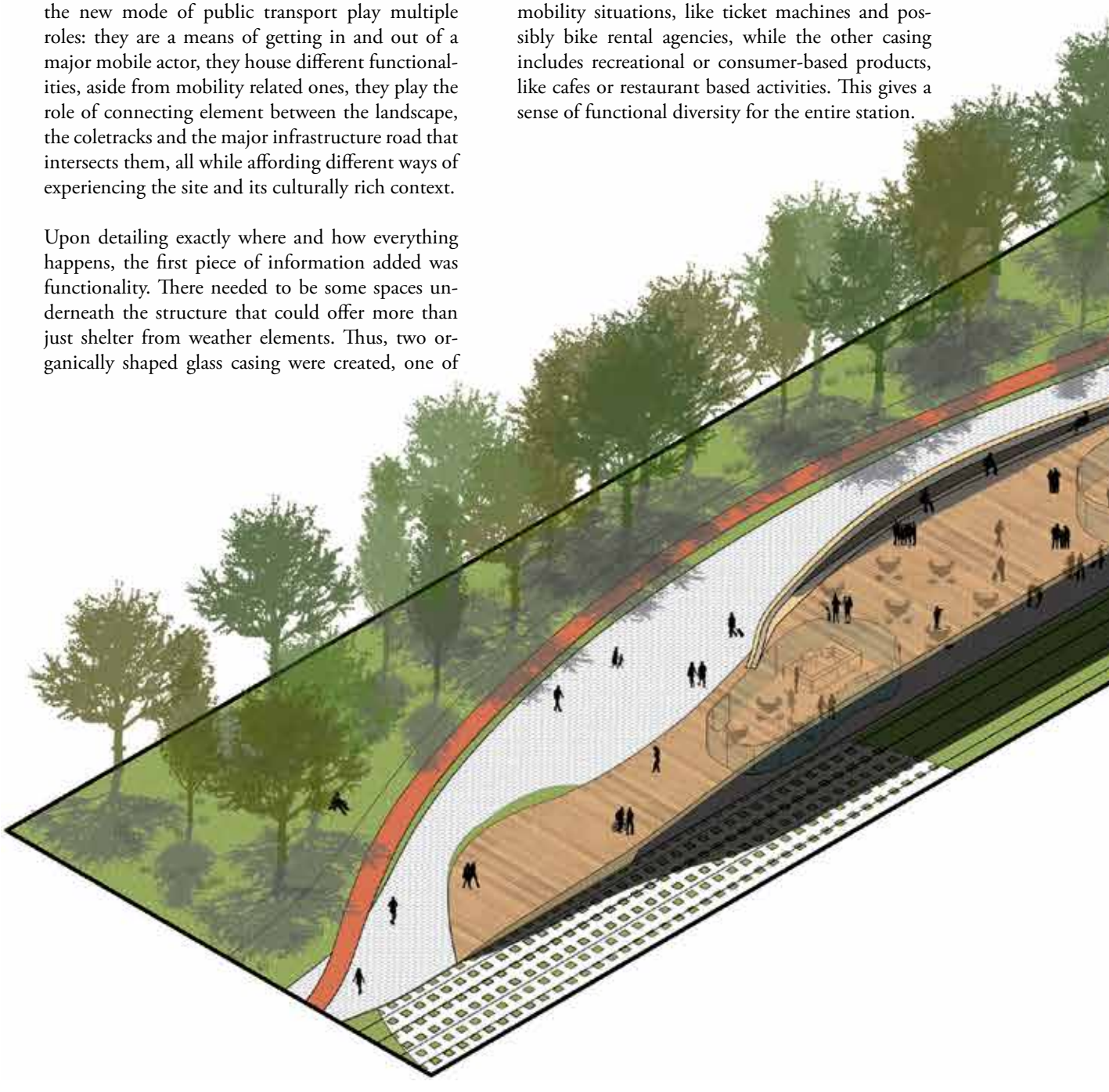
VII.1. The Enriched Forest atmosphere, looking towards The Station and the Cathedral

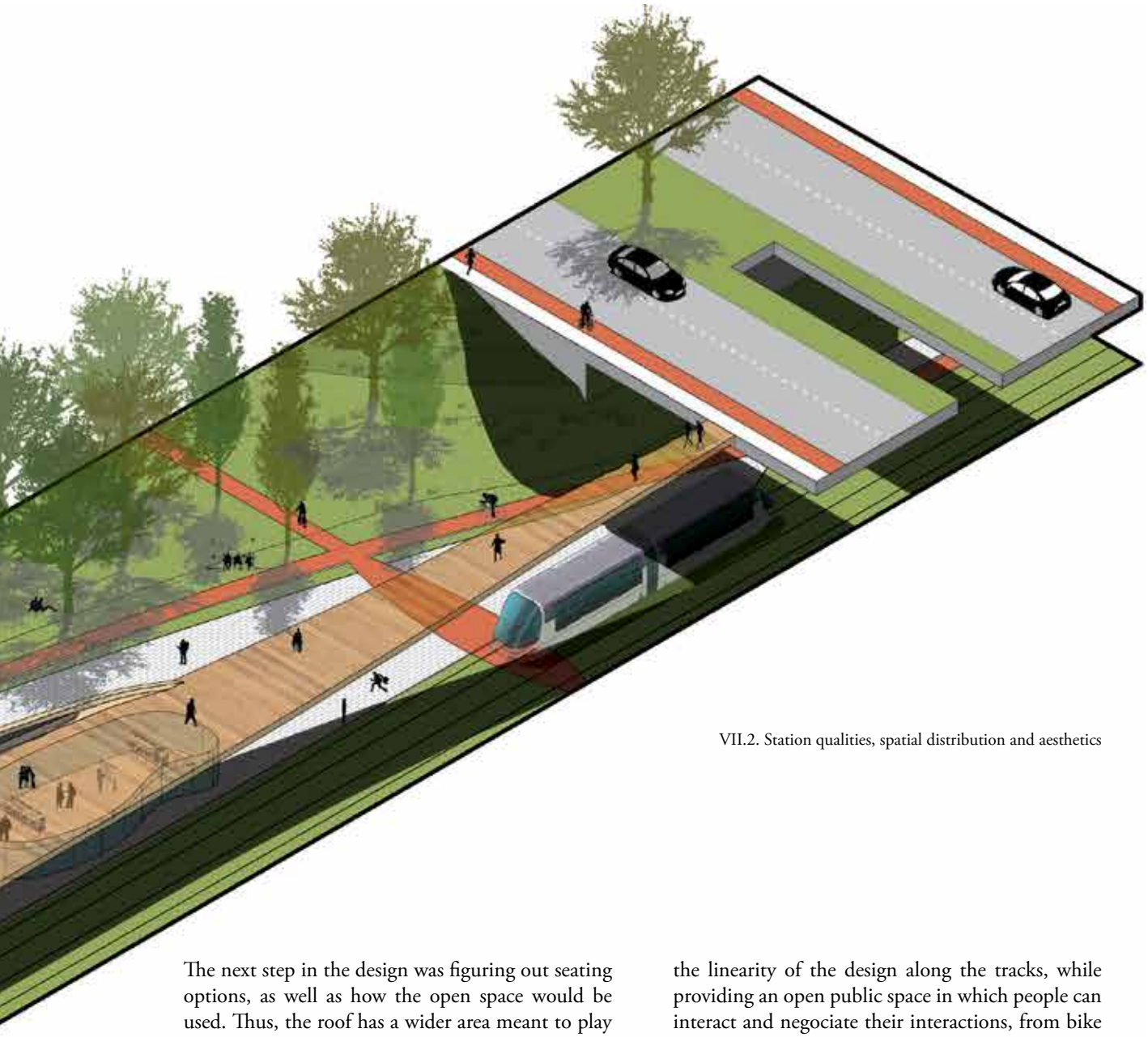
The Station

Embodied and Experience Driven Mobility

As mentioned in the site concept, the stations for the new mode of public transport play multiple roles: they are a means of getting in and out of a major mobile actor, they house different functionalities, aside from mobility related ones, they play the role of connecting element between the landscape, the coletracks and the major infrastructure road that intersects them, all while affording different ways of experiencing the site and its culturally rich context.

Upon detailing exactly where and how everything happens, the first piece of information added was functionality. There needed to be some spaces underneath the structure that could offer more than just shelter from weather elements. Thus, two organically shaped glass casing were created, one of which houses the functional aspects of the proposed mobility situations, like ticket machines and possibly bike rental agencies, while the other casing includes recreational or consumer-based products, like cafes or restaurant based activities. This gives a sense of functional diversity for the entire station.





VII.2. Station qualities, spatial distribution and aesthetics

The next step in the design was figuring out seating options, as well as how the open space would be used. Thus, the roof has a wider area meant to play the role of an elevated public square, where people can experience the views from a different level. This platform provides seating options through the material itself bending upwards and creating a shell, so that the seats fit in naturally with the entire structure.

The seating options on the lower part of the platform are more liberal, with the landscape itself being intended to act in this way, giving much more freedom to how people want to relax - either by themselves, around other people, or in a group. This lower level also acts as an extension of the pedestrian paths that flow along the coletracks themselves, making this widening gesture to be able to make room for the roof structure. This in turn breaks up the linearity of the design along the tracks, while providing an open public space in which people can interact and negociate their interactions, from bike to public transport, from pedestrian to bike, from lower level to upper level, from coletracks to street, from landscape to urban.

Although people have freedom to move as they want around the station, the paved areas being at the same level as the green ones, certain areas have a more mixed type of material covering them to show where certain mobile elements are favoured to cross. For example, in the area where the roof structure ends in the public space at the lower level, people can cross over to the amphytheater of the meadows by way of a interwoven pavement of concrete and grass, that intend to show the transition from the "urban" to the "natural".

VII.3. The Station - design qualities and human scale

VII.4. The Station - seen from underneath the tunnel

EVALUATION

ASSESSING THE MOBILE LANDSCAPE

Conclusions

Summing Up The Mobile Landscape

Through the vision established at the beginning of this thesis, the goal was to create a strategic framework that could work at a city level, but that could also inform how design decisions and design options can be influenced by a more city-wide approach to urban design. More specifically, the mobile situations presented and their coresponding design is what this study truly wanted to shed light upon. The fact that, if taken in the context of a strategic build up, in which multiple elements of urban design can be brought into the conceptualization phase, mobility, not only as a field of study, but as a design element and design tool can achieve better, more well rounded results.

Thus, by incorporating and accommodating a new mode of public transport on an unused piece of land that, originally, was meant for industrial transport, not only does an extensive dead zone inside the city become a new source for mobile and social energy, but the actual mobile experience of the users is enhanced in a positive way. In this way, the goal of creating an *experience driven* mobility as opposed to a *transit oriented* one is fulfilled.

Thesis Questions

Aside from outlining the general problem or problems of the give study asignment, the two question addressed in the beginning of this study have two roles: one is to guide the person conducting this study so that the focus can be directed towards efficient outcomes, while the other is to inform the potential reader of what type of study this will be and how it will be approached from a theoretical perspective.

To this extent, the overall scope of the questions is tackled step by step. Starting with the strategic level and moving down towards station design, each of the parameters outlined as problems in the initial inquiry are touched upon and given solution, while other are approached with more detail.

