

Figure 5.1. Hydrological cycle on section. Author, 2016.

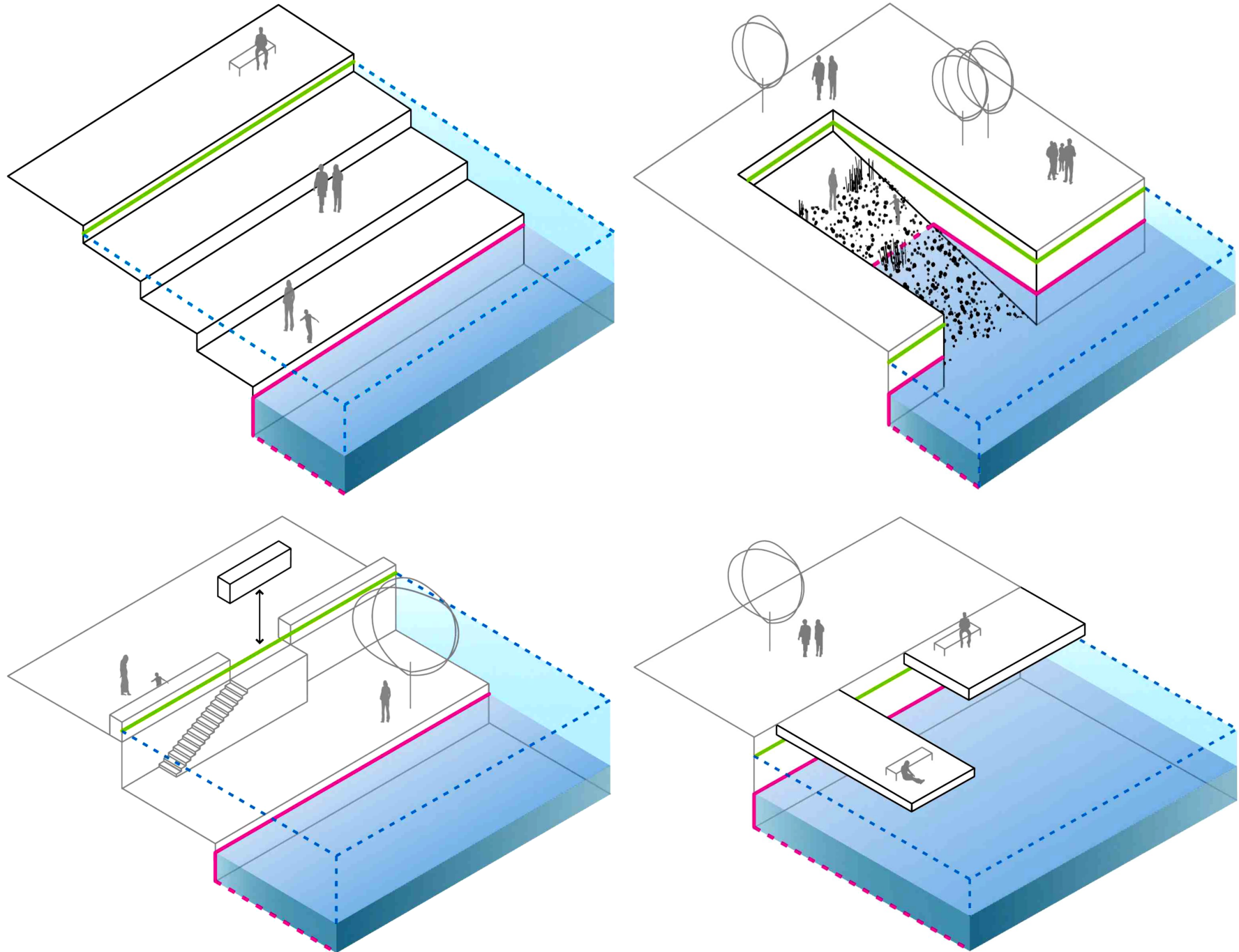


Figure 5.2. Linear spatial expansion, selective spatial expansion, temporary resistance and above water. p.50, Prominski et. al., 2012.

5.1 SCOPE

5.1.1 RIVER SPACE

River flows create a constant kinetic force of water that expresses hydrological connections and interactions over time, as explained by Rodríguez-Iturbe and Rinaldo (2001:252). Natural and urban river channels are the veins of a water system (Mathur & Da Cunha, 2014:9). These 'veins' interact with many topographical locations (Mathur & Da Cunha, 2014:4). The role of architecture in mediating natural and constructed form and shape is significant, particularly regarding people's experiences of river spaces which are firmly embedded in natural ecosystems (see Figure 5.2). Urban river space precedents on both a national and international level can inform this scope.

5.1.2 WATER TECHNOLOGIES

By using an integrated water supply from the onset of a design project, architects can emphasise eco-systemic services. Furthermore, the cost of pure drinking water will rise as the demand for clean drinking water rises. Marsalek, Jimenez-Cisneros, Karamouz, Malmquist, Goldenfum, and Chocat (2008:32) argue that water demand issues will increase significantly in the future. Water's natural availability is a significant factor when looking to the future. This premise should be taken into consideration upon the selection of precedents.

5.1.3 USERS AND HYDROTHERAPY

As part of a holistic urban design response in creating a feedback space to the surrounding buildings, the Prinshof School for cerebral palsy children as well as other patients located in the Medical District would need to be catered for.

Cerebral palsy is a neurological and developmental condition that is commonly classified as a disability and ranges in severity and distribution (Levitt, 2013:1). Numerous movement and tone disorders, for example, ataxia, athetosis, and muscle flaccidity, rigidity, and spasticity are associated with cerebral palsy. Also associated with this condition are sight and hearing disorders (Campion, 1997:145). Patients with conditions ranging from neurosurgical head injuries, spinal mobilisations, spinal cord injuries, rheumatic disease to orthopaedic injuries and sports-related injuries can also be rehabilitated by using water-induced therapy (Campion, 1997:146).

Patients and children with cognitive and motoric difficulties, such as those associated with cerebral palsy may further benefit from hydrotherapy, when they apply the intuitively induced changes and skills learnt from water therapy sessions into their daily routine (Campion, 1997:145).

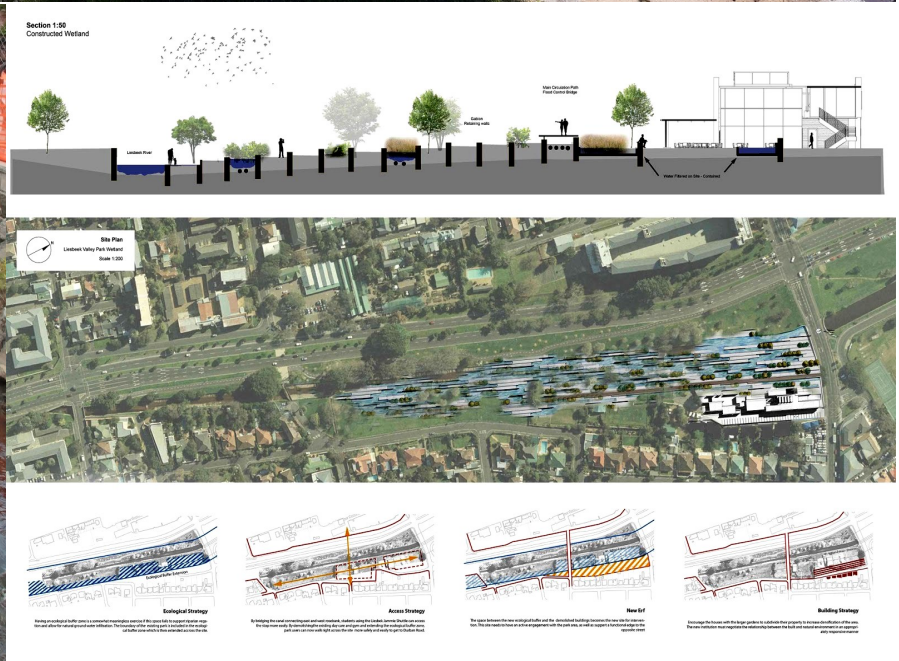


Figure 5.3. Jonkers Saw Mill River, <http://www.sawmillrivercoalition.org>, 2014.

Figure 5.4. Liesbeek River and architectural proposal, <http://fol.org.za/>, 2014.

5.2 RIVER RESTORATION PRECEDENTS

Considering the conditions of the Apies River from both international and local precedents of urban river restoration provides informed and potentially sensitive approaches from existing precedents.

5.2.1 SAW MILL RIVER RESTORATION, UNITED STATES

In 1922, a 900m underground concrete waterway located under Yonkers municipal parking lot and the Getty Square (city centre) was completed up until the Hudson River (www.sawmillrivercoalition.org, 2011). A community supported proposal promulgated the concept of exposing the concealed waterway and integrating it with the surrounding public spaces. It allows for the waterway to ecologically revitalise itself and spatially revitalise the surrounding urban condition (www.sawmillrivercoalition.org, 2011).

The river park (see Figure 5.3) provides an educational platform for the town to learn about aspects regarding urban ecology as the intervention accommodates an accessible wetlands (www.daylightyonkers.com, 2011). The river bed consists of 1400m² of wetland habitat that includes a tidal pool and two freshwater pools. The project promotes “socio-cultural, economic and ecological importance” as stated by the Saw Mill River Coalition (www.sawmillrivercoalition.org, 2011).

5.2.2 LIESBEEK RIVER RESTORATION, SOUTH AFRICA

The Liesbeek River (see Figure 5.4) Framework is a locally organised scheme that proposes the development of ecological and social resilience around urban spaces in the Liesbeek River catchment basin. This development is reflected in its objectives which are “centred on Landscape Urbanism principles” according to the Friends of the Liesbeek (www.fol.org.za, 2016). The framework considers “urban, natural and social parameters” in the larger river catchment area and is guided through framework principles which are translated towards a set of design factors “guiding site development” as stated by Friends of the Liesbeek (www.fol.org.za, 2016).

Importance regarding site development is placed on its urban connections and its physical relationship to the river. Nikki Onderstall’s project (nikkionderstallportfolio.blogspot.co.za, 2013) named ‘Hydrating Liesbeek Valley Park’ (see Figure 5.4) reflects some aspects of this framework and how it translates to the design process and outcome as mentioned above. By using the site’s hydrological cycle and expanding its ecological footprint, the proposed intervention expanded its restorative relationship between the surrounding site and the river by means of a water filtering landscape intervention. (nikkionderstallportfolio.blogspot.co.za, 2013).



