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Replicating the Bilbao Effect in Pretoria West through means of landscape architecture

H. J. Strydom

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Submitted by: Hercules Strydom

Study Leader: Graham Young

Course Coordinator: Johan N. Prinsloo

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In accordance with Regulation 4(c) of the General Regulations (G.57) for dissertations and theses, I declare that this dissertation, which I hereby submit for the degree Master of Landscape Architecture (Professional) at the University of Pretoria, is my own work and has not previously been submitted by me for a degree at this or any other tertiary institution. I further state that no part of my dissertation has already been, or is currently being, submitted for any such degree, diploma or other qualification.

I further declare that this dissertation is substantially my own work. Where reference is made to the works of others, the extent to which that work has been used is indicated and fully acknowledged in the text and list of references.

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Abstract

The industrial age has left behind many urban spaces and buildings frozen in time. The city of Bilbao tackled the issue by commissioning famous architect, Frank Gehry, to design an award winning branch of the Guggenheim Museum Bilbao. This single injection into the urban tissue saved the city from economic and cultural depression by boosting the tourism industry.

This dissertation investigates and deconstructs “The Bilbao Effect” to better understand and replicate it’s successes in Pretoria West. The theoretical approach led to the redesign of the existing show-grounds in Pretoria West. The landscape intervention is an abstraction of the greater community by capturing and celebrating a very typical industrial and agricultural built form. The design caters for numerous events, shows, and expositions to take place and attract people from all parts of South Africa to recreate the Bilbao Effect in order to essentially regenerate Pretoria West.

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Glossary of terms

Abstraction: The process of taking away or removing characteristics from something in order to reduce it to a set of essential characteristics.

AGT: Art Gallery of Toronto

Artistic Elements: The core traits of an artwork, visually detectable and separately identifiable.

Catalyst: An event or person causing a change.

Celebrity Designer: Someone who is famous in the area of design.

Commercial zone: An area zoned for commercial development.

Community dereliction: The state of a whole community having been abandoned and become dilapidated, the shameful failure to fulfil one's obligations.

Contemporary landscape architecture: Contemporary means of current time, thus contemporary landscape architecture is today's (or tomorrow's) expression of the current style. It is innovative and forward-thinking with no strict rules or unifying features. The use of materials in contemporary landscape architecture varies greatly depending on what is new and popular.

Depression: A severe and prolonged downturn in economic activity.

Design intervention: A discrete action designed to improve the system but you can't predict exactly how things are going to turn out. It's not a project in the sense that there is a clear objective, and a set of milestones over sometimes lengthy periods.

Economic decline: An economic recession is typically defined as a decline in gross domestic product (GDP) for two or more consecutive quarters.

Energy: The strength and vitality of the concentration of people which result in economical and social activity.

Environmental decay: Environmental degradation is the deterioration of the environment through depletion of resources such as air, water and soil; the destruction of ecosystems; habitat destruction; the extinction of wildlife; and pollution.

Folly: An ornamental structure whose creation reflects a whimsical inclination on the part of the designer, built primarily to be viewed as part of the scenery. It is primarily for decoration, but suggesting through its appearance some other purpose.

Functional City: A city with extensive systems for housing, transportation, sanitation, utilities, land use, and communication. Their density facilitates interaction between people, government organizations and businesses, sometimes benefiting different parties in the process.

GMB: Guggenheim Museum Bilbao

Humanistic Architecture: Architecture that focuses on the human experience of designed environments.

Industrial zone: An area zoned and planned for the purpose of industrial development.

Industrial City: A relatively large city characterized by open competition, an open class system, and elaborates specialization in the manufacturing of goods.

Microcosm: A community, place, or situation regarded as encapsulating in miniature the characteristics of something much larger.

Modernism: A philosophical movement that, along with cultural trends and changes, arose from wide-scale and far-reaching transformations in Western society during the late 19th and early 20th centuries.

Pedestrianized: A streetscape that is intended for pedestrians only, not vehicles.

Recreational space: Space where recreational activities are often done for enjoyment, amusement, or pleasure and are considered to be "fun". This recreational activities can be communal or solitary, active or passive, outdoors or indoors

Residential zone: A residential area is a land used in which housing predominates, as opposed to industrial and commercial areas. Housing may vary significantly between, and through, residential areas. These include single-family housing, multi-family residential, or mobile homes.

ROM: Royal Ontario Museum

Streetscape: The collective appearance of all buildings, footpaths, gardens and landscaping along a street.

Synthesis: The combination of components or elements to form a connected whole

Theoretical approach: A theoretical approach attempts to understand the root causes of something, and construct a predictive model that explicitly says when the event will happen.

Urban acupuncture: A socio-environmental theory that combines contemporary urban design with traditional.

Urban Fabric: The physical aspect of urbanism, emphasizing building types, thoroughfares, open space, frontages, and streetscapes but excluding environmental, functional, economic and socio-cultural aspects.

Urban precinct: An Urban space enclosed by the walls or other boundaries of a particular place, or by an arbitrary and imaginary line drawn around it.

Urban regeneration: Regeneration of the city centre and its immediate surroundings.

Water strategy: The strategy to optimise the use and conservation of the water resources on the site.

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1 Introduction



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The first chapter will introduce the reader to the site and the problem. It will cover the theoretical approach and how it will inform the design intervention on the chosen site. The topic of the dissertation is focused on the so called “Bilbao Effect”, how it regenerated the city of Bilbao, and whether it can be replicated by means of landscape architecture within an urban precinct known as Pretoria West.

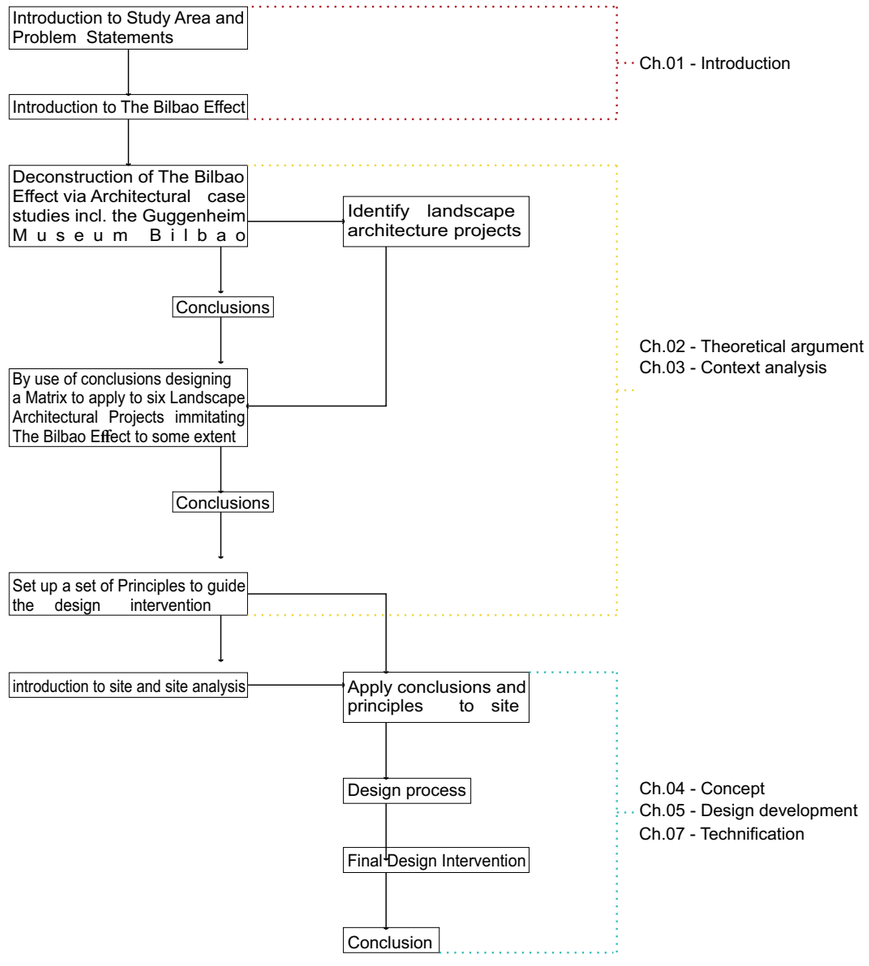

Figure 1.1: Flow diagram explaining the intentions of this dissertation

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Pretoria West

The project site is in the heart of Pretoria West (Figure 1.2). Pretoria West is best known for its industrial zone and large show grounds that are still used today, albeit infrequently. Pretoria West has a unique character as it consists of industrial, commercial, and residential zoned areas separated by the large showgrounds (Figure 1.2). The showgrounds consist mainly of open areas used as parking for large events that are held in the six conference halls that form part of the showgrounds. The Pilditch Stadium also forms part of Pretoria West's defining elements, a very successful multi-use sporting facility which is currently the home ground of SuperSport United (2nd team) and Garankuwa United ("PSL" 2016).

It might seem as if Pretoria West is a functioning microcosm of a city, but it is deteriorating both physically and economically. Pretoria West has a rich and colourful history (Meiring 1980). In the 1980's this part of Pretoria was surveyed for Burgher-right plots (Meiring 1980). There was an agreement that the Voortrekkers would receive farms in the Transvaal, but many preferred large stands and they settled mostly in Pretoria West (Meiring 1980). After 1902, farmers flocked to the city from the country to the existing Goede Hoop residential area; a part of Pretoria West, which developed rapidly (Meiring 1980).

Urban regeneration

Since the earliest human settlement urban regeneration has been accompanying urban development, and was especially emphasized after World War Two (Li 2003). After several decade's experience and billions of dollars spent, decision makers realized the importance of the urban image including both the quality of life and the urban environment (Li 2003). Public squares were recognized as prerequisites and catalysts for economic development in cities (Li 2003). Many Western countries have proven that public squares within the urban fabric create a symbol for the city, as well as recreational space for the residents. The squares also greatly contribute to urban regeneration (Li 2003).

Urban regeneration, also known as urban renewal, urban renaissance, and urban revitalization, is the field of public policy that addresses urban issues such as environmental decay, economic decline, community dereliction, growing unemployment, and social issues caused by these urban issues (Merriam-Webster 2003). In biological terms, regeneration means the regrowth of lost or injured tissue, or the restoration of a system to its initial state (Merriam-Webster 2003). These factors are also prevalent in urban areas. According to Couch et al. (2003:2)

> *"Regeneration is concerned with the regrowth of economic activity where it has been lost; the restoration of social functions where there has been dysfunction, or social inclusion where there has been exclusion; and the restoration of environmental quality or ecological balance where it has been lost".*

Urban regeneration is thus not the creation of a completely new urban area, but is instead the management and planning of existing urban tissue and environments (Couch et al 2003). An integrated vision is required to lead and resolve urban issues within environments that have been subject to change (Roberts 2000). When urban regeneration is mentioned it is mostly referred to as the regeneration of the city centre and its immediate surroundings as they are usually more densely populated and possess greater historic significance (Plaza et al 2015). A model of a city successfully regenerating its economy, infrastructure, and cultural activity through a single urban acupuncture is known as the "Bilbao Effect" (Plaza et al 2015).

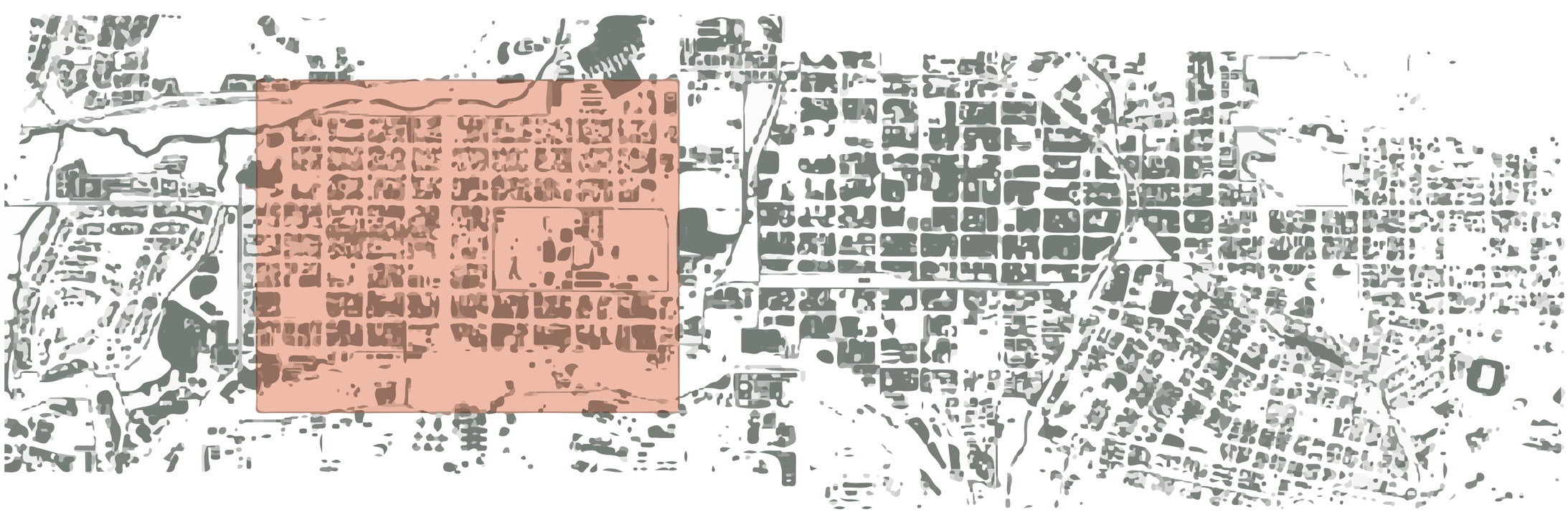

Figure 1.2: Diagram highlighting the chosen study area for the dissertation, Pretoria West

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Figure 1.3: Map of Spain illustrating the catalytic impact one building can have on the entire city and country

The Bilbao Effect

The 'Bilbao Effect' is a success story of urban regeneration named after the seemingly miraculous and unprecedented success of the Guggenheim Museum Bilbao (GMB) (Plaza et al 2013). The Guggenheim Museum Bilbao, built on a site previously encompassing Bilbao's failed shipbuilding industry, was intended as a flagship for the city's regeneration plan.

According to Franklin (2016), the intention was to move the city away from its rusting heavy industries and machine-age modernism and to restructure it around new service industries, emerging technologies, design, culture, and aesthetics. The GMB opened in 1997 and hoped against hope to attract 400,000 art tourists a year (Franklin 2016). This would have enabled the developers to pay back the total investment in a short timeframe and deliver valuable income to the city and the Basque Country economy (Areso 2007). In fact, they attracted a million visitors in their first year and have maintained that level ever since. As a result the cost of building the museum ($100m) was repaid in five years (and the overall investment in ten years). The GMB became a major contributor of GDP to the city, adding $33.5m per year to Basque public funds from 2006 (Areso et al 2013).

Significantly, the GMB also boosted global connectivity by placing this second-tier city on the global map of specialised international art-related tourism circuits (Plaza et al 2015), prompting further investment strategies around the world that linked art museums, art tourism, and urban regeneration (Franklin 2016).

Although Basque Country remains substantially industrial (22% of GDP), the Bilbao Effect became the holy grail for de-industrialized cities seeking reinvention (Financial Times 2012). Its potent mix of structural change and economic development, urban regeneration with a cultural twist, signature architecture for urban brand renewal, and local–global partnerships in museum development, inspired a huge growth in centerpiece museum projects in the 1990's and 2000's— but few were as successful as Bilbao (Plaza et al 2013).

> *"Even a Frank Gehry museum commissioned by a wealthy private collector was no guarantee that a new museum would work. Described in 2004 as 'EMPty', visitor numbers almost halved in the first three years of Experience Music Project (EMP) in Seattle, another shiny titanium museum built for Microsoft founder and billionaire Paul Allen. In the same period, it cut its workforce from 500 to 200."* (Franklin 2016:80)

Opening in 2000, pundits said it would consolidate Seattle's regeneration through the 1990's; however, it didn't.



Figure 1.4: The GMB



Figure 1.5: The GMB

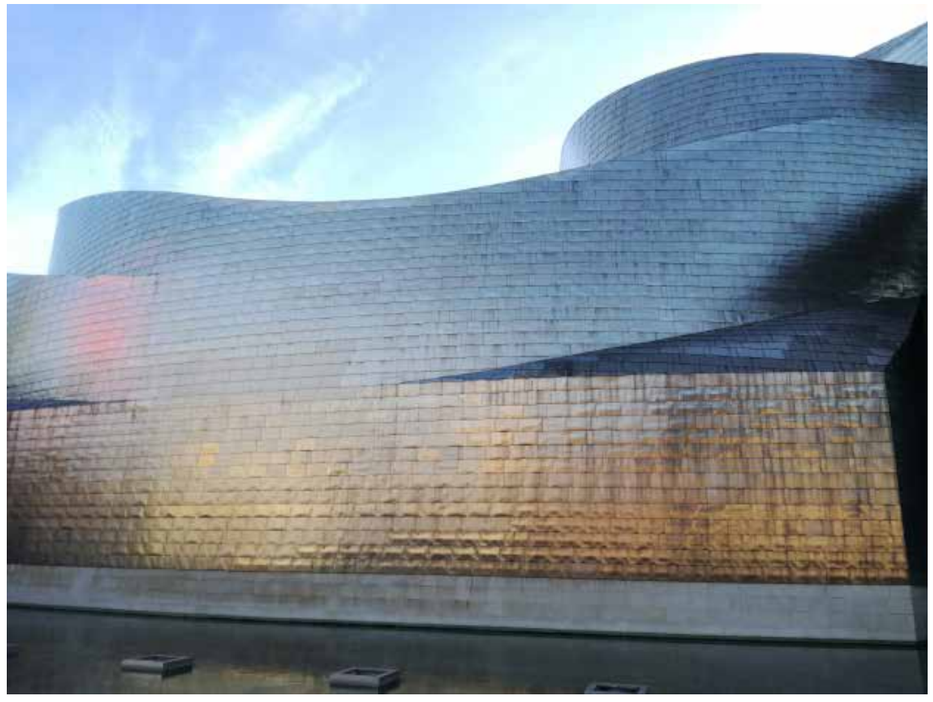

Figure 1.6: The GMB

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1.2 Problem statement

Pretoria West is a historic remnant, reminiscent of an industrial past. Although industries take up most of the urban form, there are precious open spaces that are underutilized, which can transform Pretoria West in to a more healthy and sustainable urban environment.

1.3 Hypothesis

The Bilbao Effect is a successful, sustainable approach to the regeneration of a post-industrial precinct. Landscape architecture will regenerate Pretoria West successfully with an intervention similar to the architectural approach of the Guggenheim Museum in Bilbao (within its context). A few questions that will guide the study are:

1. What defines the Bilbao Effect?

2. Is the Bilbao Effect a good means of Urban Regeneration?

3. Can the Bilbao Effect be translated into landscape architecture?

4. Can the Bilbao Effect be applied within a South African context, and particularly, when applied to a derelict urban site in Pretoria West?

1.4 Research question

How can a post-industrial precinct benefit from a landscape architectural intervention with an approach guided by the so-called “Bilbao Effect”?

1.5 Delimitations

Very little research has been done on landscape architecture and the Bilbao Effect. The purpose of the study is to identify design principles that will guide the author through to the technicalities of the design.

Numerous authors have conducted case studies about the projects that will be discussed. Their research and opinions are considered when the author makes an unbiased analysis of the project.



Figure 1.7: The GMB
Figure 1.8: (right) An image of the site in Pretoria West



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Figure 1.9: Arial photograph of a large part of the showgrounds in Pretoria West

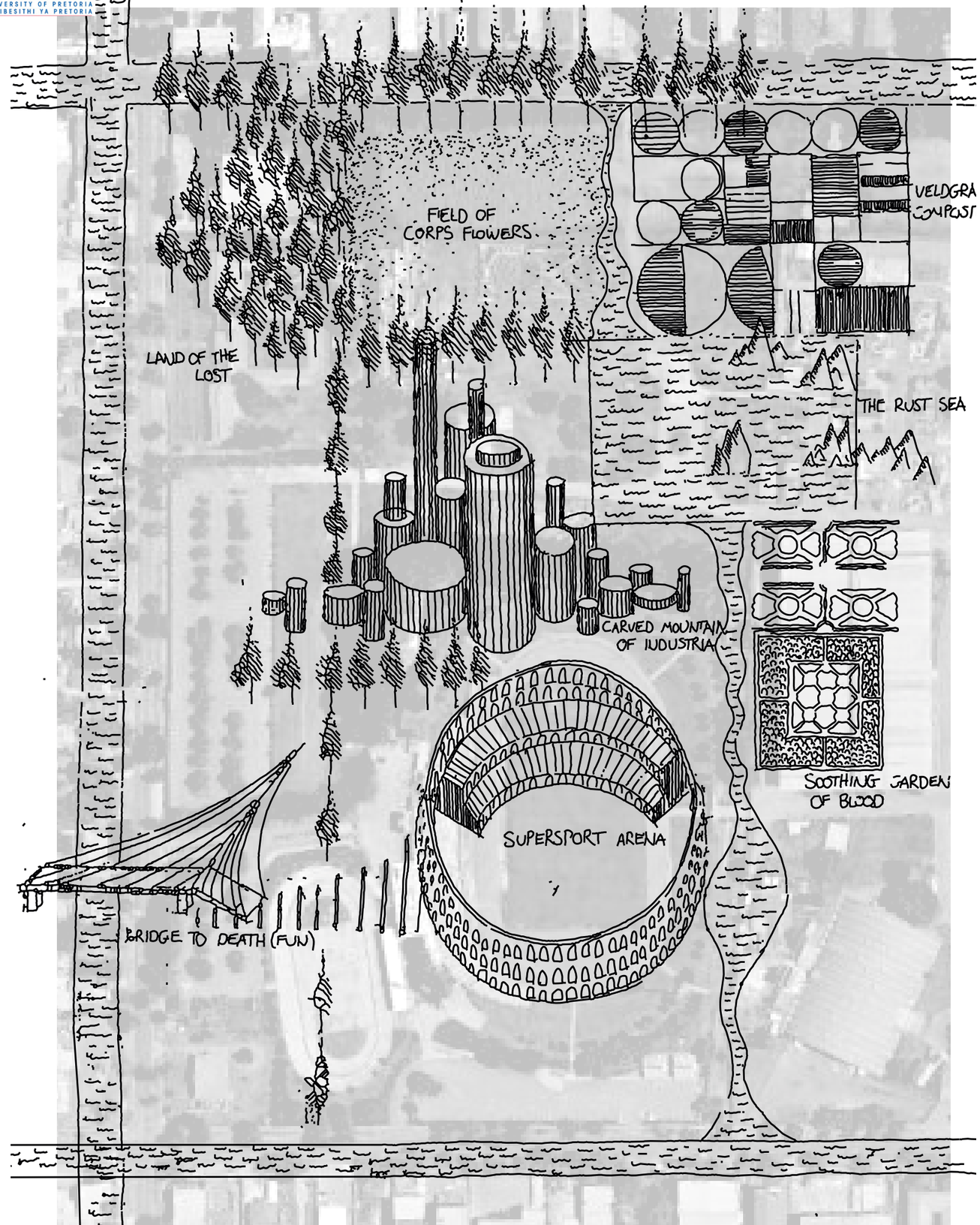

Figure 1.10: Studio exercise envisioning the landscape as a palimpsest of stories forming a coherent landscape becoming a destination

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2 Theoretical argument

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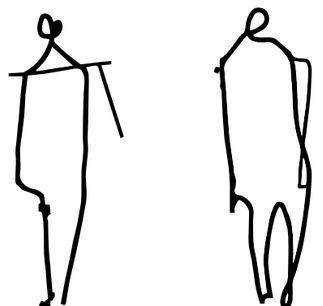

The following section of the dissertation comprises of a literature study deconstructing the Bilbao Effect. Once the Bilbao Effect has been clarified and understood, three architecture case studies will be investigated in terms of their successes and shortcomings (one of which will be the Guggenheim Museum Bilbao). After the case studies have been investigated and conclusions have been made, a new method will be designed to deconstruct landscape architecture case studies. The landscape architecture projects will be selected from popular projects around the world which have successfully regenerated their precincts, essentially creating a 'Bilbao Effect' of their own. Conclusions drawn from the investigations will form the basis of principles to guide the design intervention in Pretoria West.

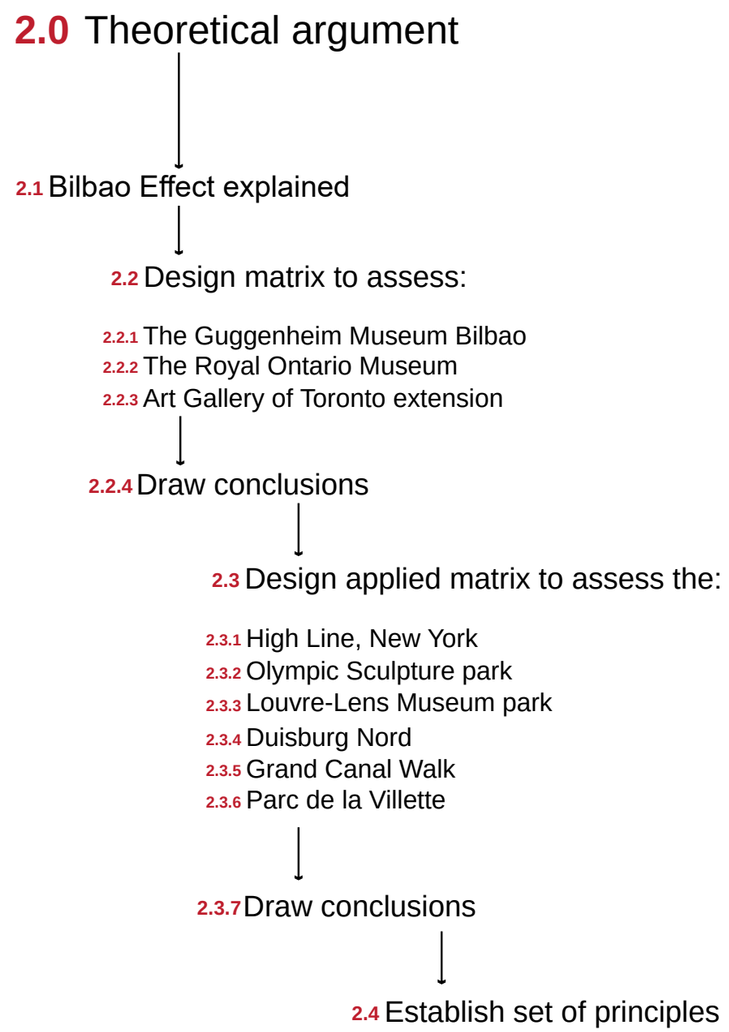

Figure 2.1: Flow chart outlining the focus points and intentions of this study

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Methodology

This section aims to answer the question, what is it about the Bilbao Effect that makes it so successful?

This section starts with a brief literature review on the Bilbao Effect and the Guggenheim Museum. To determine exactly what it is that makes the Bilbao Effect so successful, the Guggenheim Museum Bilbao (GMB) will be scrutinized along with two other buildings with similar intentions to the GMB (the Royal Ontario Museum and the Art Gallery of Toronto extension), in terms of regenerating their precinct. The study on the GMB and two more buildings are done to narrow down the scope of investigation for the next study, the most important study.

A method is designed to break down six landscape architectural projects in order to fully understand the Bilbao Effect in landscape architecture. The best way to draw objective and accurate conclusions from the case studies is to distil each case study into a set of quantifiable data. Once the data has been retrieved the data will be analysed.

This set of data must be designed purposefully in order for it to compare to other sets, essentially seeking differences and similarities between the sets of data. The resemblance of the data is thus essential to the study as the designed intervention in Pretoria West will be based on the findings of this chapter.

Limitations

Although this method attempts to represent the case studies in a clinical, non-biased manner, there are a few shortcomings. Very few research studies contain information linking the Bilbao Effect with landscape architecture. The three architectural case studies provided an easy choice as Argyle (2017) states that numerous authors consider them to mimic the Bilbao Effect. The landscape architecture case studies were chosen by the author after considering projects from around the world that have regenerated their precincts. Projects considered popular by both the public and designers were strongly considered before choosing the six projects. Projects (considered as precedents) within the landscape architecture profession were also considered.

The projects were scored according to quantifiable, tangible factors (such as proximity to transport nodes and the size of the landscape). The categories that include information regarding the physical design principles and the designer's approach were scored by the author according to his understanding of the project.

After every case study a list of references will represent the information used for that section.

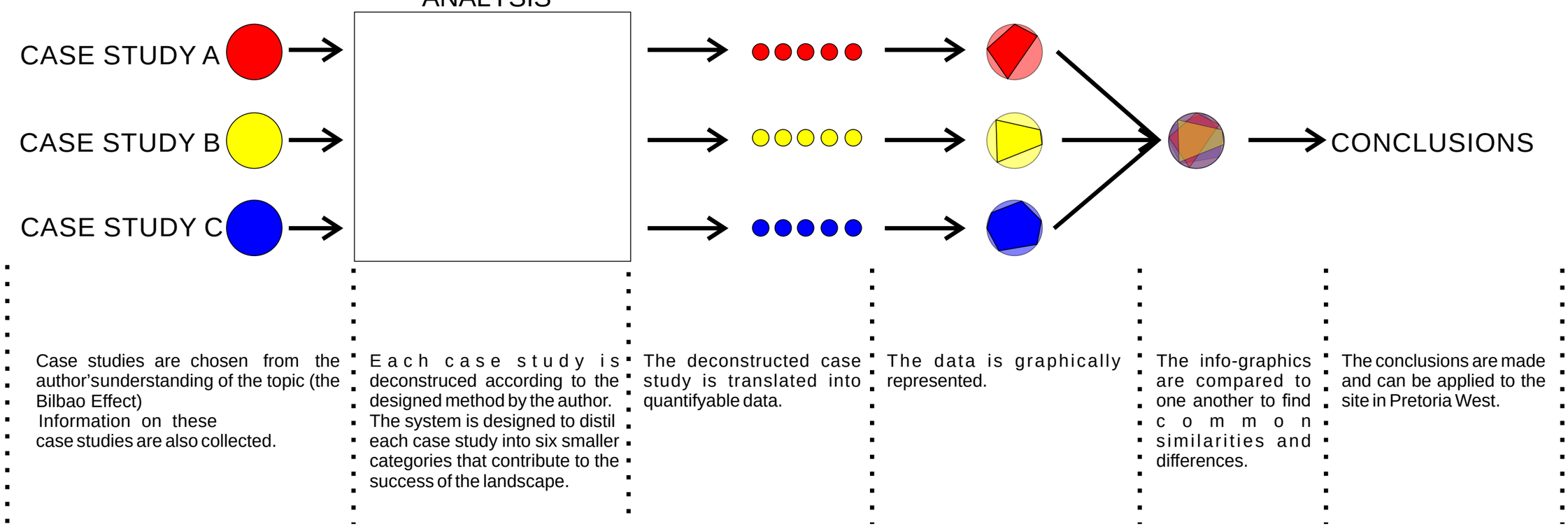

Figure 2.2: Flow chart explaining the process of deconstructing the various case studies

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2.1 The Bilbao Effect

The city of Bilbao was in a similar physical, cultural, and economic depression as Pretoria West finds itself in today. For some time, very little to no stakeholders have invested in the western quadrant of Pretoria as the energy of the city has moved to the east. Bilbao underwent a major transformation from a post-industrial city to a vibrant cultural and economically stable city. This was largely due to the masterpiece of a building called the Guggenheim Museum Bilbao design by Frank Gehry.

This dissertation will not only thoroughly explain the Bilbao effect, but will also greatly focus on the GMB, why is it a successful building, and why is it a good urban catalyst? Numerous writings, (Areso 2007), (Franklin 2016), (Gonzalez 2011), (Safdie 2010) focus on the physical effect the GMB has had on the Basque region, concurring on the fact that the Bilbao effect is a positive catalytic reaction that economically and culturally regenerated the city of Bilbao. This section will look at two buildings erected with the same intentions of regenerating a precinct and compare them to the GMB to reinforce conclusions.

This dissertation seeks to understand whether the Bilbao effect can be replicated in the form of a designed landscape in the suburb of Pretoria West. The majority of this section will thus focus on well-known landscape architectural projects that have managed to regenerate a post-industrial city/precinct i.e. transposing the Bilbao Effect to a landscape context.

"The city of Bilbao is situated on the banks of the Nervión, a tidal river. The climate in Bilbao is milder than in most other parts of the peninsula, rarely falling below freezing in winter, or rising above 35ºC in summer. There is also more rain, which is a mixed blessing.

The green hills of Bilbao are a welcome relief after an extended stay in the dry plains in the south, but planning a day at the beach is more risky. The population of Bilbao is just over 372,000, but within the metropolitan area there are over 1,000,000 inhabitants. Bilbao is divided into eight district areas: Deusto, Uribarri, Otxarkoaga/Txurdinaga, Begoña, Ibaiondo, Abando, Rekalde and Basurto/ Zorroza. The end of the nineteenth century and the early twentieth century witnessed the rise of Bilbao as an economic power within the Basque Country and Spain. Mining, shipbuilding, and other iron industries led its economy for several decades and attracted large numbers of inhabitants to the growing city." (Gil 2017)

The steel industry collapsed in the mid -1970's and 1980's and caused major social, economical and ecological problems (Gil 2017). In 1983 a catastrophic flood was seen as the last nail in the coffin (Gil 2017). The flood affected the entire Basque country, Burgos and Cantabria. Transportation, electricity and gas services, drinking water, food, telephone, and many other basic services were severely affected (Gil 2017). This catastrophe made the city rethink their strategy plan for the future of Bilbao. According to Gil (2017), multiple large-scale initiatives, ambitious unbuilt proposals, and remarkable built projects took place during this period that would culminate with the opening of the the Guggenheim Museum Bilbao on October 19, 1997.

According to Argyle (2017), Architects such as Eric Owen Moss, Daniel Libeskind, Patrik Schumacher and Jürgen Mayer all praise the GMB as a succesful building and urban catalyst. The researcher sides with the majority of critics, who consider that it is a successful, innovative, and pleasing building to look at. It was mentioned earlier that the regeneration of Bilbao due to the GMB is not debatable as it was a success. This is an undeniable fact. What is debatable is why the museum has attracted over 9 million visitors since opening in 1997. The building transformed Bilbao from a functional , modernist industrial city, to a more humanistic , accessible city.



Figure 2.3: Bilbao floods



Figure 2.4: Bilbao floods



Figure 2.5: Bilbao floods



Figure 2.6: Bilbao floods

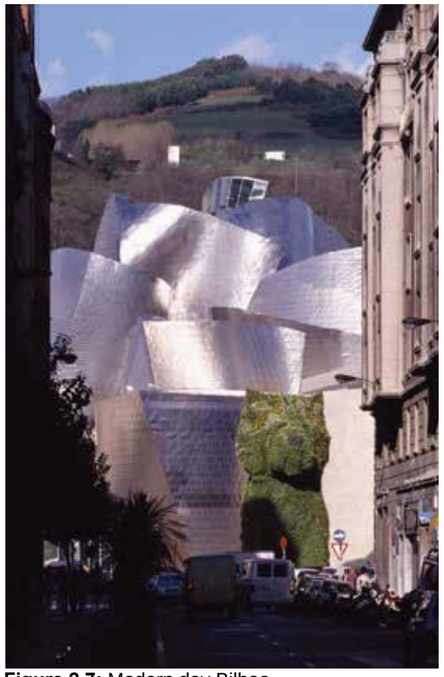

Figure 2.7: Modern day Bilbao

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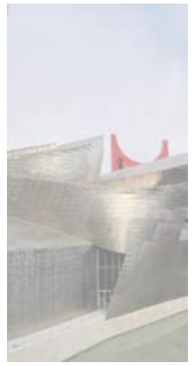
1

The Guggenheim Museum Bilbao, Frank Gehry

The GMB can be seen as expressive abstraction in some manner, Gehry expresses the vibrant and 'hot-headed' Spanish culture through the manifestation of voluminous forms reading as one beautiful unit (Gil 2017). It is evident that the Guggenheim Museum Bilbao did not break any design principles. The case study shows that numerous principles such as contrast, hierarchy, balance etc. were considered as part of the design of the building. The materials used do stand in contrast to its surrounding context, but this is not arbitrary. The materials used (titanium, steel and stone) are synonymous to Bilbao's reign during the industrial era. Gehry did therefore not simply respond to the character of the site, but to the character of the entire Basque region. No innovative program is present, Museums have been existent for hundreds of years. It is, however the physical building taking the form of an artwork that is innovative and 'exciting'. It is certainly clear that the strong concept of Gehry can be experienced through the voluminous form the building renders. Ignoring that which people perceive as being a

2





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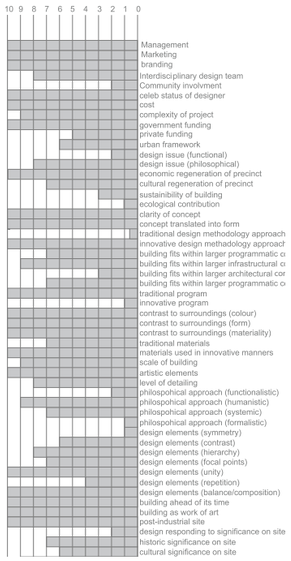

A brief literature study gathering information regarding the selected case study.

Images of the building

The information translated into a info-graphic. How the info-graphic was set up is explained on the following page

Figure 2.8: Graphic summarising the process of deconstructing the architecture case studies

2.2 The Matrix

A matrix system was set up to graphically deconstruct the three buildings and all the stakeholders involved, to determine the factors contributing to the Bilbao Effect. Displayed in Figure 2.8 are all the factors that might play a role in the success of the building, ranging from the physical design of the building to the management and location of the building. The purpose of this matrix is, through a comparative analysis, to compare the different case studies and come to conclusions that will lead to a more complete, accurate matrix, for the landscape architecture case studies.

Questions formulated by the author to determine all the factors that might possibly contribute to the success of the building. Why does (or doesn't) this building succesfully recreate a Bilbao Effect?	Questions deconstructed into factors that can be given a score out of 10 in order for the case studies to be comparable with one another	A score between 0 and 10 is given to each factor according to author's understanding of the research (high … medium … low)
Is the building succesful because it is managed as a corporation?	management	10 9 8 7 6 5 4 3 2 1 0
	marketing	10 9 8 7 6 5 4 3 2 1 0
	branding	10 9 8 7 6 5 4 3 2 1 0
How much funds where available for this project?	Interdisciplinary design team	10 9 8 7 6 5 4 3 2 1 0
	community involvment	10 9 8 7 6 5 4 3 2 1 0
	celeb status of designer	10 9 8 7 6 5 4 3 2 1 0
	cost	10 9 8 7 6 5 4 3 2 1 0
	complexity of project	10 9 8 7 6 5 4 3 2 1 0
	government funding	10 9 8 7 6 5 4 3 2 1 0
	private funding	10 9 8 7 6 5 4 3 2 1 0
Is the building part of a larger framework?	urban framework	10 9 8 7 6 5 4 3 2 1 0
Is the building a necessity?	design issue (functional)	10 9 8 7 6 5 4 3 2 1 0
	design issue (philosophical)	10 9 8 7 6 5 4 3 2 1 0
In what way is the precinct regenerated?	economic regeneration of precinct	10 9 8 7 6 5 4 3 2 1 0
	cultural regeneration of precinct	10 9 8 7 6 5 4 3 2 1 0
	sustainibility of building	10 9 8 7 6 5 4 3 2 1 0
	ecological contribution	10 9 8 7 6 5 4 3 2 1 0
Does the building have a concept?	clarity of concept	10 9 8 7 6 5 4 3 2 1 0
	concept translated into form	10 9 8 7 6 5 4 3 2 1 0
The approach of the design methodology, is it innovative or traditional?	traditional design methodology approach	10 9 8 7 6 5 4 3 2 1 0
	innovative design methadology approach	10 9 8 7 6 5 4 3 2 1 0
Is the building simply put on site or responsive to some contextual infrastructure?	building fits within larger programmatic context	10 9 8 7 6 5 4 3 2 1 0
	building fits within larger infrastructural context	10 9 8 7 6 5 4 3 2 1 0
	building fits within larger architectural context	10 9 8 7 6 5 4 3 2 1 0
	building fits within larger programmatic context	10 9 8 7 6 5 4 3 2 1 0
Does the program of the building have something to do with people visiting the building?	traditional program	10 9 8 7 6 5 4 3 2 1 0
	innovative program	10 9 8 7 6 5 4 3 2 1 0
Is the building in contrast to its surroundings?	contrast to surroundings (colour)	10 9 8 7 6 5 4 3 2 1 0
	contrast to surroundings (form)	10 9 8 7 6 5 4 3 2 1 0
	contrast to surroundings (materiality)	10 9 8 7 6 5 4 3 2 1 0
What materials have been used by the designer?	traditional materials	10 9 8 7 6 5 4 3 2 1 0
	materials used in innovative manners	10 9 8 7 6 5 4 3 2 1 0
What is the scale of the building?	scale of building	10 9 8 7 6 5 4 3 2 1 0
	artistic elements	10 9 8 7 6 5 4 3 2 1 0
	level of detailing	10 9 8 7 6 5 4 3 2 1 0
What the philosophical stance of the designer?	philospohical approach (functionalistic)	10 9 8 7 6 5 4 3 2 1 0
	philospohical approach (humanistic)	10 9 8 7 6 5 4 3 2 1 0
	philospohical approach (systemic)	10 9 8 7 6 5 4 3 2 1 0
	philospohical approach (formalistic)	10 9 8 7 6 5 4 3 2 1 0
Does the building adhere to design principles?	design elements (symmetry)	10 9 8 7 6 5 4 3 2 1 0
	design elements (contrast)	10 9 8 7 6 5 4 3 2 1 0
	design elements (hierarchy)	10 9 8 7 6 5 4 3 2 1 0
	design elements (focal points)	10 9 8 7 6 5 4 3 2 1 0
	design elements (unity)	10 9 8 7 6 5 4 3 2 1 0
	design elements (repetition)	10 9 8 7 6 5 4 3 2 1 0
	design elements (balance/composition)	10 9 8 7 6 5 4 3 2 1 0
Is the building ahead of it's time?	building ahead of its time	10 9 8 7 6 5 4 3 2 1 0
	building as work of art	10 9 8 7 6 5 4 3 2 1 0
Does the design respond to the site?	post-industrial site	10 9 8 7 6 5 4 3 2 1 0
	design responding to significance on site	10 9 8 7 6 5 4 3 2 1 0
	historic significance on site	10 9 8 7 6 5 4 3 2 1 0
	cultural significance on site	10 9 8 7 6 5 4 3 2 1 0
	geographic significance of site	10 9 8 7 6 5 4 3 2 1 0
	the new element modifies the elements around it	10 9 8 7 6 5 4 3 2 1 0
	existing elements are enhanced or transformed	10 9 8 7 6 5 4 3 2 1 0
	the catalytic reaction does not damage its context	10 9 8 7 6 5 4 3 2 1 0
	an understanding of the context	10 9 8 7 6 5 4 3 2 1 0
Is the building controversial?	did the building challenge architecture	10 9 8 7 6 5 4 3 2 1 0
Is the building an abstraction of some sort?	organic forms	10 9 8 7 6 5 4 3 2 1 0
	artistic forms	10 9 8 7 6 5 4 3 2 1 0
	forms easily composed	10 9 8 7 6 5 4 3 2 1 0
	strong,rigid lines	10 9 8 7 6 5 4 3 2 1 0
	building is an abstraction of existing phenomenon	10 9 8 7 6 5 4 3 2 1 0
	building is abstraction of an idea/ideaology	10 9 8 7 6 5 4 3 2 1 0

Figure 2.8 (continued): Explaining the categories under which the case studies will be scored

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2.1.1 The Guggenheim Museum Bilbao, Frank Gehry

The GMB can be seen as expressive abstraction in some manner, Gehry expresses the vibrant and 'hot-headed' Spanish culture through the manifestation of voluminous forms reading as one beautiful unit (Gil 2017). It is evident that the Guggenheim Museum Bilbao did not break any design principles. The case study shows that numerous principles such as contrast, hierarchy, balance etc. were considered as part of the design of the building. The materials used do stand in contrast to its surrounding context, but this is not arbitrary. The materials used (titanium, steel and stone) are synonymous with Bilbao's reign during the industrial era (Safdie 2010). However, Gehry didn't simply respond to the character of the site, but to the character of the entire Basque region. No innovative program is present, museums have been existent for hundreds of years. It is, however, the physical building taking the form of an artwork that is innovative and 'exciting'. It is certainly clear that the strong concept of Gehry can be experienced through the voluminous form that the building renders (Safdie 2010).

Ignoring that which people perceive as being a beautiful building, one looks at the GMB and thinks "how on earth was this created?" It is unlikely that another person could have come up with these shapes; the overall complexity of the project is certainly ahead of its time. It must be admired for something out of this world yet it is so much in place (Gil 2017).

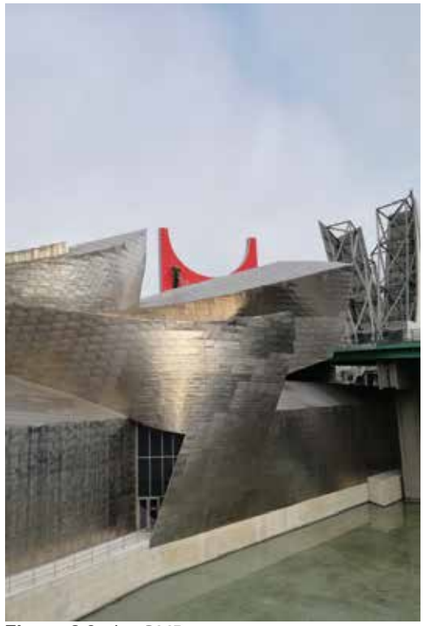

Figure 2.9: the GMB



Figure 2.10: the GMB

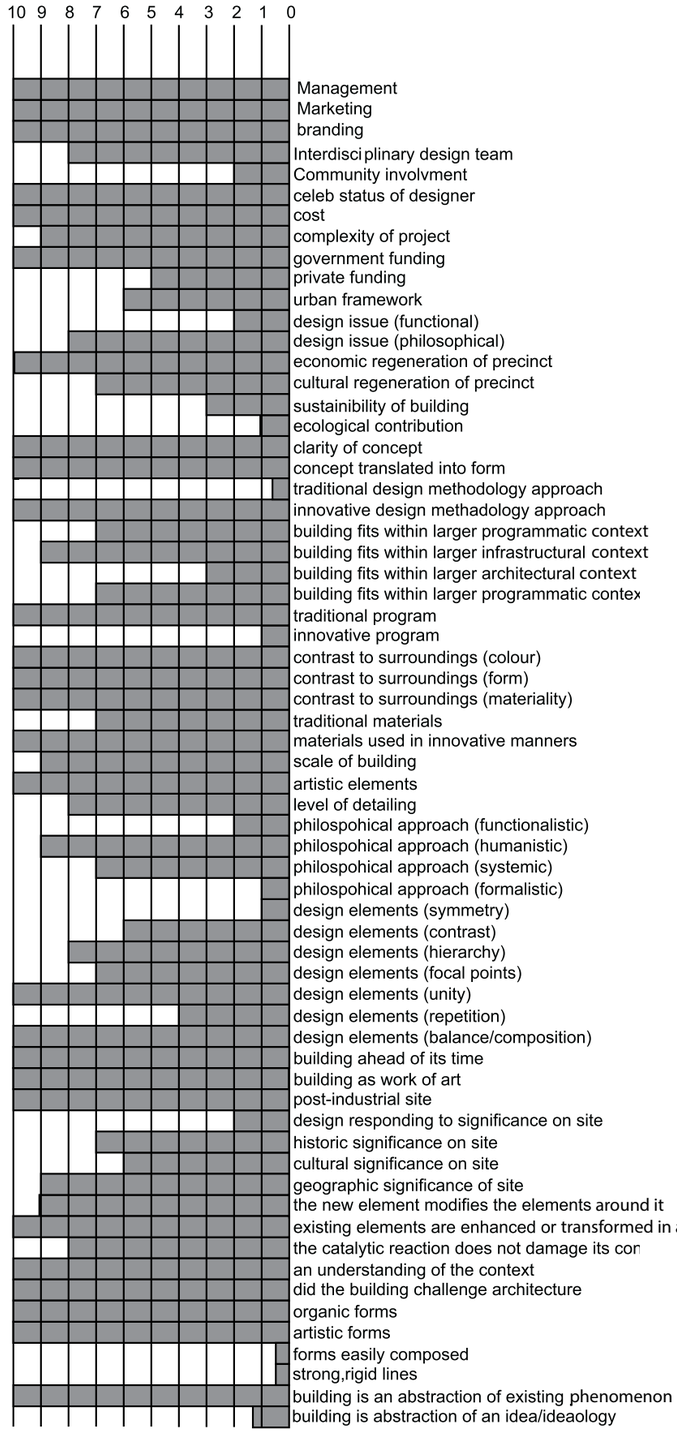

Figure 2.11: Info-graphic deconstructing the Guggenheim Museum Bilbao

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2.1.2 The Royal Ontario Museum, Daniel Libeskind

The extension to the Royal Ontario Museum was chosen as a second case study as many authors compared the GMB to the Royal Ontario Museum (ROM) as the intention was to regenerate not only the old museum, but the entire suburb. The reason the the ROM is compared to the GMB is that the ROM did not do a very successful job as an urban catalyst (Safdie 2010). A comparison of the two case studies will most definitely highlight the successes and failures of the two buildings.

At first glance of the building, one can tell a lot about it. Similar to the GMB the ROM also seems out of place as it competes for attention (Safdie 2010). The big difference, however, is that the ROM feels out of place as well. Not only did the community of Toronto despise the shapes of Libeskind, architectural writings do not assess the building favourably either (Safdie 2010). Libeskind challenged the way in which knowledge and artefacts were displayed throughout the centuries in a very linear fashion (as knowledge and artefacts were acquired over the years) (Safdie 2010). He did this by attaching "crystals" to a very old classical building. Yes, it is just as flashy as the GMB, but the composition of forms and lines are not done in a very harmonious way. Toronto is a city that likes to do things quietly and to be 'in the background' (Safdie 2010). Again, the ROM does not express or respect the approach of the local people. Also, the "crystals" shooting out of the building cannot compare to the complexity of the GMB's voluminous, soft lines. The ROM lacks the humanistic elements mentioned earlier.



Figure 2.12: The ROM



Figure 2.13: The ROM

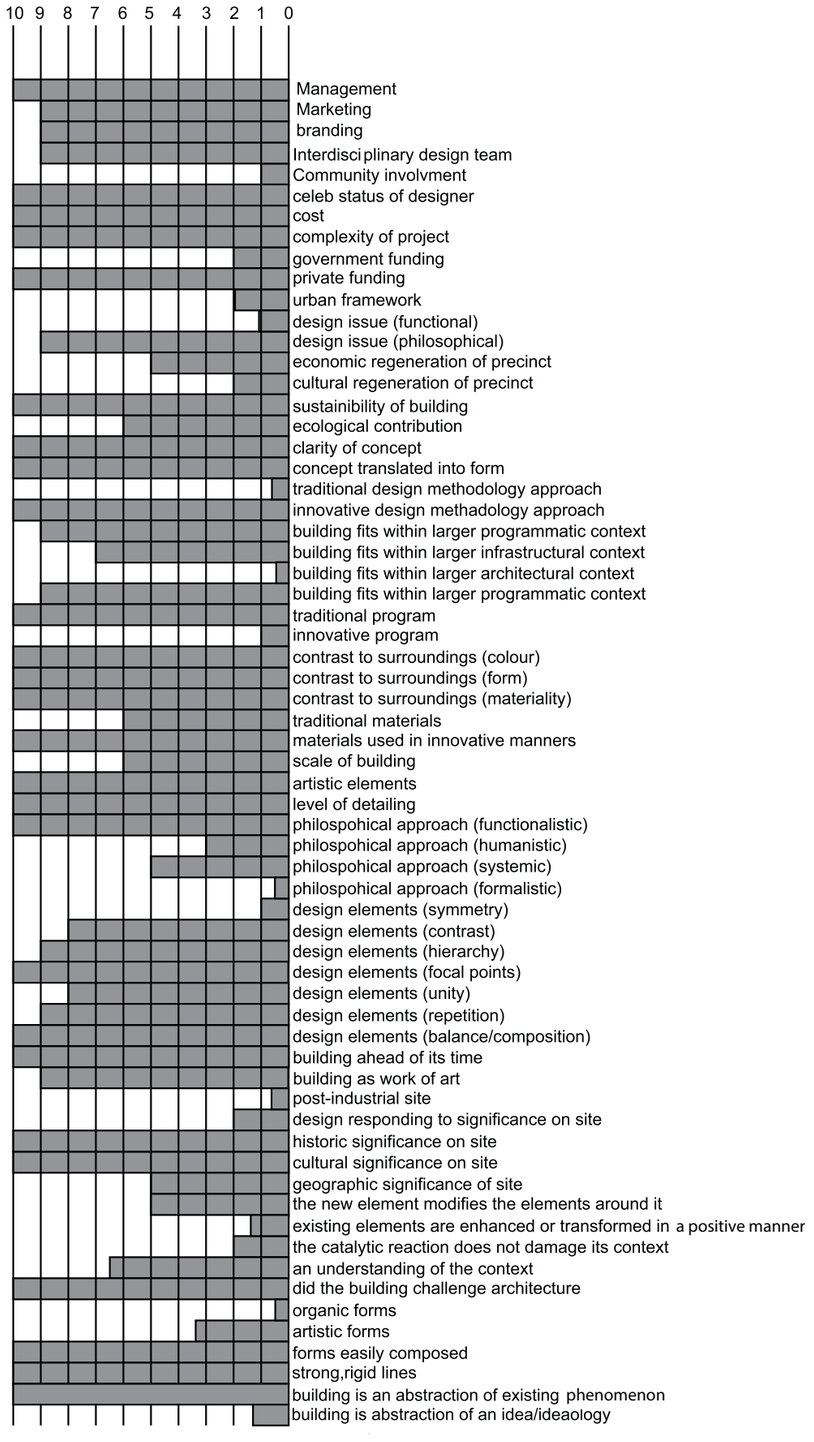

Figure 2.14: Info-graphic deconstructing the Royal Ontario Museum

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2.1.3 Art Gallery of Toronto extension, Frank Ghery

The last architectural case study was the extension to the Art Gallery of Toronto (AGO). Both projects (the AGO and ROM) involved the intervention of a contemporary extension to a historic Museum. Although the building takes on the shape of a crystal floating through the city, it is one of Gehry's most subtle works of architecture to that time. Gehry's famous manipulation of materials is prominent in this building. Probably the most renowned feature of the building is the interior timber staircase wandering through space. Visitors to the museum have described the space as being unexpectedly comfortable, in contrast to the ROM's illegible and wasted interior space. The glass façade is sloped down towards the bottom for pedestrians to experience the reflection of the Victorian and Georgian architecture across the street. Rather than shouting, the glass façade invites one into the gallery.

Once entered, the user experiences a child-like narrative, meandering through the timber staircase and flowing through the warm spaces. This building takes a stance in its surroundings without taking anything away from the adjacent historic buildings. It is a building that caters for the user experience rather than making a statement. The AGO's annual visitors echo the success of the building.



Figure 2.15: The Art Gallery of Toronto extension



Figure 2.16: The Art Gallery of Toronto extension

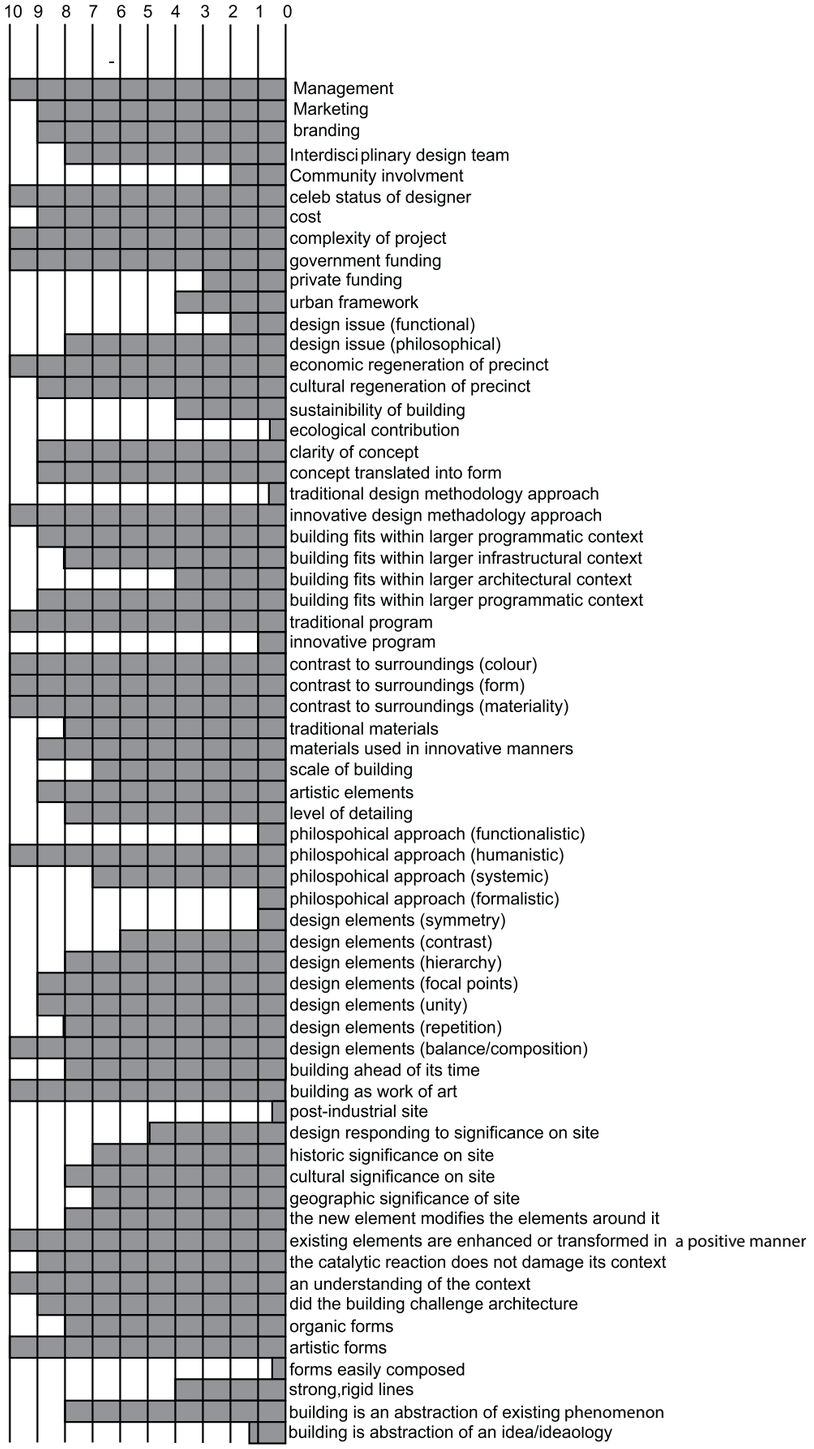

Figure 2.17: Info-graphic deconstructing the Art Gallery of Toronto extension

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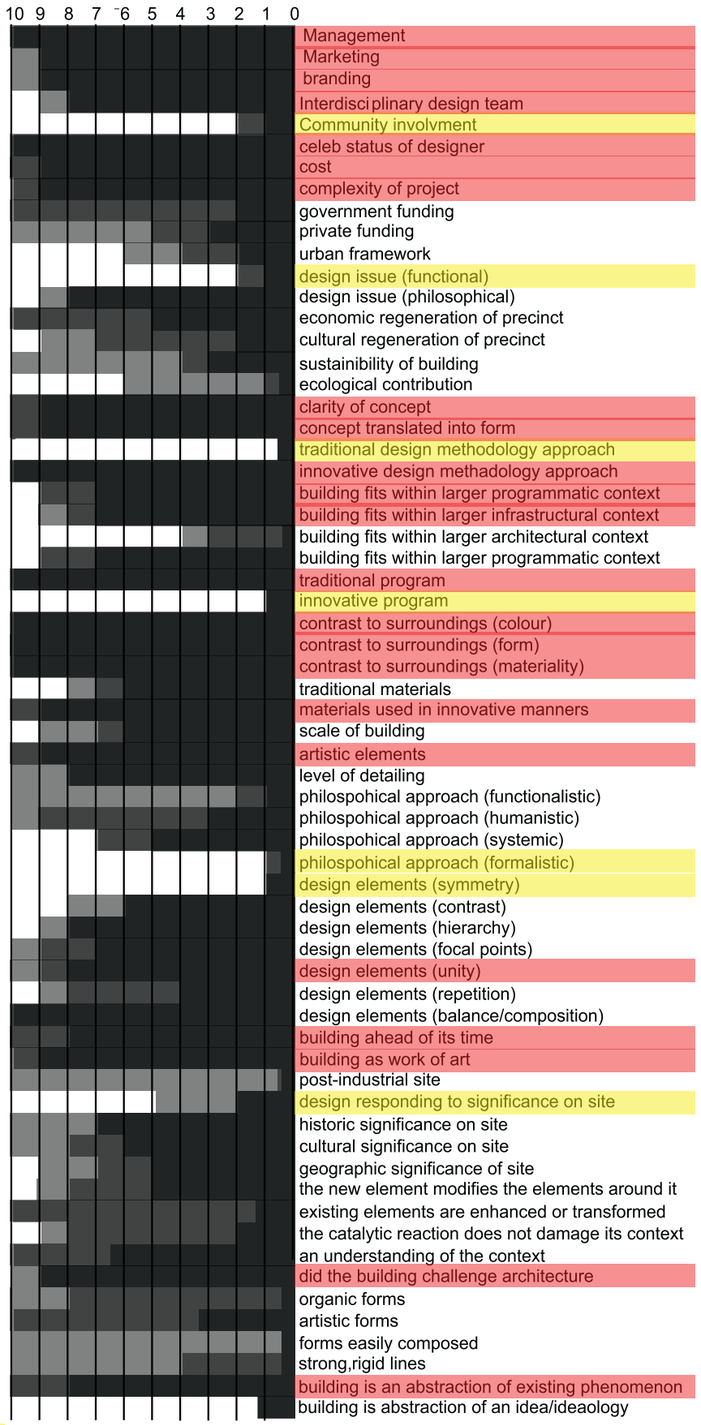


Figure 2.18: Highlighted are focal points of the more advanced matrixes for the landscape studies to follow

2.1.4 Findings

Derived from a synthesis of the data, in order for the building to recreate the Bilbao Effect, the following is required:

- It should be managed as a business in terms of the management, branding, and marketing of the building (and what happens inside the building).

