

A river remembered

*reconnecting to landscape, memory
and place-making through water routes*

*Josephine Dalberg | DLBJOS002
MLA Design Dissertation 2019*

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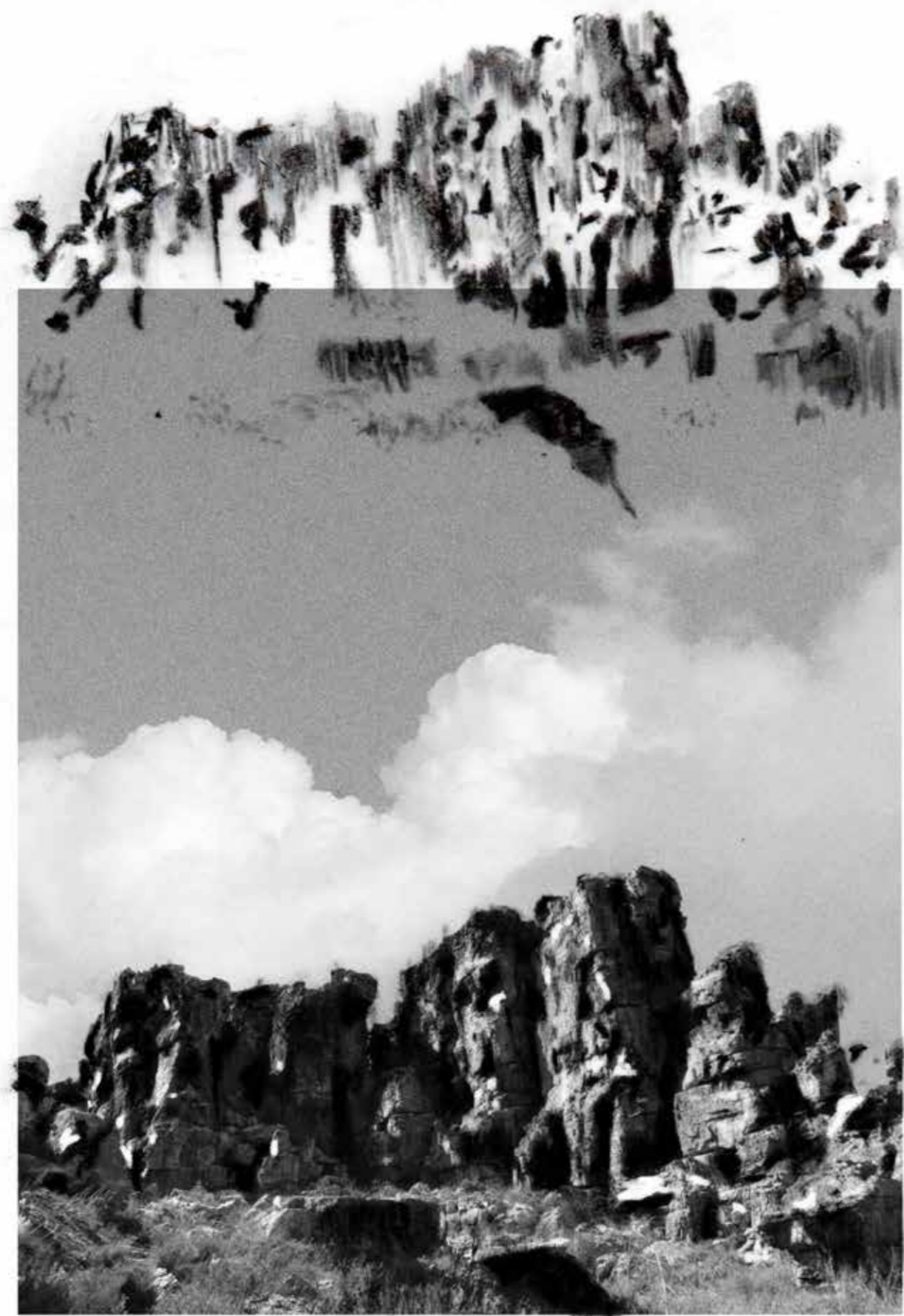
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	Credit Value of Research: e.g., 60/120/180/360 etc.	120
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Project Title	A Living Museum Curating reflection of the intangible in landscape	

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CONTENTS /

Part I // thesis introduction	5
Part II // design research	11
Part III // dissertation	27
Part IV // materials and construction	55
Bibliography	66

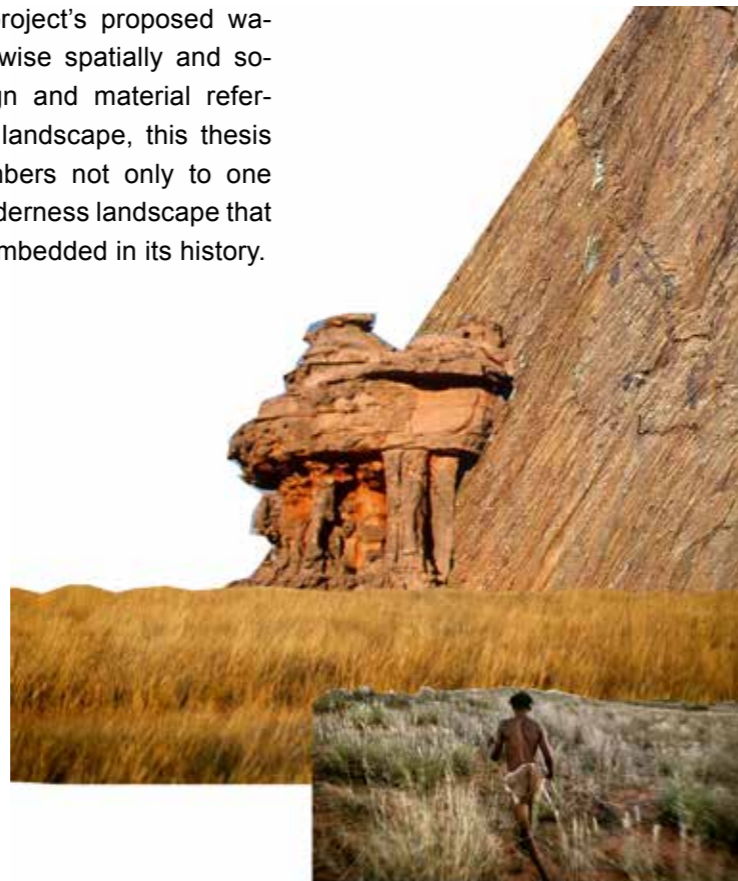
PART I

INTRODUCTION ~

Rooted in the Cederberg region, this thesis looks towards the intangible and deep memory in landscape as concepts that can be harnessed to support an emerging practice of place-making in a community on the outskirts of Clanwilliam. Acknowledging the growing claim to Khoe and San heritage among members of said community, the project found its departure in an investigation into the intangible ties that once connected the Cederberg's indigenous peoples to place.

The research process led to an understanding of the central role that rivers and tributaries have played in human engagement with landscape. In this local context, rivers functioned not only as a vital water resource but also as navigational corridors that cut through the Cederberg's complex mountain range. These were water routes that supported human patterns of movement and gathering whilst simultaneously connecting far reaches of the wilderness.

This thesis resurfaces these landscape memories by introducing a water thread to Clanwilliam that remembers and re-establishes the notion of rivers as movement routes and gathering. Simultaneously, the project's proposed water network would connect this otherwise spatially and socially segregated town. Taking design and material reference from the immediate Cederberg landscape, this thesis hopes to connect Clanwilliam's members not only to one another but also, importantly, to the wilderness landscape that surrounds the town and is so deeply embedded in its history.



“Landscape is therefore a key component of how people perceive, memorise and represent history. It leads to the construction of collective memory of a social group or population, which is one of the sources of identity [...]. In other words, it becomes a physical manifestation of a culture's knowledge and understanding of its past and future [...]. The primary way in which we should view landscapes is thus as a social phenomena.”

- Muller, L. (2008). Intangible and tangible landscapes: an anthropological perspective based on two South African case studies. *South African Journal of Art History*, 23(1), 118-138.

RESEARCH QUESTION ~

How can memory of previous relationships to landscape be projected into a contemporary practice of place and identity making?

Sub-questions |

- / How does one resurface memory which is inherently intangible?
- / How does one represent the intangible?
- / How does one resurface past relationships to environment without dismissing what may be valuable in the contemporary relationships thereof?

AIMS ~

/ To support an existing practice of place-making through the celebration of a relationship with landscape and water.

/ To create a landscape which:

- Weaves together currently separated spaces/ communities.
- Establishes alternative movement routes.
- Establishes public social gathering space in an area that is otherwise void thereof.

Liana Muller (2008) Intangible and tangible landscapes: an anthropological perspective based on two South African case studies, *South African Journal of Art History* 23:1, 118-138

EMBEDDED EXPERIENCE

landscape through the phenomenological lens



“Current landscape phenomenologies” ~

“Memory -- in terms of practices of remembering and commemoration -- has long been a core concern of phenomenological philosophy. And equally questions around materiality have been a touchstone for analysis in this area... Here, the materialities of specific landscapes -- their solidities, liquidities and atmospheres -- can be understood as soliciting and inspiring senses of self... a focus upon individual lives and landscapes *can* enable the forging of connections with wider cultural, historical and political questions regarding the constitutions of landscape. **What we see here are accounts in which landscape’s political and historical resonance -- its paradoxical function as both preserver and eraser of memory -- is accessed via the lens of corporeal and material practices.**”

Wylie, J. (2013). Landscape and Phenomenology. In P. Howard, I. Thompson and E. Waterton (Eds.) *The Routledge Companion to Landscape Studies* (pp. 63) New York: Routledge

CONSIDER ~

“To engage with the material site is to observe. What are the forms, the [colours], the textures, the grain of the landscape? The potential is threefold: it encourages the viewer to shift from visual to physical perception, its tactile presence reinforces local identity, and it connects to historic social structures. The material site engages the senses and asks visitors to consider the material: its texture, the natural process of making it, the cultural process of gathering, transporting and arranging it. It encourages the visitor not only to see a site but also to understand its physical logic.

“Finally, the material content of a site can provide access to intangible cultural relationships with place. The form and structure of a site are often historically connected to a cultural cosmology.

“Through myths and naming, most pre-modern cultures used their landscapes to conceive and order the universe. Although today, we may lack the faith required by such a worldview it nonetheless provides us with a hint of the power of place. And in the face of global climate change, perhaps it provides us with some much-needed humility.”

- Roxi J. Thoren, ‘The deep grain of the inquiry: Landscape and identity in Icelandic art’ 2010



Roxi J. Thoren (2010) The deep grain of the inquiry: Landscape and identity in Icelandic art, *Journal of Landscape Architecture*, 5:1, 38-51, DOI: 10.1080/18626033.2010.9723429

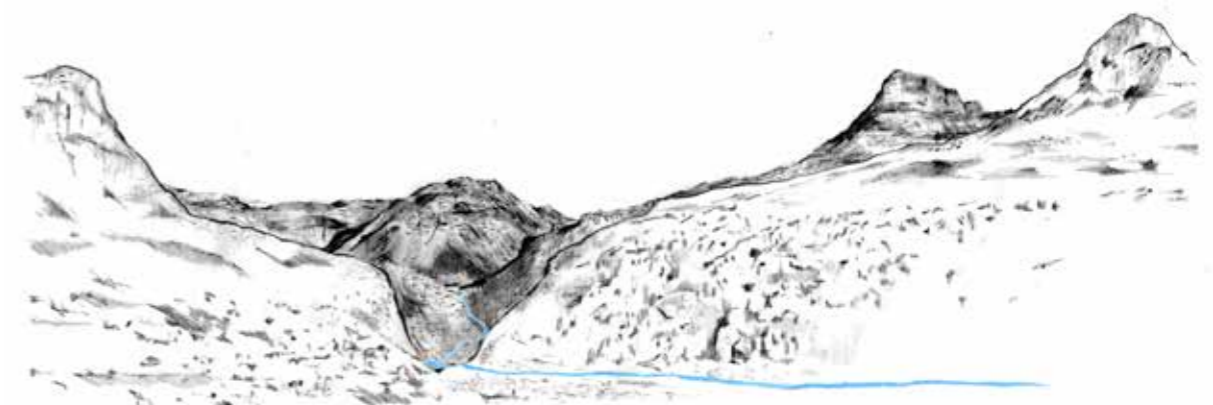
DESIGN RESEARCH

revealing past and present relationships of people(s) to landscape

METHODOLOGY ~

Part II starts by looking at the location of rock art sites in the Cederberg and an enquiry into their being along river routes. What emerges is a understanding that this pattern reflects the use of water systems as navigational corridor, along which temporary settlement nodes were established. Knowing this, the research extends into an investigation of present day interactions between local communities and their surrounding environments/natural resources.

Following the timeline (pages 16-17), and its revealing of the Cederberg's human-river relationships through history, the study zooms in on the current conditions of the area's first town, Clanwilliam, and how water is used—or not used—by its inhabitants. What results is a thesis that investigates the re-establishing of water systems as a guide for movement routes and gathering space. It proposes a potential thread of resource and activity that connects community back to landscape while simultaneously bolstering an emerging community identity.