Figure 5.5. Mason's Bend, Alabama. forrestfulton.com. 2010.



- A: Bathing pools
- B: Obscure room
- C: Glazed photovoltaic park
- D: Ice ditch
- E: Reed beds
- F: Solar water heaters
- G: Horizon

Figure 5.6. Fenland Obscura, p.40, Smout et al., 2007.

5.3 TECTONIC+CONCEPT PRECEDENT

5.3.1 MASON'S BEND COMMUNITY CENTRE, U.S.A.

This intervention (see Figure 5.5) commenced as an open-based architectural project which was designed to respond to the needs of the surrounding community with a “public, multi-functional, open-air space” (forrestfulton.com, 2010) which resided on a privately owned site. It was implemented by Auburn University’s Rural Studio as a project that focusses on “publicly accessible space”, (forrestfulton.com, 2010). The tectonic language is determined from the building’s response to the surrounding community (forrestfulton.com, 2010).

Local building materials were combined with this formal translation. The wall and roof plane provide for a heightened interior volume. Rammed earth walls extend from the landscape into the building and frames the entry and threshold to the intervention (forrestfulton.com, 2010). The roof is divided into two segments; “thin aluminium sheeting and a automotive glass roof light” (forrestfulton.com, 2010). “The rammed earth has a timeless character”, (forrestfulton.com, 2010). Alternative and recycled building materials were used to economically maximise the project.

5.3.2 FENLAND OBSCURA, CONCEPTUAL (NOT-BUILT).

This speculative project (see Figure 5.6) is determined by man-made geometries that are visually prominent on the landscape as described by Smout et al., (2007:39). It is derived from returning the rural water infrastructure from the “distant horizon”, (Smout et al., 2007:43) and is able to form a series of connected water-programmed landscapes. “Roads, railways, and rivers run parallel and perpendicular to each other, often raised above the ground level”, as explained by Smout et al., (2007:39). “Drainage ditches and dykes that cut into the black ground at regular intervals demarcate field boundaries”, Smout et al., (2007: 39).

The vertical tower reciprocates the patterns of irrigation ditches and drains Smout et al., (2007:39). They are programmed with bathing pools which are regenerated by adjacent reed beds and ponds Smout et al., (2007: 43). “Landscapes, the sky, the horizon, surfaces and glass” are made passively responsive to the hydrological cycle in the manner that water appears on these surfaces (Smout et al., 2007: 41).

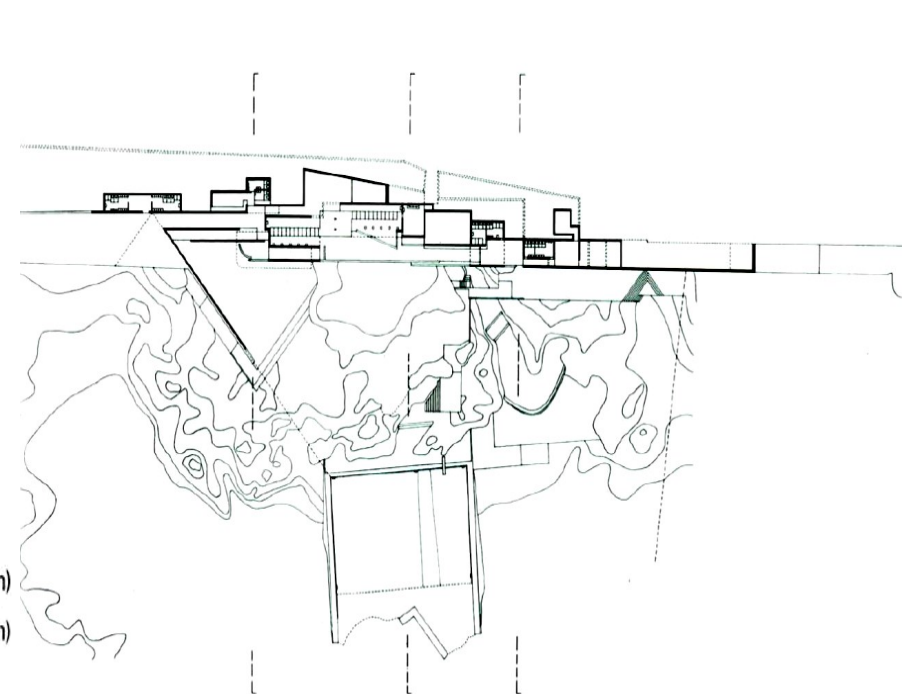
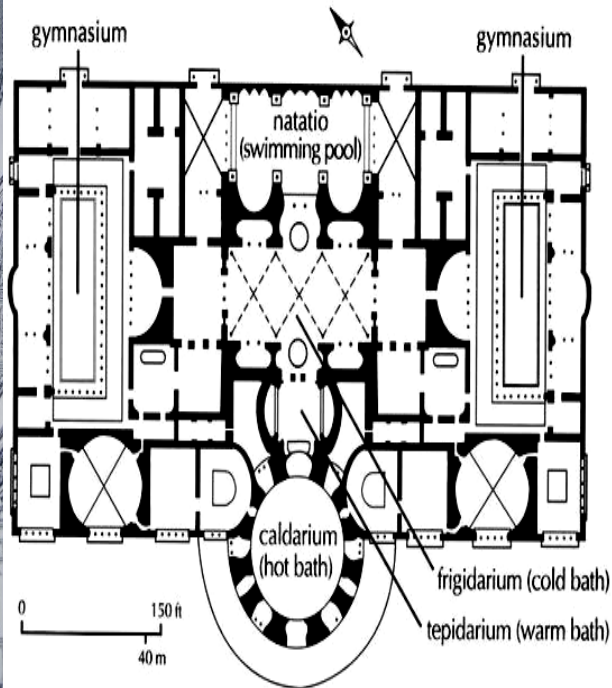
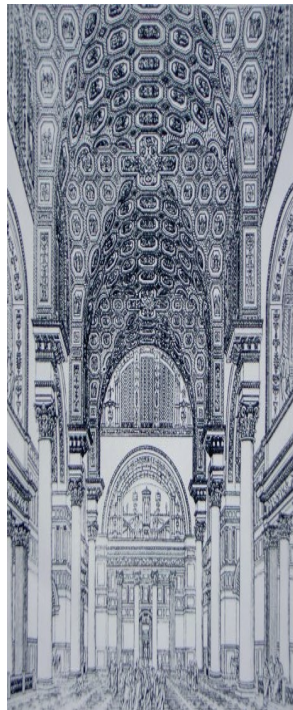
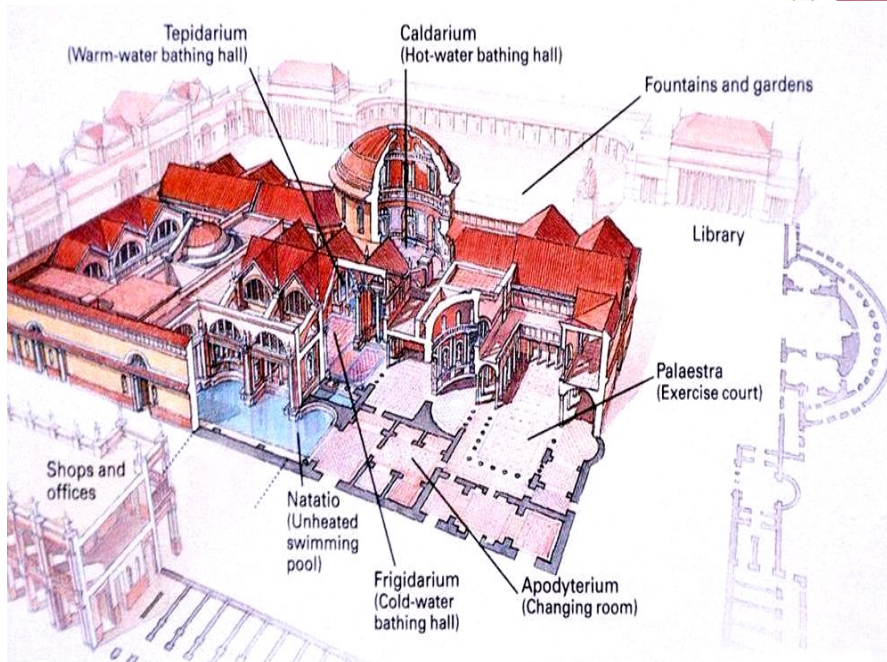


Figure 5.7. Baths of Caracalla. www.livius.org .2015.

Figure 5.8. Leca Swimming Pool. www.galinsky.com .2011.