- The building must be designed by a “celebrity” designer with a large amount of fees available for the project.

- A strong concept, clearly translated into the form of the building (not necessarily translated into the program).

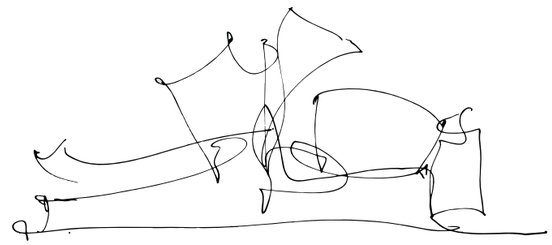
- The program does not need to be an innovative program, but rather the experience thereof should be innovative.

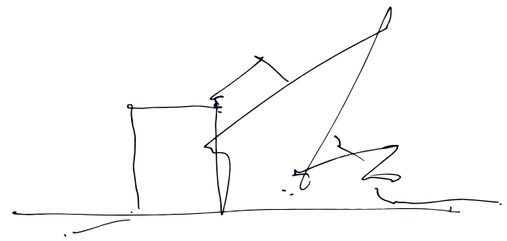
- It needs to stand in contrast to its surroundings in terms of colour, form, and materiality.

- It does not necessarily have to consist of new, innovative materials, but rather consist of traditional materials that are used in innovative manners.

- It challenges architecture in some manner, whether it is criticized or praised by pundits.

- It must be an abstraction of some sort.





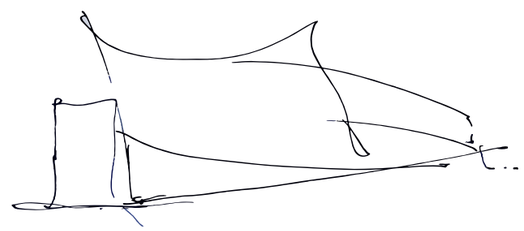


Figure 2.19: The GMB
Figure 2.20: The ROM
Figure 2.21: The AGO

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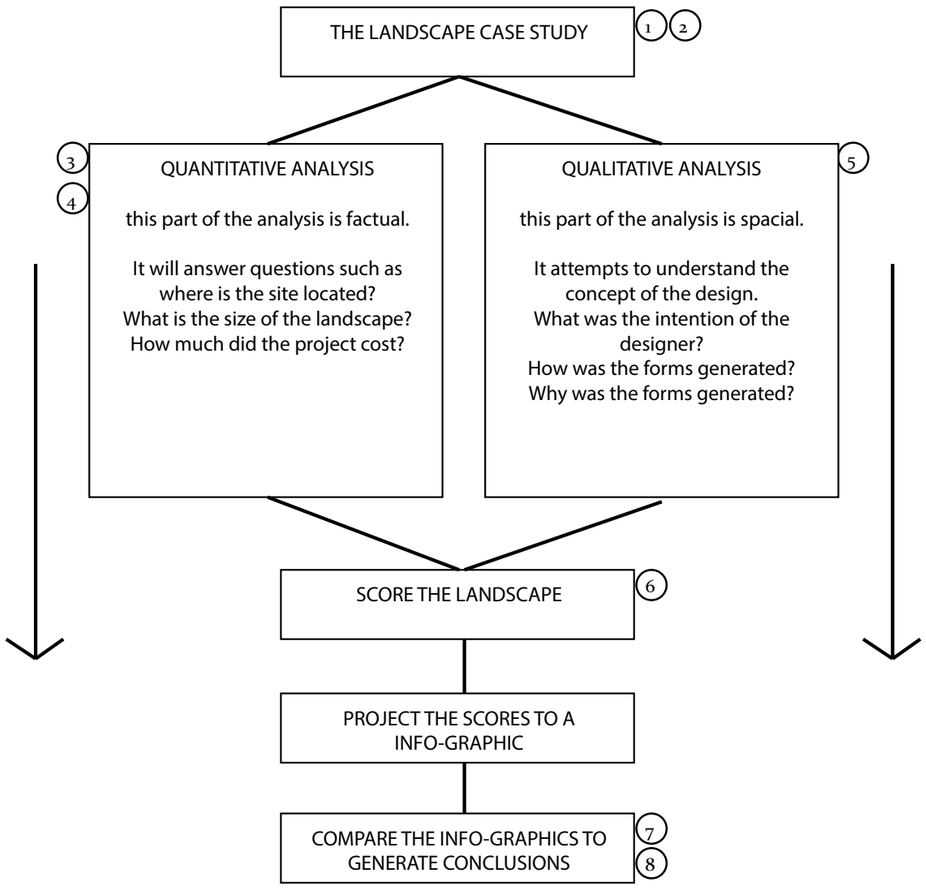
2.3 Landscape architecture case studies

The case studies conducted on landscape architecture projects were selected because of their similarities to the aim of the GMB to regenerate old post-industrial sites/cities. The criteria of the landscape projects differ slightly from the architectural case studies, as the intentions of the projects were to regenerate their precincts. The landscape projects will be scrutinized in more depth than the previous case studies. Figure 2.22 illustrates the steps taken to analyze the landscape projects.



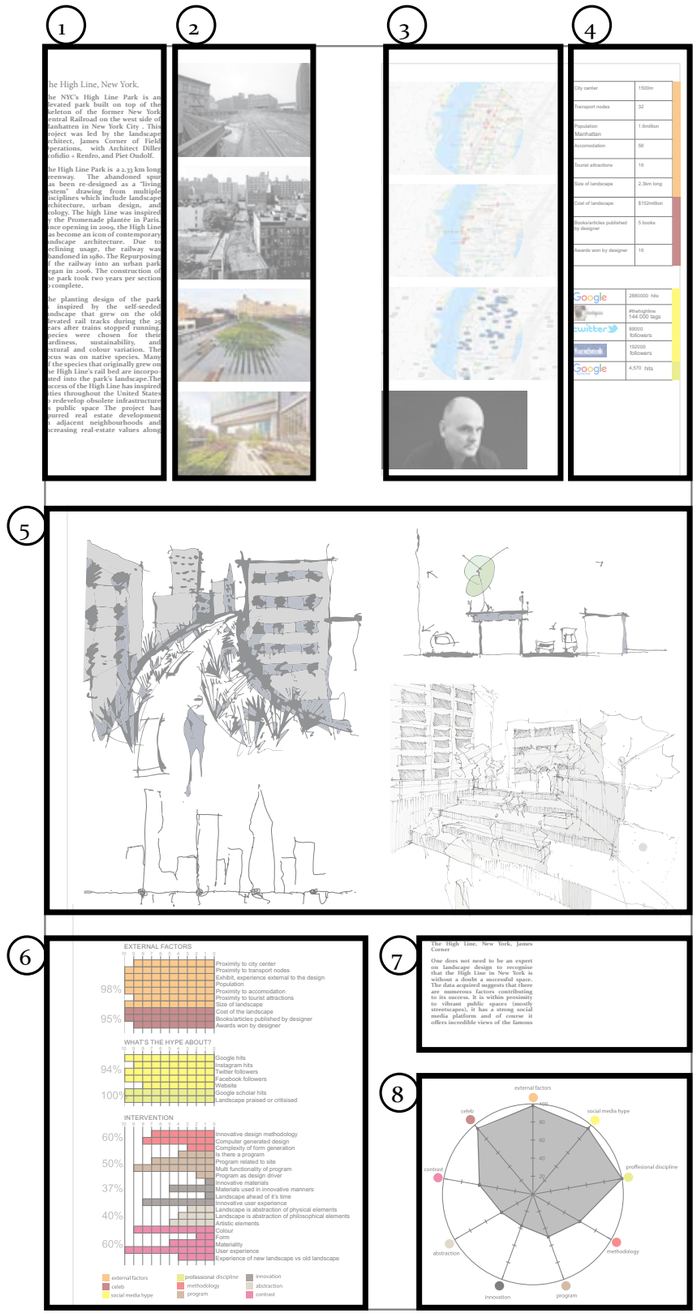


Figure 2.22 (top): Flow diagram explaining the process of analysing the landscape case studies

Figure 2.23 (right): Highlighted are the steps followed for conducting each landscape architecture case study

1. Introduction and description of the project
2. Images of the project
3. Snapshots from www.maps.google.co.za highlighting transportation nodes, accomodation and tourist hotspots within a radius of 3km from the site.
4. Tables containing information about the site. www.facebook.com; www.twitter.com; www.instagram.com
5. Qualitative sketches and spatial investigations of the site
6. Information projected onto the info-graphic. Info-graphic explained on the next page
7. A brief concluding statement regarding the site and the info-graphic
8. The information is projected onto a chart, summarizing the project

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external factors

external factors

0km – 3km – 6km	km	Proximity to city center
40 – 20 – 0	number of bus, metro, train or tram stops	Proximity to transport nodes
high – low	authors discretion	Exhibit, experience external to the design
2,5 – 1,25 – 0	million	Population
60 – 30 – 0	as found on www.booking.com	Proximity to accomodation
20 – 10 – 0	as found on www.maps.google.com	Proximity to tourist attractions
230 – 115 – 0	hectares	Size of the landscape

celeb

152 – 125 – 0	million $	Cost of the landscape
40 – 20 – 0		Books/articles published by designer
40 – 20 – 0		Awards won by designer

whats the hype about?

social media hype

2,8 – 1,4 – 0	million	Google hits
150 000 – 25 000 – 0	amount of images with the hashtag #(name_of_park)	Instagram hits
23 000 – 11 500 – 0	amount of people following the official page of the park	Twitter followers
20 – 10 – 0	amount of people following the official page of the park	Facebook followers
Yes – No		Does the park have a website?

proffesional discipline

46 000 – 23 000 – 0		Google Scholar hits
Praised – Critisised	according to the various authors	Landscape praised or criticised

design intervention

methodology

high – medium – low	the amount of new, advanced processes followed (design approach)
	Innovative design methodology
high – medium – low	high computer (technological) input to design
	Computer generated design
high – medium – low	
	Complexity of form generation

program

Yes – No	
	Is the design based around the program?
high – medium – low	the influence the program had on the physical design
	Program related to site
high – medium – low	the amount of programs the site can cater for
	Multi-functionality of program
40 – 20 – 0	the program's influence on the concept development
	Program as design driver

innovation

high – medium – low	amount of new, advanced materials (apposed to traditional materials)
	Innovative materials
high – medium – low	amount of new, advanced materials joining and composition of materials
	Materials used in innovative manners
yes – no	
	Landscape ahead of it's time
high – medium – low	traditional program on site experienced in a new and advanced manner
	Innovative user experience

abstraction

high – medium – low	contains abstracted, re-interpreted elements from the site or the surrounding area
	Landscape is abstraction of physical elements
high – medium – low	contains abstracted, re-interpreted elements derived from an idea, ideology, topic or paradigm
	Landscape is abstraction of philosophical elements
high – medium – low	amount of artistic elements within the landscape
	Artistic elements

contrast

high – medium – low	contrast relative to it's surroundings
	Contrast: Colour
high – medium – low	contrast relative to it's surroundings
	Contrast: Form
high – medium – low	contrast relative to it's surroundings
	Contrast: Materiality
high – medium – low	contrast relative to it's surroundings
	Contrast: User experience
new – old	
	Experience of new landscape vs old landscape

Figure 2.24 (top and right): A detailed legend explaining how the projects are scored within their categories

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2.3.1 The High Line, New York, James Corner

The NYC's High Line Park is an elevated park built on top of the skeleton of the former New York Central Railroad on the west side of Manhattan in New York City. This project was led by the landscape architect, James Corner, of Field Operations, with Architect Diller Scofidio and Renfro, and Piet Oudolf.

The High Line park is a 2.33 km long greenway. The abandoned spur has been re-designed as a "living system," drawing from multiple disciplines which include landscape architecture, urban design, and ecology (Corner 2014). The high Line was inspired by the Promenade plantèe in Paris.

Since opening in 2009, the High Line has become an icon of contemporary landscape architecture (Keller 2016). Due to declining usage, the railway was abandoned in 1980. The repurposing of the railway into an urban park began in 2006. The construction of the park took two years per section to complete (Keller 2016).

The planting design of the park is inspired by the self-seeded landscape that grew on the old elevated rail tracks during the 25 years after trains stopped running (Corner 2014). Species were chosen for their hardiness, sustainability, and textural and colour variation. The focus was on native species. Many of the species that originally grew on the High Line's rail bed are incorporated into the park's landscape (Corner 2014).

The success of the High Line has inspired cities throughout the United States to redevelop obsolete infrastructure as public space (Keller 2016). The project has spurred real estate development in adjacent neighbourhoods and increased real-estate values along the route (Keller 2014). Since September 2014, the park attracted nearly five million visitors annually (Keller 2016).



Figure 2.25: Image of the site prior to the intervention



Figure 2.26: Image of the site prior to the intervention



Figure 2.27: Image of the site after the landscape intervention



Figure 2.28: Image of the site after the landscape intervention



Figure 2.29: Transportation nodes near the site (3km radius)



Figure 2.30: Tourist hotspots near the site (3km radius)

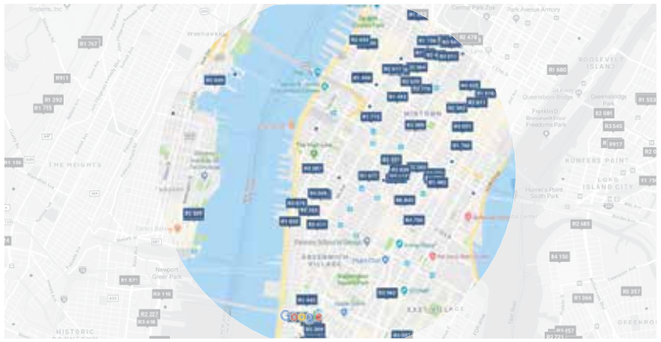

Figure 2.31: Accomodation near the site (3km radius)



Figure 2.32: James Corner

1	City center	1500m
2	Transport nodes	32
3	Population Manhattan	1,664,727
4	Accomodation	56
5	Tourist attractions	16
6	Size of landscape	2.3km long
7	Cost of landscape	$152million
8	Books published by designer	5 books
9	Awards won by designer	16

10	Google	2 880 000 hits
11	Instagram	#thehighline 144 000 tags
12	twitter	89 000 followers
13	facebook	192 000 followers
14	Google Scholar	4 570 hits

1 https://www.maps.google.co.za
2 https://www.maps.google.co.za
3 https://www.citypopulation.de/php/usa-newyorkcity.php
4 https://www.maps.google.co.za
5 https://www.maps.google.co.za
6 https://www.google.co.za
7 https://www.nytimes.com/2009/06/09/arts/design/09highline-RO.html
8 https://www.books.google.co.za
9 https://archinect.com/jcfo
10 https://www.google.co.za
11 https://www.instagram.com
12 https://www.twitter.com
13 https://www.facebook.com
13 https://www.scholar.goolge.co.za

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Figure 2.33: Perspective of a typical walkway between the buildings

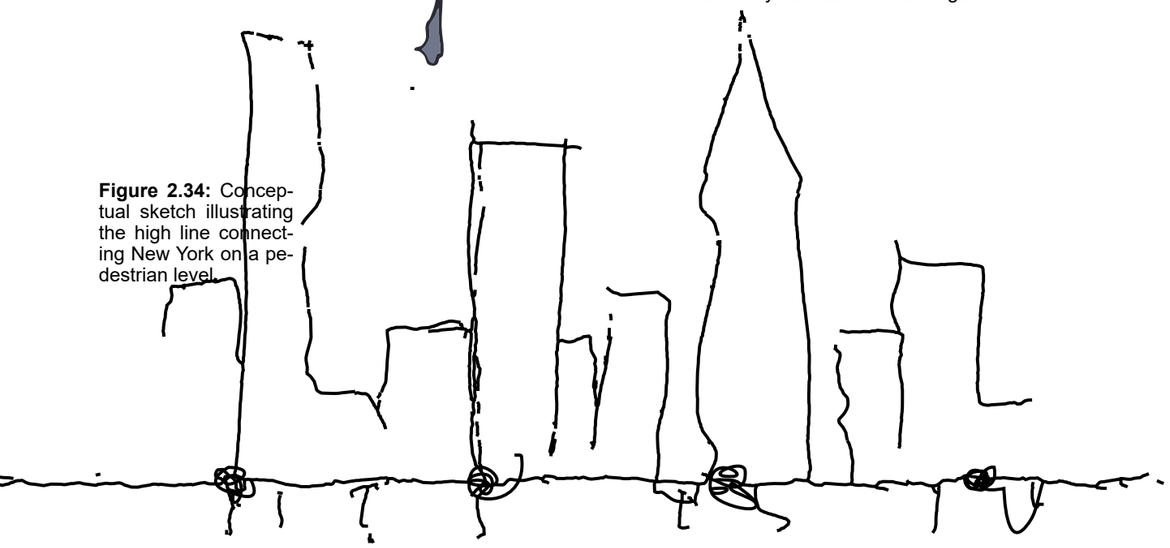

Figure 2.34: Conceptual sketch illustrating the high line connecting New York on a pedestrian level.

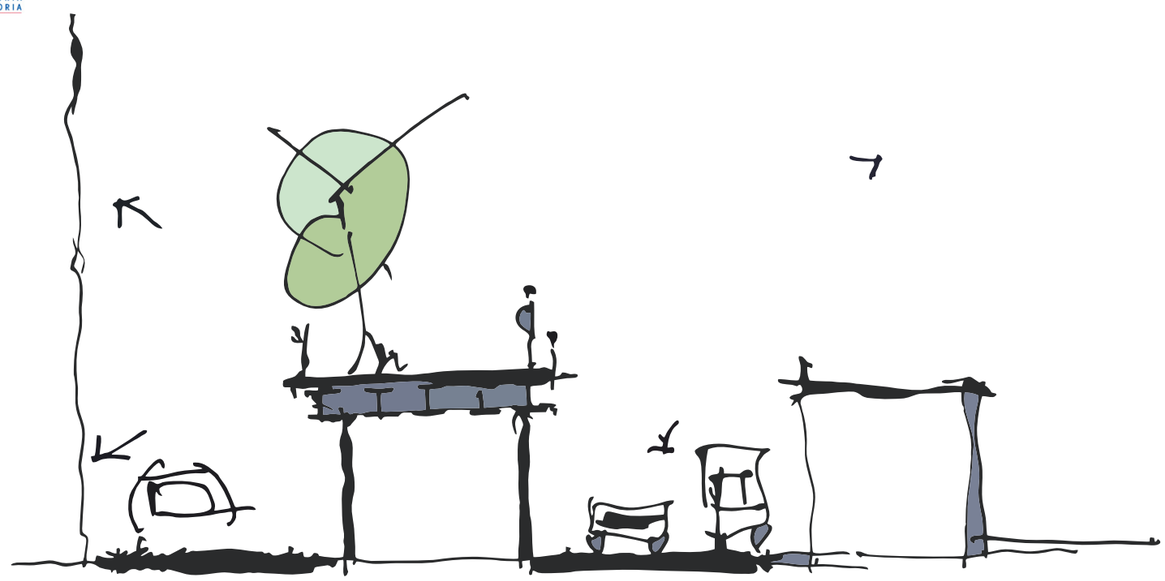

Figure 2.35: Section through the High Line

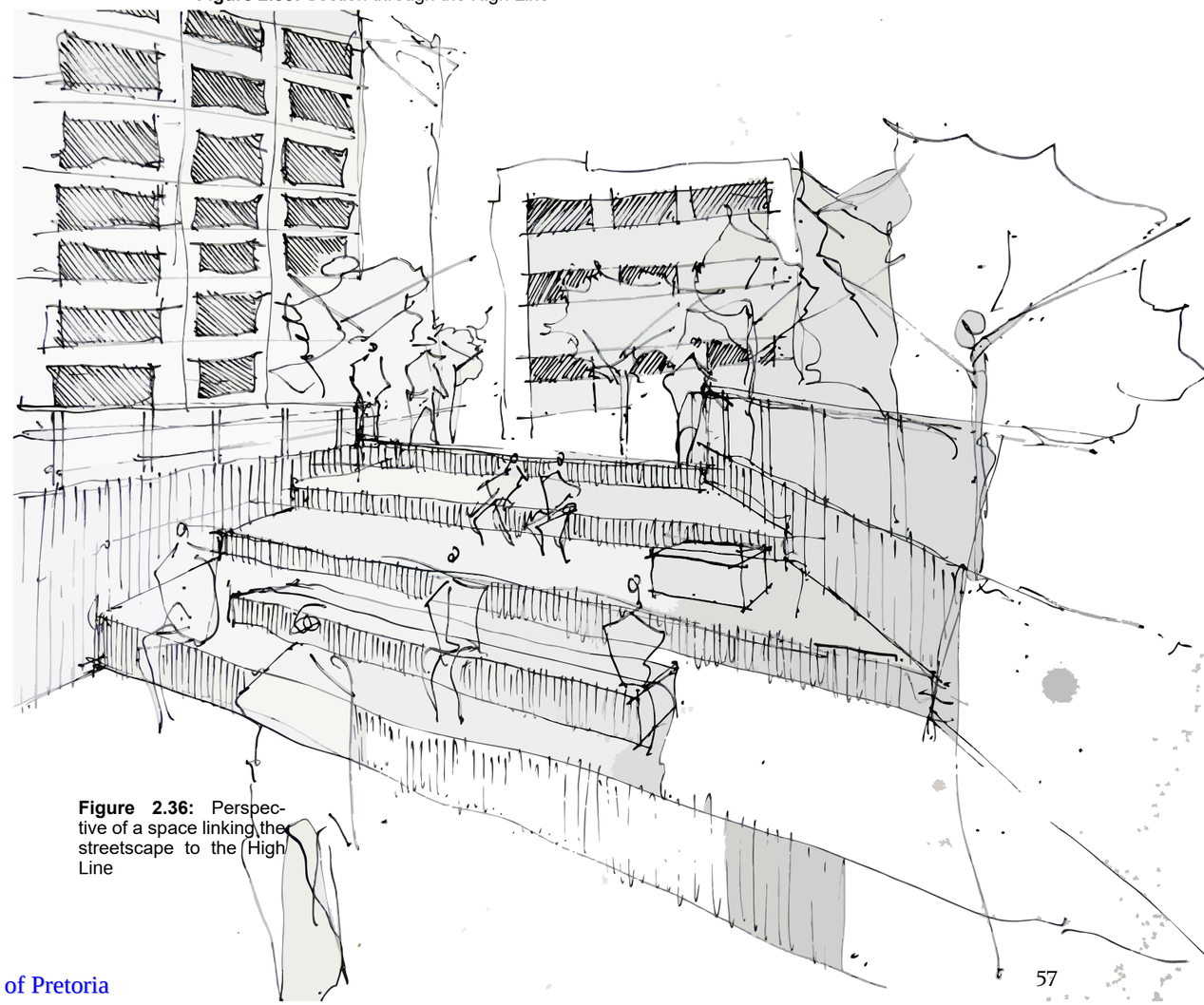

Figure 2.36: Perspective of a space linking the streetscape to the High Line

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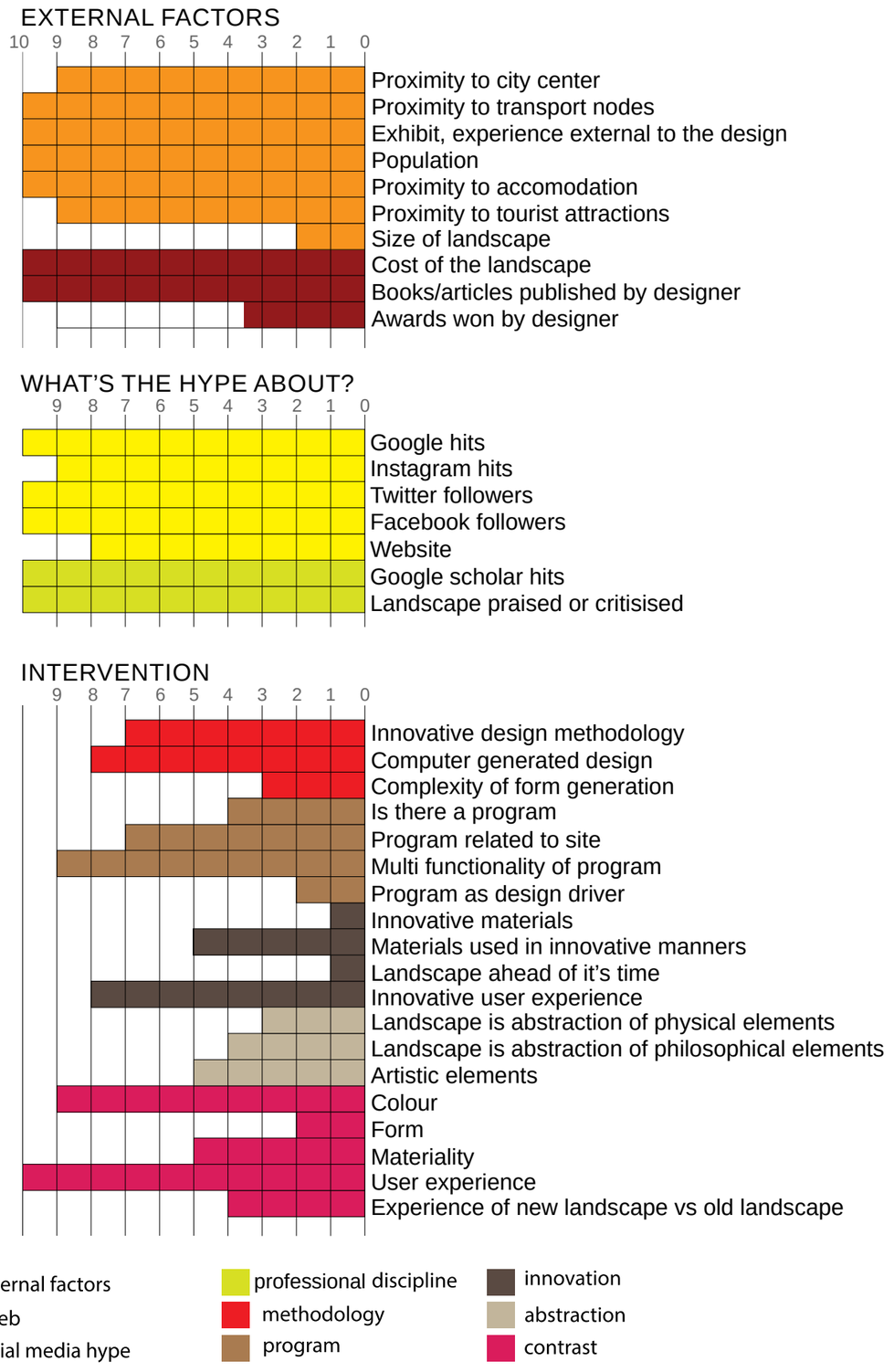

Figure 2.37: Information projected onto the graphic

One does not need to be an expert on landscape design to recognise that the High Line in New York is without a doubt a successful space. The data acquired suggests that there are numerous factors contributing to its success. It is within proximity to vibrant public spaces (mostly streetscapes), has a strong social media platform, and of course, it offers incredible views of the famous New York skyline. The celebrity status of James Corner placed the project within the contemporary discussion of landscape architecture.

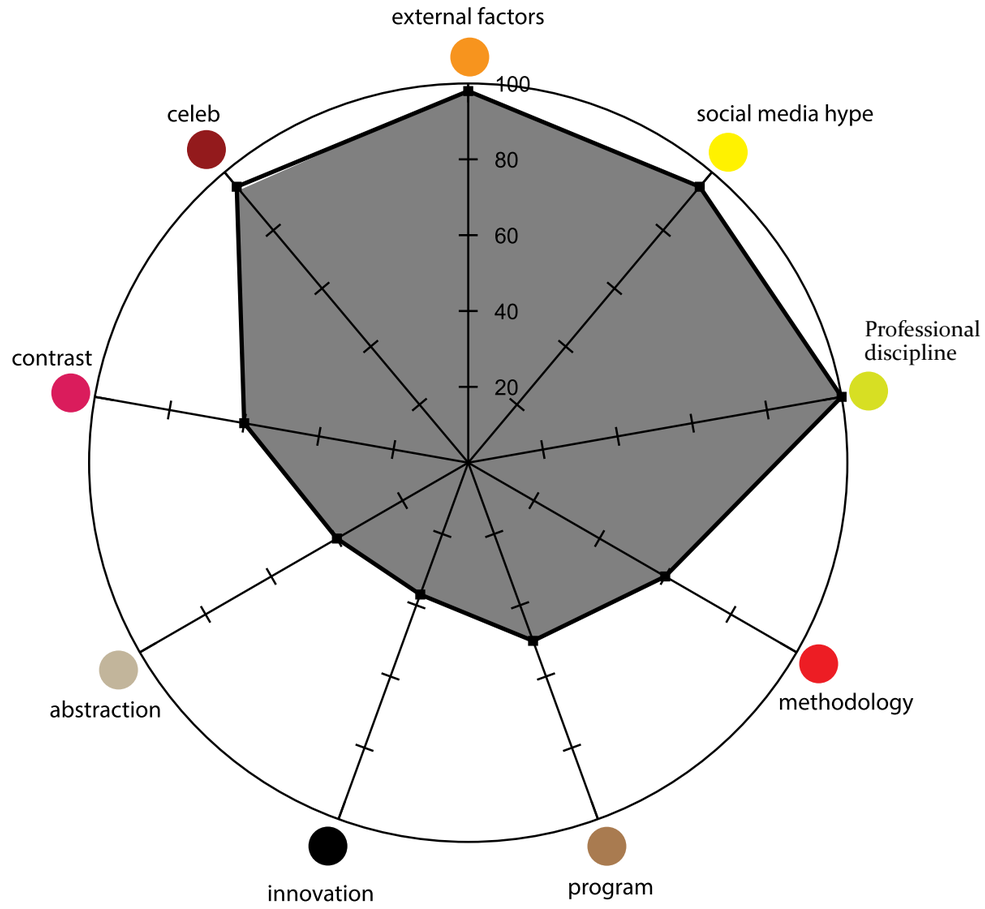

Figure 2.38: Info-graphic of the site

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2.3.2 Olympic Sculpture Park, Seattle, Weiss/Manfredi

The Olympic Sculpture Park is an open air sculpture park located in Seattle on the last undeveloped waterfront property (Architect Magazine 2012). It was an industrial site sliced by train tracks and an arterial road. The design uses an uninterrupted Z-shaped green platform to connect three separate sites; a dense and temperate evergreen forest; a deciduous forest of seasonally changing characteristics; and a shoreline garden including a series of new tidal terraces for salmon habitat and salt water vegetation (Architect Magazine 2012). The park is elevated above sea level and descends forty feet to the water. Magnificent views of the Seattle skyline and Elliot Bay can be enjoyed from the park (Minner 2011).

The site was formerly owned by Union Oil of California (Unocal) and used as an oil transfer facility (Minner 2011). Over 120,000 tons of contaminated soil had to be removed and re-filled with clean soil before construction of the park could begin. The water strategy is planned in such a way that landforms and plantings collaborate to direct, collect, and cleanse storm water as it moves through the site before being discharged into Elliott Bay (Minner 2011).

Minner (2011) of Archdaily describes the park as follows: "As a "landscape for art", the Olympic Sculpture Park defines a new experience for modern and contemporary art outside the Seattle Art Museum walls; (the park is part of the museum). The topographically varied park provides diverse settings for sculpture of different sizes. Deliberately open-ended, the design invites "*new interpretations of art and environmental engagement, reconnecting the fractured relationships of art, landscape, and urban life*." (Minner 2011)



Figure 2.39: Image of the site prior to the intervention



Figure 2.40: Image of the site

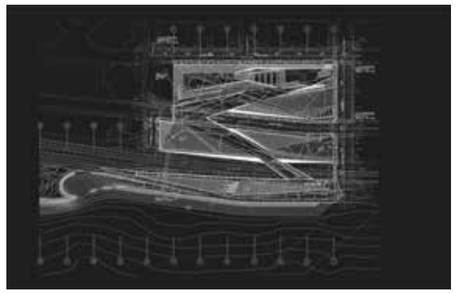

Figure 2.41: Autocad drawing of the design



Figure 2.42: Image of the site

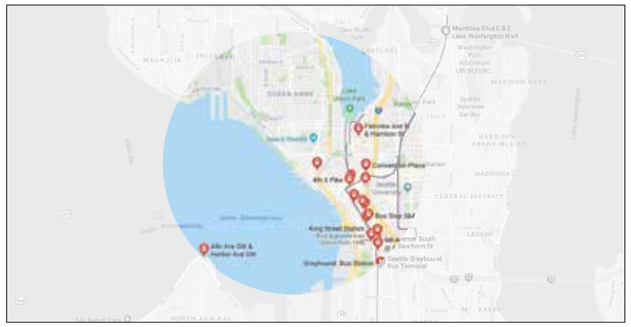

Figure 2.43: Transportation nodes near the site (3km radius)



Figure 2.44: Tourist hotspots near the site (3km radius)

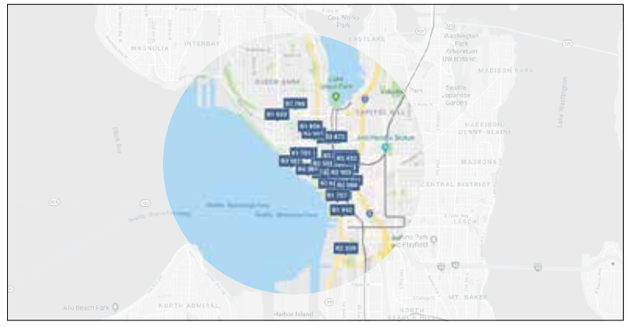

Figure 2.45: Accomodation near the site (3km radius)



Figure 2.46: Marion Weiss and Michael Manfredi

1	City center	2000m
2	Transport nodes	17
3	Population Seattle (City in King county)	724 745
4	Accomodation	26
5	Tourist attractions	12
6	Size of landscape	3.4ha
7	Cost of landscape	$85 000 000
8	Books published by designer	more than 22
9	Awards won by designer	more than150
10	Google	203000 hits
11	Instagram	#olympicsculpture park 16 406 tags
12	twitter	no page
13	facebook	2000 followers
14	Google Scholar	520 hits

1 https://www.maps.google.co.za
2 https://www.maps.google.co.za
3 https://www.citypopulation.de/php/usa-washington.php?cityid=5363000
4 https://www.maps.google.co.za
5 https://www.maps.google.co.za
6 landscapevoice.com/olympic-sculpture-park/
7 landscapevoice.com/olympic-sculpture-park/
8 https://www.books.google.co.za
9 http://www.weissmanfredi.com/awards/
10 https://www.google.co.za
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12 https://www.twitter.com
13 https://www.facebook.com
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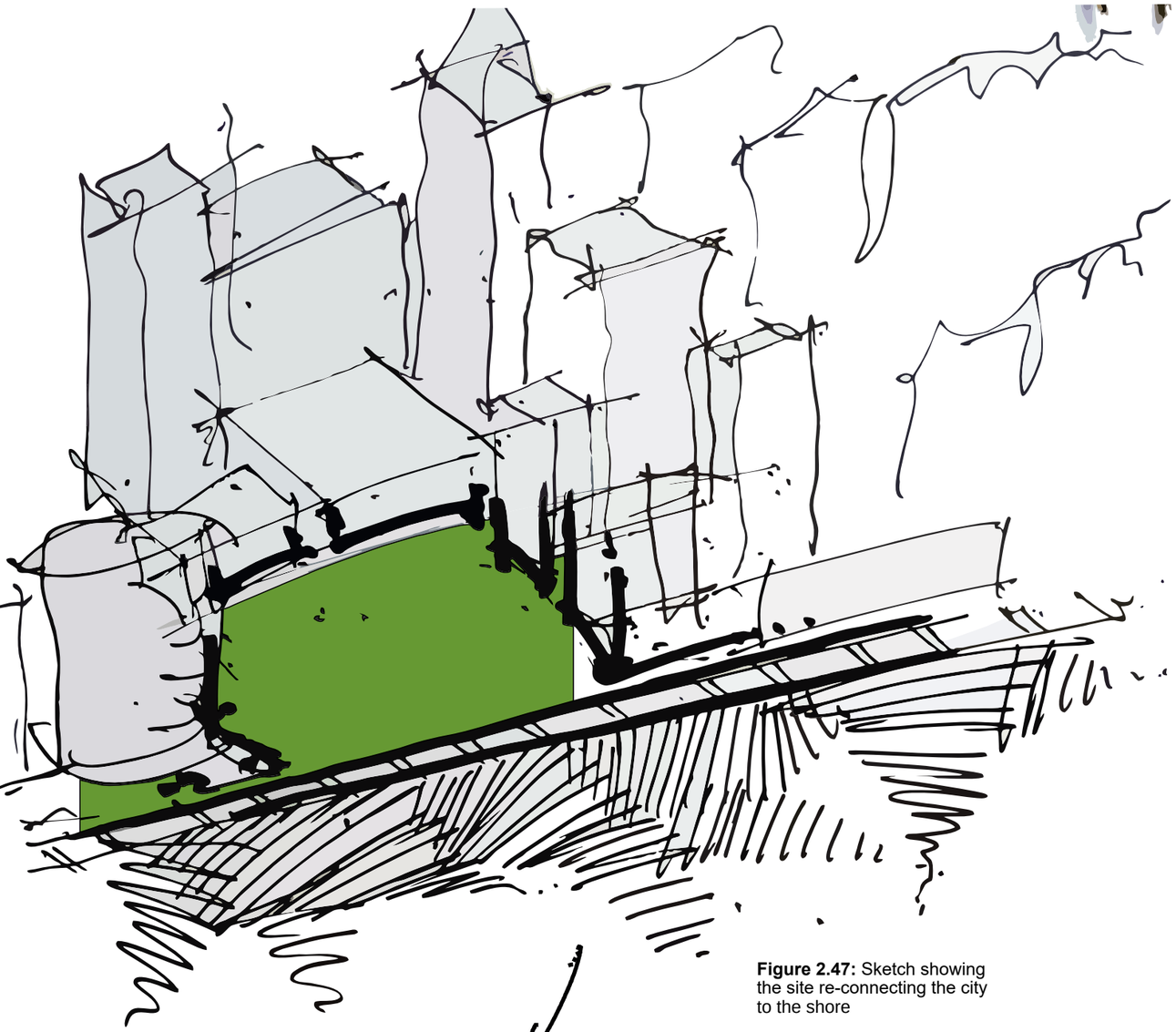

Figure 2.47: Sketch showing the site re-connecting the city to the shore

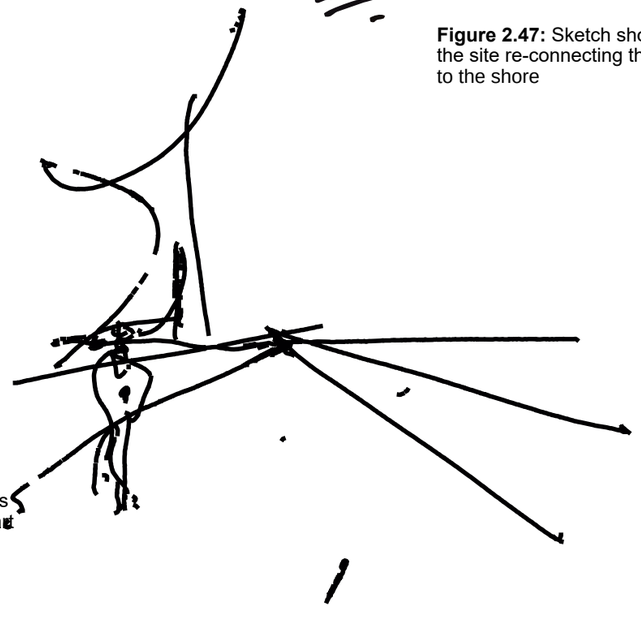

Figure 2.48: Conceptual perspective of the user experience. It feels as if one is moving through a work of art

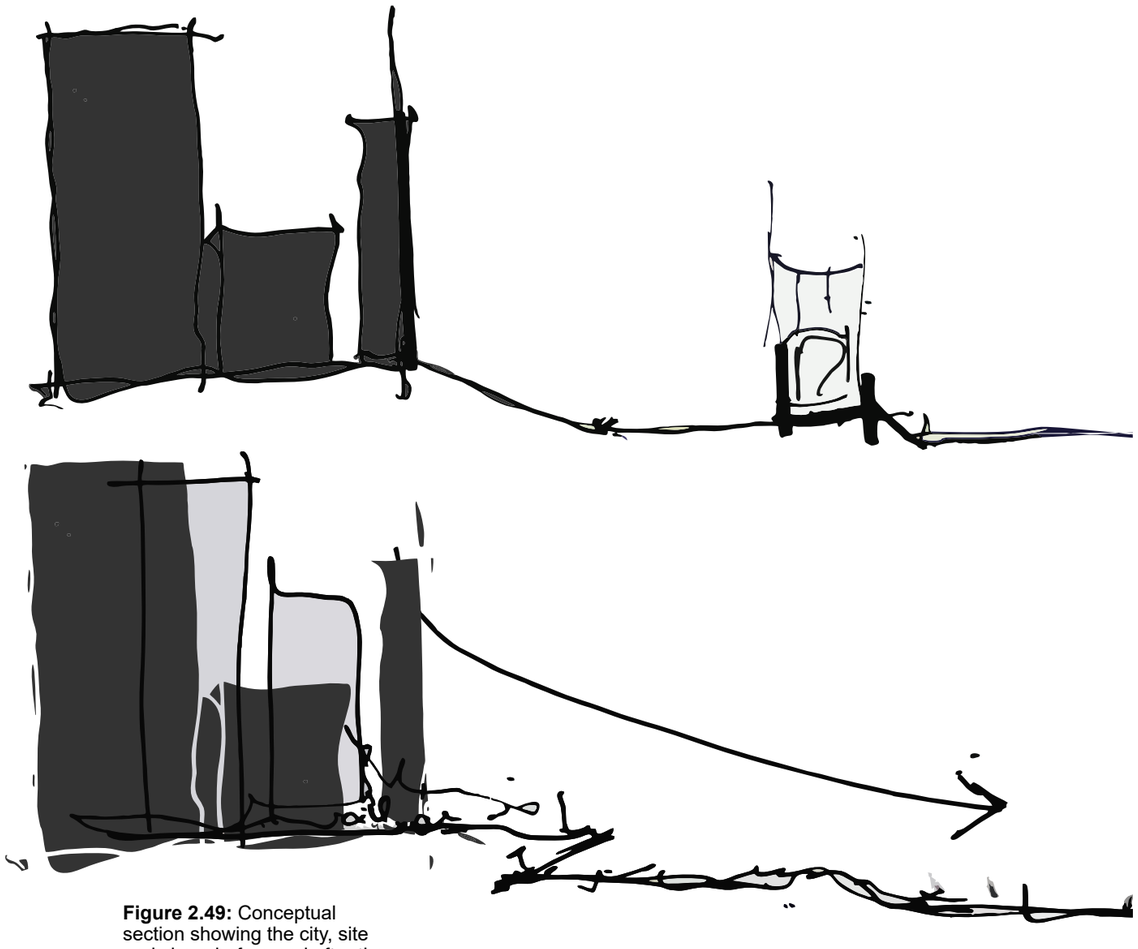

Figure 2.49: Conceptual section showing the city, site and shore before and after the intervention.



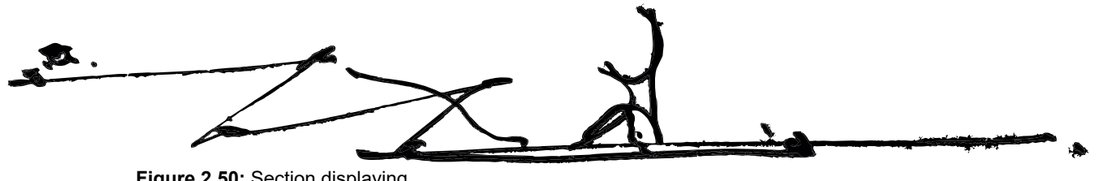

Figure 2.50: Section displaying the site as a work of art

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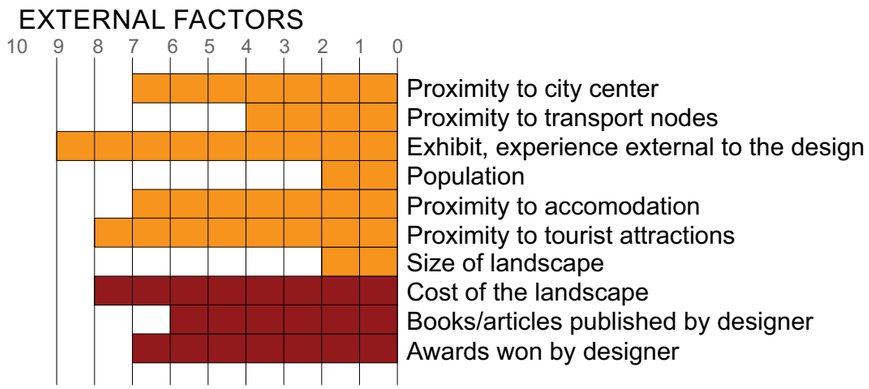

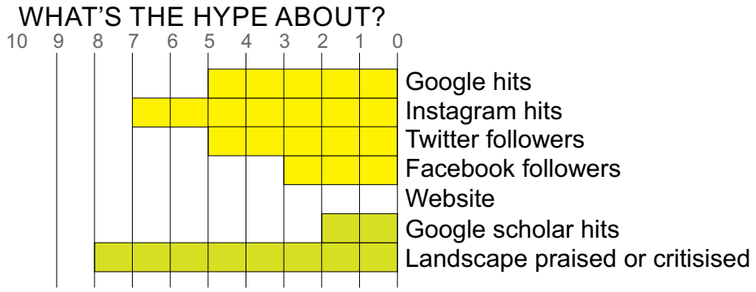

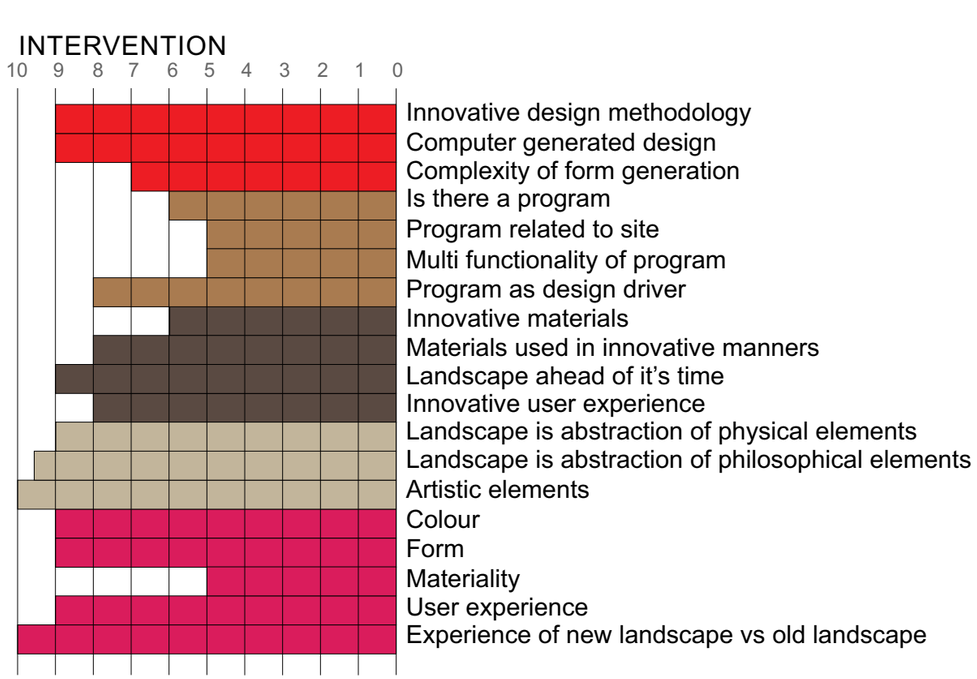

Figure 2.51: Information projected onto the graphic

The Olympic Sculpture park is a technical, innovative landscape connecting Seattle to the shoreline. There are external factors at work, as the landscape is filled with contemporary pieces of artwork. According to the data, the Sculpture Park is a very well rounded off project.

This project can be seen as a precedent in terms of the technical resolution of the major level differences.

One of the intentions of the park is to guide the user through a 'sculpture' of a landscape rather than simply displaying the prefabricated sculptures.

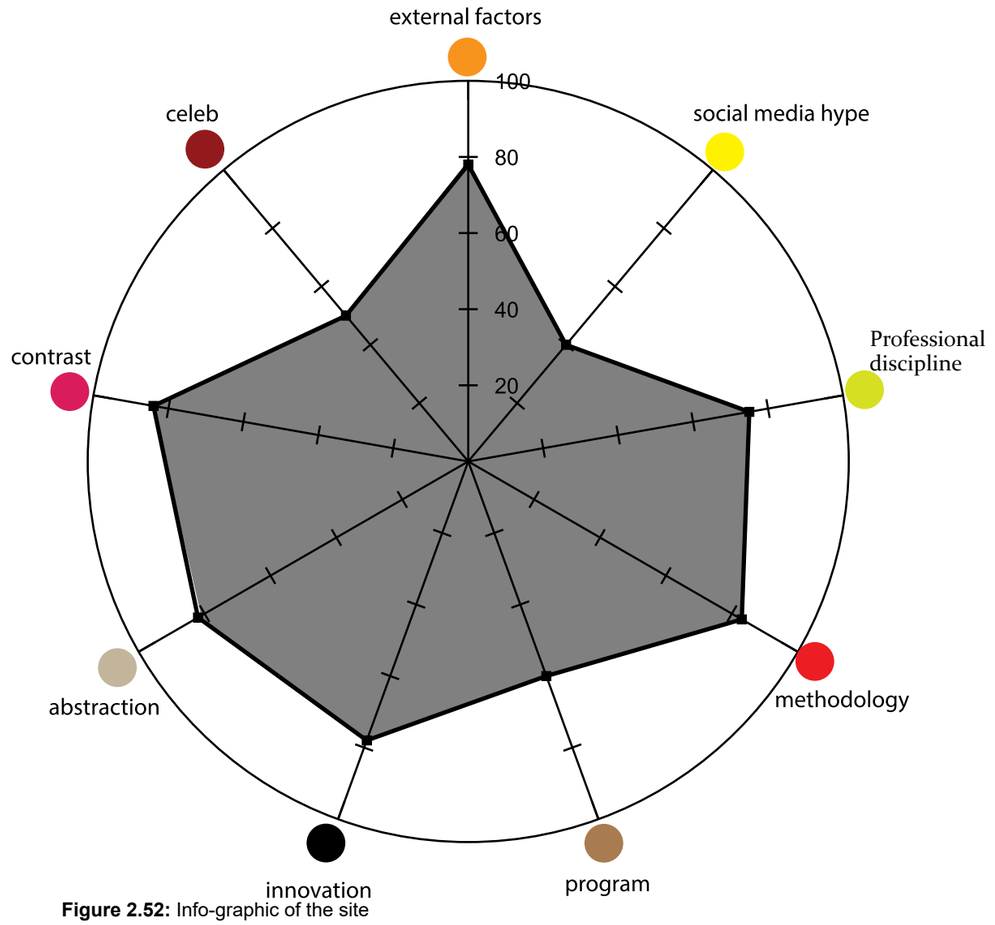

Figure 2.52: Info-graphic of the site

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2.3.3 Louvre-Lens Museum Park, Lens, Catherine Mosbach

The Louvre-Lens is an extension of the Louvre, Paris. The museum is built on a 20 hectare wasteland that was originally a coal mine until the 1960's (Rosenfield 2012). The museum consists of a 360 meter long steel and glass structure surrounded by an exterior park (Rosenfield 2012). The site has a slight elevation as a result of excess fill from the mine.

The Louvre-Lens Museum Park is situated near the northern border of France in order to be accessible for English, Belgian, and German tourists. Catherine Mosbach, the Landscape Architect describes the park at the Louvre-Lens as follows: "*Landscaped setting which extends the programs of the museum outside the wall. It is the place for cultural programming, animation and popular gathering in connection with the activities of the museum. Connection between museum, city and territory*"



Figure 2.53: Image of the site

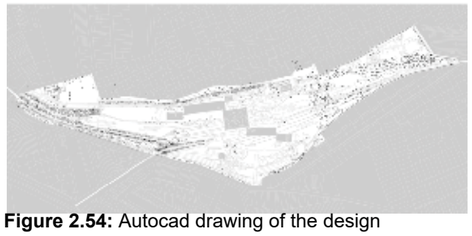

Figure 2.54: Autocad drawing of the design



Figure 2.55: Arial image of the site



Figure 2.56: Image of the site

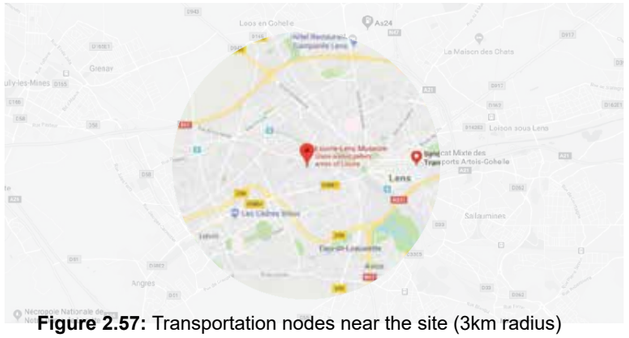

Figure 2.57: Transportation nodes near the site (3km radius)

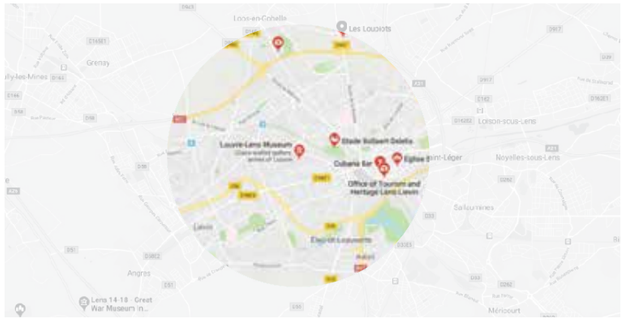

Figure 2.58: Tourist hotspots near the site (3km radius)

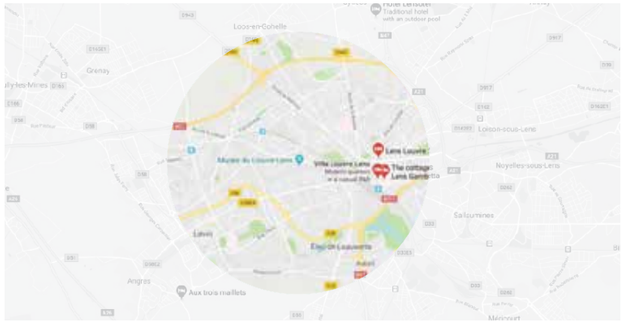

Figure 2.59: Accomodation near the site (3km radius)



Figure 2.60: Catherine Mosbach

1	City center	1900m
2	Transport nodes	3
3	Population Lens	30 413
4	Accomodation	3
5	Tourist attractions	6
6	Size of landscape	25ha
7	Cost of landscape	16 500 000 euros
8	Books published by designer	2
9	Awards won by designer	8

10	Google	281 000 hits
11	Instagram	#louvrelensmuseum 711 tags
12	twitter	23 000 followers
13	facebook	38 000 followers
14	Google Scholar	133 hits

1 https://www.maps.google.co.za
2 https://www.maps.google.co.za
3 https://www.citypopulation.de/php/france-pasdecalais.php?cityid=62498
4 https://www.maps.google.co.za
5 https://www.maps.google.co.za
6 https://land8.com/museum-park-louvre-lens-shows-us-the-potential-of-coal-mines/
7 https://www.publicspace.org/works/-/project/h101-louvre-lens-museum-park
8 https://www.books.google.co.za
9 https://www.google.co.za
10 https://www.google.co.za
11 https://www.instagram.com
12 https://www.twitter.com
13 https://www.facebook.com
13 https://www.scholar.goolge.co.za

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Figure 2.61: Perspective of a typical path through the site

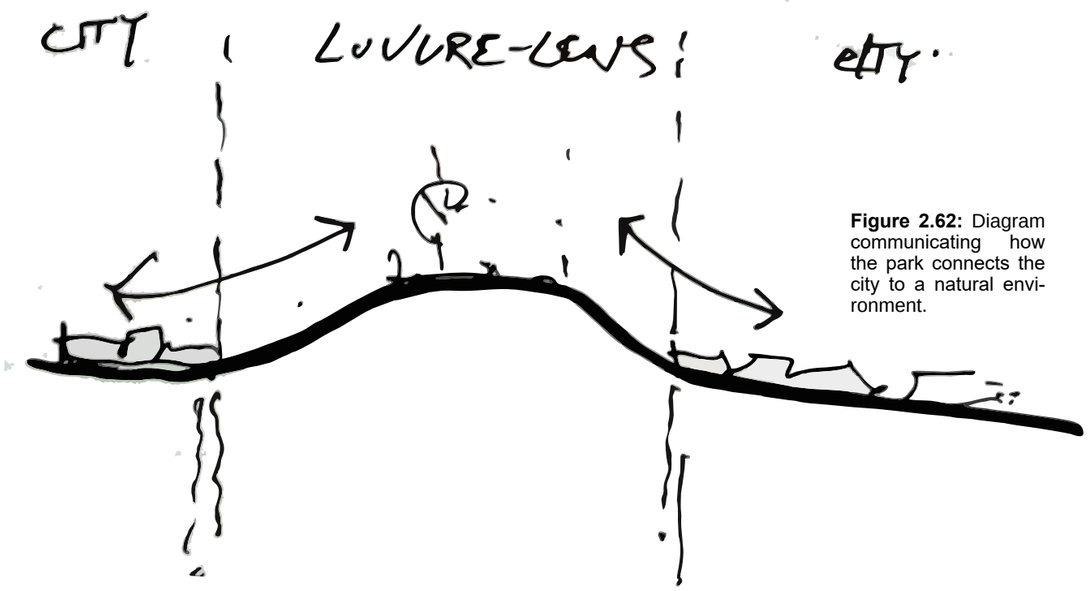

Figure 2.62: Diagram communicating how the park connects the city to a natural environment.