TIMELINE

100 000+ years ago

Middle Stone Age tools made between 100 000 and 60 000 years ago have been found within the Cederberg region, giving researchers reason to believe that these First Peoples, the San, constitute part of the “cradle of modern human kind”. Some researchers believe that this occupation of the Cederberg’s mountains and associated coastal planes may have started as early as a million years ago, evidence of the San’s history in this landscape being an incredibly deep and old one.

5000+ years ago

Home to over 2500 sites, the Greater Cederberg area is one of the richest areas of rock art in southern Africa, with some of the oldest paintings dating back to 5000 years ago. The San were nomadic peoples who, being without livestock, relied on hunting and gathering for food. In their moving through the landscape, the San would often follow the tributaries that fed into the Olifants River as these incised valleys offered the easiest routes through the Cederberg’s mountain folds. Most of the rock art sites known today (with paintings done by both Khoi and San peoples) follow these river routes.

1660

Sent by Jan van Riebeeck in 1660, a group of Dutch explorers encountered Olifants River, named then in response to all the elephants seen in the river valley.

1732

The first farm in the Olifants River valley was granted, marking the beginning of the San having to compete with settlers for resources (it also obstructed freedom of movement) in the Cederberg valley.



1808

The Clanwilliam is the Cederberg’s oldest town, and is the seventh oldest in South Africa. Formed between 1804 and 1808 (exact dates are unknown) it became its own sub-district in 1808, having been classified under the Stellenbosch district until then.

1854

Other towns slowly start establishing in the Cederberg area, with Ceres being founded in 1854 and Citrusdal in 1916. Both these towns, as was the case for most others in the area, were established to service the local farms.

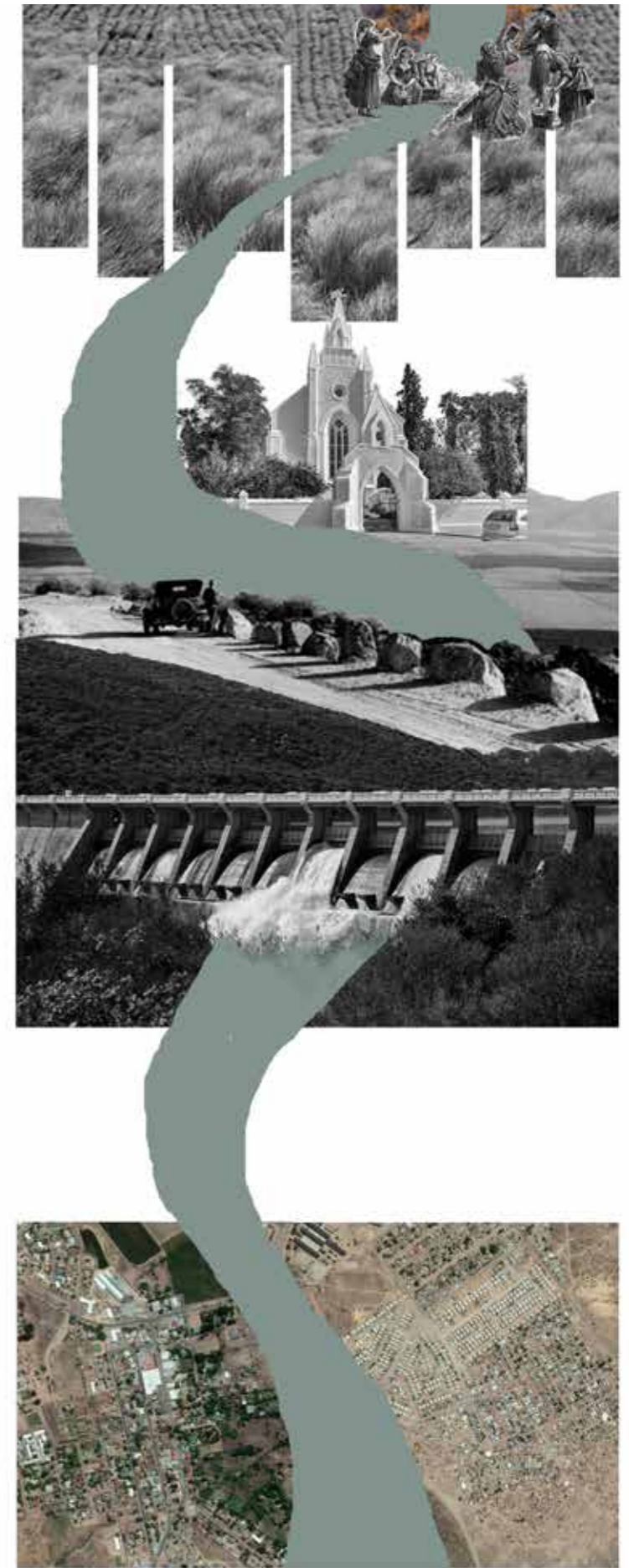
1935

The Clanwilliam dam, concrete and gravity fed, is built on the Olifants River in 1935. The build represents opposite to indigenous relationships to resources/water. Where the San were transient along river routes, these colonial towns imposed their fixed and absolute state upon their environments through hard, static infrastructure which alter the existing natural systems.

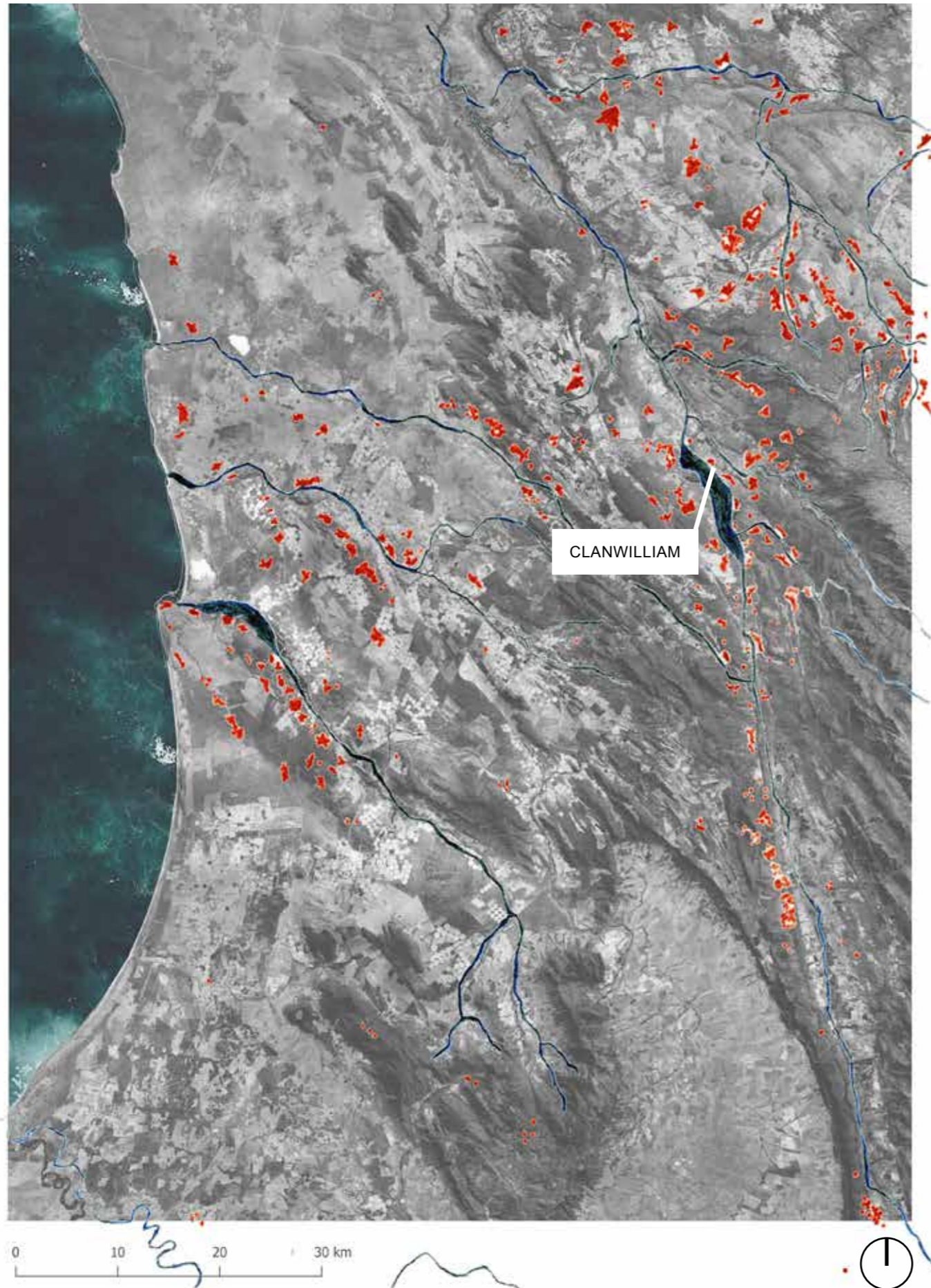
1948 - current

Part of the apartheid agenda was a rigorous planning scheme which enforced a segregationist residential policy. This rigorous separation of communities came to dominate both towns and cities and, for the most part, the residue and effects of these implementations are still deeply embedded in the arrangement of space in of the Cederberg’s rural towns.

Information source:
History of the Cederberg Mountains. (2019, July 1). Retrieved August 18, 2019, from <https://cederbergridge.co.za/2018/04/05/history-of-cederberg-mountains/>.



RIVER ROUTES



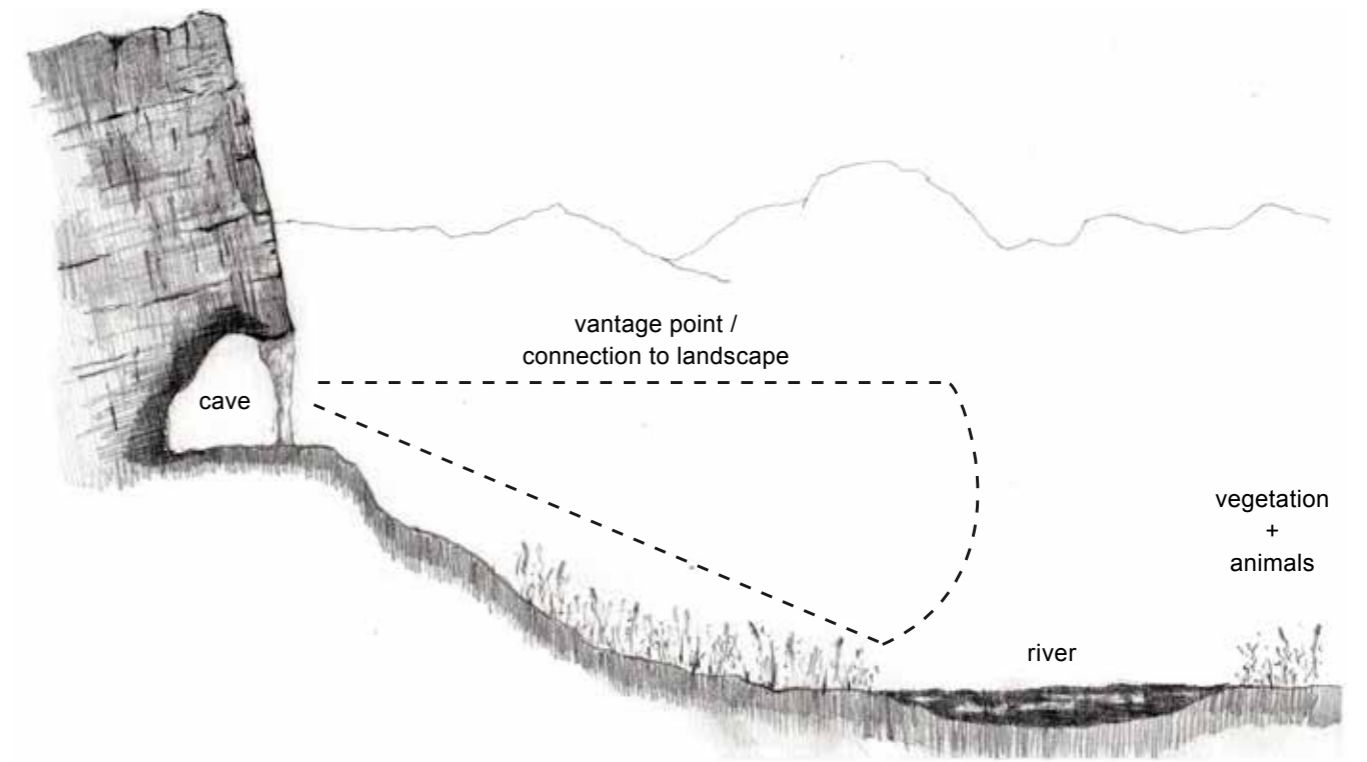
WATER COURSE NAVIGATION ~

If rivers and streams were the navigation corridors of the First Peoples (Khoekhoe and San), then it can be understood that today's equivalent are our intricate road systems which, like rivers, cut into mountains in their attempt to follow the path of least resistance.

In a community such as that in Clanwilliam, where residents predominantly move on foot or by bicycle, is it possible to reclaim this road space for a water corridor instead?

The drawing below demonstrates a section of the map to the left. Cederberg rock art sites are often found in caves or on large walls of rock, indicating these spaces as points of gathering (even if only temporarily) and story-telling. Caves were spaces of shelter, offering much needed respite from the area's often intense sun/heat. Today these caves are visited by locals and foreigners alike, not only for their historical art but also for their complex, often sublime formations (see pages 14-15).