5.4 HISTORICAL PRECEDENTS

5.4.1 BATHS OF CARACALLA, ROME, ITALY

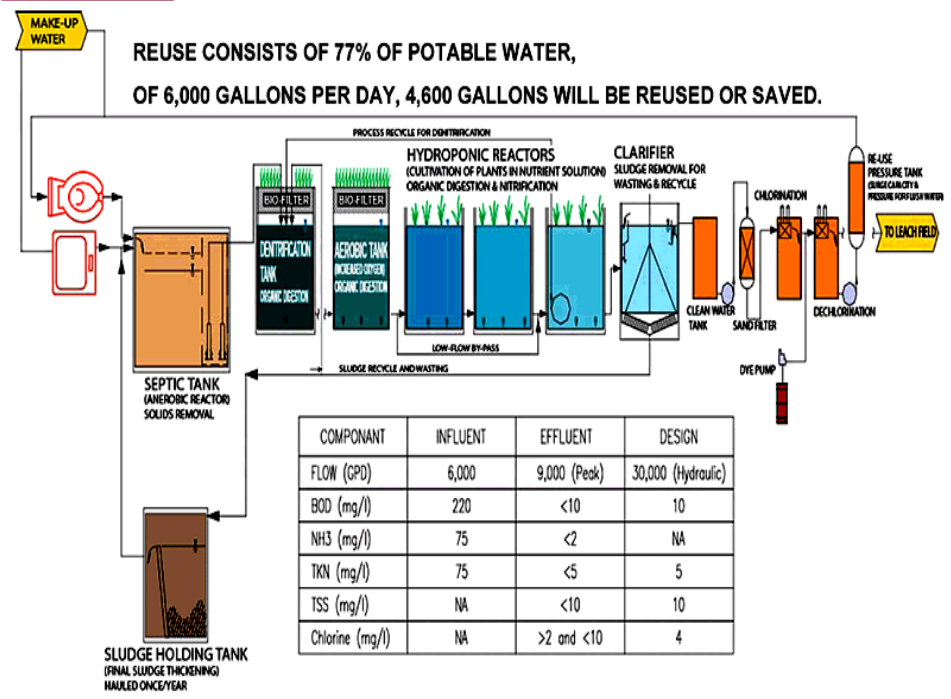
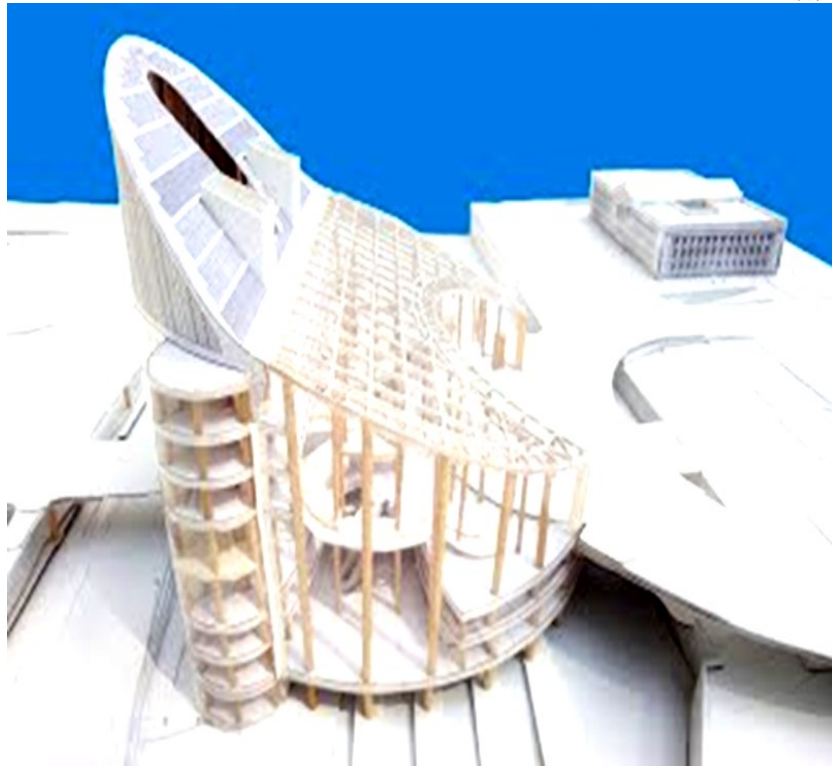
The Baths of Caracalla (see Figure 5.7) were programmed with swimming pools, exercise yards, a stadium, steam rooms, libraries, meeting rooms, fountains and other amenities that were formally enclosed with garden courtyard spaces (Castex, 2008: 5). The stereotomics of the building and how it facilitated the internal circulation regarding the pool spaces was a major architectural structuring device (Castex, 2008: 5). Arranged to either side of the main axis were offices, service rooms and exercise courts (Castex, 2008: 6). Surrounding the bathing block was a formal garden that included fountains, a stadium with seating for spectators and subsidiary structures such as libraries, meeting halls, and shops (Castex, 2008: 6).

Thick concrete masonry was used to build massive walls to support various roofing structures, covering rooms with different shapes and sizes (Castex, 2008: 7). “Domes, half-domes, barrel-vaults, and groin vaults, also constructed of concrete, created dynamic spaces arranged in artful sequences” (Castex, 2008: 7). Heat for the warm rooms and sweat rooms was provided by double walls and spaces under the floors whereby hot air was introduced (Castex, 2008: 8).

5.4.2 LECA SWIMMING POOL, PORTUGAL

This project (see Figure 5.8) is located between the main boulevard and boardwalk along the coast of the Atlantic Ocean and the natural seashore, which consists of sandy beaches with rocky outcrops (Hensel and Turko, 2015: 159). Between the boulevard and the beach the terrain drops a few metres, a change that is accommodated by a retaining wall (Hensel and Turko, 2015: 159). “The swimming pool’s facilities are placed against this wall, and due to the sectional change, they are not immediately visible from the boardwalk” (Hawley, 2013: 80). Ramps lead down to the facilities, which are expressed as in-situ concrete that integrate with the external walls and the roof (Hensel and Turko, 2015: 159). “The choice of materials creates the experience of a gradual change from the boardwalk towards the swimming pool’s facilities” (Hensel and Turko, 2015: 159).

The intervention provides an example of a concealed threshold, where the pools cut into a retaining wall and the rocky edge of the shore, providing no clear definition between the natural and the artificial, or public and private space (Hawley, 2013: 80). The pools fill and empty according to the tide to create a dynamic rhythm of multiple edge conditions that uses the site’s contours (Hawley, 2013: 80).



LIVING MACHINE FLOW DIAGRAM

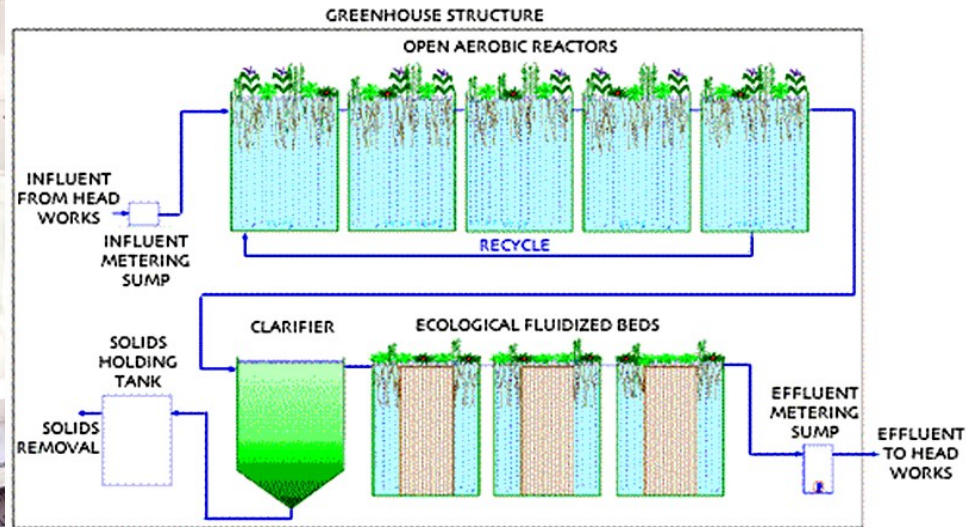


Figure 5.9. Zero-Energy Concept Building. <https://sites.google.com/site/zeroenergyconceptbuilding/>. 2015.

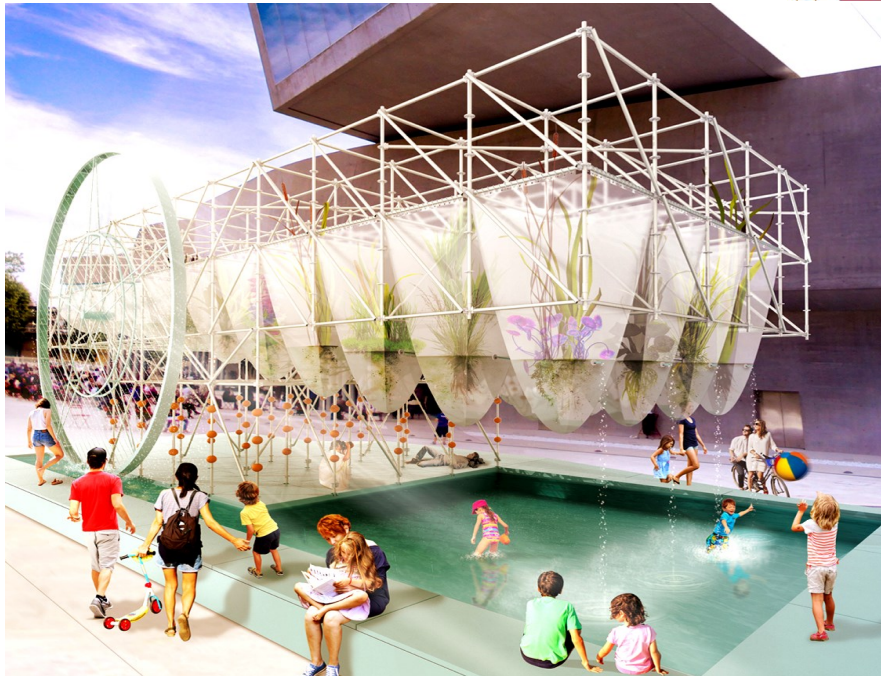
5.5 LIVING MACHINE PRECEDENT

The Lakefront Station, (Cleveland, United States) is an example of a Zero-Energy Concept Building, (ZECB), (ZECB Proposal, 2015), with the possibility of public funding. The concept is derived from producing the energy it needs to function with locally available renewable resources coupled with the efficient use of sustainable building technologies (Figure 5.9). It highlights the systematic arrangement of components for making restorative interior environments (ZECB Proposal, 2015). It simultaneously applies natural methods including Fixed-Film Ecology (FFE) for waste water purification.