Consequently, it is shown throughout the strategic and the design phases how city life can be reintroduced around these former coletracks, not at the expense of nature, but by using it in a framework of *mobile landscapes* to generate new affordances for neighbouring areas, as well as for the potential visitors that the new design would bring.

The Mobile Strategy

The choice to give the strategic approach almost as much focus as the design is to showcase just how important having a clearly defined overview is, especially for mobility studies. Through applying this sort of approach, a wider array of concepts have been implemented, ranging from social production to wayfinding principles. And by wraping these in the larger umbrella concepts of *mobility* and *landscape*, transitioning to the design phase and, thus, towards a much smaller scale than the city level one, was made easier by having already established destinations, at least in a broad sense.

As mentioned in the theoretical chapter, the strategic approach caters more to ideas and principles about how problems can be solved at a city wide level and how taking these ideas and implementing them at the smaller scale then helps build a coherent story for the city and, ultimately, gives mobilities design the opportunity to actually implement the objectives through operational interventions.

The Design of Mobilities

The core concepts of *the mobile landscape* are taken through a chosen site that best showcases them. In chosing this site, a wide array of elements were factored in, from historical and cultural significance, to contextual land use patterns. Having a site that has both rich landscape potential, as well as a solid built environment frame is key in showing just how the strategic concept can be applied to site specific elements.

The actual design of the area, apart from incorporating the outlined elements of the strategy, was taken gradually, from deciding the position of the stations, to the decision to connect the two levels present at the site, to creating a roof structure that both covers and offers a new elevated public space. The structure itself integrates with the surroundings both in shape, but also in the type of materials being used. The wood used to cover it is the same type of wood that can be found in the area, ensuring the design physically incorporates contextual elements and does not just relate to them.

By creating the elevated public space, the new level of perception upon the site offers the potential to highlight the cultural and historic landmark that is the St. Albertus cathedral. As it is both a physical and functional commanding presence, it already dictated how most of the relations on that specific side of the site occured. Thus, the landscape was molded to take that presence to the next step, and actually create the sensation of reverence.

Breaking The Barrier

As this was the main goal from the start of this thesis, special attention should be focused towards it in these final words. As mentioned multiple times throughout the previous chapters, it is the assumption that to break down a perceived barrier, be it physical, metaphorical or otherwise, the easiest way is to make people use or inhabit that barrier in a certain way. Starting from the strategic approach, this was done by incorporating social production principles for the actual coletracks. Thus, people would inhabit the space of their own free will due to seasonal or weekly activities of a temporary nature. This slowly builds interest for the space as more than just a transport corridor, while also creating an area where social interaction can occur. This is not meant to happen along the whole stretch of the coletracks, but in the initial stages it is supposed to be a type of urban acupuncture, where small, localized activities start building up into a bigger structure that, eventually, will connect in an organic way.

Down at the design scale, it is already implied that interest for the coletracks is there. Thus, the design decision had to factor in freedom for people to move around the site. And not only that, but suficient options in terms of landscape and social use had to be present. In turn, each side of the coletracks is developed to have its own specific character, all four of which are focused on creating social spaces (*space producing social*). But, in the same time, elements like urban furniture are kept to a minimum, enforcing the idea that people need to inhabit the landscape the way that they see fit (*social producing space*).

The mobile landscape, throughout the entire process, has become an example of how applying strategic thinking to mobility situations and mobility problems can help turn a space into a place by creating a vibrant attraction pole of a different character than what can be found in the bustling city. The multitude of shops and cafes are exchanged for natural landscapes that offer different ways and levels of mobile and social embodiment. These are fashioned through context-oriented design and a focus towards creating mobile cultures that favour the experience of the ride and not just the destination. In this way, not only are the local neighbourhoods reconnected, but the entire coletrack systems gets reconnected to the entire city by providing an active component in its socio-economic environment.

Reflection

The Next Step

While the concepts and strategies drawn out through this thesis are meant to highlight the different ways in which mobility can influence city development, as well as city design, it is how these principles are taken forward that actually poses more philosophical questions. Although mobile studies are used to emphasize that the social medium is actually what professionals design for, it is the underlying aspect that, to some extent, citizenship and social interaction dictates the design decisions. In this final chapter, the purpose is to question the back and forth motion between public decision and design decision, between s*taging from above* and *staging from below.*

Staging from above, thus, is a given aspect to designers; it is the bread and butter of the approach to any design field, especially ones that involve predictions and educated speculations on how people use the design. This is no more true than for mobilities design. As users are the main focus group of such designs, it is paramount that the designer have a steady grip on the realities of the context in which the task is set. But, at the same time, mobility design also influences areas much further than the envisioned environment. This is in line with the network city principles and how cities have started to become global, in which the way people move around from destination to destination receives much more focus than in the past. And, today, this movement is not only contained inside a city's limits; it reaches out much further than that, due to the multitude and availability of public transport, and, in this way, connects to the larger idea of city-networks, where "designed artefacts should be moved from their isolation as autonomous objets d'art or as utilitarian-only technocratic systems (D'Hooghe, 2010), to their entanglement in hybrid socio-technical networks, which reach across multiple realms." (Jensen and Lanng, 2016)

Although there exists a number of cases that can be made for the network city and its effects on local or country-wide economies, the point is that today's mobility culture is something that stretches outside the realm of design as it is know. To this extent, mobility design need to adapt as well, and while the mobility turn emphasizes the emergeance of social studies as an interwoven concept of the new mobile world, the idea of a mobile strategy, and of a *mobile landscape*, is not meant to challenge this notion by zooming out to a scale in which social interaction is not that easily visible. Its purpose is that of becoming a complementary aspect of mobilities design, one in which the overarching network of the city or cities can be studied and conceptualized, so that, when actual small scale design happens, it already has a point of departure and time can be saved on initial discussions.

Although *the mobile landscape* is a context specific approach to mobilities, heavily related to the characteristics of the natural and industrial environment surrounding Genk, this does not make the idea of a mobile strategy any less viable. On the contrary, it actually should be telling of the fact that only using the strategic approach in such an expansive way could the concept of this thesis be reached. The same can be applied for other cities facing simmilar situations.

Apart from, possibly, larger, capital-type cities which can afford to dedicate specific areas to industries, many of the world's urban environments are facing a steady, if not drastic decline in industrial property. The comment is not on whether or not this is a good thing, but it relates to how the urban fabric left behind in the wake of this decline is forever changed. The discussion about *genius loci* doesn't, then, refer to its original purpose of *spirit of place*, but actually becomes something new, a *novus genius loci*, one not bound only by the physicalities of ages past, but inclusive of the changes that the industrial period had on cities and their spaces.

Thus, old or unused industrial infrastructure, or industrial spaces in general should be reused and not transformed into something completely different.

To this extent, Genk has an extremely relevant example: the *C-mine*. Formerly know as the Winterslag Coal Mine, toward the middle of the 2000s the municipality decided on revitalizing this piece of land that was so close to the city center. But in doing so, they did not approach it through a demolish-and-rebuild mentality, but they actually reused the existing buildings and industrial structures to create an interesting blend of industrial aesthetics with contemporary cultural uses. The most stand-out elements of this ensemble are the two former mine shaft structure that serve as a cultural and historic landmark for Genk. This is but one example of how post-industrial cities can incorporate contemporary design without the need for a complete do-over.

But leading the discussion back to mobilities and mobility design, one of the main challenges faced during the design process was decision making. Although it is mentioned that, due to the strategy, the decisions come much more easily as a result, the fact of the matter is that, once the scale gets small enough, certain problems or issues, sometimes of a technical nature, arise. By tackling this sort of project alone, one is left without the backup of healthy criticism from a peer with the same investment in the task, and this lead to a fairly shallow brainstorming process. Although the strategy did indeed help to focus some of the design decisions beforehand and did indeed guide the look and feeling of the proposed site, the author is left to wonder whether some of the decisions taken, ones that could not be covered through the theory, were the right ones.

To this extent, to ensure a better or more well rounded final result, a constant shuffle between strategic and design levels should have been integrated in the design process. This would possibly have lead to more specificity in the mobile strategy, while at the same time ensuring that the design decisions are the right ones. And while this was attempted to some extent, time resources did not permit such an exhaustive approach. Extrapolating, this could lead to one of the issues of implementing a mobile strategy in the real world.

Often it is the case in an urban design or landscape design practice that deadline or submission pressure dictates the outcome of a project. But when talking about a strategy, where there are much more concept and areas that need to be addressed, time is an incredibly influencing factor because decisions that happen at a city level need to be well thought out and should, of course, employ a multi-disciplinary team of professionals, not just from urban studies, but from social and economical ones. Practice-wise, having such a team is thus key in elaborating a well though out urban strategy that can react at multiple levels, far more than those enacted by *the mobile strategy*. Consequently, economic impact and feasibility studies should be conducted to ensure that the proposed vision can be obtained and is not too ambitious, mobility experts could weigh in on how new infrastructures can accommodate the proposed economic development, while assuring a stable social environment, and sociologists could be better equiped to tackle the social challenges of the 21st century, those of an increasingly networked city.

Illustration List

Chapter I

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II.1. - I.4. Created by the author