Can this notion of shelter and gathering along water, rooted in a narrative of landscape as resource, be translated into a contemporary Cederberg community?



CAVE / GEOLOGY

- shelter
- canvas
- sublime

RIVER

- resource
- spirit
- connection
- route

VEGETATION

- resource
- forage
- food
- medicine

Map and information source:
 Parkington, J., &
 Rusch, N. (2003).
 Cederberg rock paintings (Vol. 2). Living
 Landscape Project.

HUMAN-LANDSCAPE RELATIONS ~



river as movement route



river as gathering and settlement edge



water potential:
to connect landscape to community to town centre

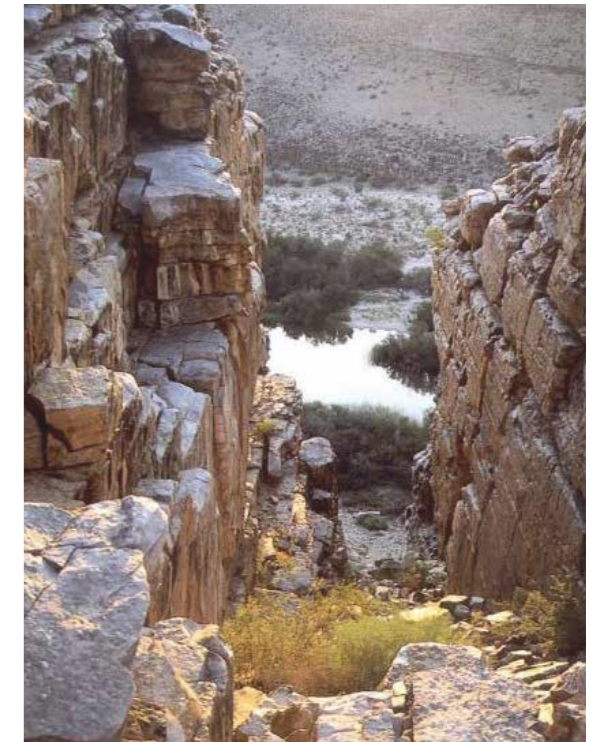


LANDSCAPE AS HABITAT ~

The six bottom images show some of the complex rock and cave formations found in the Matjiesrivier Nature Reserve area of the Cederberg Conservancy. Several rock paintings have been found here, revealing an ancient habitation of the area.

Note: a study of the geology and geomorphology that has led to this landscape can be found on pages 66-69 of this document.

Images sources:
Bottom six photographs are my own.
Top and right photos are property of Roger Diamond, retrieved from:
Low, B., Diamond, R., & Almond, J. (2004). The Cederberg-Tanqua tension zone. *Veld & Flora*, 90(3), 114-117.



DISTANCE

understanding contemporary relationships
of settlements to landscape

CLANWILLIAM

TOWN CENTRE / RESOURCE CENTRE

Colonial history with an apartheid legacy which still effects the town's spatial structuring today.

Centre of access to economic opportunity.

Clanwilliam town centre lies closest to the river convergence, while its satellite informal area sits at a distance from this resource.

SEPARATION

Spatial and economic separation from town centre.

Here the peripheral community is visually "hidden" behind a hill.

LOW INCOME AREA /
RDP HOUSING

SEPARATION OF TOWNS/LOCALS FROM RESERVE

While finding information on the history of Matjiesrivier itself has been unsuccessful thus far, it is known that the removal of communities from their landscapes is a common pattern in the formation of nature reserves in South Africa.

What are the implications of these removals on the lifestyles of the removed and their relationships with the environment?

MATJIESRIVIER NATURE RESERVE CEDERBERG WILDERNESS AREA

Once private farm land, this 12800 hectare area on the eastern edge of the Cederberg Mountains was declared a nature reserve in 2000. Given its being both an ecologically significant site (where Fynbos meets Succulent Karoo vegetation) and of heritage value (home to many San rock art paintings), the reserve was awarded World Heritage status by the UN in 2014.

This is a landscape worked in (farm, construction, conservation and hospitality work) by many of those living in Clanwilliam and other nearby towns.

SEPARATION OF TOWNS/LOCALS FROM RESERVE

LOW INCOME AREA /
RDP HOUSING

SEPARATION

Spatial and economic separation from town centre.

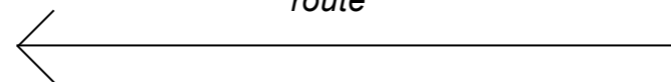
Topographic separation by hill sitting between the two nodes. Use of terrain in planning.

TOWN CENTRE / ECONOMIC CENTRE

While finding information on the history of Matjiesrivier itself has been unsuccessful thus far, it is known that the removal of communities from their landscapes is a common pattern in the formation of nature reserves in South Africa.

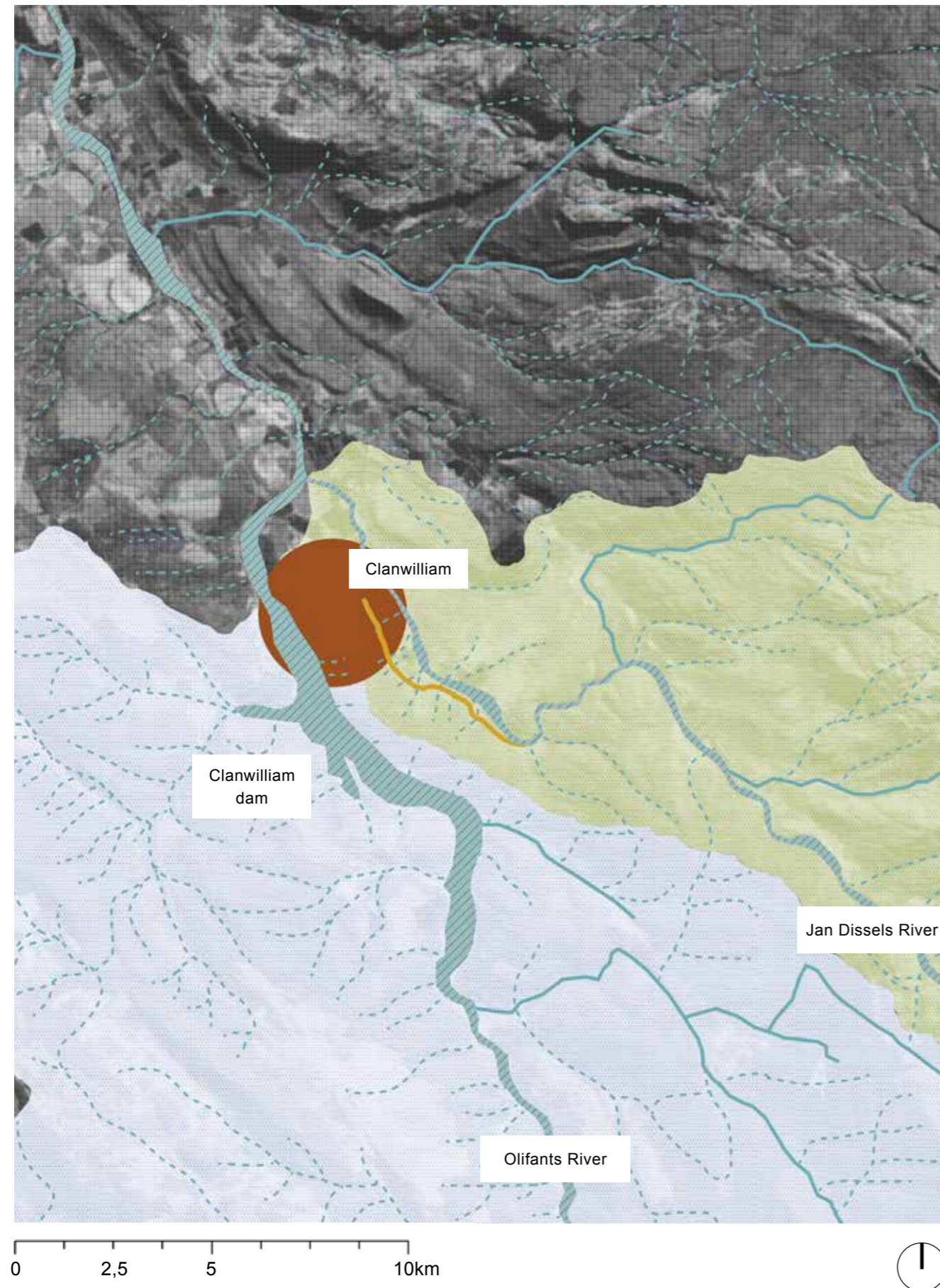


route



TOWN CENTRE — separation — PERIPHERAL — separation — RESERVE LANDSCAPE (access?) — separation — PERIPHERAL — separation — TOWN CENTRE

Clanwilliam + surrounds rivers and tributaries system
 yellow line: Jan Dissels canal from source to town centre



WATER RESOURCE



0 1km

- Jan Dissels open canal
- Jan Dissels piped canal
- Olifants river agricultural canal

Canals or “leiwaters” have been constructed to direct water from both rivers, with that from the Olifants serving agricultural land and the Jan Dissels canal flowing into Clanwilliam’s centre where it is used by private properties.

Clanwilliam is situated between two rivers, the Olifants—with its catchment area starting in the Cederberg mountains, near Ceres—and the Jan Dissels river to the north of the town. The rivers start and end in totally separate catchment areas (quaternary catchment areas are shown by the green and blue areas on the left map). This might explain why the Jan Dissels kept flowing through the height of the 2015-2017 drought, while the Clanwilliam dam (which sits on the Olifants river) sat at only 39.3% capacity in August 2017.

Currently the Jan Dissels canal is piped, flowing hidden directly below the town’s peripheral (RDP) community. Given the fact that the water in this system survived the region’s drought, it seems a waste not to introduce this much needed resource to an otherwise dry space. Here lies the opportunity to surface the memory water relationships into a community narrative of place-making.



WATER WAYS //
following the Jan Dissels canal

All images my own, taken on site.
 Clanwilliam, August 2019.

A	B	C
D	E	F
G	H	I
J	K	L

WATER ROUTED
 following the Jan Dissels canal

A // small dam from which water is channelled towards the canal system

B // contrast between constructed concrete canal system and natural river

C // sluice gates which direct water towards different farms/private properties at separate times

D + E // canalised water (stone and concrete) versus natural trench for water channeling.

F // livestock in the area make use of the canal

G + H // water directed through pipes - break in visual connection to the water passage

I + J // water 'disappears' into a pipe

K + L // the Jan Dissels river canal system becomes a formal concrete channel as it enters the town centre where it is used in private gardens.

The Jan Dissels is significant in that it kept flowing freely through the height of the drought period (2015-2017) while the Clanwilliam dam and Olifants river reached very low levels. As of winter 2019, the Clanwilliam dam is at 99% capacity, with plans in action to raise the dam wall by 3m.

GARDENS + PLACE MAKING



TRANSFORMATIVE GARDENS ~

The top left image shows the RDP extension of the community in 2010, shortly after its construction. The images below it give examples of the current conditions of these lots: empty front yards turned into spaces of unique character and identity through the establishment of gardens—some are indigenous, others have roses, and some grow food. This transformation of home and street points to an already existing relationship with water (many of these gardens appear to be fed by sprinklers, even those of the more informal dwellings) and a community engagement in and desire for place-making.

Is there an alternative way of bringing water into these gardens? One which is less reliant on municipal resources in a high-risk drought area?

Images source:
 Google Maps Streetview images
 (Taking photos on the site visit felt potentially invasive, thus opting to use Google Maps images)

COMMUNITY PARTICIPATION



community nursery, seed to seedling

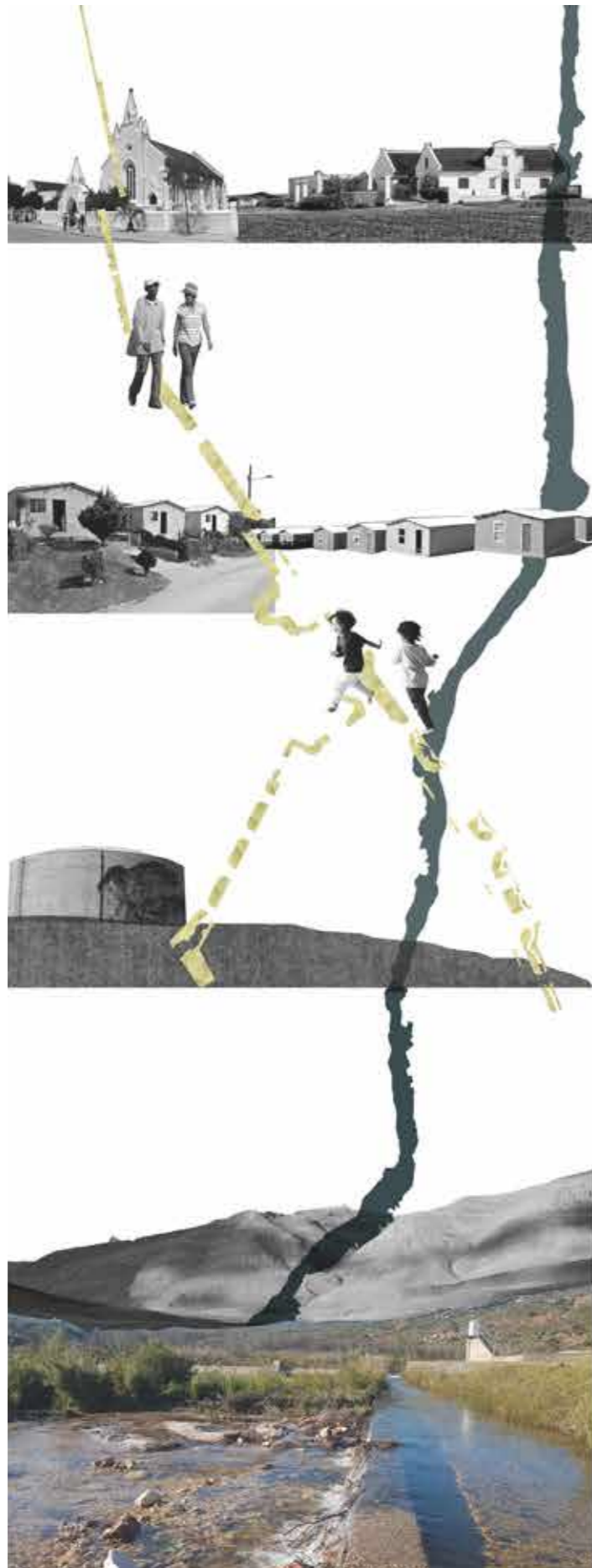


seedlings planted out and matured



potential to transform into a food garden

Potential to introduce a community run nursery that grows its own plants for the aforementioned “transformative gardens” as well as the proposed planted intervention. By introducing community participation, the potential for long term success and maintenance of the project is far more positive. Studies have also shown that community participation leads to a better sense of public ownership of and care for the intervention.