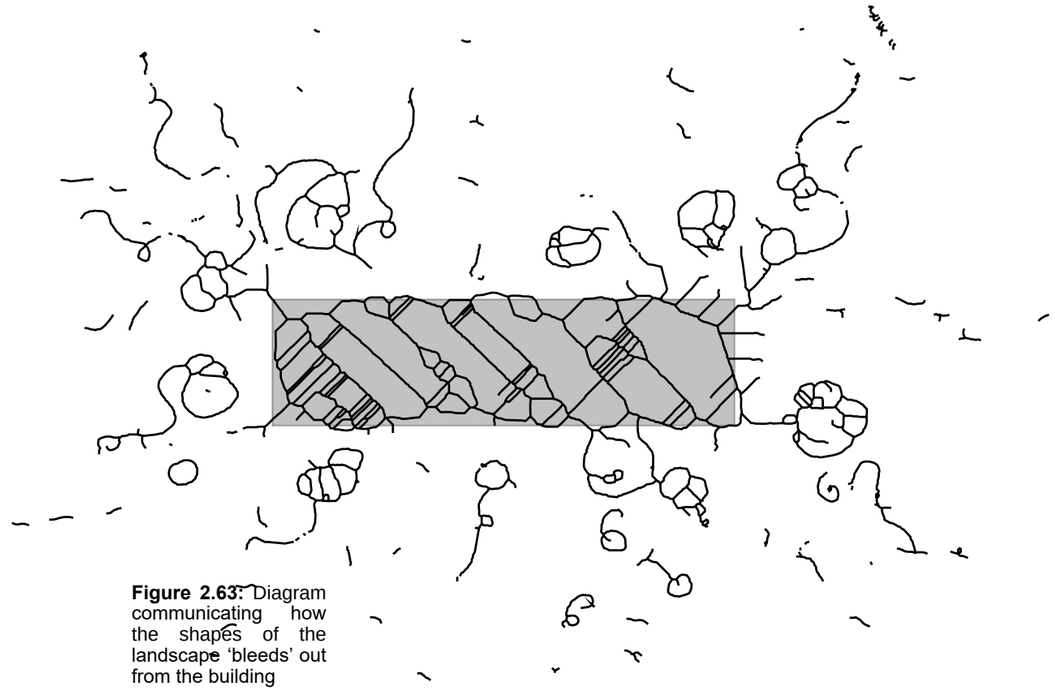

Figure 2.63: Diagram communicating how the shapes of the landscape 'bleeds' out from the building

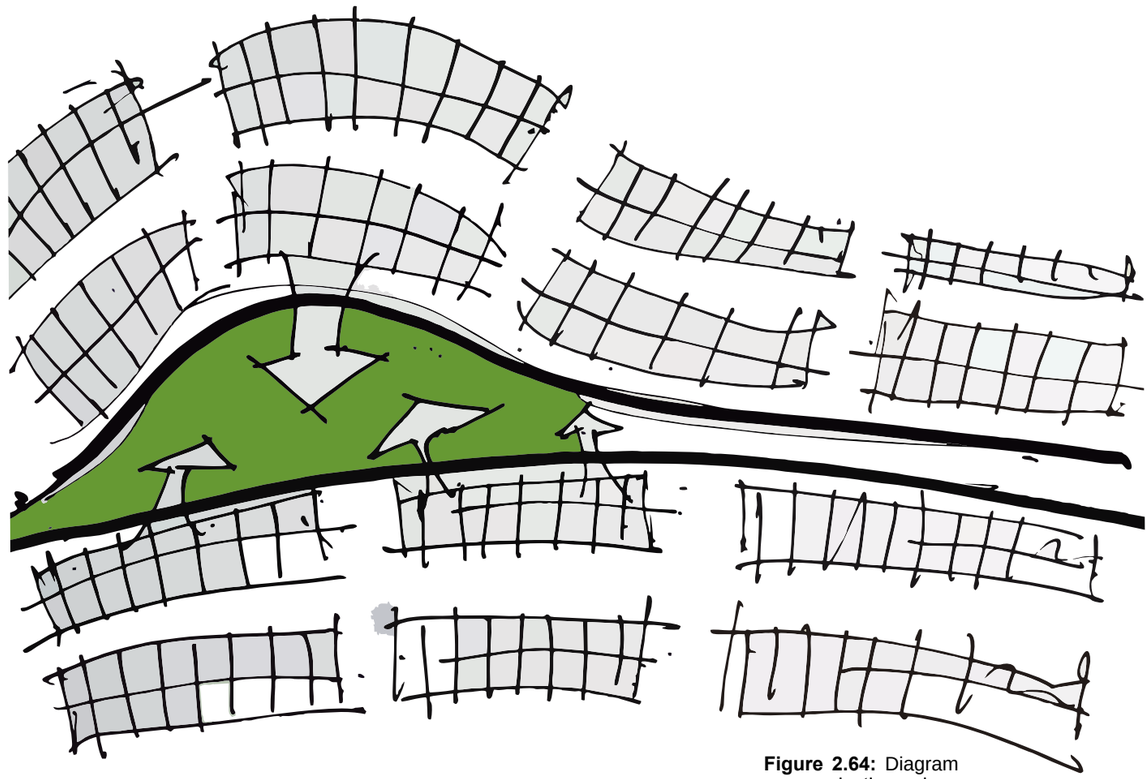

Figure 2.64: Diagram communicating how the park connects the city to a natural environment.

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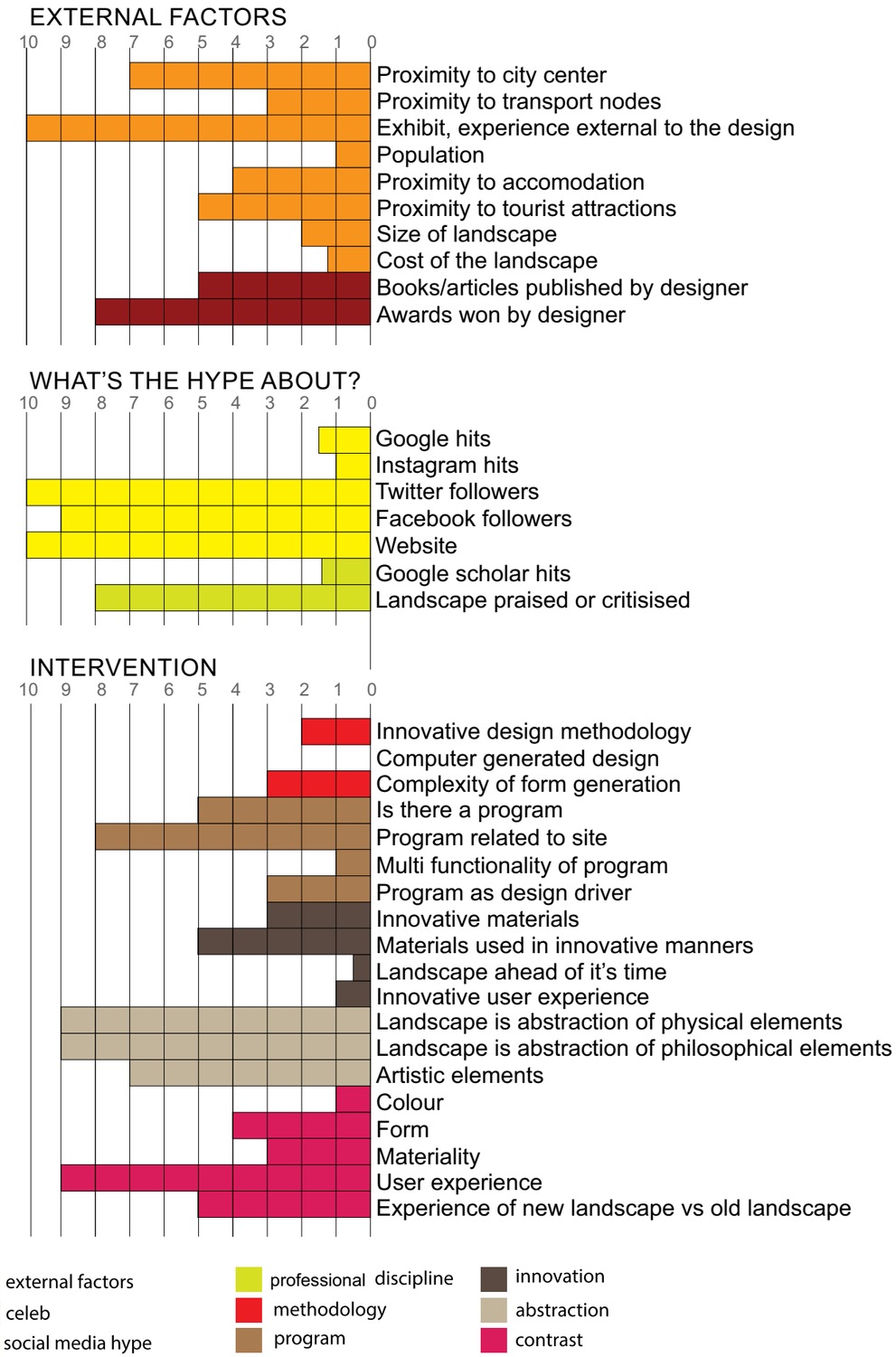

Figure 2.65: Information projected onto the graphic

The Louvre-Lens Museum Park is a more subtle landscape, exposing the relicts of the previous site activities (a mining belt). One might argue that people will visit the site only to get to the Louvre museum, but the subtlety of the intervention compliments both the architecture and the surrounding natural environment. The park stands in contrast to its surroundings through the intimate natural spaces it creates via meandering paths through the forest. Figure 2.20 show that although the stance of the park is subtle it is a well balanced design, measured by the number of people attracted to the site.

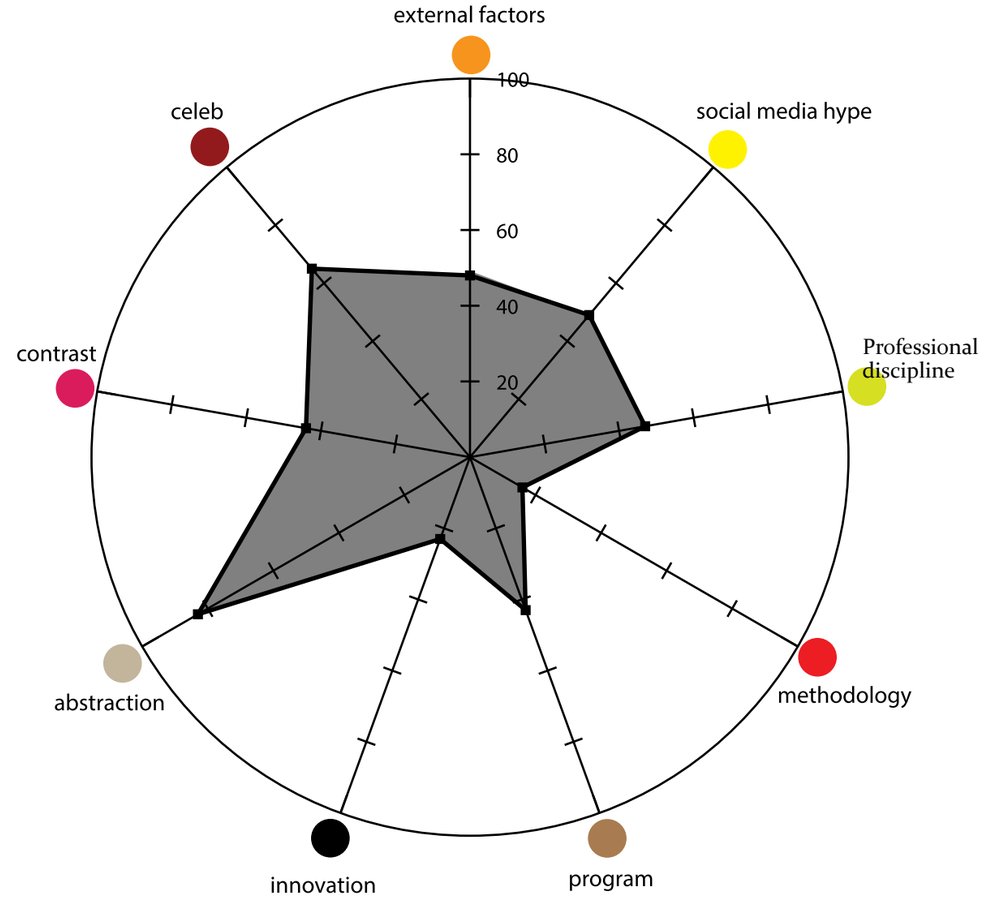

Figure 2.66: Info-graphic of the site

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2.3.4 Duisburg Nord Landschaft Park, Duisburg, Peter Latz

Landschafts Park is a public park located in Duisburg, Meiderich, Germany. It was designed by Peter Latz of Latz + Partner. The aim of this park is to heal and understand the industrial past, rather than trying to reject it. The park is built on an old abandoned coal and steel production plant. Since the site was abandoned in 1985, the area was significantly polluted. New functions were found for the old structures on the site.

The concrete bunkers create a space for intimate gardens. The old gas tanks have become pools for scuba divers. Concrete walls are used by rock climbers. The most central place of the factory, the middle of the former steel mill, had been made into a piazza. The former sewage canal is used as a method of cleansing the park. This park is a re-representation of the past; the park itself is a living museum.



Figure 2.67: Image of the site



Figure 2.68: Plan of the site



Figure 2.69: Image of the site



Figure 2.70: Image of the site



Figure 2.71: Transportation nodes near the site (3km radius)

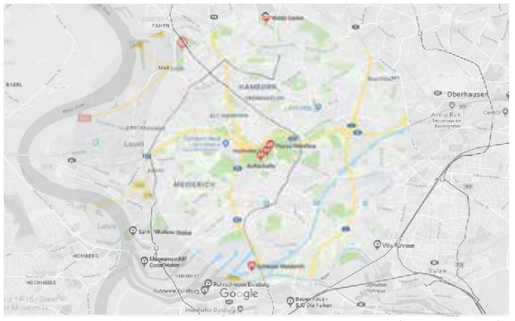

Figure 2.72: Tourist hotspots near the site (3km radius)

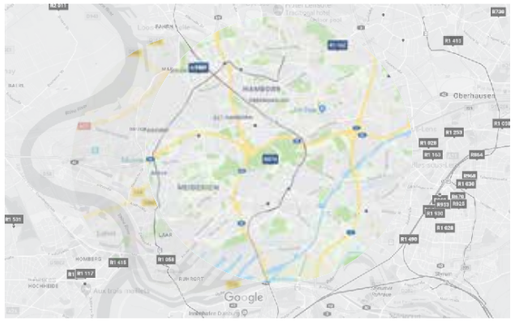

Figure 2.73: Accomodation near the site (3km radius)



Figure 2.74: Peter Latz

1	City center	1900m
2	Transport nodes	4
3	Population Duisburg	502 634
4	Accomodation	4
5	Tourist attractions	5
6	Size of landscape	230ha
7	Cost of landscape	100 000 000$
8	Books published by designer	66
9	Awards won by designer	24
10	Google	184 000 hits
11	Instagram	#duisburgnordlandscaftpark 43 tags
12	twitter	812 followers
13	facebook	16 768 followers
14	Google Scholar	767 hits

1 https://www.maps.google.co.za
2 https://www.maps.google.co.za
3 https://www.citypopulation.de/php/germany-duisburg.php
4 https://www.maps.google.co.za
5 https://www.maps.google.co.za
6 https://rmitallchange.weebly.com/north-duisburg-landscape-park.html
7 www.landezine.com/index.php/2011/08/post-industrial-landscape-architecture/
8 https://www.books.google.co.za
9 https://www.latzundpartner.de/en/buero/auszeichnungen/?page=2
10 https://www.google.co.za
11 https://www.instagram.com
12 https://www.twitter.com
13 https://www.facebook.com
13 https://www.scholar.goolge.co.za

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Figure 2.75: Perspective of the industrial site

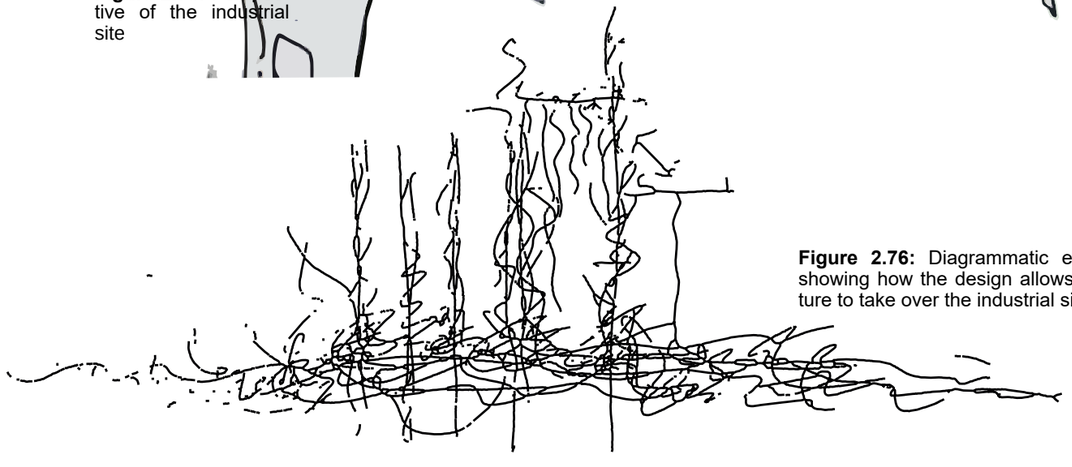

Figure 2.76: Diagrammatic elevation showing how the design allows for nature to take over the industrial site

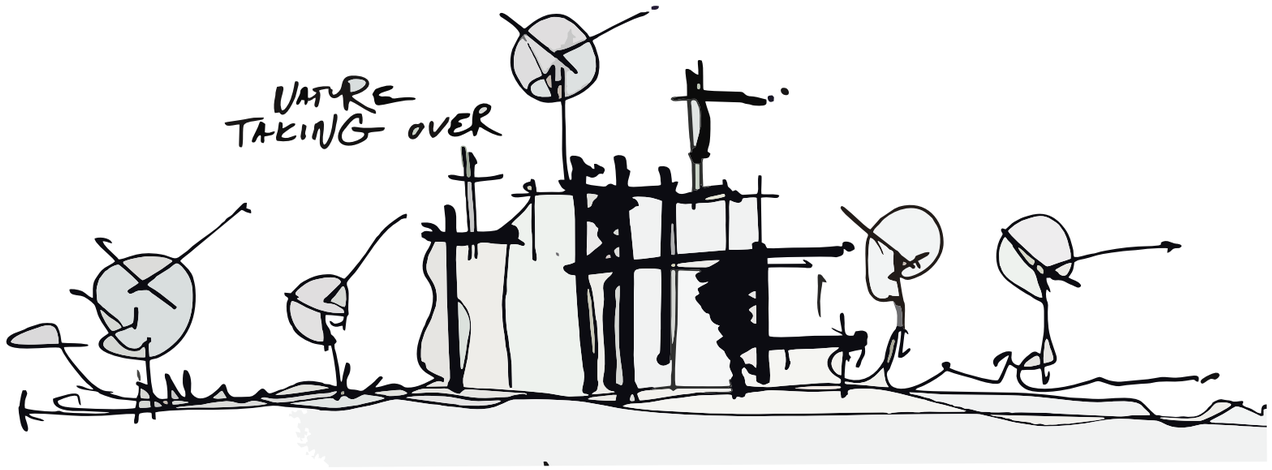

Figure 2.77: Diagrammatic elevation showing how the design allows for nature to take over the industrial site

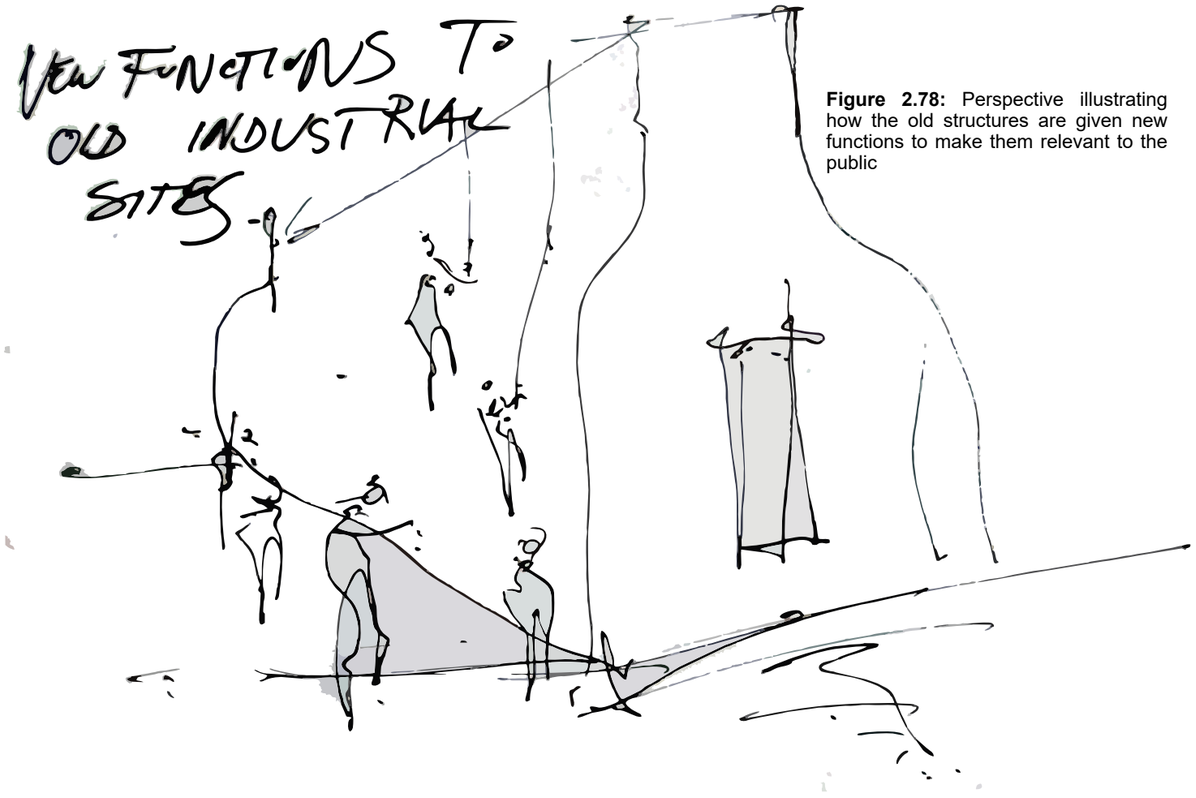

Figure 2.78: Perspective illustrating how the old structures are given new functions to make them relevant to the public

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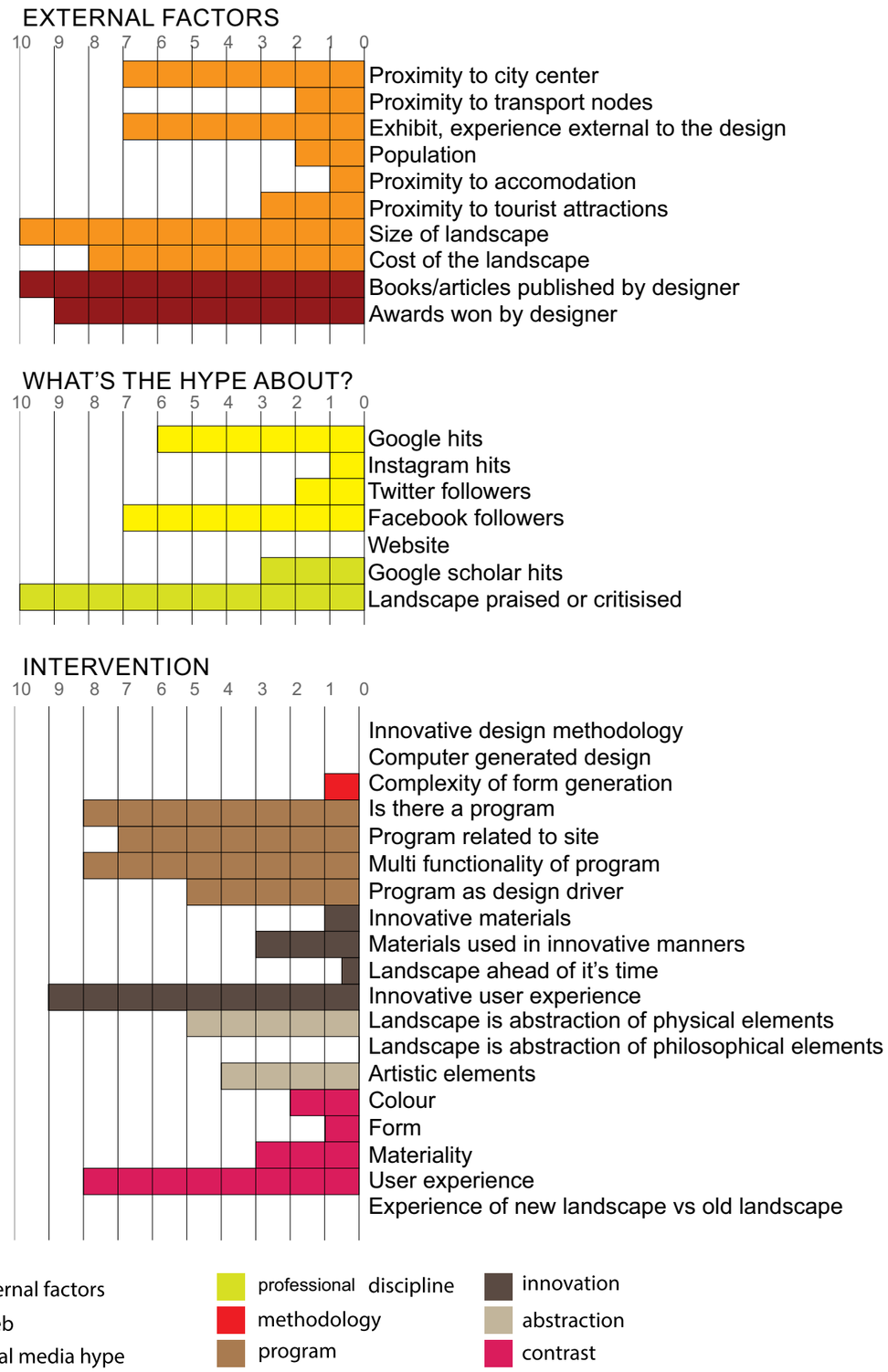

Figure 2.79: Information projected onto the graphic

Duisburg Nord Landscape Park is an excellent example of making a few alterations to an existing gas plant to not only remediate the ecological nature of the site, but to create public space for the people of Duisburg. Not a very innovative approach was followed, but nonetheless the project was executed to perfection. The site sits in stark contrast to its surroundings as it creates a space to connect the people with naturalized environments.

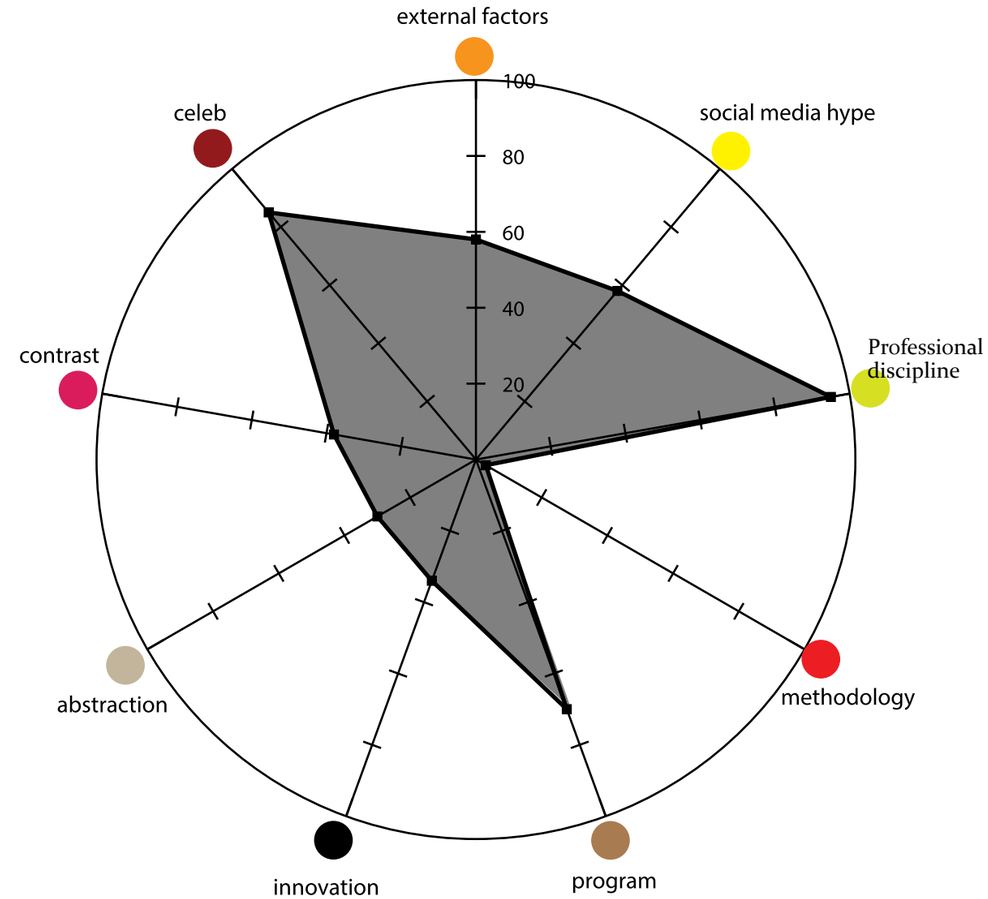

Figure 2.80: Info-graphic of the site

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2.3.5 Grand Canal Square, Dublin, Martha Schwartz

Grand Canal Square forms the centerpiece of the Dublin Docklands' emblematic revitalization project. The project was completed in 2007 (Krzykowski 2008). The square is situated on the banks of the Grand Canal, in front of the new Cultural Arts Performance Centre designed by Studio Daniel Libeskind (Krzykowski 2008).

Granite paved paths criss-crosses the Grand Canal Square allowing movement in any possible direction, and also enabling the square to host major public events such as festivals and performances (Krzykowski 2008).

The idea of the red stroke is to represent a red carpet rolled out from the canal into the site's main theatre (WAN 2009). The "red carpet" is made from bright red resin-glass paving. This paving reflects and captures light during the day. Eight-meter high, red light poles are positioned on the carpet at various angles providing dramatic light at night. A fountain and other attractions also fills the space (WAN 2009).

This square is a 24/7 destination for communal celebrations and according to Martha Schwartz, it accurately interprets and exemplifies Dublin's optimistic metropolitan energy (WAN 2009).

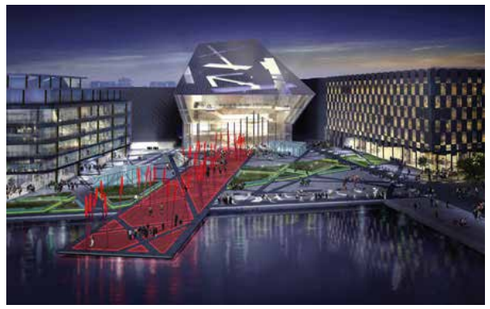

Figure 2.81: Image of the site at night



Figure 2.82: 3D rendering of the site

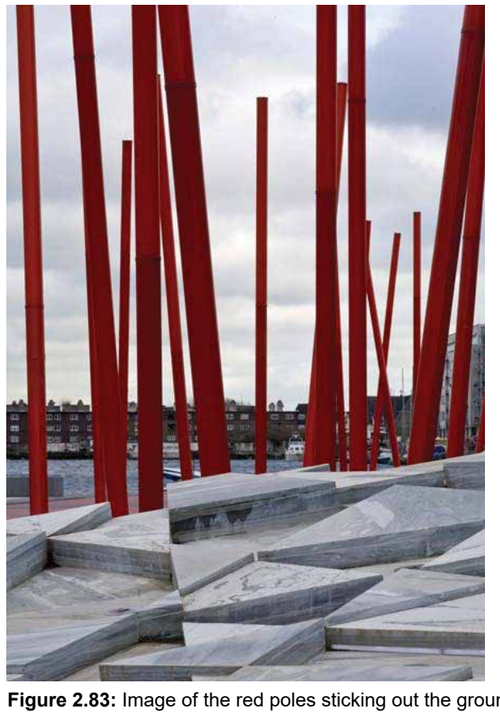

Figure 2.83: Image of the red poles sticking out the ground

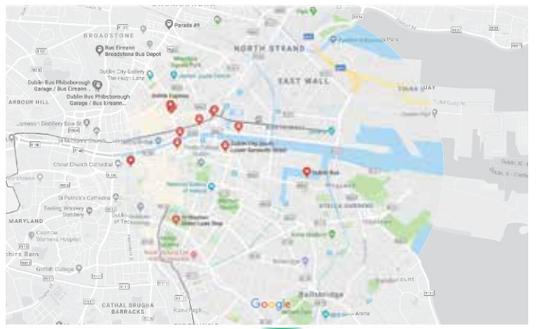

Figure 2.84: Transportation nodes near the site (within 3km)



Figure 2.85: Tourist hotspots near the site (within 3km)



Figure 2.86: Accomodation near the site (within 3km)



Figure 2.87: Martha Swarts ttp://www.dublindocklands.ie/living-docklands/things-do/sightseeing/grand-canal-square

1	City center	1500m
2	Transport nodes	13
3	Population Dublin	527 612
4	Accomodation	47
5	Tourist attractions	6
6	Size of landscape	0.64ha
7	Cost of landscape	$8 000 000
8	Books published by designer	4
9	Awards won by designer	36

10	Google	207 000 hits
11	Instagram	#grandcanalsquare 1336 tags
12	twitter	no page
13	facebook	no page
14	Google Scholar	87 hits

1 https://www.maps.google.co.za
2 https://www.maps.google.co.za
3 https://www.citypopulation.de/php/ireland-admin.php?adm2id=DC
4 https://www.maps.google.co.za
5 https://www.maps.google.co.za
6 charteredland.ie/grand-canal-square/
7 ww.thejournal.ie/the-reflector-construction-2969940-Sep2016/
8 https://www.books.google.co.za
9 www.marthaschwartz.com/practice/awards/
10 https://www.google.co.za
11 https://www.instagram.com
12 https://www.twitter.com

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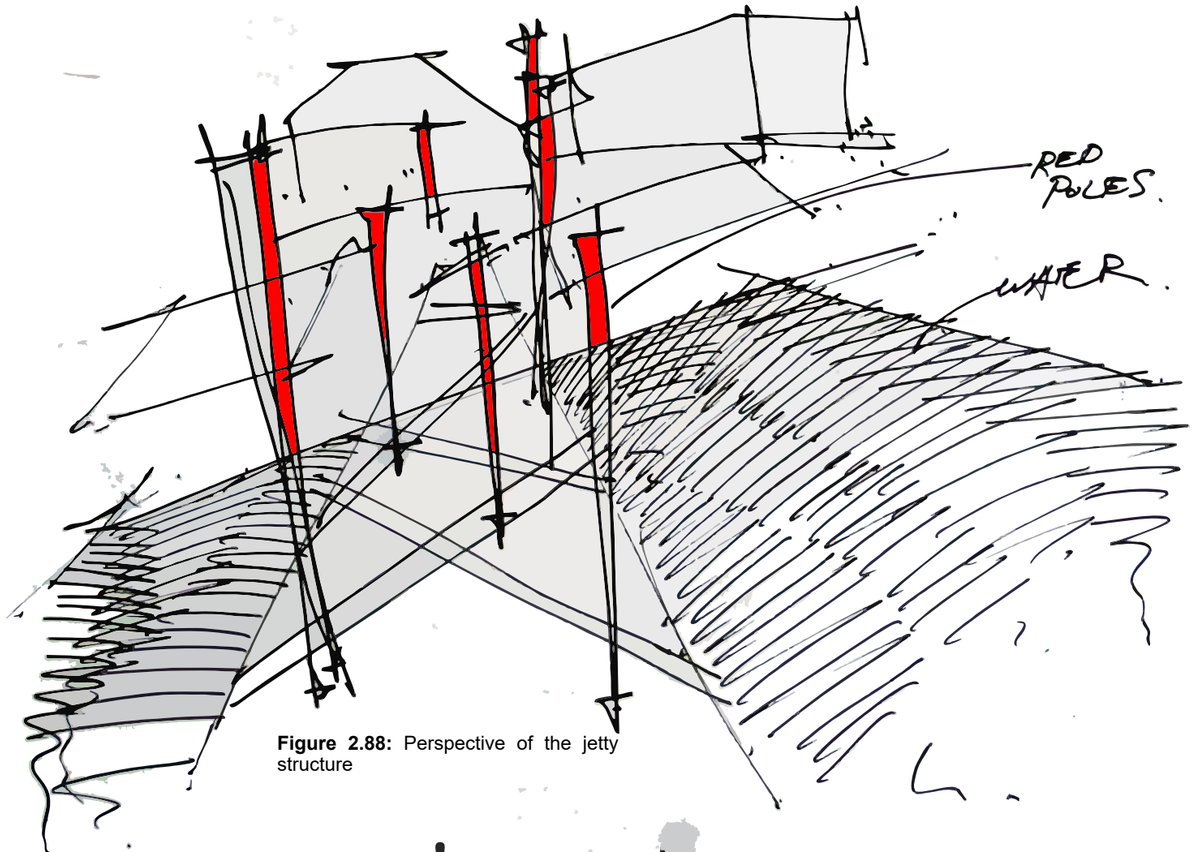

Figure 2.88: Perspective of the jetty structure

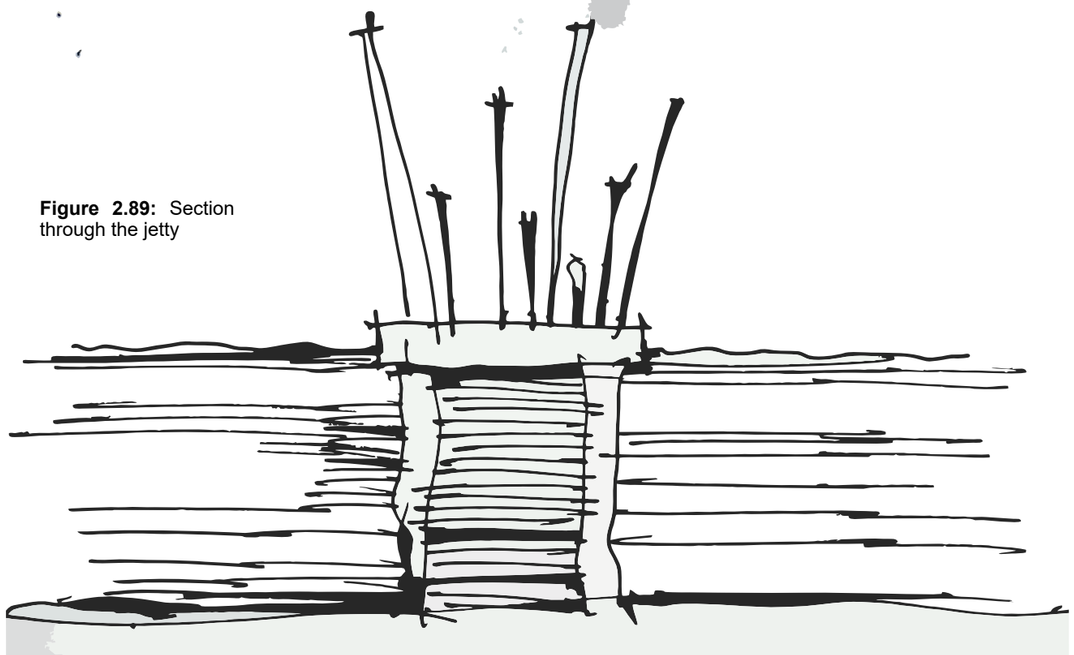

Figure 2.89: Section through the jetty

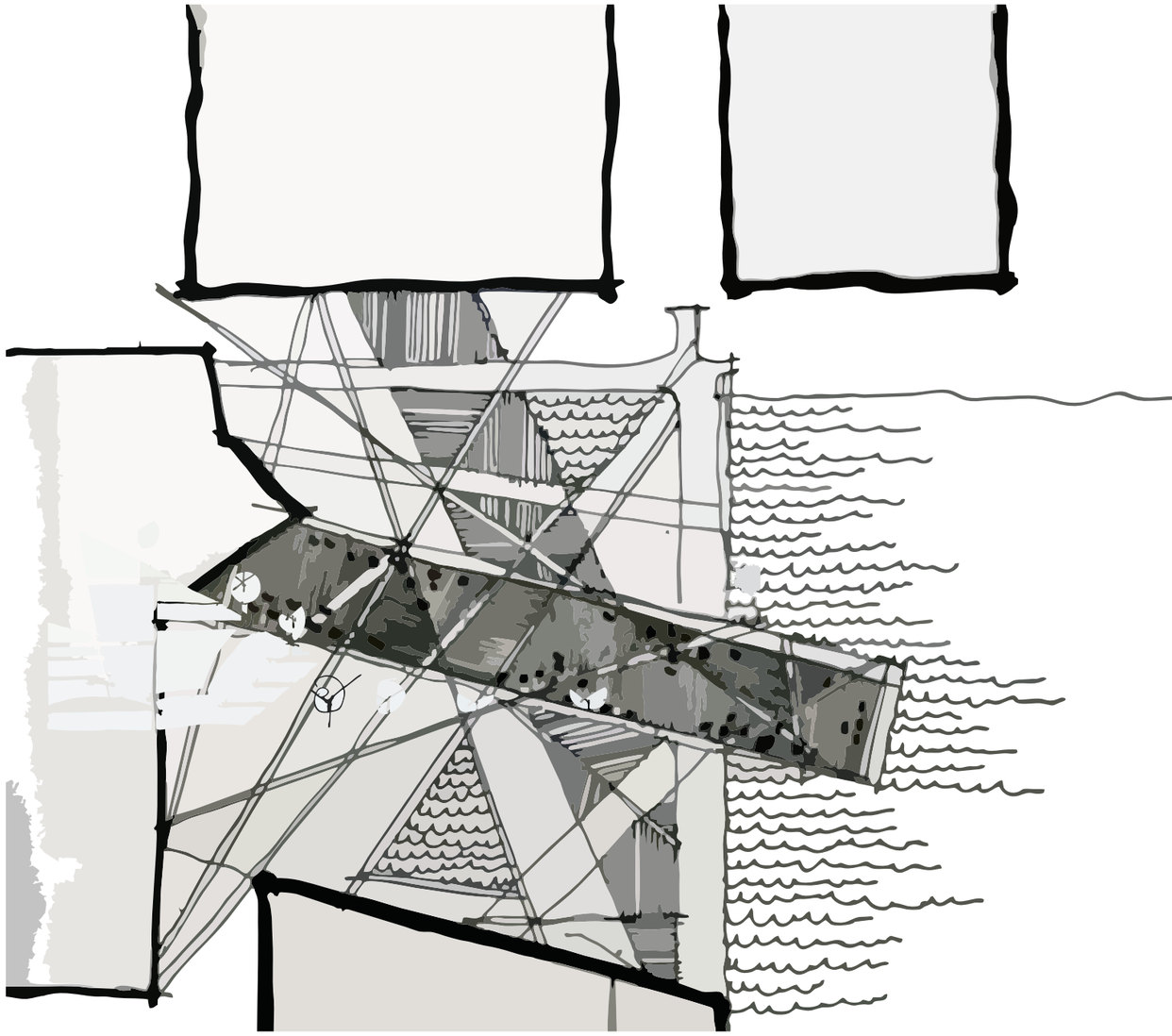

Figure 2.90: Plan of the urban space, highlighting the juxtaposition of the site and it's boundaries

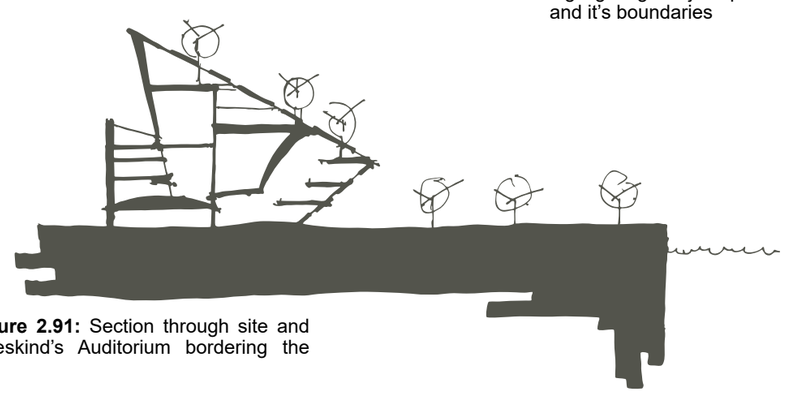

Figure 2.91: Section through site and Libeskind's Auditorium bordering the site

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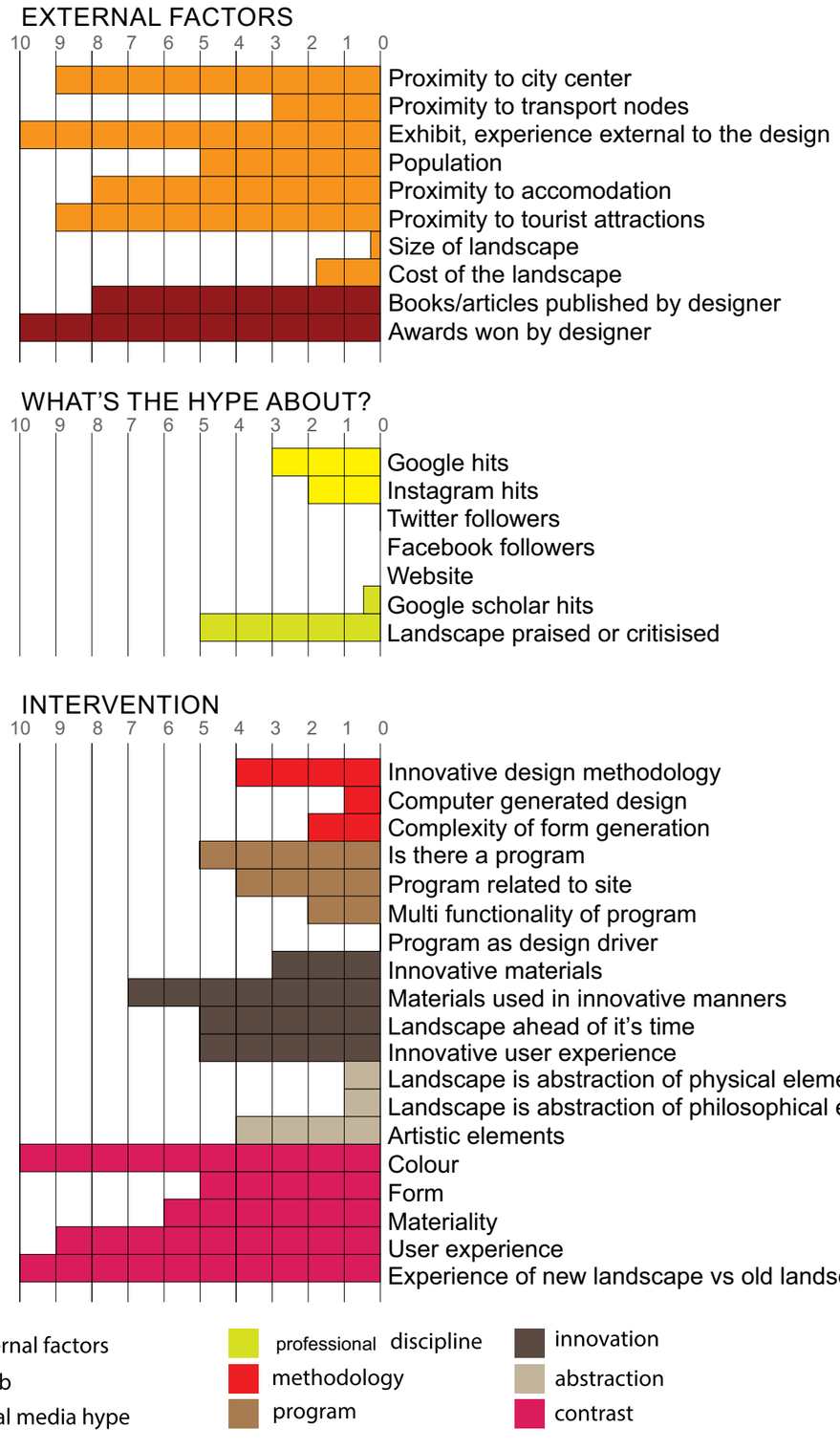

Figure 2.92: Information projected onto the graphic

The Grand Canal Square makes a statement by using bright red illuminated poles. The local people of Dublin have been criticizing the design on online forums and it is clear to see why. The design does not recognize the existing historical layer of the site.

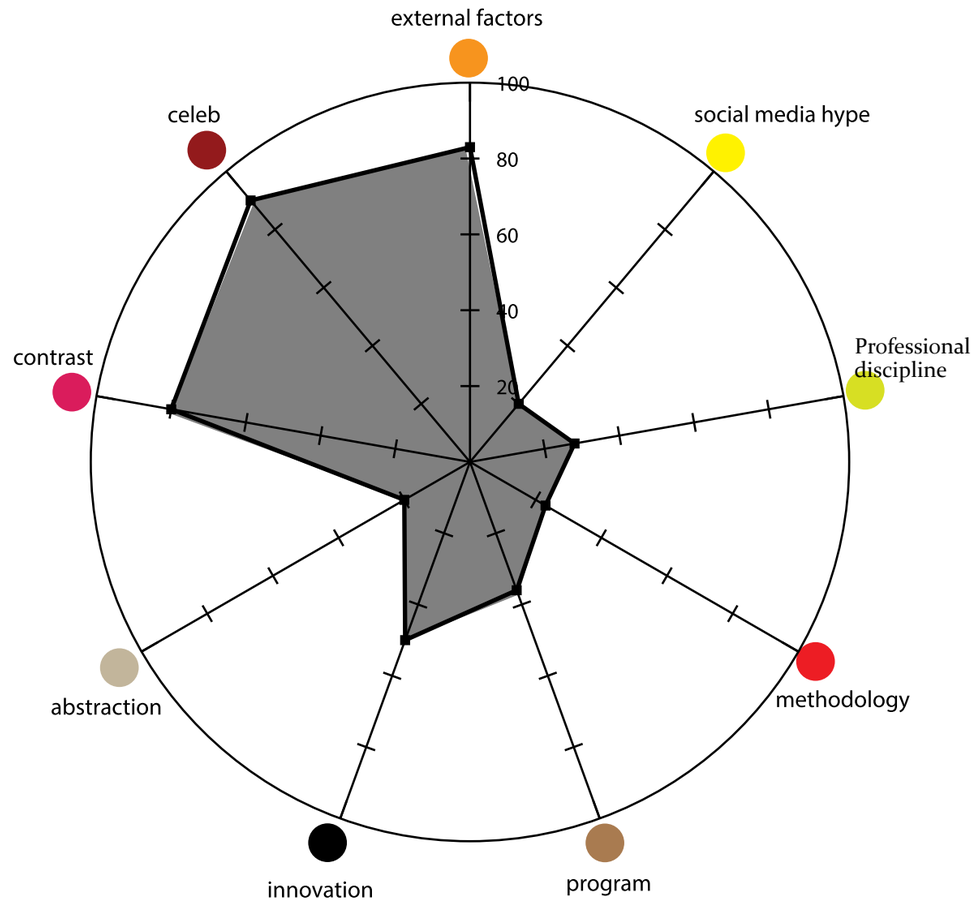

Figure 2.93: Info-graphic of the site

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2.3.6 Parc de la Villette, Paris, Bernard Tschumi

The Parc de la Villette is located at the north-eastern edge of Paris and is 55.5 hectares in area (Souza 2011). The park houses a large concentration of cultural venues in Paris, including three major concert venues, the Paris conservatory and the City of Science and Industry (Europe's largest science museum) There are live performance stages and theatres, as well as playgrounds for children, and thirty-five architectural follies, themed gardens, and open spaces for exploration and activity, the park has created an area that appeals to both adults and children (Souza 2011).

The park was designed by Bernard Tschumi, a French architect of Swiss origin, in partnership with Colin Fournier. The site was a former slaughterhouse and the national wholesale meat market which had been relocated in 1974 (Souza 2011). The park was developed as part of an urban redevelopment project.

The park opened in 1987 and has become a popular attraction for locals and international tourists. An estimated 10 million people visit the park each year.

According to Tschumi, the intention of the park was to create space for activity and interaction, rather than adopting the conventional park mantra of ordered relaxation and self-indulgence. The vast expanse of the park allows for visitors to walk about the site with a sense of freedom and with opportunities for exploration and discovery.

The design of the park is organized into a series of points, lines, and surfaces. The intention is to act as a means of deconstructing the traditional views of how a park is conventionally supposed to exist (Souza 2011).



Figure 2.94: Image of a folly in the landscape



Figure 2.95: Image of a folly in the landscape



Figure 2.96: Image of a folly in the landscape



Figure 2.97: Image of a folly in the landscape

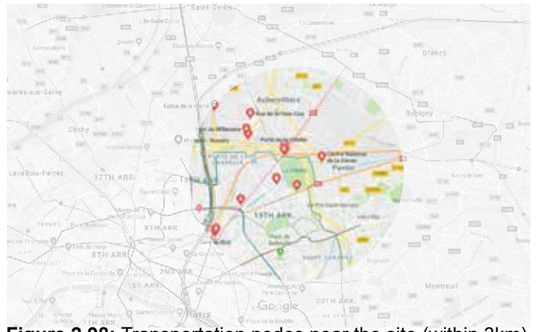

Figure 2.98: Transportation nodes near the site (within 3km)



Figure 2.99: Tourist hotspots near the site (within 3km)



Figure 2.100: Accomodation near the site (within 3km)

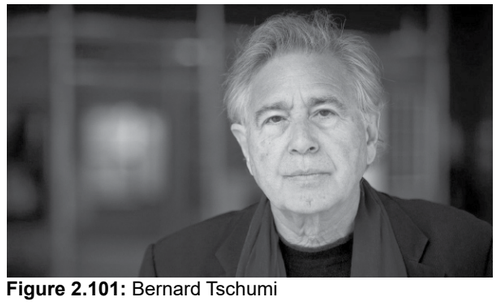

Figure 2.101: Bernard Tschumi

1	City center	5200m
2	Transport nodes	15
3	Population Paris	2 241 346
4	Accomodation	17
5	Tourist attractions	2
6	Size of landscape	55.5ha
7	Cost of landscape	14 000 000 euros
8	Books published by designer	33
9	Awards won by designer	39
10	Google	1 090 000 hits
11	Instagram	#parcdelavillette 16 785 tags
12	twitter	15 400 followers
13	facebook	no page
14	Google Scholar	8 670 hits

1 https://www.maps.google.co.za
2 https://www.maps.google.co.za
3 https://www.citypopulation.de/php/france-cityofparis.php
4 https://www.maps.google.co.za
5 https://www.maps.google.co.za
6 www.architectmagazine.com/project-gallery/parc-de-la-villette-722
7 https://www.publicspace.org/works/-/project/w023-parc-de-la-villette
8 https://www.books.google.co.za
9 www.tschumi.com/awards/
10 https://www.google.co.za
11 https://www.instagram.com
12 https://www.twitter.com
13 https://www.facebook.com

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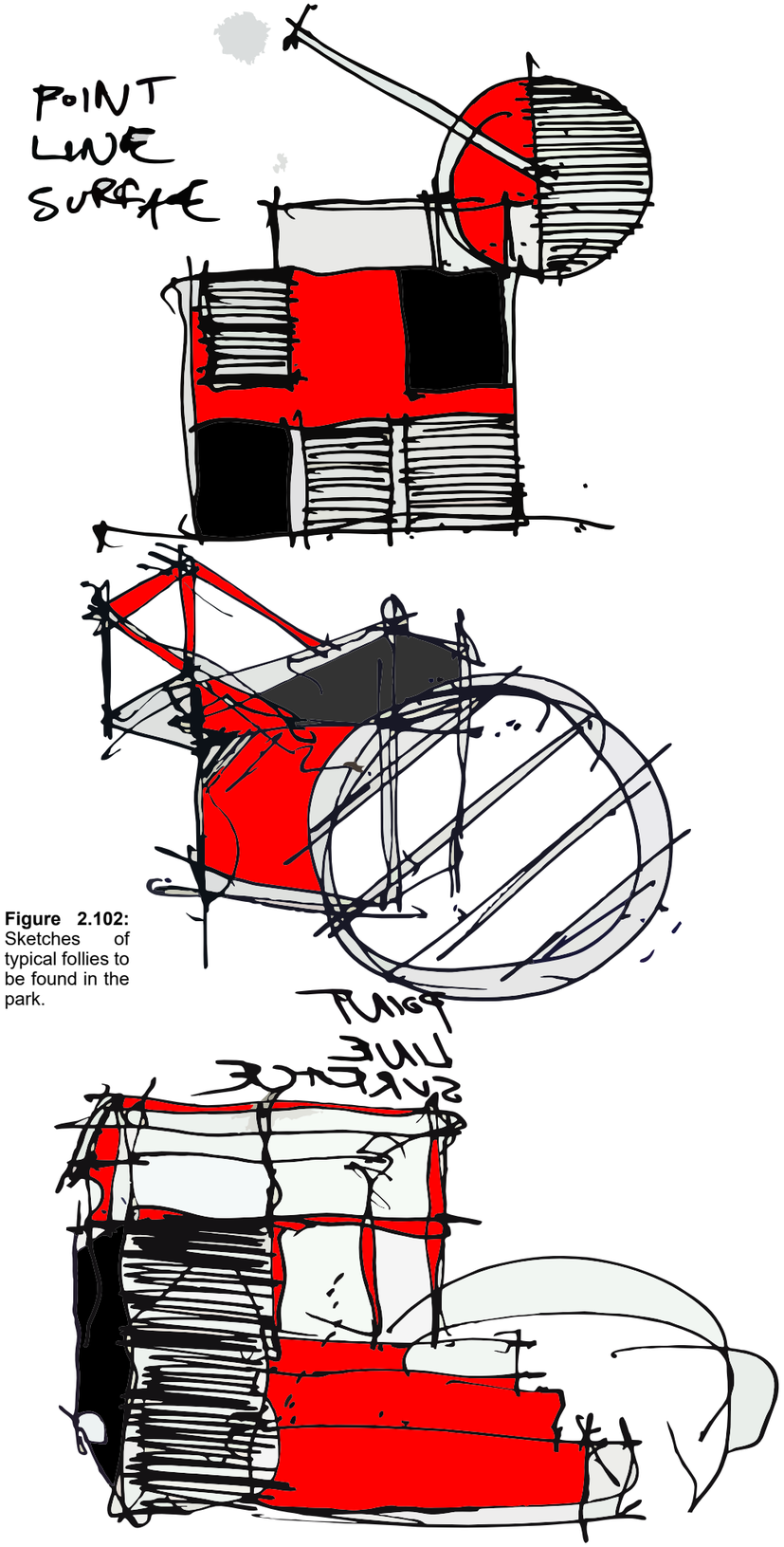

Figure 2.102: Sketches of typical follies to be found in the park.

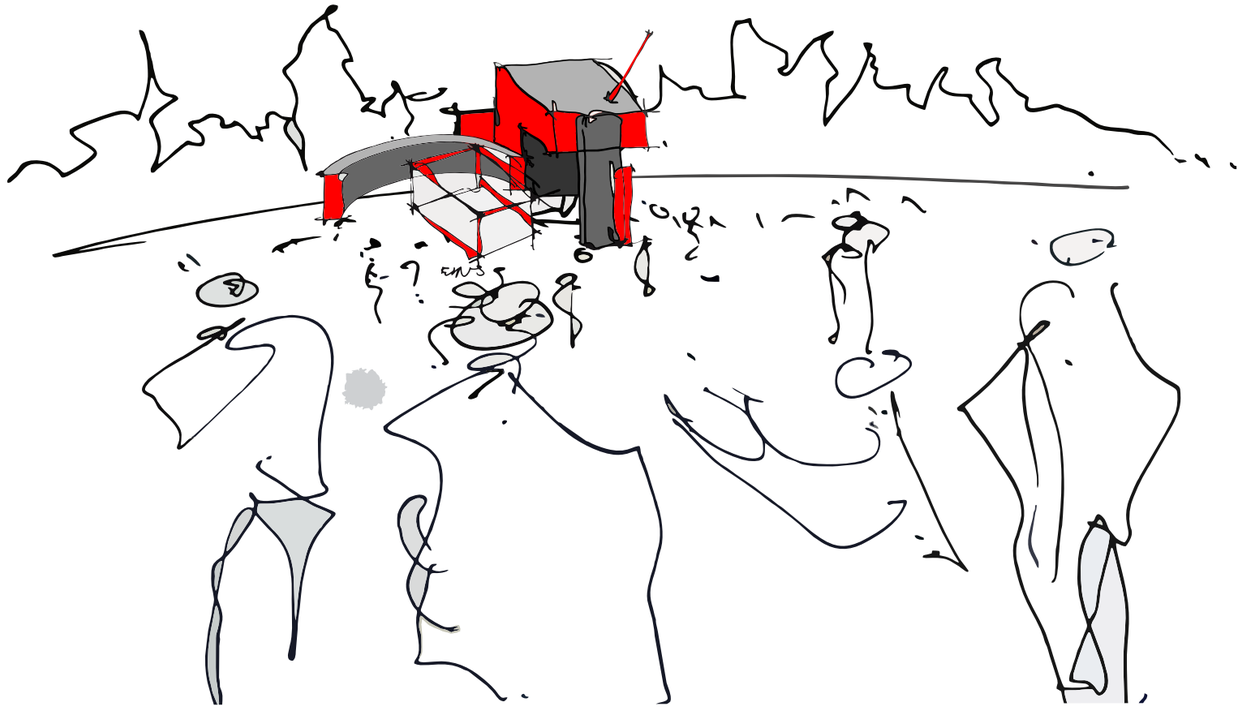

Figure 2.103: Perspective of people gathering around the folly during an event

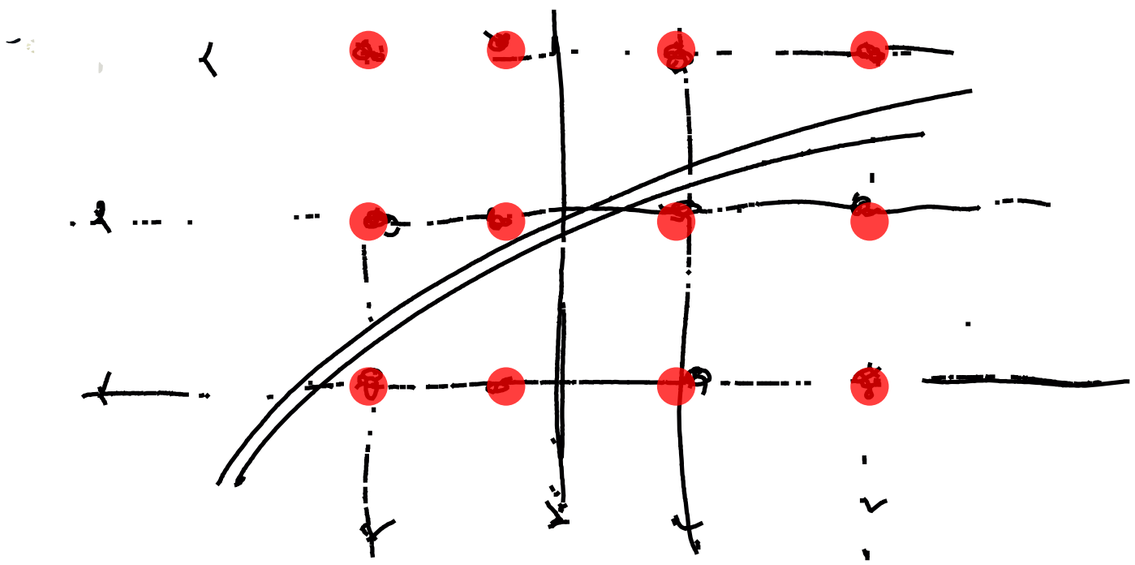

Figure 2.104: Diagram illustrating the concept of deconstruction. The entire park consist of points, lines and surfaces.