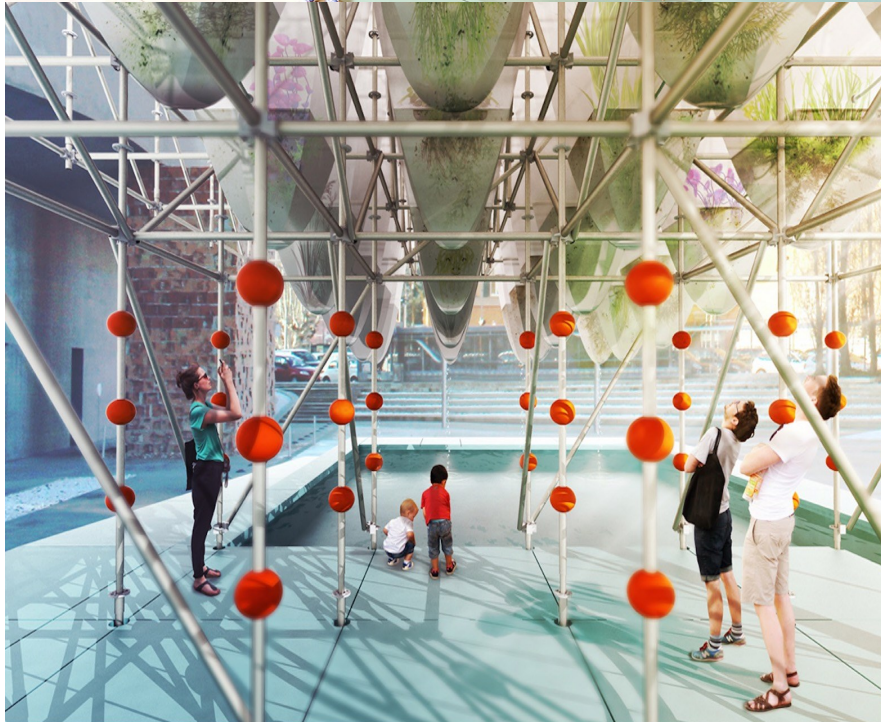
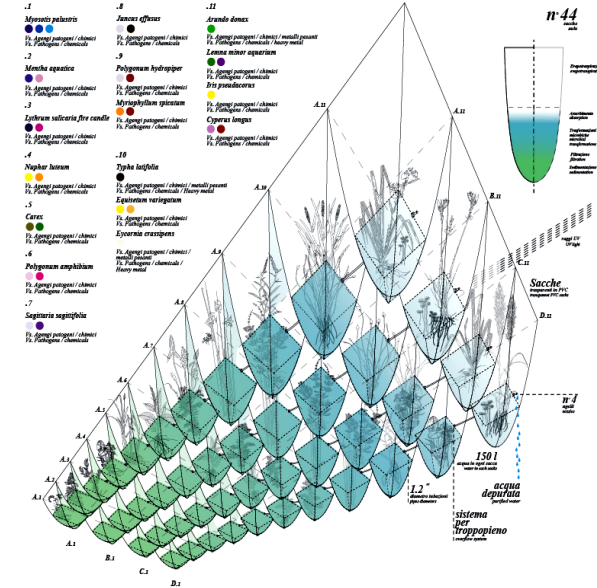
The FFE purified water is used in multiple ways, through endless cycling by natural purification methods defined as a series of wetland tanks. Tanks are arranged as a natural water purification system with the developmental input of biologists Woods Hole and John Todd (ZECB Proposal, 2015). The clarifier, a frosted glass cylinder is considered the core instrument of the Living Machine. With domestic greywater entering the top which is filled with several rings consisting of a sand and chlorination filtration system, illustrated in further detail (ZECB Proposal, 2015). The water purification process is publicly displayed and considered a significant architectural element in this typological 'greenhouse' building (ZECB Proposal, 2015).

The technological configuration is summarised as follows (ZECB Proposal, 2015):

- Eco Living Machine natural water purification system with clarifiers.
- Eco-Living Machine layout for Lakefront Station includes two, separate streams of FFE tanked wetlands.
- A single stream producing non-potable water in a week as per the diagram. (see Figure 5.9).
- The second stream producing potable drinking water in a week is a hybrid development of the Living machine flow diagram. (see Figure 5.9).
- Reduce potable usage for sewage by 100% low flow WC, urinals, and by on-site Eco-Living Machine water purification system.
- 100% water treatment purification for all water located on an urban site.
- FFE tanked wetlands water purification system, can self-sustain water purification for its own water use and the neighbouring County Courthouse and City Hall.



Albula[®]
sistema fitodepurativo
phytoremediation system



Albula[®]
dettaglio prospetto
elevation detail

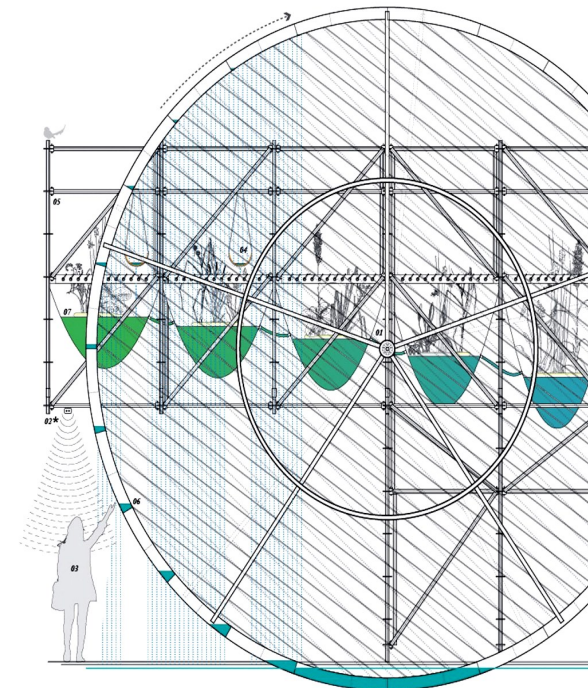


Figure 5.10. Albula installation, DeltaStudioArchitecture, 2016.

5.6 REGENERATIVE PRECEDENTS

5.6.1 ALBULA INSTALLATION, ROME, ITALY

Albula (see Figure 5.10) is an interactive device that addresses the urban pollution crisis and the deterioration of the Tiber River (DeltaStudioArchitecture, 2016). The Albula proposal activates a part of Rome's urban space. It continues a historical approach regarding the Tiber's river mills in the past (DeltaStudioArchitecture, 2016). . Historical mills used the river's kinetic energy for necessary agricultural activities. The Albula in contrast, uses "reverse ecology" and draws on human activity to purify the Tiber's river water and distribute it to the city (DeltaStudioArchitecture, 2016).

The project applies an integrated phytoremediation system, responds to public meeting activities in the urban square, and climatic cooling or shading aspects of the site. The system manages a "10 000 litre water capacity" (DeltaStudio Architecture, 2016). "The clean water distributed at the end of the cycle complies with current health and environmental regulations" (DeltaStudioArchitecture, 2016). The phytoremediation structure consists of a water wheel and tank, a platform, a t-profile scaffold structure and suspended phytoremediation pockets which behave as natural pumps to absorb pathogens, chemicals and heavy metals (DeltaStudioArchitecture, 2016).

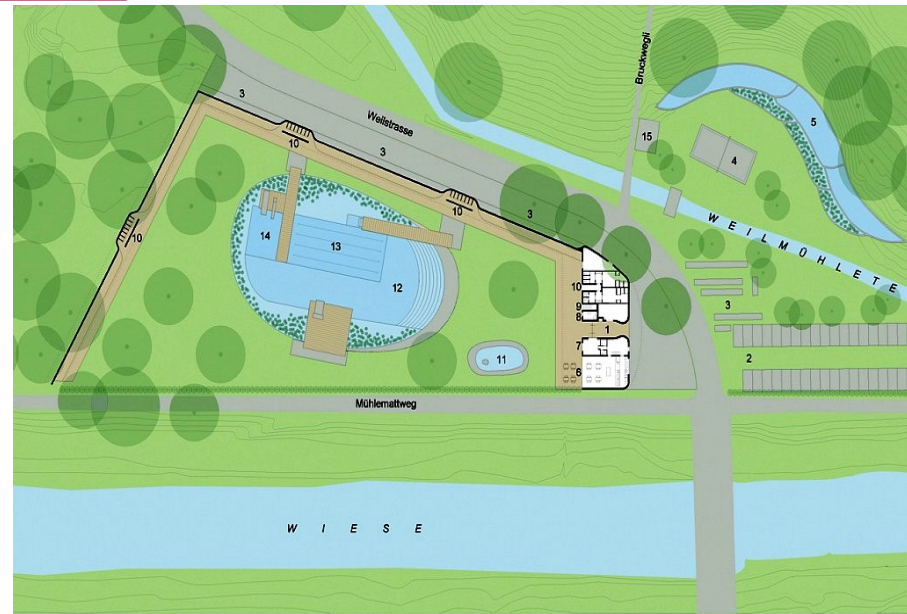
5.6.2 NATURBAD, RIEHEN, SWITZERLAND

Herzog & De Meuron's unbuilt proposal for a chlorine operated pool was redesigned (see Figure 5.11) to use the peripheral landscape and river system to purify the pool water as explained by Bridgette Meinhold, (inhabitat.com, 2013). "Natural water filtration" processes allowed the designers to make an improvement on their previous pool design (www.inhabitat.com, 2013). The program of the site allows a "lap pool, diving area, recreational swimming pool and children's pool" (inhabitat.com, 2013). "These are serviced by ablution and changing facilities adjacently placed near the pool" (inhabitat.com, 2013). The pool applies a "sequence of filters to purify and restore the pool water" as explained by Meinhold (inhabitat.com, 2013).

Debris in the form of dust, dirt, "grease and hair are trapped in the first sequence" (inhabitat.com, 2013). The water is next conveyed across the street to the "regeneration area where water lilies and irises work with aquatic sediment to filter and absorb bacteria and other compounds" (inhabitat.com, 2013). The regeneration system distributes clear water which is returned back to the pools. The pool and its regeneration biotechnology is able to process a user capacity of 2000 people on a daily basis (inhabitat.com, 2013).



- Planungsperimeter, Bereich A + B
- Zone für Nutzungen im öffentlichen Interesse (NöI)
- Grünzone
- Wald
- Gewässer
- Gebäude



- | | | | |
|-------------------|-------------------------|---------------------------------|----------------|
| 4 Beachvolleyball | 7 Bademeister/Kasse | 10 Garderoben/Duschen/Toiletten | 13 Schwimmerb |
| 5 Filteranlage | 8 IV-Toilette | 11 Planschbecken | 14 Sprungbecke |
| 6 Café | 9 Treppe zum Sonnendeck | 12 Nichtschwimmerbecken | 15 WC |

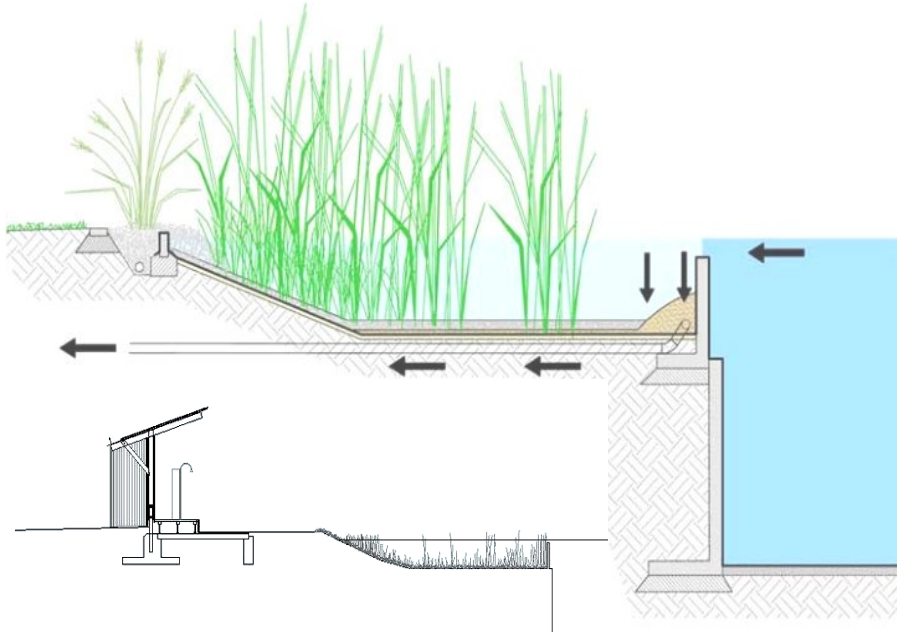


Figure 5.11. Riechen Naturbad by Herzog and De Meuron, www.inhabitat.com. 2013.