DISSERTATION

re-surfacing water and memory

SUMMARY ~

The following dissertation started with an inquiry into how historical human relationships within the Cederberg landscape have been lost over time. What is explored in the design development is how these memories may be resurfaced into a contemporary setting to foster meaningful connections between people and place.

When studying the past interactions of people with the Cederberg environment, one finds a continuous narrative of rivers and water courses through the region's history. Maps documenting the known San rock art sites in this landscape show that they are, for the most part, dotted along river edges. This points toward the obvious fact of rivers as vital fresh water resource, but also the notion of water courses as corridors through the landscape along which movement and gathering occurred. Later in history we find these same rivers determining the location of the Cederberg's first settlements and towns.

This project proposes translating these notions of river, as resource supporting movement and gathering, into a contemporary Cederberg community, Clanwilliam. I have chosen to focus on this town as it is considered a gateway to the broader Cederberg wilderness and has a community with deep ties to and memories within the landscape, with number of residents claiming indigenous Khoe and San heritage and identity. This translation of river memory into contemporary setting is proposed as two water infrastructures: a *leiwater* network and a seasonal bioswale system. These two systems would run through a peripheral low-income community of Clanwilliam into the town centre, bridging what is currently two distinct and socially and economically separated areas.

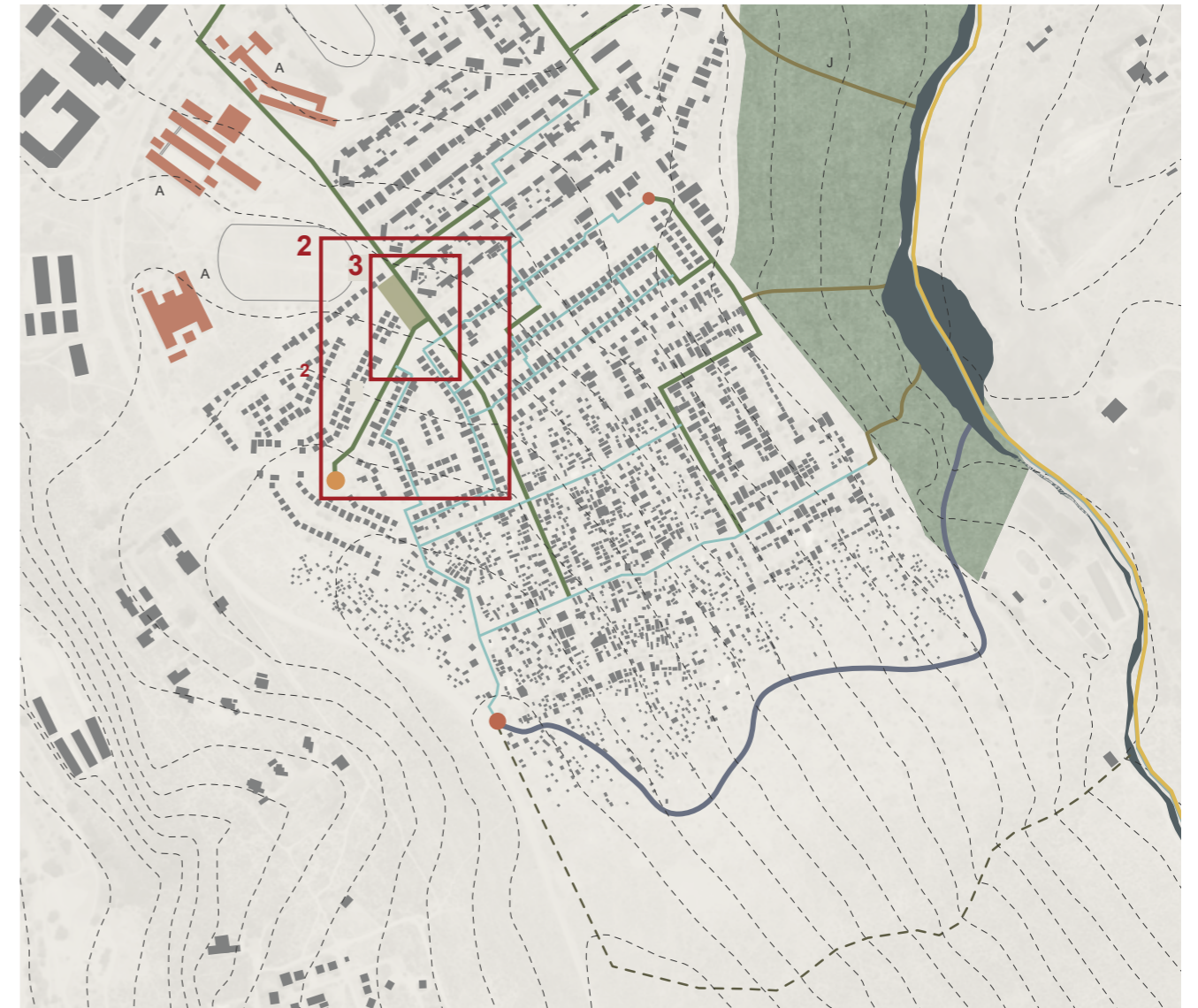
Recognises the opportunity latent in the hidden Jan Dissels canal, the project proposes daylighting this water course as a communal resource, resurfacing a direct relationship to water within the peripheral community. The water from this now open channel would then be pumped up into a reservoir from which a community *leiwater* network is gravity fed. Understanding that this water is a precious resource that should be treated with care, the *leiwater* network is proposed as a metaphorically closed system, one that runs between private properties where the owners are able to take responsibility for the maintenance and integrity of this resource.

The *leiwater* network is intended to feed into the private gardens that are transforming the community's sense of place, hopefully acting as a catalyst for further growth. Acknowledging the importance of these gardens, the proposed bioswale system would mirror this greenery into the community streetscape, redefining a major road as a pedestrian oriented armature.

This notion of a water systems redefining the streetscape is pulled into the town centre, becoming a metaphorical thread that connects these otherwise separated areas. What results is a new urban layer that is suggestive of the town's historical ties to water, while simultaneously filling a contemporary need for access to resource and social public space.














MASTER PLAN

Clanwilliam water thread



0 250m



- | | | | |
|---|--|---|--|
|  | <i>Leiwater</i> / water channel feeding Jan Dissels water to the community's public and private gardens |  | Existing Jan Dissels canal Open system |
|  | Seasonal bioswale system |  | Existing Jan Dissels canal Closed (piped) system |
|  | Bioswale system through town, occupying existing parking spaces |  | 5m Contours |
|  | Swale to Jan Dissels canal connection |  | Existing reservoir (20m diameter) |
|  | Water channel defining the outer boundary of the community and supporting subsistence farming along its edge |  | Proposed reservoirs |
|  | Water from Jan Dissels canal pumped up to top reservoir (which in turn feeds the <i>leiwater</i> system) |  | Existing open spaces |
|  | Surge flow outlet channel | | |

LEGEND CONTINUED ON NEXT PAGE ~

MASTER PLAN LEGEND CONTINUED ~



Plan references

1. "Town Connection" - town centre plan
2. "Community Network" - community plan
3. "Streetscape Transformed" - detailed community plan



Proposed daylighting of Jan Dissels canal

A - high school and primary school complex

B - churches

C - clinic

D - hospital

E - Clanwilliam Living Landscape Project

F - 'Ou Tronk' Museum (history of Clanwilliam)

G - information Office

H - shopping complex

I - police station

J - currently open and unused space;
three possible options for development:

first phase intervention plant with Clanwilliam
daisies (which thrive in disturbed sites)

transformation into productive land; either
agricultural or indigenous medicinal plants

development into residential area (as
anticipated in the Spatial Development
Framework 2017-2022)



town centre

**peripheral
community**

reservoir

**leiwater as water thread from Jan Dissels canal,
through community and into town centre**



0 50m



1. Clanwilliam town centre, main activity corridor, Hoof street



0 50m

focus area



2. Community major movement corridor, Dwars street

LANDSCAPE as INFRASTRUCTURE

SUPPORTING CULTURAL AND SOCIAL VALUES THROUGH WATER NETWORKS ~

Introduction ~

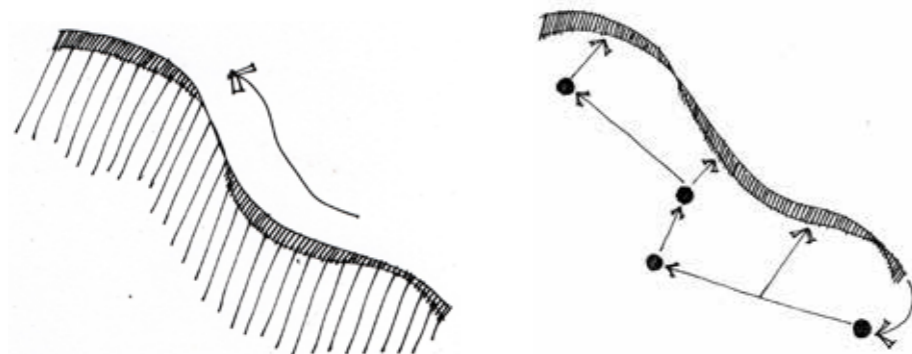
The following essay looks at the synthesis of landscape and infrastructure and argues for its potential to facilitate social and ecological functions while simultaneously supporting a community's emerging cultural identity (a reclaiming of Khoi and San heritage) and aesthetic identity (gardens as place-making).

At its core, this dissertation looks at deepening the relationship between community and landscape. This is achieved by introducing a network of water systems that are grounded in an investigation into previous relationships between indigenous peoples and the natural resources that supported their daily life.

Daylighting Hidden Infrastructure ~

Currently buried in infrastructure beneath the ground, a portion of the Jan Dissels river (which continued to flow throughout the 2015-2017 drought) is channelled towards the town centre in a pipe that goes unseen and unused as it bypasses Clanwilliam's peripheral community.

The dissertation daylights this piped water in order to establish an open watercourse. Raised above ground, this water network would operate as an armature of opportunity while providing ecological services to the community. This infrastructure is proposed as a catalyst for a semi-agricultural, cultural and economic programme in which traditional (both medicinal and edible) indigenous plants are grown, harvested and sold, ultimately uplifting the community managing it. Simultaneously, this open stream would establish a landscape corridor for the community—an alternative movement route which is a shorter distance than the established road—between the town centre, the Khayelitsha community, and the rural landscape beyond Clanwilliam. This notion of a water system as a movement route is grounded in historical/indigenous patterns of settlement and movement along rivers and tributaries, thus reflecting the community's historical Khoekhoe and San identity.

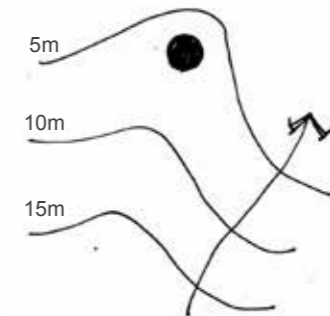


Left: the open water system facilitates the growth of an agrarian landscape along side it. Right: beginning with water pumped up from the Jan Dissels river into a reservoir, what follows is a network of water storage (reservoirs) and water movement (*leiwaters*) that supports community gathering and movement respectively.

Network Strategy ~

The project proposes extending the Jan Dissels water system into a network of *leiwaters* ('water channels') and water reservoirs through the community itself. When looking at the site's existing reservoir in its context, it is evident that this infrastructure sits on an underutilised open space in what is an otherwise densely built up area. What is presented in this thesis is the opportunity to utilise these water storage spaces as sites of intervention, rather than infrastructure to be hidden, becoming a necklace of social programmes/public space that connects otherwise socially fragmented areas. By creating a system in which the reservoirs are positioned within easy walking distance of each other and set on high ground (and therefore easily seen), they become landmarks in the community, contributing to a sense of place and identity-making.

