

The Activation and Repair of Landscape

A thesis submitted to The Dublin Institute of Technology in part fulfillment of the award of the requirements of Bachelor in Architecture

by

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THESIS

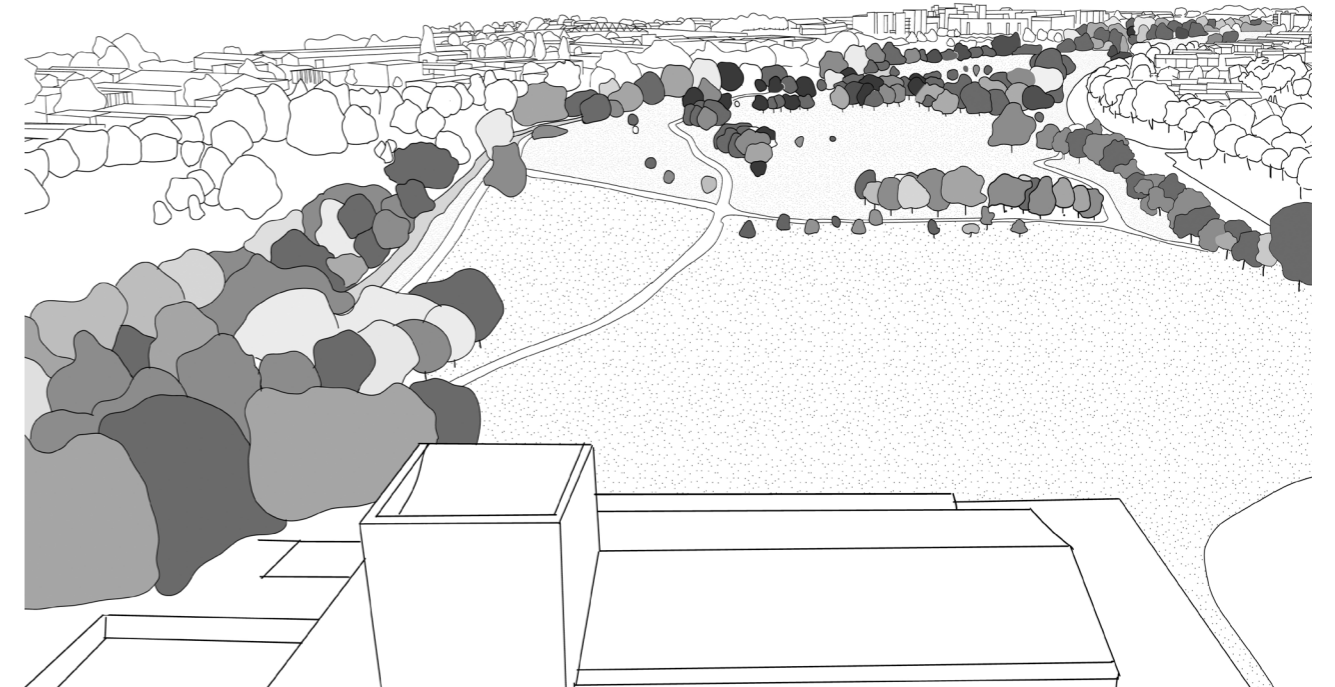
The Tolka Valley Park is a long linear park in North Dublin which runs from Castleknock to Glasnevin along the Tolka River. This is the site for my Thesis investigation, The Activation and Repair of Landscape

A primary objective of the thesis is to promote activity in the park. The activation of the park refers to increased activity and use, in particular evening use. The park is set in between three adjoining neighbourhoods: Cabra, Ashtown and Finglas. Despite the park's prominent situation between its adjoining neighbourhoods, it appears to be underused and lacks activity.

There are significant apparent disconnections between the adjoining communities that engage with the park. This further adds to the lack of activity in the park. To one side of the park there is a large industrial estate and to the other is a large housing estate, built in the 1970s. Many of the houses address the park with their gable end facing the park. This is a typical landscape condition throughout Ireland, where the relationship between the housing and the open-space was not designed but is rather the result of left-over, in-between, or waste-lands between the boundaries of housing estates created by individual developers. It is this context that prompts the question of the activation of landscape.

The second objective is the repair of landscape. The section of the park between Finglas and the industrial estate was formally a quarry in the 19th Century and its matter was used to shape much of North Dublin City before the site became a landfill in the mid-20th Century. The land was used as dumping ground for municipal waste for Dublin Corporation up until 1973 when the landfill subsequently became a park. Landfill regeneration into parkland has become increasingly popular due to their low cost, their large site size and their close location to cities. Closed before the EU framework was introduced which dealt with the proper treatment of landfills, the landfill was never properly designed and appropriately capped, this has resulted in the continued contamination of The River Tolka below. As a result of the human reshaping of the earth's surface through quarrying and the subsequent practices of landfilling the landscape is damaged. This prompts the need for repair as a strategy for managing landscape.

The term 'critical care' describes our built environment's responsibility of planetary care and is a necessary approach in achieving our commitment to the sustainable development goals. The '2030 Agenda for Sustainable development' was adopted by all European Union member states in 2015. Central to this are the 17 Sustainable Development Goals (SDGs). The goals set out a strategy for 'improved health and education, reduced inequality, and spur economic growth- all while tackling climate change and working to preserve our oceans and forests'. Goal 11 of the SDGs, Sustainable Cities and Communities' looks at making spaces more inclusive, connected, safe and resilient (UN, 2022).



Above: Aerial sketch Tolka Valley Park

BACKGROUND

In order to investigate the activation and repair of Tolka Valley Park a landscape condition that is not designed, it was useful to study historic and classical landscapes that were. Some examples of formal landscapes including European gardens, the formality of the 17th Century Baroque piazza and 18th century cinematic Italian gardens were analyzed to determine the spatial devices and reasoning that define them. The divergence of the 20th century parks from formal architecture was also explored in this way. To do this I studied two key texts Architecture and Landscape (Steenbergen & Reh, 2003) and The Design of Cities (Bacon, 1974). Both texts describe and interrogate landscapes in an analytical and interesting way.

Architecture and Landscape, Clemens Steenbergen | Wouter Reh

In the text Architecture and Landscape, The Design Experiment of the Great European Gardens and Landscapes, Steenbergen and Reh develop a methodology for analyzing the spatial thinking behind the great formal landscapes of Western Europe.

The text develops a new methodology to interrogate formal landscapes beyond the picturesque. The analytical observations made by Steenbergen and Reh are predominantly demonstrated through diagram. As part of the authors investigation, they derived a system of describing landscapes through four components: basic form, spatial form, visual structure and program form. This system of investigation was firstly developed in Steenbergen's dissertation De Stap over de Horizon and was subsequently used by McMenamin and Sheridan (2020) in their research on vernacular architecture to better understand its relationship with site and landscape. Under this methodology landscapes can be described as follows:

Basic Form - The way in which the landscape is rationalized and reduced defining its basic layout and organization.

Spatial form - The experience of the landscape including its three-dimensional treatment, circulation, paths and movement systems.

Visual Structure – The visual features in the landscape

Program form- The activities that occur in the landscape and how the program is interpreted. (Steenbergen & Reh, 2003).

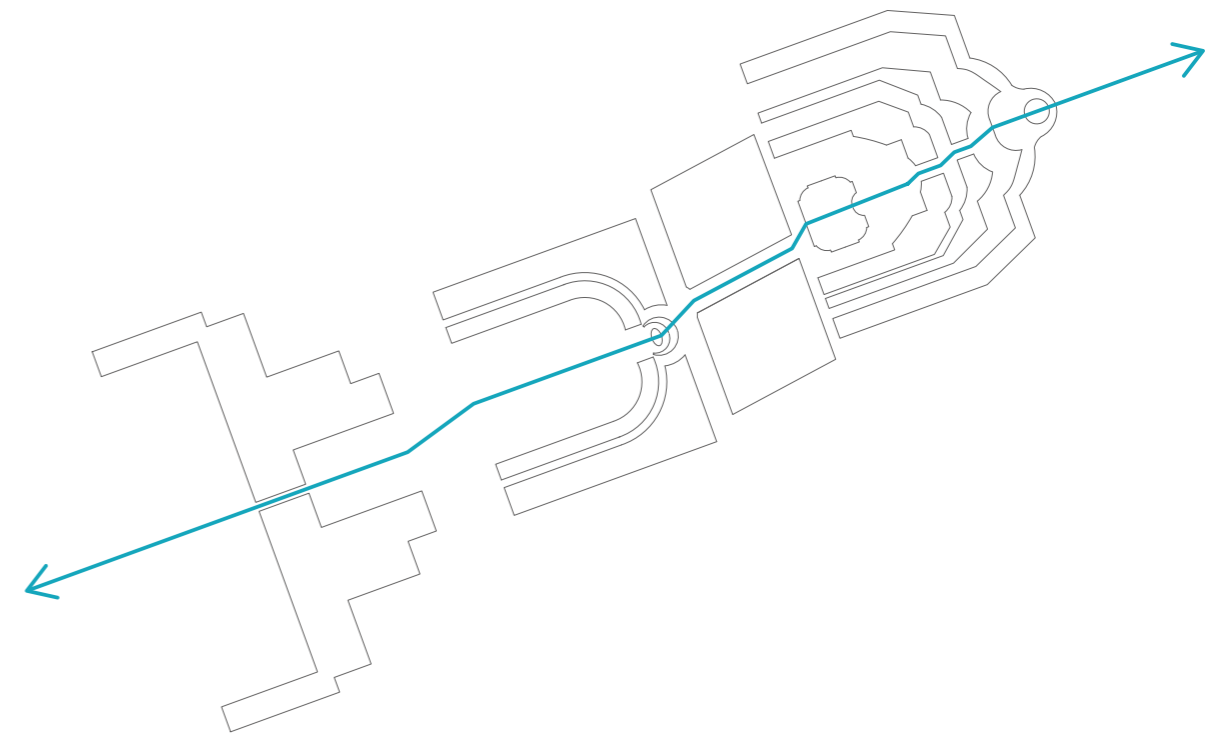
The Boboli Gardens, Florence

The Boboli Gardens, Florence, are significant in terms of management of landscape. The gardens sit on the hill of the Boboli and form the landscape of the Palazzo Pitti, designed by Brunelleschi in 1550 for the Grand Duke Cosimo I de' Medici's wife (Steenbergen & Reh, 2003, p45).

Basic Form – The gardens sit in the Arno valley, containing the Arno River which flows through Florence in a northwest – southeast direction and get their basic form from the two-principle defining axis of Roman settlement, the cardo maximus and the decumanus maximus. The two axes form the basic landscape divisions in the valley. The gardens are set on the defining axes, aligning them with the structural configuration of the city of Florence and subsequently allowing for a cohesive and connected urban condition (Steenbergen & Reh, 2003, p46).

The Palazzo is symmetrically placed on the axis which ascends the hill from the southeast to northwest. The axis connects (from below to above): the piazza on the Via Romana, The Palazzo, Cortile, The Artichoke Fountain, the first stone theatre, the Neptune Fountain and the second green amphitheatre (Steenbergen & Reh, 2003, p 48). The entrance to the gardens is via an archway through to the Cortile, which sits centrally on the axis. The cortile and first and second amphitheatres are placed on top of one another and get successively bigger, so they appear to be the same size, giving the impression of a vertical plane facing the loggia (Steenbergen & Reh, 2003 p 48).

Spatial Form - The landscape and associated buildings of the gardens are treated as a stage set are articulately managed and composed. The first amphitheatre appears as a continuation of the palazzo's piano nobile; its height is set to allow the rear elevation of the palazzo to act as a stage set background to the amphitheatre. The view is set in the direction of the town. Along the diagonal line of vision, the observer removes themselves from the symmetrical axis and are presented with a view of key civic buildings, the political poles of the city, Brunelleschi's dome and the campanile of the Palazzo della Signoria (Steenbergen & Reh, 2003 p 48). At the second amphitheatre the palazzo acts as an object of control in the landscape, concealing the city beyond. An order of sequence is established by the amphitheatres. The procession along the axis is celebrated. A movement system is created which cumulates at the top of the hill. At

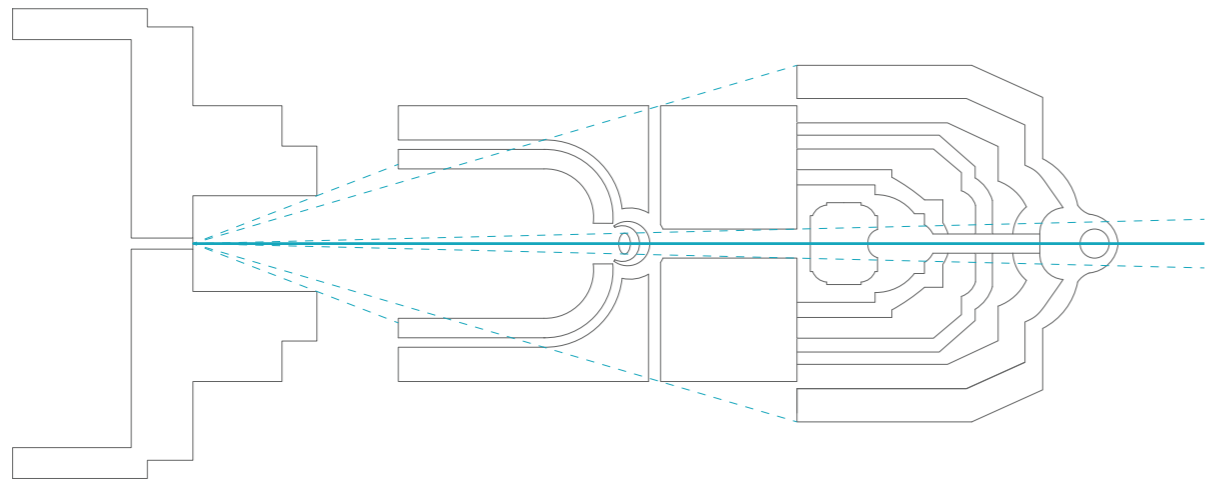


Above: Axis Diagram, Boboli Gardens

this point the view back over the palazzo is revealed and through a 'periscope' effect the garden united in its context (Steenbergen & Reh, 2003 p 48).

Visual Structure- Through the careful articulation of space the gardens are incorporated into the city in the form of a picture. The gardens act as a backdrop for civic life in Florence. From the Uffizi, a street which houses all the important administrative buildings in the city and connects to the Piazza della Signoria. The street along its longitudinal axis creates a telescope effect and its large open portico frames the Boboli Gardens as a picturesque hilly landscape (Steenbergen & Reh, 2003 p 51).

Program Form- The program of the garden and its associated buildings, the palazzo, the cortile, the fountain, the theatres and amphitheatres interact with the landscape as a series of connected nodes along an axial condition. The steep sloping section gives rise to interesting spatial programming of terraced buildings and spaces. There is a sensibility and rigor that comes with the sites topography and the programs alignment with the defining axis (Steenbergen & Reh, 2003).



Above: Perspective Diagram, Boboli Gardens

The Viottolone, which is a long avenue, makes up another axis and descends to the Porto Romana. This avenue is less formal than the adjoining axis and is overgrown in parts and has labyrinths to the sides. The informality of this axis through the park compliments the formality of the adjoining axis running through the palazzo. Along the Viottolone there would have been more informal gatherings and activity. Its overgrown avenue opposes the strict management of the adjoining axis. The setting of two axis of opposing formality demonstrates how both scenarios can exist in tandem; one does not detract from the other, both are celebrated and give rise to different functions. The careful management of landscape along the axis of the palazzo allows for a strict theatrical landscape articulated by the amphitheatres and their positioning along the axis, while the informal Viottolone makes room for the reality of everyday life.

Design of Cities, Edmund Bacon

Edmund Bacon employs similar analytical methodologies to study the development of cities and landscapes. Bacon looks to the past to demonstrate how various special devices such as

perspective and the articulation of points in space have been used throughout architecture and landscape history and have influenced the development of contemporary design. Bacon also interrogates the forces that are at play which determine the forms of cities, most significantly Movement Systems.