Chapter III

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Chapter IV

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Chapter V

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Chapter VI

VI.1. - VI.9. Created by the author

Chapter VII

VII.1. - VII.4. Created by the author

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APPENDIX

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Appendix

Something Extra, To Explain

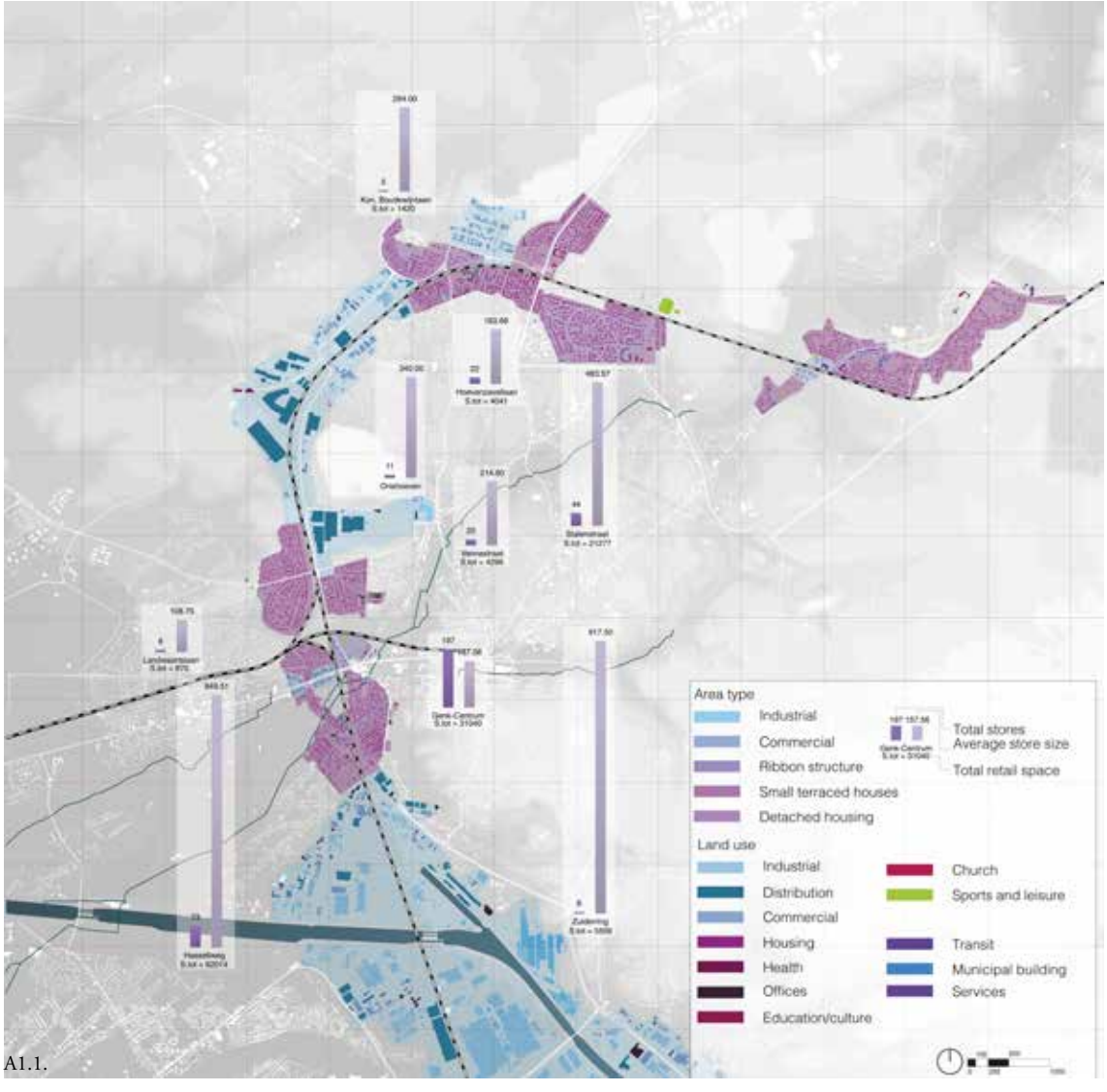
Analysis

What Started The Mobile Landscape

Building Typology and Land Use

This analysis shows the distribution of building typologies around the coletracks. There can be easily distinguished the main industrial areas of Genk, as well as the neighbourhoods surrounding the tracks. Thus, all the housing is represented by single family units, of maximum 3 stories. Each of the neighbourhoods are part of the former mining ensembles, with a street and house distribution specific to the Garden City movement.

The industry is of a mixed variety, and fairly well distributed. The industrial area towards the North is mainly focused on distribution, with several commercial outlets scattered alongside them, while the one towards the South is composed of production industry (heavy industry)

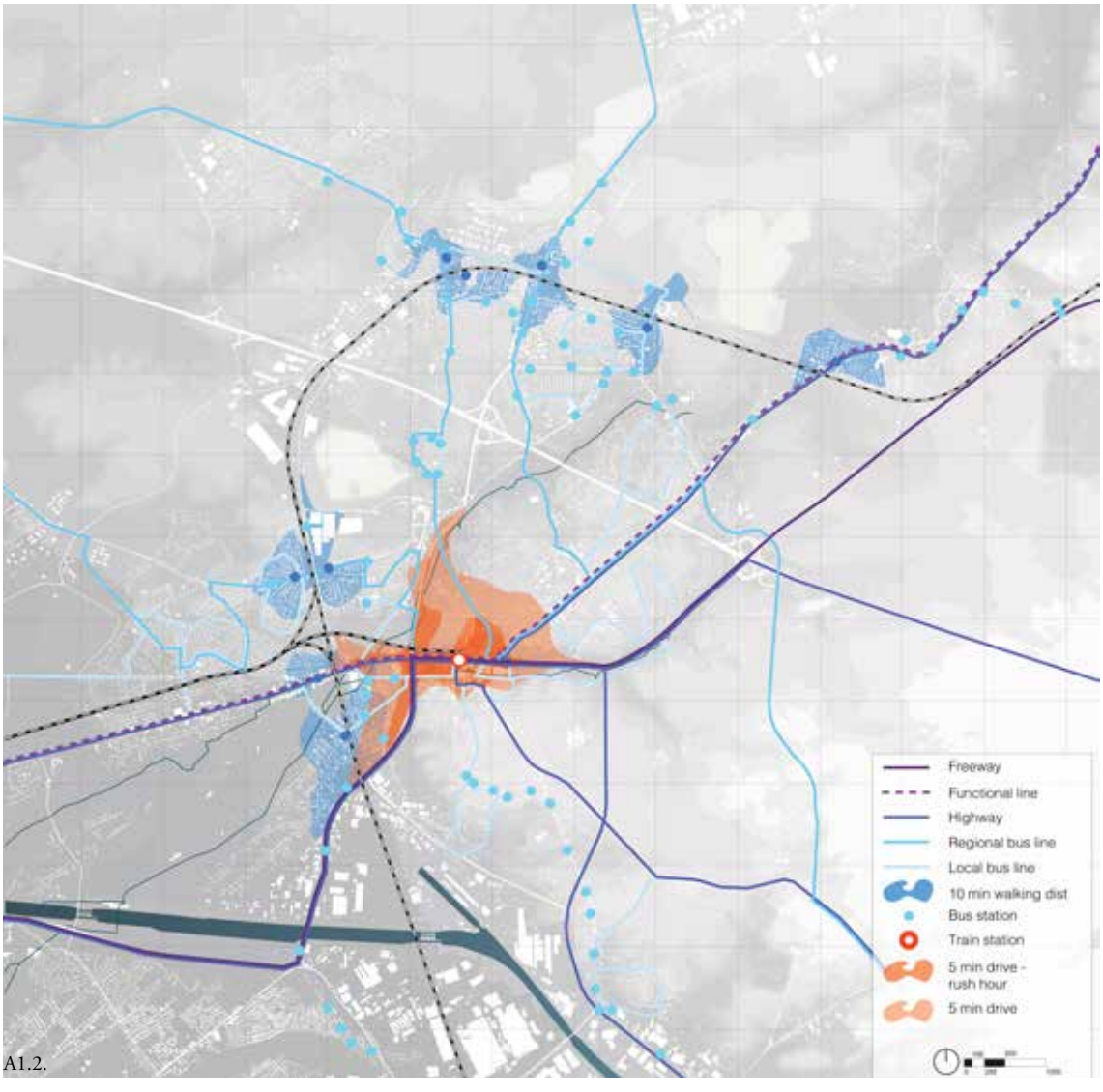


A1.1.

Public Transport and Regional Mobility

Public transport only comes in the form of regional and local busses, their trips being mainly in a radial fashin. Few busses reach deep in the heart of the neighbourhoods structure, making public transport in Genk rather lacking. While tracking 10 minute walks from the bus stations closest to the coletracks, it can be easily seen that most of the movement happens, again, radially, while the coletracks themselves are not used in any mobile way. Interestingly enough, the industrial area in the North-Western part of the city is not conencted by public transport, at least not directly.

Congestion is a problem only in the center of the city, and during rush hours. Even by car, a 10 minute drive during non-rush hours gets the user 1 to 2 km away from the city center, thus making car usage fairly frequent as a result.

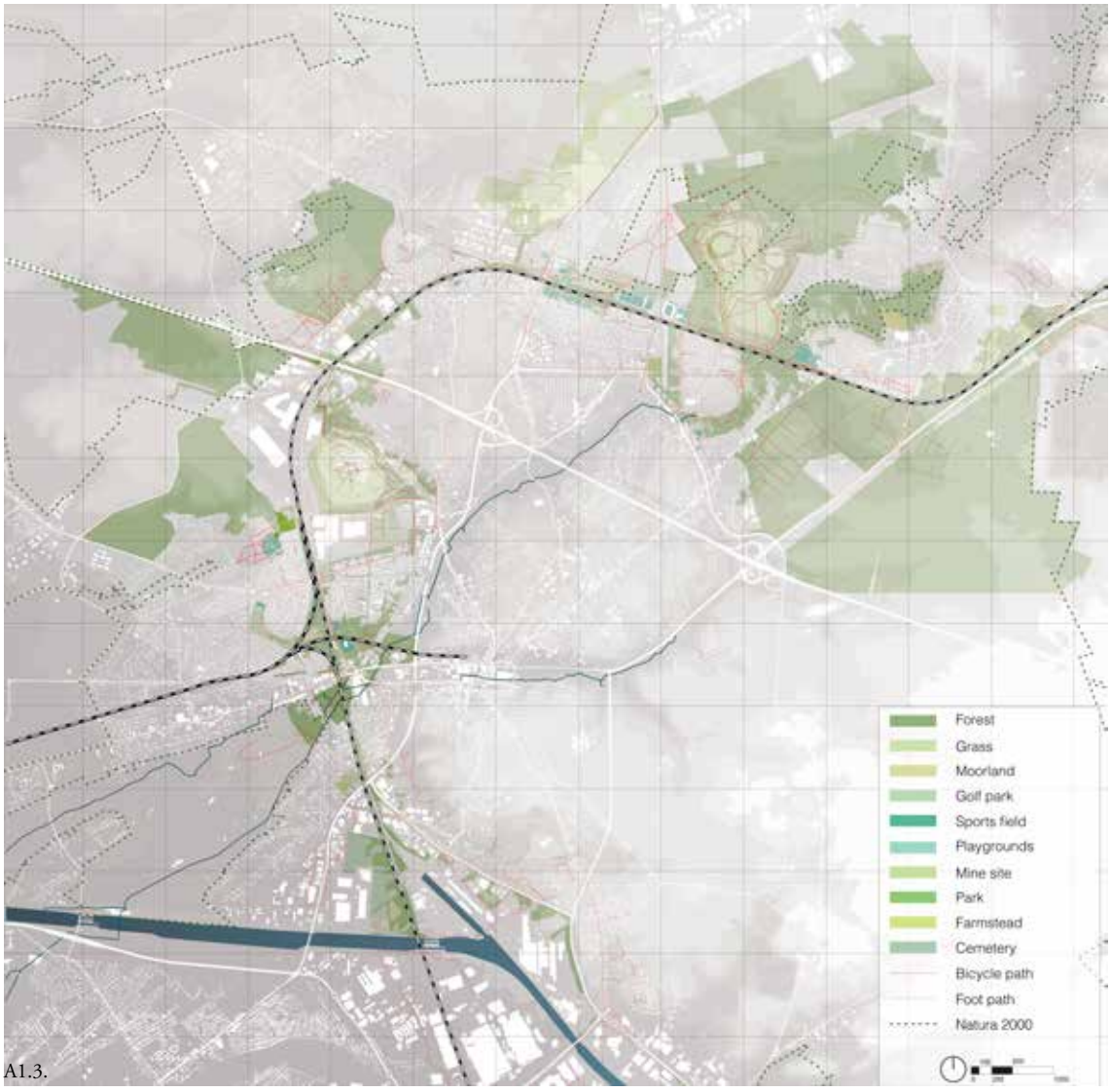


A1.2.

Green Structure

Green spaces, planned or not, appear all along the length of the coletracks, mostly in the form of a forested corridor. Here, nature has taken over making the space inaccessible to its citizens. Towards the outskirts of the city, a fairly distinct connection can be seen between the coletracks and the larger green spaces of the surrounding landscape. These are mainly represented by large forest areas, as well as expansive green meadows, especially around the coletips of the former mining sites.