Understanding that gardens have been used to transform the community's aesthetic identity and character (see page 37), the *leiwater* system is intended to support this process of place-making by acting as a catalyst for a further system of transformative gardening. While this infrastructure primarily transports water from reservoir to garden (both private and public), in wetter months this open-system also facilitates stormwater management. Ultimately, water and its movement are exposed to the community, as opposed to the current managerial approach which disappears it into a network of underground pipes. This alternative fosters a celebration of the resource in an otherwise hot and dry environment.



Left: looking at the site's topographical system, the water reservoirs are to be placed on ridges (high points), while the *leiwater* network is guided by the landscape's troughs/depressions.

Conclusion ~

What is imagined through this project is a design intervention that situates itself at the intersection between landscape, infrastructure and urban design. From this intention emerges a water network that facilitates everyday functions (the distribution of water, stormwater management, and gardening) while also supporting a set of cultural values that is grounded in a relationship between community and landscape.

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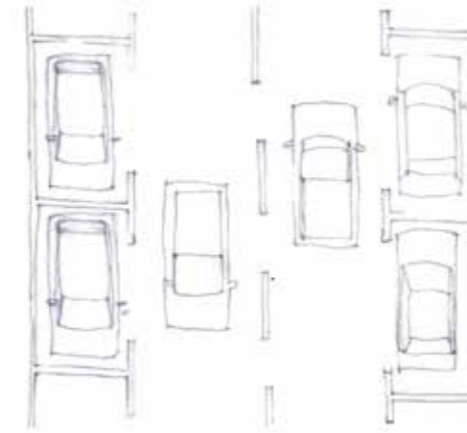
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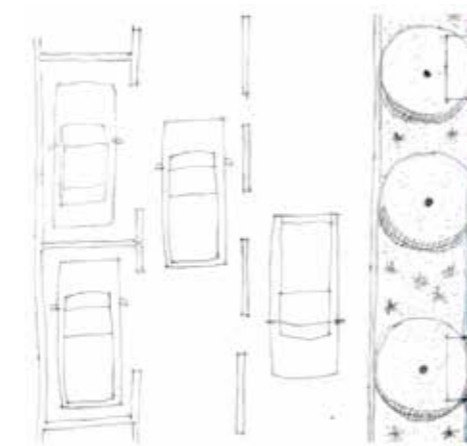
TOWN CONNECTION



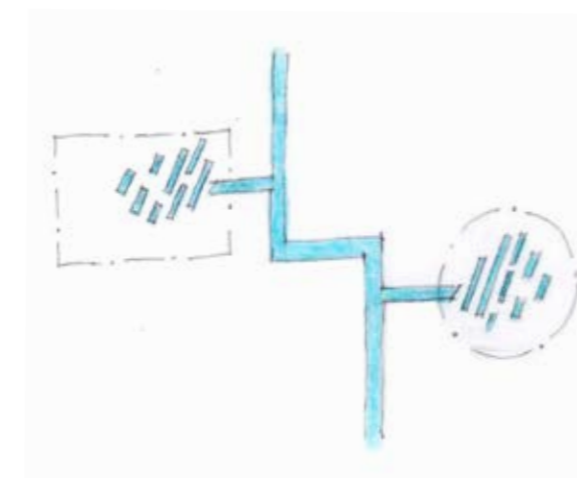
0 50m



Existing road arrangement: centre lanes are straddled by parallel parking bays. The extent of available parking seems unnecessary given the scale of the town centre and the levels of activity therein.



Proposed: design intervention shifts (in response to open spaces) across either side of Hoof street, always occupying the width of a parking-bay.

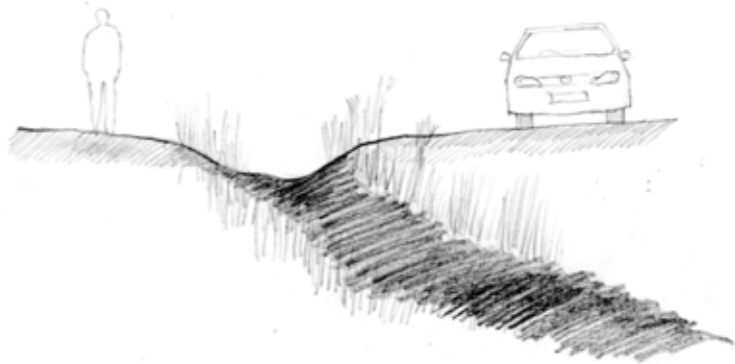


The *leiwater* system pulls into open public space along the street edge, feeding the gardens there and creating cooler micro climates for public benefit.

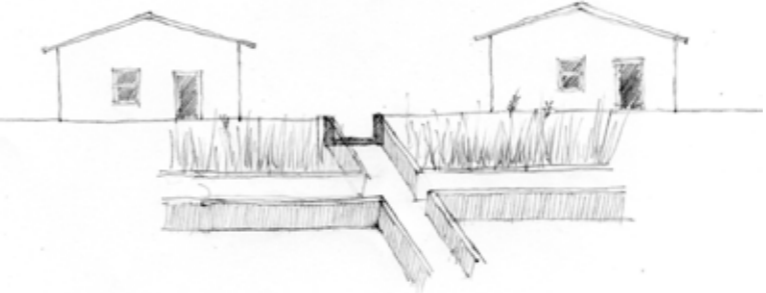
COMMUNITY NETWORK



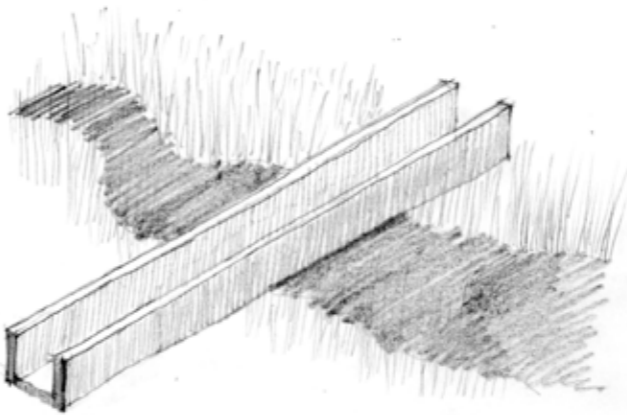
0 50m



Open/dirty water
 Bioswale system runs alongside the road, catching surface runoff and *leiwater* overflow. Wetland planting filters this water before it reaches the Jan Dissels canal/stream.



Closed/clean water
 Distributing water from the Jan Dissels river, the *leiwater* ("water channel") network runs between properties, where it services gardens and is maintained by home owners.



Water crossing
 Celebrate the point at which the *leiwater* network crosses the bioswale system. This intersection offers a micro-climate made cool by the presence of these water systems.

STREETSCAPE TRANSFORMED



0 10m



public resource

A Proposed building: plant nursery and greenhouse. Part of the design's implementation and management scheme, it is proposed that the seedlings here are grown *by the community for the community*. This public participation encourages involvement in the intervention's long term maintenance and, as studies have shown, a sense of community ownership and care.

Once the project's planting is complete, the nursery can sell its produce to local nurseries, otherwise the area can be transformed into a community food garden.

B Water storage pond.

C Kids' play area
(in school catchment area)

D Seedlings are planted out into an intermediate zone where they can mature before being planted out by the community into the proposed public spaces/streetscape.

E River rock road surface -- a change from the otherwise tarred surface -- slows cars as they enter into the pedestrian/public plaza zone. The rock here reflects the materiality of the swale systems, as well as the bigger river systems (Olifants and Jan Dissels) framing the town.

F Cattle grid where cars cross the swale system. See isometric drawing.

G River rock road surface change used to indicate pedestrian crossing.

H Raised steel grate walkway through swale system. See technical details and isometric drawing.

I Leiwater runs above and across the swale system. Important here is that the water of each system does not mix as the leiwater is carrying clean water to be used in gardens/allotments.

J Performance stage/market platform. Community interpretive space.

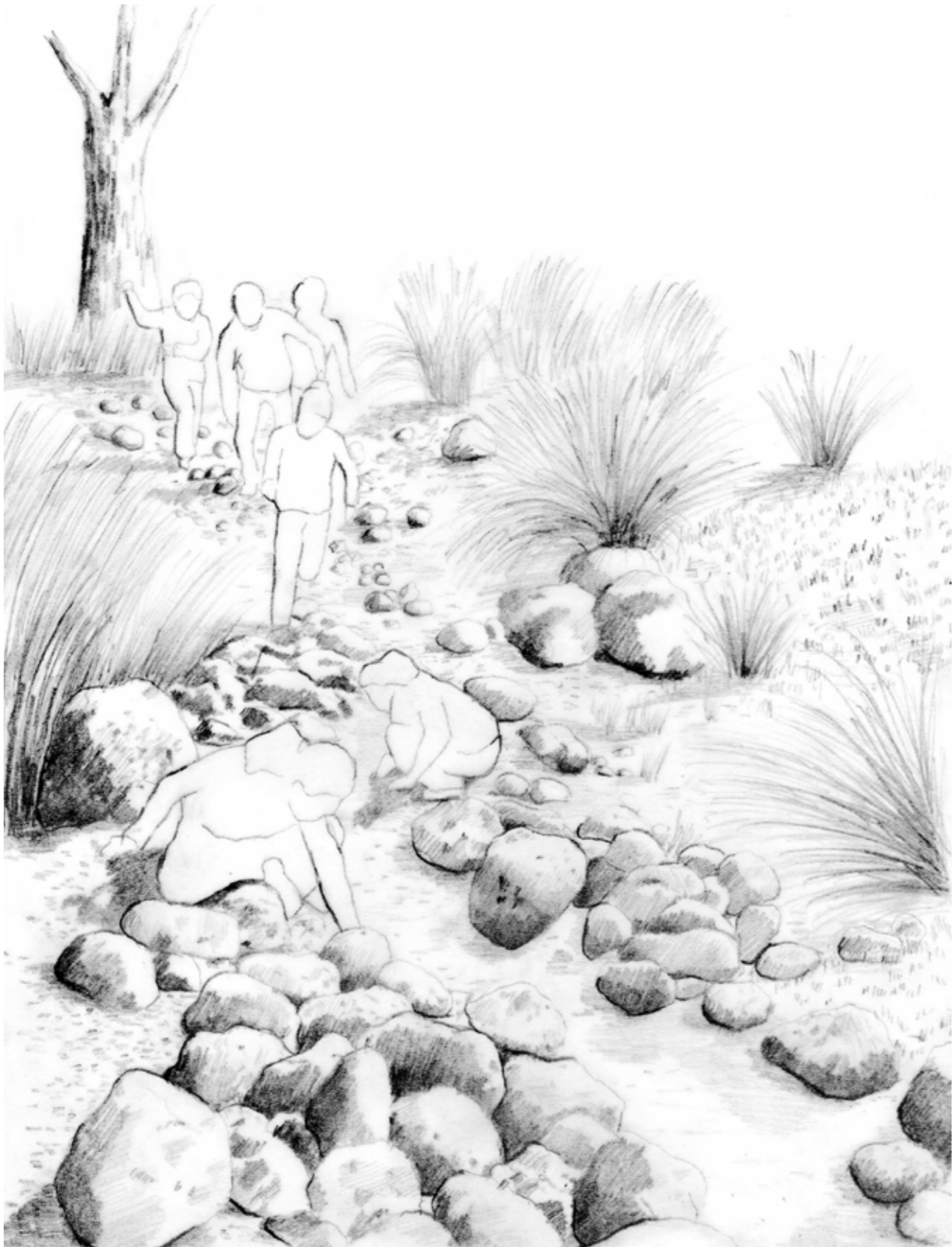
K Leiwater network between homes.