Bacon describes movement systems as 'paths along which city dwellers move or are transported' (Bacon, 1974, p 33). This is way of looking at our cities and more specifically public space. The role he describes of the designer is to create continuity of experience through space. In order to achieve this the connections between our public space must be equally considered as they are part of the 'continuity of experience'. Bacon describes how movement systems must 'relate to the tempo of movement it aims to accommodate as well as the general nature of the surroundings...pedestrian movement systems require interest, variety, and impressions of rapid change'. (Bacon, 1974, p 19). Bacon's description of movement systems draws parallels with Steenbergen and Reh's term spatial form both an analysis of one's experience through space.

Paul Klee, artist, uses the analogy of natural forms such as leaves to describe the flow of energy in our cities. The diagrams present movement systems as a natural order which see articulation of space at points of interaction. The diagram illustrates 'the flow of lines of energy along the veins and sub veins of a leaf, radiating out from the stem of the leaf. This flow of energy expires in space, the points of expiration determining the form of the leaf' (Bacon, 1974). Klee's watercolor illustrates areas of quality where stems meet. If we look at the stems of a leaf as movement systems in our cities the points of convergence of these movement systems have the potential for great richness (Bacon, 1974, p 28). In today's context the connection of points as nodes in space may be to connect historic monuments or structures as in the case of Sixtus V's work; however, a node today may be points of production, neighborhoods, community centres, points of civic activity etc. The connection of such points along with a well-designed system of movement may help to connect disconnected communities and therefore make our public space more inclusive, connected, safe and resilient.

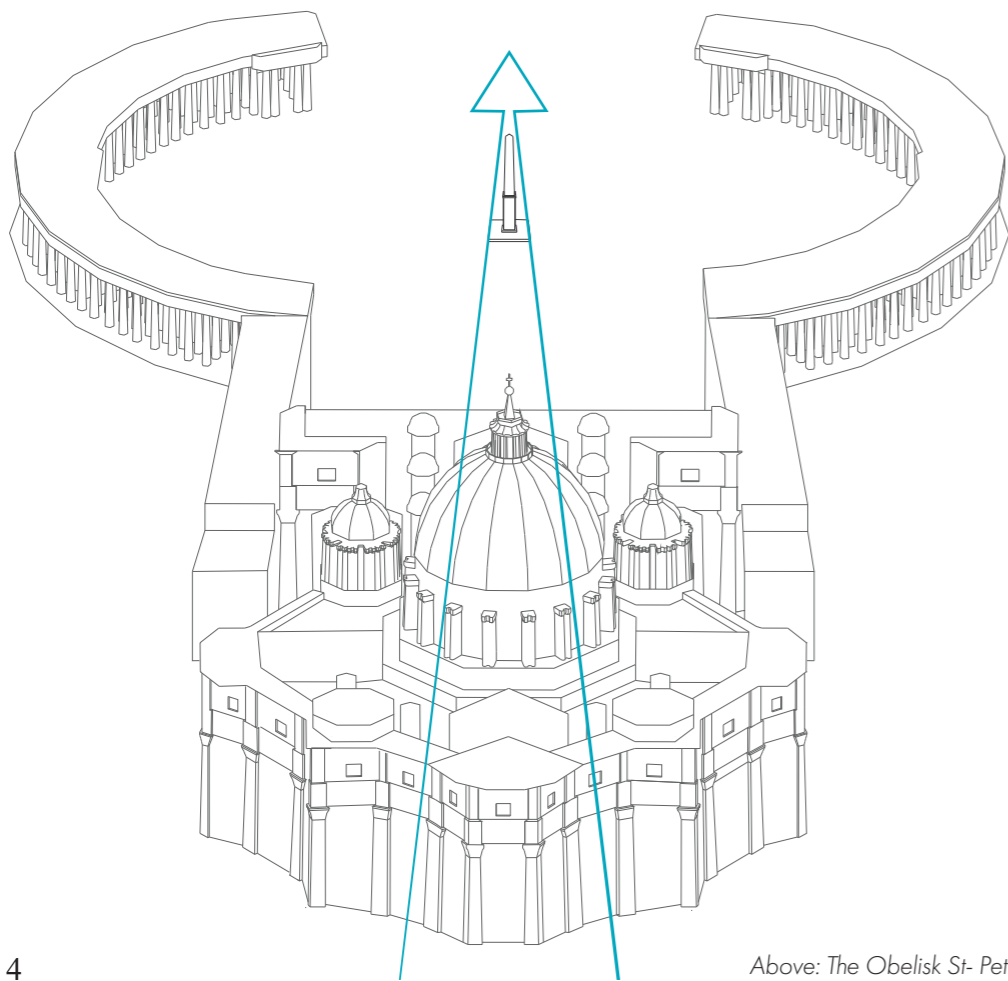


Above: Fig.1 Paul Klee, Movement Systems

Bacon describes the importance of clearly articulated public space. The form of the built infrastructure that our public space engages with should have a clear philosophical relationship with the space it engages. This point of order can come from context or function of space. Public space is a fundamental part of public life and how we interact with public space is important (Bacon 1974).

One such spatial device Bacon discusses is the articulation of points in space. It can be said that this articulation of space is lost in a lot of modern architecture. By drawing connection to distant objects or points in the landscape our built environment is given context in its surroundings. The connection of points in space creates tension between space which changes in composition as the observer moves around the space. The articulation of points in space was widely used in Baroque Rome to create a rational order.

Sixtus V used obelisks in an effort to recreate Rome into a 'city worthy of the church' and used obelisks as objects of order due to 'their positive physical forms which could not be easily removed' (Bacon, 1974, p 31). During Sixtus V's short reign he placed four obelisks in space as objects of order. The most famous of which is that of St Peters square in Rome. In the square the articulate design of the colonnade was informed by the existing obelisk in the piazza; 'the columnar screen gave shape and definition to a magnificent extent of space and order was achieved'. (Bacon, 1974, p 31). The obelisk itself makes up only a small part of the scheme, however its effects are significant and widespread.



Above: The Obelisk St- Peters Sqaure as a Point of Order

Contemporary 'Counter Parks'

From the mid-19th century there was a discernible shift away from formal and monumental architecture towards a more contemporary and social architecture and thus the emergence of the contemporary 'Counter park'. The German landscape architect Liebrecht Miggie valued the economic, political and social importance of parks and gardens. He developed 'The Green Manifesto' which was a highly political document published in 1919 and proposed that Germany's economic problems could be solved by creating parks and gardens, in particular small intensive productive gardens that would allow people to be self-sufficient and live off the land (Haney, 2007, p 201). Miggie envisioned a new world where 'the city and land formed a continuous texture of gardens dwellings and civic areas, which would be both urban and hygenic' (Haney, 2007, p 202). In the Manifesto the social importance of parks and landscapes are given significance. Public Baths, sports grounds and playgrounds are among the civic functions mentioned (Haney, 2007, p 205)

The Manifesto also rejected the ornamental formal landscapes and in their place, proposed that our landscapes would be highly active, social and functional spaces. This shift in the value is later played out throughout the 20th Century.

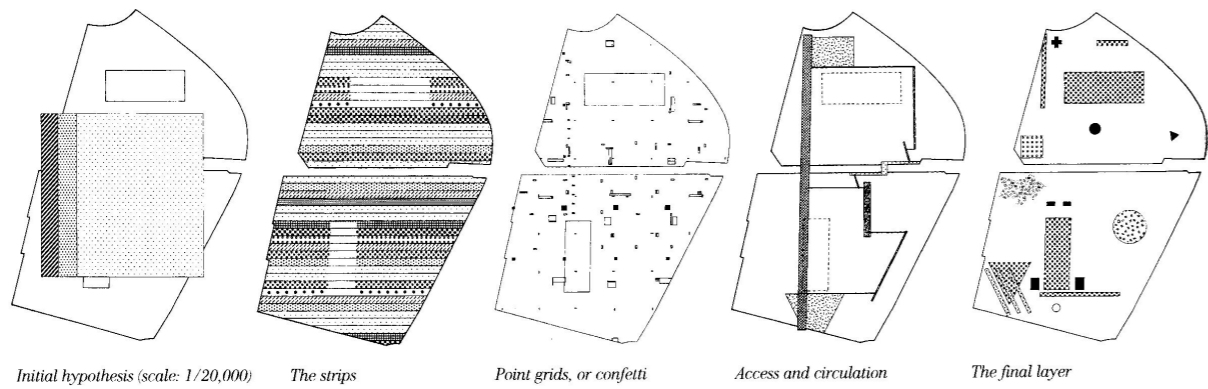
Le Parc De La Villette

The Parc de Villette project was a competition run by the French government in 1982. The objectives set out by the government were to 'mark the vision of an era and to act upon the future economic and cultural development of a key area in Paris' (Tshumi, 1988, p 2). The project came at the same time as other grand projects such as the Louvre pyramid, the Opera at Bastille and the Arch at Tete-Defense. The brief for the project called against the prevailing landscape replica of the formal gardens that had preceded; instead, the park was to be 'an urban park of the 21st century' (Tshumi, 1988, p 2), containing a complex program of cultural and entertainment facilities including open air theatres, restaurants and art galleries, workshops, playgrounds, visual displays as well as gardens where cultural invention was encouraged.

The competition resulted in two highly publicised and debated projects, Bernard Tschumi's winning project and Rem Koolhaas and Elia Zenghelis of OMA's finalist project. The two projects were significant in their attitude towards urban form. The defining approach shared by both projects was to spread the functional elements of the park across the whole site in order to create a condition of chance encounters between : music, art, sport, technology and nature (Ducatz, 2005, p 52).

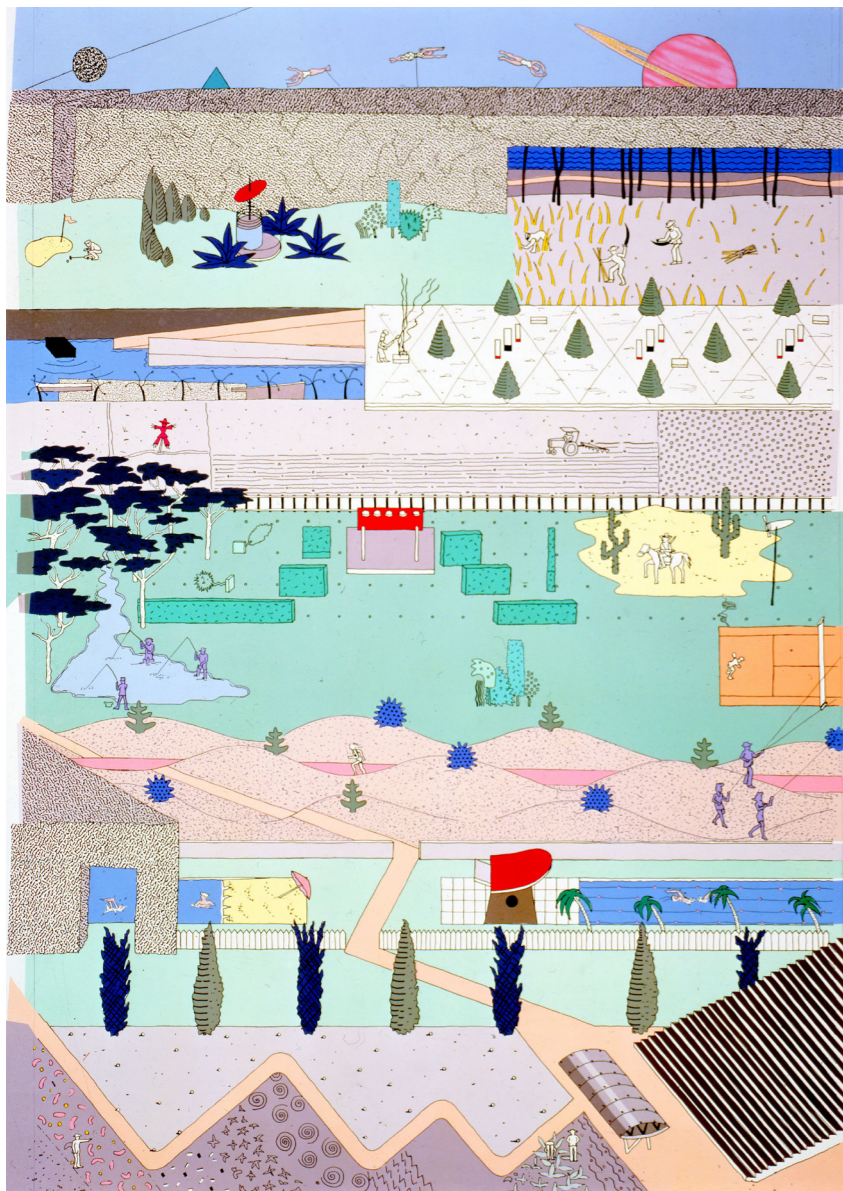
OMA developed a system of order which involved the overlapping of five different layers, each with their own logic and function. One layer was composed of mathematically formulated interlocking grids that promoted random and accidental groupings of activity and resulted in a landscape condition which they described as 'tectonic confettis' (Ducatz, 2005, p 52). Tshumi's project shared a similar approach however differed in that it proposed to create an order and cohesive landscape condition from the repetition of familiar elements arranged along a system of points and lines arranged in a more formal grid.

For the purposes of discussing the activation of landscape OMA's project for la Villette is more significant. It was OMA's belief that 'the site of la Villette is too small, and...the Park de la Villette too large, to create a park in the recognizable sense of the word' (Marot, 2006, p 25). For this reason, OMA proposed a dismantled tower of program which would be spread out over the entire park, providing a landscape which would serve as a 'social condenser', a term which Koolhaas had used in his manifesto 'Delirious New York' (Marot, 2006, p 25). The site was arranged in a series of east-west parallel bands which are intermediated by a straight boulevard running north-south and intersect the bands at right angles. The bands were to be



Initial hypothesis (scale: 1/20,000) The strips Point grids, or confetti Access and circulation The final layer

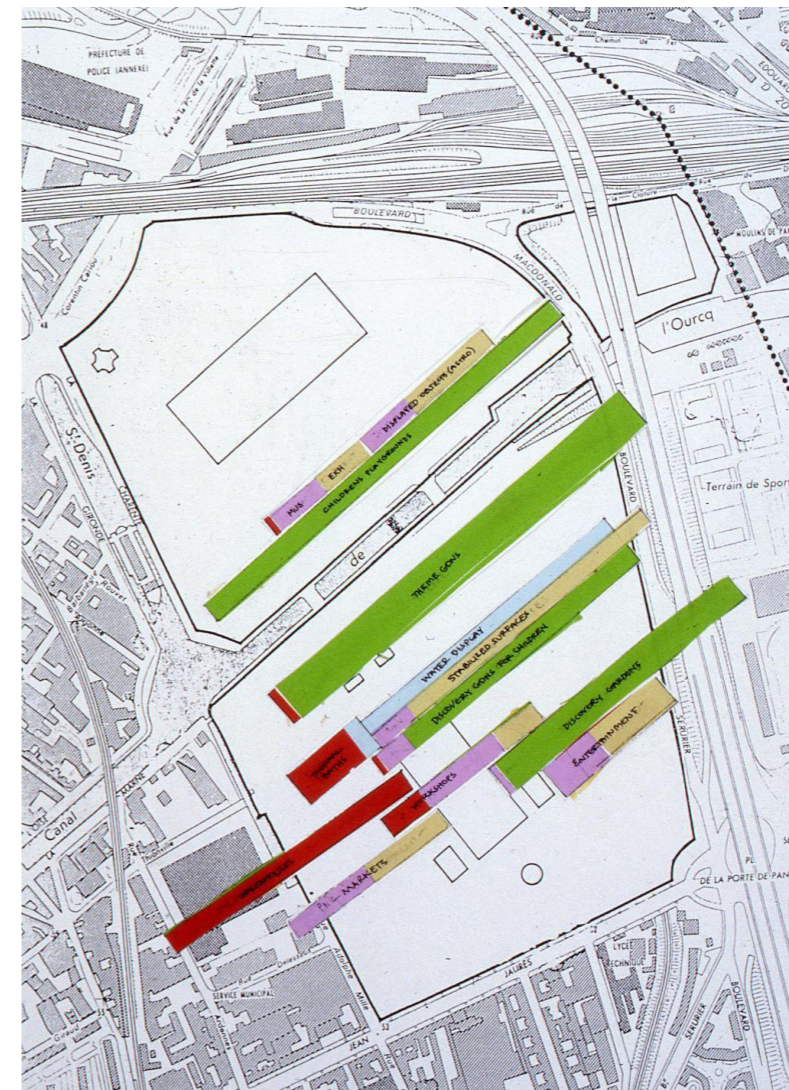
Above: Fig.2 (OMA) Concept layers



Above: Fig.3 (OMA) Poster based on competition

intermediated by rows of trees which act as natural walls 'defining zones of program but at the same time create a series of successive landscapes' (Marot, 2006, p 29). The transparency and permeability of the natural screens would vary creating a highly managed landscape which would allow for chance encounters between different programmatic functions. A condition is created where one band of program could be activated by another and differing functional elements connected.