5.7 THERAPY PRECEDENTS

5.7.1 TELETÓN TREATMENT CENTRE, PARAGUAY

The Teletón Treatment Centre (Teletón Rehabilitation Centre, 2014) for disabled children in Paraguay integrates reclaimed building materials in a holistic manner, as demonstrated in Figure 5.12. The Teletón Association is a charity organisation that primarily works with children who have general disabilities and spinal injuries (Harper, 2013). The centre accommodates programmes such as physiotherapy courses and educational projects (Harper, 2013).

The centre is arranged as a group of masonry buildings embedded within a lush tropical garden (Harper, 2013). The main building is divided into two parts by courtyards and has private counselling rooms, play spaces, and physiotherapy facility rooms (Harper, 2013). From the south-east corner of the building, a path leads away to a separate hydrotherapy pool which is enclosed in a masonry shell (Harper, 2013). On the interior side, “three vast inverted brick pyramids rise from freestanding columns concealing emergency water tanks” for use in times of drought (Harper, 2013:n.p.).

5.7.2 BASEL REHAB CENTRE, SWITZERLAND

The rehabilitation centre engages with natural building materials and the site’s micro-climate as an alternative in making a therapeutic intervention (herzogdemuron.com, 2016). The simple rectilinear design (see Figure 5.13) makes navigation comfortable for the building’s users (herzogdemuron.com, 2016). The relationship between interior and exterior spaces was considered as the primary design informant (herzogdemuron.com, 2016).

The complex is conceived from the exterior to the interior and is considered a permeable building (herzogdemuron.com, 2016). The complex is approached from an outdoor courtyard space. From the main reception, various inner courtyards provide orientation: one is filled with water, another is clad in timber, the bathhouse is placed in the third courtyard. “The diversified design offers patients and their relatives a building that does justice to the complexity of their needs” (herzogdemuron.com, 2016). Public and private spaces relative to the courtyards allow for public and private spatial activities or sessions.

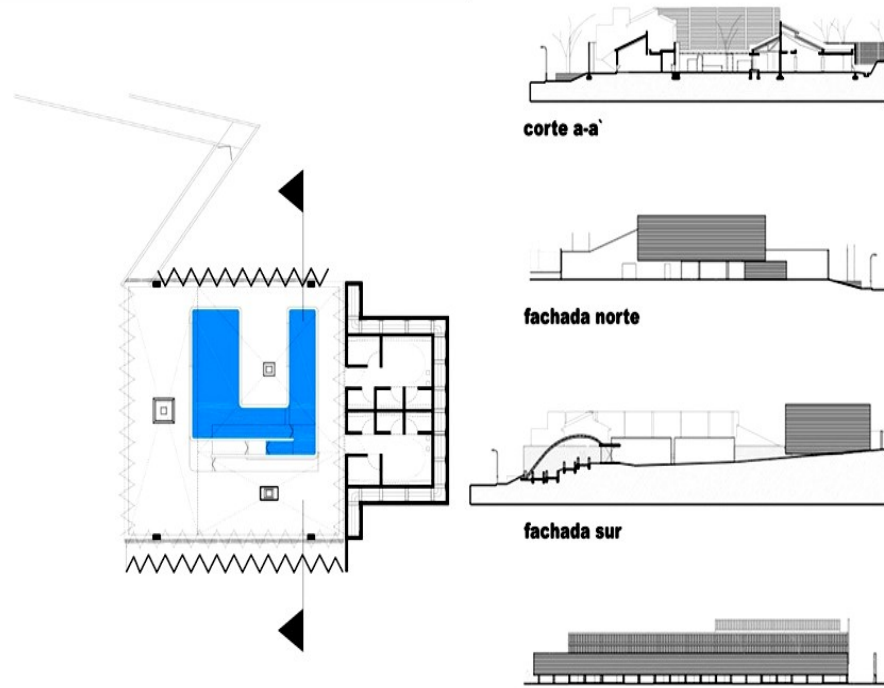


Figure 5.12. Teleton Hydrotherapy Centre. architectural-review.com. de. 2015.

Figure 5.13. Basel Rehab Centre. tanczostibor.wordpress.com. 2013.

5.8 CONCLUSION

5.8.1 PLATFORMS OF EXCHANGE

The Lakefront Station conceptual proposal, (see Figure 5.9), demonstrates another example of where designers and architects use natural technologies in conjunction with building systems in order to provide necessary eco-systemic services.

5.8.2 RIVERSPACE AND CONNECTIONS

Herzog and De Meuron's design of the Naturbad Riehen, (see Figure 5.11) which was only implemented in 2007, showcases the experience of bathing in a regenerative river space. It provides insight into the experience of a river space and how to maximise the potential of pool spaces adjacent to a river.

5.8.3 HEALING AND HYDROTHERAPY

The Teletón Hydrotherapy Centre (see Figure 5.12) expresses a regionalist response to design in its use of reclaimed materials (Harper, 2013). The architects who designed this centre showed a clear understanding of the basic requirements of planning for people with disabilities, and they used a simple approach to space making, resulting in the creation of a comforting local space. This is likewise reflected in the REHAB centre in Basel (see Figure 5.13) as seen by natural courtyard landscapes that combines with the building in a clearly visible but simple manner.

5.8.4 CONNECTION TO WATER

The Liesbeek River Restoration Project (see Figure 5.3), discussed above, considers the Liesbeek River as a part of its overall urban condition, as well as its formative history. The project starts with the same poetic narrative that has been identified with regard to the Apies River.

Furthermore, the Liesbeek River Restoration Framework can be said to be a response to negative urban conditions and physical issues which were identified by the relevant role players, which, again, is similar to what has been found regarding the Apies River. The view of the river as a connective element in a disconnected city centre can be applied both to the Apies River and the Liesbeek River. The precedents discussed above provide a tangible example of the applicable conceptual relationships which will be employed by the proposed intervention.

5.8.5 SYNTHESIS

The discussed precedents provides a background for implementing the natural, poetic, hydrological, functional, centroidal, linear, user and movement layers necessary for the conceptual stage of the dissertation process (see Figure 5.14). It initially shows the synthesis of these relationships and the respective layers as a conceptual strategy for the project site.

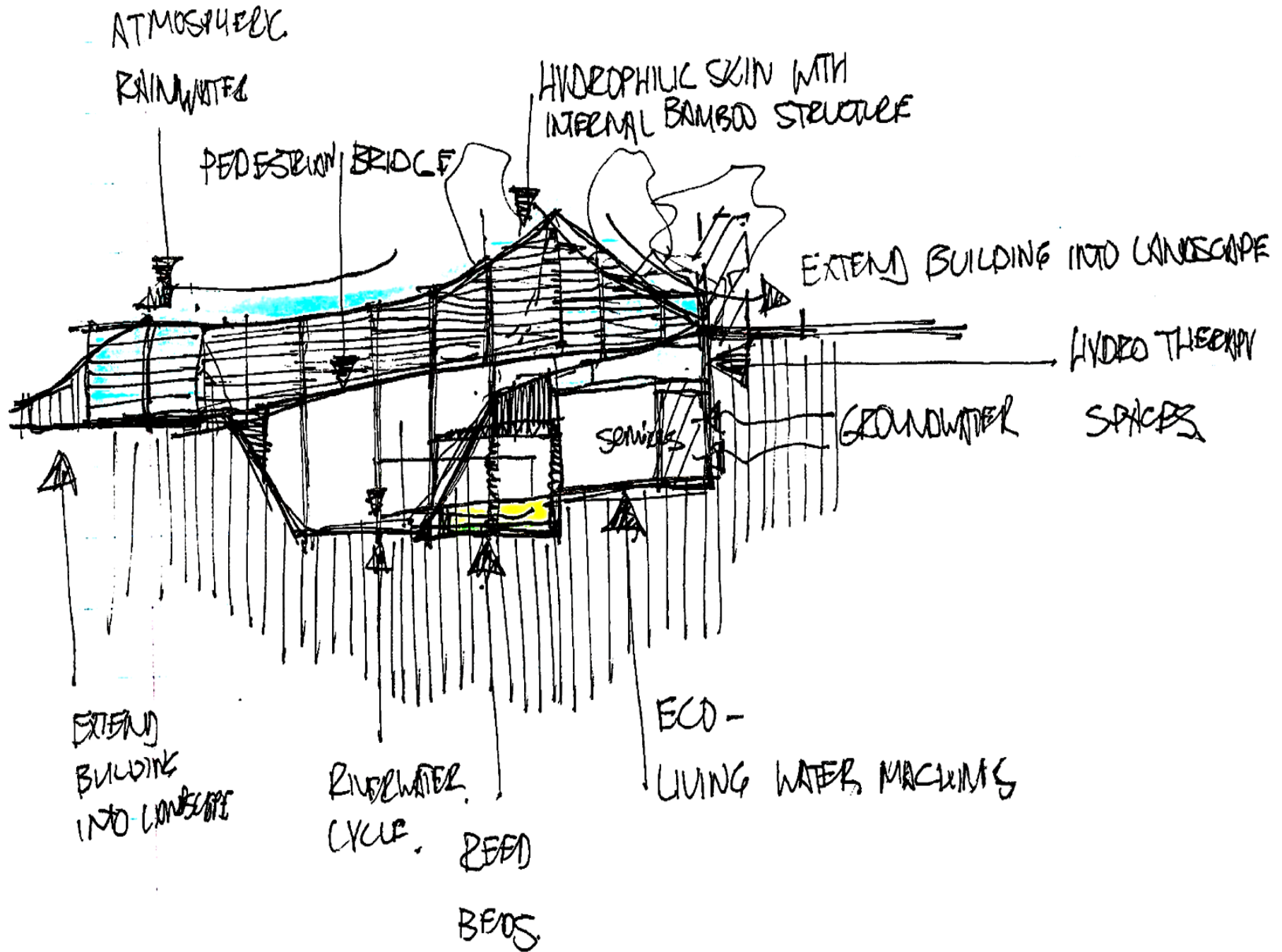


Figure 5.14. Basic synthesis sketch of precedent elements for a regenerative bio-historic waterscape. Author. 2016.