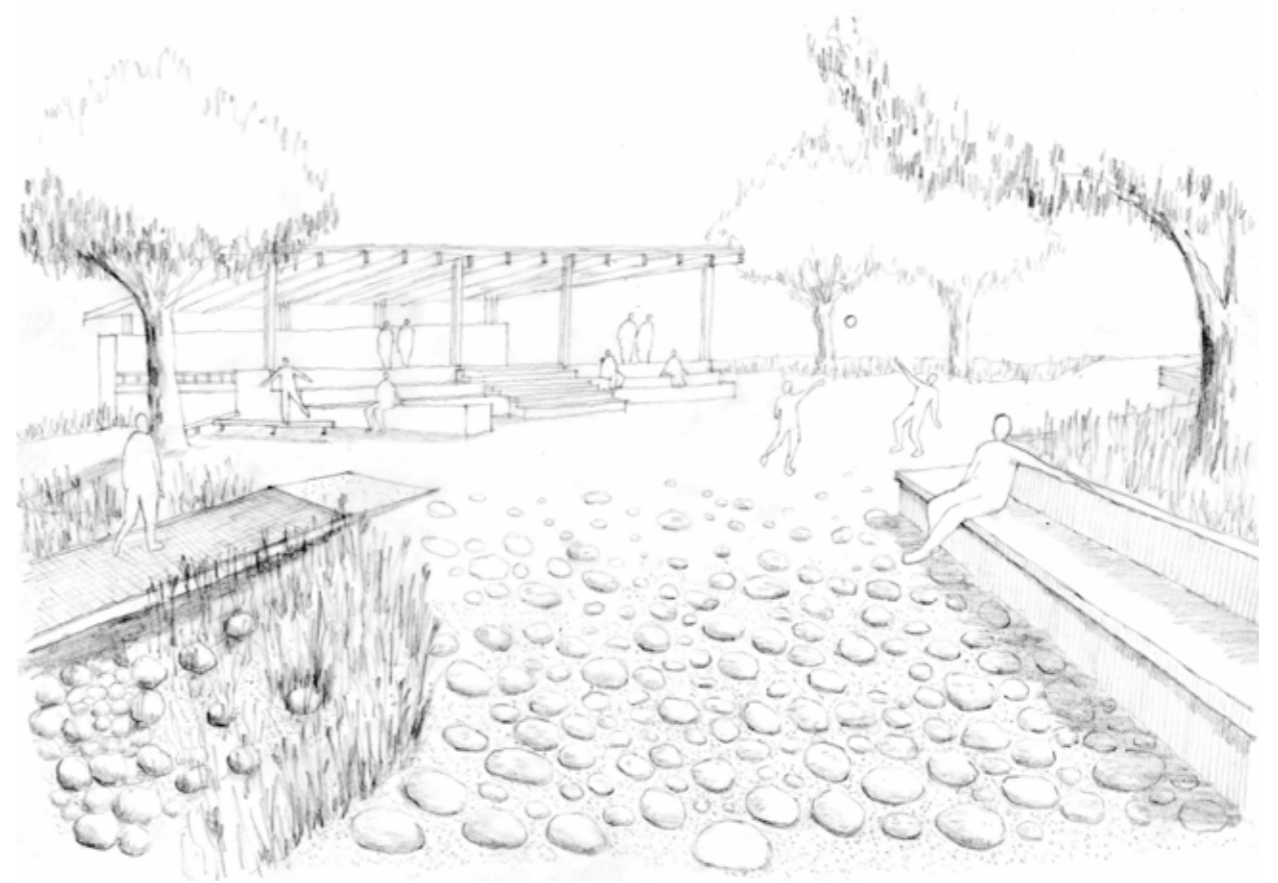
Bioswale.
Wetland planting mix.



Dry planting mix.



bioswale as playscape



plaza / market / performance area



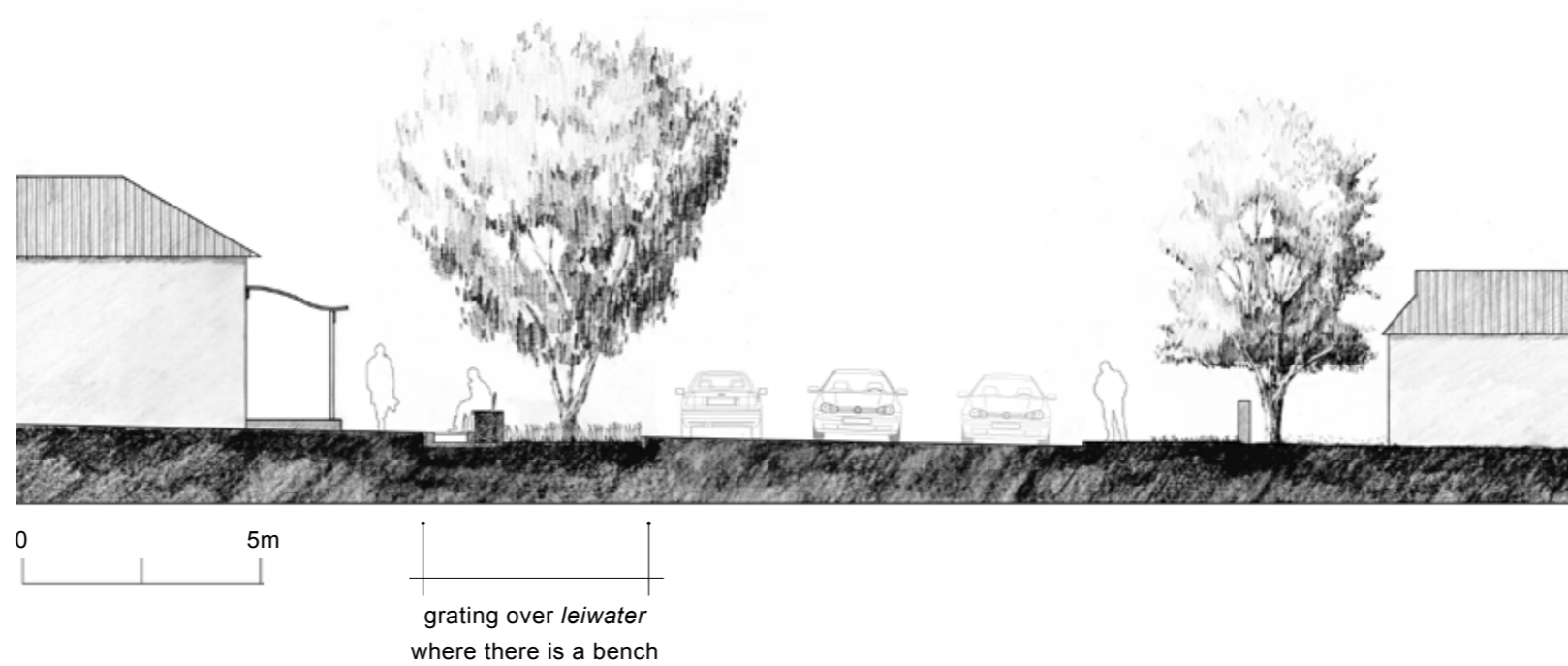
bioswale as movement corridor and gathering edge

COMMUNITY SCALE

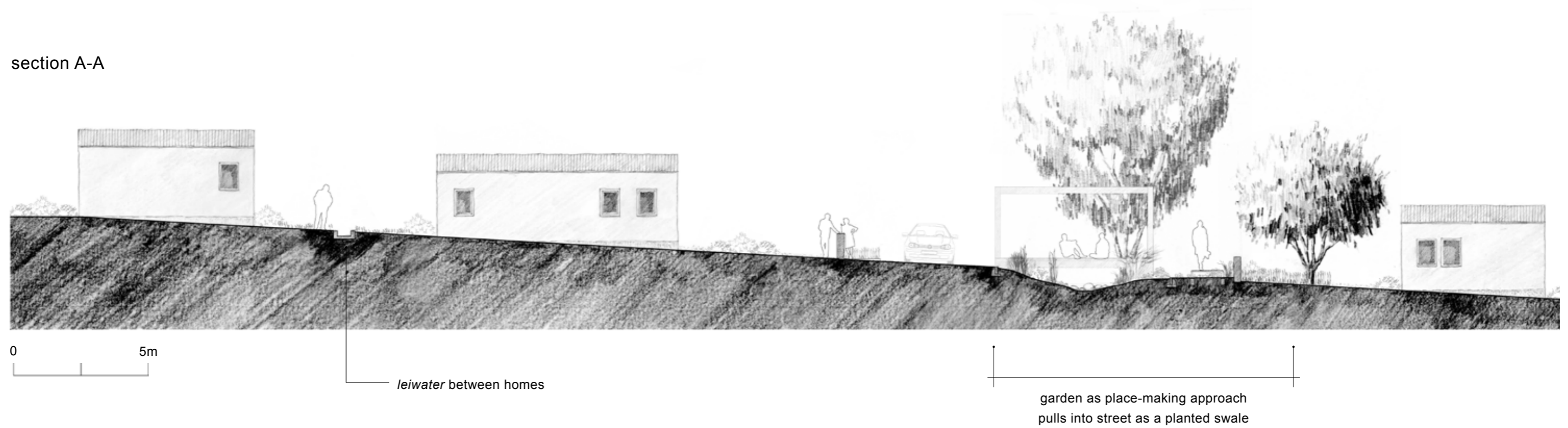


typical cross section through town system

The town intervention consists of a formal concrete *leiwater* channel in keeping with the existing character of the town centre. The design occupies part of the existing pavement as well as the width of the existing parallel parking strip.

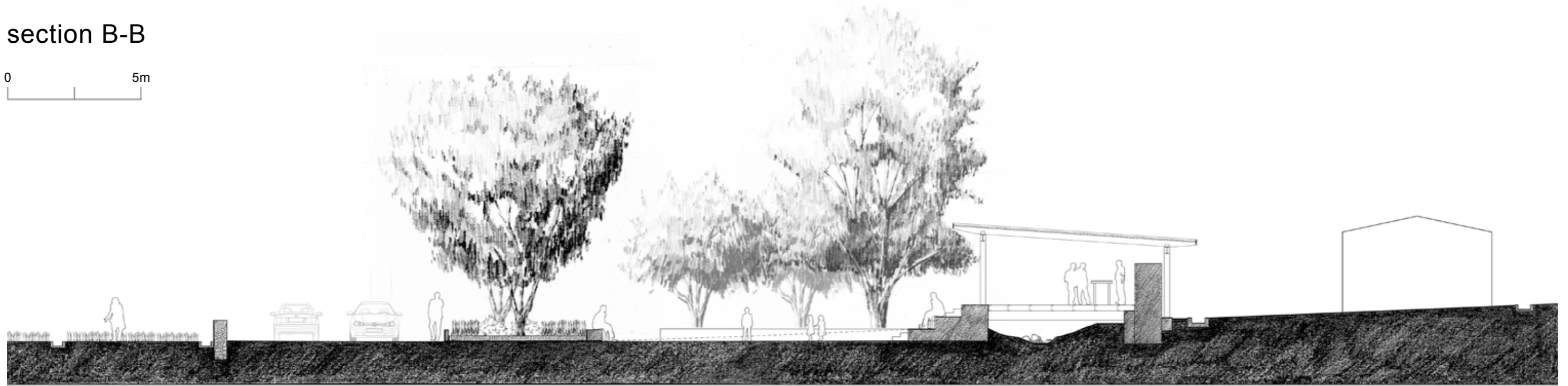


section A-A



section B-B

0 5m



planting as threshold /
seating edge under trees

open centre area
play / gather / perform

seating
steps

covered platform over swale
market / performance



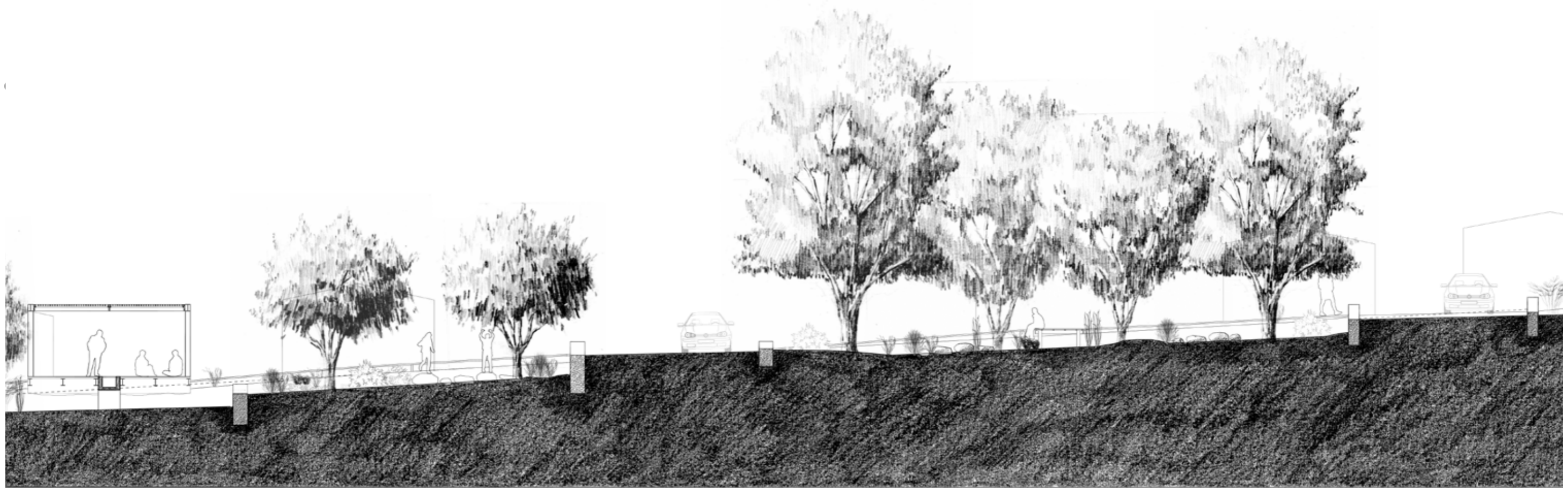
plant nursery / greenhouse
with preparation area

seasonal swale

kids' play area

seasonal swale

productive land / economic benefit
seedling plants / community food garden

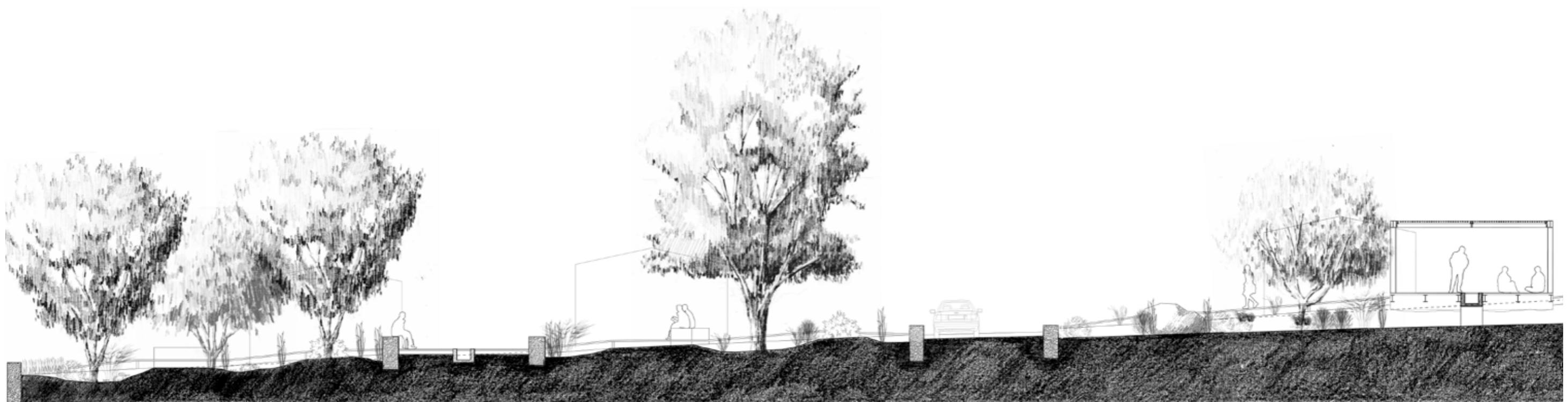


deck and pergola over
swale and leiwater crossing

500mm gabion wall weirs

water crosses dip in road

start of bioswale system along Dwars street,
a major community axis/activity corridor