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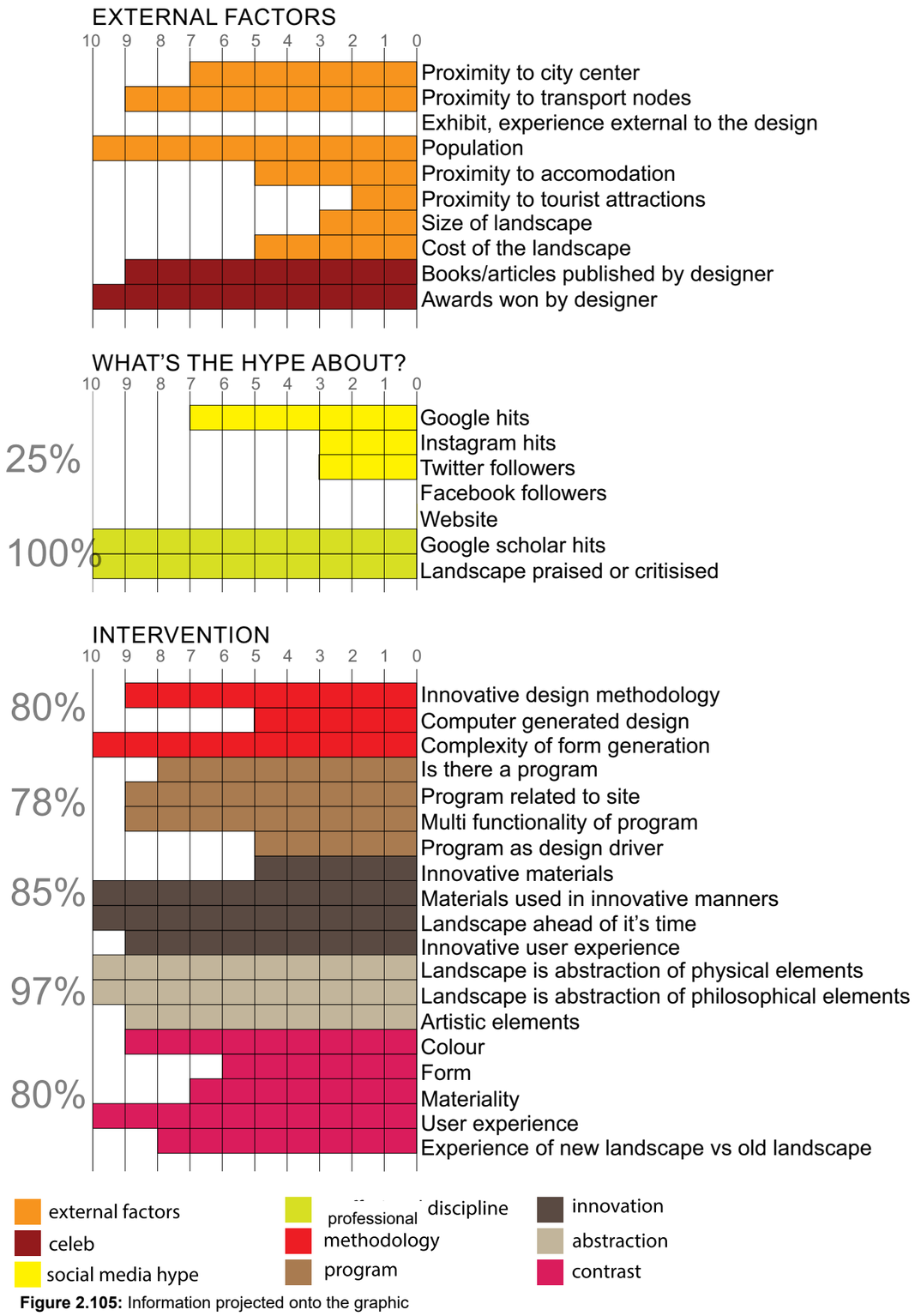

Figure 2.105: Information projected onto the graphic

A masterpiece manifesting in the form of abstract follies, Parc de la Villette is an example of deconstructivism as a design approach. A very successful park regenerating a post-industrial precinct with distinction. Parc de la Villette does not possess a strong social media platform or external factors leading people to the site, but it is rather an abstraction and celebration of an ideological concept of deconstruction. Much like the GMB the design of the park sits seamlessly within the larger context, not afraid to make a statement.

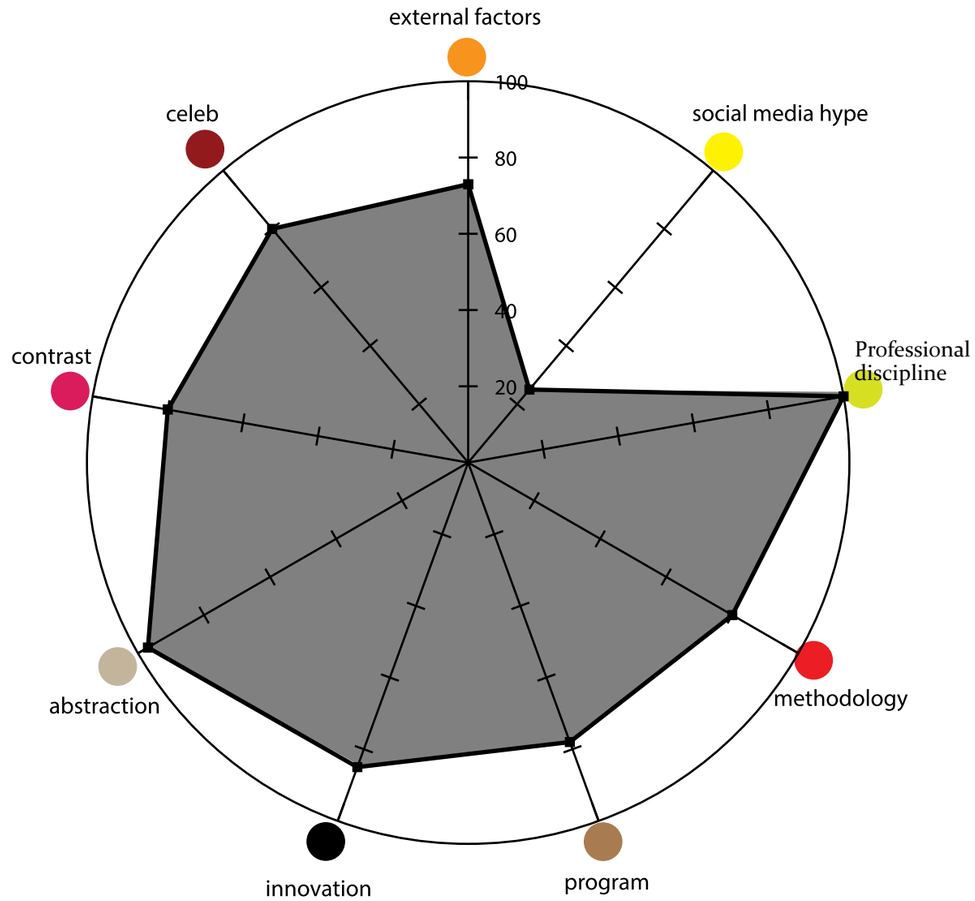

Figure 2.106: Info-graphic of the site

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2.4 Compiling the data

The following chart (Figure 2.104) is a graphic summary of the landscape projects analysed. The following graphics compare the landscape projects to one another in order for conclusions to be made about the Bilbao Effect and landscape architecture.

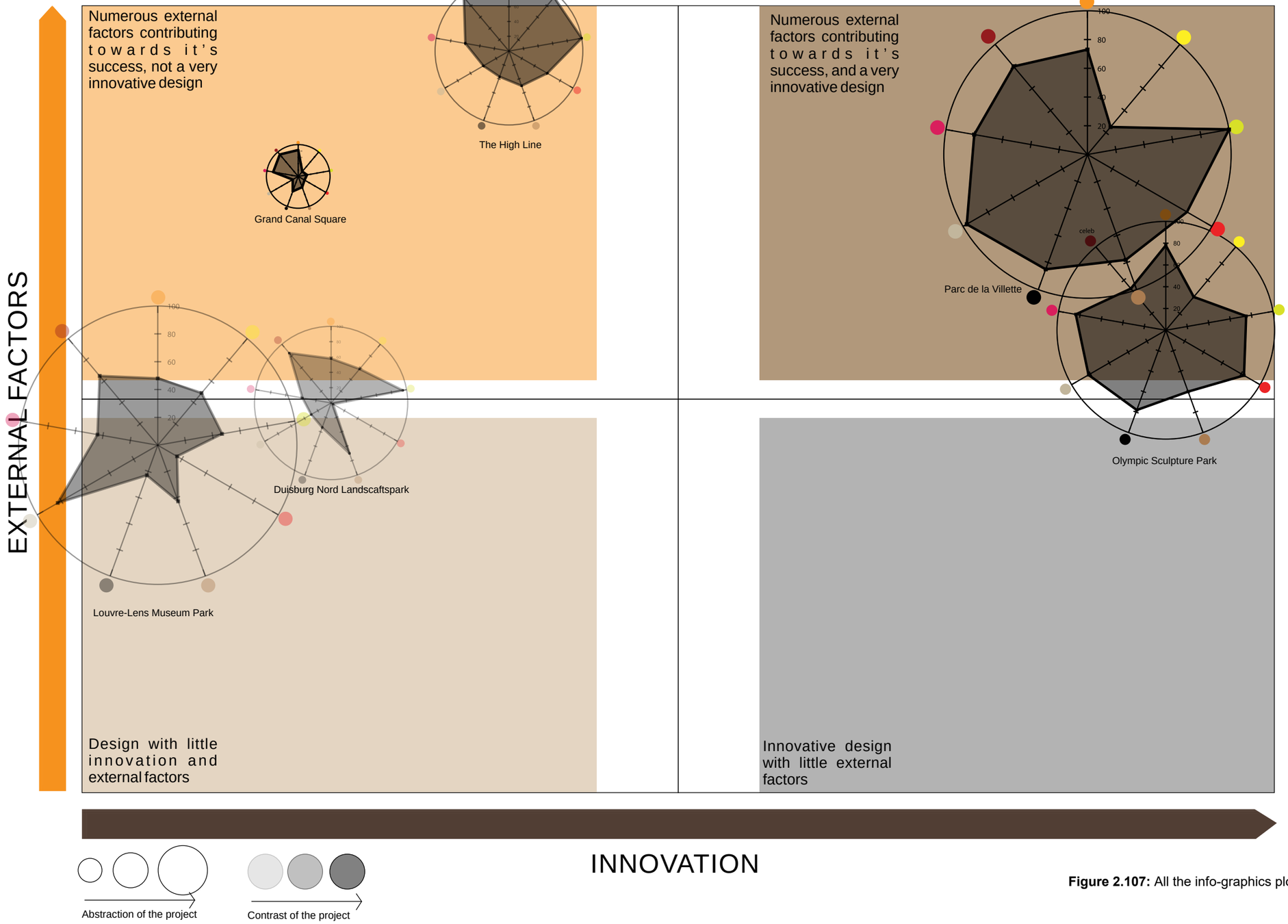

Figure 2.107: All the info-graphics plotted onto a chart

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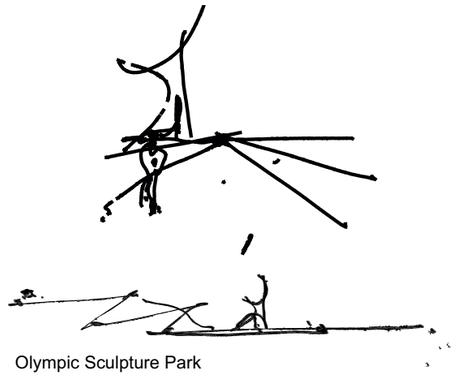
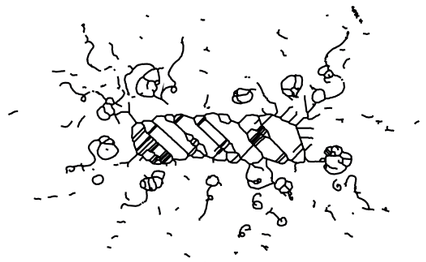
Figure 2.104 is distilled into parti diagrams, each one stating why the project has recreated the Bilbao Effect.



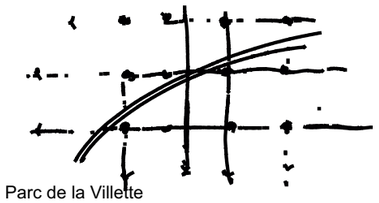
Olympic Sculpture Park

Physical Abstraction
External exhibition
Simple program, innovative user experience
Contrast is ecological



Louvre-Lens Museum Park

Physical Abstraction, subtle
External exhibition
Simple program, innovative user experience
Contrast is ecological



Parc de la Villette

Philosophical Abstraction
No program, innovative user experience



The High Line

External exhibition
Simple program, innovative user experience
Contrast is ecological



Duisburg Nord Landschafstpark

External exhibition
Simple program, innovative user experience
Contrast is ecological

Figure 2.108: Parti diagrams summarizing the landscape projects

The overlaid graphics creates a new info-graphic which theoretically illustrates the ideal project to recreate the Bilbao Effect. The graphic can now be used as a guideline for the design process to follow. The theory suggests that for the Author to recreate the Bilbao Effect in Pretoria West the design will have to comply to the graphic.

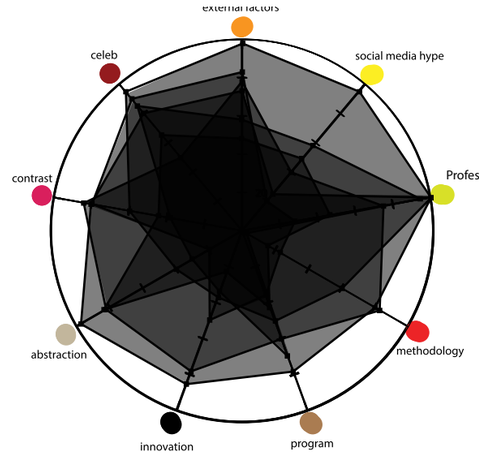


Figure 2.109: All the info-graphics overlayed

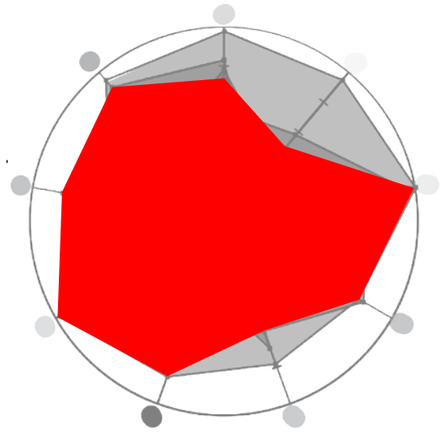


Figure 2.1010: New info-graphic created from Figure 2.109, the ideal project to recreate the Bilbao Effect

2.4.1 Conclusions

1.) Five out of the six precedents looked at whether they have some form of external exhibit integrated within the design. A good example is how the High Line merely compliments the existing famous skyline of New York City (Figures 2.33 - 2.36). The Seattle Sculpture Park is another example as it is filled with art pieces sculpted by world renowned artists.

2.) No landscape has challenged landscape architecture the same manner that the Guggenheim Museum Bilbao has challenged architecture.

3.) Successful projects have an interactive and frivolous social media platform, as well as professional management.

4.) An innovative program is not necessary, but it would be preferable to have the program perceived as an innovative user experience.

Chapter three consists of the urban analysis and the urban issues in Preotria West. Once the author has an understanding of the site, the context of the conclusions will be calibrated to the specific site. Before the design process kicks off, chapter three will refine the conclusions of chapter two.

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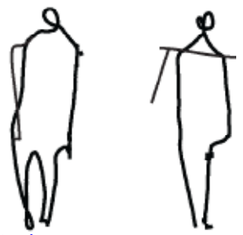
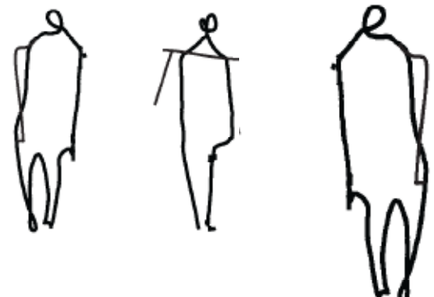
3 Context analysis and urban vision





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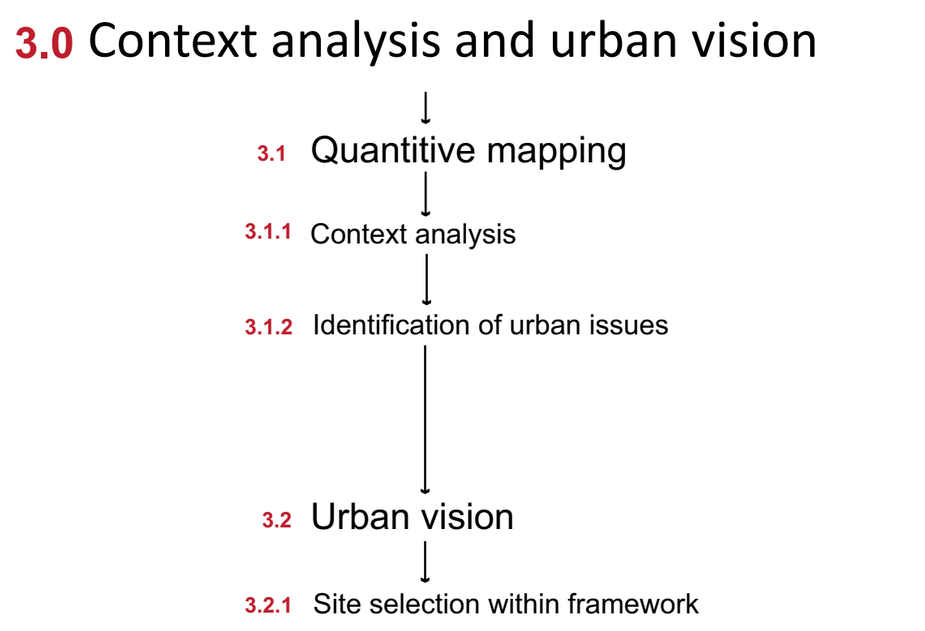

Figure 3.1: A flow chart of the chapter outline

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Figure 3.2: Arial photograph highliting Pretoria West

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Pretoria West

The discovery of abandoned industrial space, buildings, and objects currently occurs more frequently as urban space becomes very precious (Thomas 2003). The world is teeming with such spaces. The spaces compose a story of the past in a very intuitive way, spaces frozen in time waiting to inspire our imaginations (Thomas 2003). They are abandoned relics - creepers run up and down empty staircases, birds and other small animals mark it as their home, broken windows give nature free access. It is here where past, present, and future forcibly intersect in the form of memory (Thomas 2003). They stand as icons at the core of communities and are thus as much a part of our history as cathedrals, monuments, and artefacts. (Thomas 2003)

Globally, in many cities around the world, industrial areas were a precedent in terms of the technical resolution of the major level close to harbours because of their proximity to unskilled labour and railways.

Figure 3.3 shows that the Pretoria West region was allocated for industrial development along with a residential suburb serving the industrial area (Janse van Rensburg 2012). After the power station was relocated (from the inner city) to Pretoria West in 1922, industrial expansion was inevitable (Janse van Rensburg 2012). Residential densities could not satisfy these demands. Thus, additional labour from various locations was necessary to fulfil these economic needs. Over a period of time, the neighbourhood has changed from a residential to a mixed-use suburb consisting of restricted industry, commercial industry, retail, flats, and single-volume residential areas (Janse van Rensburg 2012).

Although these zones coincide, there is a lack of integration, which leads to a monotonous indefensible urban environment that lacks identity (Janse van Rensburg 2012)(Figure 3.4).

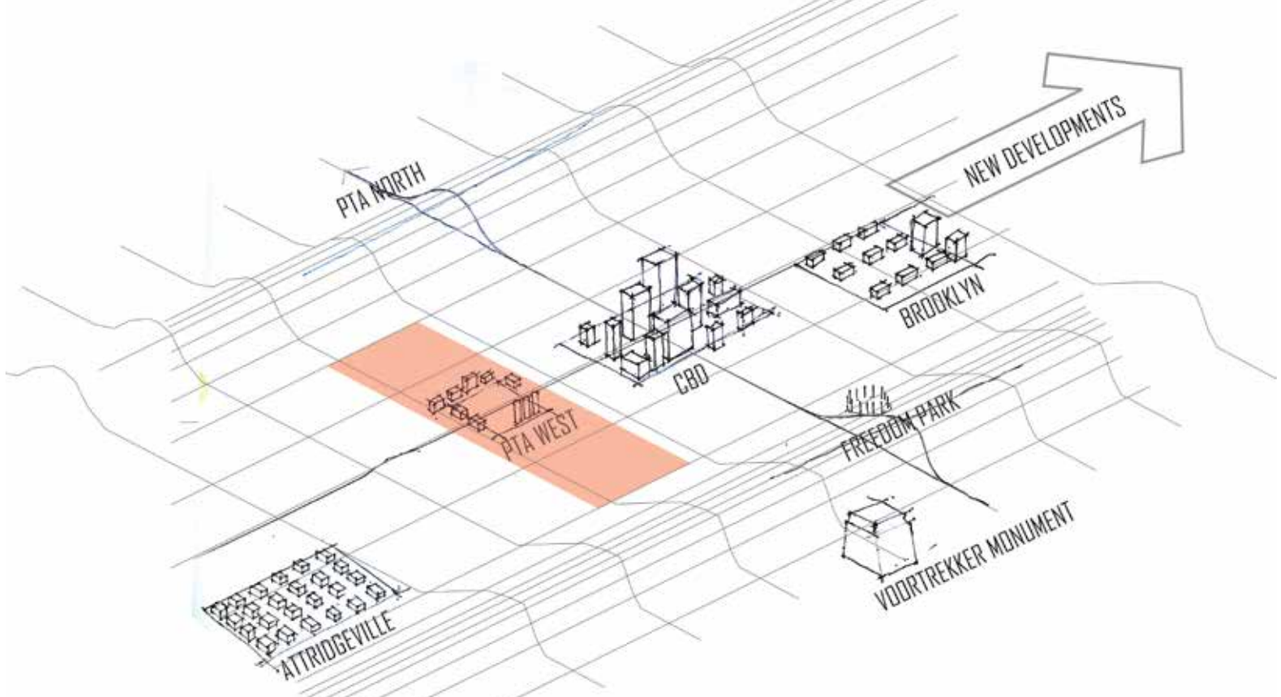

Figure 3.3: Diagram illustrating Pretoria West's position relative to surrounding suburbs

The Tshwane urban vision

> *"Only 27% of the 220 000 ha that constitutes Tshwane's municipal area is built-up, leaving 73% as some form of open space. Of this 4.97% or 11 890 ha is managed by Parks and Horticultural Services. However only 13% or 1 596ha of that is zoned as parks. This means that only 0.73% of the total open space of Tshwane developed public is open space, such as parks and plazas. This highlights the lack of public open space within the city. Areas to the east of the CBD seem to have a healthier open space system. However, to the west there are very few - or no - well-developed public open spaces (Tshwane 2007: 12). Public open spaces have a direct impact on the quality of life of urban residents and is essential for mental, spiritual and physical well-being. It fulfils relaxation, recreation and place making needs. Open space is necessary in order to give coherent structure and beauty to our cities and should guide urban growth. Open space is also important in maintaining vital ecological services such as air and water purification and the maintenance of biodiversity. Quality of life improves, through the development of parks, recreation facilities and open space systems, are critical components of any strategy to attract new economic development, as well as assisting business retention and expansion efforts."*

(Tshwane 2007: 12)

Although the city of Tshwane does have an existing open space framework, it is extremely passive in comparison other world metropolitans (Smit 2011). What the city names as their framework is actually mapping of green, brown, and blue areas in the city.

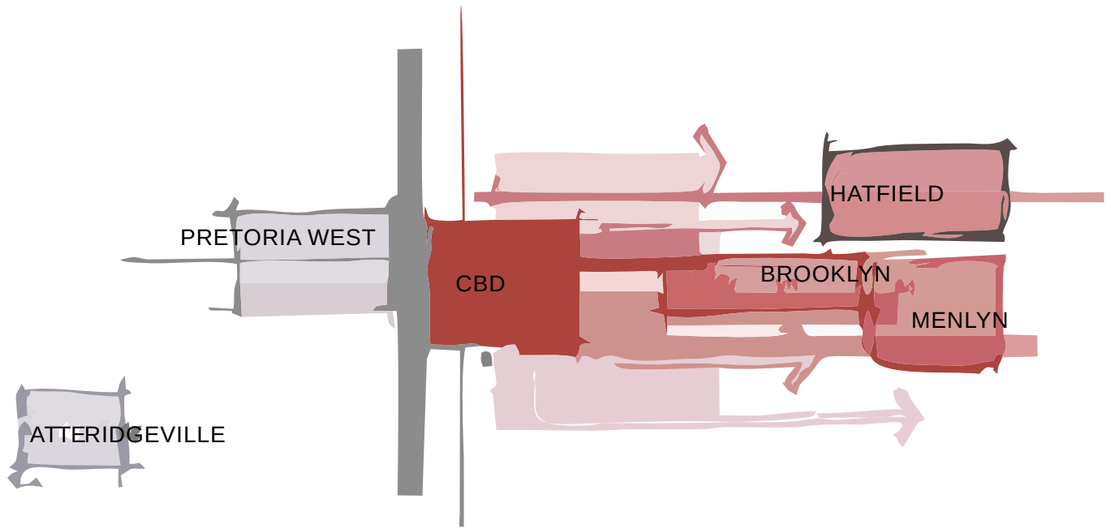

Figure 3.4: Diagramatic representation of the energy of the city shifting to the east of Pretoria

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3.1 Quantitive mapping

The following few pages consist of the mapping exercises conducted by the author and two architecture students, forming the Pretoria West Urban Vision group.



Figure 3.5: Mapping of the public transport systems



Figure 3.6: Mapping of low income households

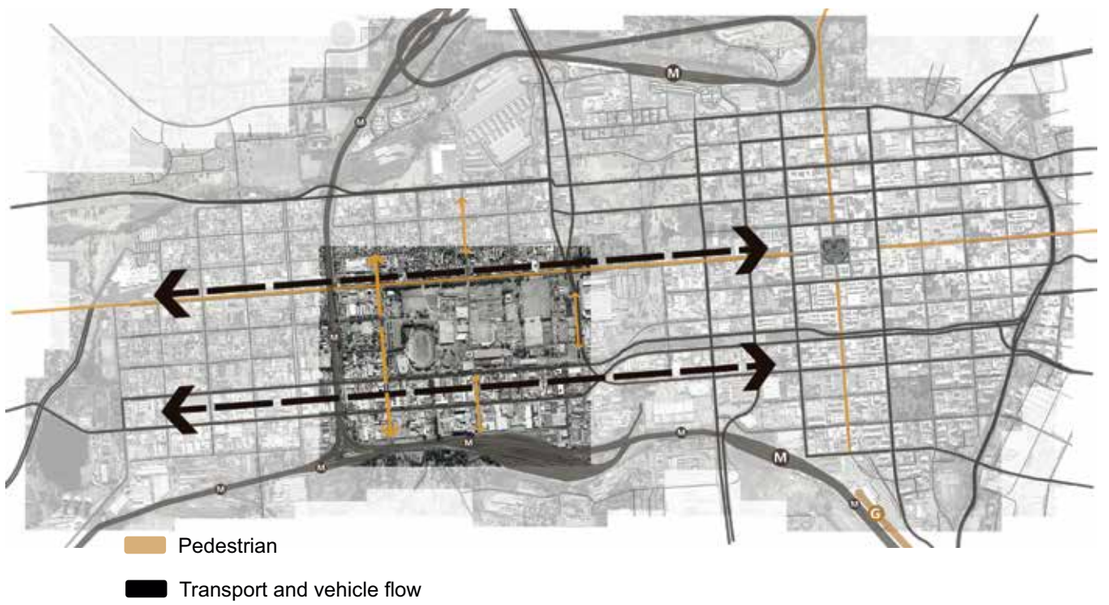

Figure 3.7: Mapping of the pedestrian movement



Figure 3.8: Mapping of the Religious, healthcare and SAPS

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Figure 3.9: Mapping of the population density



Figure 3.10: Mapping of the green spaces

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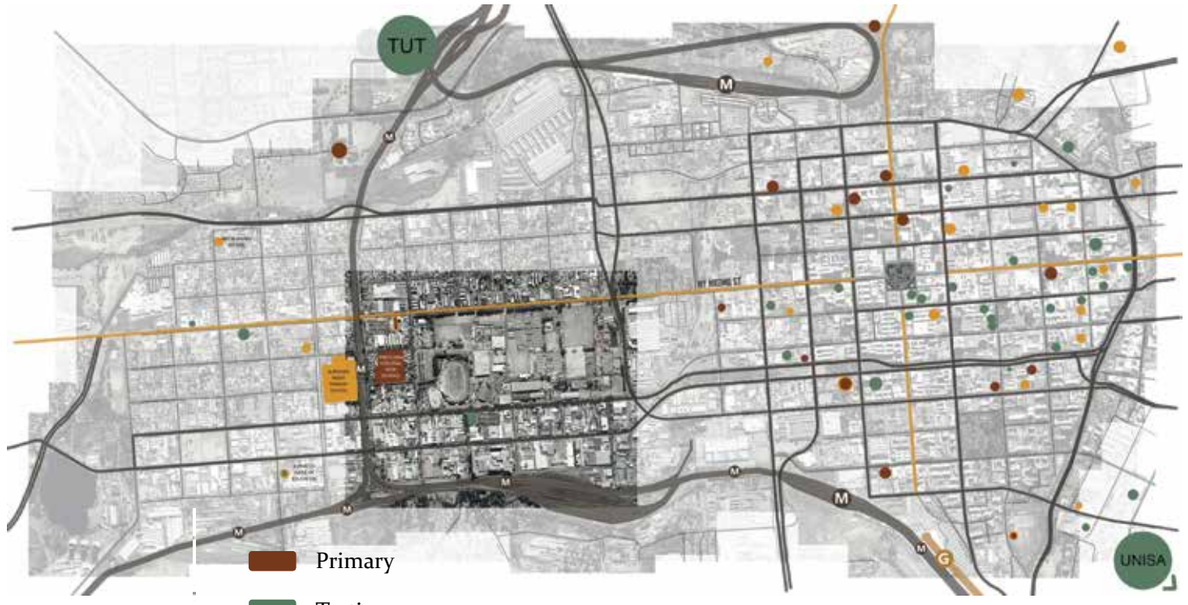

Figure 3.11: Mapping of the educational institutions

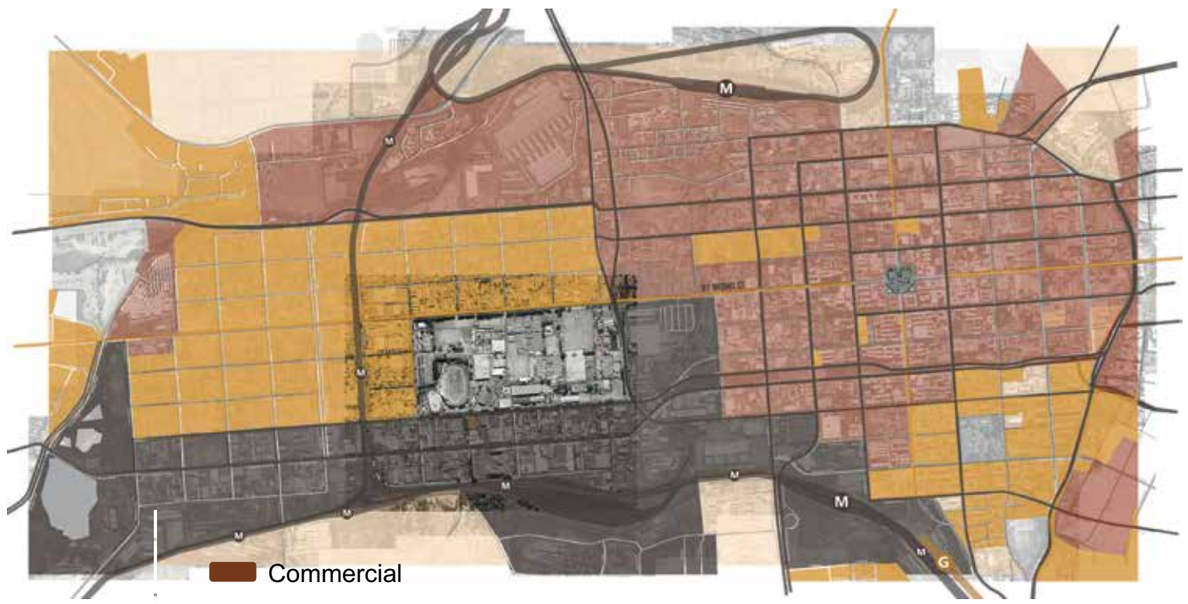

Figure 3.12: Mapping of the existing official zoning

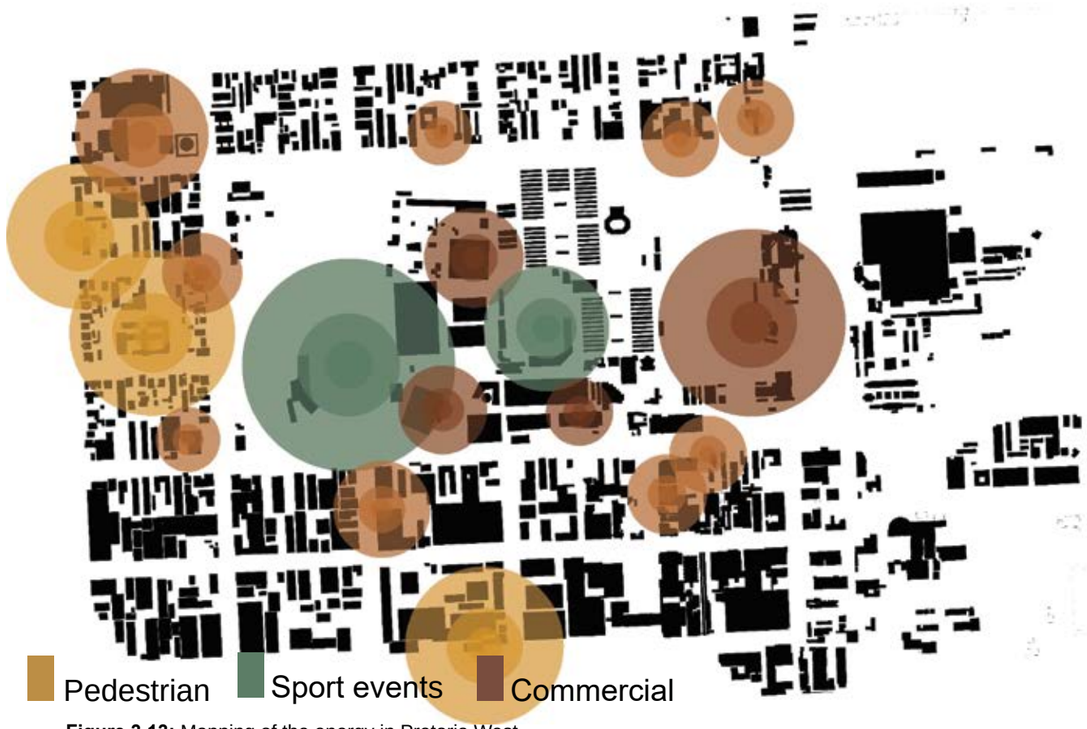

Figure 3.13: Mapping of the energy in Pretoria West

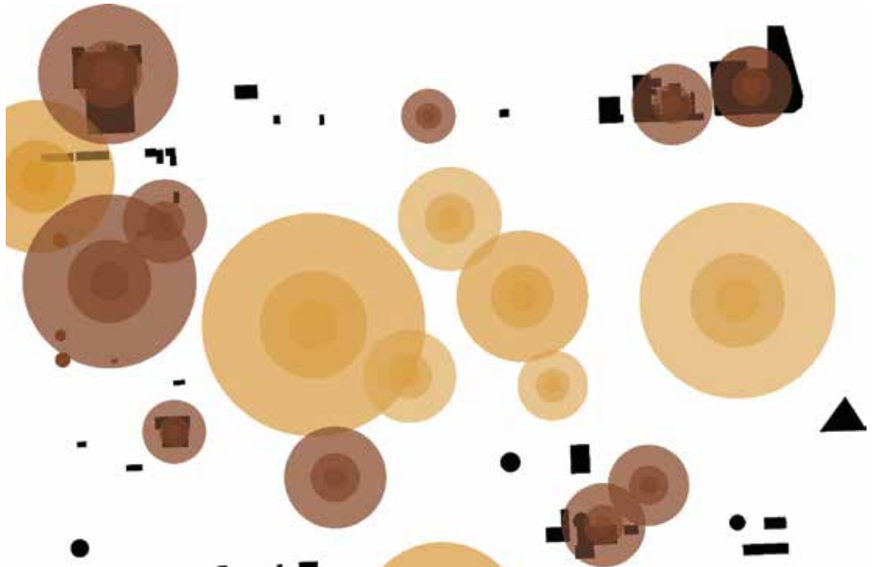

Figure 3.14: Mapping of the lost energy in Pretoria West

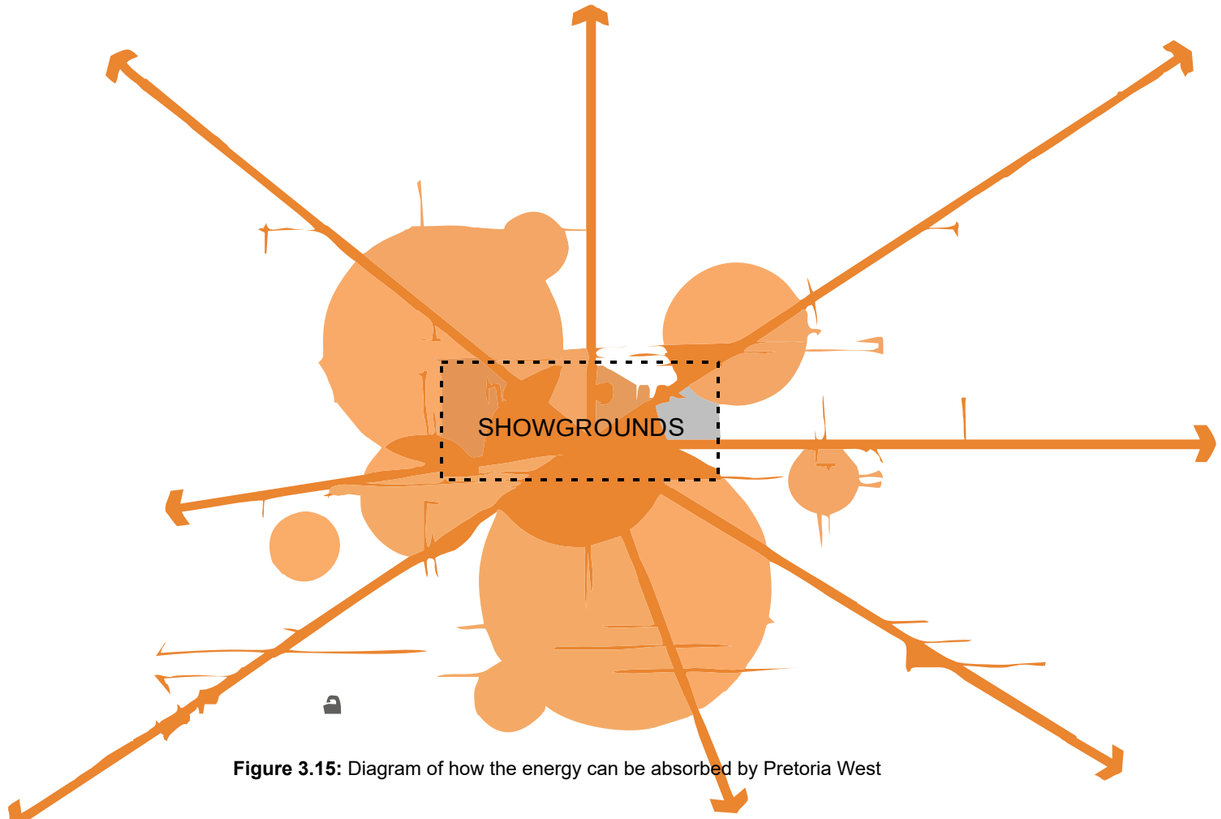

Figure 3.15: Diagram of how the energy can be absorbed by Pretoria West

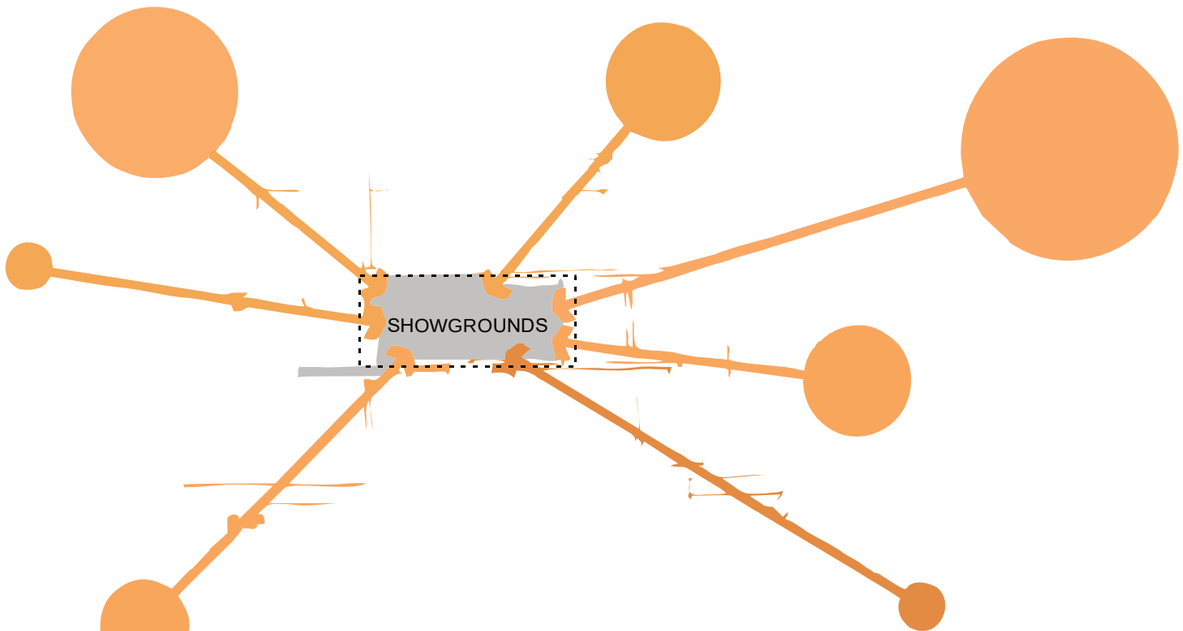

Figure 3.16: Diagram of how the energy can be absorbed by Pretoria West through people from outside

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Figure 3.17 Spatial sketch of typical fourway crossing and streetscape

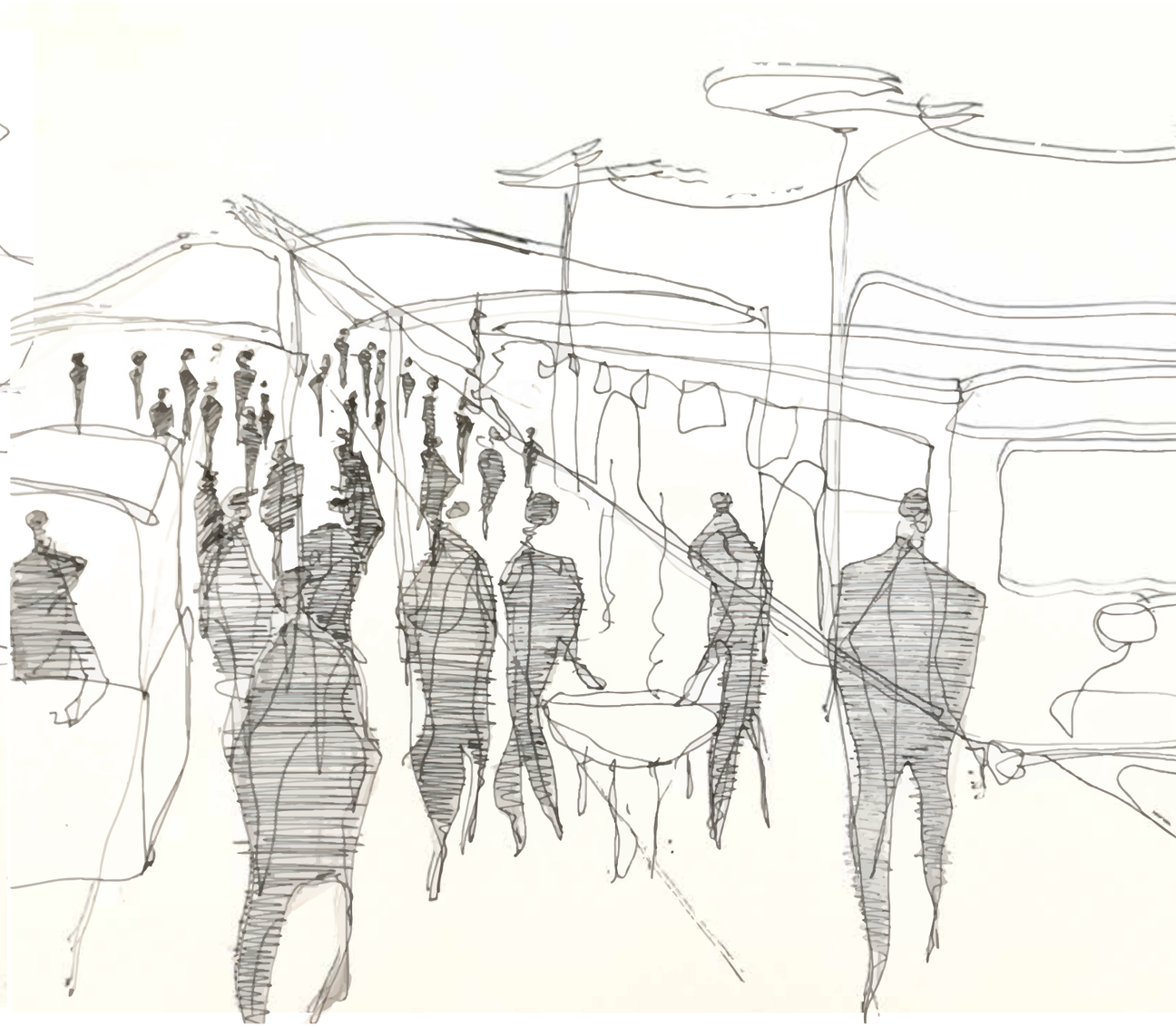

Figure 3.18: Spatial sketch of the train station

To many people the showgrounds characterize the whole of Pretoria West; in fact the showgrounds have hosted thousands of events since the first Pretoria Show in 1937, making it a historical and functional precious space within the suburb. The problem, however, is that the showgrounds sit as an impermeable membrane between the commercial/light-industrial zone and the more residential part of Pretoria West.

For years it catered for people coming from far as an event/exposition outside space and not at all catering for the local people of Pretoria West. As one can see on the diagrams (Figures 3.17-3.20), the showgrounds do attract a lot of energy, but none of which is absorbed by the greater precinct. At this stage the showgrounds of Pretoria West is identified as an opportunity rather than a constraint within the urban vision.

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Figure 3.19: Instinctive mapping of edges and boundaries in and around the showgrounds

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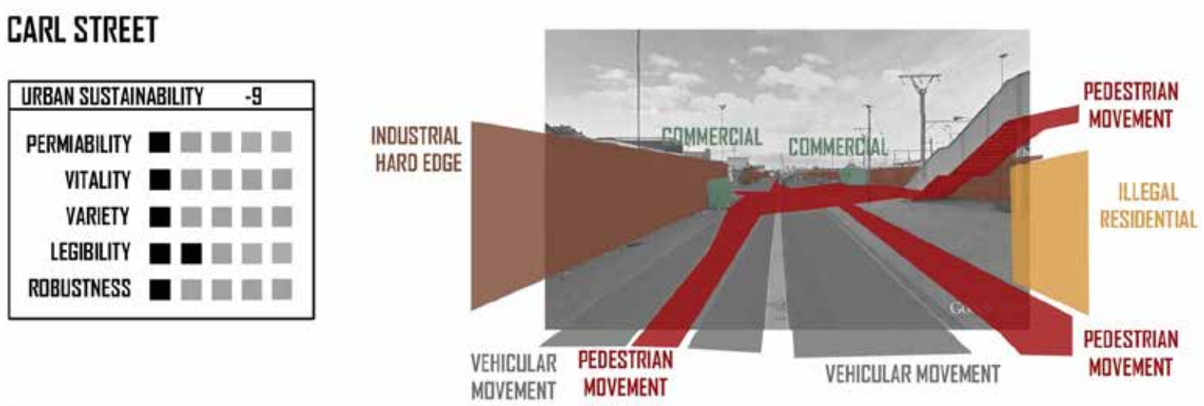

Figure 3.20: Urban sustainibility of Carl Street

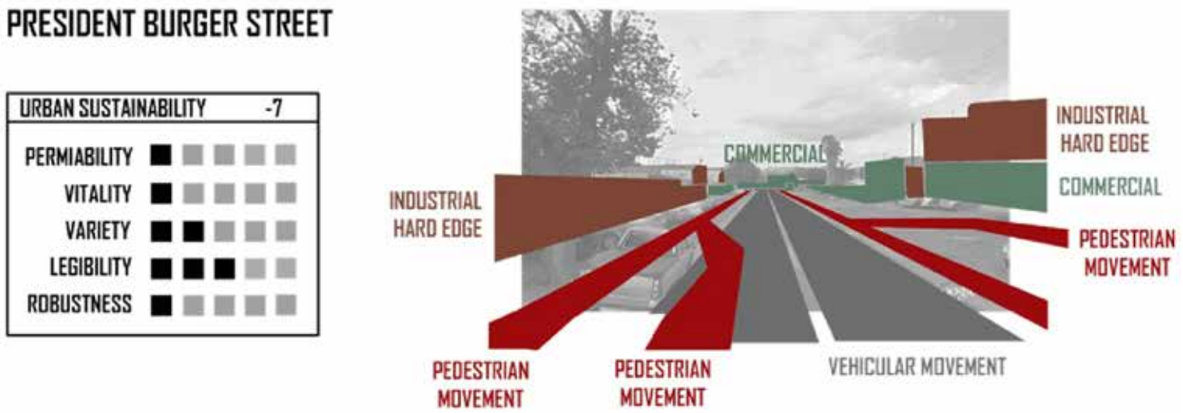

Figure 3.21: Urban sustainibility of President Burger Street



Figure 3.22: Typical views of Pretoria West's streetscapes



Figure 3.23: Group studio work



Figure 3.24: Group studio work



Figure 3.25: Group studio work

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3.2 Urban problems

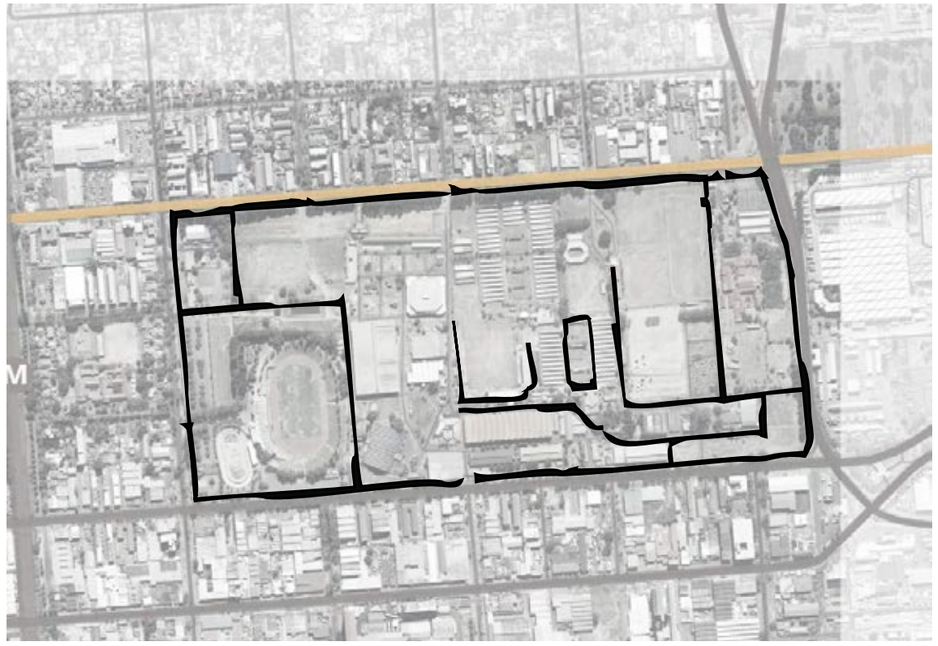

Figure 3.26: The showgrounds do not allow for people to flow through the site. It takes a pedestrian 20 minutes to walk around the showgrounds

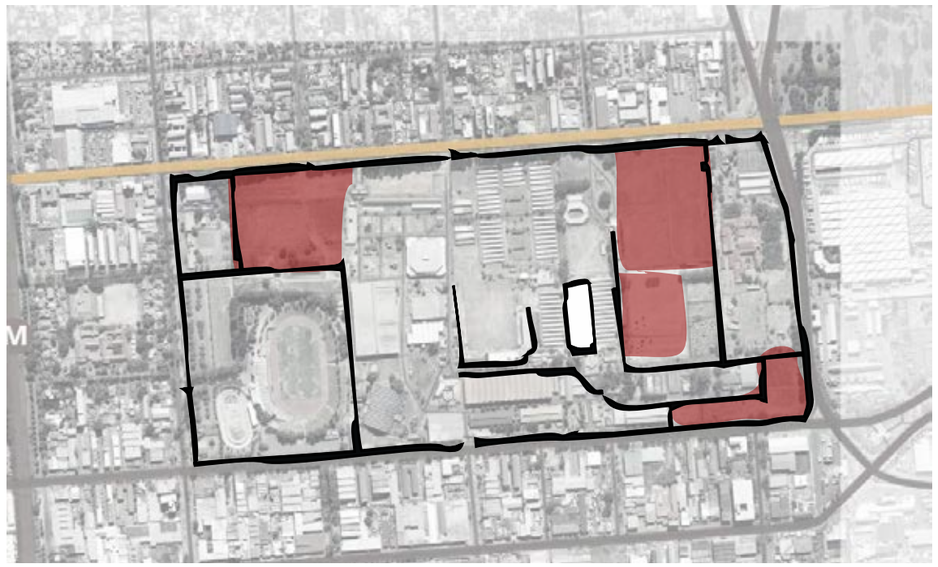

Figure 3.27: Large open spaces within the showgrounds are dormant 95% of the time, it is spaces consisting of short veldgrass only used as parking if there is an event happening in the showgrounds (4 times a year). It is thus extremely mono-functional



Figure 3.28: Whenever there is an event held at the showgrounds the entire space is lit up with people, commerce and an overall bustling atmosphere. The problem is that all this potential is lost once the event has finished, there is no sustainable destination for people.



Figure 3.29: By looking at the official zoning of the area, one can clearly see there is a need for mixed used spaces and streetscapes to allow for more humane interactions on smaller scales. There are little to no healthy signs of urban ecology present. The vegetation mostly consists of Jacaranda trees planted on the sidewalks in 15 meter intervals.

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3.3 Solutions and urban vision

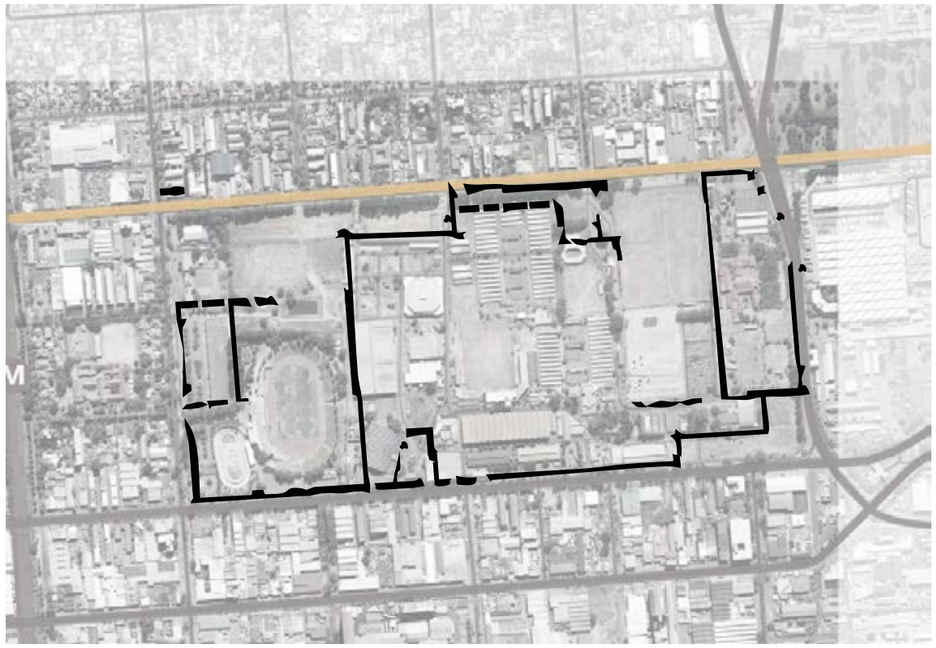

Figure 3.30: Impermeable edges surrounding the showgrounds are altered to create both spaces belonging to the street and new movement patterns inviting users into the showgrounds

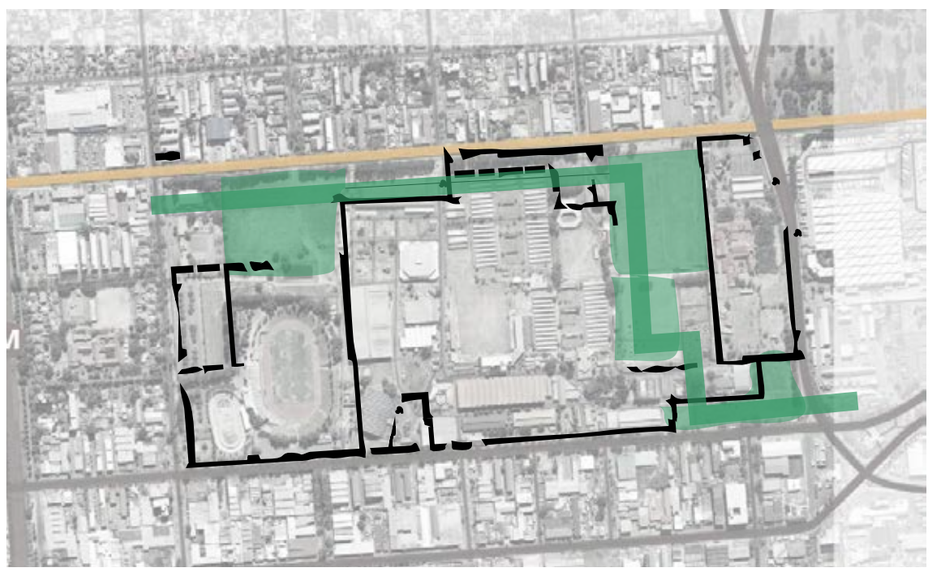

Figure 3.31: Large open spaces within the showgrounds are connected and re-imagined as multifunctional public spaces

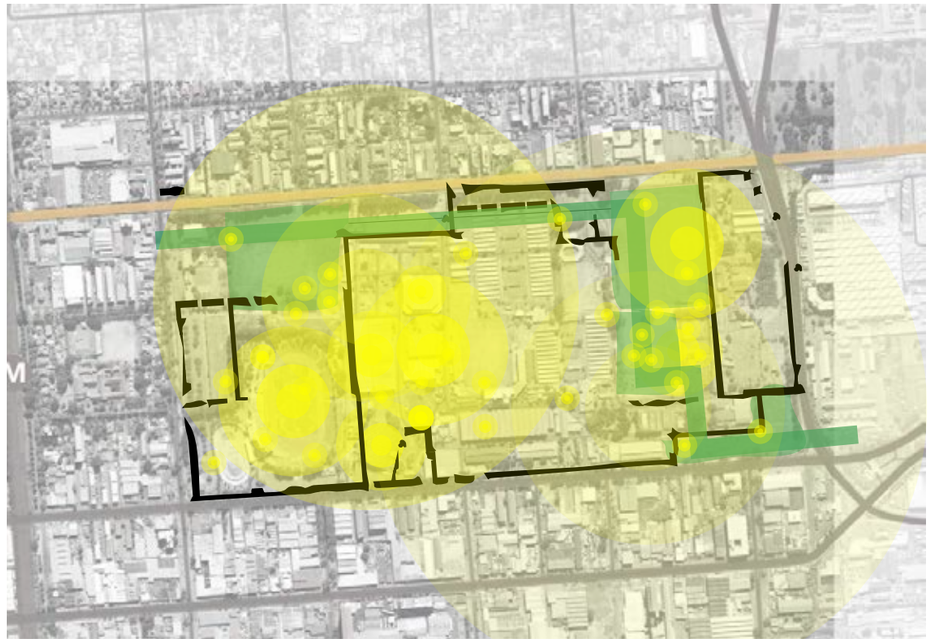

Figure 3.32: Various pockets are created to capture the energy emitted from the showgrounds in the case of events. These pockets will come in forms of spaces, activities, commerce etc. Essentially to introduce the users to new, exciting spaces within the showgrounds

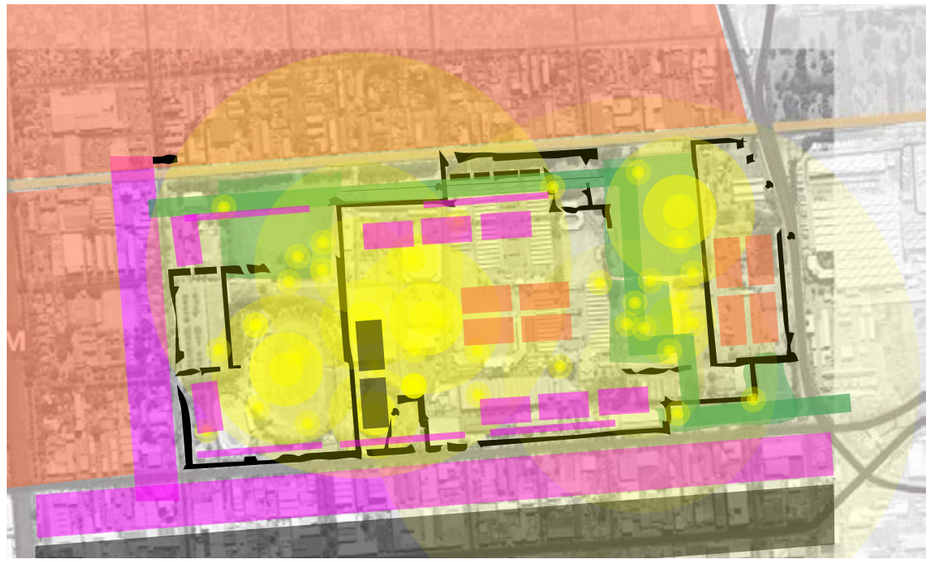

Figure 3.33: Existing conference halls are transformed into multi-use buildings. Some will become low cost residential housing and others will become commercial nodes. The reason for this is to break up the monotonous zoning

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The urban vision was thus centered on the show-grounds. As Pretoria West is a product of an apartheid town and regional planning, the residential, commercial, and industrial zoning are separated from one another. As time passed an interesting phenomenon has been witnessed in Pretoria West; more and more buildings are changing their function, integrating with the different official zones of Pretoria West and creating more mixed use blocks. All the streetscapes opposite the show-grounds show signs of buildings planned and erected, as residents are opening small kiosks and cafés altering the streetscape to become bustling pedestrian hotspots. The diagram (Figure 3.32) of the urban vision shows the proposed new functions/ zoning of the buildings edging on the show-grounds.