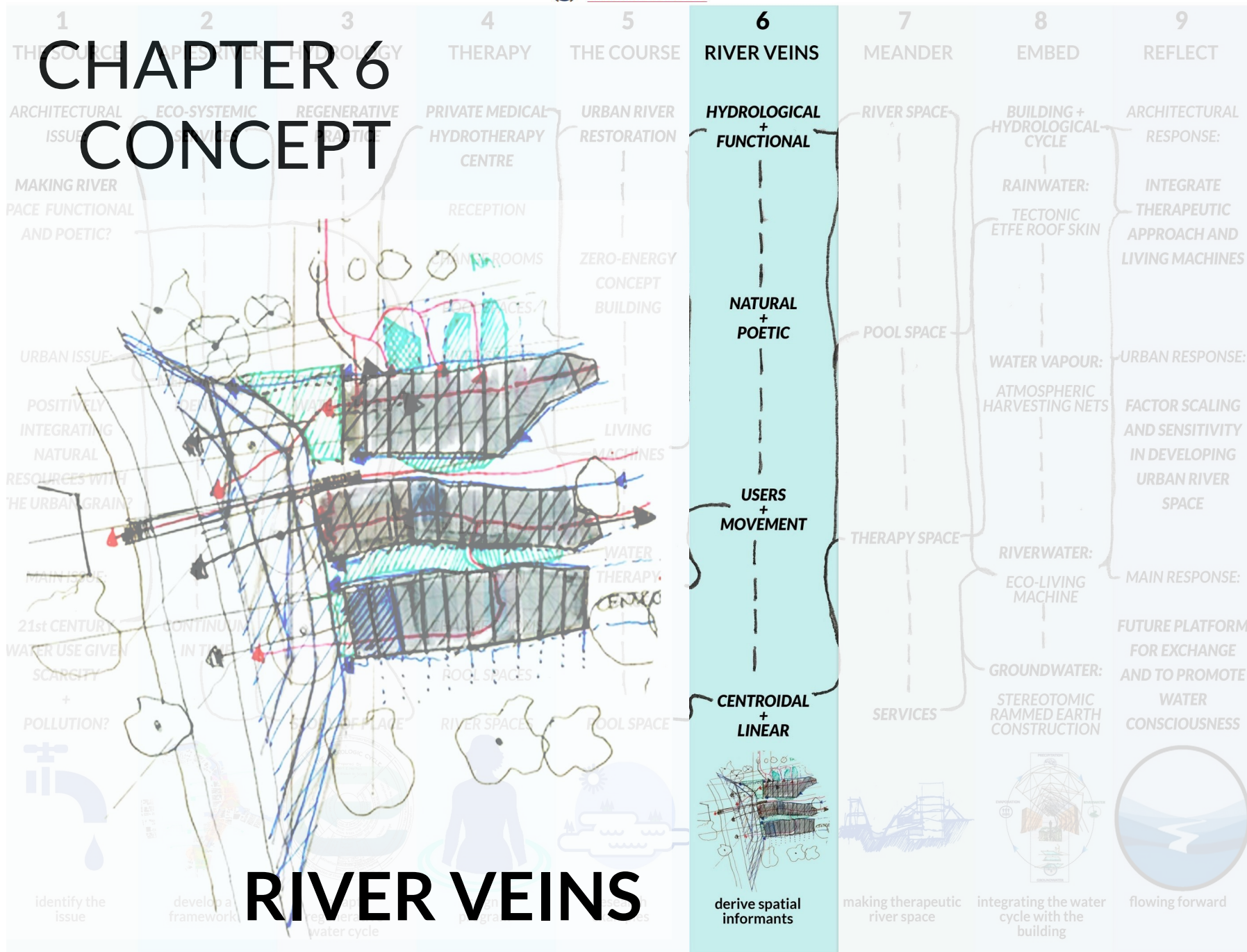


Figure 6.1. Conceptual parti sketch demonstrating potential spatial river qualities . Author, 2016.

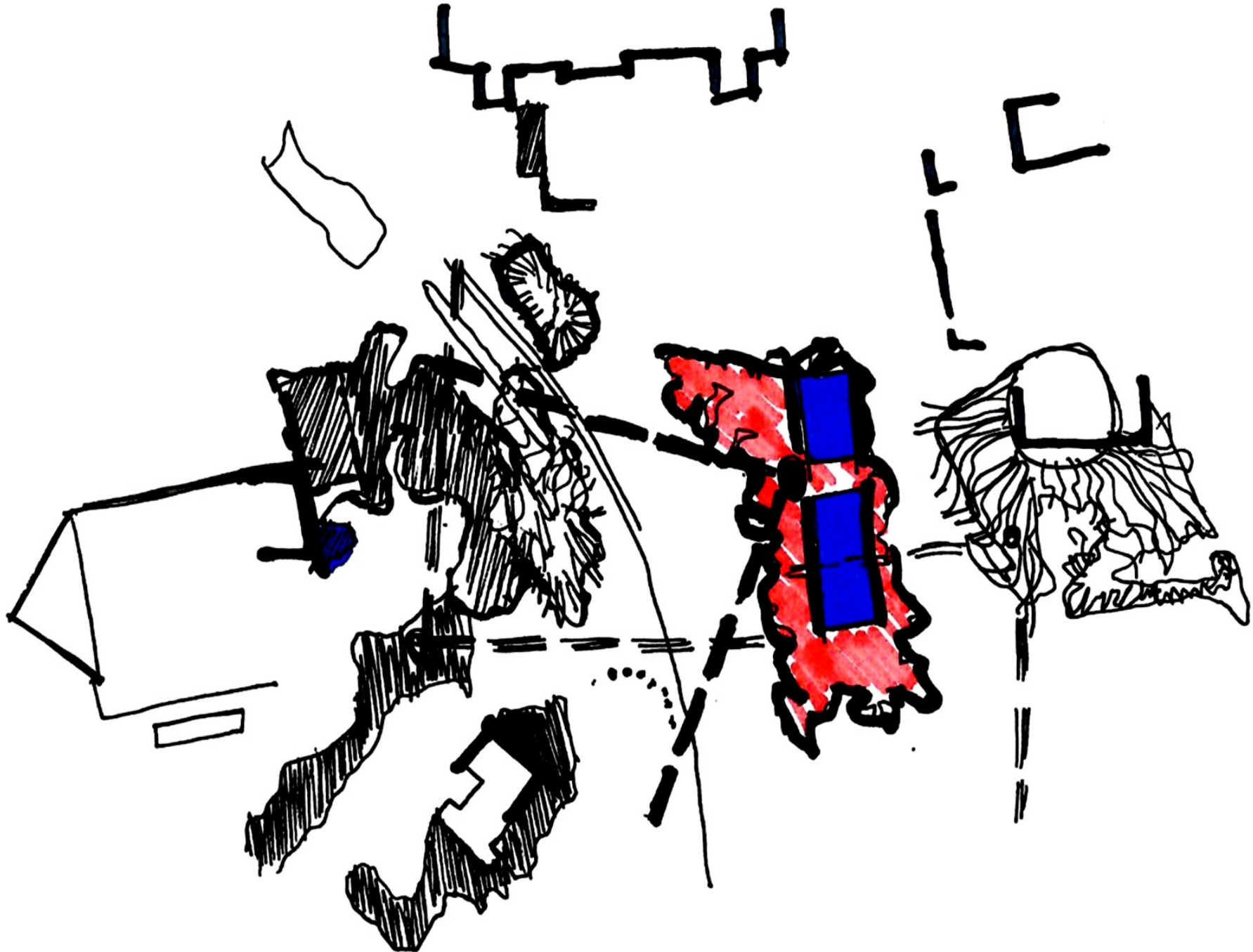


Figure 6.2. Conceptual sketch of experiences of site with natural features and viewpoints. Author, 2016.

6.1 CONCEPT BASIS

The intervention proposes to combine the lost biological, historical, and present programmatic conditions surrounding a section of the Apies River and to embed the site within the hydrological cycle of collecting and cleansing water in order to create spatial experiences. This approach is similarly outlined by Mathur and Da Cunha (2014:2). It would passively raise awareness regarding the general issues of water use and conservation. These factors were conceptually determined from the results of an experiential mapping exercise, shown in Figure 6.2. River water, rainwater, and groundwater are three elements that are found on site and that characterise the hydrological cycle, as well as demonstrate regenerative potential. The proposed intervention is largely aimed at Pretoria's urbanites, and, through an adjustment of their experience of the river space, it is intended to heal and regenerate the surrounding Prinshof Medical District.

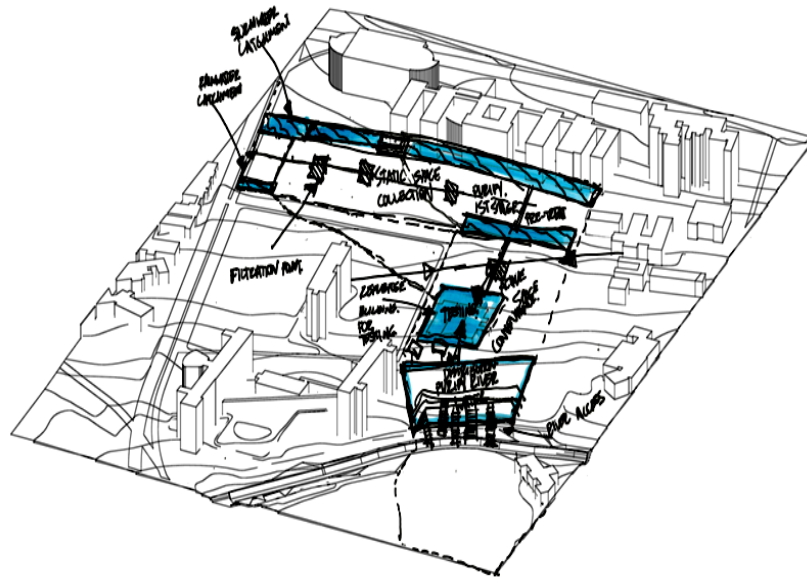
6.1.1 PROJECT IDEAS

The primary idea concerning the proposed intervention resides in enabling regenerative methods that would better integrate the Apies River into Pretoria's natural and artificial landscapes. The outcome is informed by a poetic approach towards water-conscious architecture, as stated by Moore and Keim (2004:25).