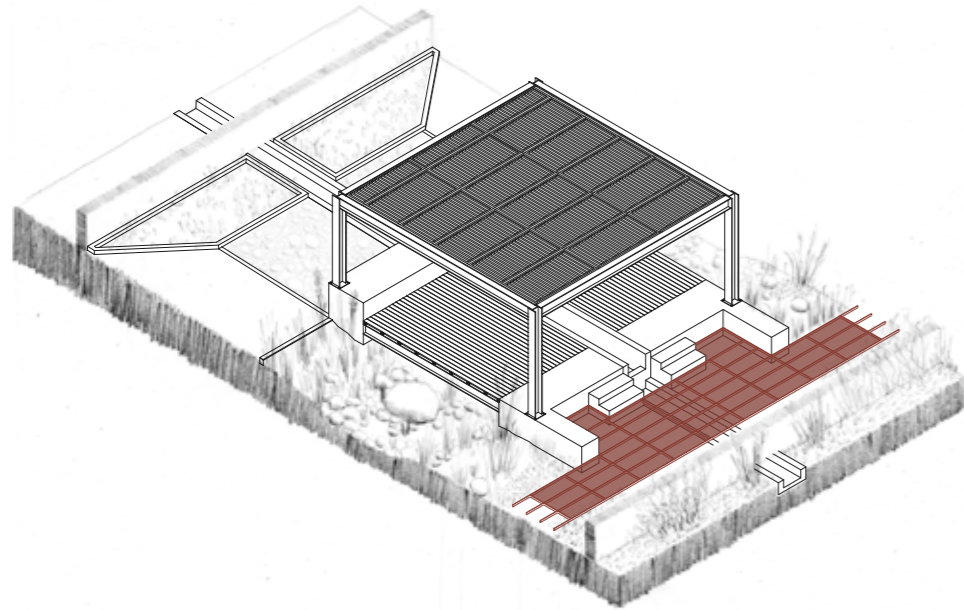
walkway seating
under shade of trees

pergola threshold
with leiwater

deck and pergola over
swale and leiwater crossing

WATER CELEBRATED

pergola at water crossing



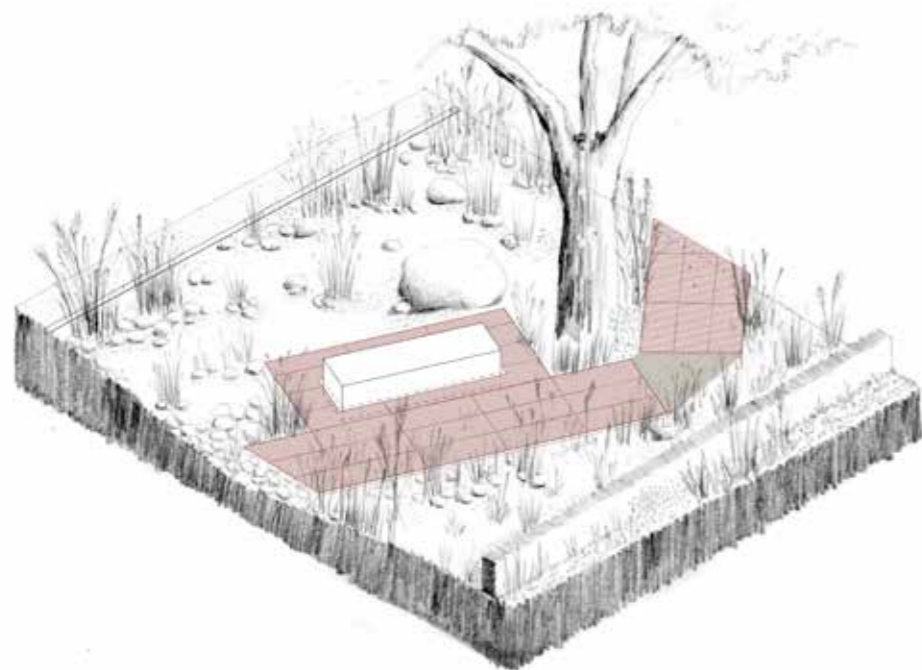
planted edge opposite pergola narrows the road to 3,2m wide, slowing traffic

round river rock road surface change slows cars while drawing attention to the experience of movement

pergola structure over the crossing of the leiwater and swale systems

steel walkway pulls into pergola threshold

shaded seating

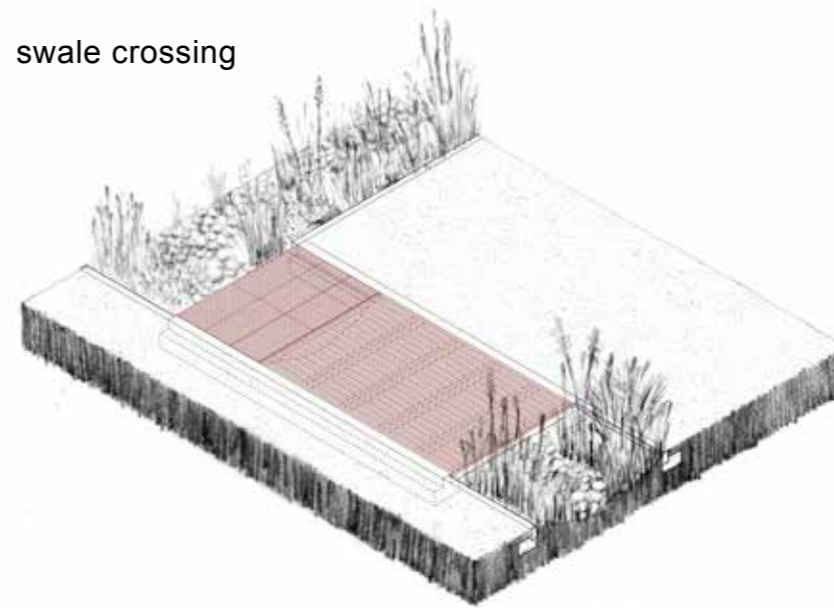


corten steel mesh walkway pulls into platform with cut-out to allow for bench to pull through

situate seating platforms near trees, cooler micro-climate in otherwise hot environment

steel mesh walkway allows for planting to grow through

swale crossing

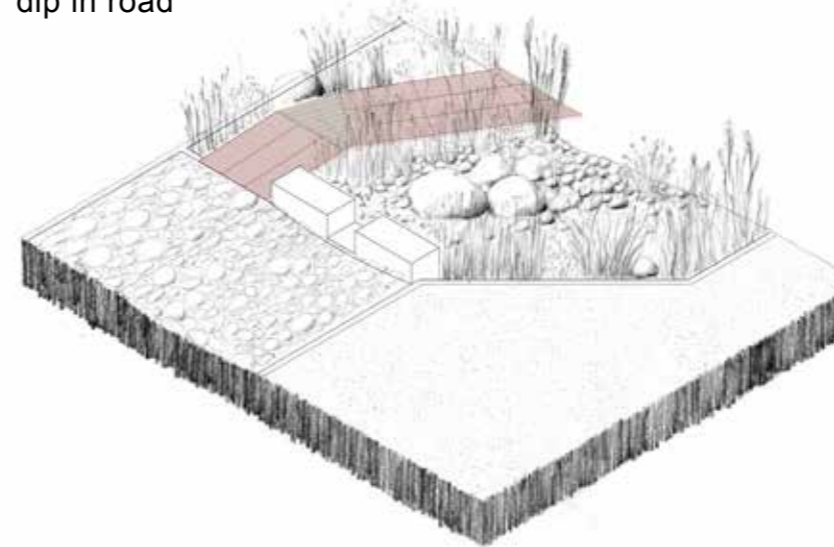


corten steel cattle-grid (standard size 3.5m x 2.2m) over swale allows cars to cross

steel mesh walkway sits next to cattle grid to allow for easy bicycle/animal crossing over swale

water flows underneath these structures—minimum distance between ground and cattle-grid underside should be minimum 0.5m

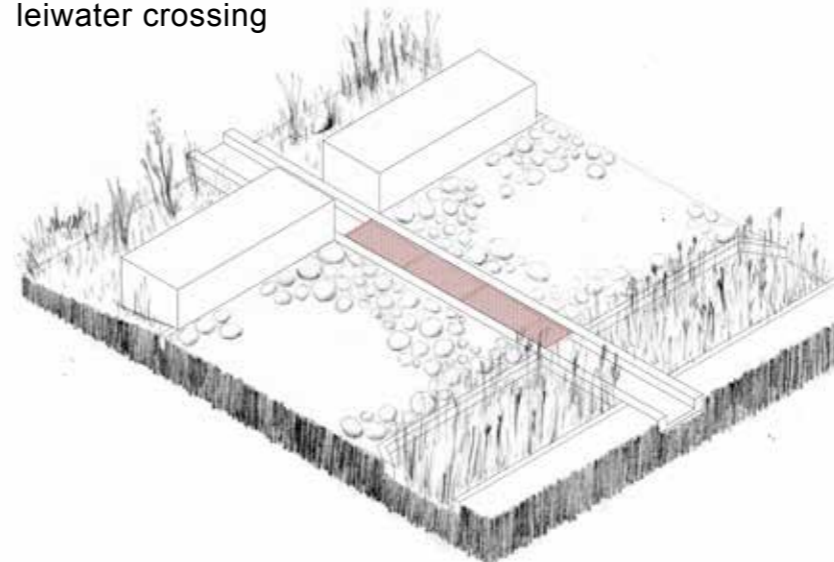
dip in road



stacked gabions (500mm width) form a weir; a threshold between the swale system and road

road dips to create channel for water to cross

leiwater crossing



where the leiwater crosses the road, a corten steel grid is used to cover the channel/allow for crossing

visual connection to the water system is maintained

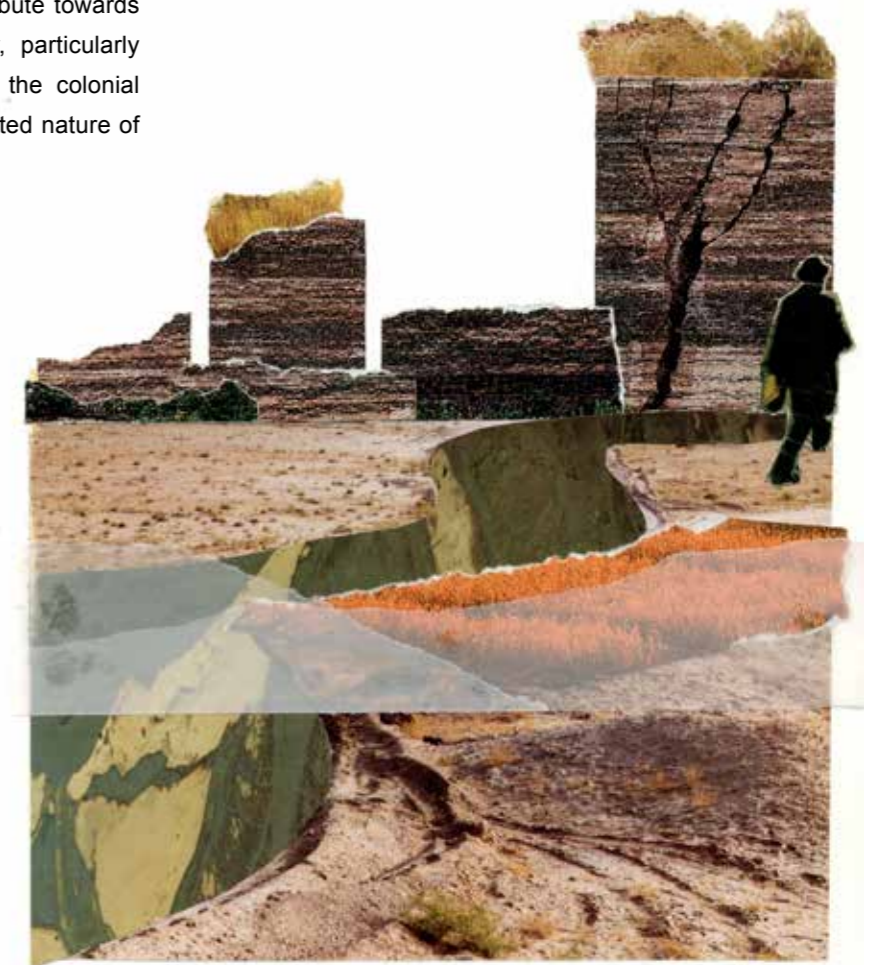
MATERIALS + CONSTRUCTION

of land and indigenous narrative

INTENTION ~

The peripheral community, sitting between Ou Kaapse road and Bloekom avenue, is one predominantly made up of RDP housing and self-made dwellings. Here, lining the streets, haphazard gardens sit alongside neatly maintained ones of mostly indigenous plants and vegetable patches—a means of creating a unique identity in what is otherwise a sameness of RDP housing.