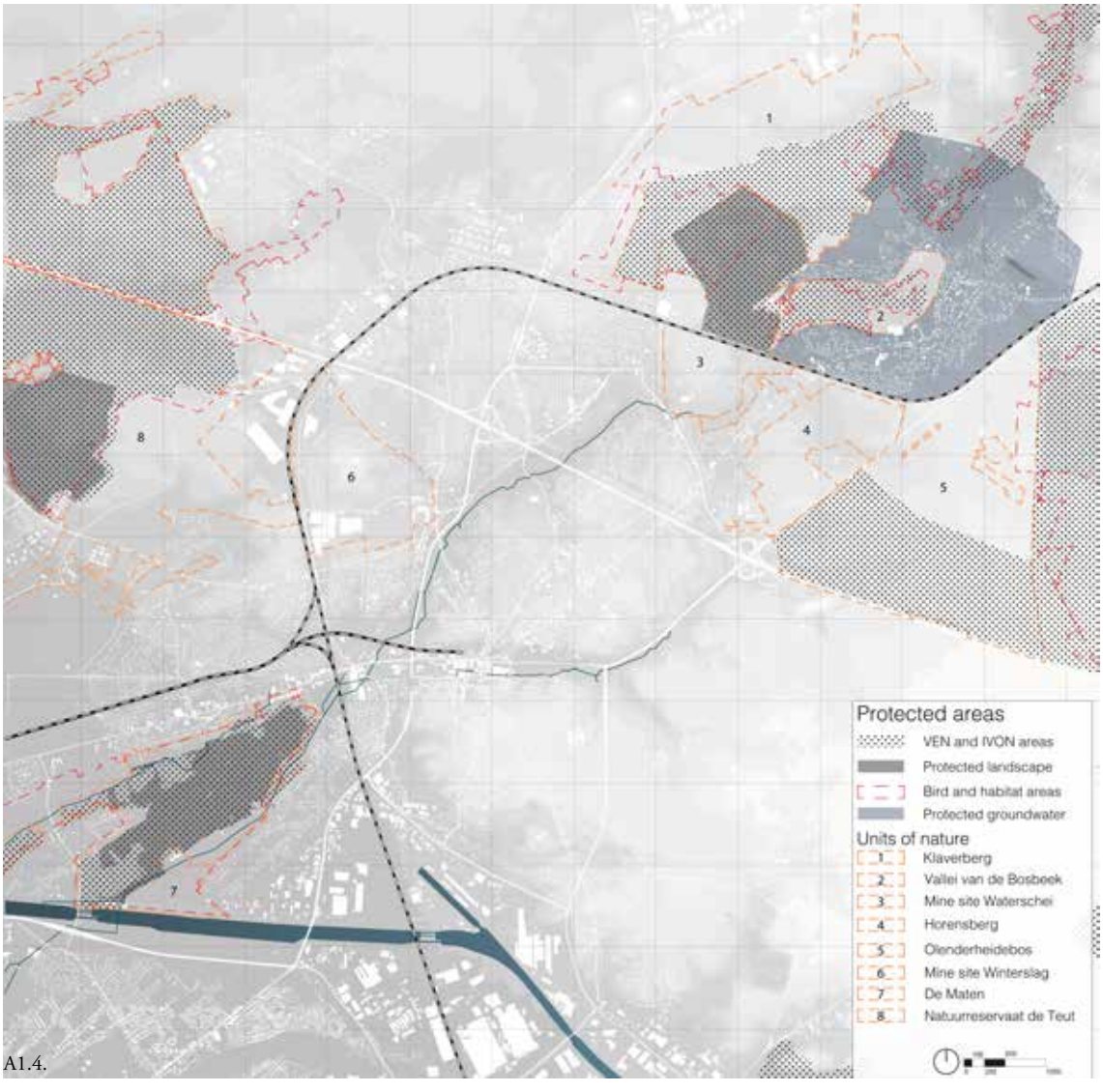
Towards the Northern part of the coletracks, a fairly large disconnection can be seen in the green structure, the only larger landscape element being the Zwartberg coaltip. Thus, there is no ecological connection between this area and the rest of the city.



A1.3.

Protected Areas

Several protected areas can be seen in connection with the coletracks. Most notable are the Klaverberg reservation to the North-East and the de Teut Nature Reservation towards the North-West, both borders being located at the edge of the coletracks. This is indicative of the action of the industrial age where rapid development and rapid mining caused the city to push back the landscape towards this limit.

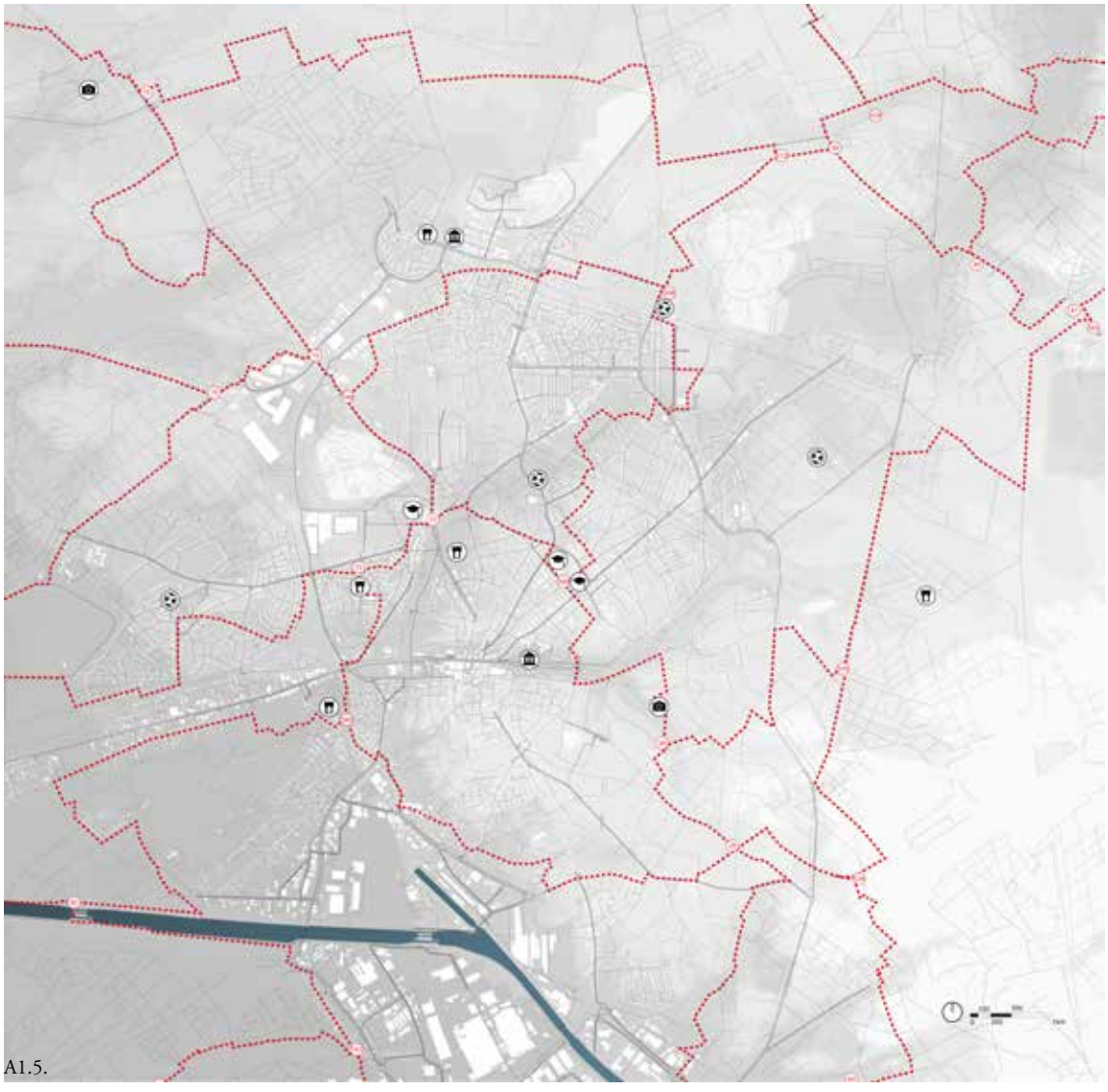


A1.4.

Regional Bicycle System

The Knooppunten bike system of belgium is fairly well distributed inside the city of Genk. The system has 8 such nodes inside the city, 3 of which are located near the coletracks. Still, the system doesn't use the existing coletracks, or their extensions to any degree, considering that the space itself is prime for biking. The system distribution of paths creates a ring-like structure around the Northern housing neighbourhoods of Genk. This leads to a fairly well connected bike system at a city level, but distances and lack of attraction along the way make the trips simply A to B movements

The bike system also connects the inner city with the larger landscape surrounding Genk.



A1.5.

Landmarks

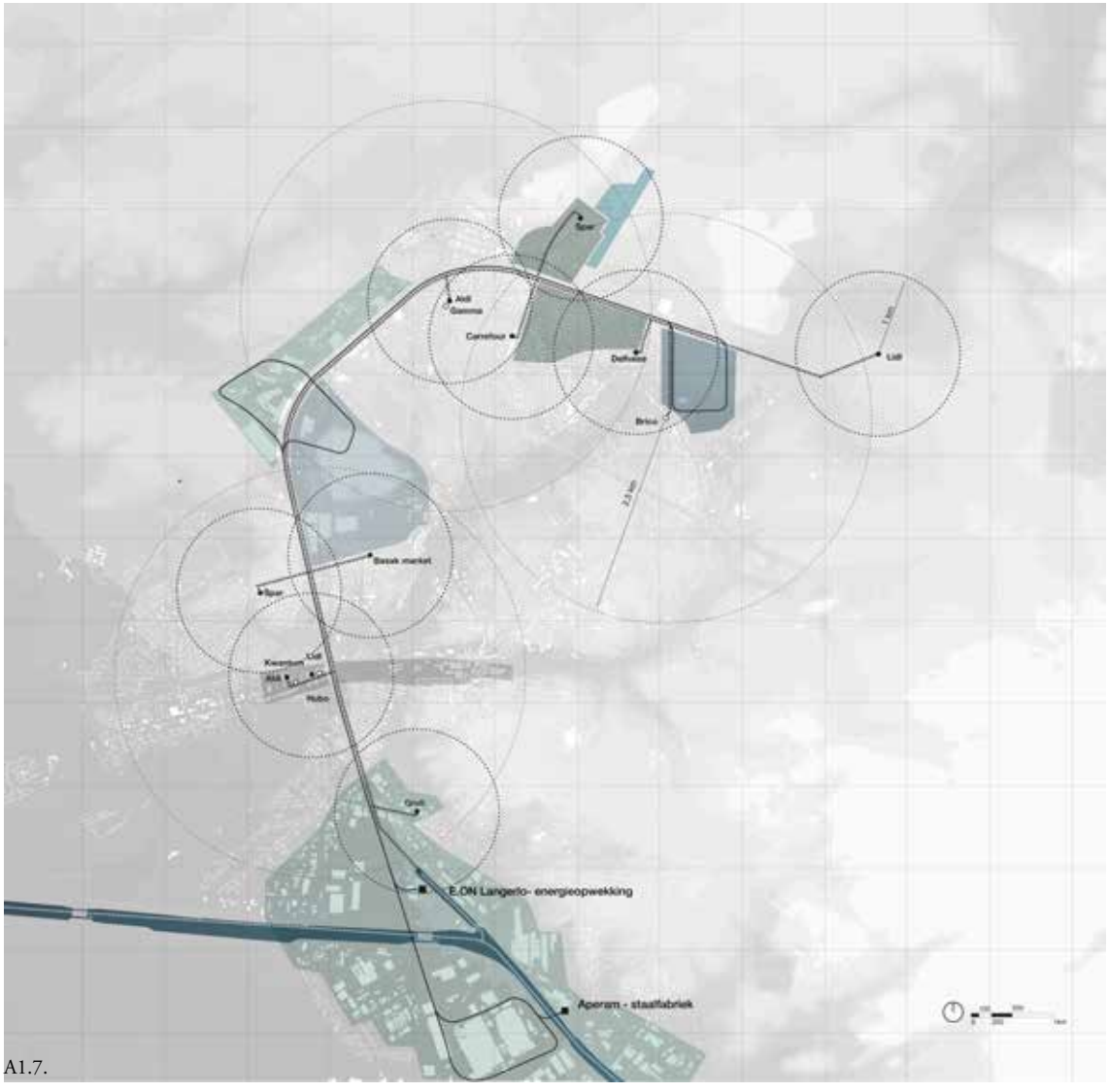
Most of the representative landmark of Genk are located either in the city center or around the coletraks, out of these, special emphasis was put forward by the municipality towards the C-mine development, due to its proximity towards the center. Still, the other two coaltips are being developed as we speak, most of the new development happening in Genk taking place towards the Northern part of the coletracks, with the technological park Thor park being developed at the former Waterschei mine site, and the biological and cultural diversity expo, La Biomista, developed by studio Koen Vanmechelen, in collaboration with famous architect Mario Botta.