In OMA's proposal for Parc la Villette two modes of perception are created between the two axes. Along the north perspective the trees are dense and suggest a mass. In contrast, along the east-west perspective the trees act as natural curtains which in places open up to reveal greater depths of vision (Marot, 2006, p 29). Unlike the formal European gardens which preceded, the landscape condition is anti-axial and suggests permeability. In addition to nature being used to divide and connect program, in areas such as the Circular Forrest, trees are artificially arranged in a circular colonnade and nature itself takes on the function of program (Marot, 2006, p 30). In OMA's proposal for la Villette we see that the new vision for a contemporary 21st century park is translated through the use of spatial devices involving nature and perspective and a layering of function.



Above: Fig.4 (OMA) Poster based on competition

FOUND LANDSCAPE: Tolka Valley

When choosing a site to test to realise the Thesis, I was immediately interested in The Tolka Valley Park. The fragility of the rich biodiversity in the park became apparent when I began to study the park and the historical reshaping of the landscape that has occurred. Originally a quarry in the 18th and 19th century, its matter was used to shape much of North Dublin before the site became a landfill in the 1930s for Dublin City Corporation's municipal waste. The landfill stopped receiving waste in 1970 at the same time works began on the large Finglas Housing Estate adjacent to the park. The landfill was closed before the EU framework was introduced; for this reason, it was never properly capped or subject to EU standards of practice regarding the closure and treatment of landfill sites. This has led to the continued contamination of the Tolka River below.

Natural landscape reshape is something we have seen from the beginning of time as geological build ups shift through the deposit of matter. The reading of the Tolka valley park like many other landscapes became a matter of deciphering the interlocking of natural and anthropic sedimentary processes that make up its soils. The River Tolka has continuously shifted the limestone bedrock in our area depositing middle coniferous limestone known as 'calp limestone' along its meandering edges. (EPA) This type of stone consisted of black limestone and shales of boulder clay giving it an earthy character. This was the Tolka Valley Park's original natural reshape. It was not until man got involved that this matter became material.

Quarrying in the Tolka Valley ceased in 1930. The reshaping of the landscape from its subsequent function as a landfill is evident in the striking localised typography left over from the deposits of municipal waste. Closed before the EU Framework was introduced, the landfill was properly managed or designed. The site was covered with a layer of topsoil and willow trees were introduced to stabilise the steep banks of the river. No system was put in place to mitigate the runoff of leachate generated from groundwater percolating through the contaminated material of the landfill. No systems of methane gathering and treatment were introduced. Methane gas is created as buried waste decomposes and may be released for up to thirty years or more after the landfill is closed. This may have resulted in the release of significant amounts of methane and the potential buildup of trapped methane below the soil.



Above: - Fig.5 Historic image of Tolka Valley Landfill



Typical of a landscape that previously functioned as a landfill in Ireland, the site was transformed into a parkland, which is its current use. Landfill regeneration into parkland is popular in Ireland due to its low cost, large site size and their proximity to cities. The land associated with landfill is also at risk of settlement as the landfill matures and the waste decomposes, this makes any significant development of the site costly. Fairview Park is another example of parkland that has been regenerated from an existing landfill. Its green landscape hides a landfill site reclaimed from the sea beneath.

In the case of the Tolka Valley Park as a result of human interaction and reshaping of the Tolka Valley, its landscape is damaged. This landscape in need of repair is further challenged by social issues arising from the park's disconnection from the residential areas. The park appears to be underused and lacks activity. Despite its large and expansive scale, it was noted that there were only a handful of visitors to the park during our survey visits.

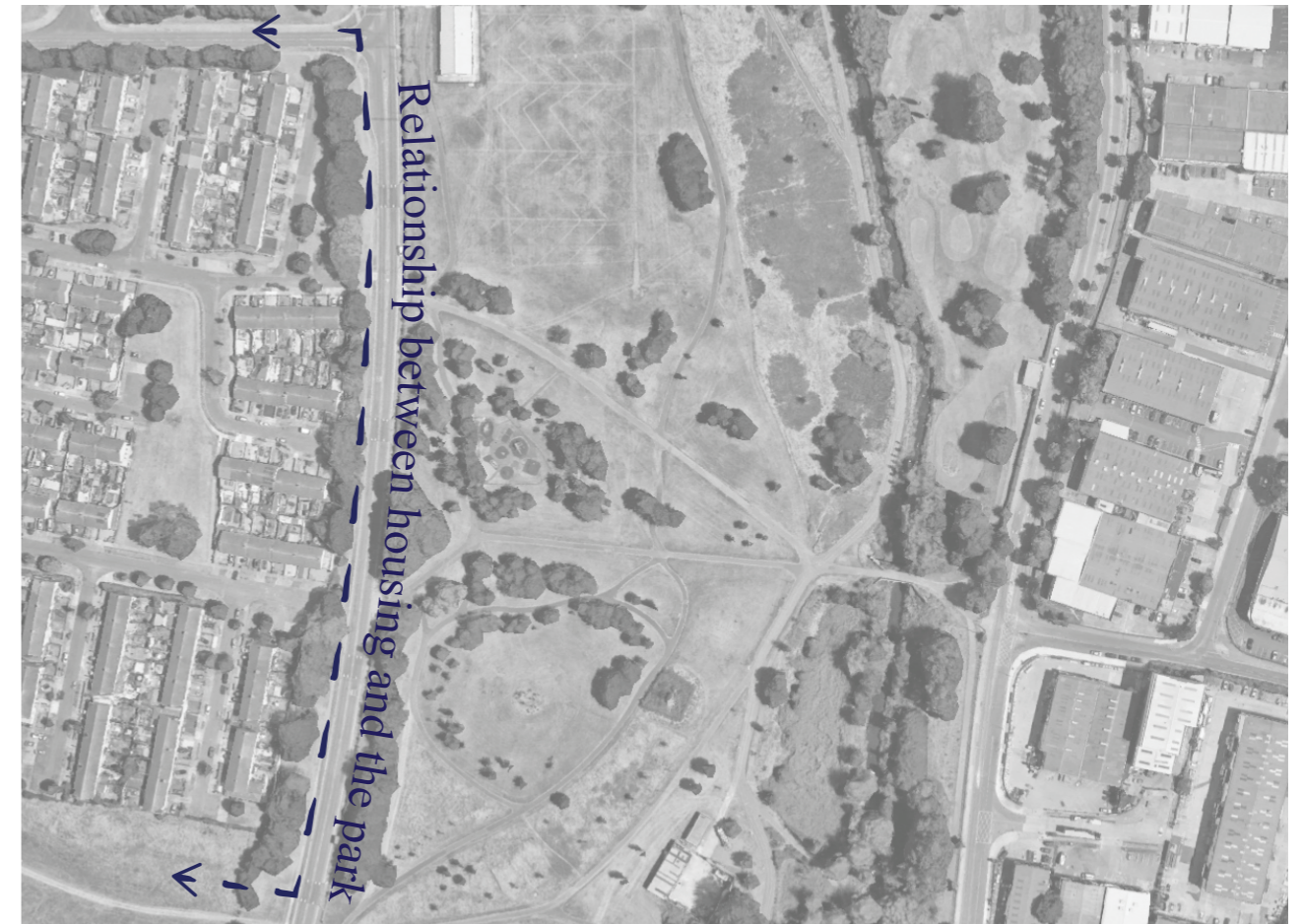
There are significant apparent disconnections between the adjoining communities that engage with the park. This further adds to the lack of activity in the park. To one side of the park there is a large industrial estate which becomes dormant in the evening and at weekends. On the other is a large housing estate, built in the 1970s. Many of the houses address the park with their gable end facing the park. This is a typical landscape condition throughout Ireland, where large developer led housing schemes have shown little ambition in turning corners and what has followed is an edge condition of gables and garden walls unsuitable for creating a strong public realm that addresses its context, in this case The Tolka Valley Park. This park sits isolated in its urban context with much of its context turning its back on the park. The lack of passive surveillance and infrastructure to support activity in the park has resulted in at times the park not being an attractive or safe place to visit.



Above: Electrical Infrastructure in the park



Image: Pathway transversing hilly mound



Above: Relationship between housing and the park

Applying the analytical systems developed by Steenbergen & Reh the landscape can be interpreted as follows:

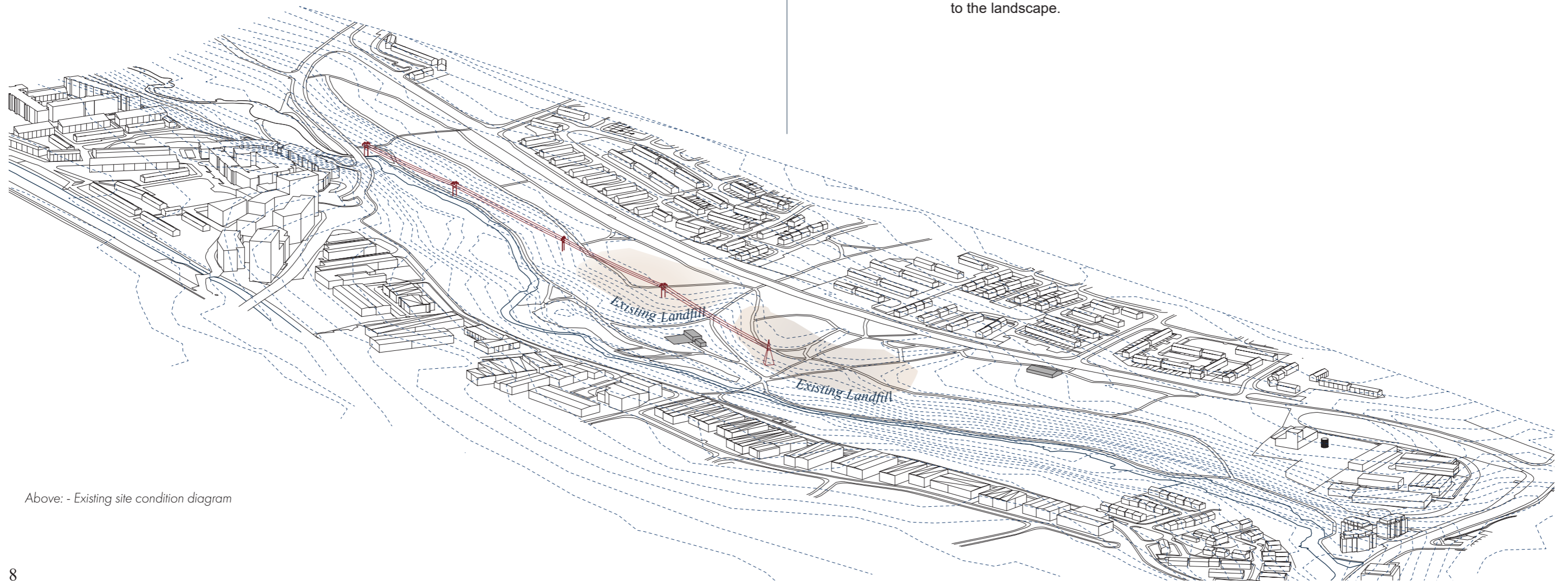
Basic Form – In the case of the Tolka Valley Park the topography of the valley that contains the Tolka River can be described as the Basic form of the landscape. The park is organized in a linear arrangement along the Tolka river. Neighbouring green spaces along the linear path of the river are disconnected by road infrastructure; the Finglas Road reduces the connection between the park and Glasnevin. Similarly, the upper extents of the park are disconnected by the Ratoath road. This road network contains the park forming the parks edge. The landscape is surrounded by two contrasting conditions, one industrial and the other highly residential. The Dublin Industrial Estate sits between the park, the Luas line and regional rail network which runs along the Royal Canal. The industrial condition to the north is contrasted by low density housing estates and newer high density housing developments to the other sides of the park.

Spatial form – The paths and circulation structure largely follow the profile of the site contours. To the south of the river there are two main paths which run in the direction of the valley.

One path runs at a low level close to the rivers edge, another runs along the top of the ridge separating the two levels. In places these paths are intersected by routes which transverse between these two levels and relate to local level changes associated with hills and mounds left over from the former function of the landscape as a landfill. The permeability and movement along the river is stronger than that of the transverse direction. Circulation routes close to the river appear disconnected from the upper level because of the steepness of the ridge which cuts off the path visually from the rest of the park.

Program form- A significant programmatic function the landscape performs is its ability to act as a natural floodplain. In times of heavy rainfall, the park acts as a flood basin relieving the surrounding industrial and residential area. Despite the park being a large expanse of land much of the landscape is unprogrammed urban green space. As a result of the sites steep topography adjacent to the river, the parks infrastructure is predominantly located on the higher-level ground. At this level there are two football pitches and an associated club house. On the south bank of the river the land slopes gently and there is a private pitch and putt golf course. Here the sites topography gives rise to function and does not inhibit. Adjacent to the river there are a series of benches and other similar forms of light infrastructure.

Visual Structure – The river dominates the landscape and provides a strong frame of reference in the landscape along the longitudinal direction. The banks of the river are heavily planted with tree species such as Beech, Oak, Scots Pine, Hazel and Ash. Running adjacent to the river there are overhead electricity cables which are connected to a system of electrical infrastructure including a large pylon in the centre of the park and a series of transmission poles which run in the direction of the river. This overhead infrastructure is a distracting presence in the park and because of the intensive fencing surrounding some of these elements, they appear as barriers to the landscape.



Above: - Existing site condition diagram

PROGRAMME BRIEF

Following this exercise of analysing and interrogating the landscape, borrowing from methodology developed in Architecture and Landscape along with my observations of the site and its broader social context; I then developed a brief for the project.

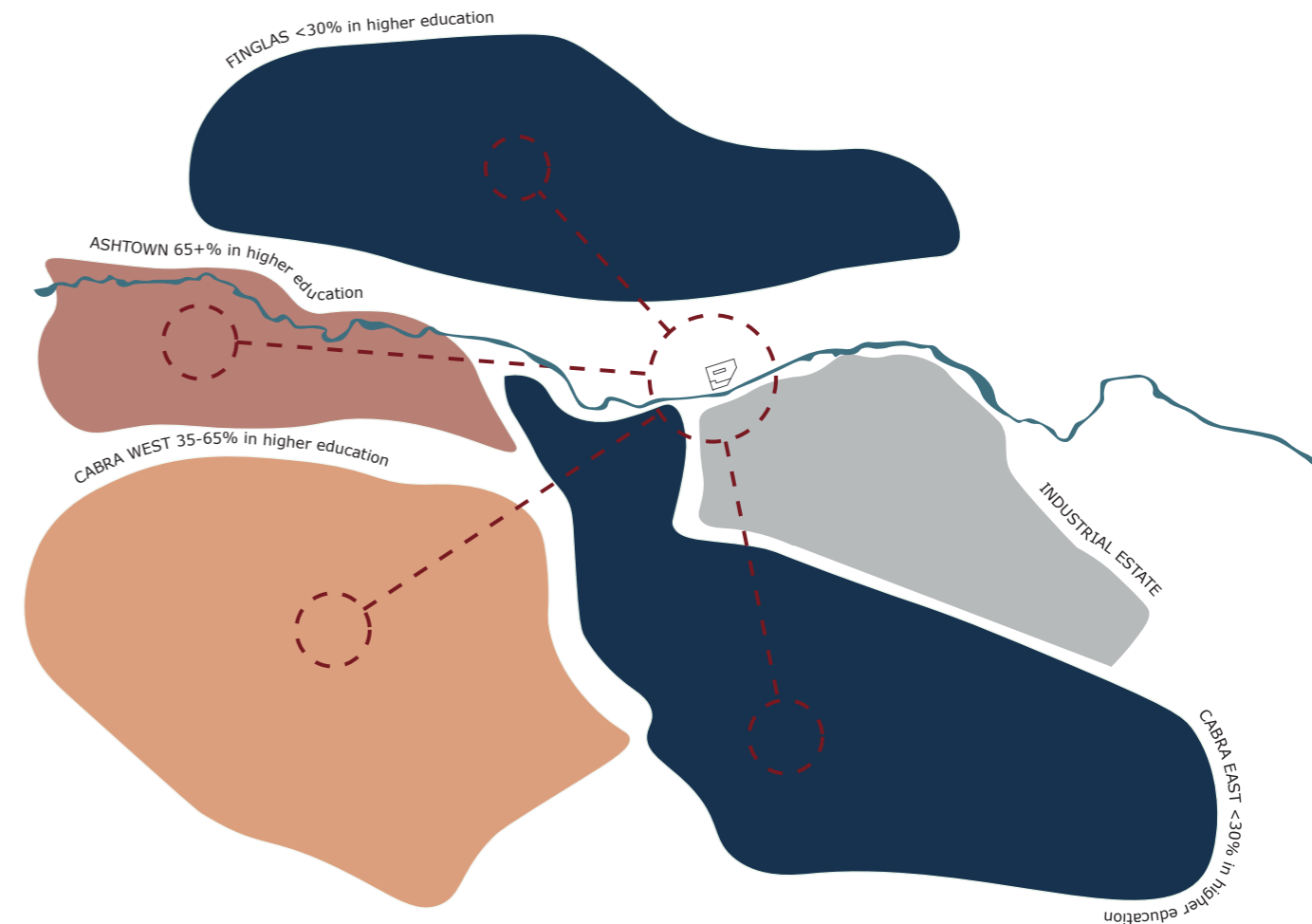
Activation of landscape is the first objective of the project. Public space is often defined by the infrastructure in which it engages with. In order to activate the park, I propose a series of interventions which aim to bring activity to the park through their function. These interventions would be connected and therefore promote movement through the park. The interventions include: an educational building, sporting facilities changing rooms, café and event space.