3.4 Findings

The show-grounds are a rich palimpsest of historical layers. There is a very specific character that Pretoria West has developed over the past decades. Character can best be described as vibrant industries with welcoming street interfaces. The functional architecture is made up of tectonic structures mostly steel and face brick finished with bright yellow, teal, and brown-reddish colors.

The vision for the study area of Pretoria West was iterated and compiled by the group; thereafter specific parts of the vision were selected for each individual to conceptualize, design and refine the project. Although the urban vision resolves the issues mentioned earlier the overall vision is a coherent one, to allow for more pedestrianized, mixed use spaces to occur within the precinct.Within the urban vision a large mono-functional part of the showgrounds have been identified to be altered into a community park for the local people of Pretoria West whilst it will still cater as functional exhibition and show space. This project will be investigated further by the author and sculpted it into a relevant dissertation for the rest of the year (Figure 3.32). Although the urban vision resolves the issues mentioned earlier, the overall vision is a coherent one, to allow for more pedestrianised, mixed use spaces, to occur within the precinct. Within the urban vision a large mono-functional part of the showgrounds has been identified. The existing large open spaces (Figure 3.29) will be altered into a community park for the local people of Pretoria West whilst it will still cater as functional exhibition and show space.

3.5 Linking theory to site

The urban issues and vision is stated. The findings of chapter two can be linked to the site. The following statements are simulations made about the design of the site in Pretoria West.

1.) The findings of chapter two stated that five out of the six landscapes had some sort of external exhibition attracting the people to the site. The site in Pretoria West does not have such external exhibitions to compliment it. The design will act as the exhibition itself; immediately shifting the focus of the approach to one focused on creation rather than making subtle site responsive decisions.

2.) The design intervention will be an abstraction of Pretoria West, capturing and celebrating the unique character of the immediate and greater context of the site. With the site being an abstraction, it will theoretically fit in seamlessly within its context.

4.) The design will result in a project that is within the strong dialogue of the profession of landscape architecture, whether it be praised or criticized.

5.) Although the site will be an abstraction of Pretoria West, to some extent it will stand in contrast to Pretoria West. The 'abstraction' referred to will be defined and refined in the following chapters.

The current urban tissue of Pretoria West is extremely monotonous in terms of urban ecology, the only natural features within the landscape consist of Jacaranda trees in the streetscape. This project will be a perfect opportunity to create intimate, natural spaces, for both the locals and visitors from far and wide. On the following page is a simulated info-graphic of the intervention that will take place in Pretoria West.

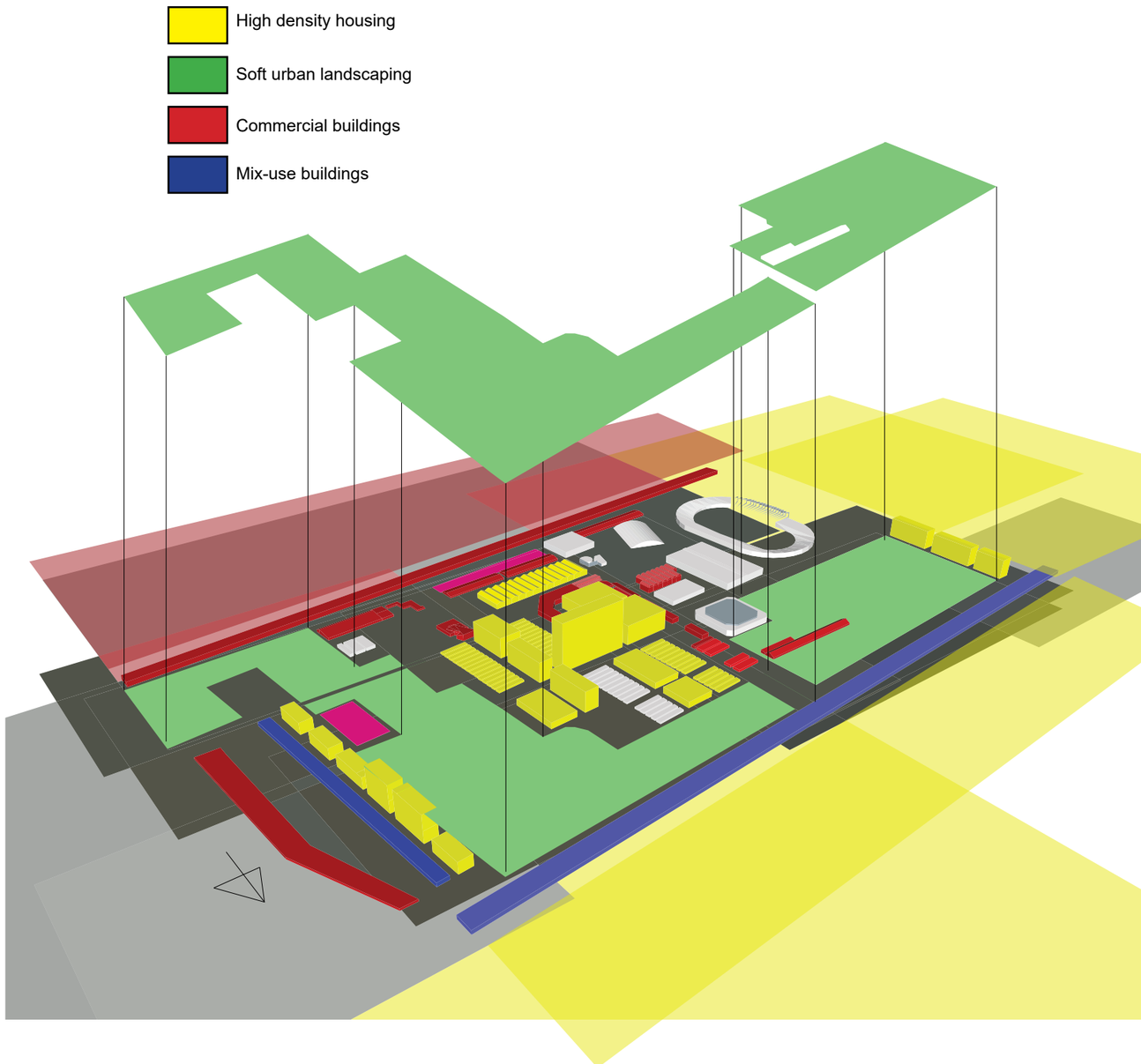

Figure 3.34: 3D concept diagram of introducing mixed use architectural fabric into the showgrounds and highlighting the focused study area

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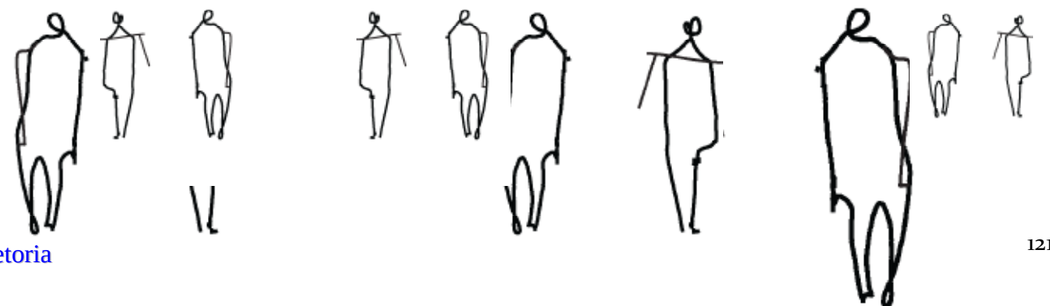
4 Concept



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By deconstructing the Bilbao Effect, conclusions have been made regarding landscape architecture projects for re-generating precincts. Conclusions will be made leading to a set of principles that will guide the development of the concept, masterplan, and finally the technically resolved design.

The instinctive vision is a site manifesting the unique character of Pretoria West. This means a site with innovative experiences attracting people from all over South Africa whilst catering as a district park for the local people. In addition, it will be a site in contrast with its surroundings, yet poetically contextualized.

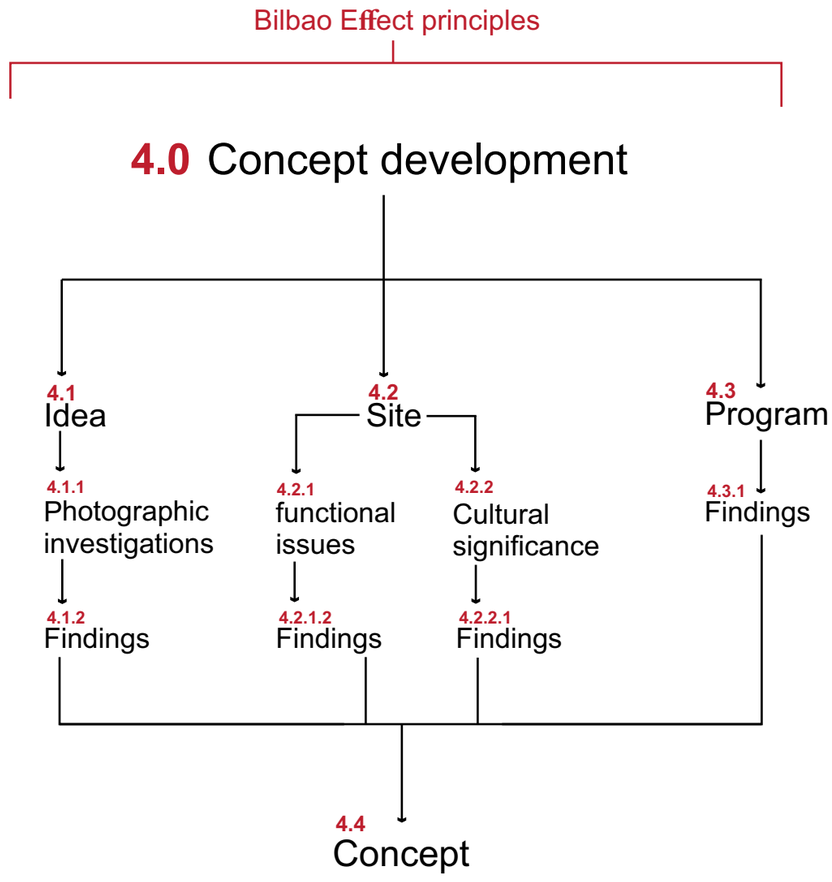

Figure 4.1: Flow chart showing chapter outline

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Methodology

A successful concept comprises of three basic principles, namely the idea for the design, the site of the intervention, and the program for the design. The deconstruction of this concept can be applied to almost all successful architectural precincts (Prinsloo 2017). To better understand the application of this concept development, a brief discussion will follow applying the three principles to the projects discussed earlier in Chapter 2. The popular landscape architecture project previously mentioned in this paper, the High Line in New York, is a good example of this application (Page 52).

1.) The idea of the design was to use modular, simple precast concrete slabs and assemble them in such a manner to create different spaces within the park. The uniformity of the material palette (including the plant species) allows for the designer to be creative in creating different spaces while it will always be perceived as being within the same design language.

2.) Following on from the idea is the site of the project, since the park sits on top of an existing old railway line it consists of precast concrete slabs laid on the sturdy infrastructure. The location of the High Line is in the heart of Manhattan, which is a borough of New York city and is widely known and an attraction for people from around the world. The design of the High Line does not overpower what has been, historically, very successful, thus the material and planting palette is of such nature as to sit very subtly and horizontally on the railway line, allowing for people to stroll through the park while they embrace the wonderful view of the City of New York.

3.) Lastly the program of the site is to allow for numerous activities to take place within the park at different times of the day. The modular set of concrete slabs in the High Line creates a balance of more intimate planting spaces interspersed with open spaces for activities such as yoga, and where art exhibitions can take place. It is also a very popular jogging destination for both locals and tourists wanting to fully embrace the New York experience. The flow of spaces is thus critical in allowing people to jog in the park. The concept for the site in Pretoria West now follows.

Referring back to the conclusions made in the theoretical section about the Bilbao Effect, it was stated that the site in Pretoria West is planned to be an abstraction of not only the immediate context, but also that of the greater Pretoria West. The abstraction will be interpreted by deconstructing the architectural typologies in the landscape.

4.1 Idea

The site subliminally represents the beauty and character of Pretoria West. At this stage of the concept development it is important to establish the overall design language that will be used to articulate the different spaces formed within the site, as well as program analysis. An investigative field trip was conducted to visit the immediate context as well as the greater community of Pretoria West; the outcome was a series of photographs capturing the essence of Pretoria West with the concept of abstraction constantly in mind. Figures 4.2 - 4.41 are photographs, taken by the author, capturing the unique structures defining the greater Pretoria West area.



Figure 4.2: Map highlighting the investigated area, the Greater Pretoria West



Figure 4.3: Image of a nursery. Nurseries can be seen at frequent intervals around Pretoria West



Figure 4.4: Image of an old Mercedes-Benz factory



Figure 4.5: Image of a Supermarket, take note of the exciting yellow and teal colours

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Figure 4.6: Image of a colourful factory



Figure 4.7: Image of an agriculture crops tunnel. Beautiful exposed tectonics



Figure 4.8: Image of a colourful factory



Figure 4.9: Image of a shed



Figure 4.10: Image of a colourful factory

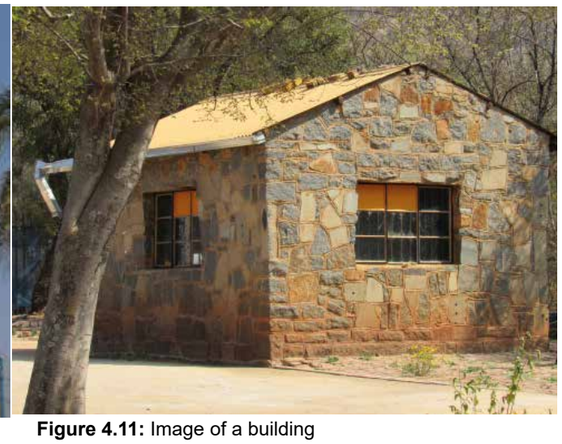

Figure 4.11: Image of a building

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Figure 4.12: Image of a "padstal" structure



Figure 4.13: Image of a shed being constructed



Figure 4.14: Image of a reservoir



Figure 4.15: Image of a hotrod car



Figure 4.16: Image of a reservoir



Figure 4.17: Image of a reservoir



Figure 4.18: Image of a factory



Figure 4.19: Image a reservoir



Figure 4.20: Image of a reservoir and dam



Figure 4.21: nursery and water tanks



Figure 4.22: Image of an old drive-in theatre



Figure 4.23: Image of a Mahem race track



Figure 4.24: Image of Mahem race track



Figure 4.25: Image of Mahem race track

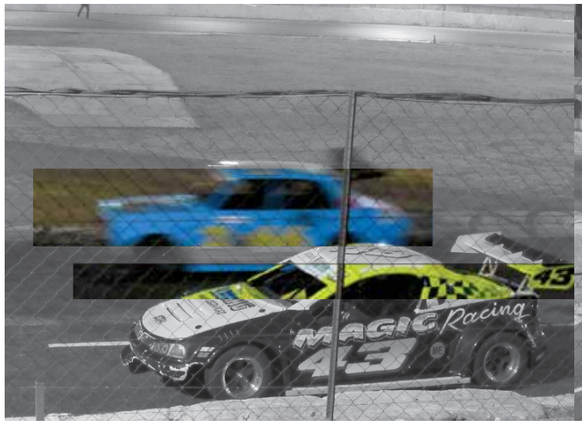

Figure 4.26: Image of Mahem race track

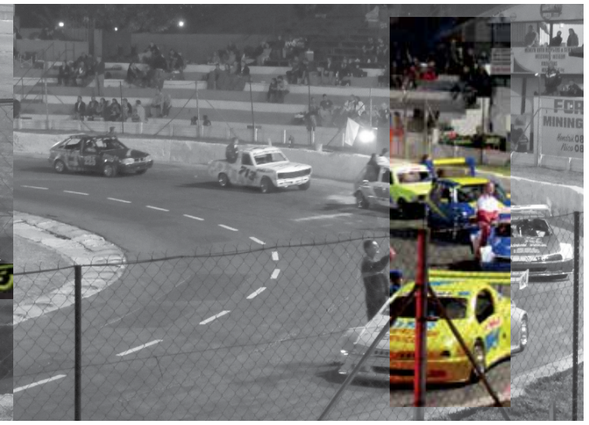

Figure 4.27: Image of Mahem race track

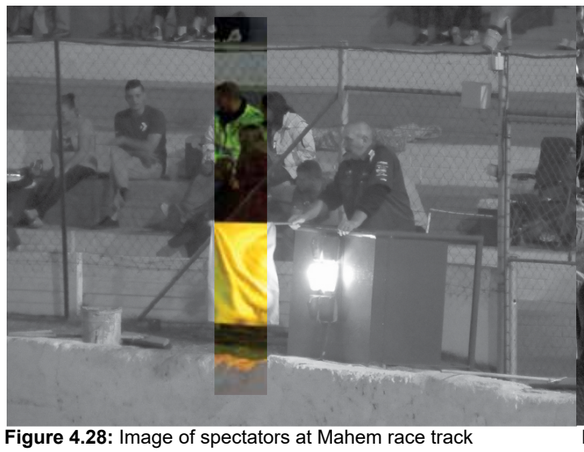

Figure 4.28: Image of spectators at Mahem race track

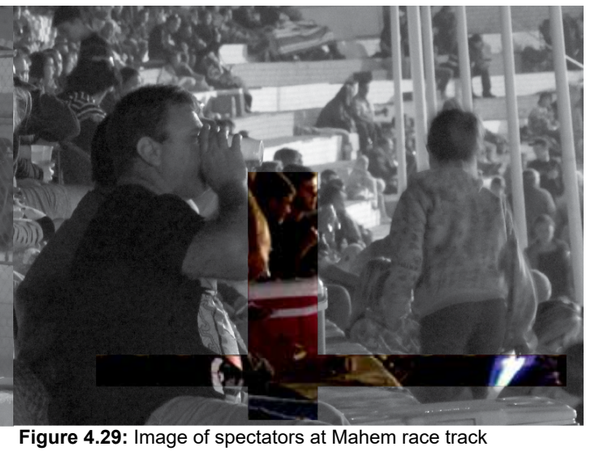

Figure 4.29: Image of spectators at Mahem race track

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The same investigation was practiced within the immediate context of the showgrounds.



Figure 4.30: Area of photographic study



Figure 4.31: Image of a small shop front



Figure 4.32: Image of a small greenhouse shade netting



Figure 4.33: Image of a shopfront



Figure 4.34: Image of a power box.



Figure 4.35: Image of the waste granite and concrete blocks covering the streetscape



Figure 4.36: Image of a typical shopfront exhibition



Figure 4.37: Image of a small kiosk



Figure 4.38: Image of one of Pretoria West's many large scale industries



Figure 4.39: Image of a building apron exhibited on the sidewalk



Figure 4.40: Image of typical palisade

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4.1.1 Investigation

The photographic study shows that typical agricultural and architecture typologies are frequently repeated, each structure designed to fulfil a specific function. Based on design principles such as contrast, balance, hierarchy, repetition, unity, and harmony, the following compositions were created with the intention of deconstructing tectonic structures unique to Pretoria West.

By deconstructing an element one removes the function typically associated with it; with the intention of isolating and questioning the hierarchy of the elements (Prinsloo 2017). As almost all of the architectural typologies documented focus purely on the functional aspect, the following compositions attempt to remove all functions from the structural and robust materials. The images looked at (Figures 4.42 - 4.49) were extracted to amplify the balanced colours and compositions that they can potentially form.

This will lead to the creation of a unique design language. This will be a language that will contribute to the form, materiality, and spaces of the design.



Figure 4.41: “Energetic repetition”



Figure 4.42: “Concrete sunrise”

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Figure 4.43: “Wheel alignment”

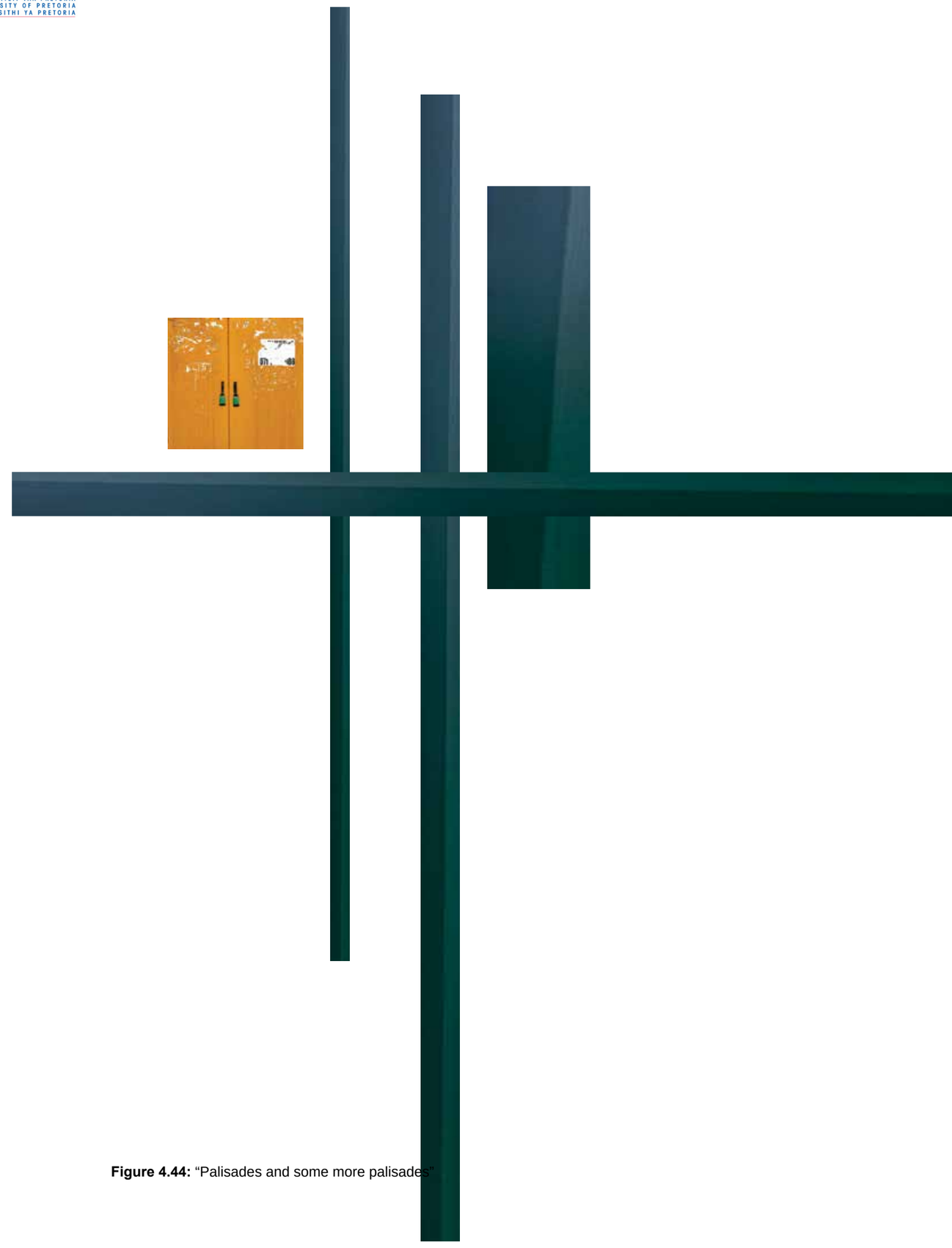

Figure 4.44: “Palisades and some more palisades”

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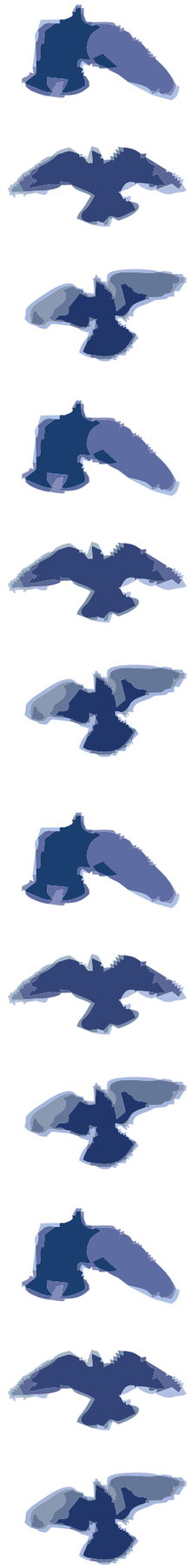

Figure 4.45: "fabrieks duif"

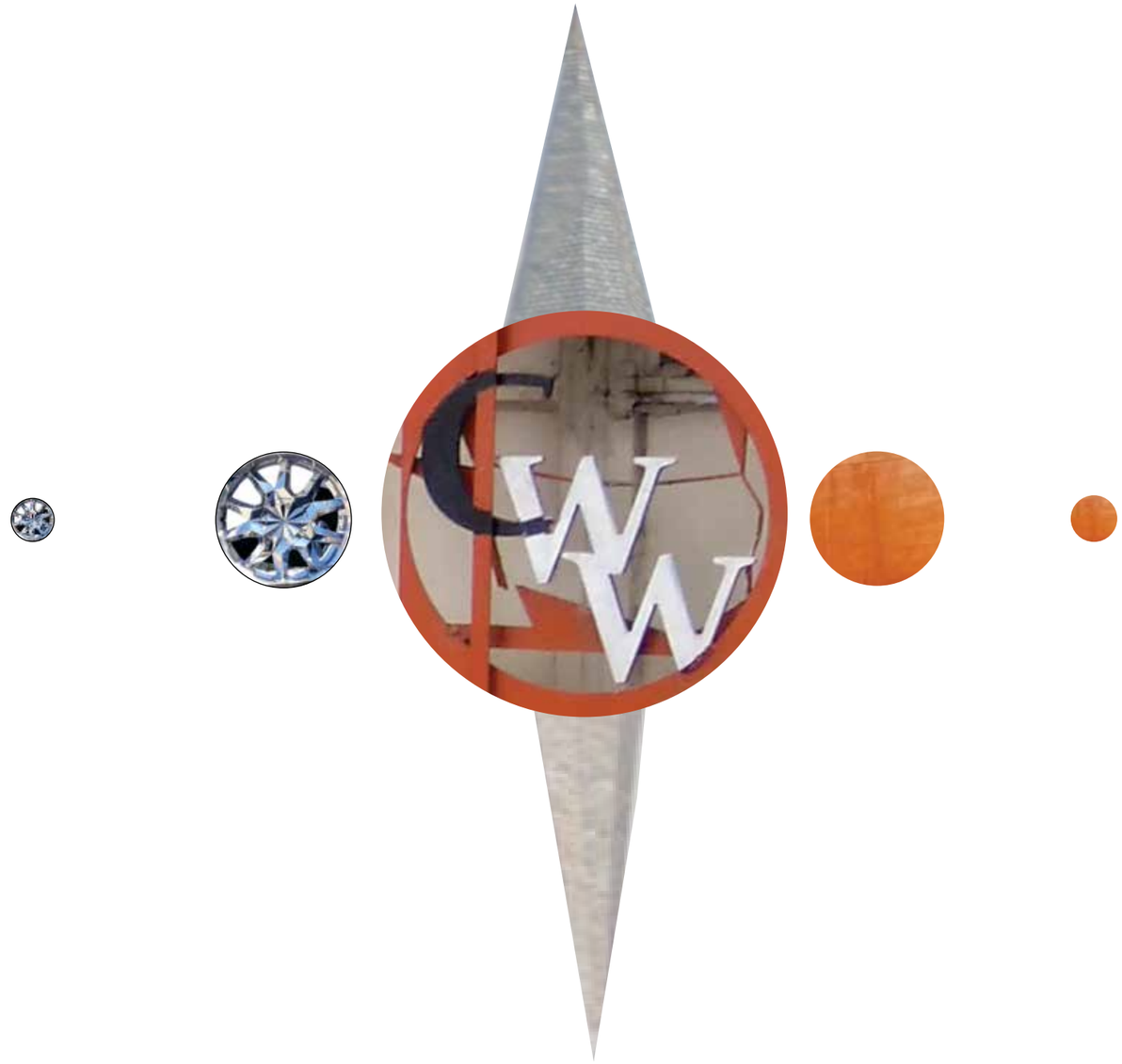

Figure 4.46: "Crossroads"

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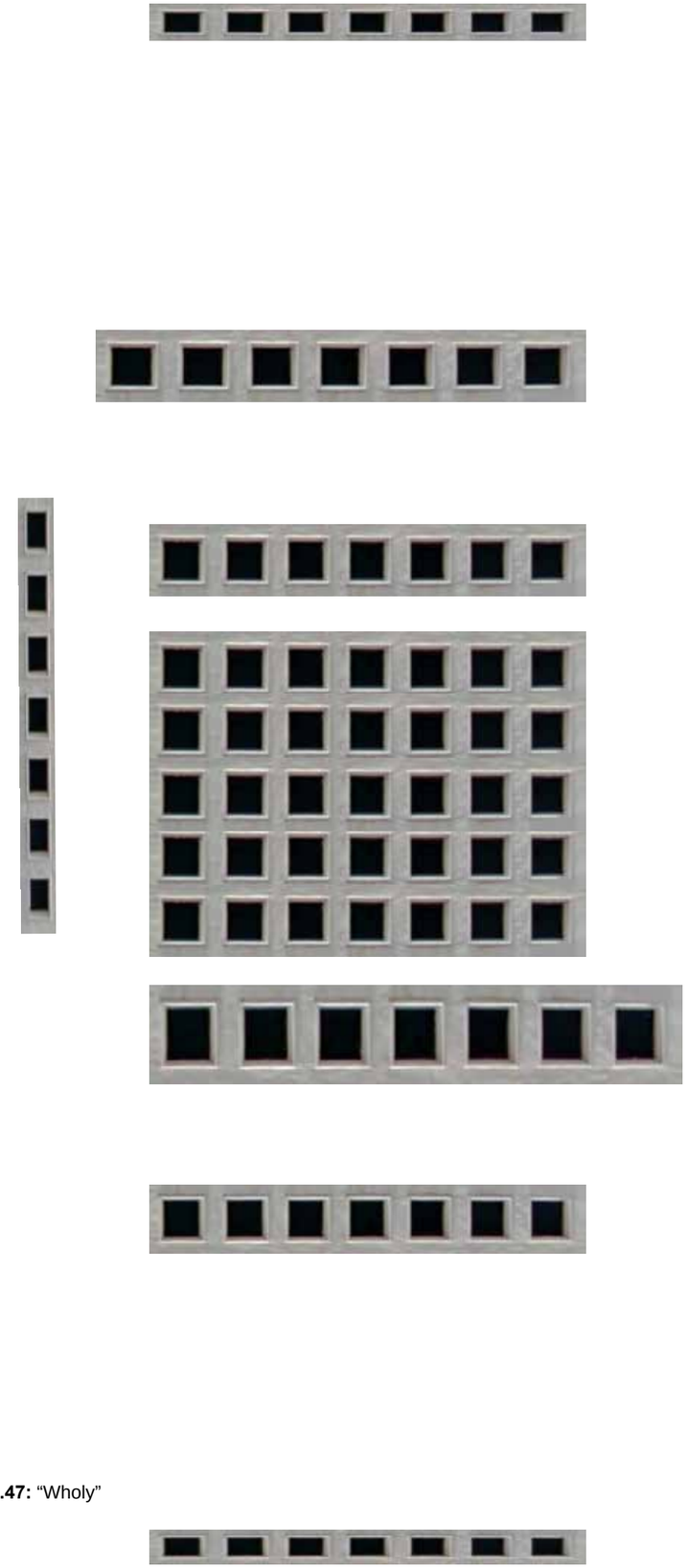

Figure 4.47: "Wholy"



Figure 4.48: "Herbie rides again**"**

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The following two drawings (Figures 4.50 and 4.51) illustrate the geometric abstraction made from typical agricultural architecture typologies found specifically in Pretoria West.

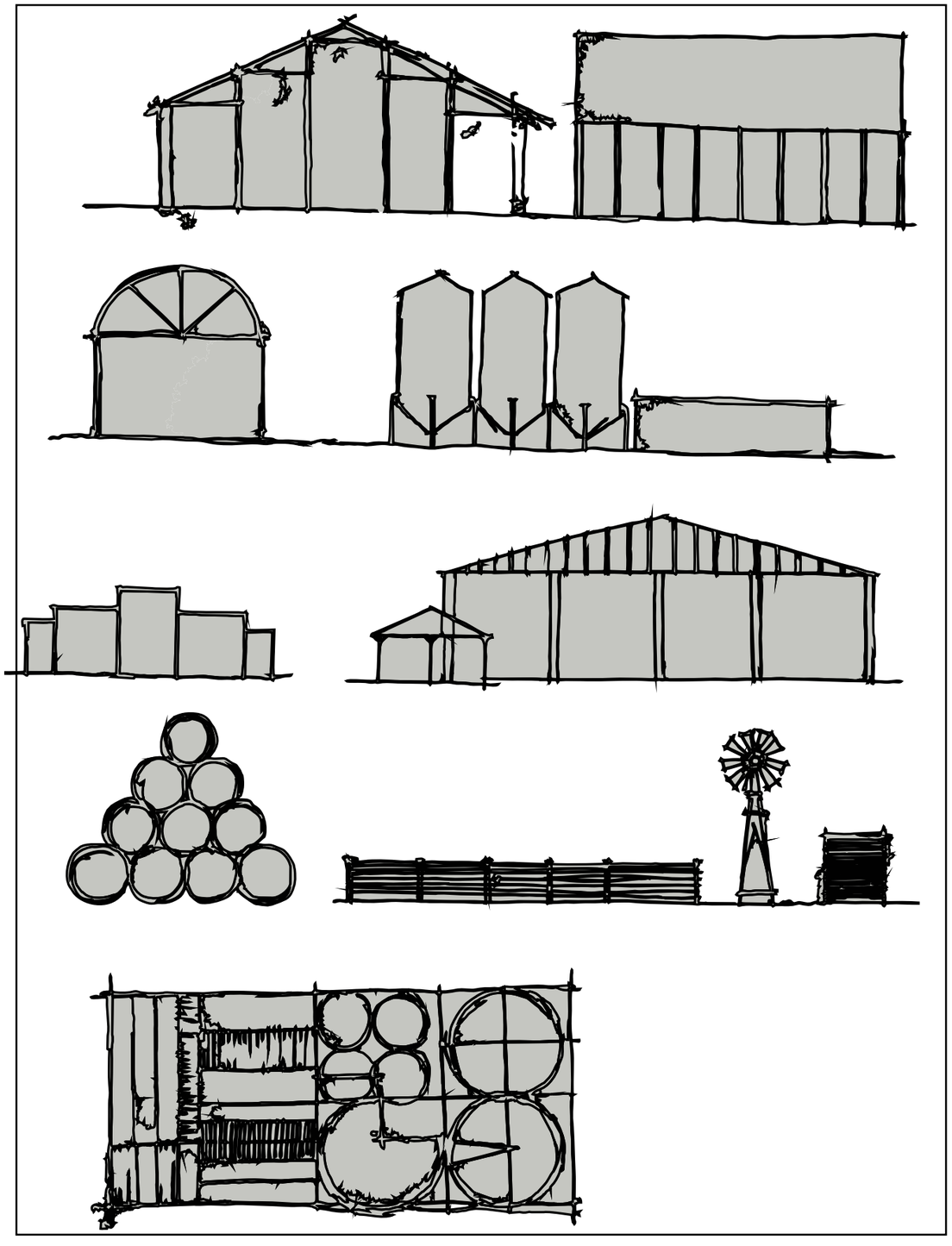

Figure 4.49: Sketch capturing the geometries of typical agricultural architecture typologies

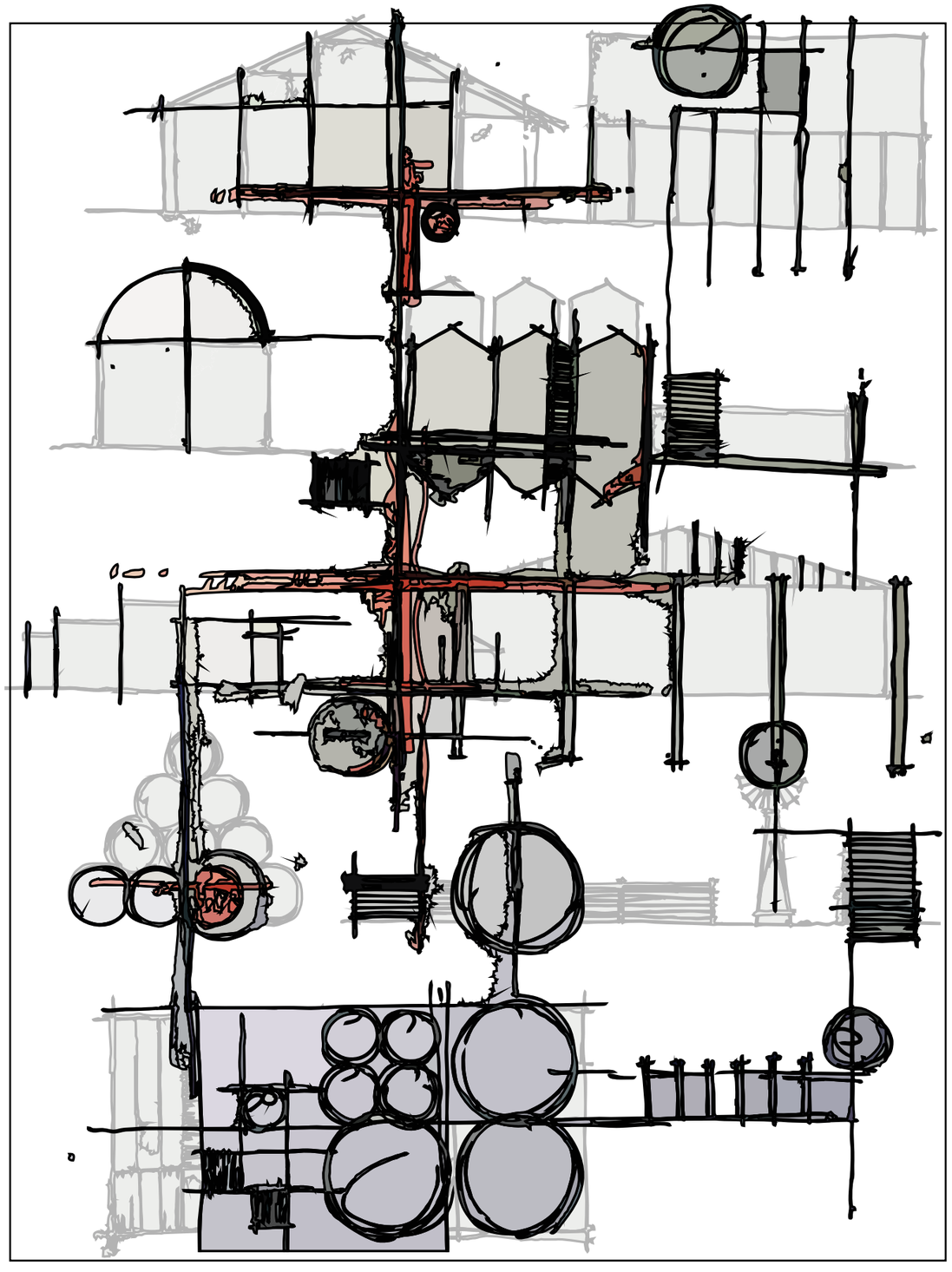

Figure 4.50: Sketch geometrically abstracting figure 4.49 to form a composition

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Figure 4.53 Is an artistic, abstract expression of the deconstructed compositions (Figures 4.42-4.49). Figure 4.53 will play an important role in the design process as it will act as the main form generator. At this stage, no spacial function is assigned to the sketch (Figure 4.53). Chapter five will use Figure 4.53 to combine spaces, functions, and aesthetics with the purpose of creating a site with one unified design language.

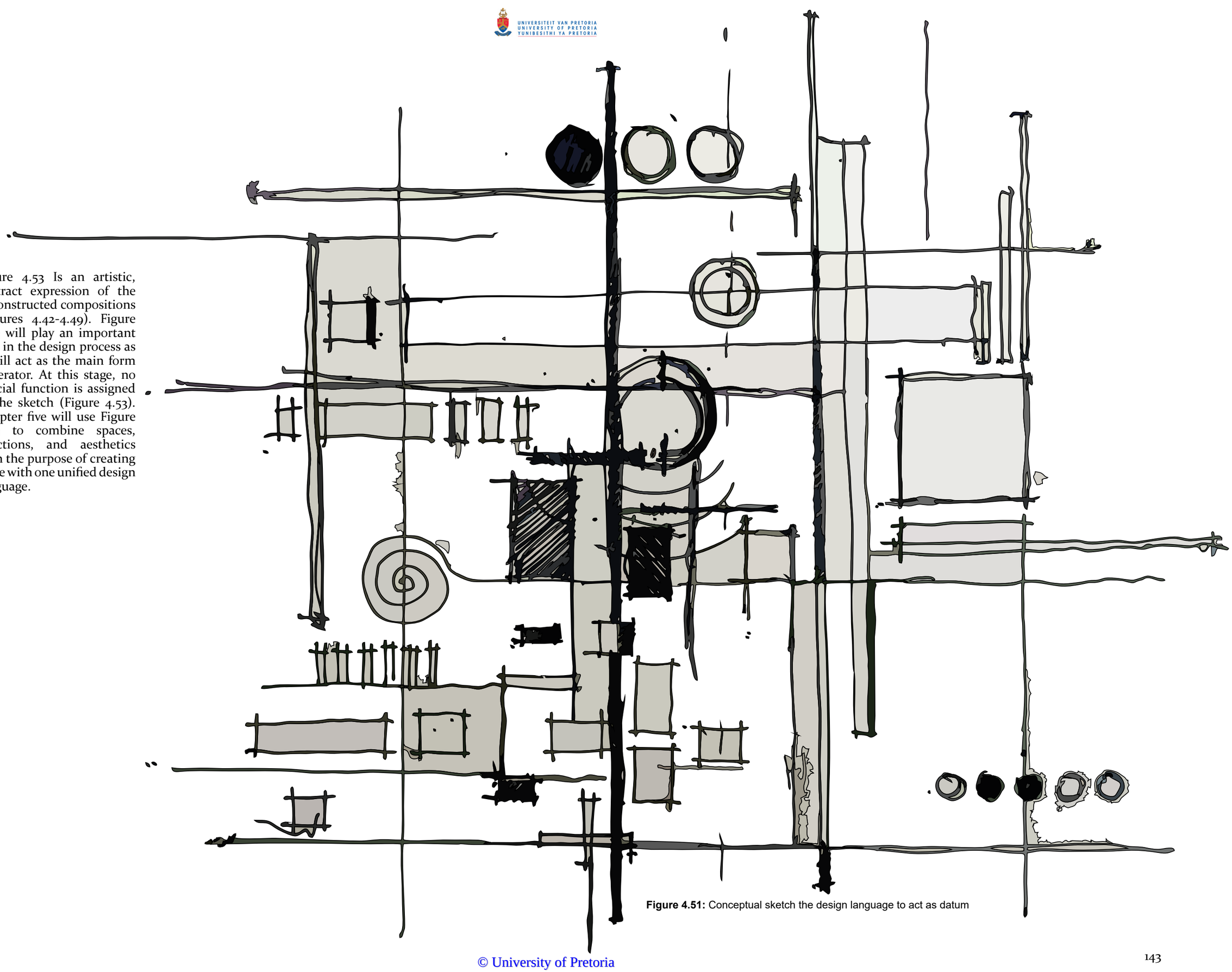

Figure 4.51: Conceptual sketch the design language to act as datum

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4.2 The Site

It has been mentioned earlier in Chapter four that the overall focus of the design intervention will be focused on the creation of spaces rather than making subtle site responsive decisions, since the site will be seen as an exciting destination for the users (one of the principles of the Bilbao Effect). Initially the vast, dead space, was selected for the intervention to allow for design freedom. One might not think that the concept of the Guggenheim Museum Bilbao is site responsive, but it is however responsive to the larger context. One must keep in mind that a building is less dependent on the physical site it sits on (since it is a superstructure) than a typical landscape design. The nature of this project is a combination of architecture (still creating outside spaces) and the design and manipulation of the landscape. There is one very important factor on site that will play a role in the crafting of the concept; the rich historical layer the show-ground possesses.

On the terrain there are many existing structures, landscapes, and elements speaking of what were once one of the biggest shows in South Africa. In the masterplan of the design these elements are identified and redefined through the design process. Using the Burra Charter (Australia ICOMOS 2013) as a guideline the following elements have been identified as having cultural significance as well as design potential. The Burra Charter (Australia ICOMOS 2013) defines the basic principles and procedures to be followed in the conservation of Australian heritage places. Although it is of Australian origin, South Africa uses the principles defined in the Burra Charter to determine cultural significance. Figure 4.53 shows the historical time line of Pretoria West. The Burra Charter, for example, states that the older the structure/event/space is, the greater it's cultural significance (Australia ICOMOS 2013).

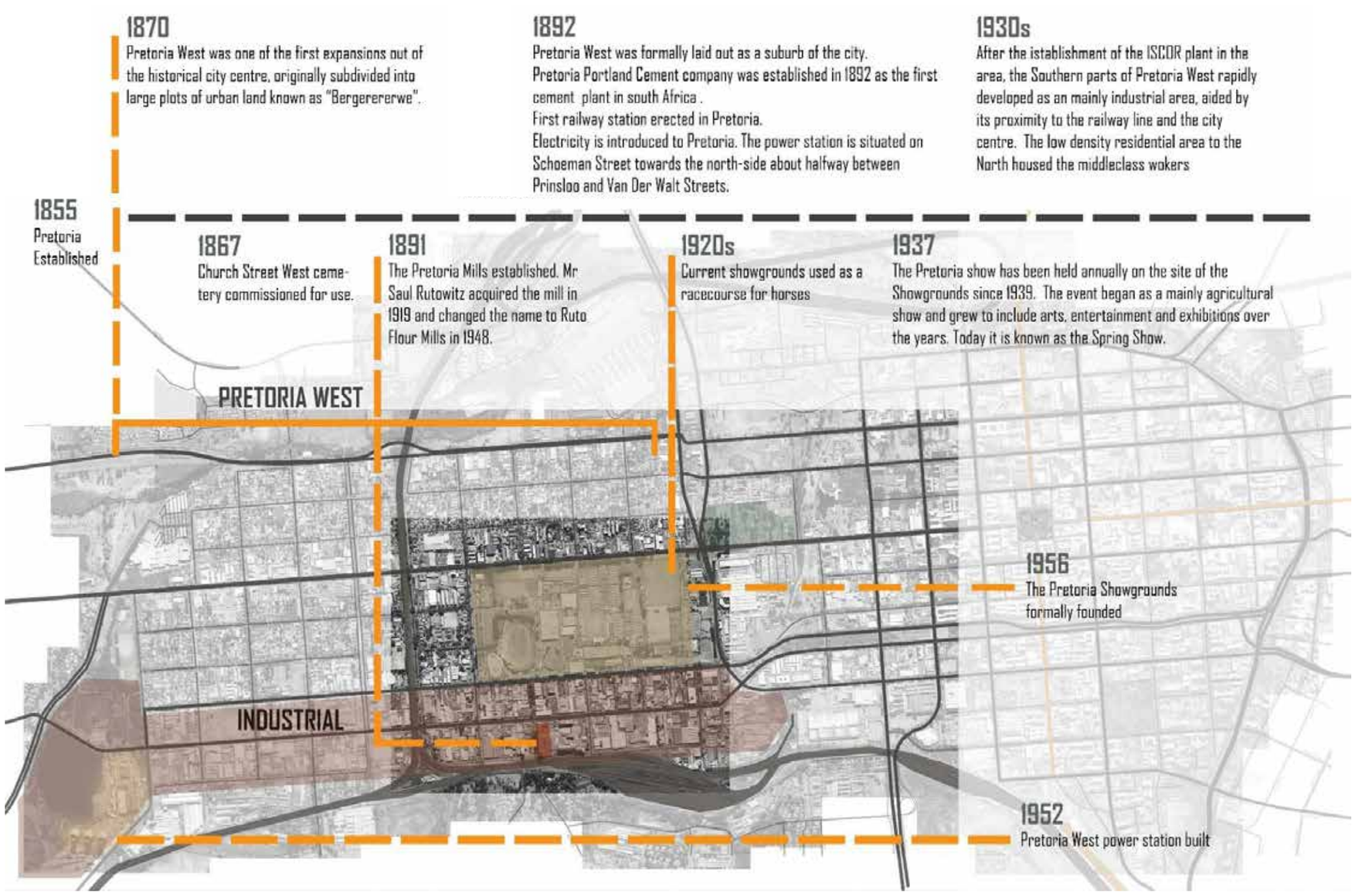

Figure 4.52: Historical timeline of Pretoria West

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4.2.1 Investigation

Figure 4.54 highlights the different existing spaces on site. The following pages will give a comprehensive description of each space culminating in a historical significance map (Figure 4.66)

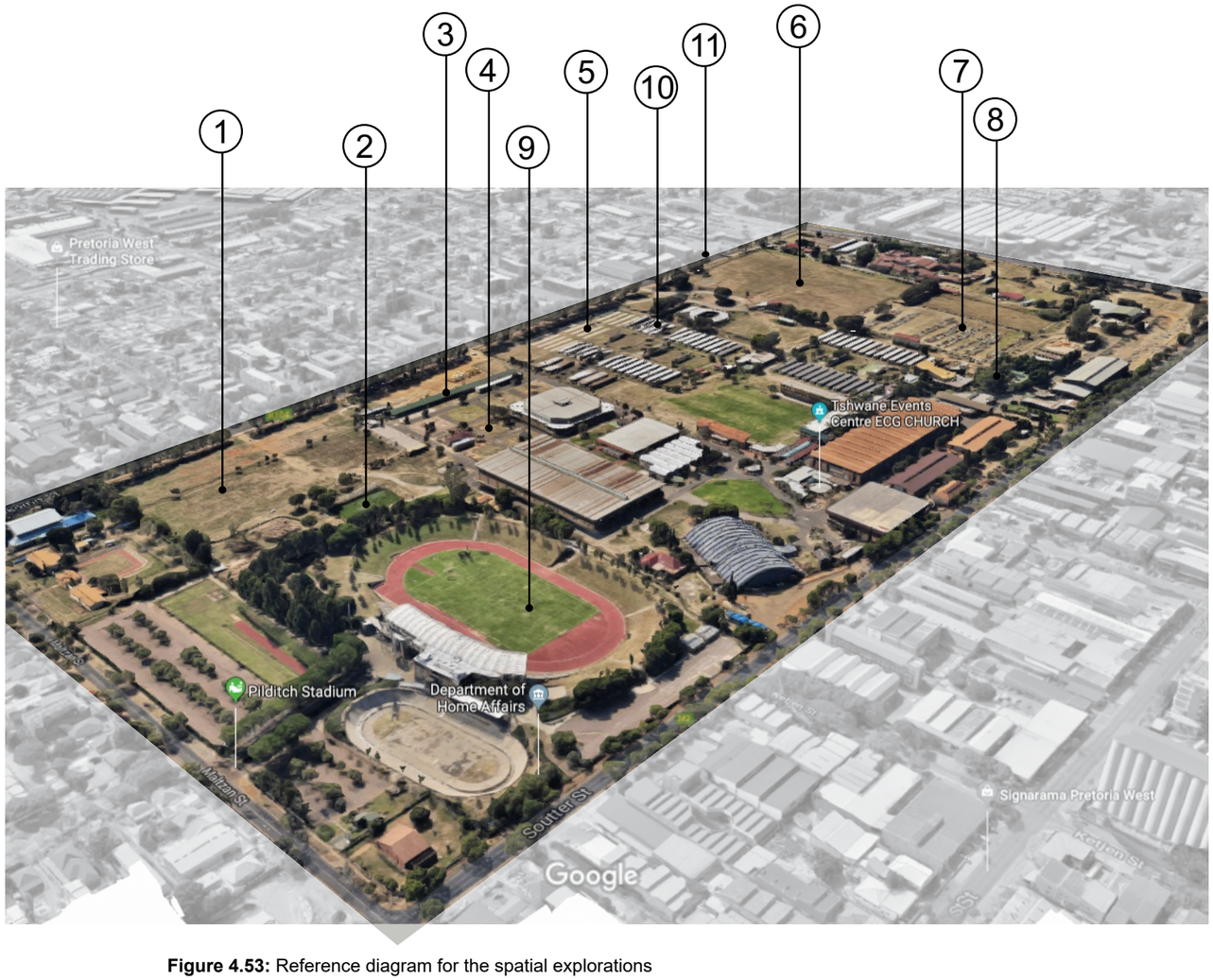

Figure 4.53: Reference diagram for the spatial explorations

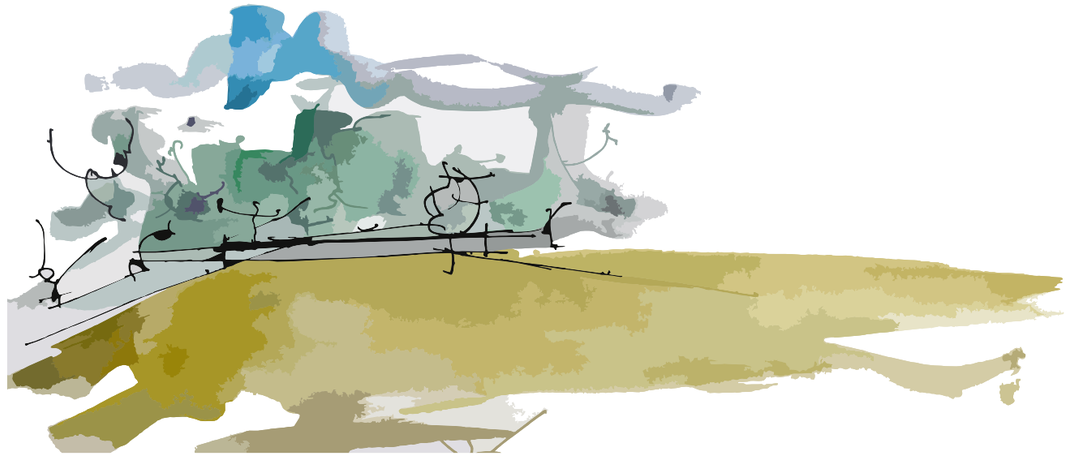

Figure 4.54: Spatial sketch of area 1 in figure 4.53

1.) One of the main open spaces which is used during carnivals and other large exhibitions. The open space is also used as parking space while events are taking place in the conference halls. The surface cover is mostly veld-grass with one or two small trees right in the middle. The reason this space has historical significance is because it has been used over decades for numerous activities creating strong cognitive memories (the carnival is a good example of creating memories especially amongst the younger generation).

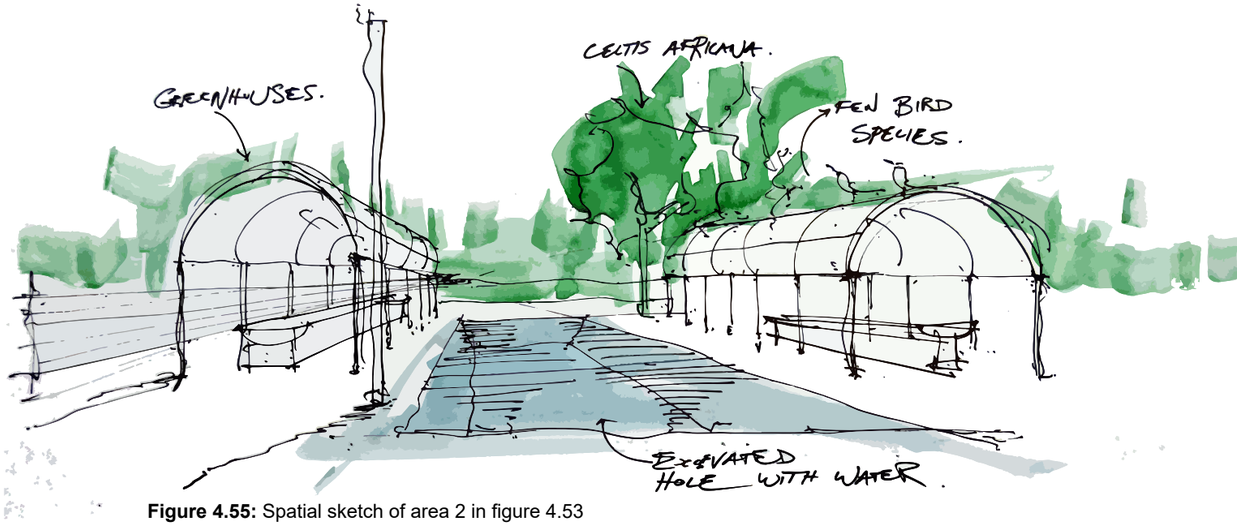

Figure 4.55: Spatial sketch of area 2 in figure 4.53

2.) This space consists mostly of an excavated square depression in the landscape filled with runoff water. It seems as if it was zoned for a building and only completed the groundworks for the project. Strangely enough, this part of the showgrounds is one of the few spaces with a biodiversity in a number of species (especially birds, moths, and small reptiles). This existing ecological microclimate must definitely be enhanced to create habitats for more species.