The main landmarks of the neighbourhoods surrounding the coletracks are the mine ensembles, with their specific Mine Cathedrals.

A1.6.

Food and Supermarket Activity Areas

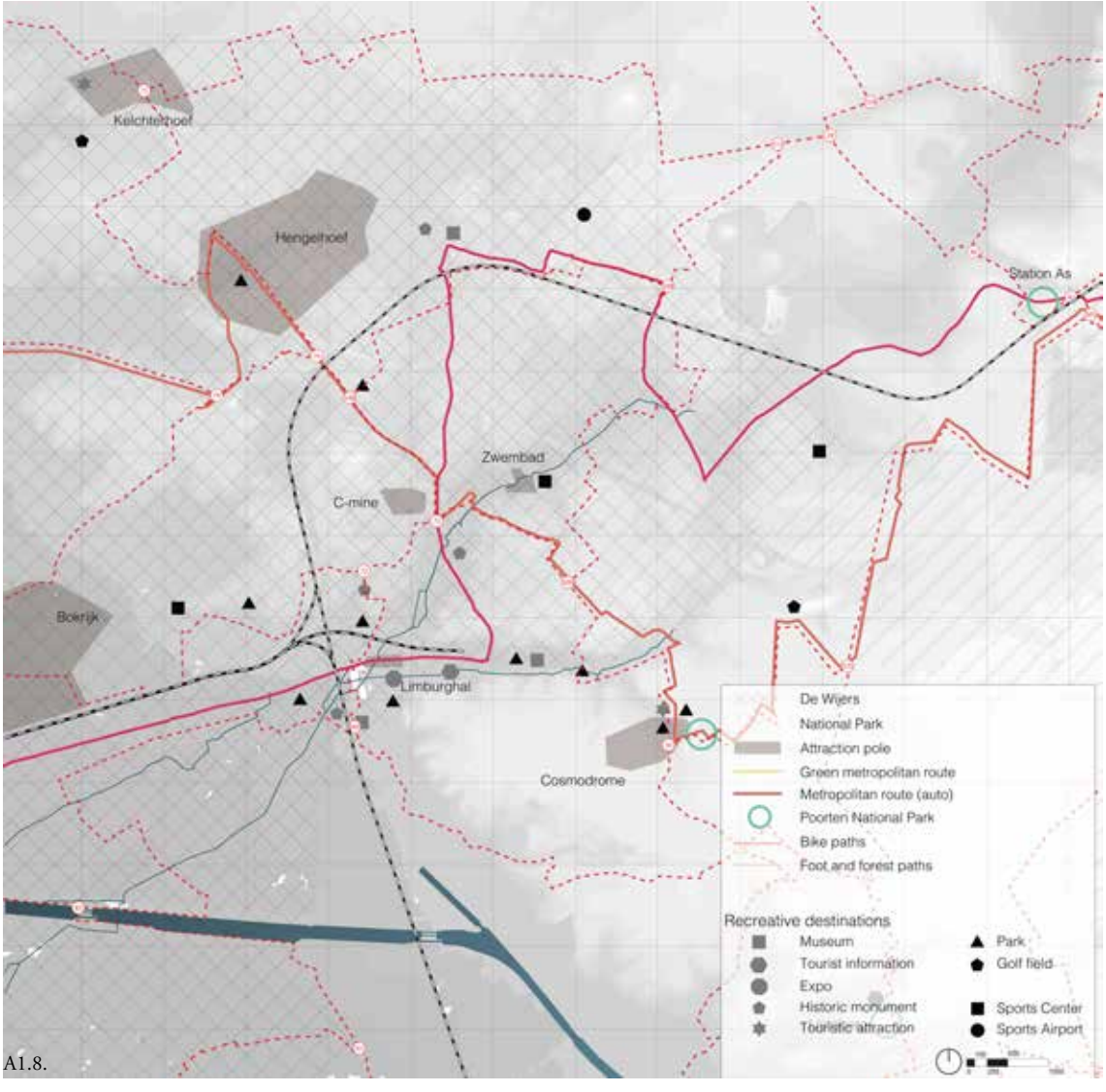
Each of the neighbourhoods around the coletracks are well covered by supermarket and food units. But due the coletracks not having a proper distribution use, all the supply actions for these stores happens along the streets of Genk, making for larger congestion problems around specific points. Areas showcasing the coverage of each specific shop show that further commercial or supermarket land use is not needed. Still, the commercial diversity of the Northern part of Genk is limited only to these supermarkets, making trips for other types of shopping having to take place towards the city center. This, in turn, reflects a low Land Use Mix indicator, favoring car and bike trips and severely lowering walkability.



A1.7.

Recreation Network

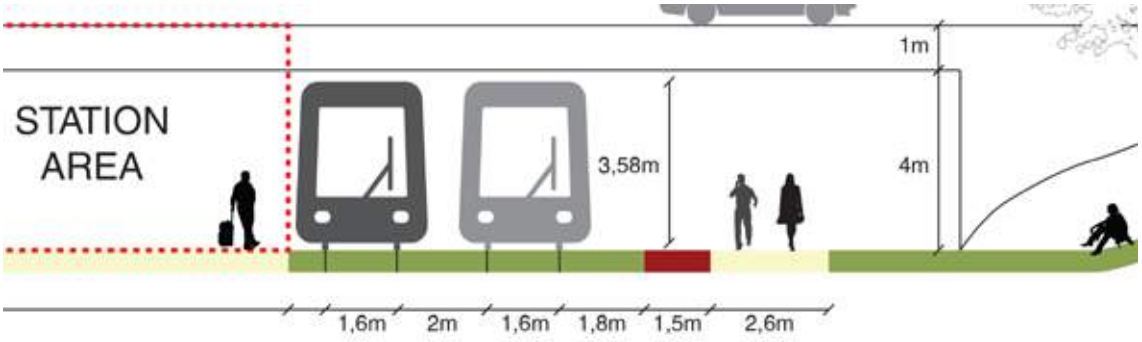
Most recreation activities happen towards the city center, or outside the city, inside landscape parks such as Hengelhoef or Katevenen. The Northern part of the city is almost devoid of recreational activities, apart from biking routes and some landscape features. This, again, leads to a focus on the mononuclear city, where Land Use Mix is only found in the city center, leading thus to most of the trips having it as a destination, while the neighbourhoods suffer in term of street life and activity.



A1.8.

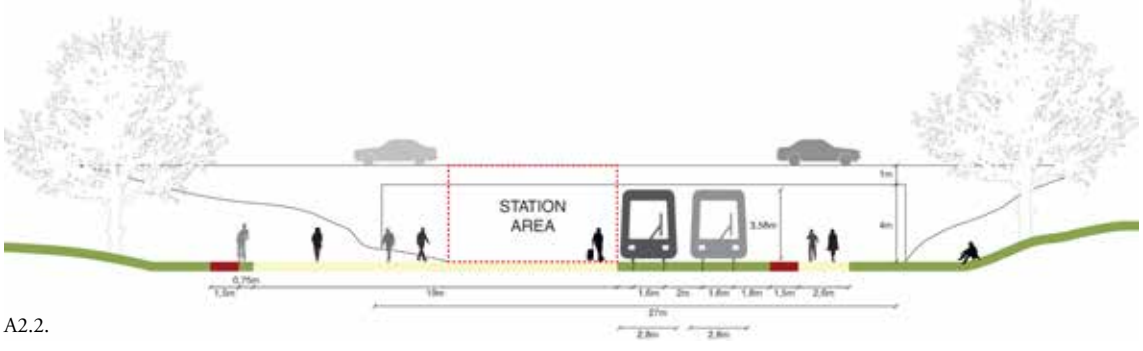
Design Dimensions

New Coletracks Dimensions



A2.1.