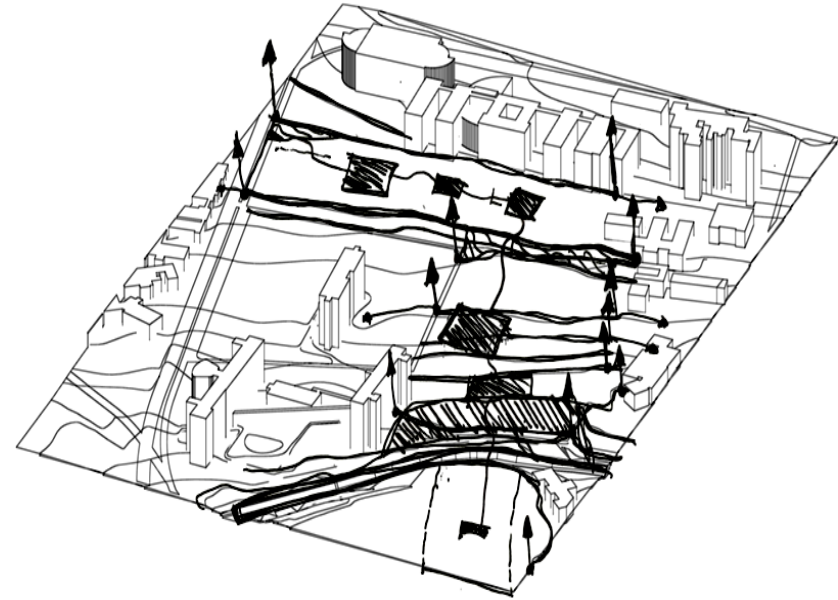
By responding to spatial and surface conditions in the natural and man-made realm and by understanding the process of systemic exchanges, the project aims to amalgamate the natural and man-made system in a seamless manner. The experience of the hydrological cycle with regard to the study area will be determined by the way in which surfaces and spaces are manipulated. The initial experience of the site will become a reference point for the experience of the river as a whole. This experience will be coupled with the framework requirements set out in the urban vision (refer to Chapter 2) and will allow the spatial development of the hydrotherapy centre.

6.1.2 FINAL CONCEPT

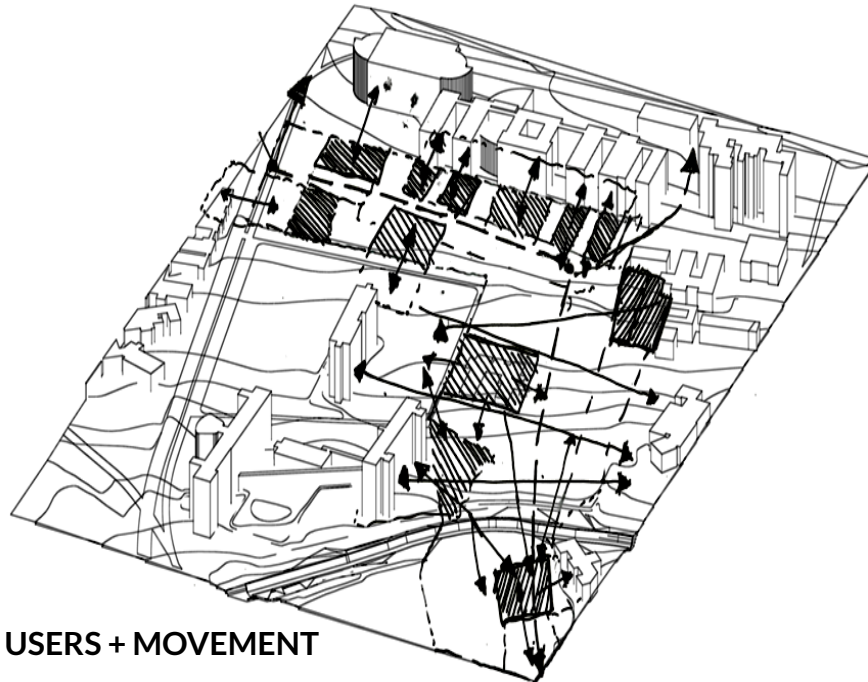
The design response attempts to create an approach that allows urban river space to be created. If future architectural and urban interventions do not respond to and interact with the Apies River, Pretoria's urban condition of peripheral urban sprawl and inner city degeneration will continue. By spatially responding to the river's condition, it can be considered as effectively responding to its physical condition. A public architectural intervention is proposed whereby urban dwellers are exposed to and are able to access and appreciate the Apies River.



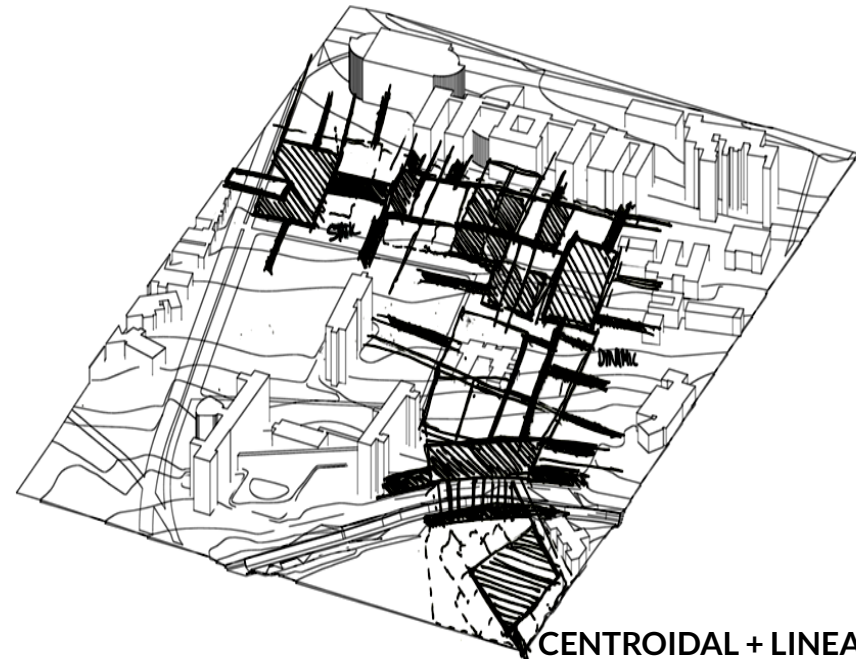
HYDROLOGICAL + FUNCTIONAL



NATURAL + POETIC



USERS + MOVEMENT



CENTROIDAL + LINEAR

Figure 6.3. Elementary spatial sketches showing potential extensions of mapped elements across the larger site, Author, 2016.

6.2 DESIGN INFORMANTS

The concept intends to reconnect urban dwellers and nature with water, as conceptually shown in Figure 6.3. These layered, conceptual relationships start to manifest in a broad conceptual outline of how the site connects the river space with its surroundings, albeit in a strictly radial fashion relative to the river. This connection between the river and its surroundings is demonstrated in Figure 6.4. The specific design generators, namely natural + poetic, user + movement, hydrological +functional, and centroidal + linear, are discussed below in more detail.

6.2.1 NATURAL + POETIC

By contouring the intervention and by using the site's nature slope, the design will inform the formal and spatial structure of the waterscape. When comparing the current physical condition of the site with speculative conditions, the bio-historical narrative of the site can be seen to continue the narrative of place.

6.2.2 USER + MOVEMENT

The SG Lourens Nursing College, the Netcare Femina Hospital, the Cerebral Palsy School, and the Medical Research Council are part of the Prins Hof Medical District, as mentioned above. The intervention could thus be seen as a connector that is centrally located in relation to these institutions.

6.2.3 HYDROLOGICAL + FUNCTIONAL

The supply of ample amounts of water links embeds potential places and spaces of exchange within the hydrological cycle. With regard to the proposed intervention, natural cleansing systems could be used to treat polluted waste water. The site's natural drainage can be used in addition to impervious surface area to form a rainwater harvesting system. All of the water from potential roof surfaces can be collected within local and centralised cistern courtyard spaces to supplement the potable water supply for waterscapes and public use.

6.2.4 CENTROIDAL + LINEAR

The centroidal and linear spaces can be seen in relation to the mapping of systemic natural and built elements found on site. The arrangement of these spatial vessels should be considered in a hierarchical manner in relation to the river. The centroidal activity spaces should develop an off-centre relationship to the main linear spaces.