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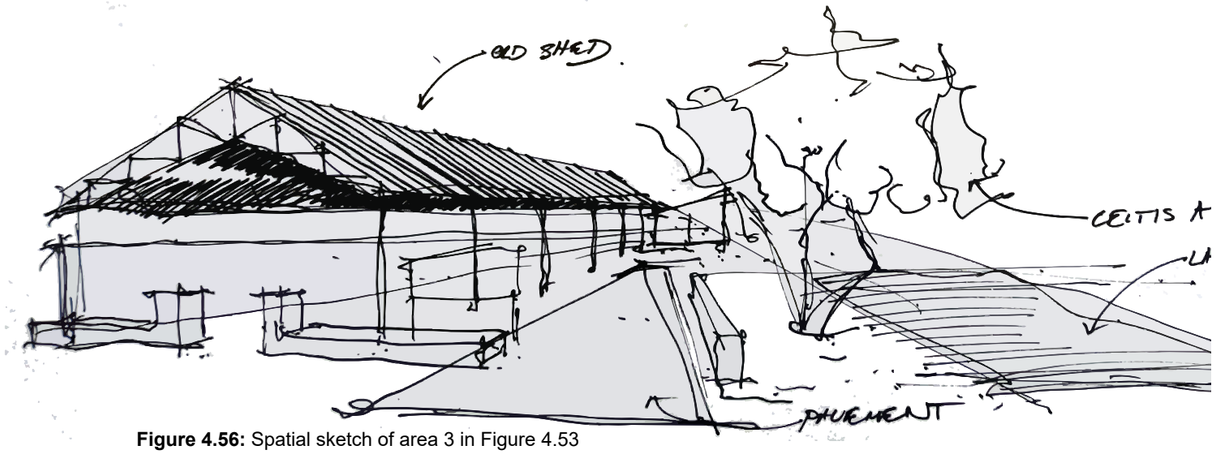

Figure 4.56: Spatial sketch of area 3 in Figure 4.53

3.) An existing old shed, not being used at the moment, is believed to have been erected for storage space during large events. The shape of the structure allows for it to be reprogrammed in the masterplan to fulfil a function of market space.

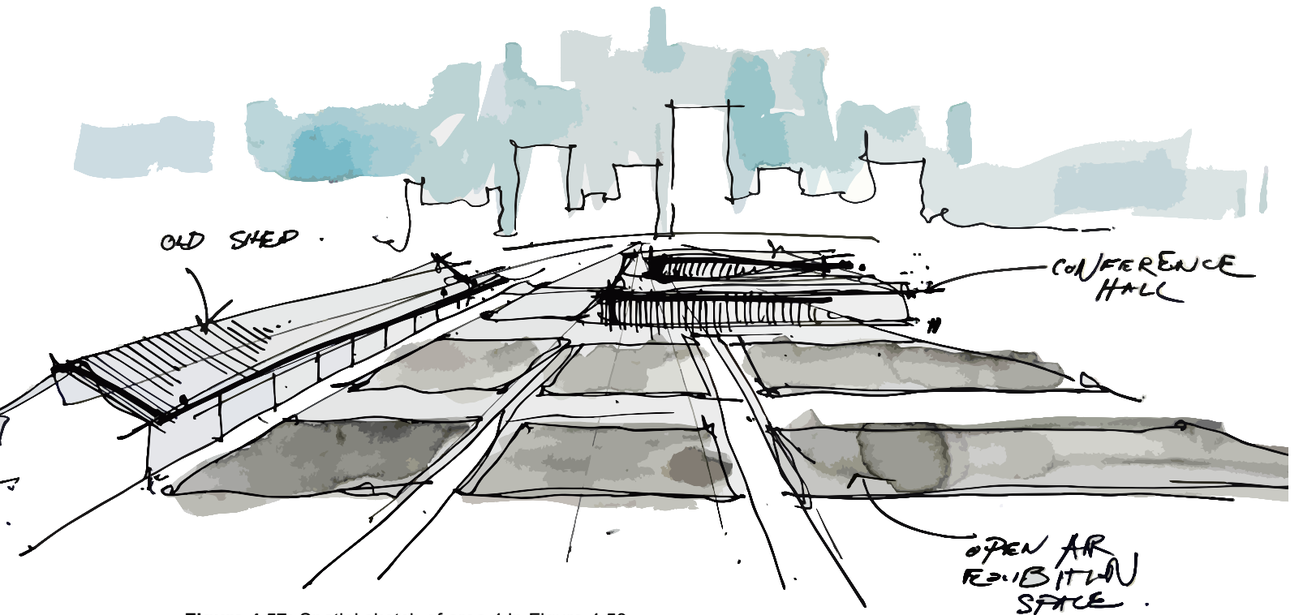

Figure 4.57: Spatial sketch of area 4 in Figure 4.53

4.) These square grass surfaces are currently zoned as exterior exhibition space and are selected to have significance. Since they are well maintained, they form an existing event space with great potential.



Figure 4.58: Spatial sketch of area 5 in Figure 4.53

5.) At first glance these surfaces seem to be Jukskei courts, but instead it was found to be footprints of former stables that have been demolished. The reason for the demolition is unknown, but it is certain that these concrete footprints will fit in seamlessly within the masterplan.

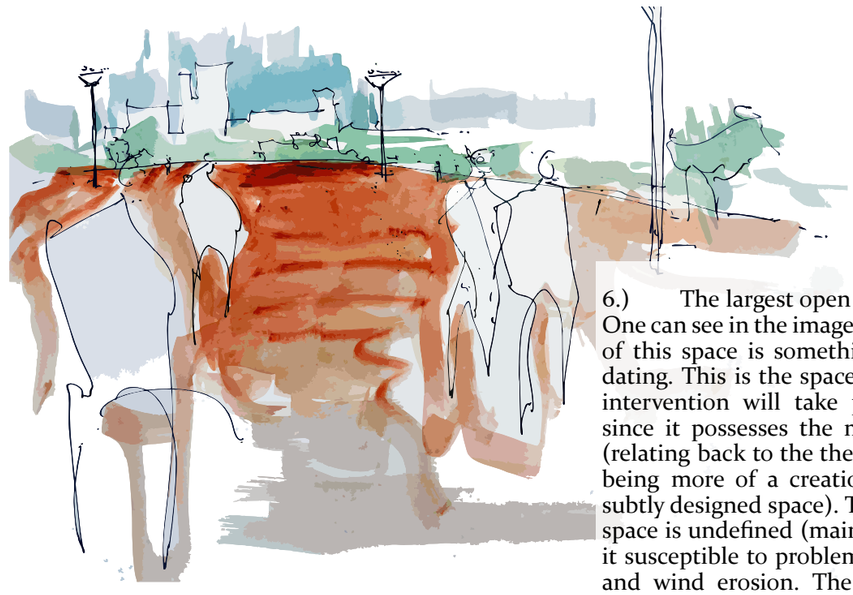

Figure 4.59: Spatial sketch of area 6 in Figure 4.53

6.) The largest open space in the site. One can see in the image that the vastness of this space is something quite intimidating. This is the space where the main intervention will take place/be created since it possesses the most possibilities (relating back to the theory of the design being more of a creation rather than a subtly designed space). The surface of the space is undefined (mainly sand) making it susceptible to problems such as runoff and wind erosion. The vastness of the space should be embraced and seen as an opportunity rather than a constraint.

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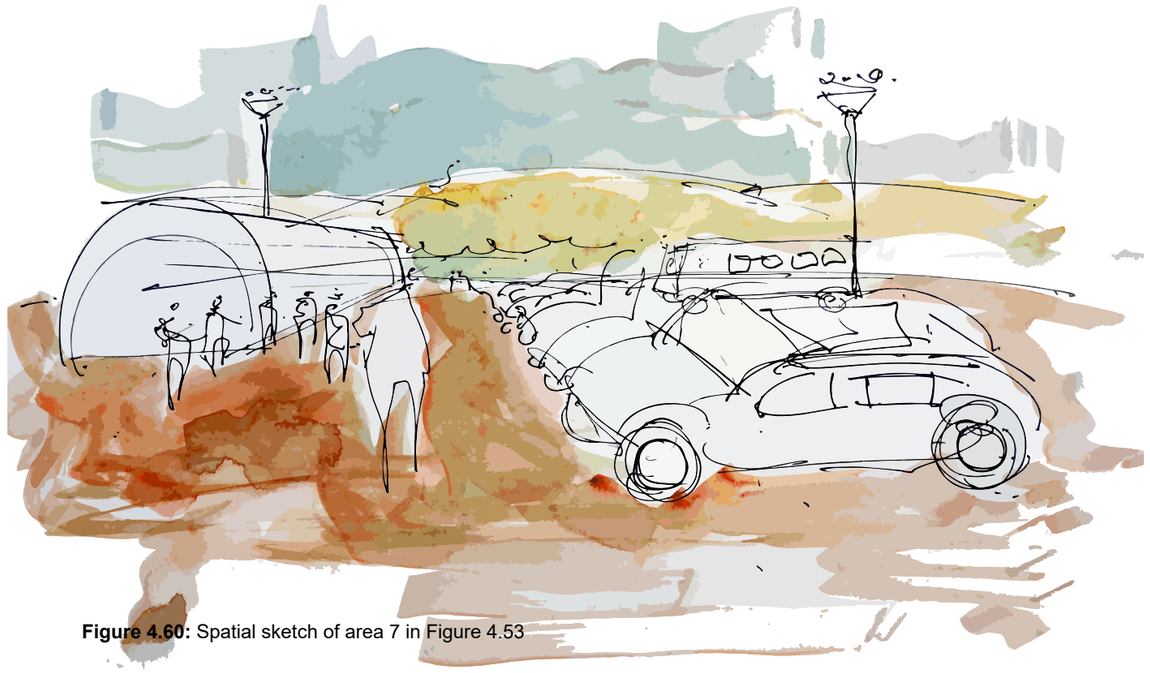

Figure 4.60: Spatial sketch of area 7 in Figure 4.53

7.) Event space currently occupied by temporary large tent structures used by the Church of Enlightenment. This space has the same characteristics as space number 6. The church plans to move to a permanent location outside of the showgrounds.

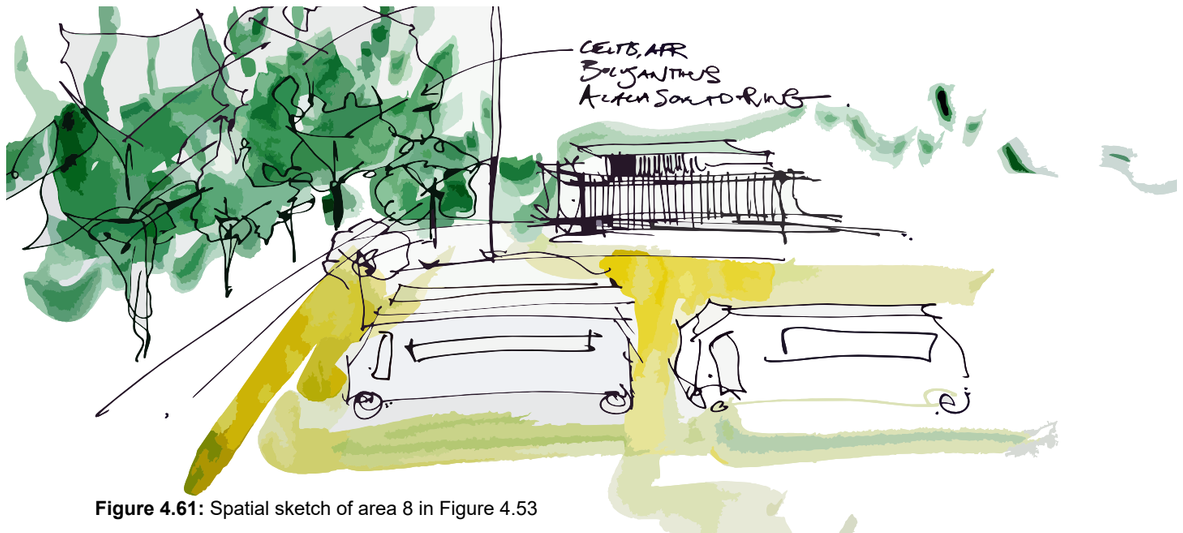

Figure 4.61: Spatial sketch of area 8 in Figure 4.53

8.) This small ecological node is once again one of the few habitable areas for a biodiversity of species.

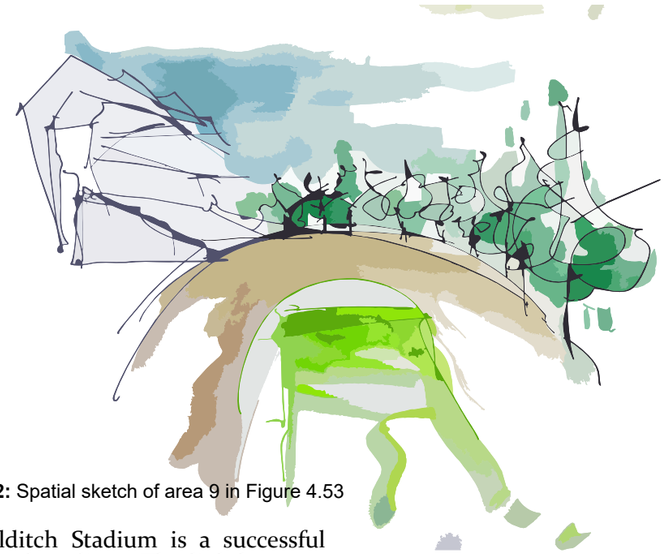

Figure 4.62: Spatial sketch of area 9 in Figure 4.53

9.) Pilditch Stadium is a successful programmed stadium. The link between the site and the stadium is impermeable at the moment; again it will pose as an opportunity for the masterplan.

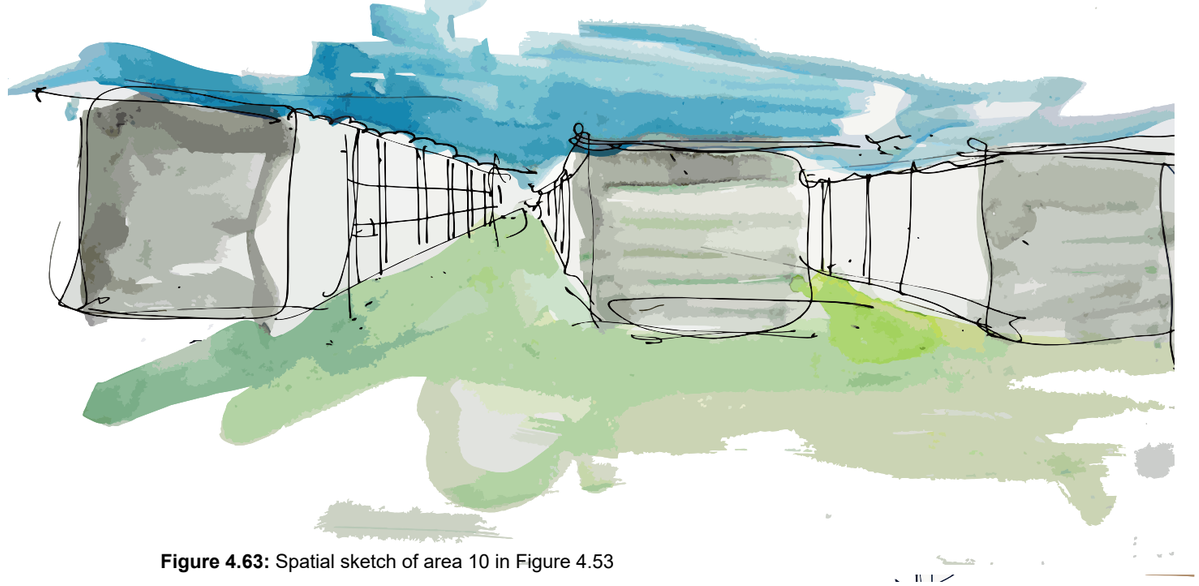

Figure 4.63: Spatial sketch of area 10 in Figure 4.53

10.) Existing stables are well maintained, they will be kept “as is” to cater as infra-structure for equestrian events. These structures speak of a strong historical layer still in use today.

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Figure 4.64: Spatial sketch of area 11 in Figure 4.53

11.) Probably one of the most defined parts of the site is the existing pine trees, forming a visual barrier between the showgrounds and the immediate surroundings. A long promenade of pine trees defines the northern edge of the showgrounds. From within spaces 1, 6, and 7, these trees form a beautiful green backdrop to the undefined open spaces.

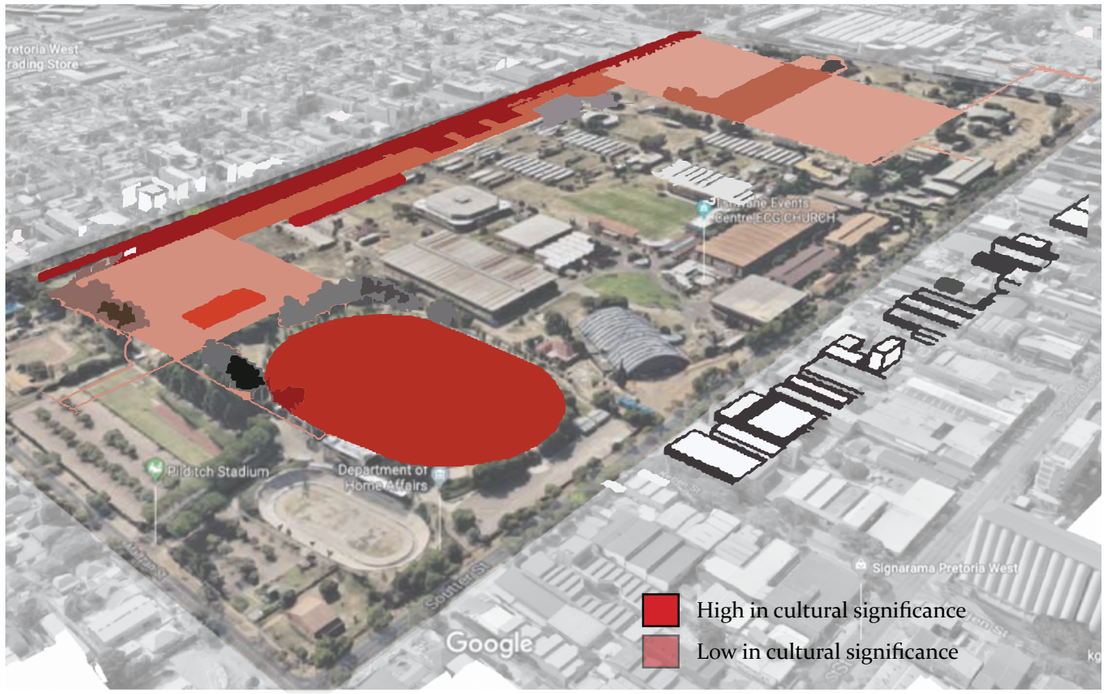

Figure 4.65: Diagrammatic representation of the cultural significance on site

Every element will be dealt with in its own manner, but the overall approach to these culturally significant spaces would be to emphasize them in such a manner that they will form functional and aesthetic features of the landscape. These historical spaces form part of the concept for the design intervention.

4.2.1 The Program

The showgrounds in Pretoria West are synonymous with the renowned Pretoria Show. The Pretoria Show is an annual event that began as an agricultural show and grew to include arts, entertainment, education, and exhibitions over the years. The show began in 1939 and was then only open to whites. However, on 22 August 1977, the show was officially opened to all races. The show is the largest springtime show in South Africa. Similar to the town and street name changes throughout the country, the show has also gone through a name change; it was briefly changed to Tshwane Show before settling on The Spring Show. The Spring Show is an all-round family fun event taking place annually between late August and early September at the Tshwane Events Center (previously Pretoria Show Grounds). In order to solve the issue of the showgrounds being dormant most of the time, the open spaces need to be reprogrammed to sustain activity.

The program for the site will feed off the existing culture of event hosting and expositions. The challenge and beauty of the program will be the balance of programmed and unprogrammed space. In other words, the entire site must be transformed into a system for hosting events and will cater as a district park during the rest of the time. The development of the program is therefore focused on designing programmed and unprogrammed spaces.

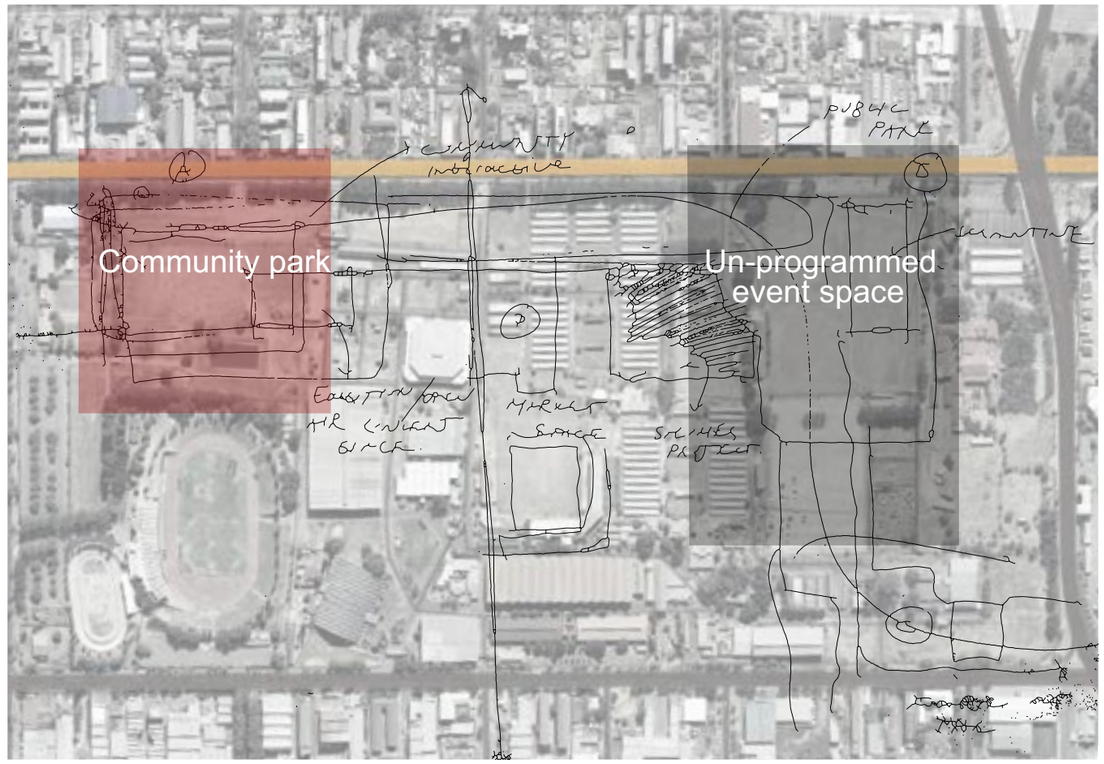

Figure 4.66: Sketch showing the zoning of programs within the site

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4.4 Conclusion

A photographic study of Pretoria West was conducted. Agricultural structural elements were frequently captured as they make this part of Pretoria unique. The theory of the Bilbao Effect states that for a design to fit in seamlessly within its context, it needs to be an abstraction of some sort. The essence of Pretoria West (the agricultural elements) is de-constructed to form a design language. A design language creating forms and spaces is used to solve social and physical issues on site (for example a large field of flowers will attract people as well as solve the issue of soil erosion).

Idea - abstraction of vernacular structural typologies manifesting to create spaces for various programmes.

Site - vast open spaces catering for a large scale intervention focused on the idea of 'creation'.

Programme - People gathering for large events as well as experiencing the innovative site on a daily basis, imitating the Bilbao Effect. Therefore, the concept is deconstructing structural elements from typical agricultural architecture, and sculpts them to create innovative public spaces for tourists and locals - a modern day showground.

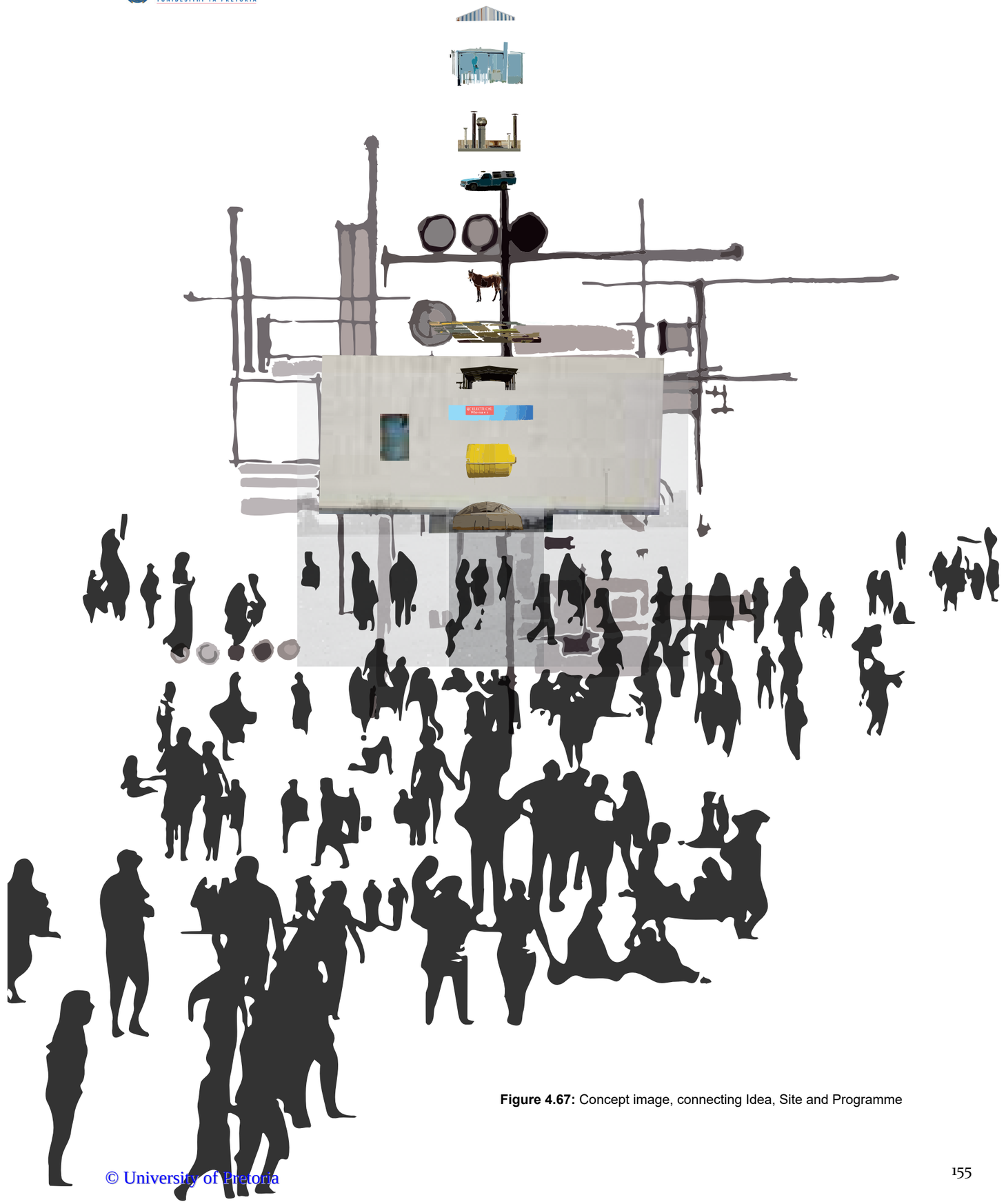

Figure 4.67: Concept image, connecting Idea, Site and Programme

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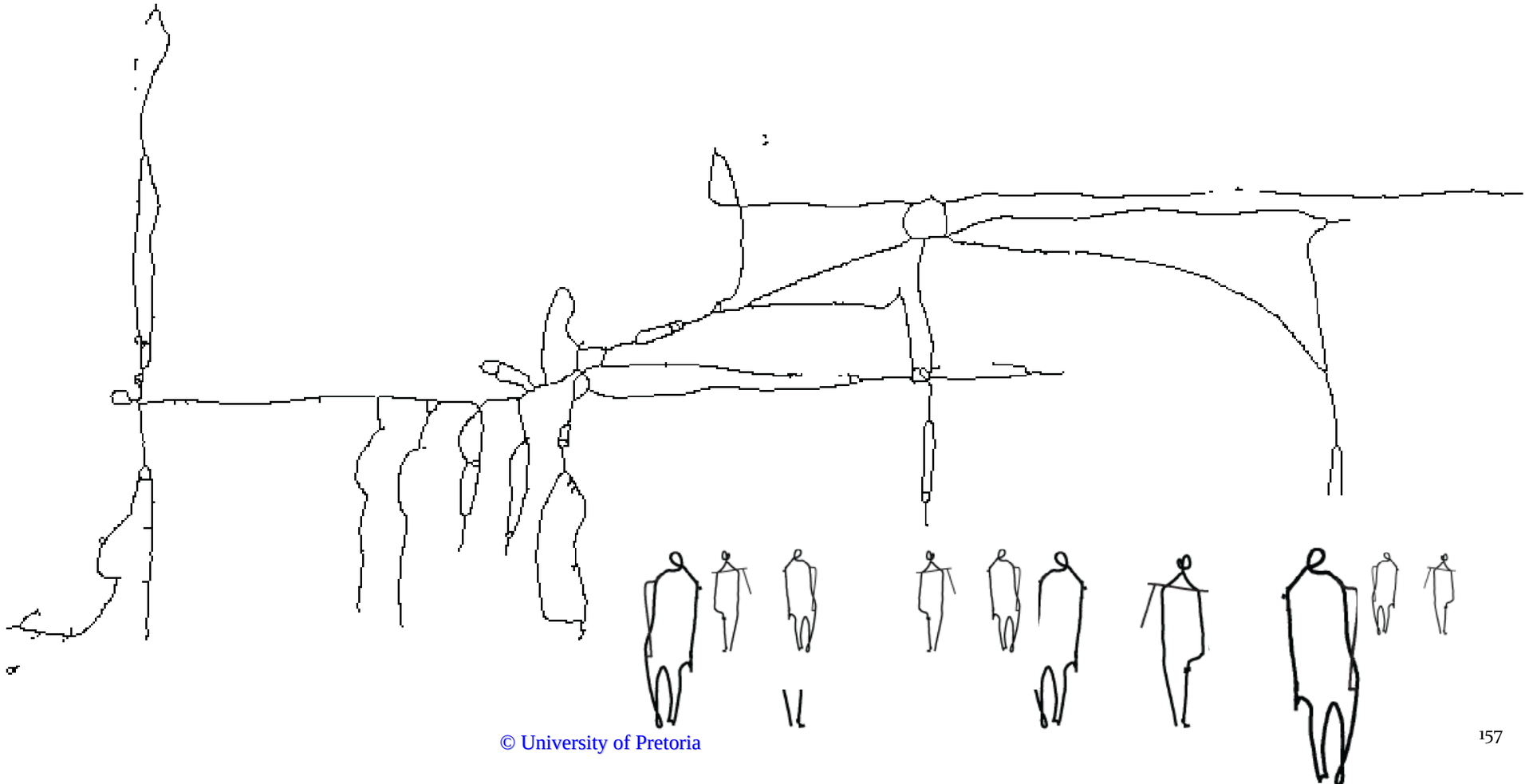
5 Design development



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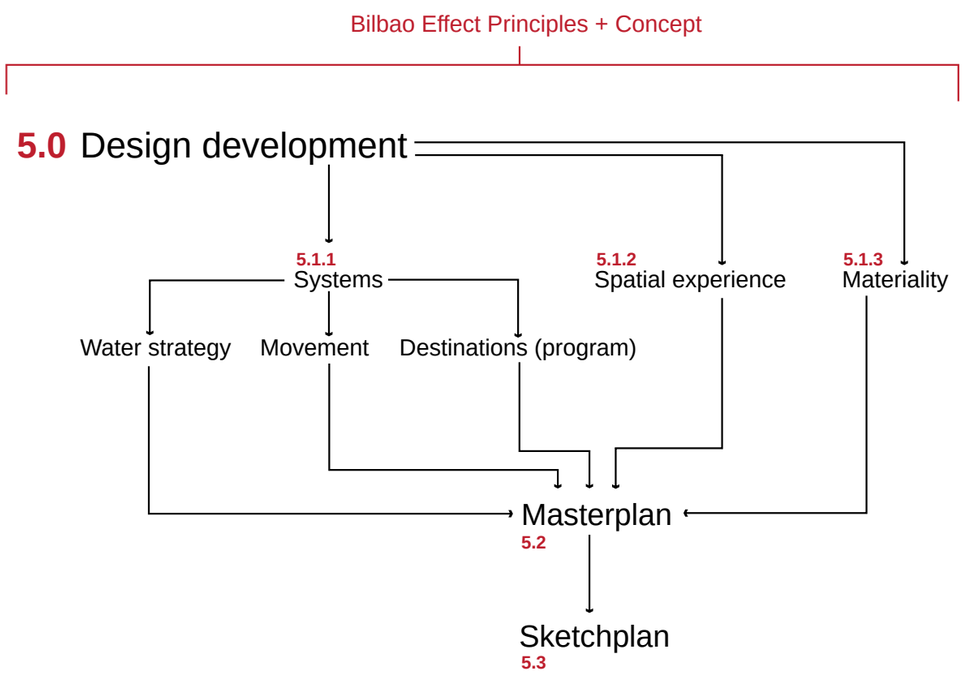

Figure 5.1: Flow diagram showing the chapter outline

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The following chapter will take the reader through the design process. In the previous chapter, the concept has been refined. Now, the concept is linked to the site to create tangible spaces emulating the theory of the Bilbao Effect. This chapter looks at systems identified and improved (water strategy, different exterior spaces, movement and new zonings) to resolve the functional issues on site as well as the theoretical issues (replicating the Bilbao Effect). Figure 5.1 highlights the intentions of this chapter, marrying the idea of abstracting Pretoria West (the design language) with the functional issues on site to conclude in a cohesive masterplan.

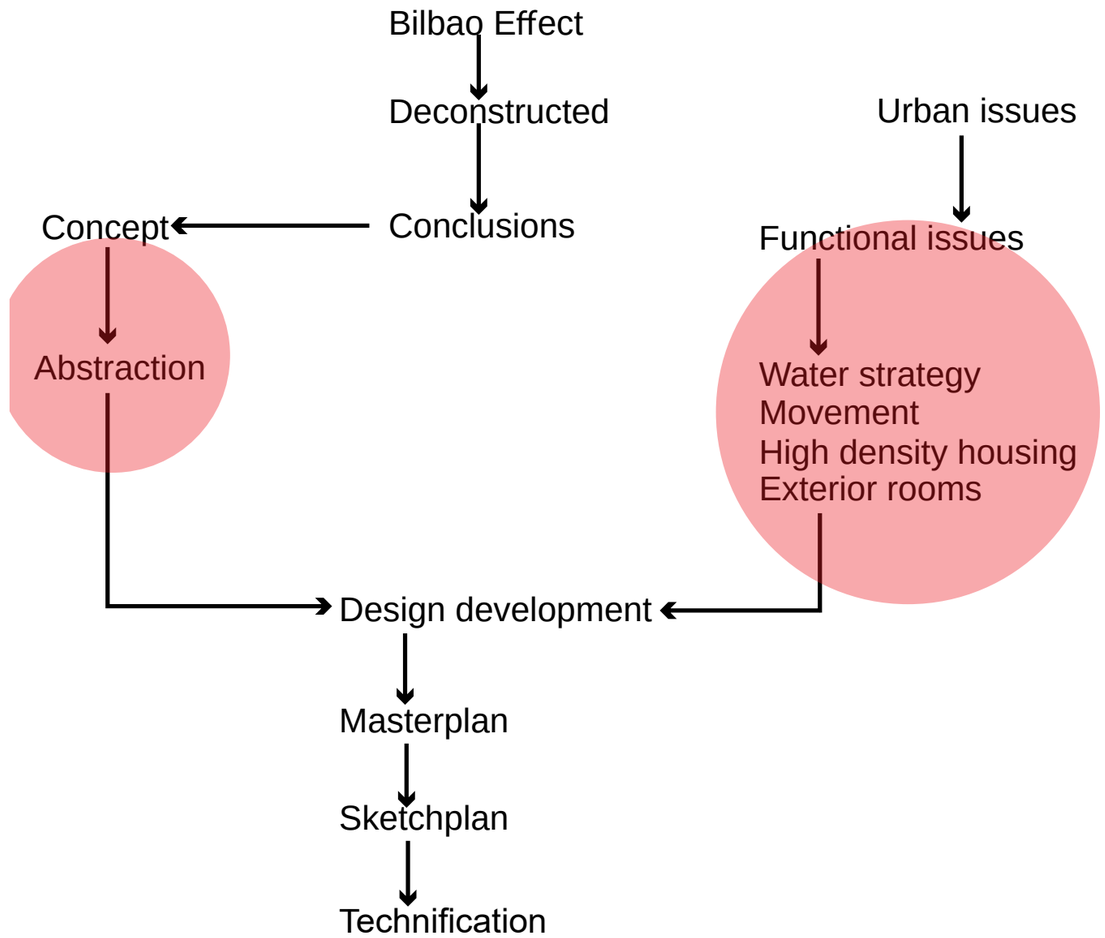

Figure 5.2: Flow diagram showing where this chapter fits in

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In order to improve the current systems an analysis is conducted, focusing on the status quo of the systems such as boundary edges, temporality (movement), vegetation and any other stakeholder that might influence the current systems. Figures 5.3 - 5.11 displays the analytical mapping of the showgrounds.

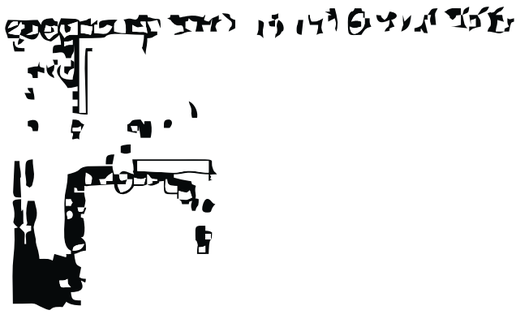

Figure 5.3: Sketch of existing, noteworthy vegetation (excluding veldgrasses)



Figure 5.4: Sketch exploring boundaries in and around the showgrounds

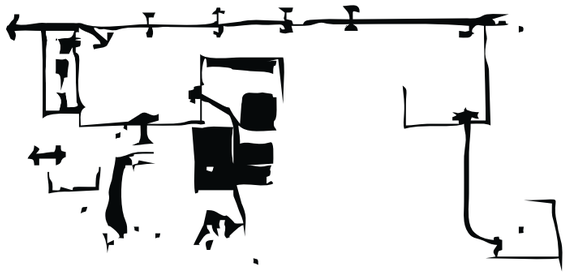

Figure 5.5: Sketch exploring boundaries in and around the showgrounds



Figure 5.6: Sketch exploring movement patterns in and around the showgrounds



Figure 5.7: Sketch exploring movement patterns during events



Figure 5.8: Sketch exploring movement patterns during events

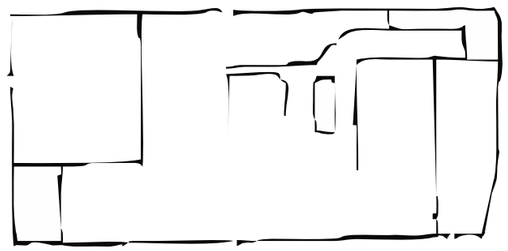

Figure 5.9: Sketch illustrating the current boundaries

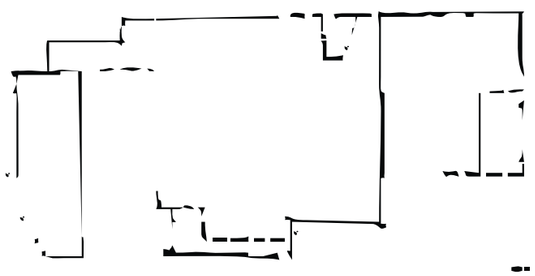

Figure 5.10: Sketch exploring possible boundaries

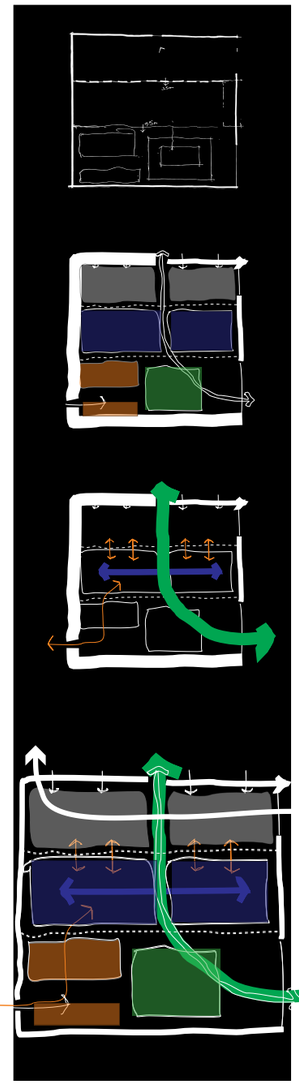

Figure 5.11: A series of sketches exploring how various programmes can be connected to the site

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5.1.1 Water strategy

In order for the design to manifest, a water strategy needs to be in place as water will play an important role recreating and deconstructing farm and industrial elements (linking it to the concept of the overall design). There are no contamination or other issues on site that needs to be resolved through the water strategy. The proposal includes large spaces of manicured landscapes, meaning water will be collected, filtered, and used for irrigation purposes (Figure 5.1). Within the stance of the project, water will play a vital role (as it does in agricultural systems) to act as an aesthetic, functioning feature, within the landscape. An example is the abstraction of a typical concrete farm reservoir offering opportunities for the user to interact with (Figure 5.1).

The following page indicates the water calculations. The calculations indicate how much water can be collected and how much water is needed (the yield, Figure 5.2 and demand, Figure 5.3). The total annual water yield for the entire showgrounds is 61 342sqm (Figure 5.2). The total annual demand for the entire show-grounds is 37 626sqm (figure 5.3). The water strategy is translated into quantifiable calculations (Figures 5.2-5.4). The calculations reflect that the water strategy will be feasible.

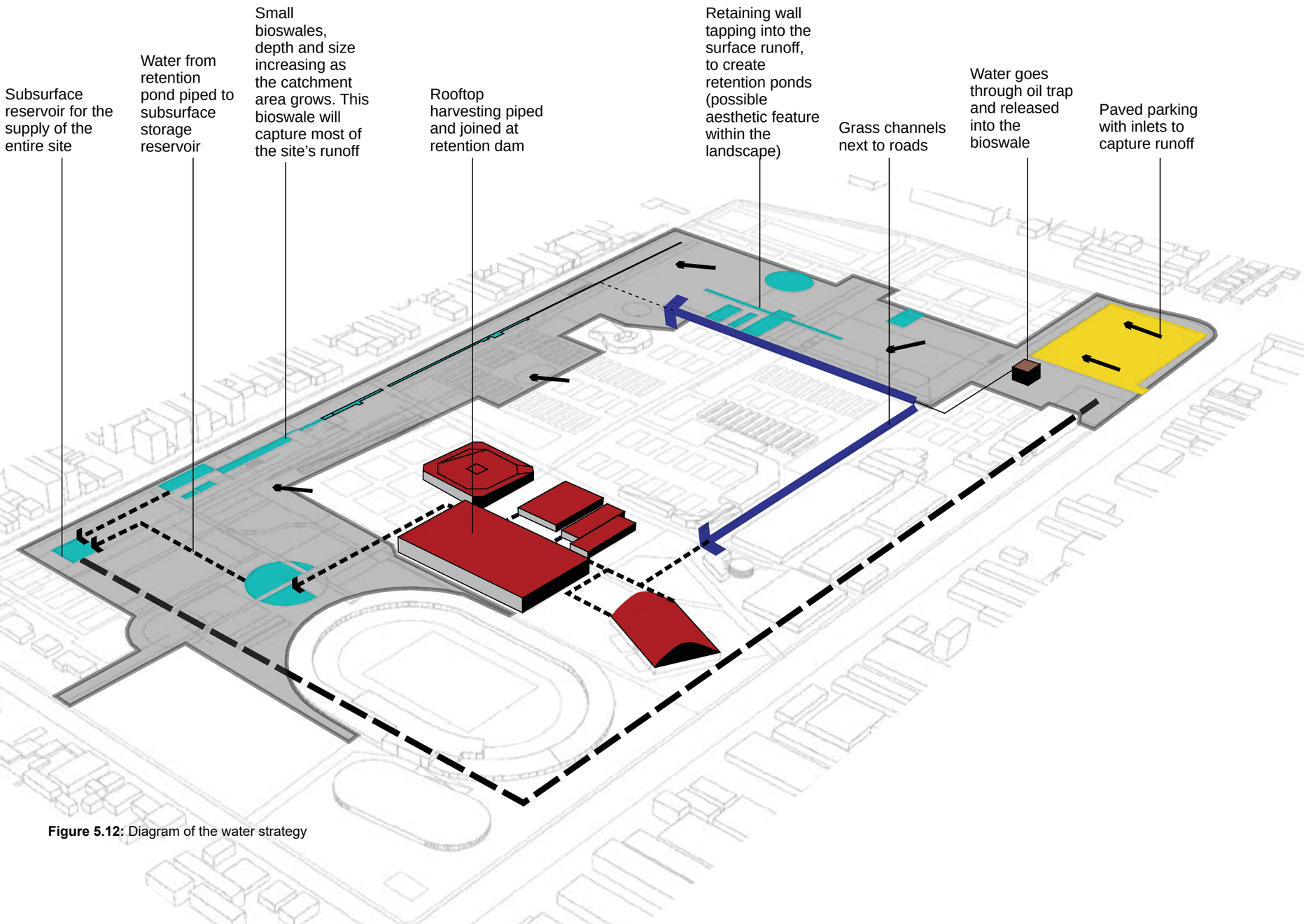

Figure 5.12: Diagram of the water strategy

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WATER MANAGEMENT MODEL

By Fourie Pieterse (October 2014)

A WATER RESOURCE INFORMATION (YIELD, m³)

A1 RAIN WATER HARVESTING DATA

DESCRIPTION	AREA (m²)	RUNOFF COEFF. (C)
Roof structures	70000	0.9
Paving A	17762	0.8
Detention	11773	0.5
Lawn	25864	0.1
Other	41551	0.05
TOTAL AREA (A)	166950.00	
WEIGHTED C		0.53

A2 RECYCLED / ALTERNATIVE WATER SOURCE

MONTH	SOURCE 1		SOURCE 2		TOTAL / MONTH (m³)
	WEEKLY YIELD (m³)	MONTHLY YIELD (m³)	WEEKLY YIELD (m³)	MONTHLY YIELD (m³)	
January	2	8.00	0.2	0.80	8.80
February	2	8.00	0.2	0.80	8.80
March	2	8.00	0.2	0.80	8.80
April	2	8.00	0.2	0.80	8.80
May	1	4.00	0.2	0.80	4.80
June	1	4.00	0.2	0.80	4.80
July	1	4.00	0.2	0.80	4.80
August	1	4.00	0.2	0.80	4.80
September	1	4.00	0.2	0.80	4.80
October	2	8.00	0.2	0.80	8.80
November	2	8.00	0.2	0.80	8.80
December	2	8.00	0.2	0.80	8.80
ANNUAL AVE.		76.00		9.60	85.60

A3 TOTAL WATER YIELD

MONTH	AVE RAINFALL , P (m)	CATCHMENT YIELD (m³) (Yield = PxAxC)	ALTERNATIVE WATER SOURCE (m³)	TOTAL WATER YIELD (m³)
January	0.13	11672.09	8.80	11680.89
February	0.09	7459.60	8.80	7468.40
March	0.09	7722.88	8.80	7731.68
April	0.05	4563.52	8.80	4572.32
May	0.01	1053.12	4.80	1057.92
June	0.01	702.08	4.80	706.88
July	0.00	351.04	4.80	355.84
August	0.01	526.56	4.80	531.36
September	0.03	2194.00	4.80	2198.80
October	0.07	6406.48	8.80	6415.28
November	0.10	9127.05	8.80	9135.85
December	0.11	9478.09	8.80	9486.89
ANNUAL AVE.	0.70	61256.51	85.60	61342.11

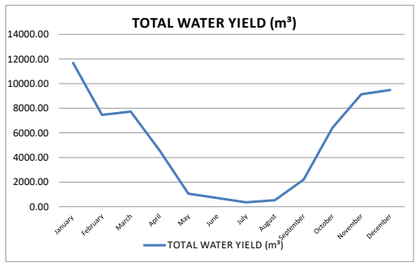


Figure 5.13: Water calculations of the yield

B WATER DEMAND

B1 LANDSCAPE IRRIGATION DEMAND (m³)

DESCRIPTION:	LAWN (m²):	25864	AGRI (m²):	0	PLANTING (m²):	61551	
MONTH	WEEKLY IRR. (m)	MONTHLY DEMAND (m³)	WEEKLY IRR. (m)	MONTHLY DEMAND (m³)	WEEKLY IRR. (m	MONTHLY DEMAND (m³)	TOTAL MONTHLY IRR. DEMAND (m³)
January	0.02	2069.12	0.025	0	0.005	1231.02	3300.14
February	0.02	2069.12	0.025	0	0.005	1231.02	3300.14
March	0.02	2069.12	0.025	0	0.002	492.408	2561.528
April	0.02	2069.12	0.025	0	0.002	492.408	2561.528
May	0.01	1034.56	0.025	0	0.002	492.408	1526.968
June	0.01	1034.56	0.025	0	0	0	1034.56
July	0.01	1034.56	0.025	0	0	0	1034.56
August	0.02	2069.12	0.025	0	0	0	2069.12
September	0.02	2069.12	0.025	0	0.005	1231.02	3300.14
October	0.02	2069.12	0.025	0	0.005	1231.02	3300.14
November	0.02	2069.12	0.025	0	0.005	1231.02	3300.14
December	0.02	2069.12	0.025	0	0.005	1231.02	3300.14
ANNUAL TOTAL		21725.76		0		8863.344	30589.104

B2 DOMESTIC / ALT DEMAND

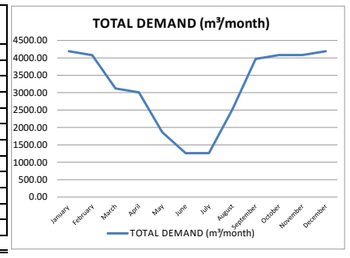
MONTH	PERSONS	WATER/ CAPITA/ DAY (l)	DOMESTIC DEMAND (m³/month)
January	50	4	6.2
February	50	4	5.6
March	50	4	6.2
April	50	4	6
May	50	4	6.2
June	50	4	6
July	50	4	6.2
August	50	4	6.2
September	50	4	6
October	50	4	6.2
November	50	4	6
December	50	4	6.2
ANNUAL TOTAL			73

B3 EVAPORATION LOSS (For 'open' reservoirs)

35mm - 45mm/week in summer

AREA OF RESERVOIR (m²): 5527

MONTH	EVAPORATION RATE (m/week)	EVAPORATION RATE (m/month)	TOTAL LOSS (m³/month)
January	0.04	0.16	884.32
February	0.035	0.14	773.78
March	0.025	0.1	552.7
April	0.02	0.08	442.16
May	0.015	0.06	331.62
June	0.01	0.04	221.08
July	0.01	0.04	221.08
August	0.02	0.08	442.16
September	0.03	0.12	663.24
October	0.035	0.14	773.78
November	0.035	0.14	773.78
December	0.04	0.16	884.32
ANNUAL TOTAL	0.32	1.26	6964.02



B4 TOTAL WATER LOSS & DEMAND

MONTH	TOTAL DEMAND (m³/month)
January	4190.66
February	4079.52
March	3120.43
April	3009.69
May	1864.79
June	1261.64
July	1261.84
August	2517.48
September	3969.38
October	4080.12
November	4079.92
December	4190.66
ANNUAL TOTAL	37626.124

Figure 5.14: Water calculations of the demand

C WATER BUDGET

TANK CAPACITY (m³): 7000
MIN VOLUME (m³): 0

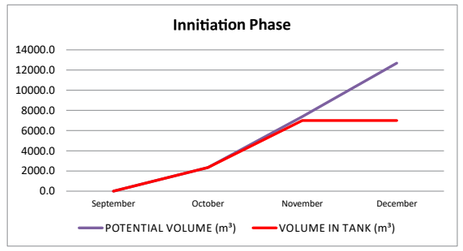
C1 WATER BUDGET — INNITIATION PHASE

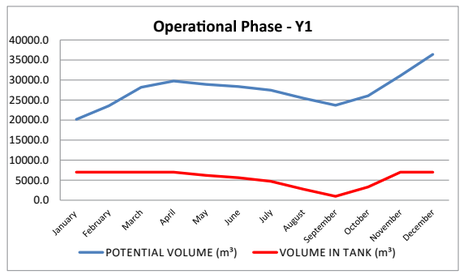
MONTH	YIELD (m³/month)	DEMAND (m³/month)	MONTHLY BALANCE	POTENTIAL VOLUME (m³)	VOLUME IN TANK (m³)
September	2198.8	3969.4	-1770.6	0.0	0.0
October	6415.3	4080.1	2335.2	2335.2	2335.2
November	9135.8	4079.9	5055.9	7391.1	7000.0
December	9486.9	4190.7	5296.2	12687.3	7000.0
	27236.8	16320.1	10916.7		

C2 WATER BUDGET — YEAR 1

MONTH	YIELD (m³/month)	DEMAND (m³/month)	MONTHLY BALANCE	POTENTIAL VOLUME (m³)	VOLUME IN TANK (m³)
January	11680.9	4190.7	7490.2	20177.5	7000.0
February	7468.4	4079.5	3388.9	23566.4	7000.0
March	7731.7	3120.4	4611.3	28177.7	7000.0
April	4572.3	3009.7	1562.6	29740.3	7000.0
May	1057.9	1864.8	-806.9	28933.4	6193.1
June	706.9	1261.6	-554.8	28378.7	5638.4
July	355.8	1261.8	-906.0	27472.7	4732.4
August	531.4	2517.5	-1986.1	25486.6	2746.3
September	2198.8	3969.4	-1770.6	23716.0	975.7
October	6415.3	4080.1	2335.2	26051.2	3310.8
November	9135.8	4079.9	5055.9	31107.1	7000.0
December	9486.9	4190.7	5296.2	36403.3	7000.0
ANNUAL AVE.	61342.1	37626.1	23716.0		

Figure 5.15: Water calculations of the budget





The water strategy is translated into quantifiable calculations (Figures 5.13-5.15). The calculations reflect the implementation to be feasible.

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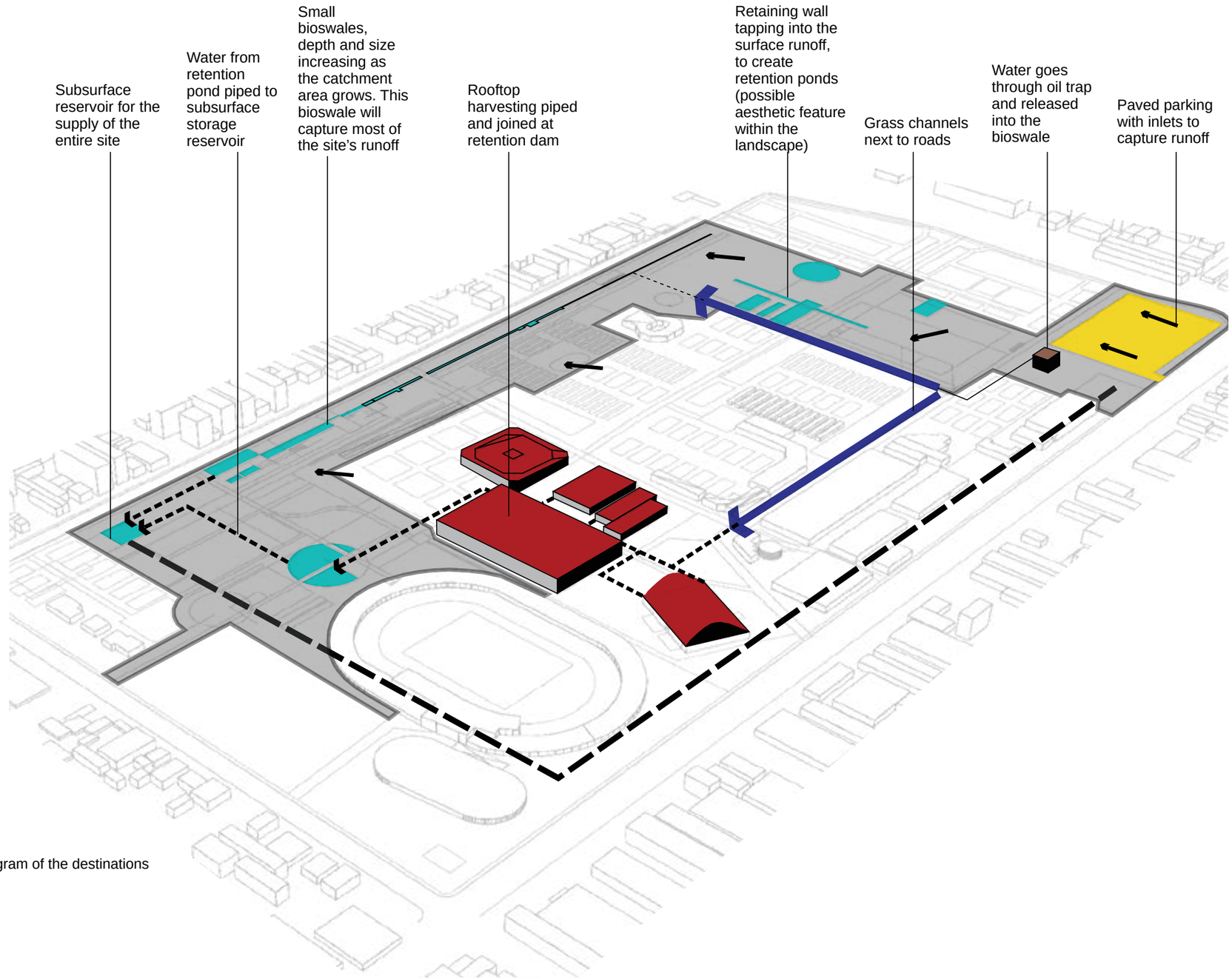

Figure 5.16: Diagram of the destinations

5.1.2 Destinations

According to the analysis of movement and cultural significance (figure 4.33), different activities were assigned to different zones. The programme of the site is balanced between programmed and unprogrammed space. An example of a programmed space is a restaurant, where the building will allow for the related activities to take place.

An example of an unprogrammed space is an open urban space, where no specific activity is linked with it, but does allow for a variety of activities to take place. The balance of these two spaces will solve the issue of the showgrounds being dormant most of the year, and will attract people to the site. The idea is to make a positive impression on the user, in order for him/her to return.

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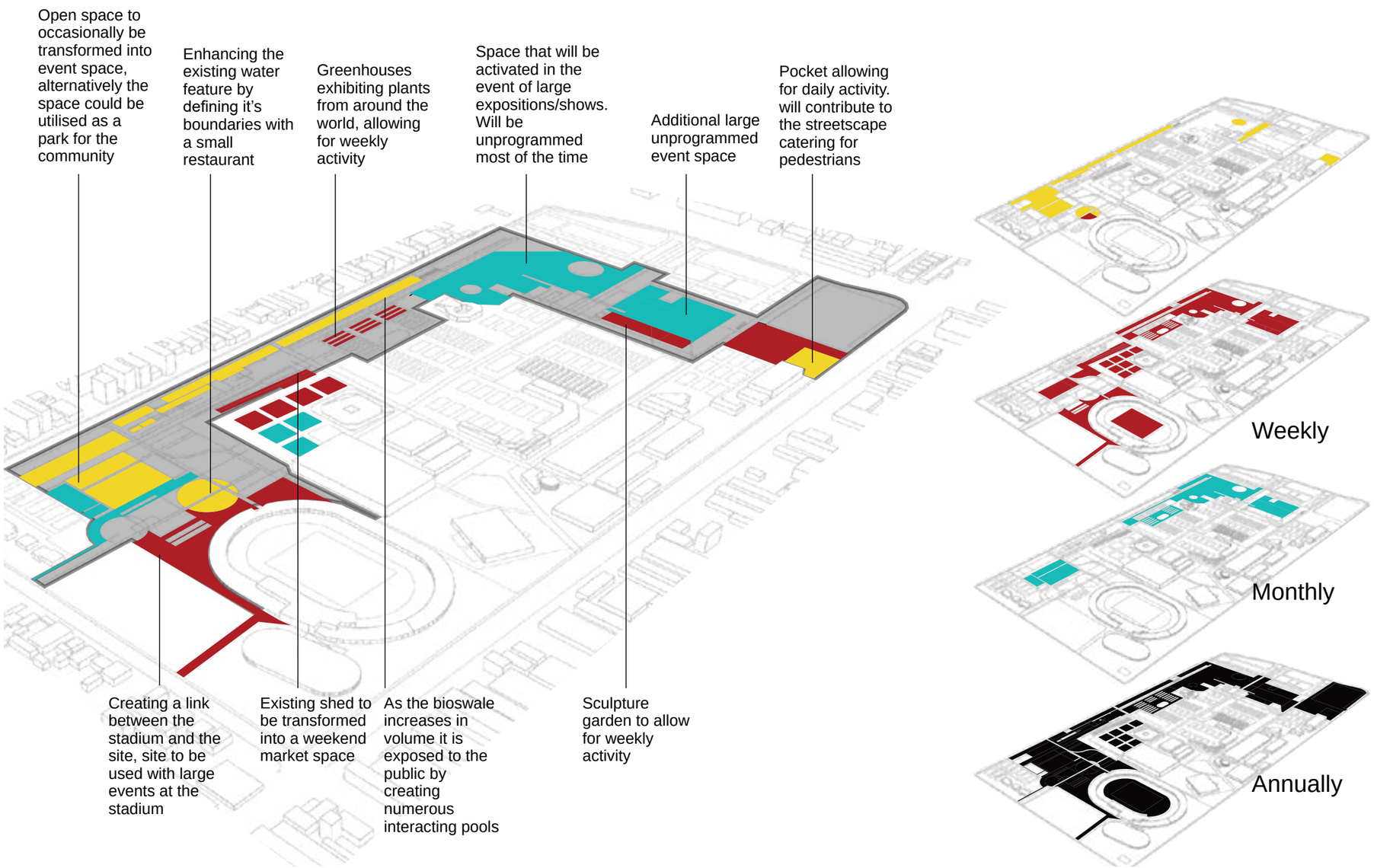

Figure 5.17: Diagram of the movement

5.1.2 Movement

According to the quantitative mapping of the site (Figures 3.3-3.10), it is illustrated that the movement on, through, and around the site, does not allow for a pedestrianised streetscape. The showgrounds sit as an impermeable barrier within Pretoria West. Figure 5.6 highlights the intentions of breaking down the impermeable barriers. This design decision will create an inviting precinct that will support the mixed use streetscape.