Station Dimensions



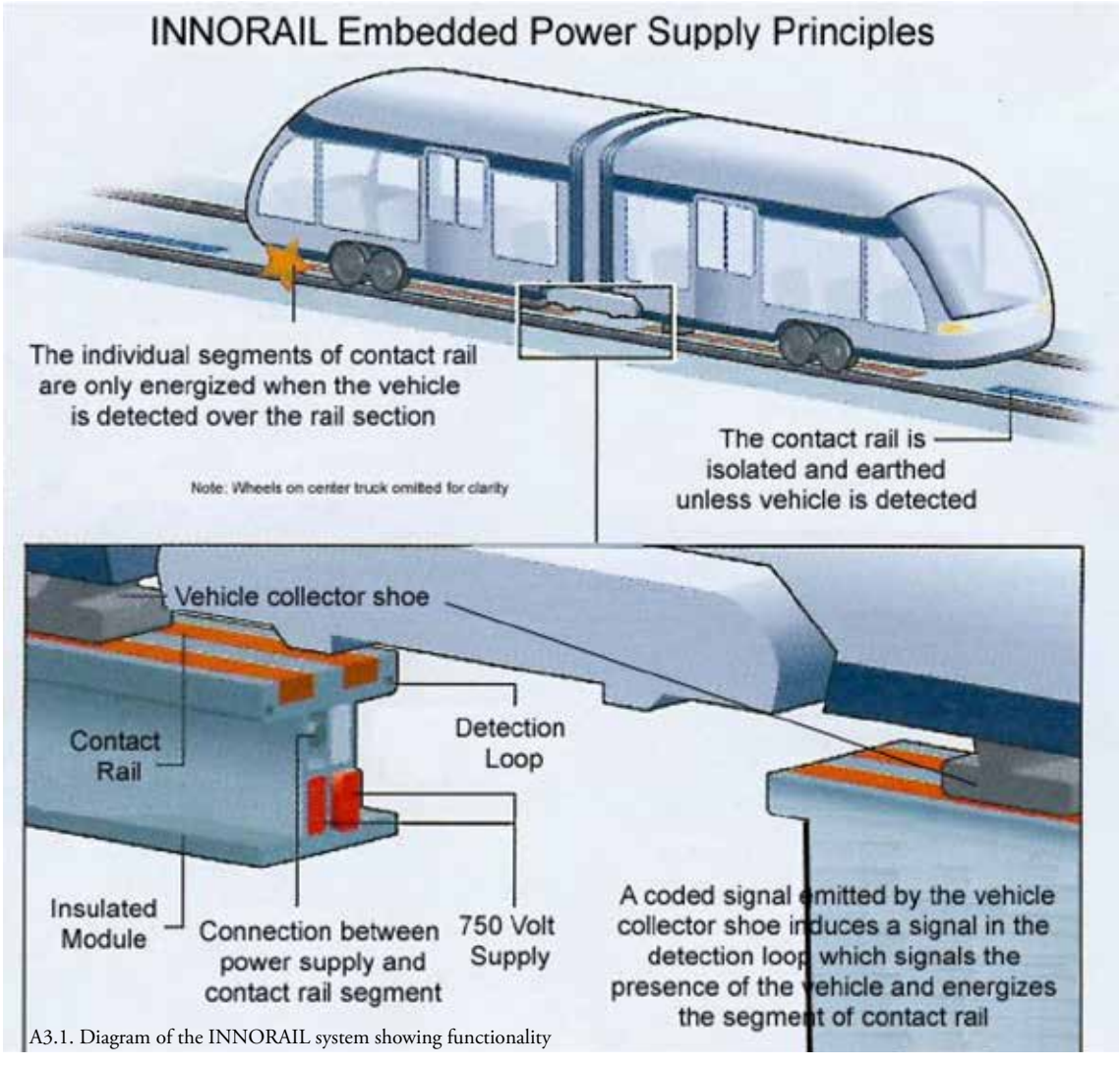
A2.2.

LIGH RAIL WITHOUT WIRES

Due to the the inherent visual discomfort caused by the Overhead Contact System (OCS) of usual light rail transport, the Ground level switch contact system comes as a much more environmental and design friendly option. It consists of an electric power supply embedded in the actual tracks, from which the light rail draws power. This is a segment based switch system, meaning that the circuit is not powered unless the track section detects that the light rail is in contact with the energy source. The car itself is also fitted with on-board power sources, in case of electrical dead zones (Swanson, 2004).

To increase safety, monitoring systems are implemented along the way to ensure that the electric signal is stopped once the light rail has gone past the energized segment.

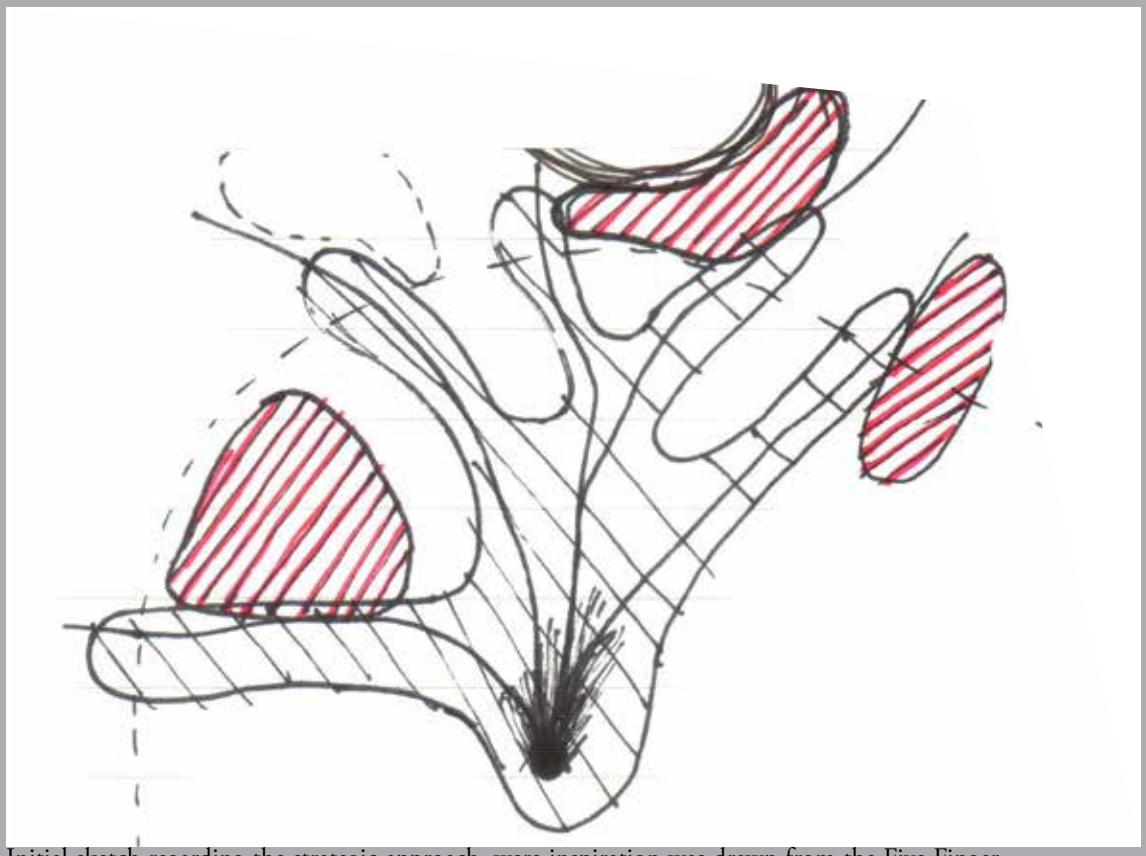
The most well know example of such a system is the INNORAIL ligh rail, an the city that has started to pioneer such systems is Bordeaux, in France, which has steadily moved towards a full wireless light rail transport system. Special consideration should be taken towards geographical implementation, as the system has not been tested in cold, winter climates.



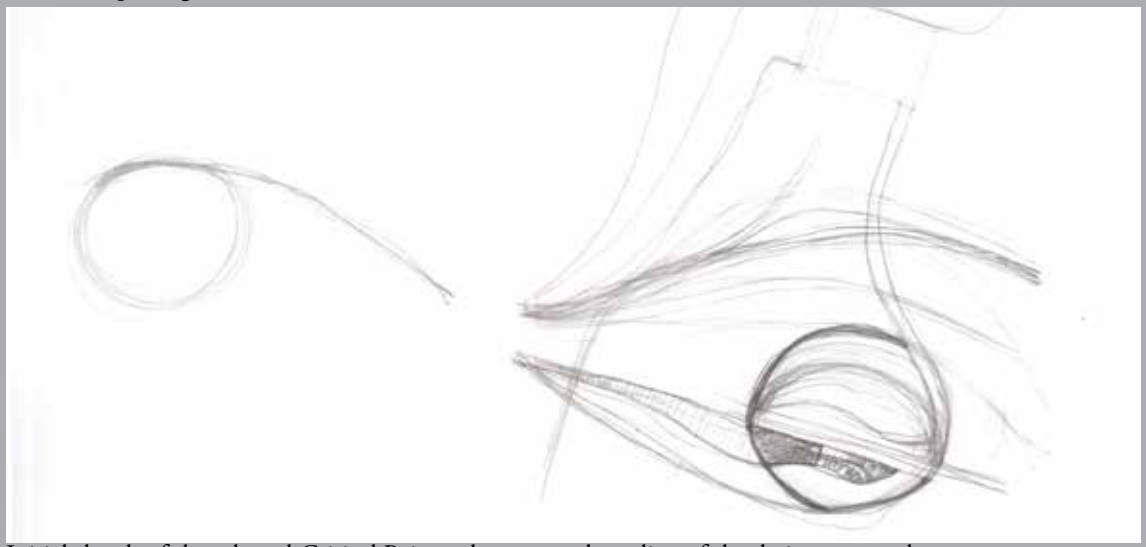
A3.1. Diagram of the INNORAIL system showing functionality