The area surrounding the park is highly residential, this requires all interventions to be procured by the needs of the people living in that area. It was observed during our research in semester one that there was a disparity in the number of people involved in higher education between the three adjoining areas, Cabra Finglas and Ashtown. Finglas had the lowest amount of thirty percent in higher education, whereas Ashtown had significantly more with greater than sixty five percent. As a result of this disparity, I propose an educational building in the park which aims to bring connectivity to the adjoining areas through education. This functional building in the park looks to foster a culture of education in the area and to support activity in the park. The program includes: a large study area, reading space, music room, dance room, meeting rooms and a language laboratory. The program of the building is largely aimed at creating evening activity in the park as people from the surrounding communities would come to the building for after school study, evening classes and events.

In order to bring activity to the park the second proposed intervention is a new outdoor sports facility that includes two five-a-side pitches and two tennis courts. These sporting facilities would add to the existing sports facilities in the park and strengthen the engagement with sport, health and wellbeing in the area. The sporting facilities are supported by two pavilions which provide shelter and storage for sporting events.

In the existing and unused park depot building I propose to retrofit the building and change its use into two changing and shower rooms a café and event space. This intervention would support the sporting activity in the park providing a changing facility for sporting events. The café would be a strong actor for activity in the park providing a space for people to meet and congregate. The café addresses an existing courtyard and during event times both could be used in tandem.

The second objective of the project is the repair of landscape. As a result of the park's former use as a landfill its landscape is damaged. The repair of this landscape condition is central to the brief. Closed before the EU framework as introduced, there was no infrastructure put in place to deal with the contaminated water 'Leachate' and hazardous gases beneath the ground. For this reason, infrastructure including gabion walls to contain the landfill, separation layers to seal it and methane wells to vent it will be required in order to appropriately manage the existing landfill and to support any new interventions.



Above: - Levels of higher education diagram

A New Caring Approach

Goal 11 of the SDGs, Sustainable Cities and Communities, looks at making spaces more inclusive, connected, safe and resilient. In order to achieve the objectives set out by the SDG a new caring approach to our built and social environment is required. The term 'Critical' Care is often used in medical terms to describe the diagnosis and treatment of life threatening conditions. In the book 'Critical Care, Architecture and Urbanism For a Broken Planet' Fitz et al coin the term 'Critical Care' as a way of thinking about our planet's life threatening condition (Fitz & Kramsey, 2019, p 10)

The planetary condition is not good: the planet is broken, the land and resources are exhausted, drained and depleted and for this reason the planet is in need of urgent care (Fitz & Kramsey, 2019, p 10). It is this condition that prompts a need for an entirely new way of seeing the relationships between our built environment, climate and people. This new methodology centred around care goes beyond the now traditional practices of sustainability. Sustainability emerged in the 1980s and involved an initial approach into reducing the environmental impact of all aspects of life including the built environment. The practice of sustainability in construction has largely considered building as things and their success has been measured through criteria such as environmental performance, energy ratings, carbon emissions etc. Critical care goes beyond this and looks at the ongoing relationship between a building and its ecological and social environment (Fitz & Kramsey, 2019, p 28).

Considerations such as how the building fits into its context, how was the building procured, who is the building used by and how is the building maintained all effect the critical care the building performs. This new approach to architecture and urbanism goes beyond creating beautiful buildings which are sustainable and fulfil a brief, we now need buildings and public space that take on the responsibility of caring for the planet (Fitz & Kramsey, 2019, p 27).

The caring role isn't limited to the practices of construction. A projects function of care could take the form of the buildings civic function in the community. When people live in communities which are connected and cared for, they feel safer, more included and can therefore pay more attention to their environment (Fitz & Kramsey, 2019, p 32). It is through the lens of care that I have developed my studio project in The Tolka Valley.

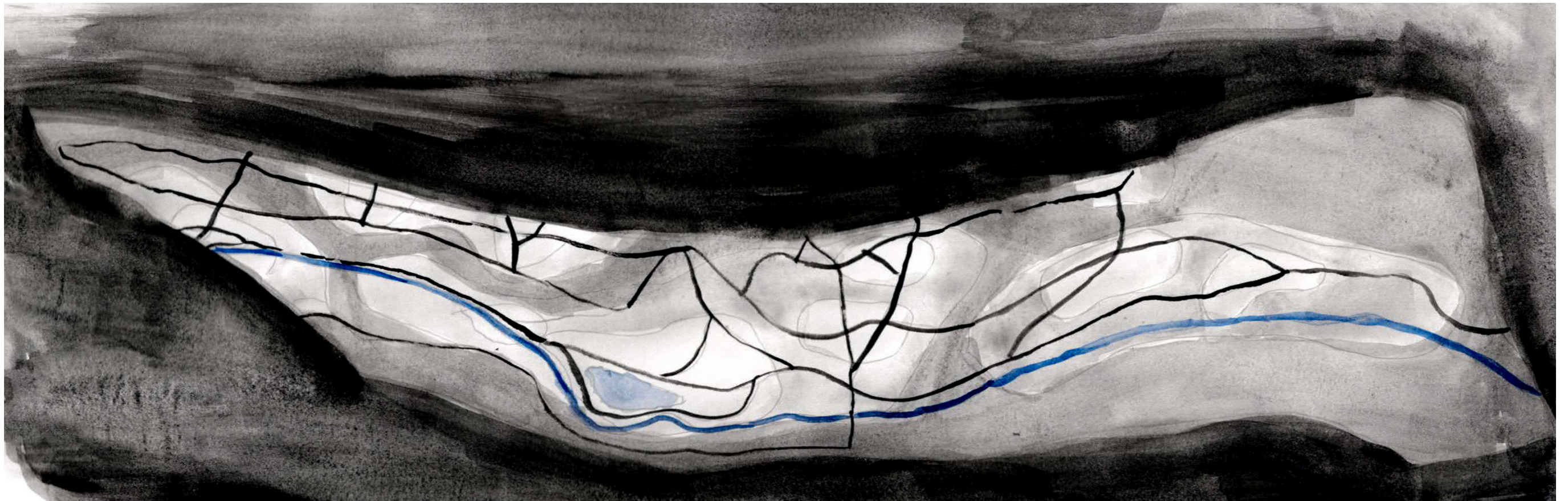
STRATEGY

Placement of Interventions

When deciding on the best possible locations in the park to place these interventions and to fulfil the brief, I took inspiration from the Artist Paul Klee who uses the analogy of the leaf to describe movements systems. Klee describes points of interest where stems of a leaf intersect. This analogy has been useful to me in deciding where to best place intervention towards creating a more active parkland. The intersection of paths present opportunity sites as points of activity.



Above: Paul Klee, watercolour
Below: Klee's image replicated for The Tolka Valley



Repair of Landfill

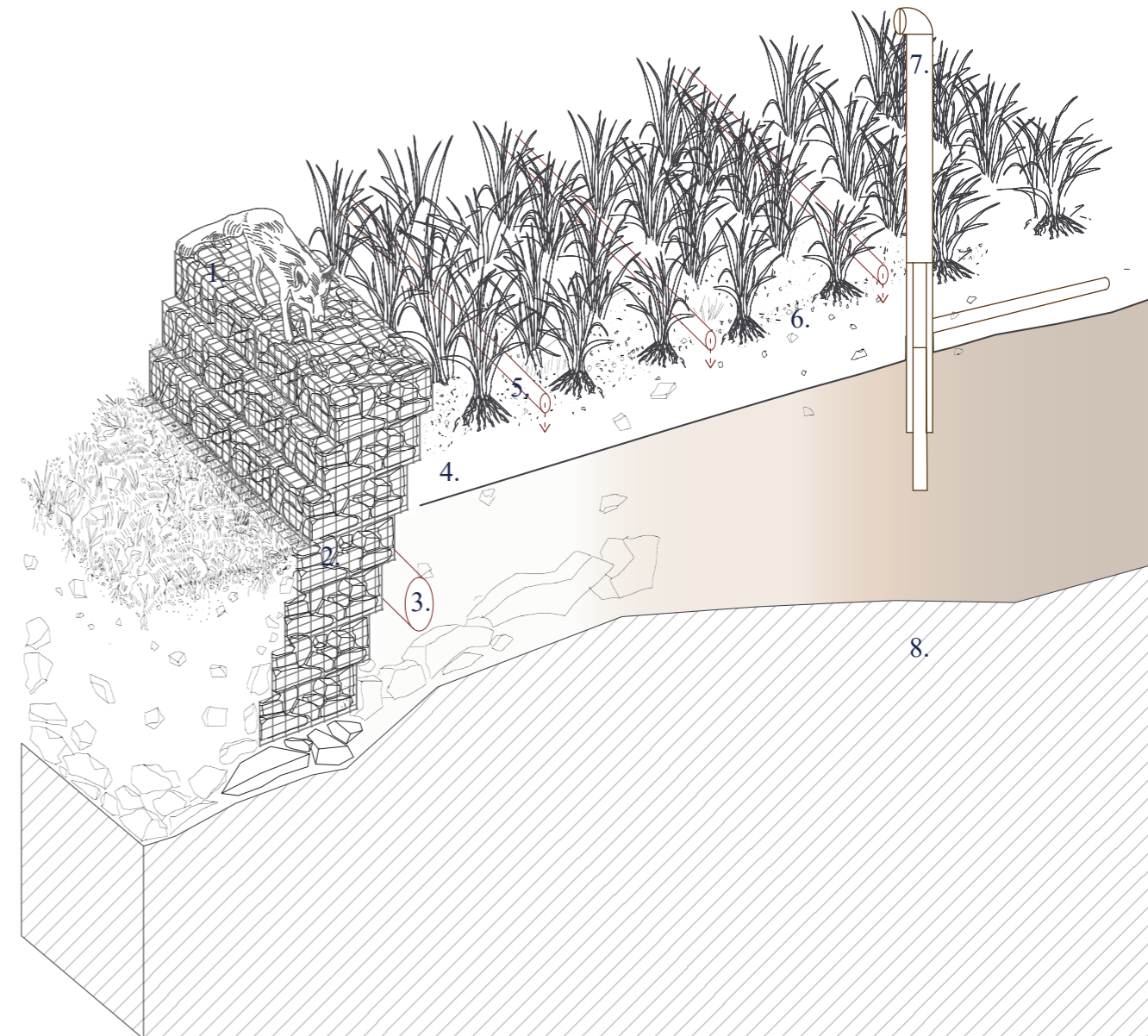
Repair of the Tolka Valley Park is a key objective of the thesis. In order to achieve this and to mitigate the pollution of the Tolka River from hazardous material I have placed an infrastructural gabion wall in the park which performs the function of repairing the landscape but also acts to support activity and function in the park.

Aligned with common contemporary practice for making an existing landfill environmentally safe, the top 1.2m of soil to the extent of the landfill is removed and a non permeable membrane is placed over the hazardous ground creating separation layer and preventing water seeping down into the landfill and becoming contaminated.

The repairing wall occurs at the edge of the landfill closest to the river where the risk of contamination is greatest. The section of wall above the separating layer acts typically allowing uncontaminated water to pass through, while holding back soil pressure. Below the separating layer the gabion basket is made impermeable by a mixture of stone and pottle clay. At this location leachate is gathered. The leachate passes through a Phyto Utilization process, where small amounts of leachate are released into the soil and treated naturally by Vervier Plants.

Key:

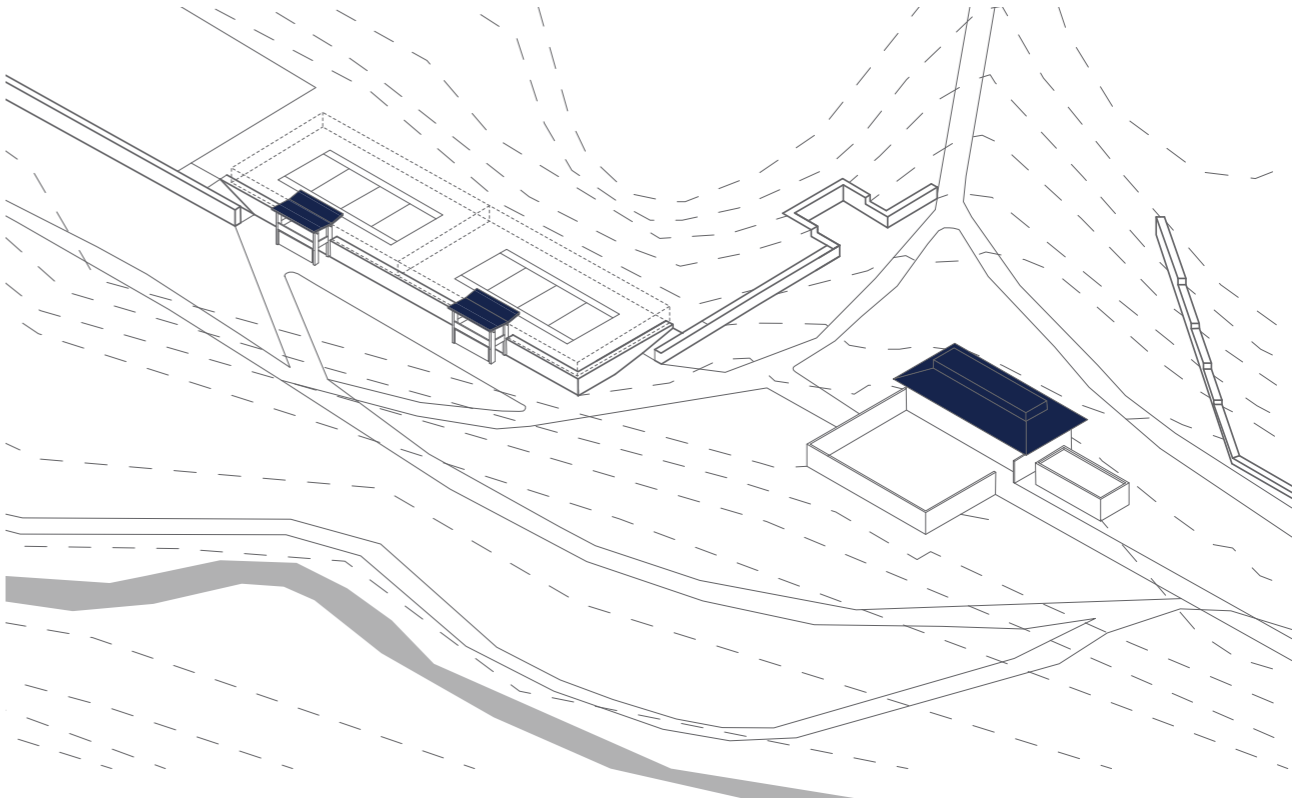
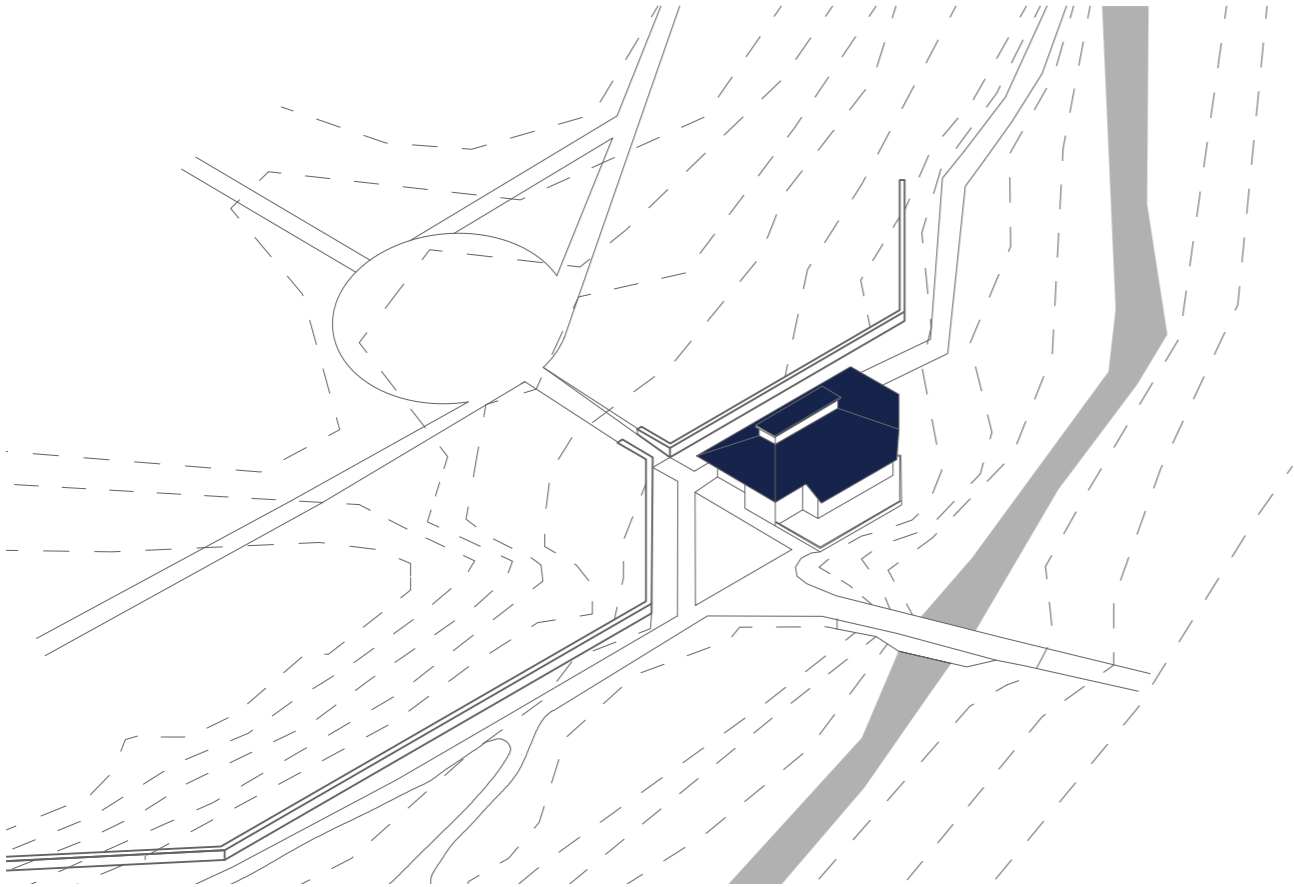
1. Permeable Gabion Basket
2. Impermeable Gabion Basket with Pottle Clay
3. Leachate Collection Pipe
4. Separating Layer
5. Leachate release pipe
6. Vervier Grass
7. Methane collection well
8. Bedrock



Repair of Landfill

Condition 1.

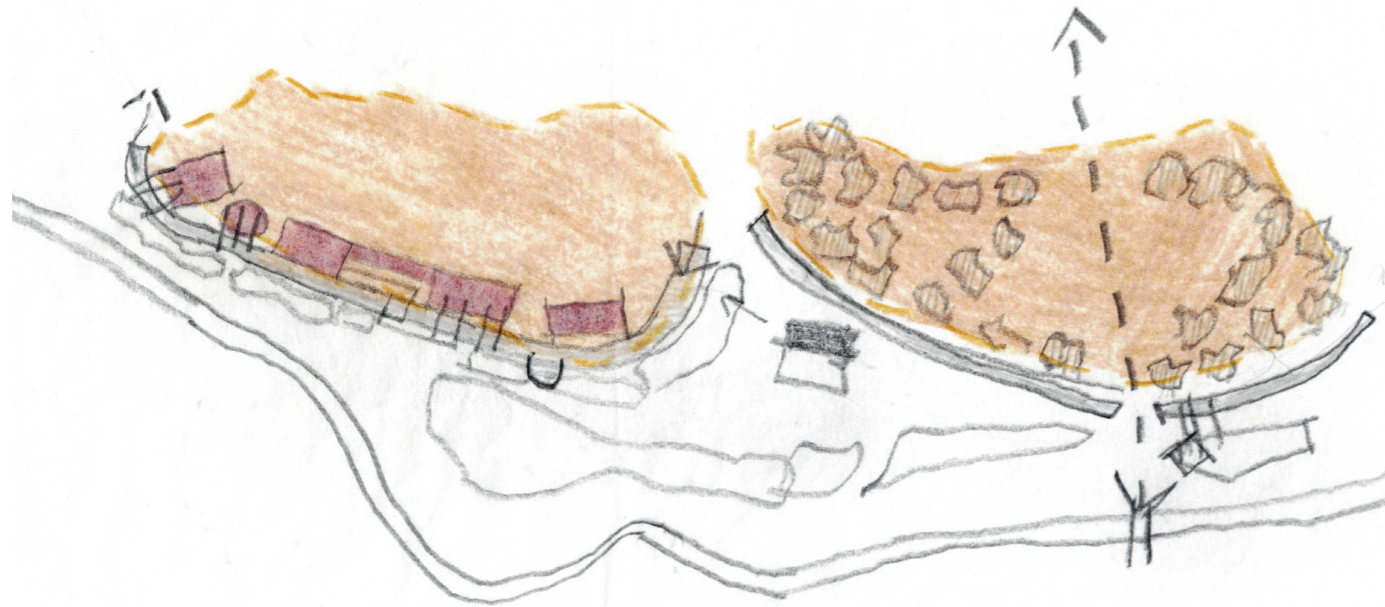
The wall as described performs an important role in fulfilling the repair of landscape objective. Secondary to its function of repair, the wall acts to support activity in the park in two different ways. Where the educational building is situated, the gabion wall retains the earth and creates shelter and a level ground to build on. This is particularly useful in the park where its topographical condition makes finding a level ground to build on difficult. At this location a new route is founded between the building and the wall; here the wall supports functional movement through the park.



Condition 2.

The second condition occurs where the proposed sports facilities are located. Here the wall performs its function in terms of repair but also allows the ground condition to be manipulated into a flat condition suitable for ball sports. The wall creates a change in level in the landscape. A pavilion structure provides shelter at the upper level and storage at the lower level. The wall in this case provides an interesting sectional relationship between the sports facilities and the river Tolka below.

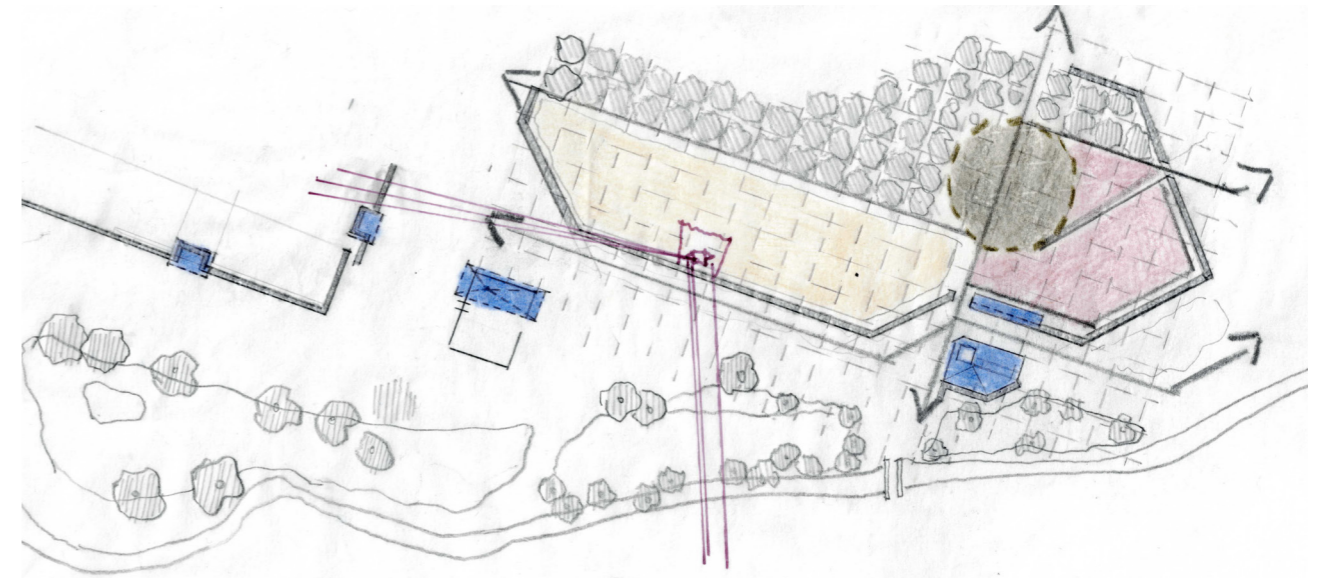
Setting Out The Wall



Iteration 1.

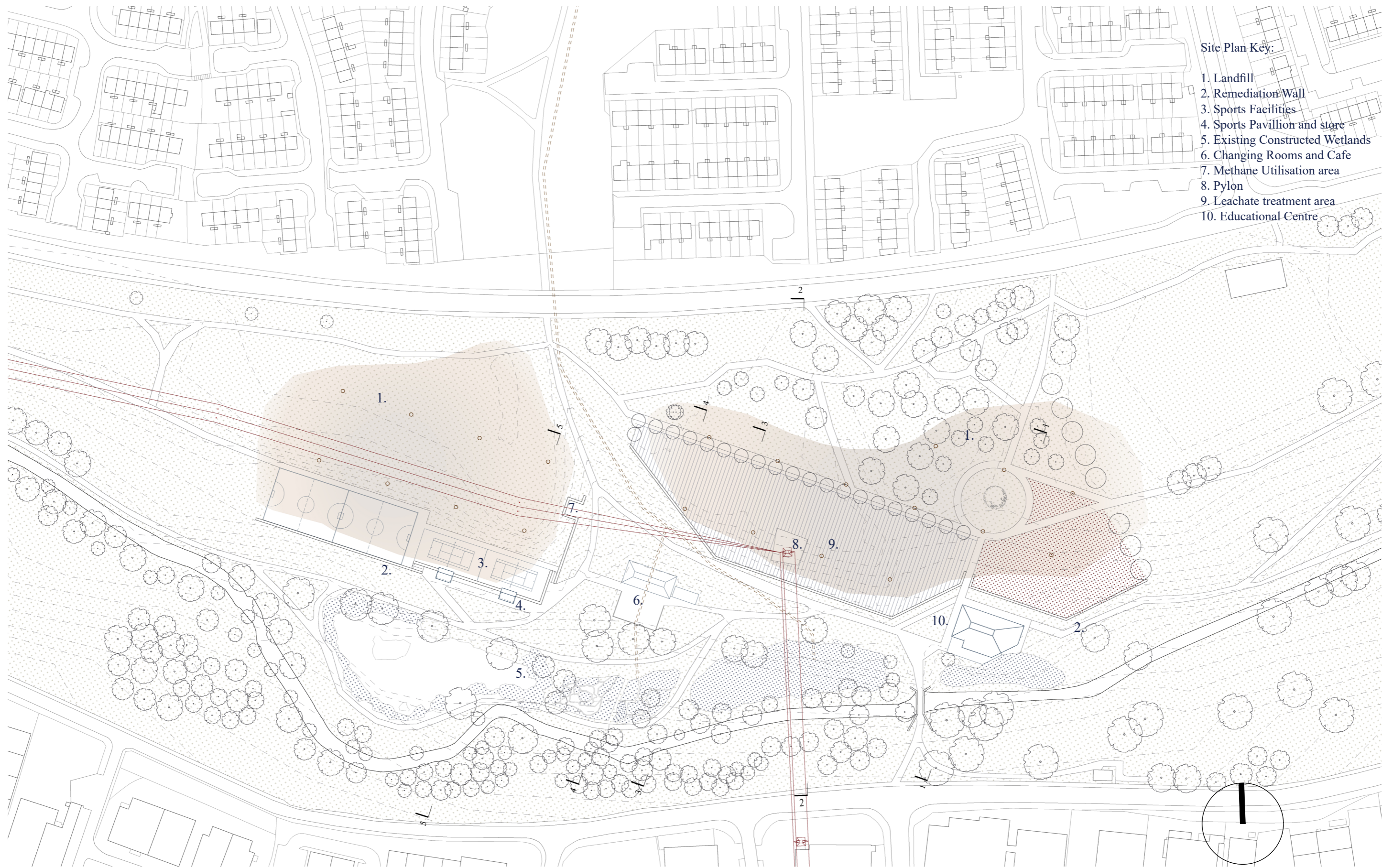
From the beginning of the project, I knew that the wall would play a significant part in the project. I interested in the work of the architects Enric Miralles and Carme pinos whose project for The Igualada cemetery involves a poetic manipulation of the site to form a terraced landscape through an architecture of earthwork and gabion walls. The relationship between the walls and functions of the cemetery are seamlessly integrated into the landscape. This project was a useful reference for the development of the project.

When beginning to set out the repairing walls in the project their locations were determined by the edge of the landfill where the risk of contamination is greatest. An early strategy was to have the wall follow the shape of the landfill literally, this created a wall that was curved and an ambiguous condition between the educational center and the repairing wall. Curving the retaining wall presented functional challenges as the walls are constructed from modular orthogonal baskets.



Iteration 2.

The subsequent iteration proved to be more useful. The curved walls were replaced by straight sections of wall which take their geometry from a grid which was established from the processes of landscape repair. The educational building is then related to the wall through its geometry. A new route through the park is established perpendicular to the wall along its axis. This section of the park is arranged in a more formal way because of the control of landscape required to repair the landfill.