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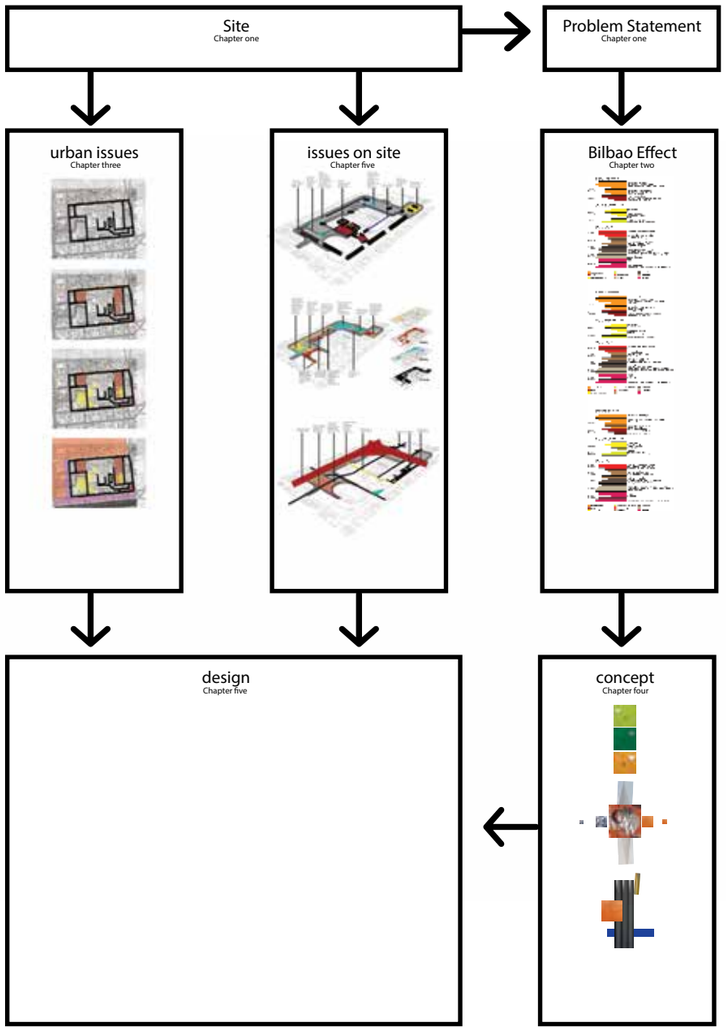


Figure 5.18: Diagram of the various spheres of the design process coming together

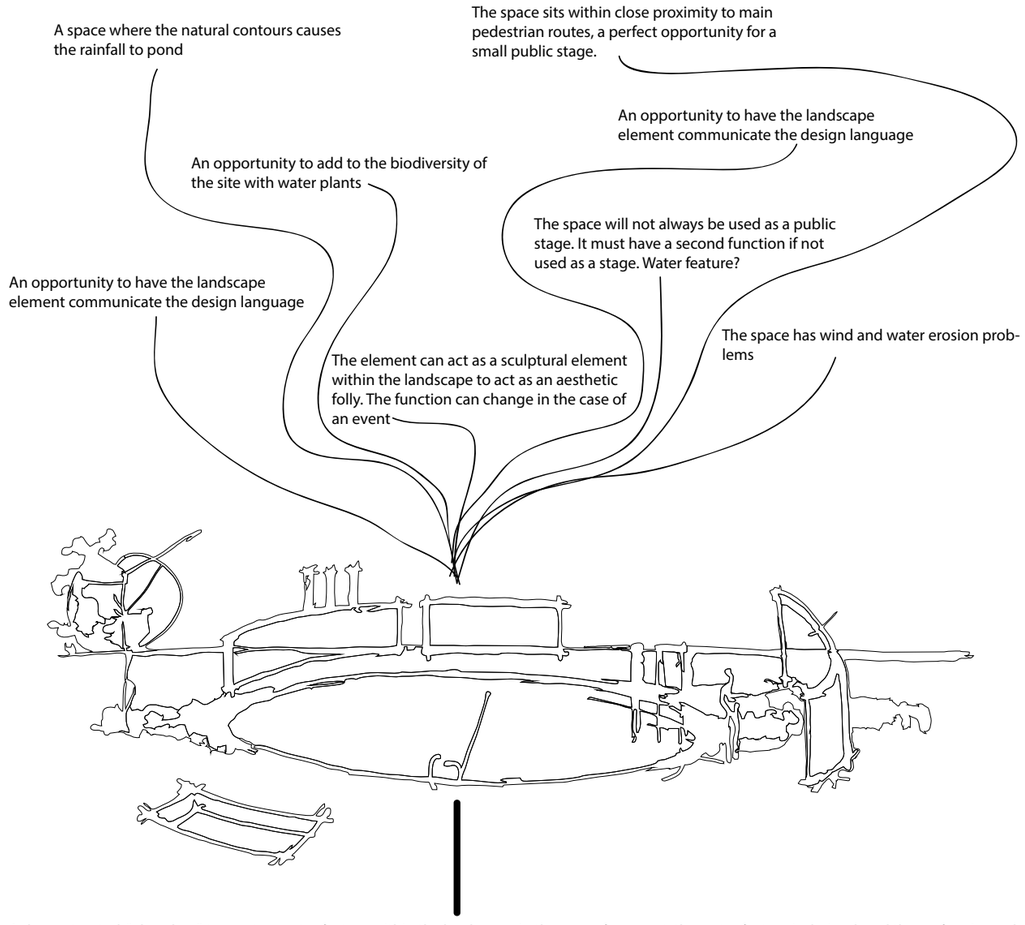
Figure 5.18 is a diagram of the design process up to this stage. Figure 5.18 illustrates the process in a simplified manner. Following the selection of the site (precinct), the problem statement and brief for the project was refined. The problem statement introduced the researcher to the Bilbao Effect which led to the refinement of the concept through various investigations. The identification and analysis of the site within the precinct led the researcher to the identification of systems (Figures 5.12 - 5.17) to be improved in order to improve conditions on the site.

The dissertation is now at a stage where the concept is applied to the site. For the first time spaces are created. These are spaces that resolve issues on functional, social, ecological, and economical levels. The combining factor being the concept defined at the end of chapter four (page 150). All information, research, and sketches completed up to this stage are now combined to create an inclusive design that will recreate the Bilbao Effect.

5.2 Spatial development

Figure 5.19 aims to explain the thought process behind the design of spaces. In the instance of Figure 5.19, a water feature is designed to solve numerous issues on site.

Figure 5.19 is a specific space designed, but it aims to convey the author's approach and outcome to the creation and reaction to any space on the site.



A deconstructed "plaasdam" to create a water feature within the landscape. In the case of an event, the water feature is drained, and the surface is used as a small stage with allocated seating spaces. The shape of a traditional round plaasdam is altered to fit in with the design language. The water feature is filled with rainfall runoff, and when drained the water is directed to the bioswale leading to the subsurface water storage. The water feature can be filled through the storage tank after an event. Concrete planters will host water plants, even when the water feature is drained the planters will remain wet. Trees are planted at the western edge shelter the space from the wind, but still allowing users to view the main folly from within the space. The water feature is surrounded with shrubs and veldgrass. The veldgrass contributes to the farm atmosphere the water feature attempts to create. Steel structures are created to use as exhibition space during an event and to act as a sculptural feature to help define the space. A part of the water feature is designed to act as a zero-depth pool. The reasoning for that is to create a play space for children, adding more program to the space. Additional seating will be installed for the parents to have clear views on their children playing. A pump room is needed to filter the water and remove all pathogens as children will be interacting with the water. The pump room is an opportunity to be designed in such a manner for it to contribute to the composition this sculptural water feature attempts to create. The trees planted at the western edge needs to cast shadows to the seating area, but should not be a problem when the water feature is filled with water. The selection of trees is crucial in this instance. It needs to be deciduous to allow for sunlight to pass through the branches during the winter to heat up the zero-depth pool, and needs to cast shadows during the summer. As the water feature is also used as a stage, it needs to be illuminated. LED lights are set up on poles. Lights need to be solar powered. The small solar pad and poles for the lights are incorporated into the exhibition structures, again, contributing to the sculptural value of the space. The shrubs or veldgrass selected needs to create a simple platform to emphasize the main folly. If veldgrass is planted, it needs to be cut back once a year. Service vehicles will need access to the space, the placement of bollards will keep that in mind. Waterproofing finishes on the surface needs accommodate both functions (water feature and stage).

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Figure 5.19: Diagram explaining the design process of a typical space within the landscape

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With the author setting out strategies for the various systems to take place (Figures 5.12 - 5.17) they now come together to create one, inclusive design.

Figures 5.12 - 5.17 consist of investiagtive sketches and model explorations, focusing on the design language as a tool to resolve functional issues.

Figure 5.20 starts to refine the spaces within the showgrounds on a large scale. This investigative sketch will lead to the masterplan and thereafter the sketchplan area is refined on a technical level (chapter 6).

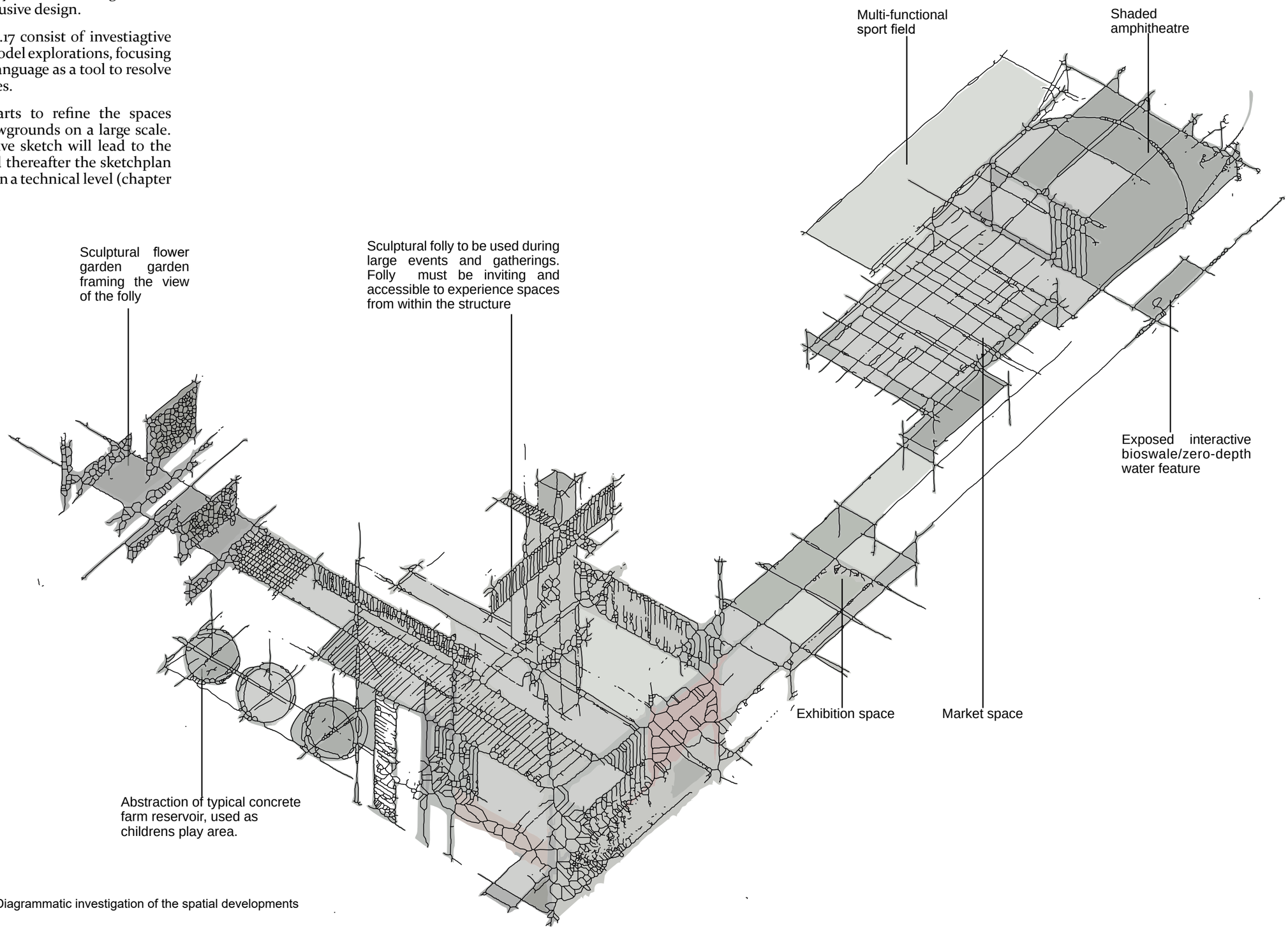

Figure 5.20: Diagrammatic investigation of the spatial developments

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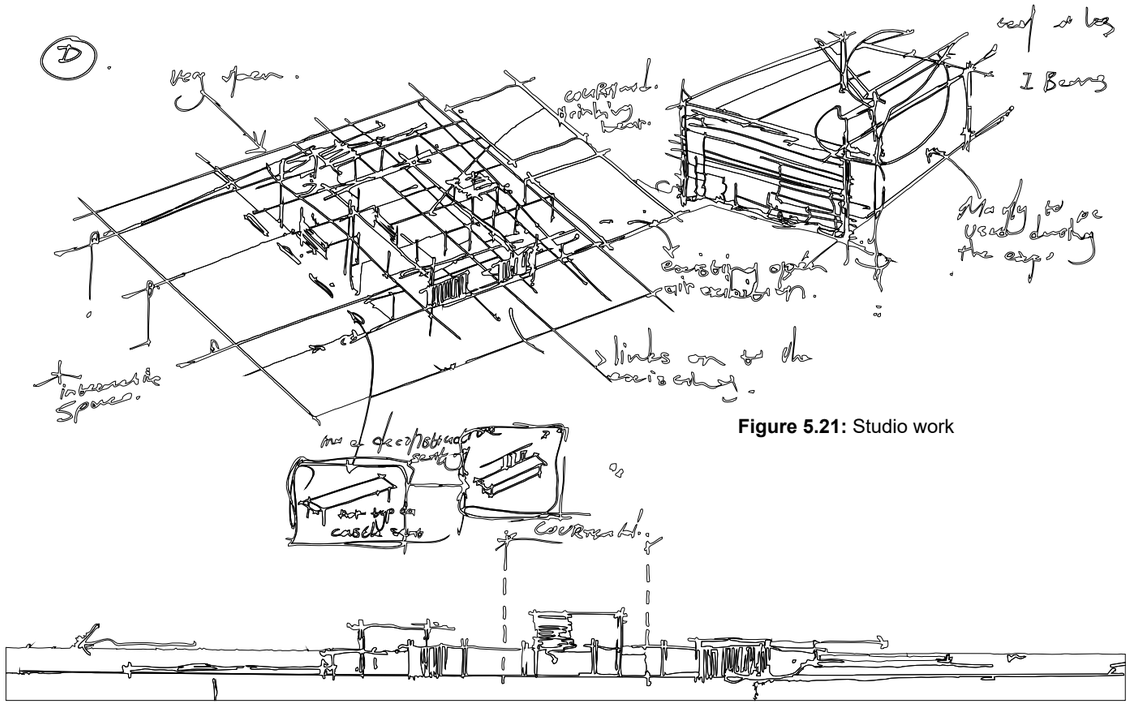

Figure 5.21: Studio work

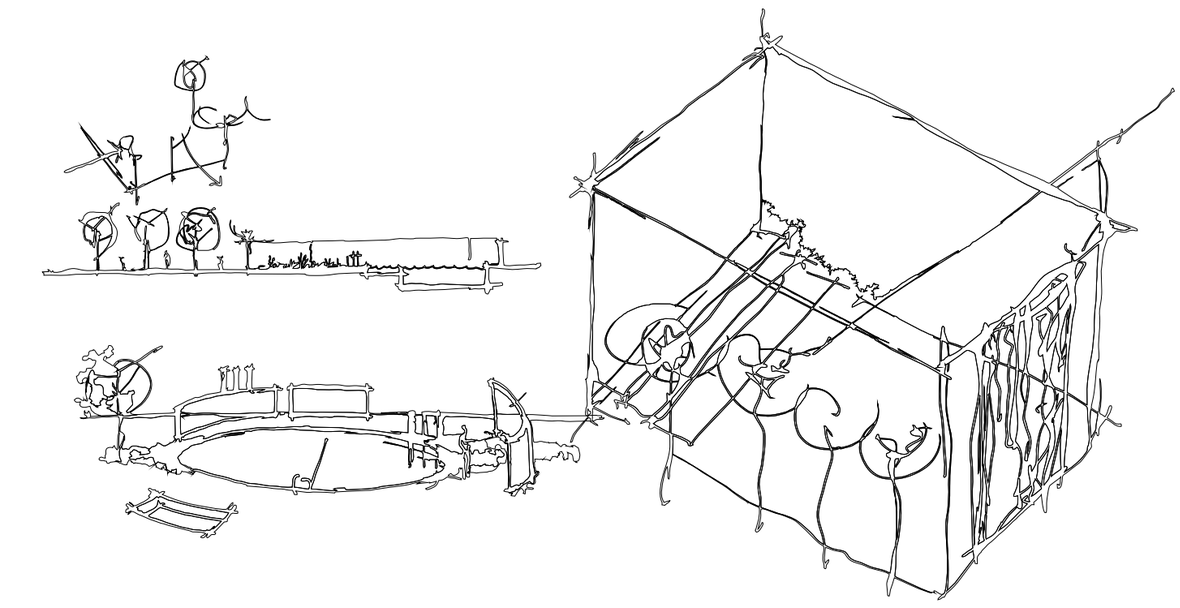

Figure 5.22: Studio work

Figure 5.23: Studio work

Figure 5.24: Studio work

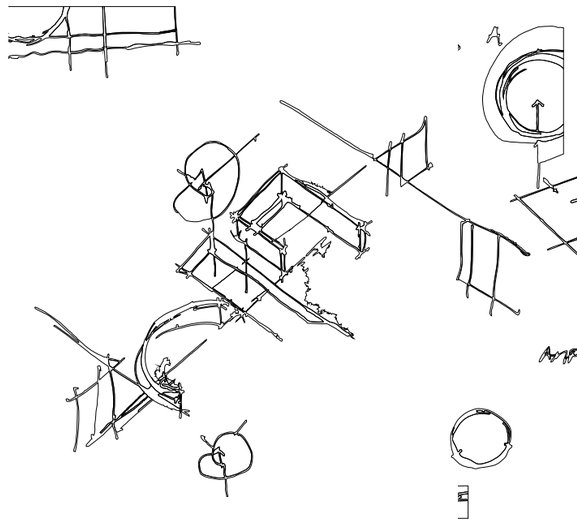

Figure 5.25: Studio work

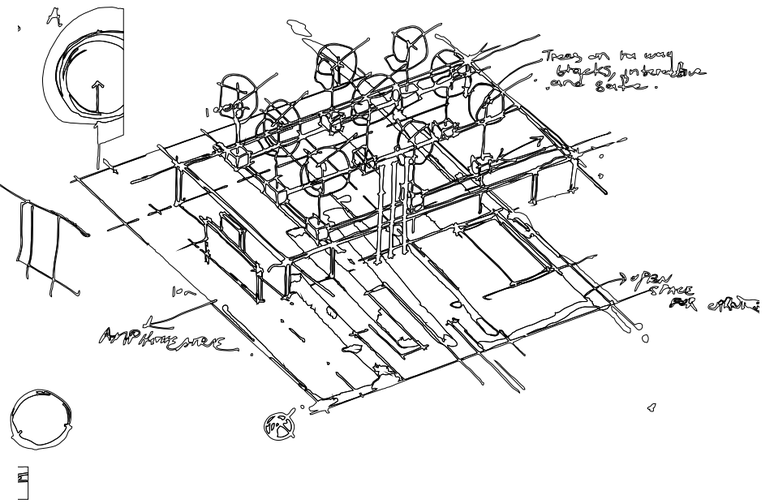

Figure 5.26: Studio work

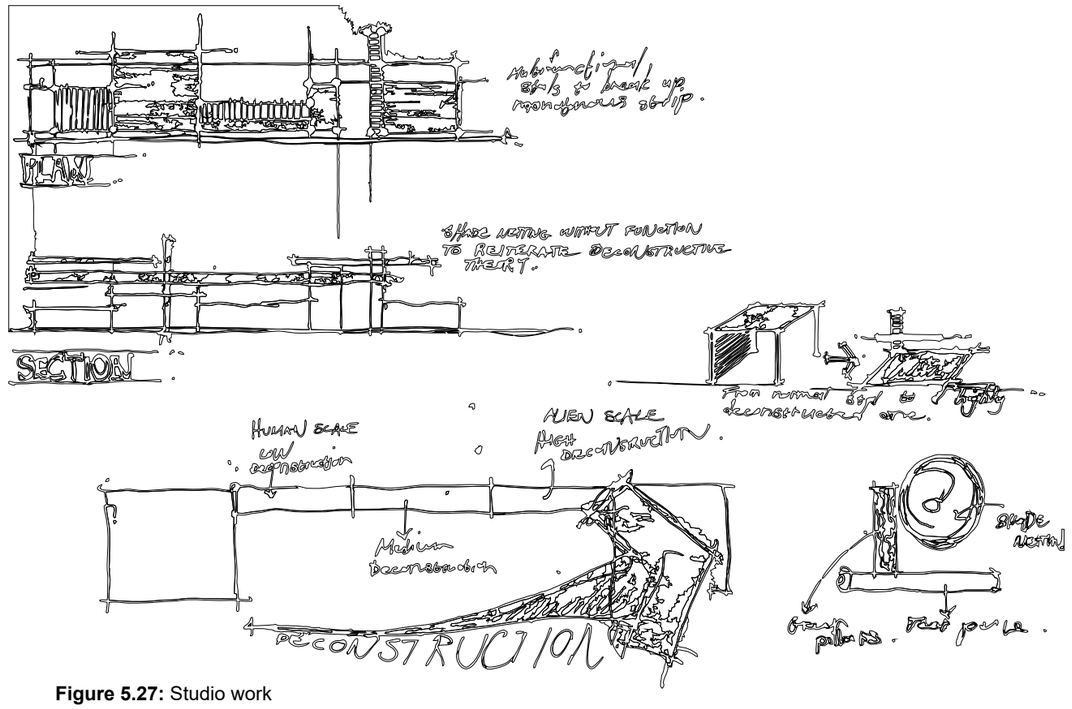

Figure 5.27: Studio work

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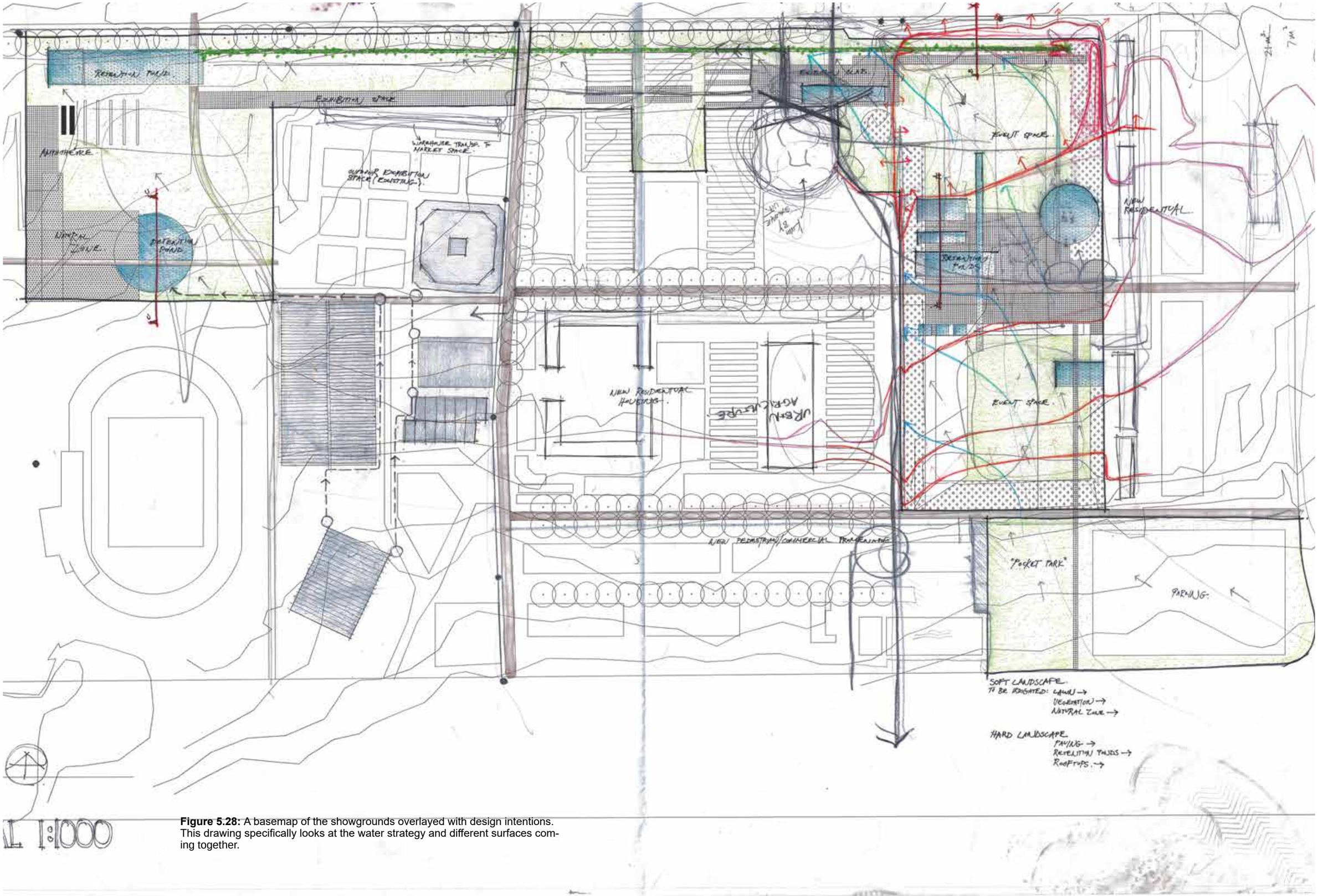

Figure 5.28: A basemap of the showgrounds overlayed with design intentions. This drawing specifically looks at the water strategy and different surfaces coming together.

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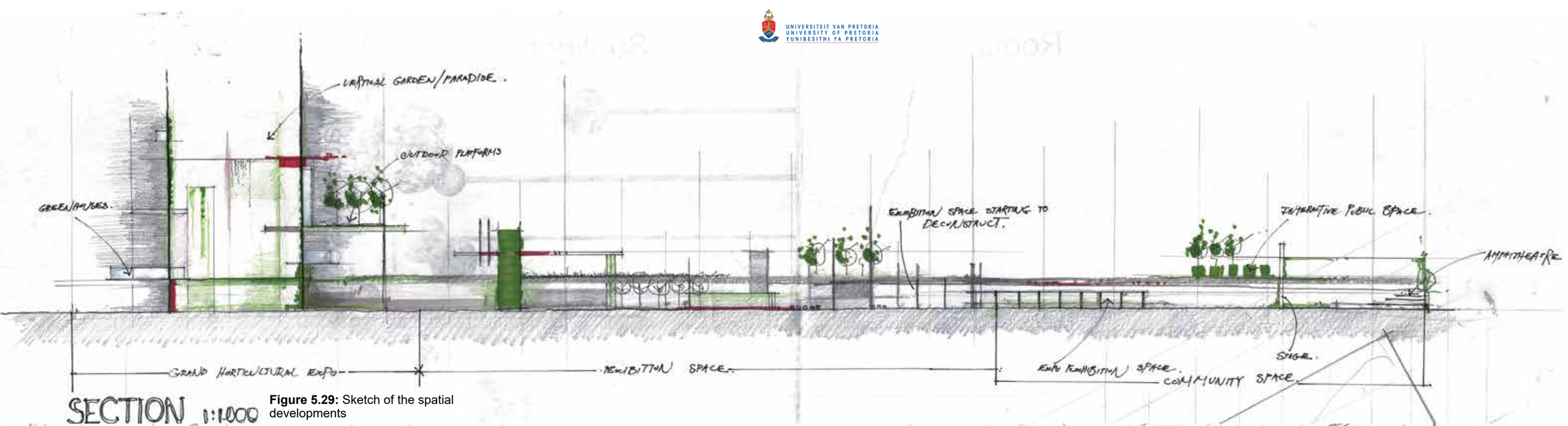

Figure 5.29: Sketch of the spatial developments

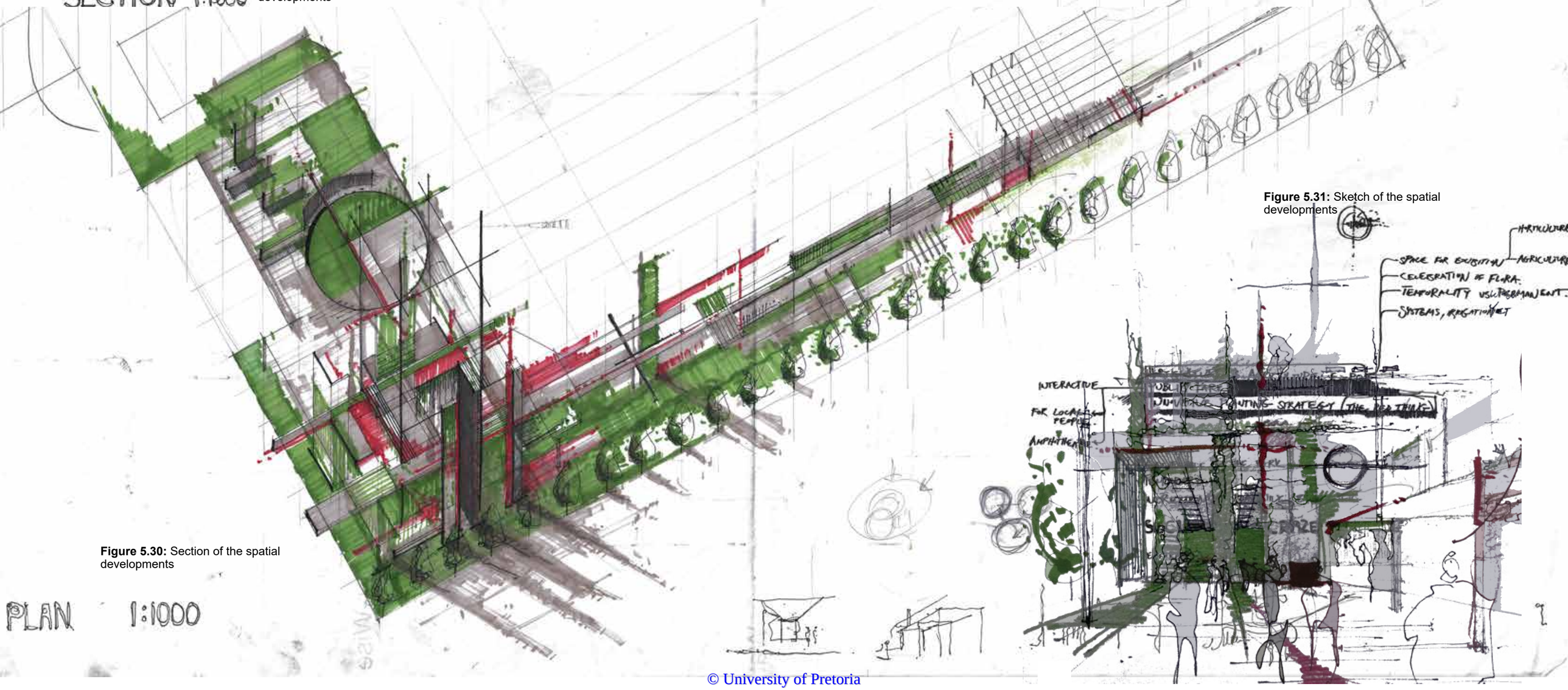

Figure 5.30: Section of the spatial developments

Figure 5.31: Sketch of the spatial developments

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Large open space filled with wild flowers typically found in the Pretoria West area. Flowers are sculpted to create an abstract composition on a large scale to attract people. Flowers would not break up the vastness of the open space, but it would solve the issue of wind and water erosion of the soil.

This open space is a great opportunity to create an exhibition (something to attract the user to the site). Through sketches in Figures 5.20 - 5.23 this space organically developed into a large structure or sculpture. A structure with the purpose to allow users to interact with. The structure is a culmination of the abstract design language. The structure needs to not only allow the user to interact with it, but it needs to act as a visual play area for the user. Something to be viewed and used from a distance. This structure is defined and referred to as a folly. This space responds to the cultural significance map (Figure 4.66, page 148) by allowing for the author to create an exhibition as the space does not score high on cultural significance.

This space developed in a transition space between the two large open spaces in the showgrounds. The space to the east (where the folly develops) and the large open space to the west are linked through this transitional space. It serves as a exhibition space to allow people to move in and around the space.

Figure 4.67 on page 149 highlighted the two main zonings on site. This western quadrant was zoned to act as a community park (as it sits within close proximity to the residential area of Pretoria West). This space seeks to link the park to the existing and succesful Pilditch stadium. There are existing ecological biodiverse spaces (Figure 4.56, page 143). These spaces are amplified to create spaces for the community to experience natural spaces in innovative manners. This part of the site will have a public stage for users to interact with. It will also have elements for the community to interact with on a daily basis. Elements such as small sport fields, vendors and outdoor gyms.

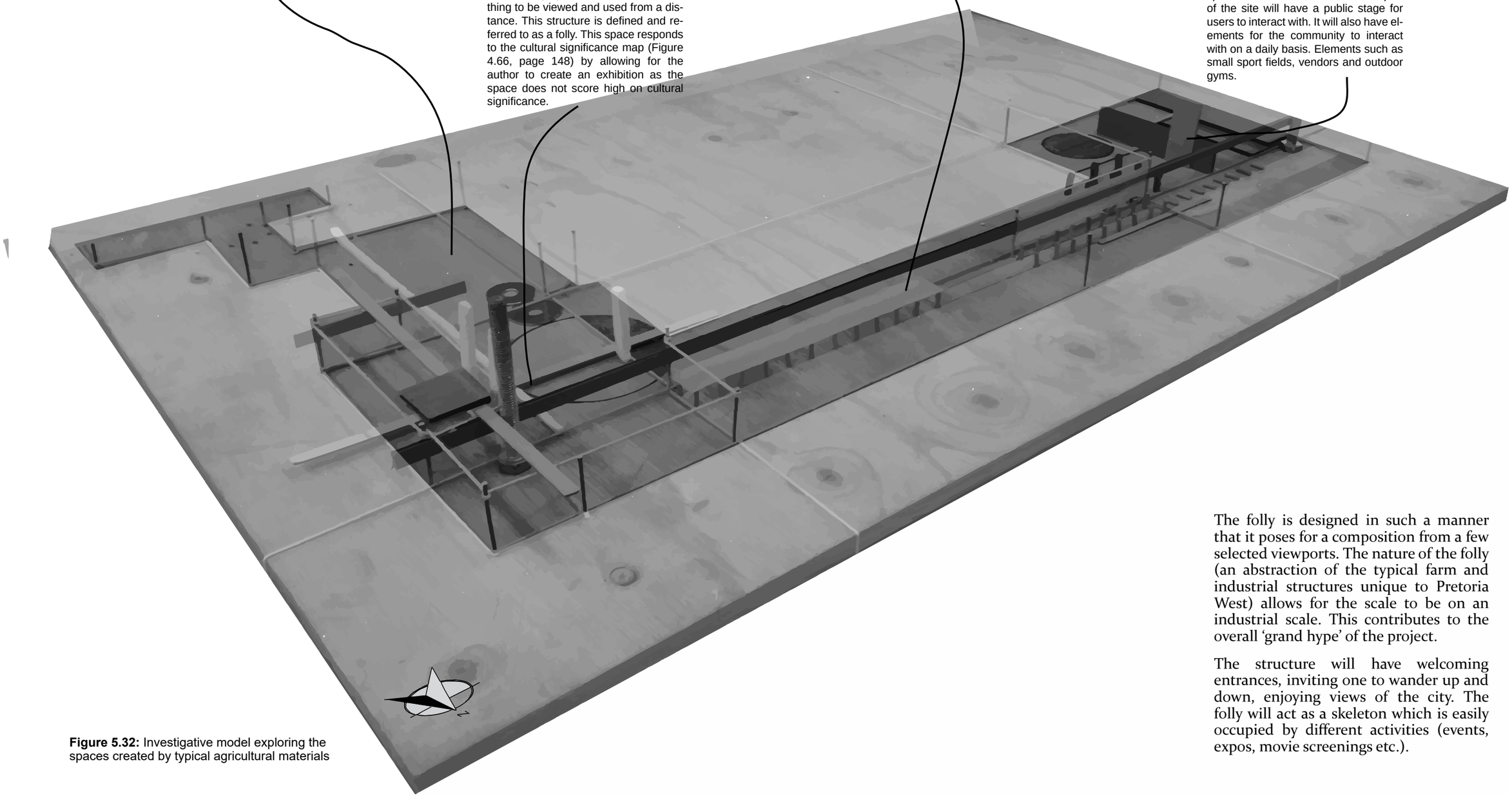

Figure 5.32: Investigative model exploring the spaces created by typical agricultural materials

The folly is designed in such a manner that it poses for a composition from a few selected viewports. The nature of the folly (an abstraction of the typical farm and industrial structures unique to Pretoria West) allows for the scale to be on an industrial scale. This contributes to the overall 'grand hype' of the project.

The structure will have welcoming entrances, inviting one to wander up and down, enjoying views of the city. The folly will act as a skeleton which is easily occupied by different activities (events, expos, movie screenings etc.).

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5.3 Masterplan

A hand drawn preliminary master plan (figure 5.32) highlights the sketch plan zone to be developed in the next chapter. The drawing shows how the sketch plan fits in with the larger precinct.

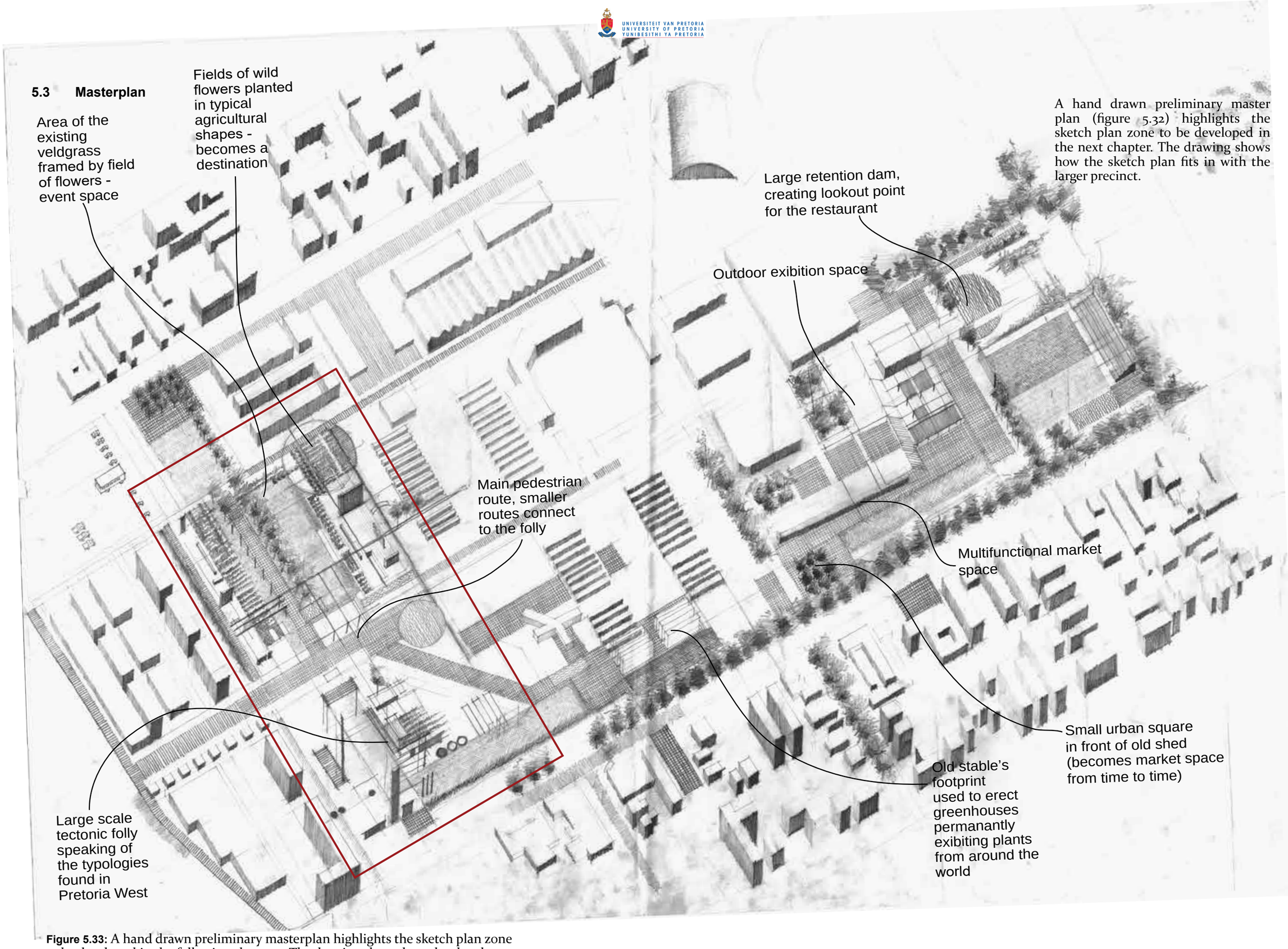

Figure 5.33: A hand drawn preliminary masterplan highlights the sketch plan zone to be developed in the following chapters. The drawing shows how the sketch plan fits in with the larger precinct.

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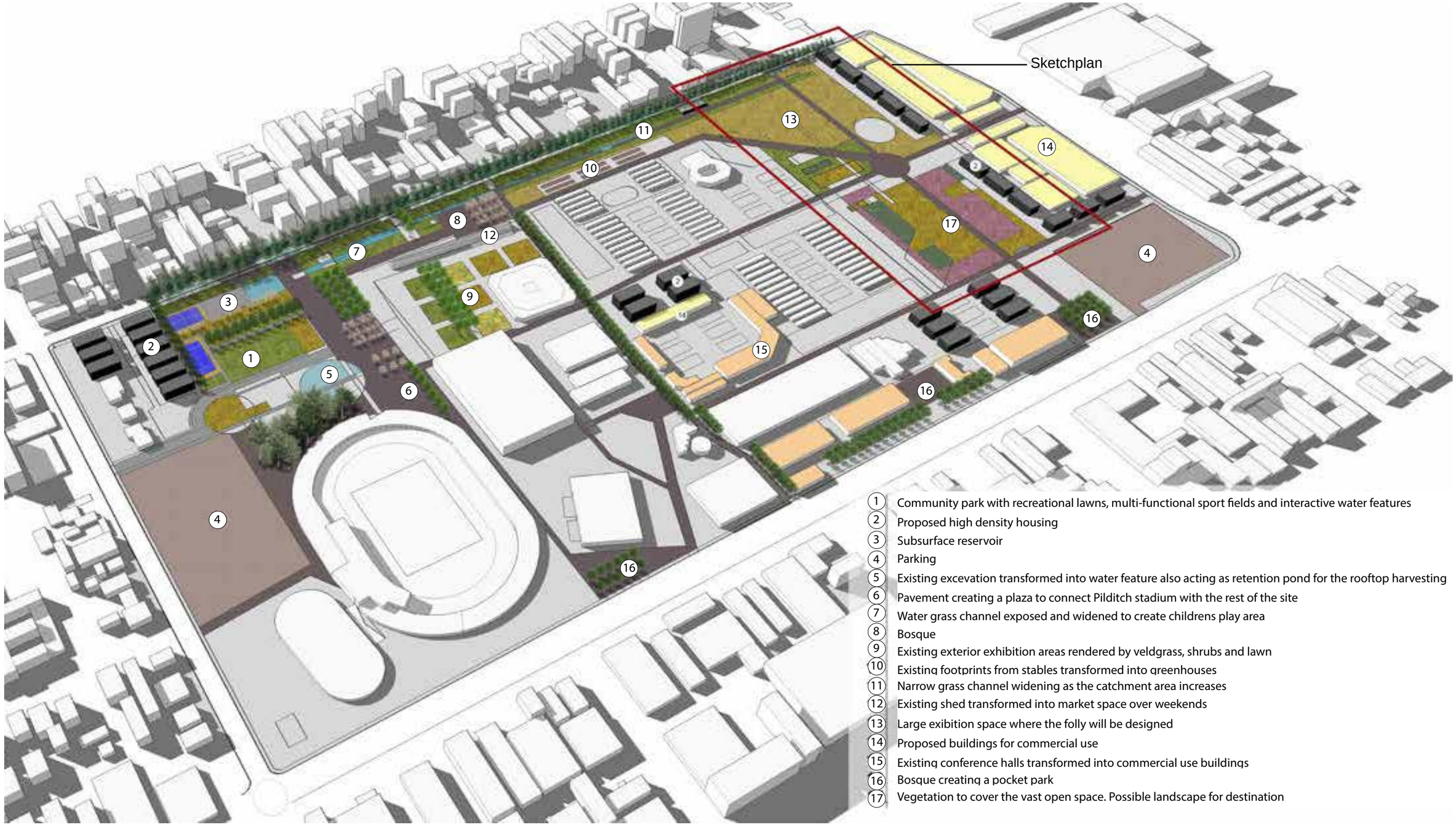

Figure 5.34: The masterplan outlining the sketchplan area

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5.4 Sketchplan

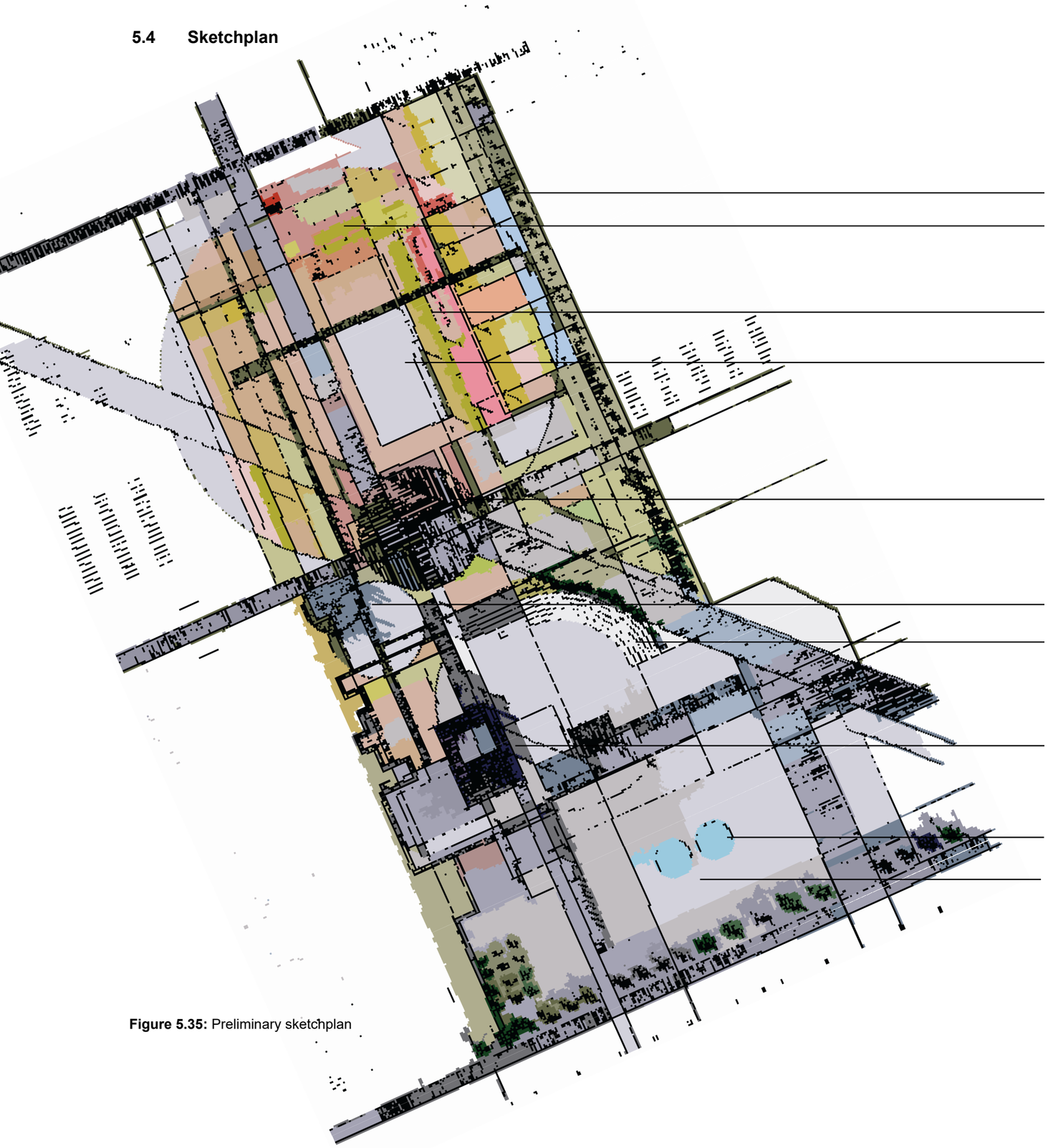

Figure 5.35: Preliminary sketchplan

Figure 5.34 shows the preliminary sketch plan and communicates the main objectives of this space. The eastern part of the showgrounds is shown in the sketch plan (Figure 5.34). As shown in the masterplan (Figure 5.33), this part of the site consists of two large open spaces. The southern open space is rezoned and filled with fields of wild flowers and veld-grass. This resolves the issue of erosion and embraces the vastness of the open space. It will also act as an aesthetic destination for the user. The northern open space is rezoned for event space. The event space will mainly consist of a large sculptural folly (Figure 5.31) creating the platform for numerous activities to take place. The fields of colourful flowers are met by a hard, stark folly, within the landscape. This folly binds in with the Bilbao Effect's principles as it is a manifestation (de-constructed abstraction) of Pretoria West. It also features as functional outdoor space.

The following chapter will discuss the refinement of the project. The technicalities will translate the concept into practical implementations.

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Figure 5.36: A perspective of the folly as one approaches it from the fields of wild flowers.

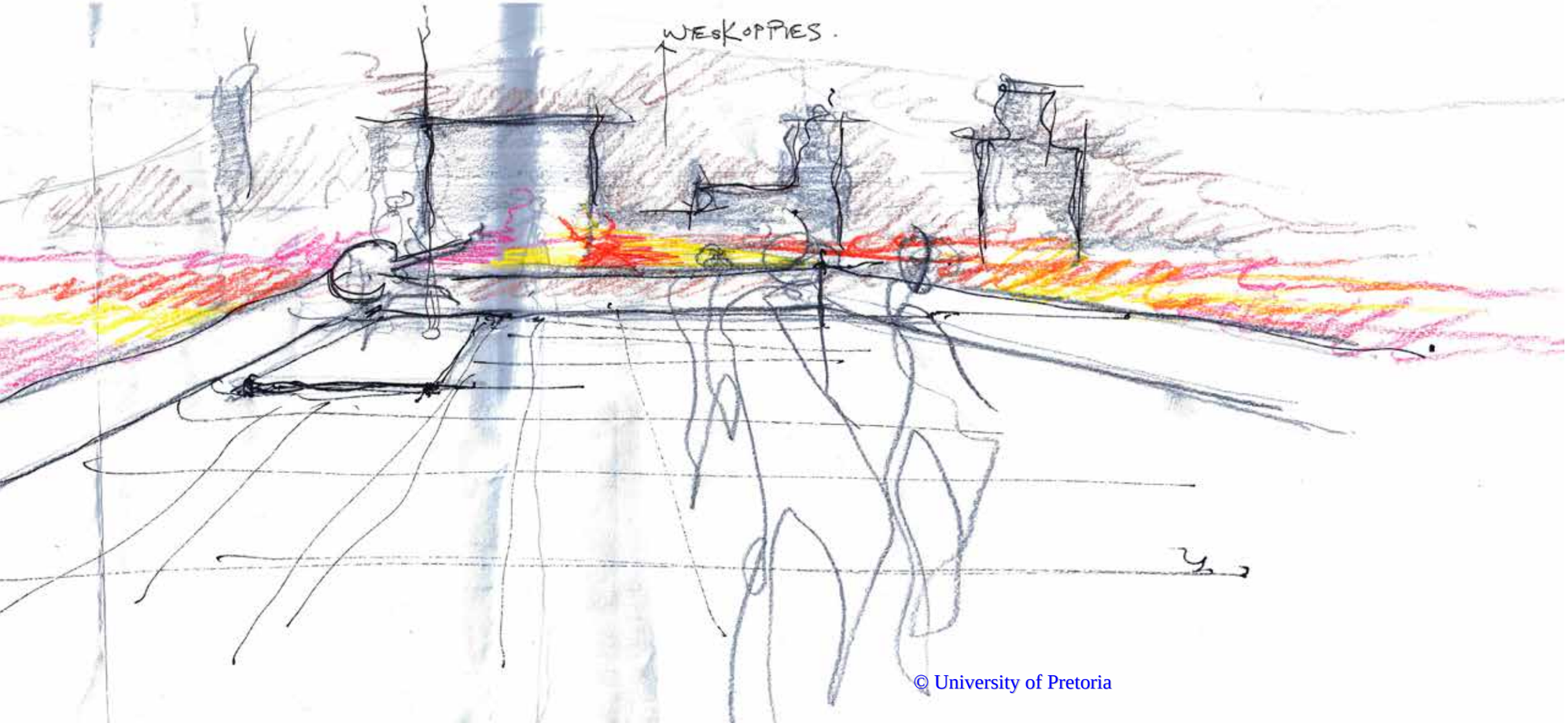

Figure 5.37: A perspective from the folly as one looks over the fields of wild flowers.

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Figure 5.38: Elevation of the folly communicating the spacemaking capabilities of the structure

Figure 5.39: Elevation of the folly communicating the spacemaking capabilities of the structure

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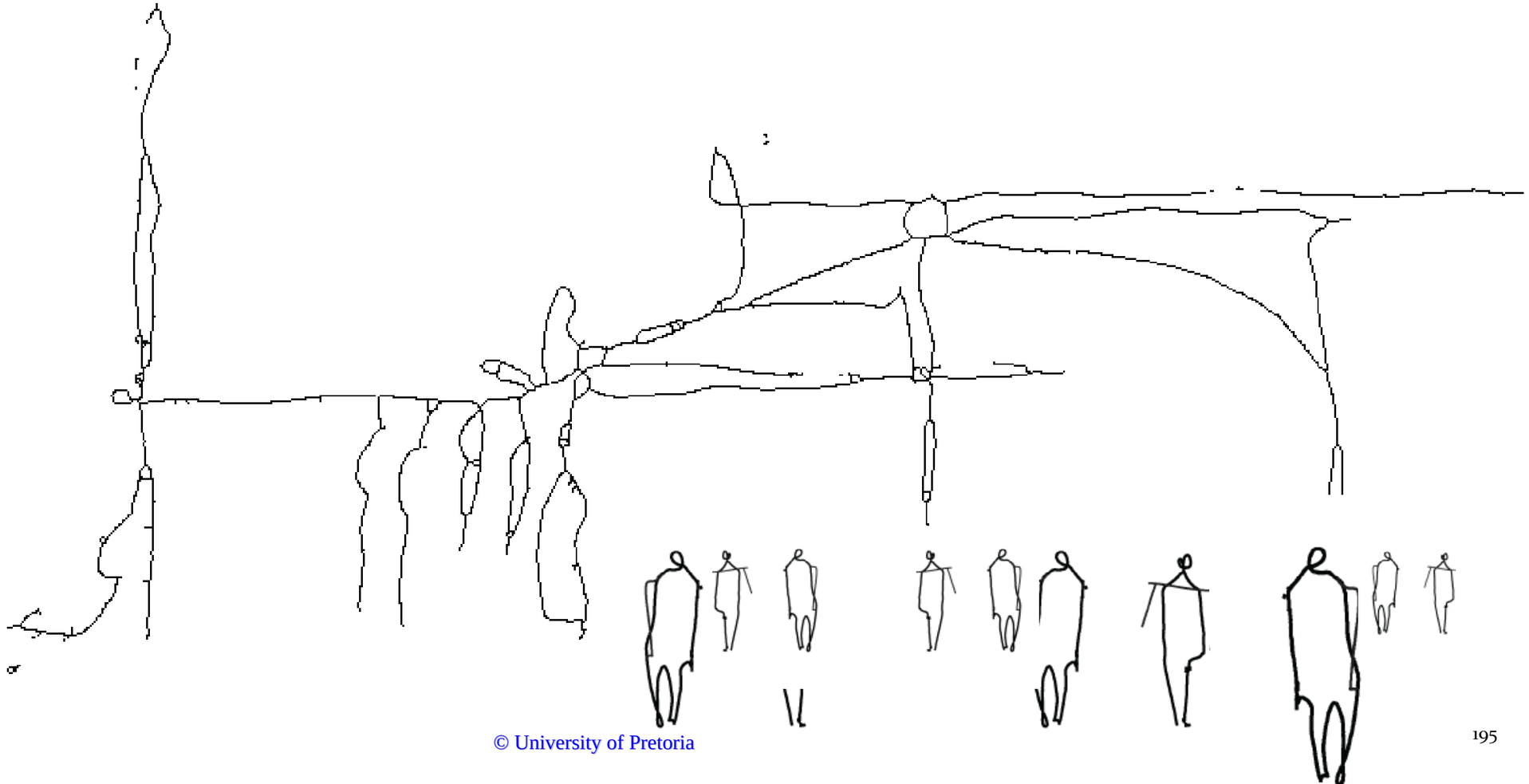
6 Technification



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This chapter covers the last component of the design process. It consists of drawings encapsulating the theory, the concept, and the refined design development. The concept of the design should be carried through to the finest details. It is the details that contribute greatly to the sense of place and ensure robust, functional spaces. As the user moves through the site, he/she should be confronted by abstract shapes, forms, and materials, all speaking of Pretoria West. The site captures experiences, spaces, and materials that are observed when moving through greater Pretoria West.

The material palette has been distilled to a set of hard structures and to species of soft vegetation. This selection of materials is not only functional but binds in with the concept of creating abstract elements reflecting the unique character of the greater Pretoria West. Materials typically found in and around Pretoria West gain preference with the selection of the material palette.

BILBAO EFFECT PRINCIPLES

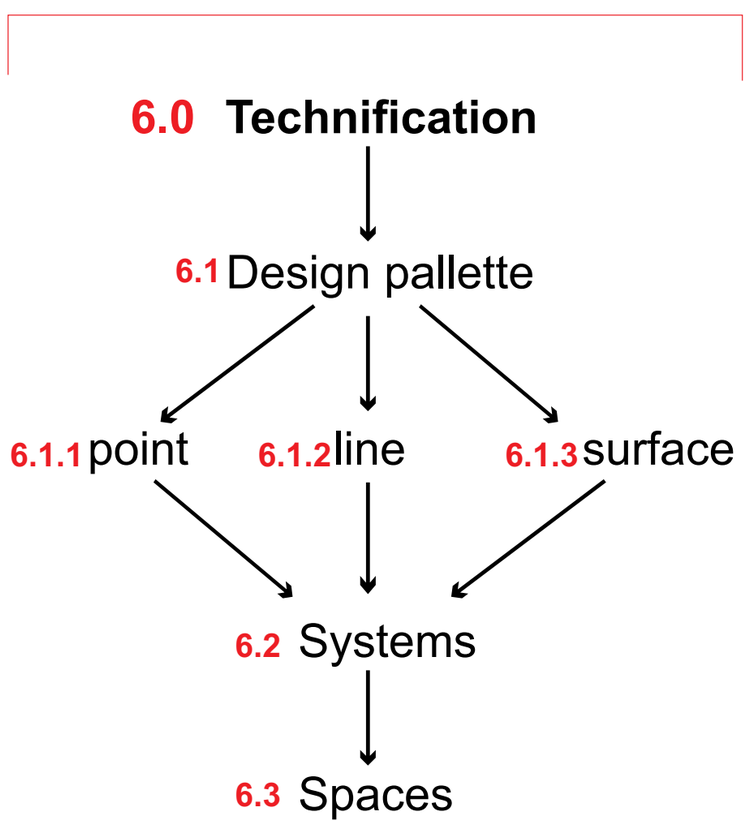

Figure 6.1: Flow diagram showing the chapter outline

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To better understand Figure 6.2, one must refer to Figure 2.2 on page 36. Figure 2.2 showed the process of analyzing the case studies, deconstructing them and lastly presenting them in info-graphics to draw conclusions from them. In chapter five the various spheres of the design process came together to create spaces with the intention of recreating the Bilbao Effect (Figure 5.18 on page 172). It is now at this stage where spaces, ideas and visions are manifested into a combination of materials. Figure 6.2 summarizes the idea of taking an object, deconstructing it and putting it back together for it to be perceived differently than before. Chapter four (Figures 4.41 - 4.48) are conceptual compositions explaining what essentially is going to happen in this chapter. All analyzed and deconstructed materials are put together to create a unique, context relevant park.