Design Process

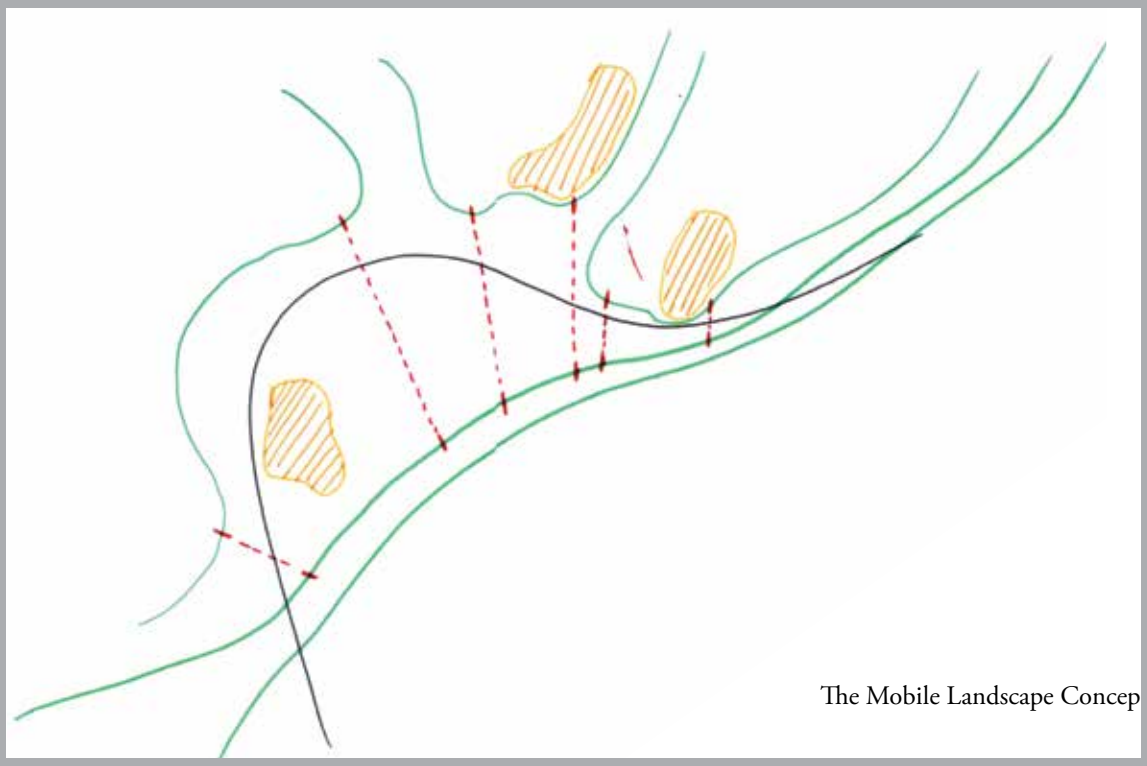
How The Mobile Landscape Was Created



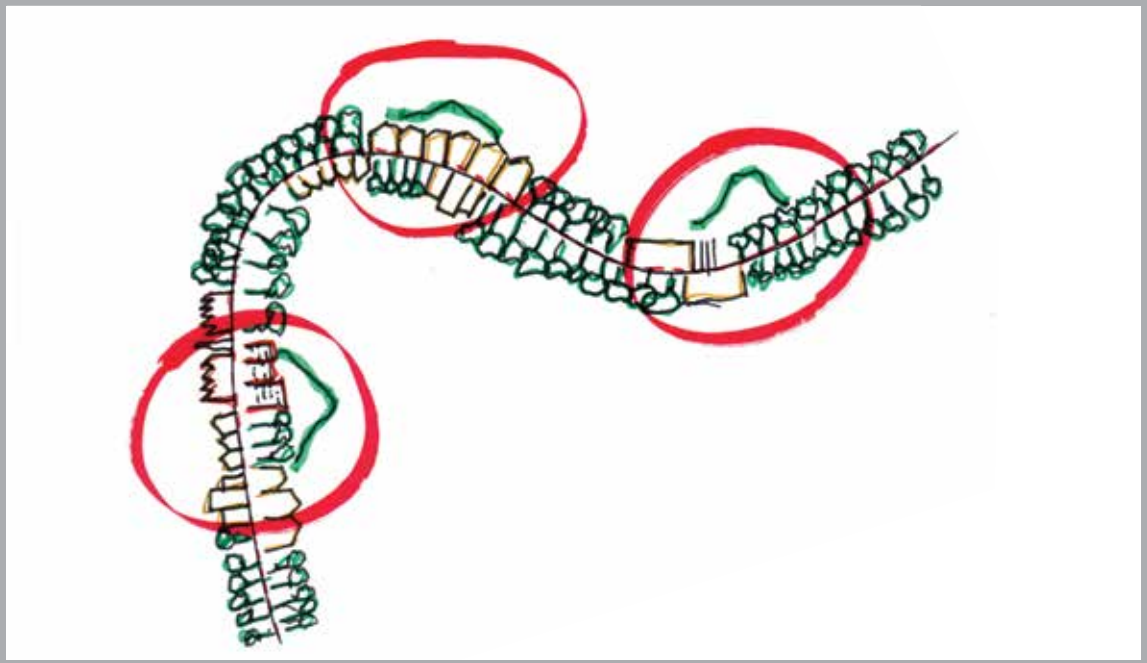
Initial sketch regarding the strategic approach, were inspiration was drawn from the Five Finger Plan of Copenhagen



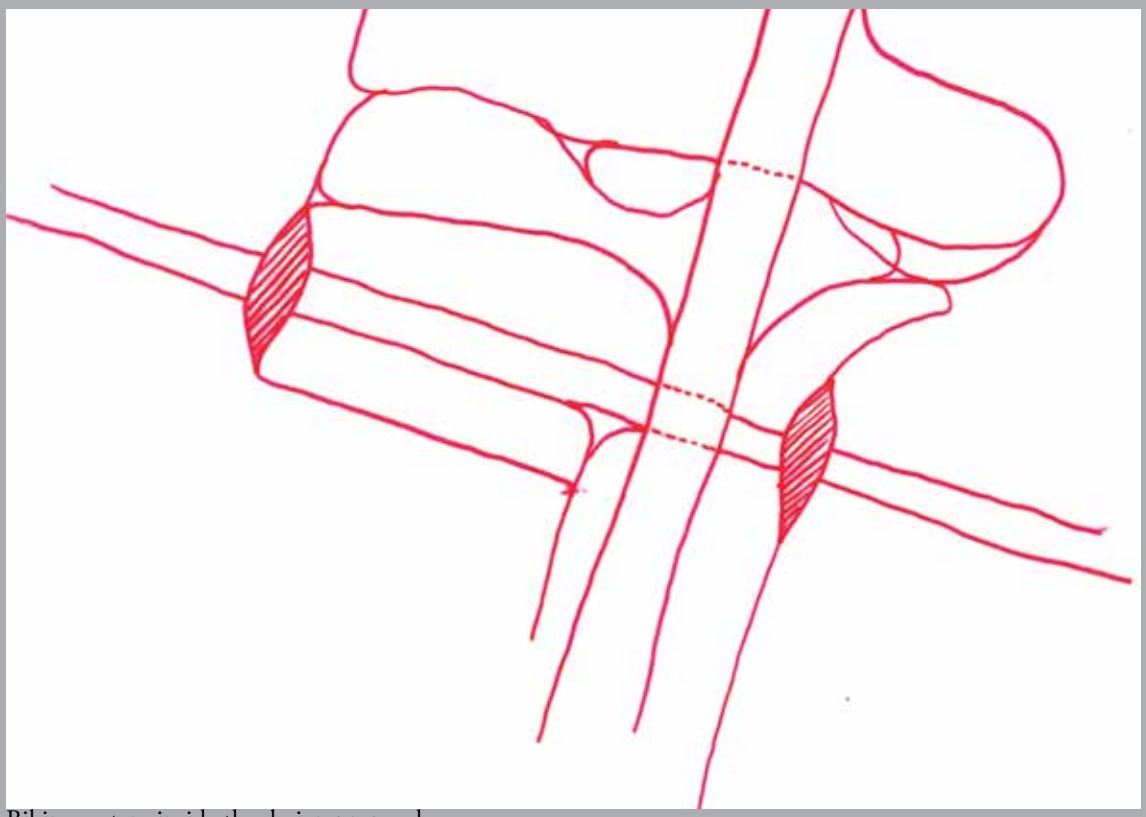
Initial sketch of the selected Critical Point, where a rough outline of the design proposal was put forward.



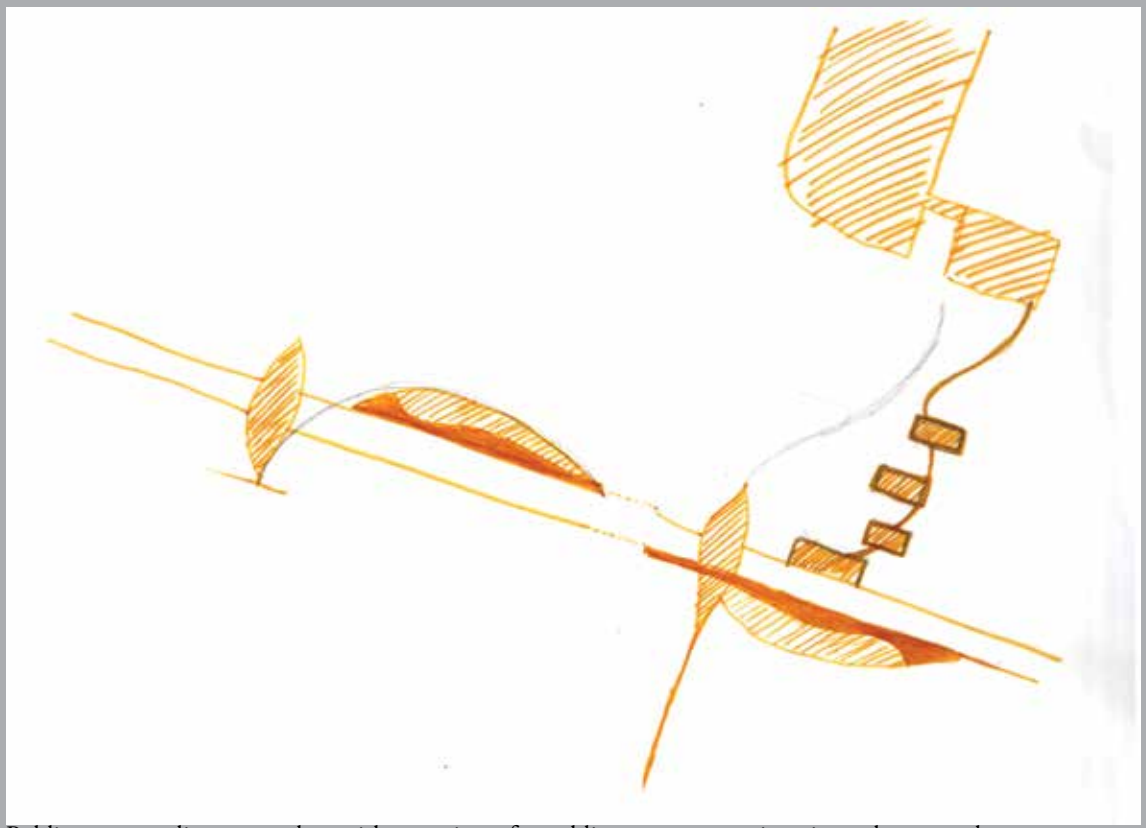
The Mobile Landscape Concep



The Mobile Landscape, where focus was put more on the development of the coaltips