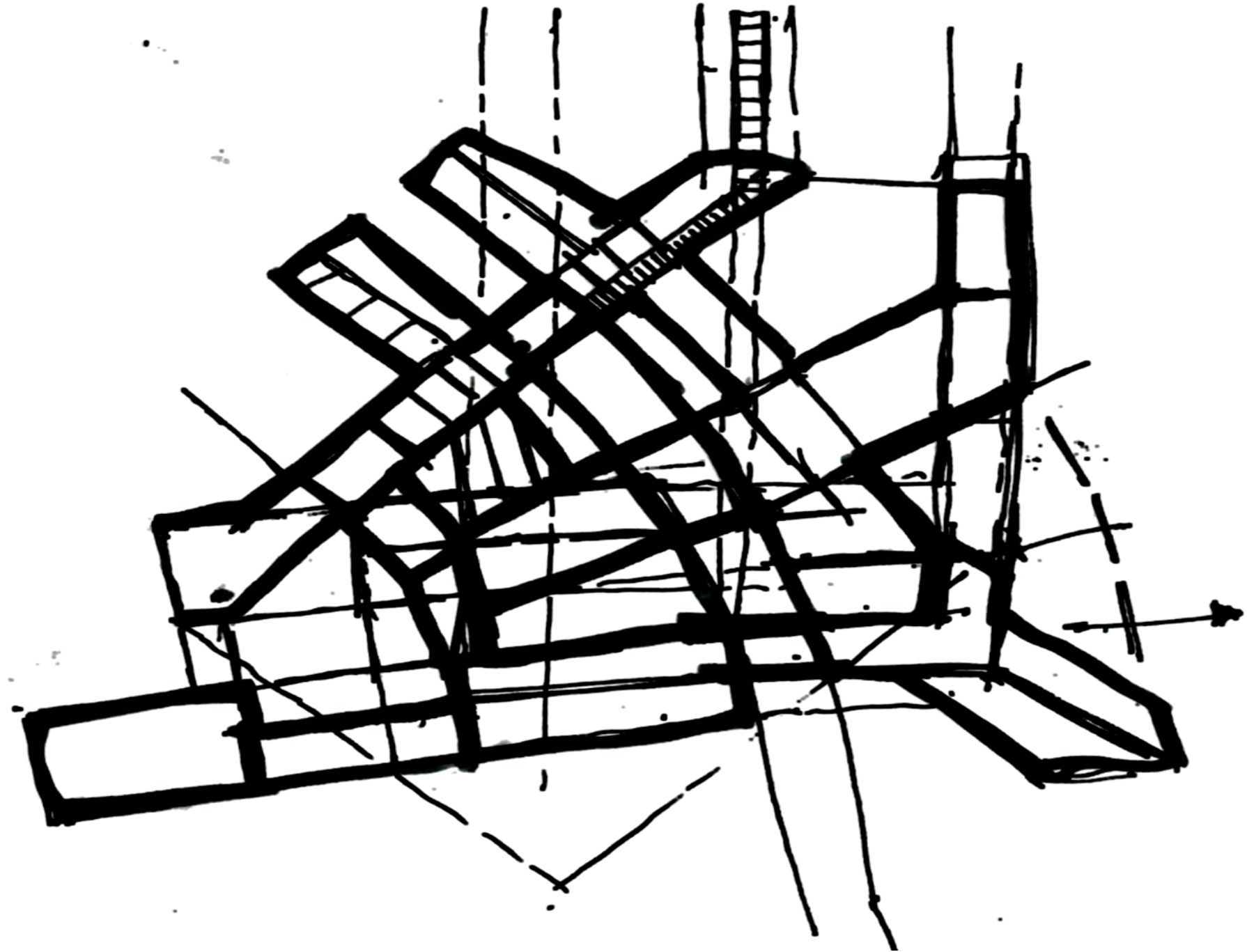


Figure 6.4. Initial parti diagram showing the spatial potential for allocating experiential river spaces, Author, 2016.

6.3 SPATIAL APPROACH

6.3.1 HYDROTHERAPY

Hydrotherapy refers to the use of water in therapy and has distinctive attributes in the treatment and recovery of certain diseases and illnesses (Campion, 1997:146). Water stimulates both aesthetic and physical responses, with physical responses leading to healing of both the body and mind of individuals. Internal centroidal and linear spaces within the proposed hydrotherapy centre can accommodate this programme and respond to the requirements of various institutions of the Prinshof Medical District.

6.3.2 CONNECTION TO WATER

Water influences the human mind and inner spirit, as its qualities are extraordinarily soothing and refreshing (Moore & Keim, 2004:26). The meditative condition induced by watching moving water washes away stress and revitalises our natural physical and emotional reserves. Placid water bodies such as lakes, which are sprawling, pure, and isolated, are tranquil spaces. Water moves at different speeds in various ways, and, it has been shown that slow moving water induces a calming effect (Moore & Keim, 2004:24).

6.3.3 CONNECTION TO THE RIVER

Rivers and canals are natural energy pathways of the earth's hydrological system as described by Prominski, Stokman, Zeller, Stimberg and Voermanek (2012: 18). These pathways connect and converse across regions and different places (Prominski et al., 2012: 18). River flows establish a continuous hydrological movement that interprets ideas and physical countenances while connecting places and time, as explained by Walter Hood (cited in Mathur & Da Cunha, 2014:83). Rivers define kinetic and dynamic bodies of water in a manner that constantly changes (Prominski et al., 2012: 19).

In this way, the centroidal and linear spaces that will be created in the proposed hydrotherapy centre to respond to the needs of the Prinshof Medical District open up and give way to the natural experience of the river.

6.3.4 SYSTEM OF EXCHANGES

The functional embeddedness of the proposed building in the hydrological cycle aligns with the unknown or invisible ecosystemic systems found on the site. The respective qualities identified in these spatial approaches manifest respectively in the plan drawing (see Figure 6.5).

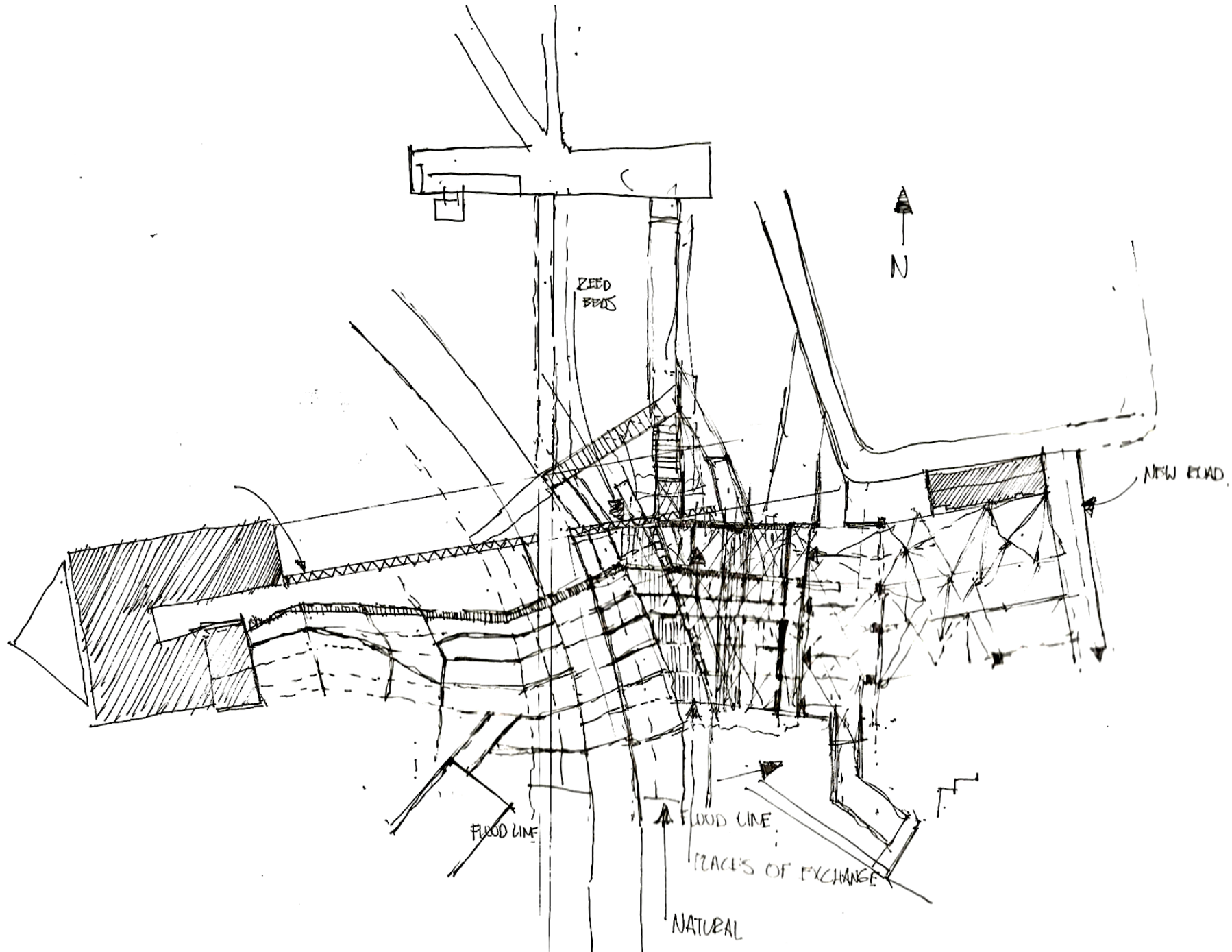


Figure 6.5. Design development plan sketch, Author, 2016.

6.4 SUMMARY

Users of the proposed building should experience the hydrological cycle in a passive manner, with linear spaces used to reconcile the descending spatial condition and to unify the lower and upper conditions of the overall river space. The spatial potential of the site, along with the conceptual generators related to the project, can be simplified as being translating either into exterior natural therapy space or interior hydrotherapy space, as shown in Figure 6.4.

6.4.1 INTERIOR POOLS

The space can be seen as consisting of three veins which are derived from the exercise of mapping the site (refer to Chapter 2). The spaces will have a main linear circulation path to grant access to the main public pool spaces on each level, as well as to the private therapy rooms. The service spaces required for the storage of groundwater and minor building services will be found at the end of the main public pool spaces. The river space is located adjacent to the core of the intervention.

Eco-living machine clarifiers, such as those used by the Lakefront Station in Cleveland, Ohio, United States (see Figure 5.9) will be used to purify the water for the building's use and may be placed on the interior or the exterior of the building.

The constructed wetlands, which are additional components of the eco-living machine, should be taken into account (Lohan & Kirskey, 2012: 12) and should thus either be located in tanks or constructed as an exterior landscape element. The constructed wetlands could potentially be located adjacent to the river

6.4.2 EXTERIOR RIVER SPACE

The tectonic roof structure of the hydrotherapy centre would cover the base of the stereotomic space containing the hydrotherapy functions. Underneath the roof skin, the internal frame structure would reach out into the landscape and facilitate the creation of external spaces where outdoor therapy spaces would be fully embraced by the site's natural spaces. The building structure will flow into the landscape, thus emphasising its integrative relationship with the site.

6.4.3 CONCLUSION

The rainwater from the building would be fed naturally into the surrounding threshold spaces of the site during rainy seasons. Enclosed water storage tanks would retain the remainder of the water for landscaping purposes. Conceptually read as part of the tectonic rainwater capturing skin and a stereotomic groundwater facilitating structure, the building alludes to the integration with the site's hydrological cycle (see Figure 6.6).



Figure. 6.6. Wireframe sketch showing space as stereotomic vs. tectonic in order to manifest the hydrological cycle, Author, 2016.