- Site Plan Key:
1. Landfill
 2. Remediation Wall
 3. Sports Facilities
 4. Sports Pavilion and store
 5. Existing Constructed Wetlands
 6. Changing Rooms and Cafe
 7. Methane Utilisation area
 8. Pylon
 9. Leachate treatment area
 10. Educational Centre

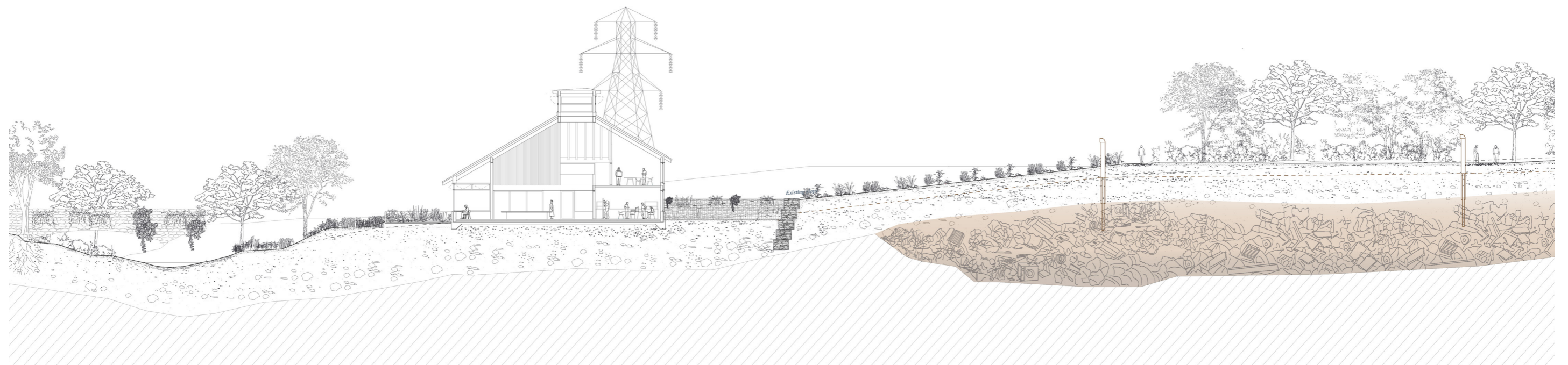
Site Plan

PROJECT

Educational Centre

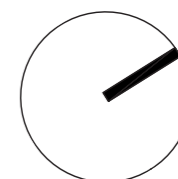
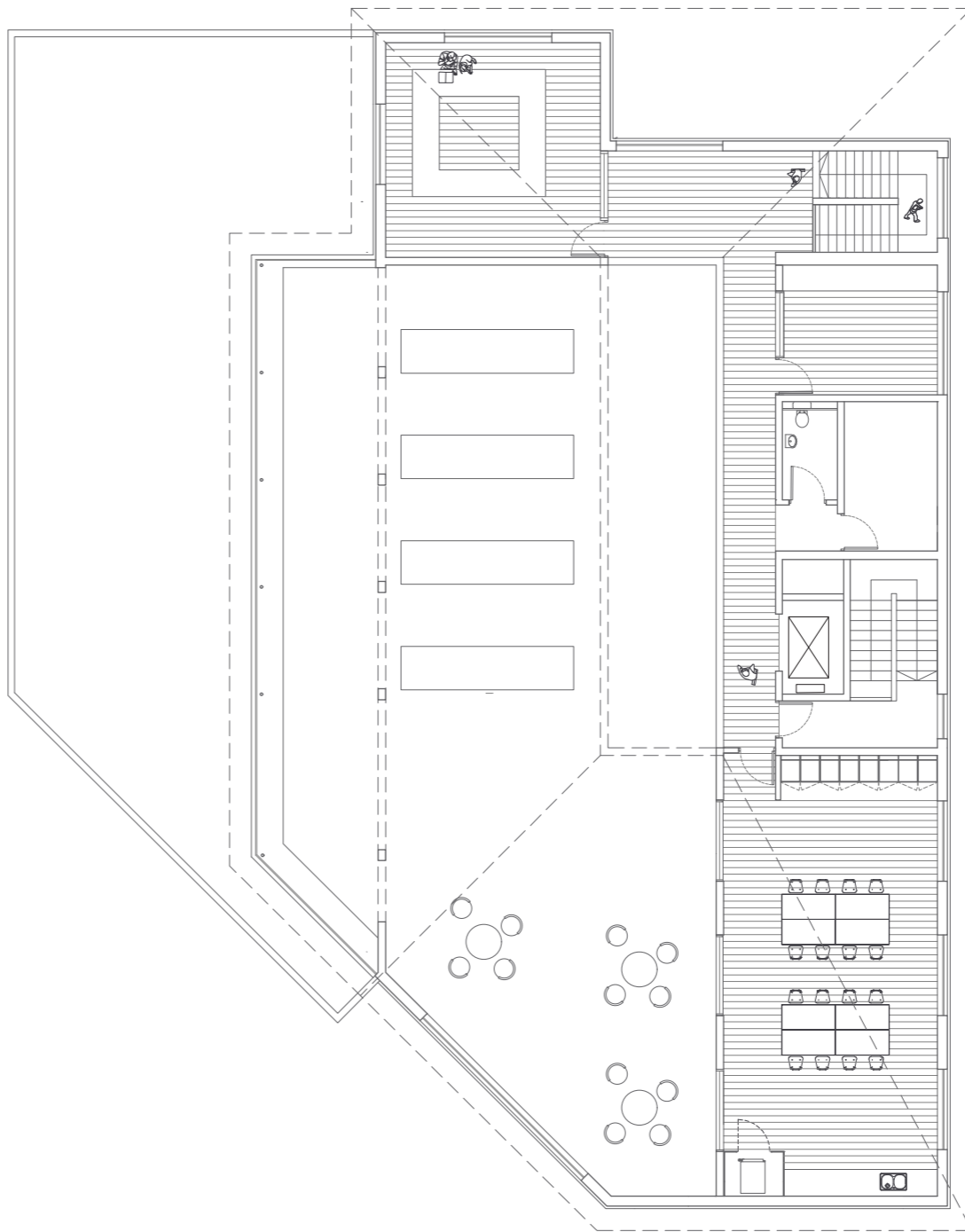
The most significant built aspect of the project is the proposed educational building. The building is situated at the main entrance to the park, where there is a bridge connecting to the Ballyboggan Road. The building was placed in this location in order to attract visitors into the park and to strengthen the entrance to the park. At this location the paths of the park intersect and branch out in different directions. This intersection of pathways presented an opportunity as a point of activity in the park.

The building is situated adjacent to the river with private spaces addressing the river and more public functions addressing the park. In order to reinforce the idea of a private and public realm, I have redirected a section of the existing pathway to the public side of the building allowing for a more calm study and reading room to the river. The decision to redirect the existing pathway to follow the gabion wall and pivot around the building is intended to engage visitors of the park with the activities that occur in the building.





Ground Floor Plan 1:200



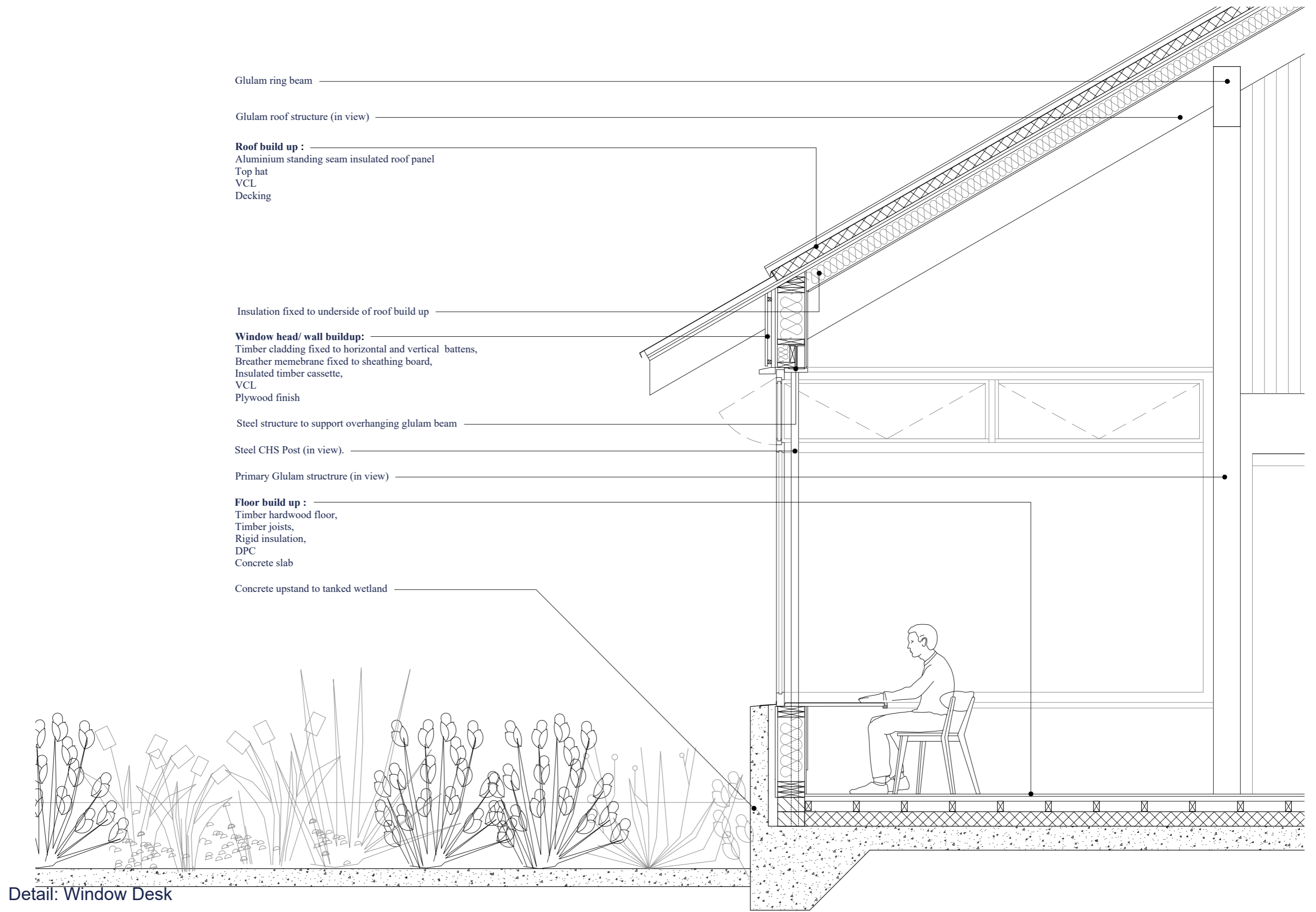
First Floor Plan 1:200

To the riverside of the building there is a large study and reading room. This space functions as a place for people to come and study throughout the day or in the evenings as a place for students to do homework and work on projects. The space is double volumed and at this location the hip roof extends down to create a more intimate condition to the river. Around this volume there are smaller rooms and a mezzanine level which provides a vantage down over the study space. The smaller rooms include meeting rooms, art room, music room and a language laboratory and are situated to the public side of the building allowing for the activities of the spaces to be present in the park.

To the south elevation which addresses the river I have placed a desk with views down over the river from a band of horizontal glazing. This is intended to create a strong connection to the river and provide a calm space to study or read and observe the landscape. At this location there is a tanked integrated pond which catches and stores water which runs off the hip roof for reuse.



Section 1:200



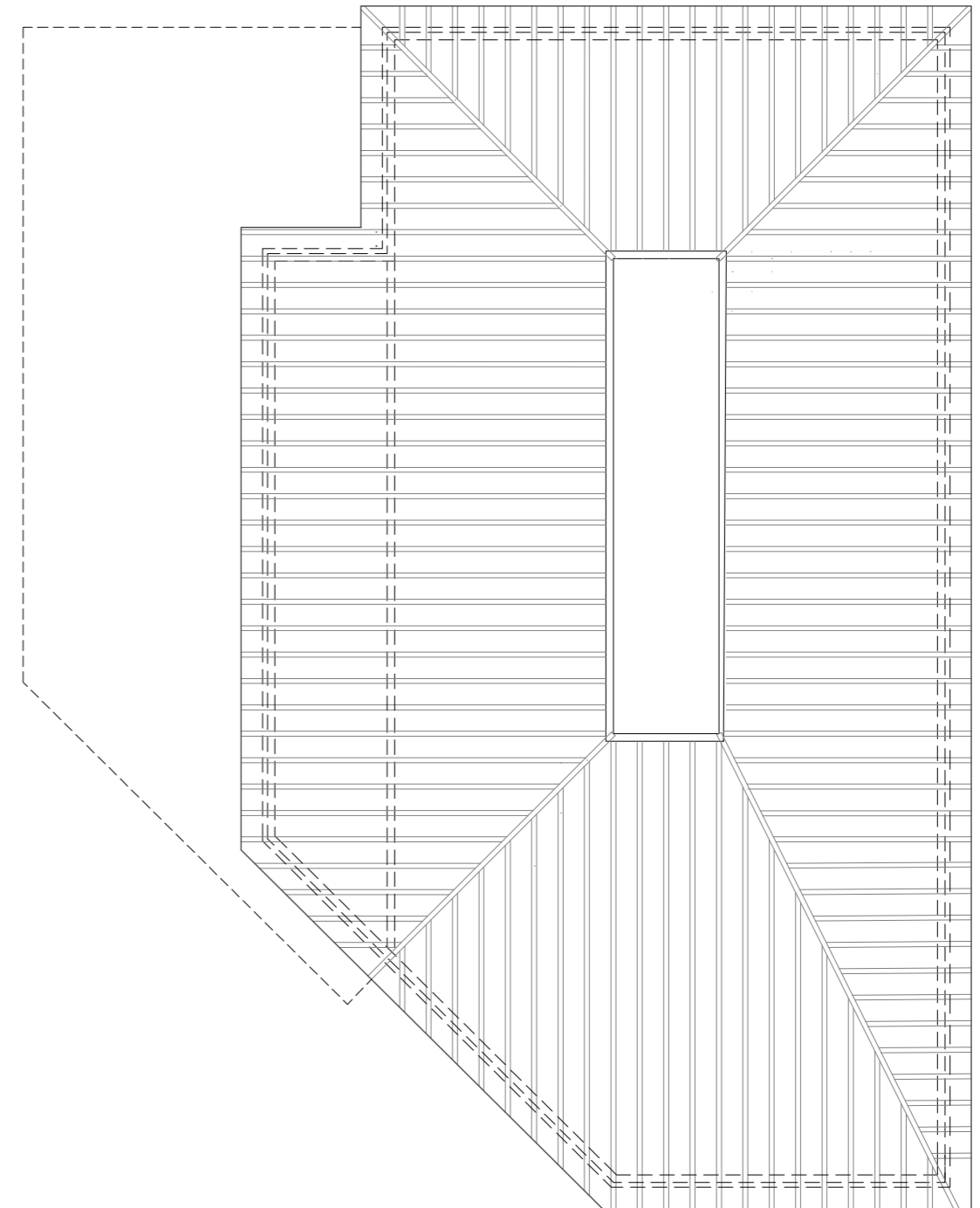
Detail: Window Desk

Building Material and Structure

The primary structure of the building is a Glulam post and beam structure. Two large glulam ring beams rap around the building and are supported by glulam columns. The first beam supports the mezzanine first floor and the second catches and resists the outward forces exerted by the roof structure.

The roof structure is made up of rafters which are arranged to form a hip roof with a skylight. The form of the hip roof is elongated to one side to suit the geometry of the site and to the side of the river it is extended to allow for a more enclosed condition. In between the glulam columns there are insulated infill timber frames, this allows for flexibility in the placement and sizing of window openings. Up to ground floor sill height there is a concrete upstand which raps around the building, providing protection to the building as well as forming the constructed pond to the south. The building is clad in vertical timber cladding with wider boards below a horizontal datum and more regular boards above.

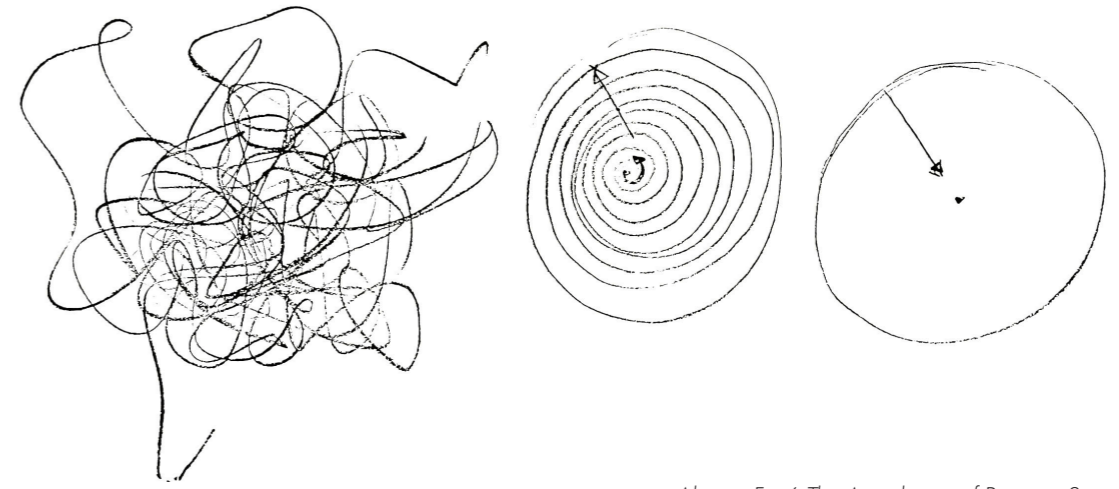
The choice of material was an important consideration for the project. Timber was chosen for the buildings structure and cladding over more traditional building materials because of its low embodied carbon. This was fundamental in the project in order to fulfill the objective of repair and to deliver a project that is not harmful to the landscape in which it sits.