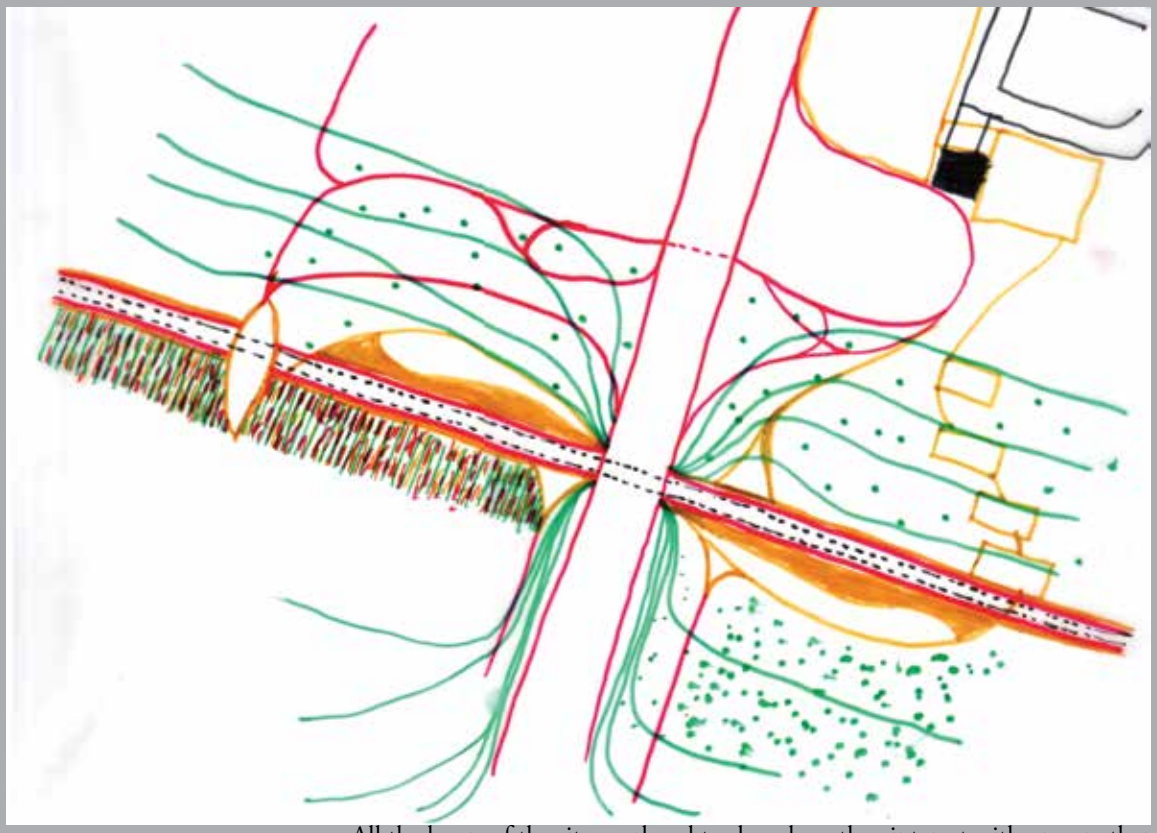


Biking system inside the design proposal

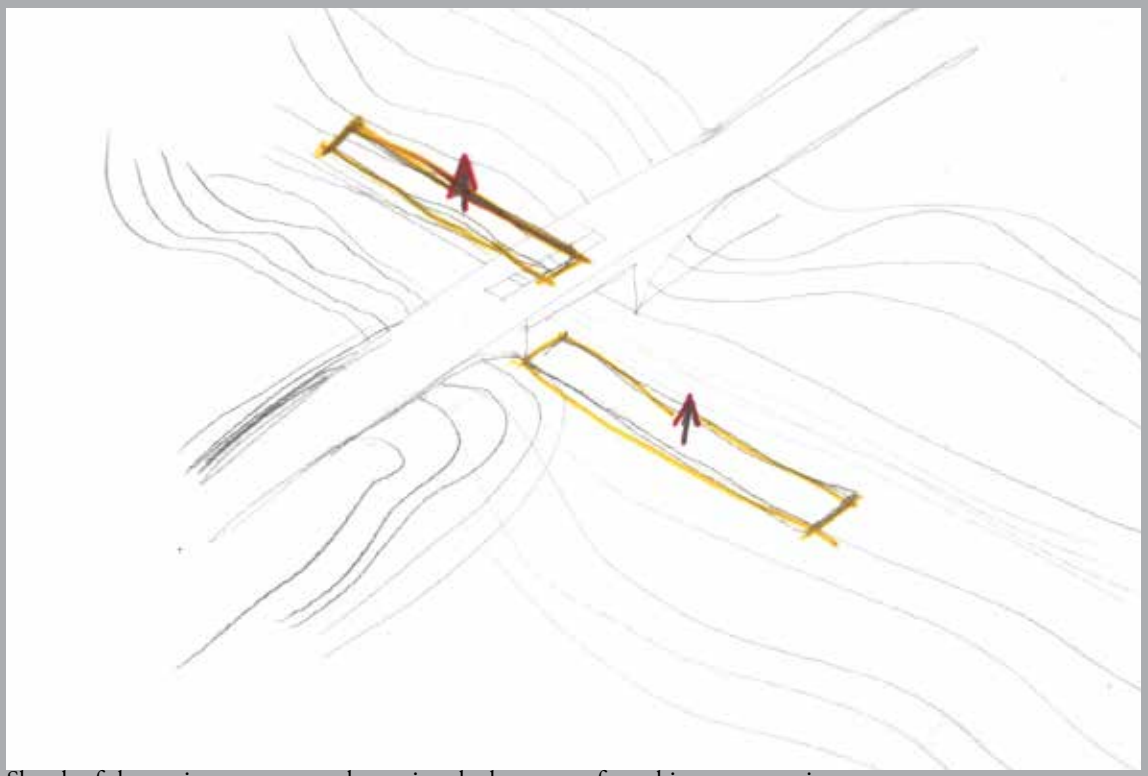


Public space outlines, complete with a version of a public space connection sistem between the coletracks and the Cathedral Square.

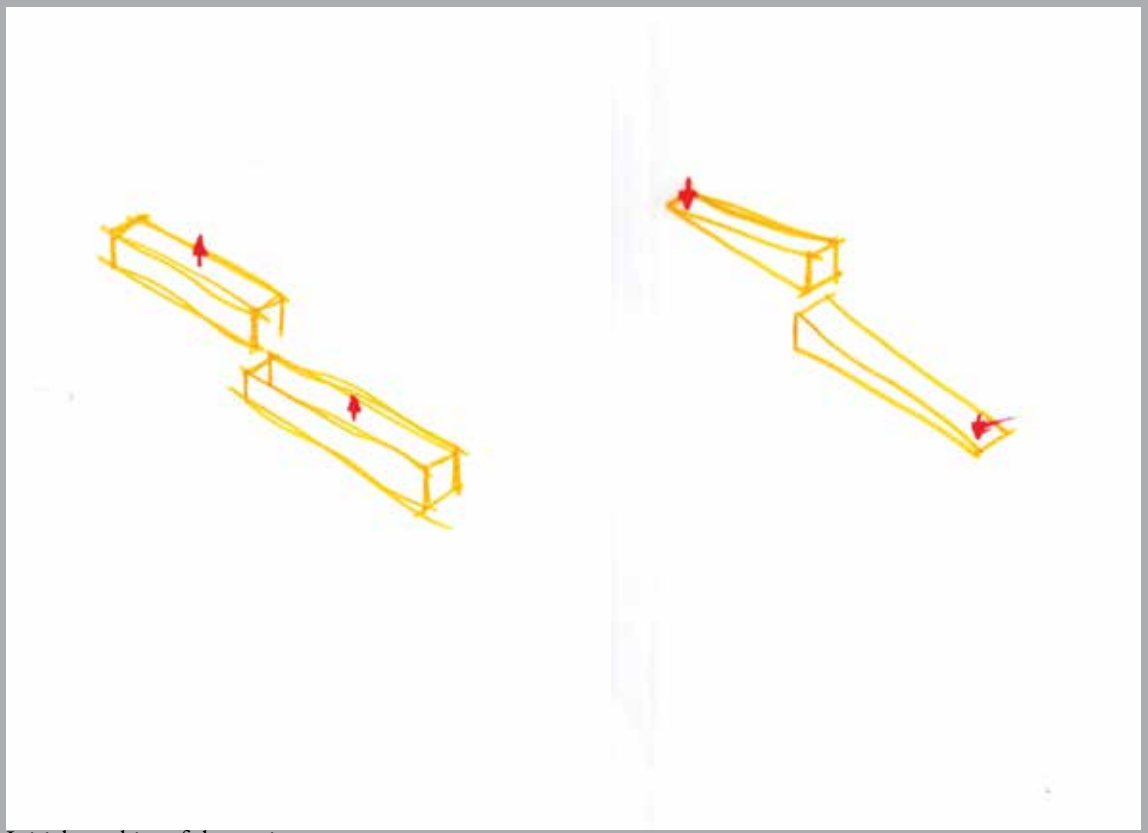
The green systems and green spaces layer of the site plan



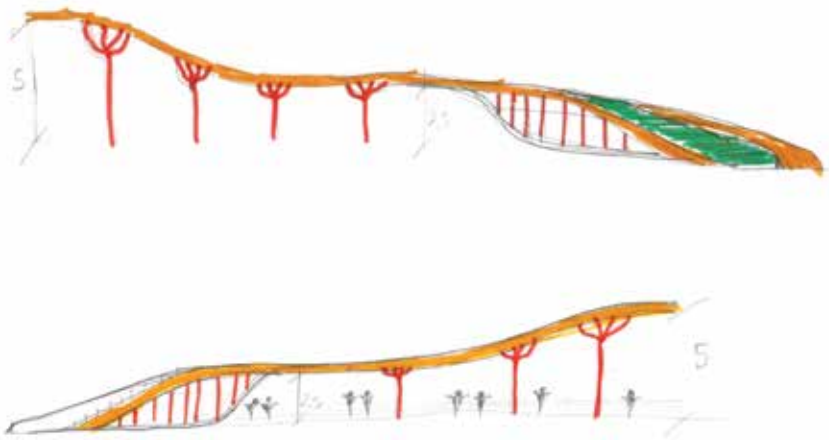
All the layers of the site overlayed to show how they interact with one another



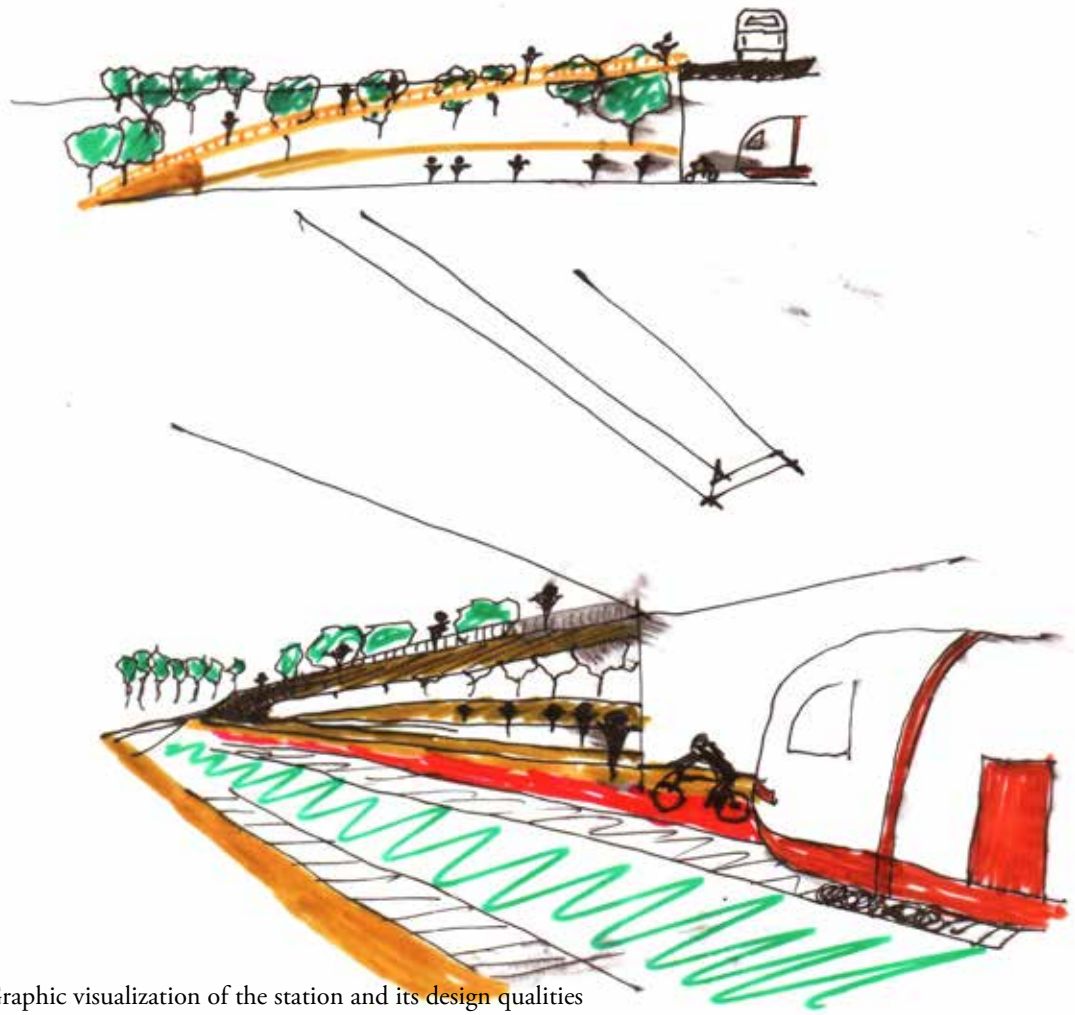
Sketch of the station concept to determine the best way of graphic representation



Initial graphics of the station concept



Sketches of the station in an orthogonal elevation view to determine slope and heights



Graphic visualization of the station and its design qualities