Inspired by Parc de la Villette (Figure 2.94 - 2.106), the technical information and details will be presented within Bernard Tschumi's deconstructed pallette, namely, point line and surface. The design was put together from various elements, it organically developed into a site very similar to the approach of Bernard Tshumi. Point, line and surface.



Figure 6.2: A basic diagram showing that all the deconstructed elements will now be put together to create new, innovative and exciting spaces

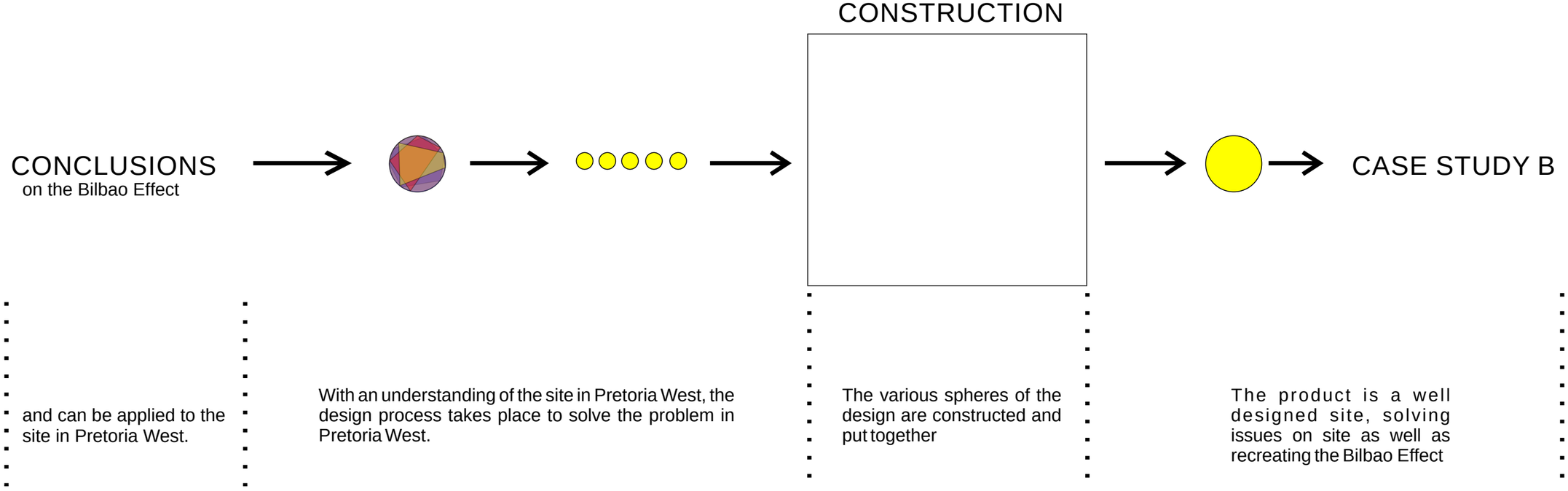

Figure 6.3: Flow diagram showing the construction of the deconstructed

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Planting Strategy

Firstly, it is important for the planting strategy to tie in with the overall concept of the park, enhancing it to the finest detail. The intervention attempts to create compositions within the landscape derived from agricultural architecture principles of greater Pretoria West. The forms can thus be placed within the stance of deconstructivism, divorcing the function and aesthetic of certain perceived everyday objects. The planting strategy is sub-divided into the following three elements;

Ecology + pattern + space

Ecology (Figure 6.4)

It is a prerequisite that a planting design contribute to the local/ global ecological significance. The datum of the site consists of numerous abstract geometries. The design will focus more on pattern and space than it will on ecology, but nevertheless the beauty of the planting design will rest on the integration between "manmade" compositions and the horticultural, ecological, success of the vegetation. It is an integrated approach of ecology, pattern, and space.

Pattern (Figure 6.5)

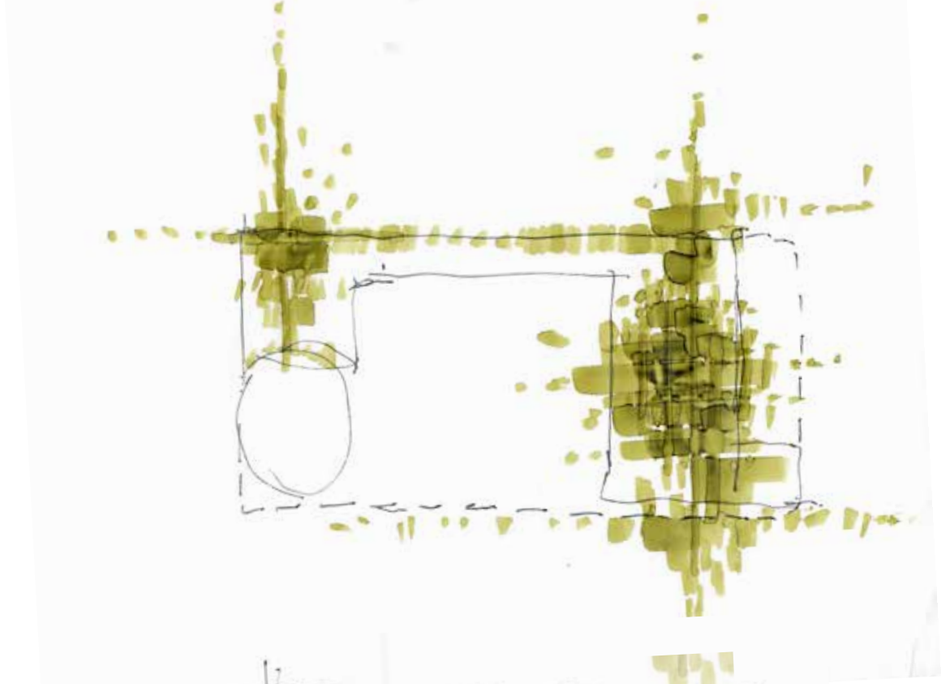
As there are already numerous superstructures creating compositions, the planting design will link into these man-made structures. Plants will not simply be planted to soften up the landscape and create different spaces; they will also be an exhibit and will be deconstructed so that the beauty of the natural experience can be appreciated, both in terms of artistic compositions, and as a functional ornament within the landscape.

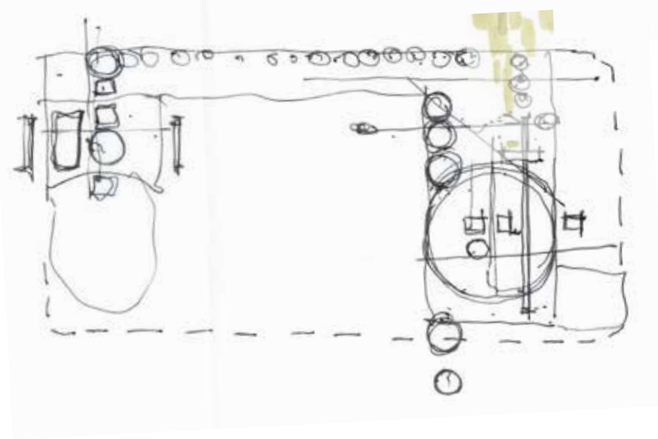
Space (Figure 6.6)

The spaces created by the planting design will create destinations and focal points, tying in with the concept of attracting people to the site. In order for the planting design to attract people from all over the country, it must be innovative in nature.

It is proposed that the site be managed as a corporation; the program of hosting numerous events will generate an income to be used in maintaining the site. The vastness and size of the spaces on the site will be utilized to cater for the planting of large fields. Namaqualand is successful as a tourist attraction because of the panoramic views of fields of flowers; people enjoy flowers. It is planned that large fields of wild flowers be planted on the site to be enjoyed from different viewpoints (from the designed architectural structures as well as growing in the large fields).

The preliminary sketch plan of the area, as indicated in Figure 5.35, illustrates the two proposed main components (folly and flowers).





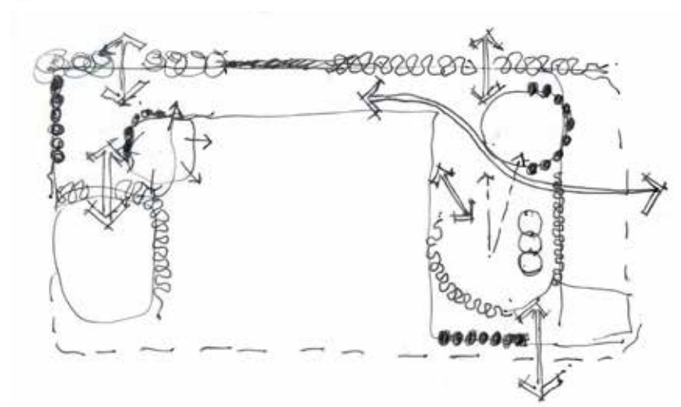


Figure 6.4 (top): Diagram explaining how the planting design will contribute to the region's urban ecology

Figure 6.5 (middle): Diagram explaining how the planting design will create abstract compositions

Figure 6.6 (bottom): Diagram explaining how the planting design will contribute to the space

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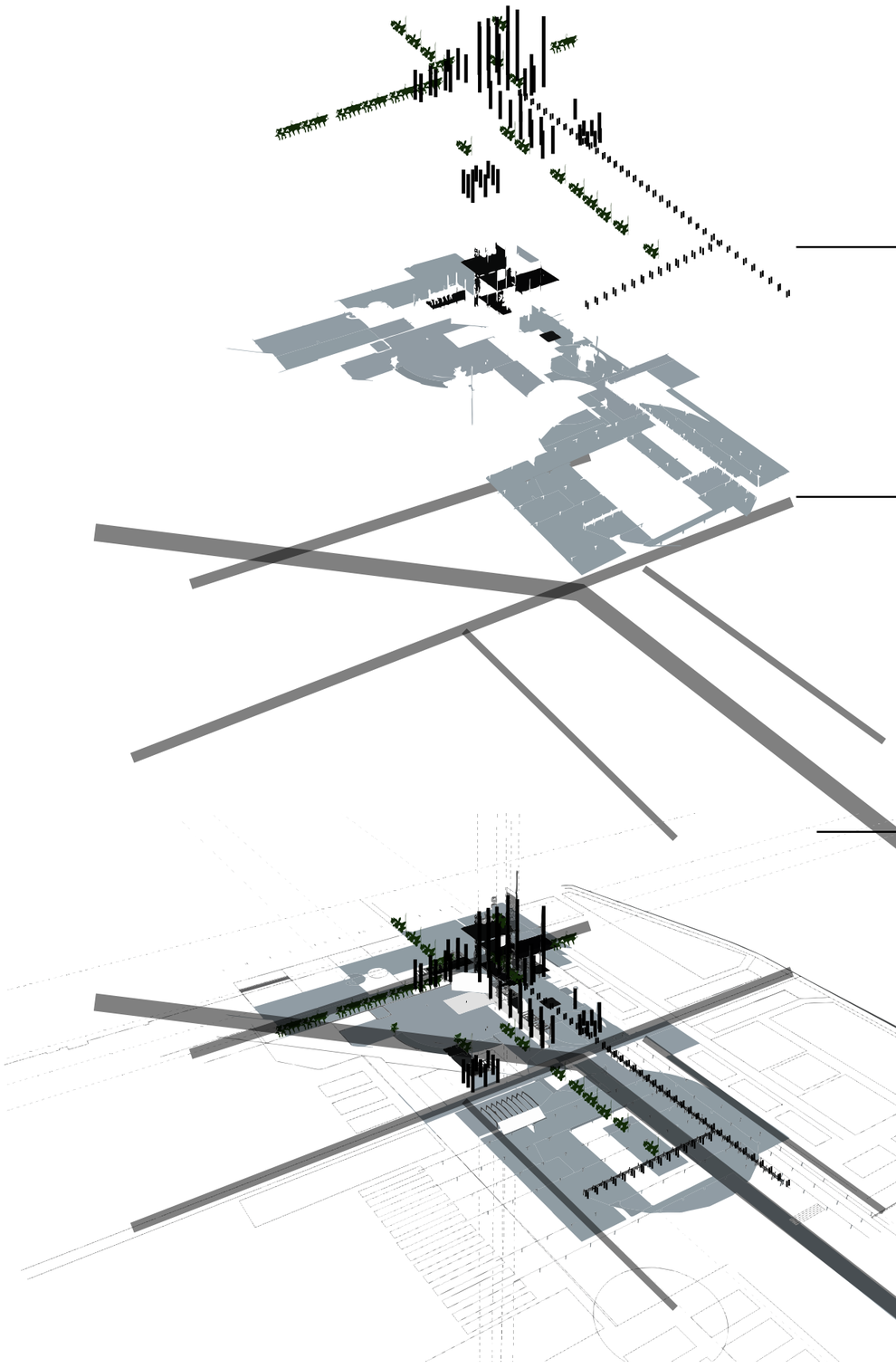



Dombeya rotundifolia



Celtis africana



Rhus magalismontana



Polygala rehmannii



Polygala virgata



Castalis spectabilis



Cenchrus ciliaris



Themeda triandra



Monocymbium ceresiiforme



Eragrostis gummiflua



Gazania krebsiana



Walkways

The design is dependent on the relationship between the soft (planting) and hard (folly) structures. This diagram best explains how the soft landscaping comes together. Different species combining to create not only artistic compositions, but also spaces connecting the user with these natural elements. The following pages show how the folly is put together.

Figure 6.7: Point, line and surface diagram communicating the synergy of the selected plant species

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The Superstructure

The folly will, as mentioned before (Figure 20), not only pose in the landscape as a sculpture, but will also create a welcoming platform to attract the user. Figure 5.19 is a preliminary concept for the approach to the technification on the folly.

As shown, the idea is to create a modular set of industrial and agricultural materials to create a variety of spaces. These spaces have different functions assigned to them. Even when no event is taking place at the folly, it will still contribute to the visual experience of the site. Materials used to construct the folly reflects the agricultural and industrial elements of greater Pretoria West (Figures 4.2-4.40).

Figure 6.8 illustrates how the folly will be put together. Once the folly is constructed there is still a final layer to be added. Functional agricultural products will be fitted on the folly to complete the composition as well as creating comfortable spaces for the users to enjoy.

Steel H-columns are used as the main points injected into the site (casted in concrete footings). The H-columns will create support for platforms to be bolted to them. The exposed H-columns gives the folly an industrial agricultural feel. All materials used on the folly are extremely functional (the reason it is used in typical structures in Pretoria West). The beauty of this is how this palette of functional materials combine to create an artistic element, rooting the folly into it's unique context.

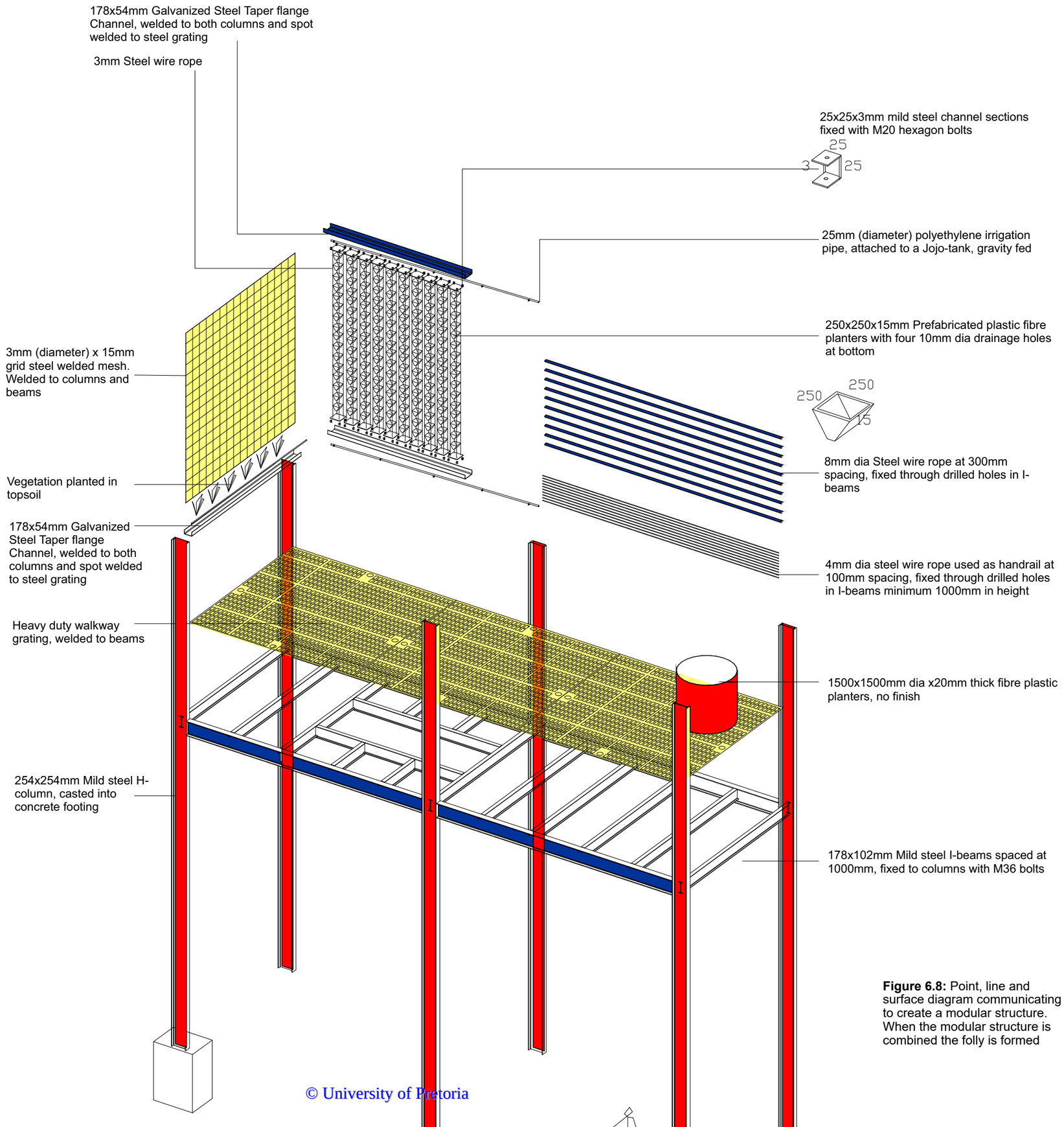

Figure 6.8: Point, line and surface diagram communicating to create a modular structure. When the modular structure is combined the folly is formed

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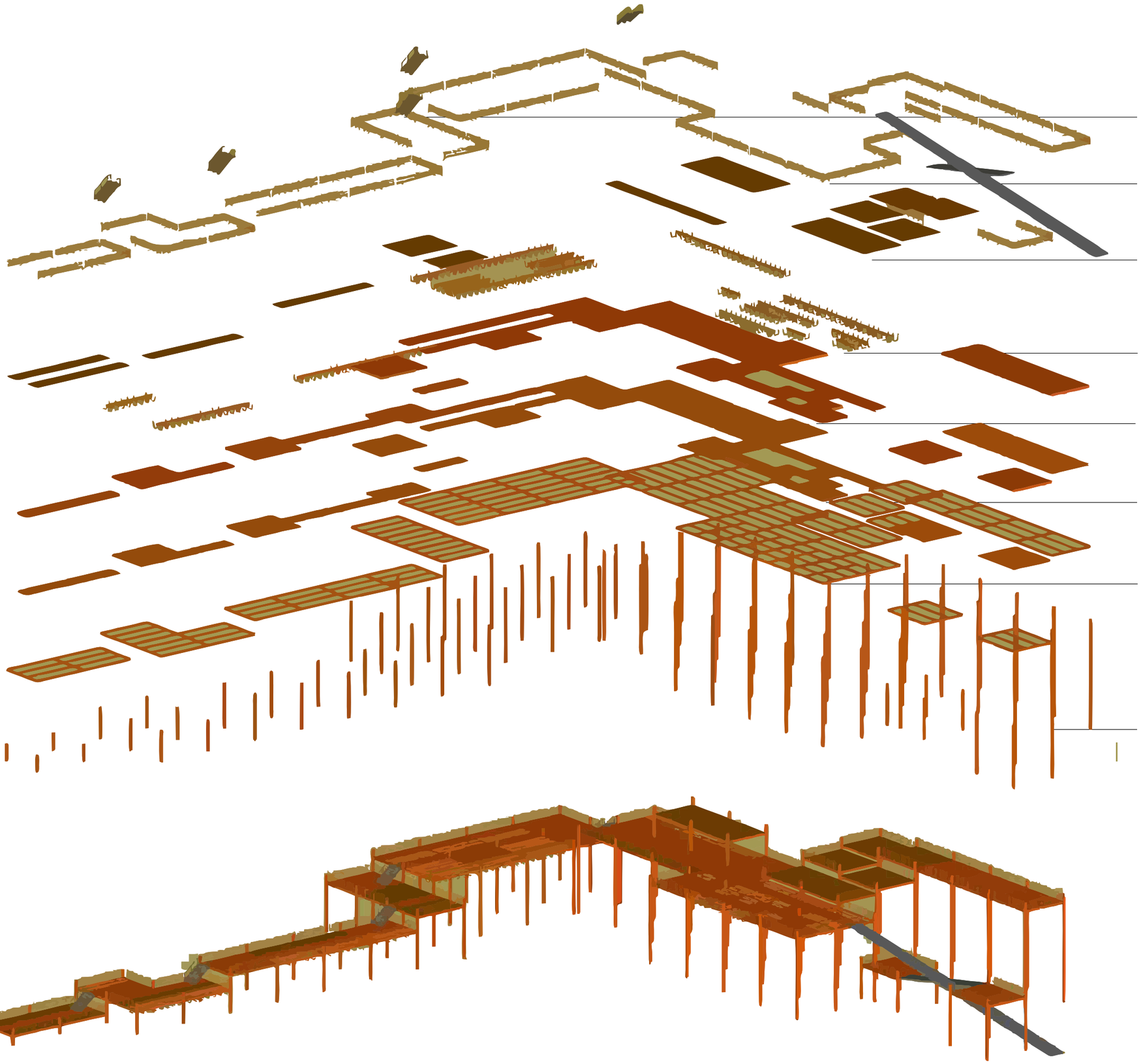

Figure 6.9: The modular folly (Fig. 6.8) is put together to form these stepping platforms, inviting the user onto them

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6.2 Systems

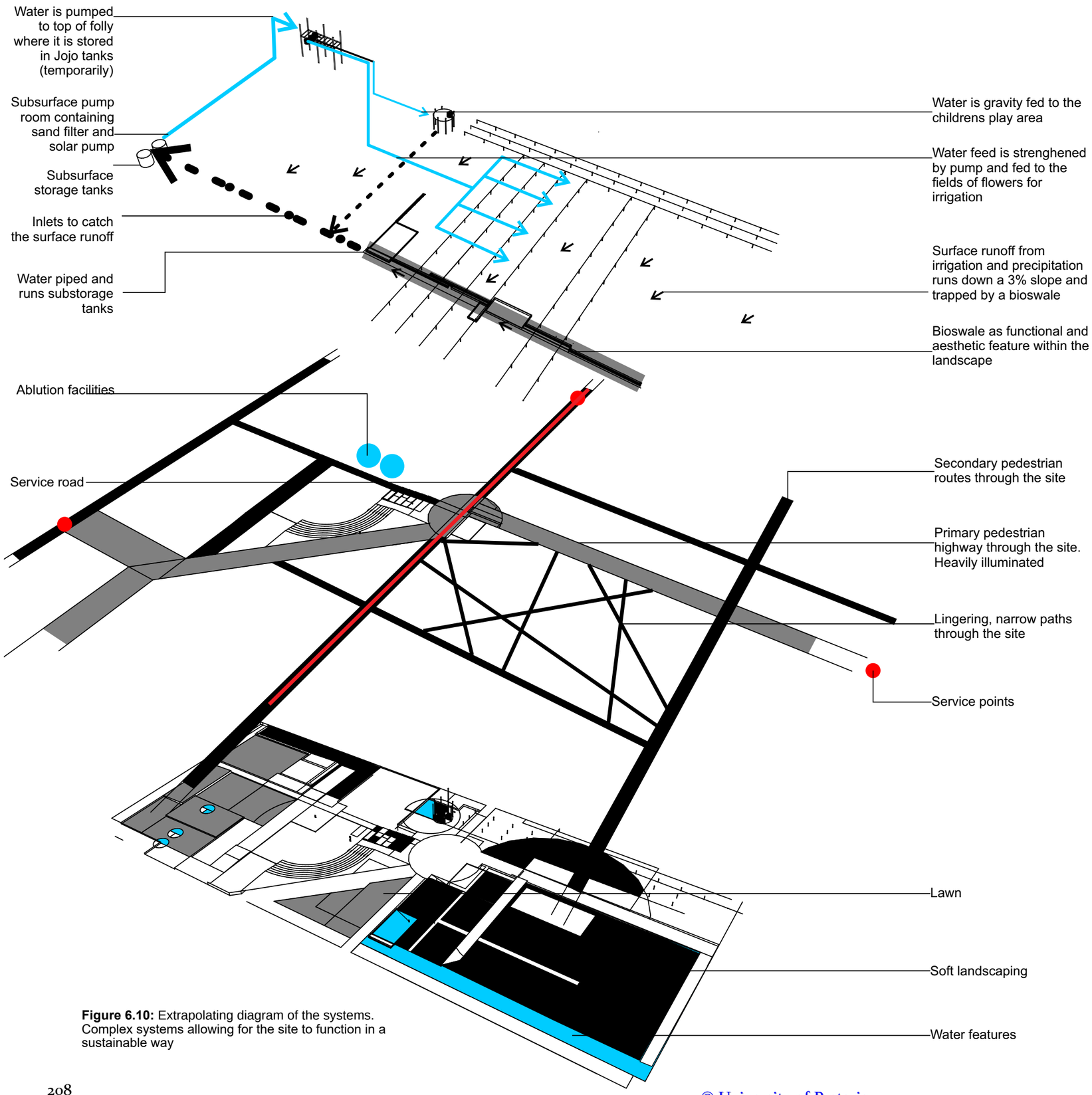

Figure 6.10: Extrapolating diagram of the systems. Complex systems allowing for the site to function in a sustainable way

Systems

The water system, movement patterns, surfaces (biodiversity) and different programs work in synergy to ensure that the design functions performs as sustainable as possible. The park is a recreational landscape, not a productive landscape. The intent of the systems are to sustain what is needed to recreate the Bilbao Effect. The water system taps into the masterplan strategy. Water is harvested, filtered and used for recreational play areas, irrigation and grey water. The movement patterns on site caters mostly for pedestrians. The only vehicles to enter the site are emergency vehicles and service vehicles. The main pedestrian route allows for vehicles to access the park the in the case of an emergency. Once a week the municipal services will enter the site to collect unorganic trash.

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6.3 Spaces

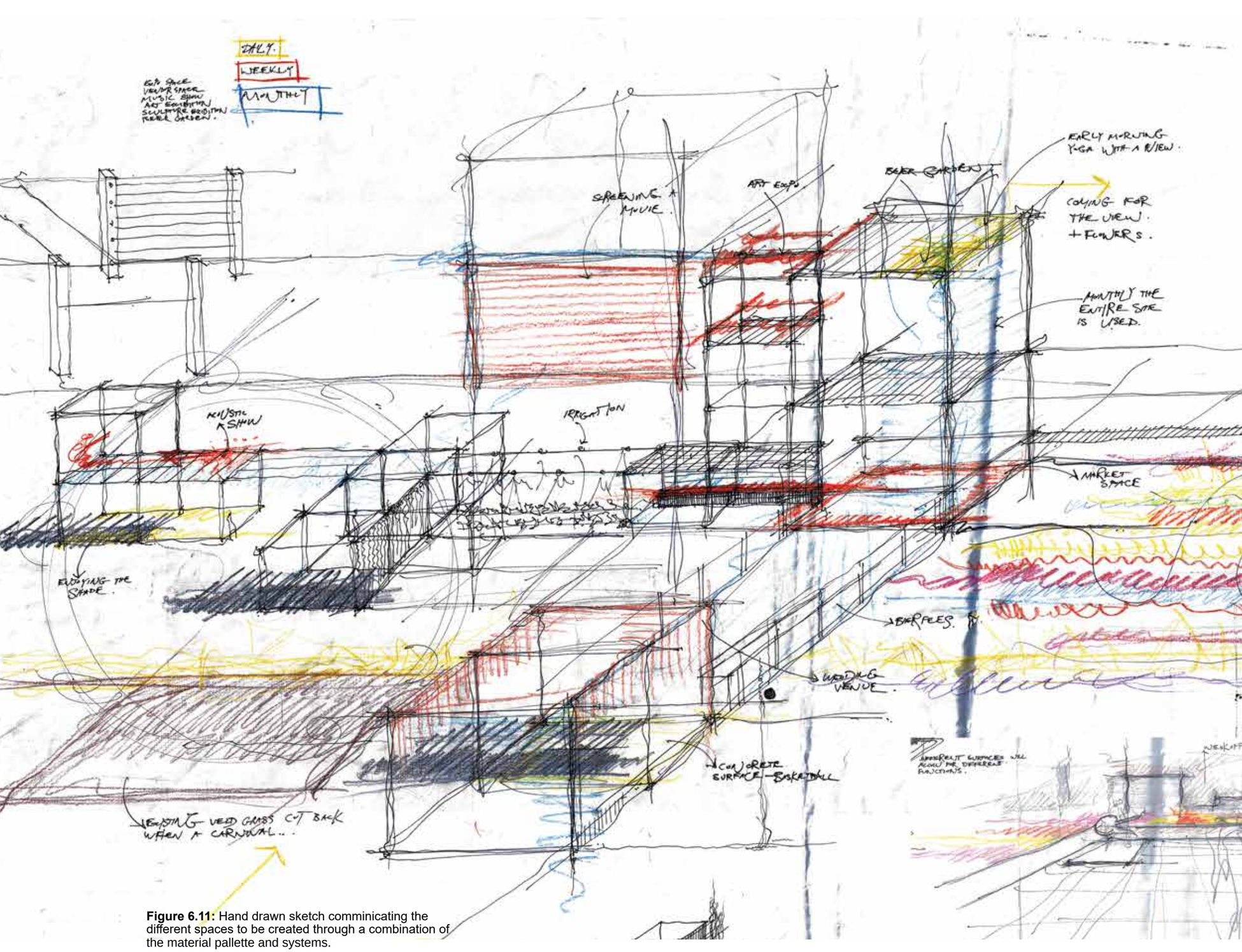

Figure 6.11: Hand drawn sketch comminicating the different spaces to be created through a combination of the material pallette and systems.

Spaces

For the site to recreate the Bilbao Effect it is essential to create an innovative user experience. Besides creating the opportunity for users to experience The showgrounds like never before, the design must have soft, comfortable spaces to interact with on a daily basis. Figure 6.11 shows how the artistic composition (folly) becomes an interactive element in the landscape. The different colours displayed in figure 6.11 all represent different destinations for different occasions to ensure the park is fully utilised and not become dormant as it currently is.

The folly is iterated to ensure that a number of activities can take place, activities such as:

-Expositions

-Sport activities

- Restaurants

- Beer brewering

- Screening of sport events

- Music concerts

- Recreational space

- Market space

The design creates a platform for these activities to take place while it provides the user with a elegant ,sculptural, artistic element to interact and look at in the form of the folly.

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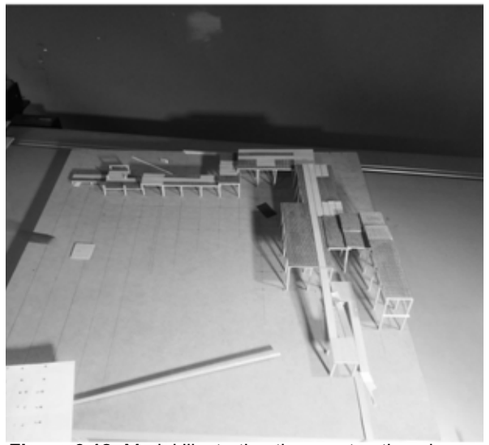

Figure 6.12: Model illustrating the construction phase of the folly.

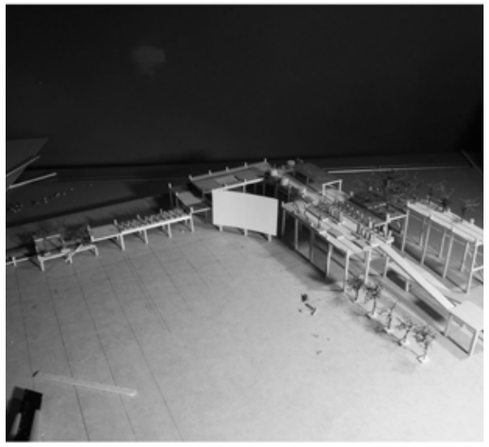

Figure 6.13: Model illustrating the construction phase of the folly.

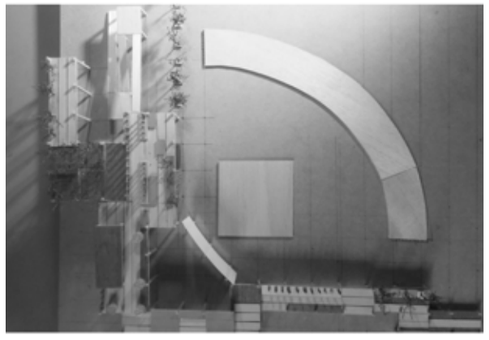

Figure 6.14: Model illustrating the aerial view of the folly. The folly defining the backdrop to the drive-in screen (amphitheatre).



Figure 6.15: Model illustrating the spaces on top of the folly, creating intimate spaces as well as allowing the user to have a wonderful view of the flower fields, and Pretoria West.



Figure 6.16: Model illustrating the stepping platforms of the folly, inviting the user.

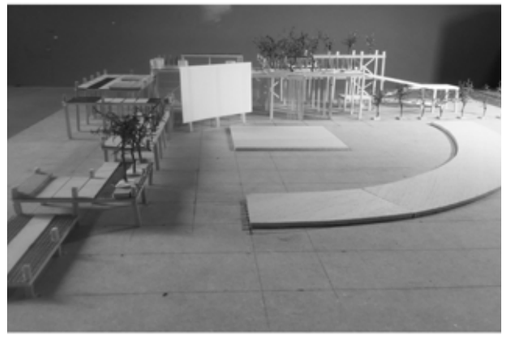

Figure 6.17: Model illustrating the folly with planting and the drive-in screen, contributing to the unified composition.



Figure 6.18: Model illustrating the various surfaces, trees and agricultural products combining with the folly to create the abstract structure in the landscape.

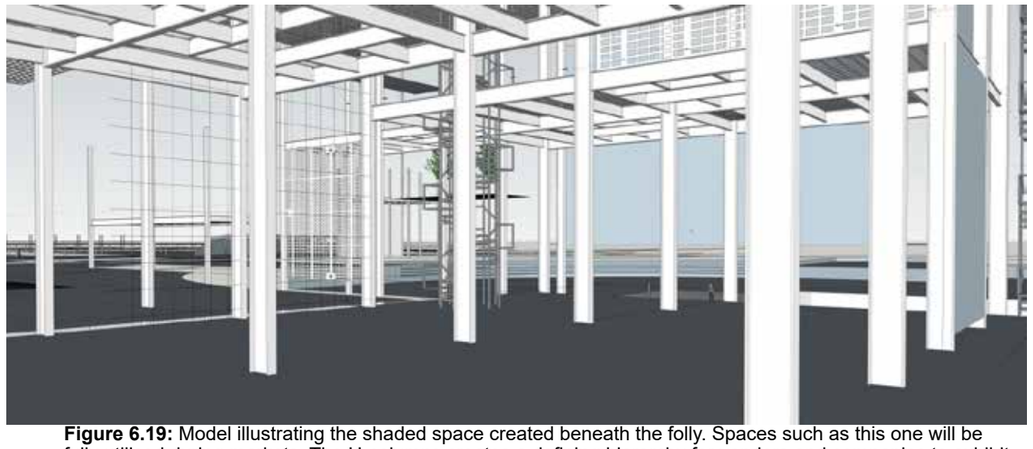

Figure 6.19: Model illustrating the shaded space created beneath the folly. Spaces such as this one will be fully utilised during markets. The H-columns creates a defining hierarchy for vendors and companies to exhibit products and services.

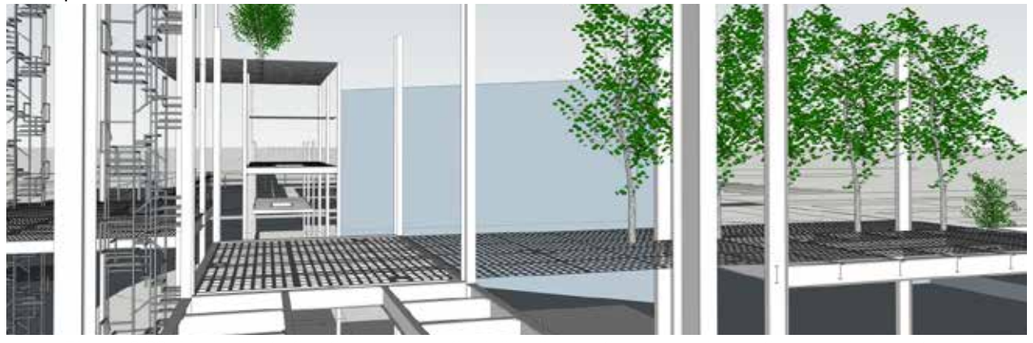

Figure 6.20: Model illustrating the view from the folly, allowing the user an innovative experience of trees.

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1 Pocket park/bosque for passing pedestrians
2 Recreational lawns
3 Folly/structure within the landsape
4 Amphitheatre seating
5 Childrens play area
6 Central gathering node
7 Recreational lawns
8 Small paved pockets within the field of flowers
9 Fields of wild flowers and veldgrass
10 Paved strips allowing for pedestrian movement
11 Existing veldgrass framed by wild flowers

Figure 6.21: The final sketchplan communicating the materials and systems combining to create different spaces for different functions within the park

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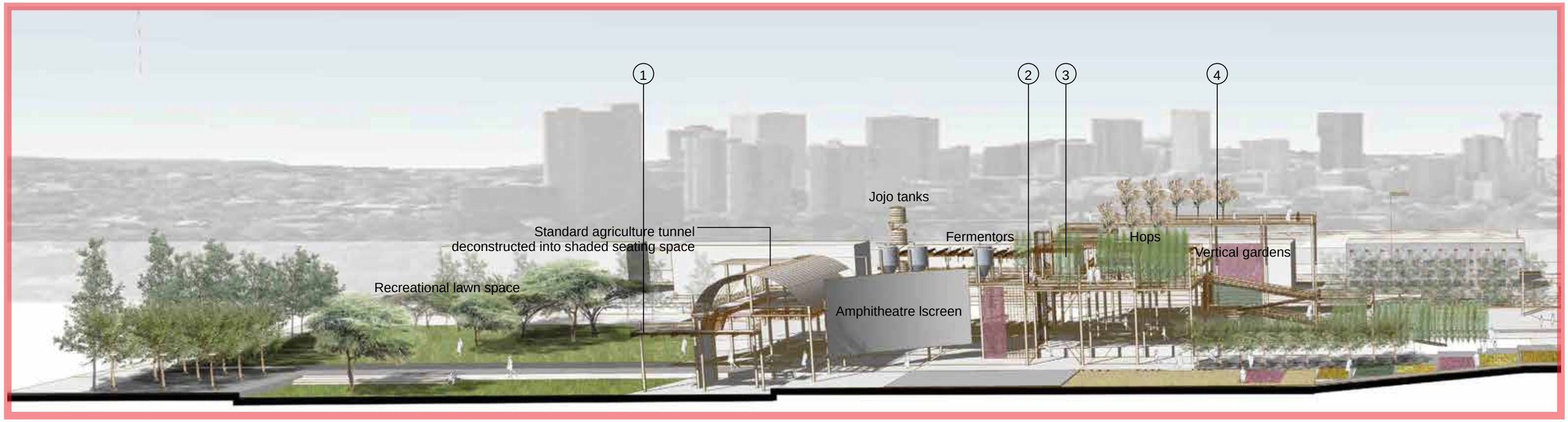



Figure 6.22: Section cutting through the entire site (Author)

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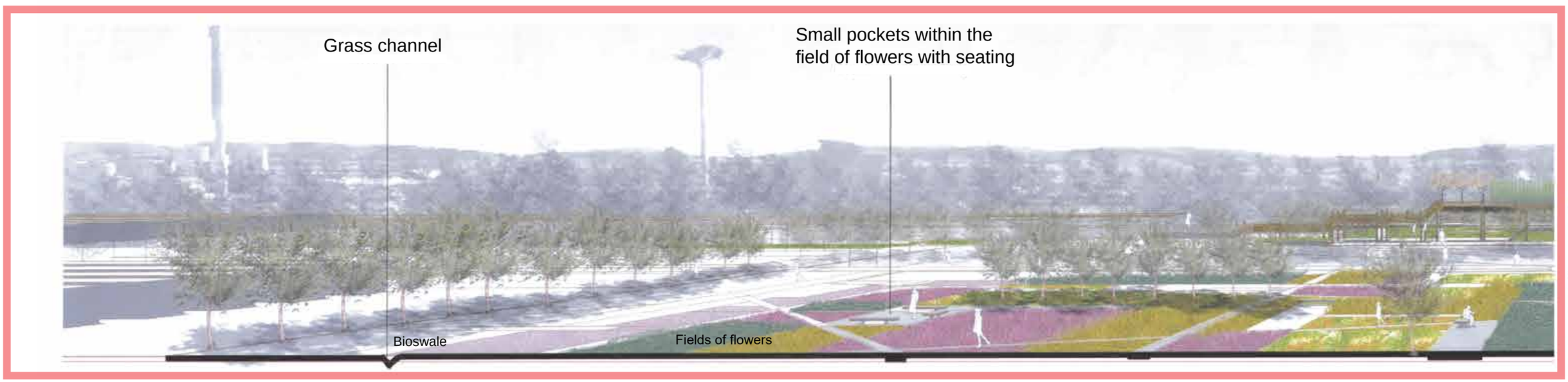



Figure 6.23: Section cutting through the entire site

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Figure 6.24: Section cutting through the folly showing the details as well as the spaces being formed on the folly

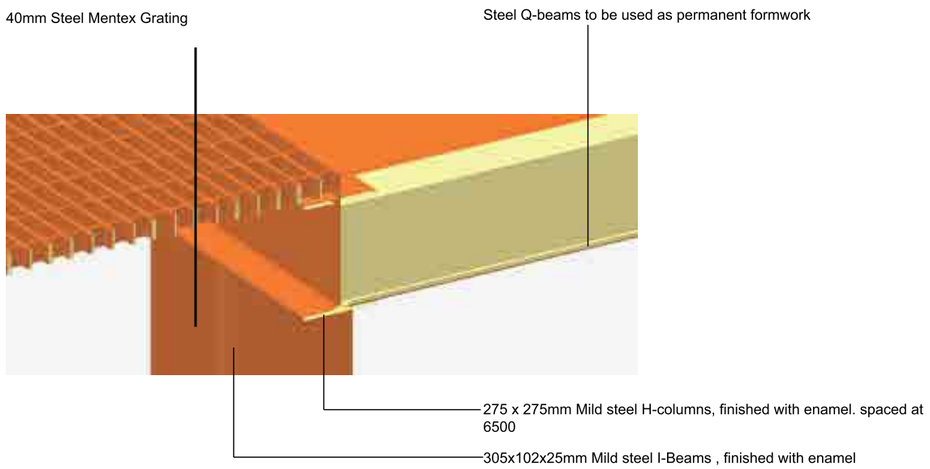

Figure 6.25: Typical detail section cutting through walkways and Mentex Grating

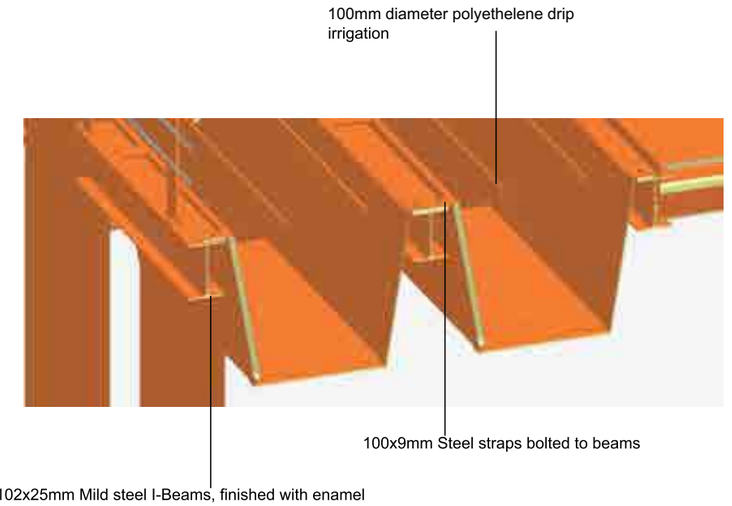

Figure 6.26: Typical detail section cutting through the planters fitted on the folly

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Figure 6.27: Perspective of the agriculture tunnel space on the folly



Figure 6.28: Perspective of the highest platform looking out on the fields of flowers and Pretoria West

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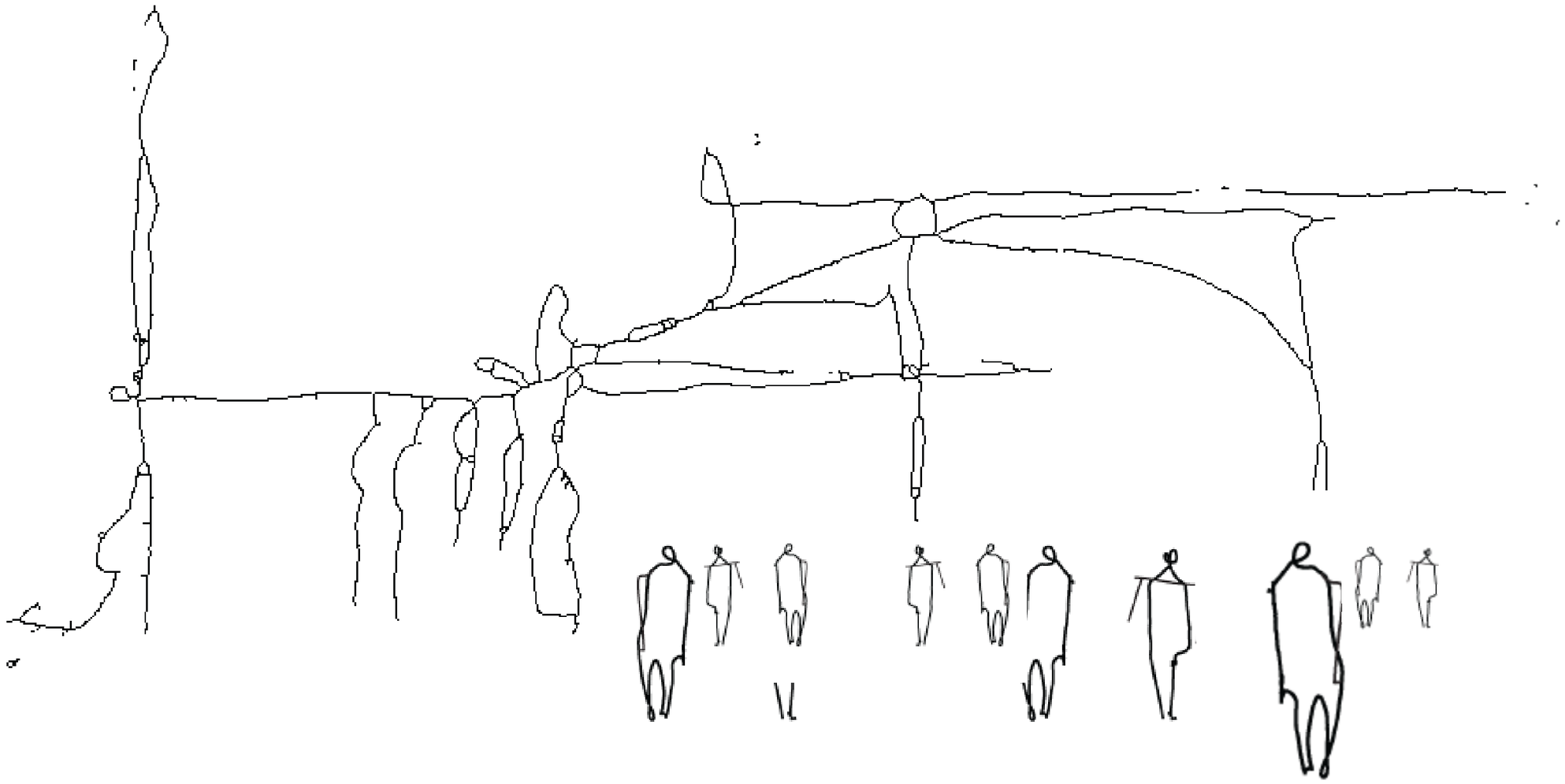
7 Conclusion



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The industrial age has left behind many urban spaces and buildings frozen in time. The city of Bilbao tackled this issue by commissioning renowned architect, Frank Gehry, to design an award winning branch of the Guggenheim Museum, Bilbao. This single injection into the urban tissue saved the city from economic and cultural depression by boosting tourism. This dissertation investigates and deconstructs the so-called "Bilbao Effect" to better understand how the principles can be applied to replicate its success in Pretoria West.

The findings of the research found that in order for a building to replicate the Bilbao Effect it must be more than a building standing in contrast to its surroundings. The buildings need to create an innovative user experience as well as conceptually be grounded to its context. A more detailed research method was designed to deconstruct landscape projects that have successfully regenerated their precinct (recreating the Bilbao Effect). By distilling each of the six projects to info-graphics, it was found that; no landscape has challenged landscape architecture the same way the GMB has challenged architecture. The program is not as important as the way the program is perceived. Some form of external exhibition needs to be present for people to visit the site and the design needs to be deeply rooted to its surroundings.

The Pretoria West Urban Vision group took on the task of identifying issues in and around Pretoria West. These urban issues all highlight the issue of frozen post-industrial precincts. The urban vision was aimed around the showgrounds. By redefining the showgrounds, several of Pretoria West's problems could be solved. By opening the showgrounds to the public and utilizing it as a mixed-use public space, it would not sit as an impermeable barrier in the center of Pretoria West. The opportunity to create healthy, urban space presented itself.

By combining the findings of the theory to the urban vision, the following simulations were made to lead the design process through to the technification.

The site in Pretoria West does not have external exhibitions to compliment it. The design will act as the exhibition itself; The design intervention will be an abstraction of Pretoria West, capturing and celebrating the unique character of the immediate and greater context of the site. With the site being an abstraction, it will theoretically fit in seamlessly within its context.

The theoretical approach led to the redesign of the existing showgrounds in Pretoria West. The intervention is an abstraction of the greater community by capturing and celebrating a typical industrial/agricultural built form found in and around Pretoria West. The design caters for numerous events/shows/expositions to take place and attract people by recreating the "Bilbao Effect" to essentially regenerate Pretoria West.

Although the dissertation has been mainly focused on deconstructing the elements of the Bilbao Effect and the precinct, the design comprises of the deconstructed elements being placed back together to create unique, abstract spaces. These elements come in the form of very typical agricultural structures and materials. With the combination of steel H-columns, steel I-beams, mentex grating, concrete slabs and a planting palette of precisely eight species a new park is designed to capture the spirit of Pretoria West.

Whilst the design solves functional issues on site and allows for innovative event space, the user will be exposed to the greater Pretoria West through abstract compositions. This design will place the user inside a park allowing for him/her to experience a deeply rooted, unique experience of Pretoria West, while enjoying it as event space.

Landscape architecture has not previously been linked to the "Bilbao Effect". This thesis has attempted to do this by defining principles that will guide a methodology from which to work. It is anticipated that the future will contain more research that investigates the relation between landscape architecture and the "Bilbao Effect", as it is both exciting and relevant in a South African context.

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List of references

ARANBURU, I. PLAZA, B. & ESTEBAN, M. 2016. *Sustainable Cultural Tourism in Urban Destinations: Does Space Matter?*. MDPI, pp. 1-14. Department of agriculture, c. e. a. l. a., 2007. Gauteng biodiversity Gap, 27: January.

ARESO, I. 2007. *Bilbao's strategic evolution from the industrial to the post-industrial city*. Bilbao: City of Bilbao

ECHELMAN, J. 2013. *Taking imagination seriously* [Interview] (22 June 2013).

FELSON, A., 2013. *Future Nature: How Do We Design Ethical Landscapes?* Wisconsin: Society for Ecological Restoration.

FLEMMING, G. 2002. *Flood Risk Management*. London: Thomas Telford.

FRANKLIN, A. 2016. *Journeys to the Guggenheim Museum Bilbao: Towards a revised Bilbao Effect*. Annals of Tourism Research, Volume 59, pp. 79-92.

GASNOLAR, A. I. 2015. *Gentrification: The process of making suffering a crime*. [Online] Available at: https://www.dailymaverick.co.za/opinionista/2015-06-03-gentrification-the-process- ofmaking-suffering-a-crime/#.WX8lJJiGPIU[Accessed 31 07 2017].

GONZALEZ, S. 2011. *Bilbao and Barcelona 'in Motion'. How Urban Regeneration 'Models' Travel and Mutate in the Global Flows of Policy Tourism*. Urban Studies, 48(7), pp. 1397-1418. HIGGS, E. 2013. Future Nature: How Do We Design Ethical Landscapes? Wisconcsin: Society for Ecological Restoration.

HOFSTEE, E. 2006. *Constructing a Good Dissertation*. s.l.:Exactica.

JAGANNATH, T. 2016. *Enhancing Our Outdoor Spaces Through the Use of Public Art.* [Online] Available at: https://parksify.com/enhancing-our-outdoor-spaces-through-interactivepublic- art-1ce2b674eb43[Accessed 19 07 2017].

JANSE VAN RENSBURG, G. 2012. *'The halfway house' - temporary housing and production facility for parolees in Pretoria West*. University of Pretoria Repository, pp. 1-127.

KELLER, E. 2014. *Extrastatecraft: The Power of Infrastructure Space* (New York: Verso Books), 15.

KING, J. 2016. *Landscape + Urbanism*. [Online] Available at: http://www. landscapeandurbanism.com/category/biomimicry/[Accessed 02 09 2016]. LI, M., 2003. Urban Regeneration Through Public Space: A case Study in Squares in Dalian, China, Waterloo: University of Waterloo.

LANG, J. R. 2016. *Neoliberlal urbanism, public space, and the greening of the growth machine: New York City's High Line park*. Environment and Planning, pp. 1-19.

MARAIS, R. 2004. *A plant ecological study of the Rietvlei nature reserve*, Bloemfontein: University of the Free State .

MARGOLIS, L. & ROBINSON, A. 2007. *Living Systems; Innovative Materials and Technologies in Landscape Architecture*. s.l. Basel: Birkhauser. MEIRING, H., 1980. Pretoria 125. Pretoria: Human & Rousseau.

MEIRING, H. 1980. *Pretoria 125.* Human & Rousseau

MILLINGTON, N. 2015. *From urban scar to 'park in the sky': terrain vague, urban design and the remaking of New York City's High Line Park*. Environment Planning, Volume 47, pp. 23242338.

MOLELLA, A. 2013. *The Eco-City as Urban Technology: Perspectives on Caofeidian International Eco-City (China).* Journal of Environmental Policy & Planning, Volume 13, pp 115-137

PLAZA, B. & HAARICH, S. N. 2013. *A Guggenheim-Hermitage Museum as an economic engine? Some preliminary ingredients for its effectiveness*, Transformations in Business and Economics, 9(2), pp. 128–138.

ROTTLE, N. & YOCOM, K. 2010. *Basics Landscape Architecture; Ecological Design*. 02 ed. s.l.:ava Academia.

ROUX, S. l. & BOTES, N., 1993. Plekke en Geboue van Pretoria. Stadsraad van Pretoria, Volume 3.

SAFDIE, O. 2010. *The Bilbao Effect*. United States: Dramatist's Play Service.

SAGI, J. 2008. *The Alberta Association of Landscape Architects*, Edmonton: s.n. Santiago,

THOMAS, R. 2003. *Sustainable urban design : an environmental approach*. New York: Spon Press.

THOMPSON, I. 2007. *Environmental ethics and the development of landscape architectural theory.* Landsape Research, 23(2).

VERNON, S. TENNANT, R. & GARMORY, N. 2013. *Landscape Architect's Pocket Book*. Second Edition ed. s.l.:Architectural Press.

WALKER, M. 2013. *The Burra Charter*, s.l.: Australia ICOMOS.

WELLINGTON, B. 2013. *Sustainable cities collective*. [Online] Available at: http://www.sustainablecitiescollective.com/dirt/186211/future-nature-how-do-we-design ethicallandscapes [Accessed 06 November 2016].

Web sites

ARCHITECT MAGAZINE. (2012, September 20). *Olympic Sculpture Park*. Retrieved October 28, 2017, from Architect Magazine: http://www.architectmagazine.com/project-gallery/olympic-sculpture-park

BERNARD TSCHUMI ARCHITECTS. (n.d.). Publications. Retrieved October 15, 2017, from *Bernard Tschumi Architects*: http://www.tschumi.com/publications/

CITYPOPULATION. (2018, February 22). *City Population* - Germany, Duisburg. Retrieved November 01, 2017, from *City Population*: https://www.citypopulation.de/php/germany-duisburg.php CORNER, J. (2014, 9 20). *Landscape Architect James Corner On NYC's High Line Park*. (J. Fehrenbacher, Interviewer)

© University of Pretoria

DUBLIN CITY COUNCIL. (2018). *Grand Canal Square*. Retrieved November 15, 2017, from Dublin Docklands: http://www.dublindocklands.ie/living-docklands/things-do/sightseeing/grand-canal-square

FIELD OPERATIONS. (n.d.). *Field Operations; About us/people*. Retrieved November 01, 2017, from James Corner Field Operations: http://www.fieldoperations.net/about-us/profile.html

FINANCIAL TIMES. (2012). *The Museum that saved a city.* https://www.ft.com/content/de652f06-70b5-11dc-98fc-0000779fd2ac

GIL, I. (2017). *Twenty years of the Bilbao effect.* Abitare. http://www.abitare.it/en/research/reviews/2017/07/09/mas-context-bilbao-effect/

HOLDEN, R. (2007). *Costs of large city parks and open spaces* (Cost of Duisburg Nord). CABE Space. HUFFPOST. (2012, January 10). *The Top 10 Pieces Of Folly Architecture*. Retrieved October 15, 2017, from HuffingtonPost: https://www.huffingtonpost.com/2011/11/10/the-top-10pieces-of-foll_n_1087467.html

KELLER, J. (2016, July 13). *First drafts: James Corner's High Line Park*. The Atlantic .

KRZYKOWSKI, M. (2008, September 05). *Grand Canal Square by Martha Schwartz Partners*. Retrieved November 15, 2017, from Dezeen: https://www.dezeen.com/2008/09/05/grand-canalsquare-by-martha-schwartz-partners/

LATZ, P. (n.d.). *Latz+Partner Team*. Retrieved November 01, 2017, from Latz+Partner: https://www.latzundpartner.de/en/buero/team/prof-em-peter-latz/

MARTHA SCHWARTZ PARTNERS. (n.d.). Academic/Research. Retrieved October 01, 2017, from *Martha Schwartz Partners*: http://www.marthaschwartz.com/

MINNER, K. (2011, January 06). *Olympic Sculpture Park / Weiss Manfredi* . Retrieved October 28, 2017, from Arch Daily: https://www.archdaily.com/101836/olympic-sculpture-park-weiss-manfredi

MUSEUM PARK LOUVRE LENS-BY MOSBACH PAYSAGISTES. (2016, September 13). Retrieved October 15, 2017, from Landezine: hthttp://www.landezine.com/index. php/2016/09/museum-park-louvre-lens-by-mosbach-paysagistes/

NYC ARCHITECTURE.COM. (2004). *The High Line*. Retrieved November 10, 2017, from New York Architecture: http://www.nyc-architecture.com/CHE/CHE029-TheHighLine.htm

PARISINFO.COM. (n.d.). *Parc de La Villette - Plein Ai*r. Retrieved October 20, 2017, from Paris Official website of the Convention and Visitors Bureau: https://en.parisinfo.com/paris-museum-monument/71469/Parc-de-La-Villette-Plein-Air

PONZ, Z. (2017, May 03). *Landscape designs we wish were in our backyard*. Retrieved October 28, 2017, from From the Grapevine: https://www.fromthegrapevine.com/lifestyle/marthaschwartz-best-landscape-designs

ROSENFIELD, K. (2012, December 29). *Louvre Lens* /

SANAA. Retrieved October 15, 2017, from *Arch Daily*: https://www.archdaily.com/312978/louvre-lens-sanaa

TSHWANE. (2007). *Proposed Tshwane open space framework*. http://www.tshwane.gov.za/sites/residents/Services/OpenSpaceManagement/Framework/Open%20Space%20Framework%20Vol%202.pdf

WAN. (2009, August 28). *Grand Canal Square - Dublin Docklands, Dublin, Ireland, Walk the red carpet*. Retrieved October 28, 2017, from *World Architecture News*.COM: http://www.worldarchitecturenews.com/project/2009/12231/martha-schwartz-partners/grand-canal-square-dublindocklands-in-dublin.html

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