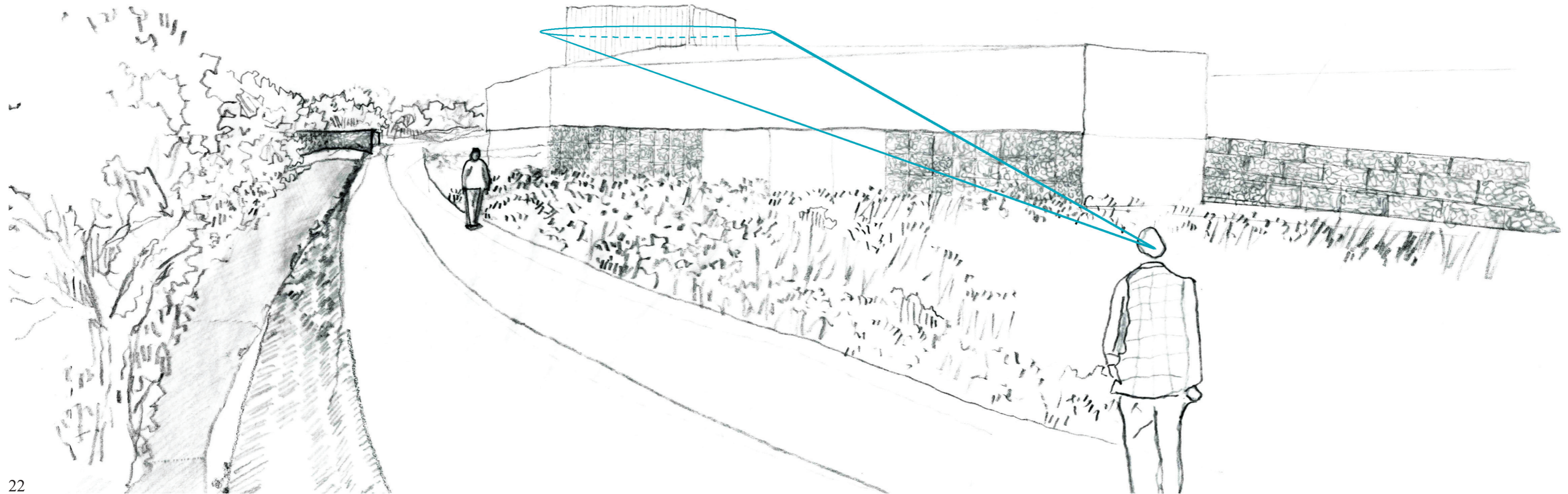
Roof Structure Plan

Articulation of Points in Space

From my reading of 'Design of Cities' I was interested in Edmund Bacon's description of St-Peters Square Rome, where an obelisk is used as a strong point of reference in the square. The obelisk as an object in space is relatively small but its effects are significant. As a result of the park's hilly topography generated from its function as a landfill, wayfinding through the park can be difficult. For this reason, I was interested in how a building's roofscape could act as a tool for wayfinding. I wanted the building's roof to provide a strong frame of reference to visitors in the park. An earlier iteration of the roof involved all sides of the roof rising to a large tower which would act as a contemporary obelisk in the park. The tower was rotated to mark the entrance to the park. This, however, resulted in awkward room shapes and made the plan of the building convoluted. This was revised into a hip roof that would be equally striking and would perform similarly as a strong frame of reference in the park.



Above: Fig.6 The Articulation of Points in Space, Edmund Bacon





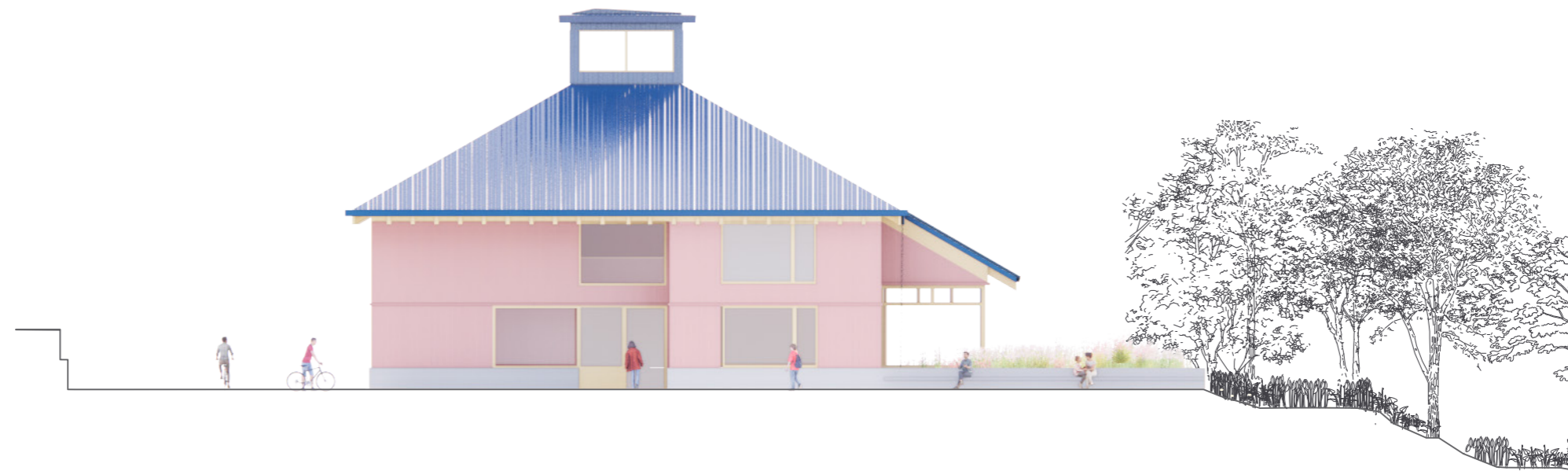
NORTH ELEVATION



SOUTH ELEVATION



EAST ELEVATION



WEST ELEVATION



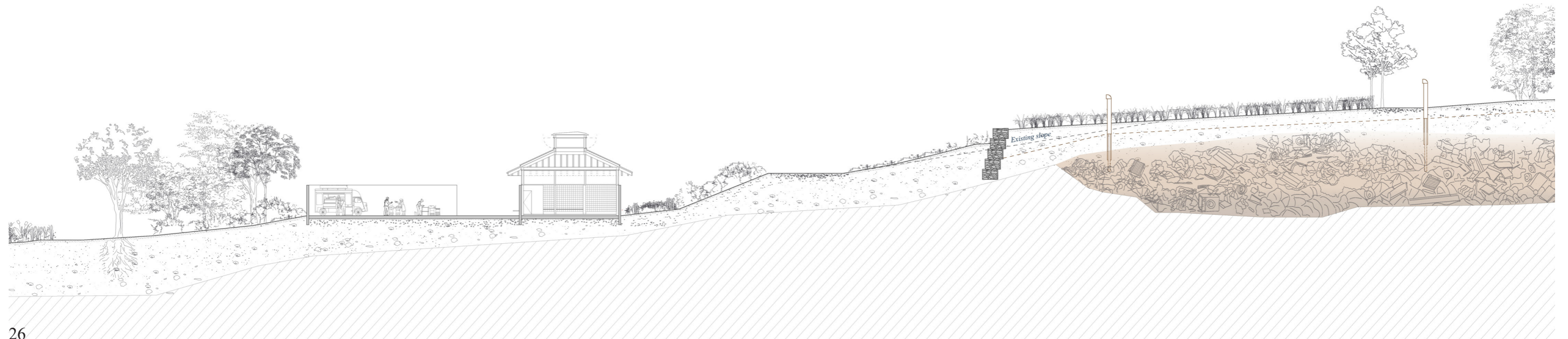
Interior Render: Study Space

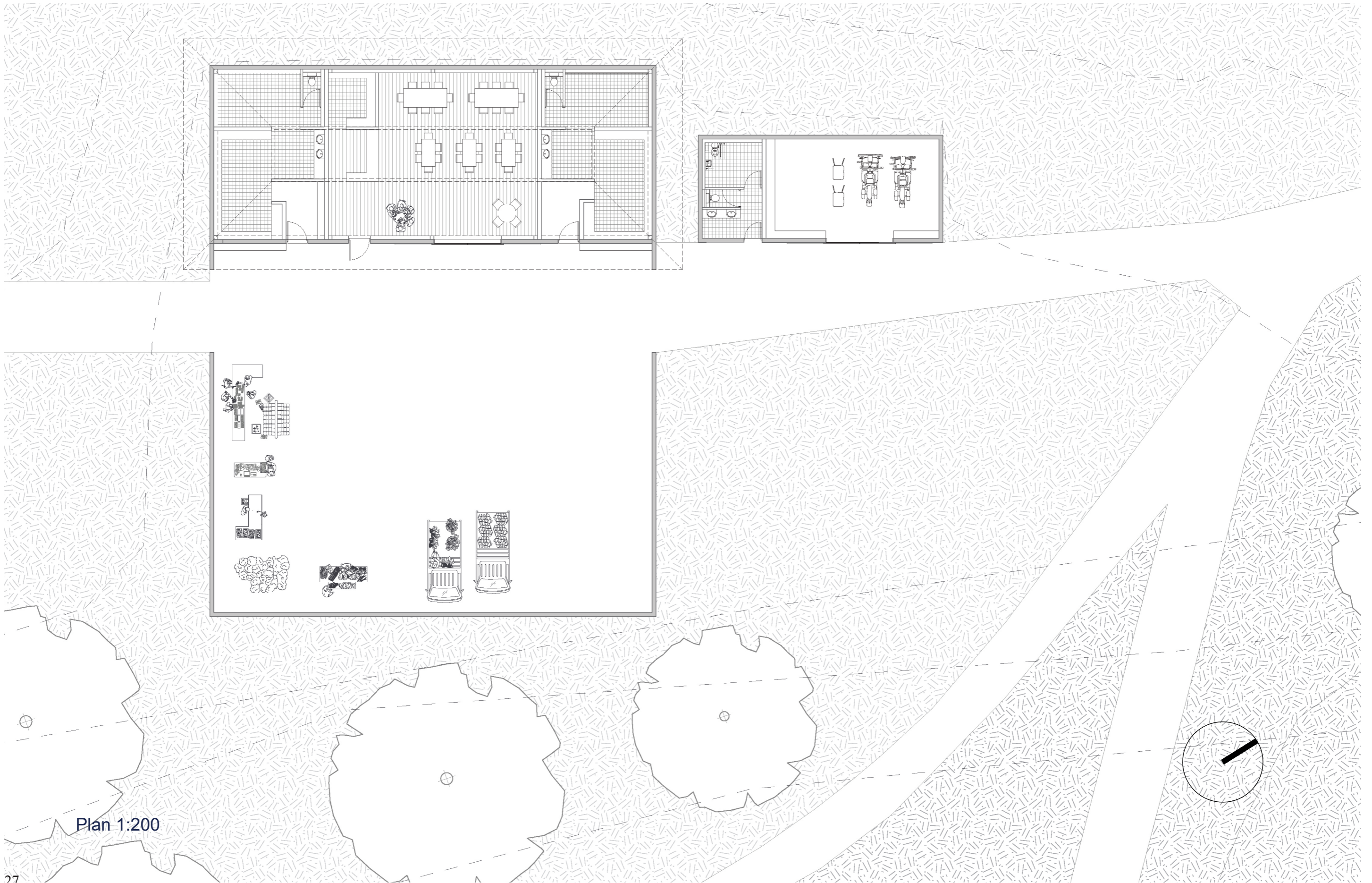
PROJECT

Changing Rooms and Café

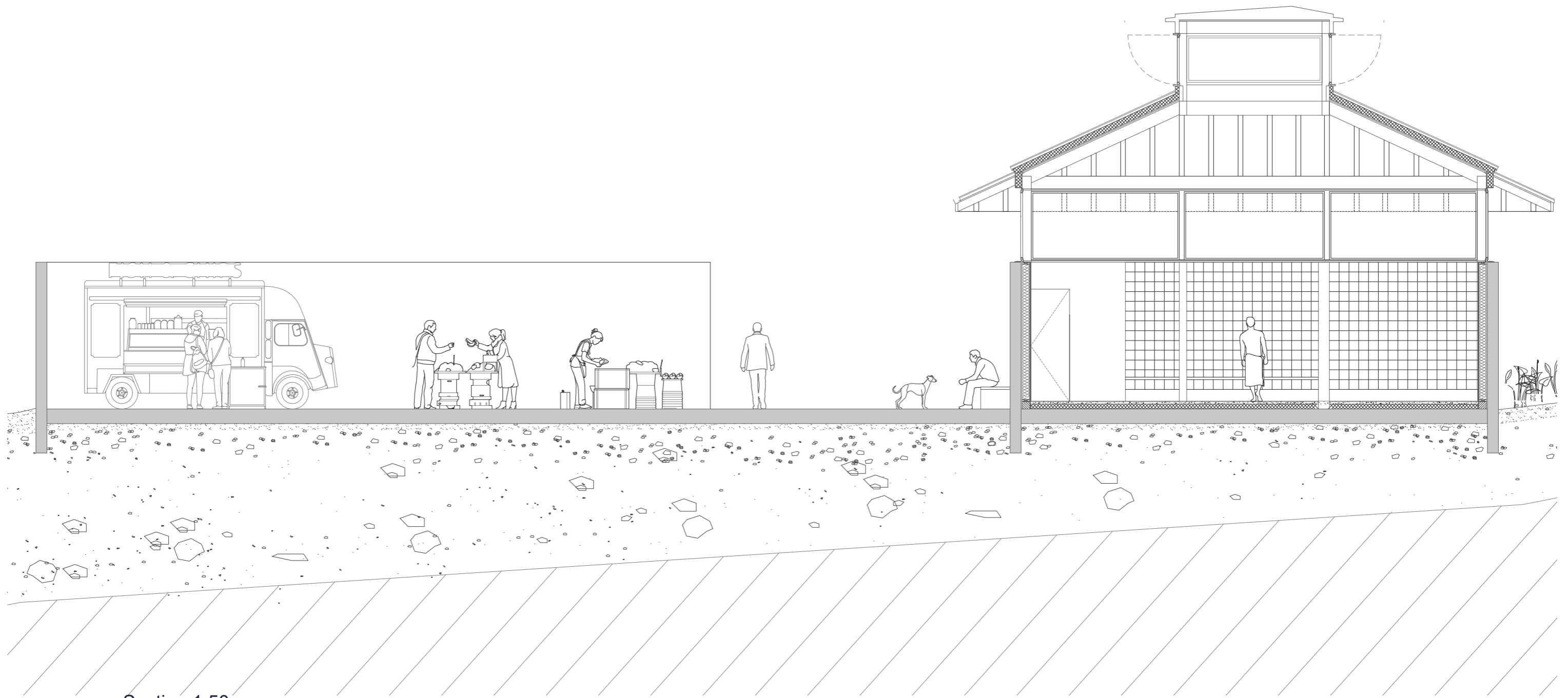
The next built intervention is the proposed changing room and café. This intervention sits within the fabric of the existing building which was previously the park depot building but now remains unused. The decision to reuse the existing fabric of the building was due to the embodied carbon contained within its construction. The existing building provided an opportunity to create a new active and useful function in the park with minimal intervention and interference with the landscape. The floor slab and blockwork walls of the existing building and yard are retained and the flat slab roof is removed and broken up for use in the gabion baskets associated with the retaining wall. In its place I have added a new roof that mirrors the hip roof form of the educational building creating a strong object of reference in the park. The roof is supported by a proposed glulam structure which elevates the roof above the existing walls allowing for a band of glazing around the building. The hip roof over sails the walls of the courtyard expelling water from the programmed space.

The building's function is split into a large café and two changing rooms. The café has a large sliding door which opens out into the courtyard space. This is intended to be used in times of events. The existing walls of the courtyard provide refuge in the landscape and provide a sheltered place for market activities and events. There are changing room and shower facilities on either side of the café. These changing rooms provide a useful service in the park and are a necessary infrastructure to support the sporting and recreational activities in the park.





Plan 1:200



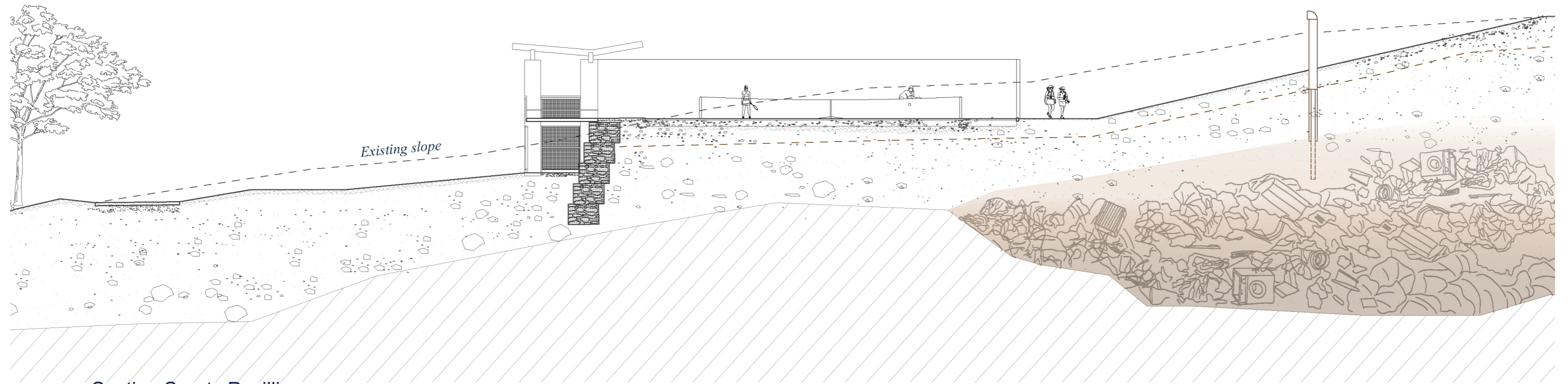
Section 1:50

PROJECT

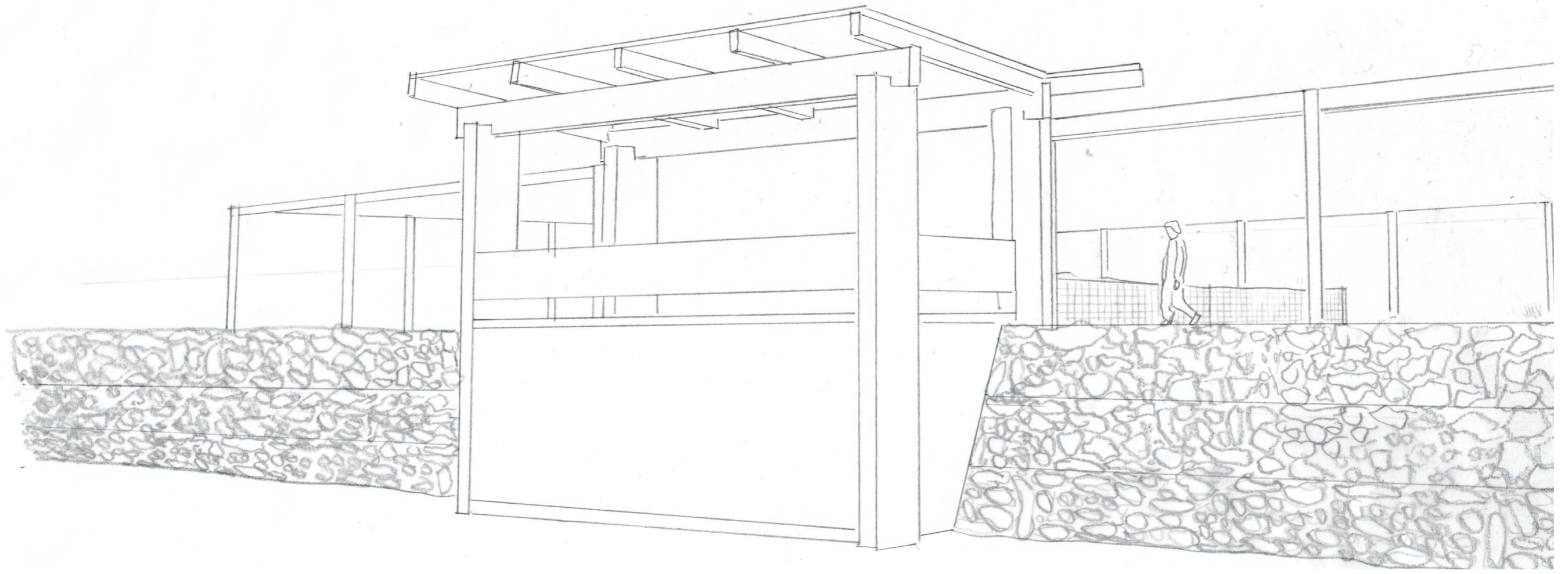
Sports Facilities

In order to further activate the park, I propose to populate one section of the repairing wall with a string of sports facilities. Currently the park has two sports pitches, however given the size of the park and the highly residential areas it borders, there is a need for additional sports facilities. The facilities include two tennis courts and two five-a-side pitches. The wall and earthworks associated with repairing the landfill provide a level ground suitable for the sports facilities.

At this location there are two sports pavilion structures that provide shelter at the higher level and storage for the sports activities below. Four concrete piers provide support to the concrete slab floor along with the roof. The roof structure is a timber roof construction with timber beams spanning between and notched into the concrete piers. The timber beams support a light butterfly roof. At the lower level a metal screen spans between the concrete piers and secures the storage space behind.



Section Sports Pavillion



Sketch Sports Pavillion

REFLECTION

The primary objectives of the Thesis are the Activation and Repair of Landscape. Activation refers to increased activity and use. There are significant apparent disconnections between the adjoining communities that address the park and despite its prominent location the park is underused and lacks activity. The section of the park between Finglas and the industrial estate was formerly a landfill and as a result of the dumping of waste on the site over many years, there is significant damage to ecosystems and ecologies of the Tolka Valley. It is this context that prompts the need of 'Activation and Repair of Landscape'.

It was in the context of The Tolka Valley Park I tested these objectives and developed a project. The project involved a series of interventions including an educational centre, changing rooms, café and sports facilities which aimed to perform useful functions in the park and therefore bring activity. These interventions were supported by a layer of infrastructure which had the function of repairing the landfill.

At an early stage in the Thesis investigation, I found it useful to study historic formal landscape conditions to broaden my understanding of landscape history and theory. I was interested to see if any of the spatial devices used could be implemented in a contemporary context. Considering the formality of the 17th century baroque piazza and 18th century cinematic Italian gardens and the subsequent divergence of the 20th century landscape from the formal towards a more contemporary and social architecture and landscape design; it is apparent that the spatial devices of the past have played a significant role in shaping our landscapes and cities. Texts such as Architecture and Landscape and The Design of Cities describe this in an analytical way and develop methodologies to interrogate landscapes beyond the picturesque. It is important to note that these historic precedents are not without their criticism. The formal landscapes and gardens of the 17th and 18th centuries were predominantly reserved for the use of the social elite and in this way present themselves as antisocial in a contemporary society. Despite this criticism I found this research very useful in terms of contextualising landscape design and for learning new methodologies to analyse landscape; this subsequently proved useful in my reading of the Tolka Valley. Elements from my research such as the articulation of points in space and movement systems have played a significant role in the development of the project.

We have seen the emergence of critical care as a new typology for addressing our planet's life threatening condition. The term critical care describes our built environment's responsibility of planetary care and is a necessary approach in achieving our commitment to the '2030 Agenda for Sustainable Development.' It is through the lens of critical care that I have developed the project.

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Table of Figures

All images are original unless specified here

Fig1. Bacon, E.N. (1974) Design of cities. New York: Viking Press

Fig 2. OMA (N.D.) Park La Villette. Available at: <https://cdn.sanity.io/images/5azy6oei/production/099a6ba225afeb9a1bf18d1f4796f8e1d2a9d257-2488x848.jpg>

Fig.3. OMA (N.D.) Park La Villette. Available at: <https://cdn.sanity.io/images/5azy6oei/production/b4996d446a341fda2a27c2be288648a159589b94-3642x4886.jpg>

Fig.4. OMA (N.D.) Park La Villette. Available at: <https://cdn.sanity.io/images/5azy6oei/production/2bd526cec72b904de7d8b073d675b39299298047-1020x1591.tif>

Fig.5 Bacon, E.N. (1974) Design of cities. New York: Viking Press

APPENDIX

Dublin City Development Plan Draft Response

Chapter 10: Green Infrastructure and Recreation,

Our cities parks are an important part of civic life and are essential for conserving Biodiversity in an urban context along with creating resilient and connected communities. The importance of our parks as fundamental assets to a city is outlined in chapter 10 of the Draft Development Plan for Dublin City plan is supported by the work of the Dublin City Council's Parks, Biodiversity and Landscape Services Division.

The cities park types vary and include formal parks, green open space areas, grassed areas, woodlands and cemeteries. Notwithstanding the success of many of the city's parks and landscapes, many of these landscapes were never fully designed, rather the result of left over-in between or wastelands at the boundaries of housing estates. An example of this landscape condition is the Tolka Valley park in Finglas which is the site of my thesis investigation as part of Dublin School of Architecture TUDublin.

The Tolka Valley Park which is referenced to in the development plan in section 10.2 for the works carried out including the new changing room facility is a large linear park which runs from Castleknock to Glasnevin. The site of the park was formerly a quarry in the 18th Century; its material was used to shape much of North Dublin City up until the 1930s, when the site became a landfill. The site was used as a landfill for Dublin City Corporation up until 1973 closing before the the EU Framework was introduced; for this reason it was never properly capped or subject to EU standards of practice regarding the closure and treatment of landfill sites. This is a typical landscape condition in Ireland where a formerly quarried site is backfilled with municipal waste, later becoming a park. Another example of this landscape type is Fairview park which was built on a municipal dump.

In the case of the Tolka Valley park the landfill was never formally treated and this has resulted in significant contamination of the Tolka River below. The common contemporary practice for the post treatment of landfills is to cap the landfill with an impermeable membrane or liner to stop the contamination of ground water and soil. Infrastructure such as gas vents are used to gather hazardous gas such as methane which build up below ground. Through the implementation of such infrastructure methane can be harvested and sold in the form of energy. In the Tolka Valley Park the landfill was capped with a layer of topsoil and Willow trees were introduced along the steep banks of the landfill to stabilise soil movement. No system was put in place to mitigate the runoff of leachate generated from groundwater percolating through the contaminated material of the landfill. No systems of methane gathering, and treatment were introduced. This may have resulted in the release of significant amounts of methane and the potential buildup of trapped methane below the soil

It is an objective of the Dublin City Council 'manage, protect and enhance parks and public open spaces to meet the social, recreational conservation and ecological needs of the city'. To fulfill this objective I believe it this responsibility of Dublin City Council to conduct a formal soil sampling and groundwater analysis of any park site that was formerly a landfill to determine the risk of contamination of groundwater and from leachate. It outlined by the Environmental Protection Agency in its State of the Environment Report that in areas such as climate, soil and water are not meeting prescribed EU targets which is resulting in the erosion of ecosystems and environments. Given this observation, it is clear the extent of damage caused by practices of landfilling during the 20th century needs to be quantified and measures taken to mitigate future

damages put in place.

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TUDublin (C17389026).

Temple of Education Project

At an early stage in the project, as part of a small group, we developed the 'Temple of Education' project. This project involved a careful retrofit of an existing yeast factory to the east of Tolka Valley park adjacent to the Tolka river. We chose this as our site because of its aspect at the very top of the park, its proximity to the river and its position between three adjoining neighborhoods Finglas, Cabra and Ashtown. The building responds to its existing form through the re-use of the existing frame structure and metal paneled roof which provides shelter to the new program set within.

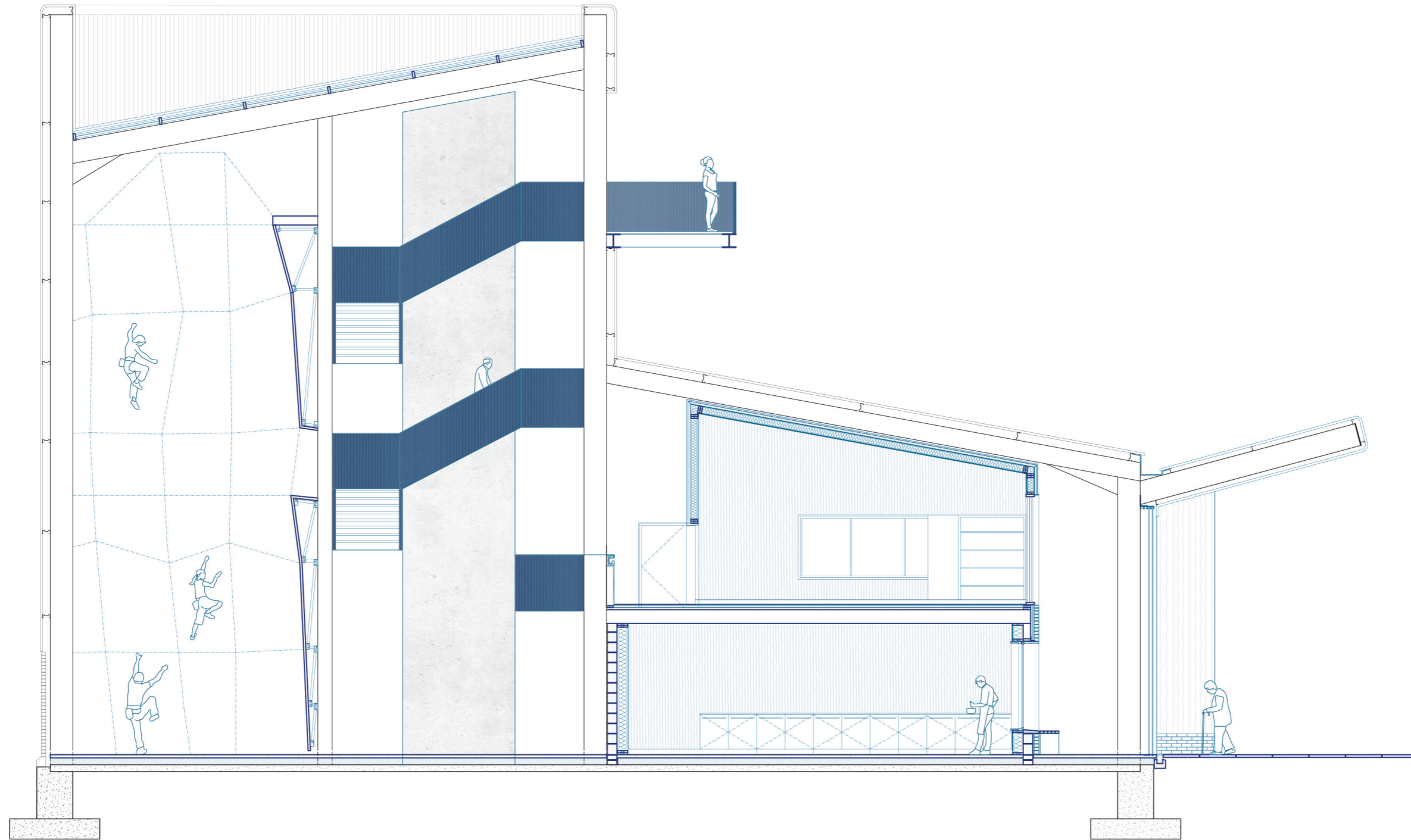
Connectivity through education was the primary objective of the project. We noticed a disparity between the numbers of people involved in higher education in the three disconnected neighborhoods. For this reason, we propose a 'Temple of Education' which aims to bring connectivity through education. The term 'temple of education' came from our observation that the buildings significant position in the park reminded us of a building of importance in a formal landscape.

The Tower Project

Following the Temple of Education Project as an initial design proposal to test the ideas of introducing antiquated spatial devices to promote activity in park. I introduced an observation tower to our groups project which would act as a contemporary obelisk, a strong point in space and create a frame of reference in the park. The tower is set within the existing structure of the former yeast factory and is set in a predominant position in the park at the top of the hill. The tower would provide expansive views over the park for the users of the 'Temple of Education' and more importantly be something to look and move towards as a defining point along a movement system.



Above: The Tower Project, view from the park



Tower Project Section