How can the use of materials and the composition/curation thereof contribute towards this emerging community identity, particularly one that differentiates itself from the colonial (architecture), trim and car-dominated nature of the town centre?



GROUND

Use materials inherent in and representative of the Cederberg landscape. Materials that speak to the **PROCESSES** of that environment.

These are the processes of **erosion, compaction, growth and disintergration** to name a few.

Rock of the Cederberg landscape:
Shale
Sandstone
(see geology study on page __)

Towards a *genius loci* and sense of place identity.

Weathering materials of the ground //
Rock
Stone
Mud
Corten steel



PLANT

Vegetation in this landscape is hugely important as it holds a strong **heritage connection** back to previous ways of engaging with landscape, namely the San's reliance on the landscape for the **foraging** of food and medicinal plants.

Also important here is that the Cederberg Wilderness area is the **meeting point** of Succulent Karoo vegetation and cape Fynbos, making for a unique ecological environment.

Site specific **plant** families //
Renosterveld vegetation
Fynbos vegetation

Area associated vegetation //
rooibos
buchu
spekboom



CEDERBERG VEGETATION



Vegetation in the Cederberg is primarily comprised of fynbos (which thrives on sandy, acidic and nutrient-poor soils) and renosterveld (which, conversely, prefers fertile clay soils derived from shale). As the climate and geology changes from west to east, succulent Karoo vegetation becomes more prevalent.

The middle image shows succulent vegetation sitting alongside fynbos.

For this project, located in Clanwilliam, the plants need to be suited to lithosolic soils. Given the nature of the design intervention (i.e.: bioswales), wetland species are included in the plant palette.

Tree requirements

- fast growing
- shade providing
- suited to rocky environment
- drought tolerant
- express seasonality

Vegetation requirements

- wetland species in bioswale
- indigenous
- hardy
- low maintenance
- varying heights and shapes

Bioswale plant palette

- Aristida junciformis*
- Elegia equisetacea*
- Elegia tectorum*
- Ornithogalum juncifolium*
- Restio festuciformis*
- Watsonia stokoei*
- Zantedeschia aethiopica*



Combretum erythrophyllum
"River bushwillow"
±10m height

Populus nigra
"Black poplar"
±20m height

Kiggelaria africana
"Wild peach"
±6m height

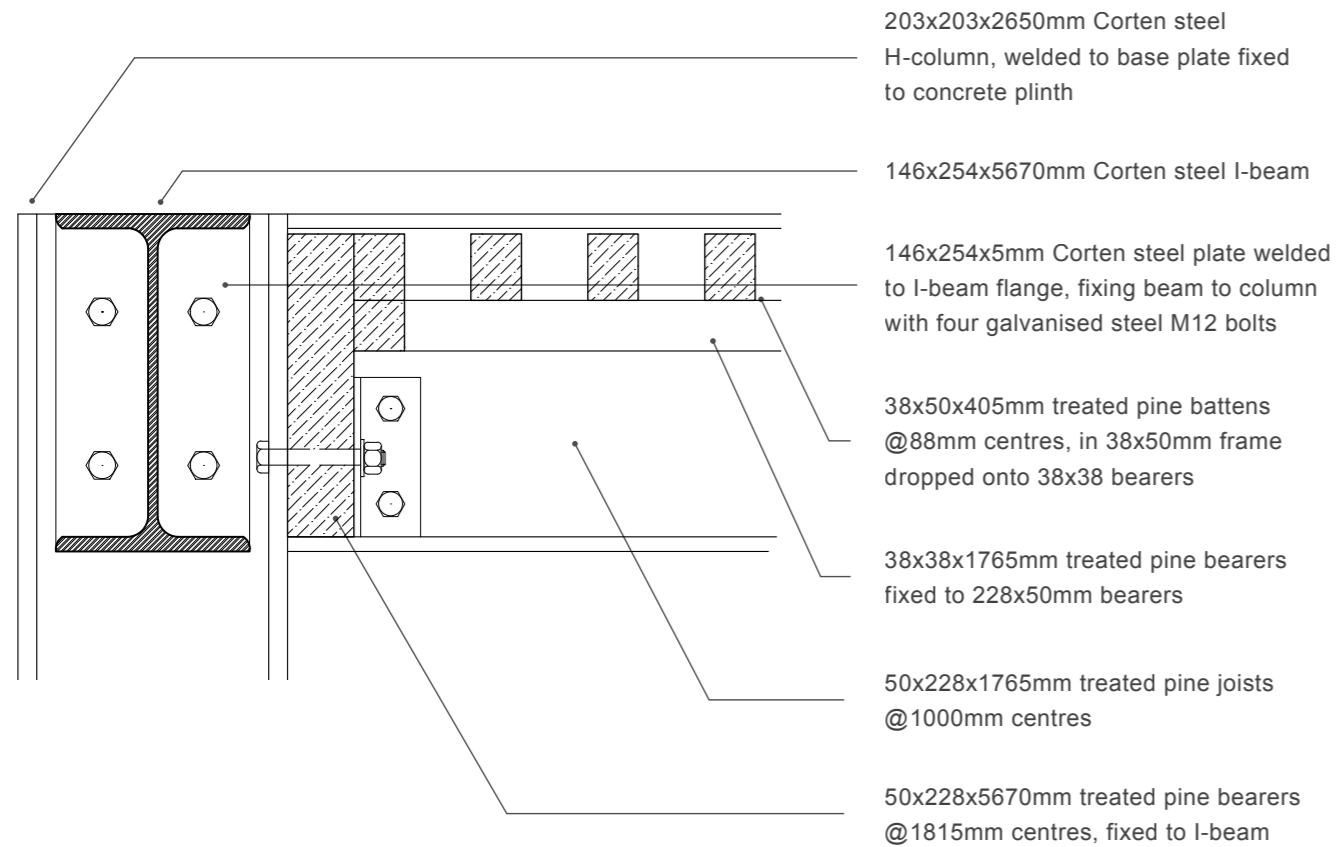
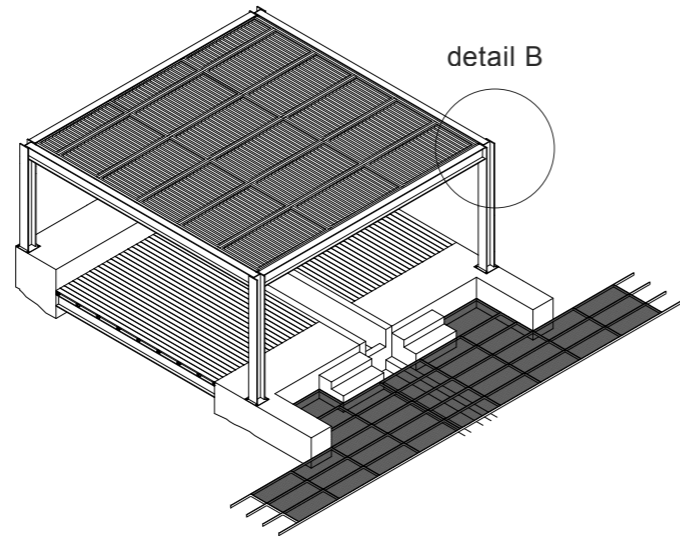
Searsia pendulina
"White karee"
±10m height



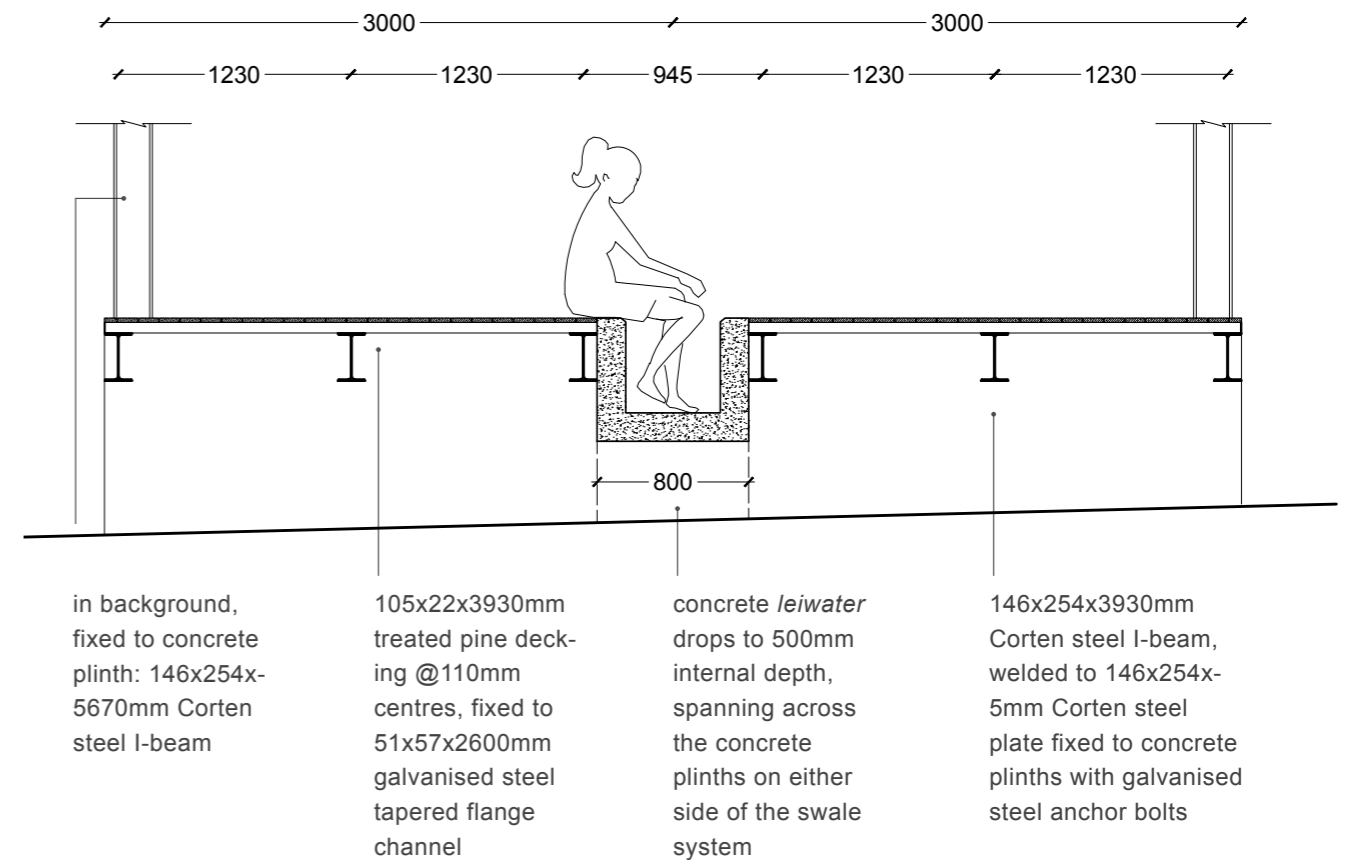
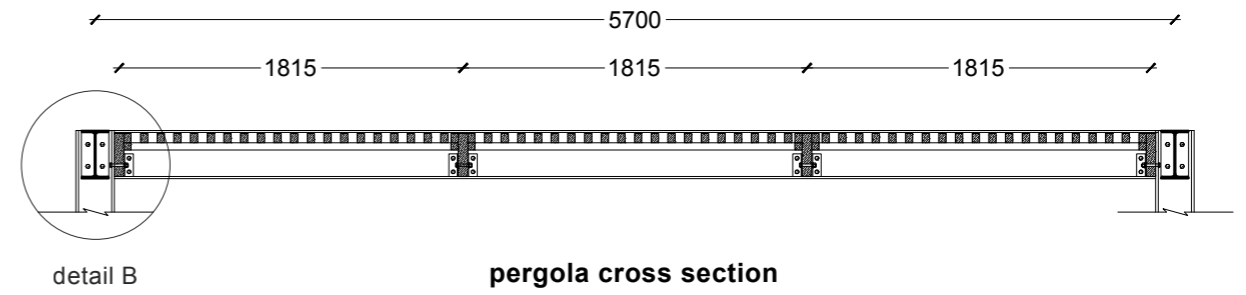
MAKING ~ pergola



Construction methods for this project have been approached with a consideration for community participation (employing locals to build and manage the intervention). For this reason the building and making methods have been designed to be simple and easy to learn, using standard parts to keep costs efficient.

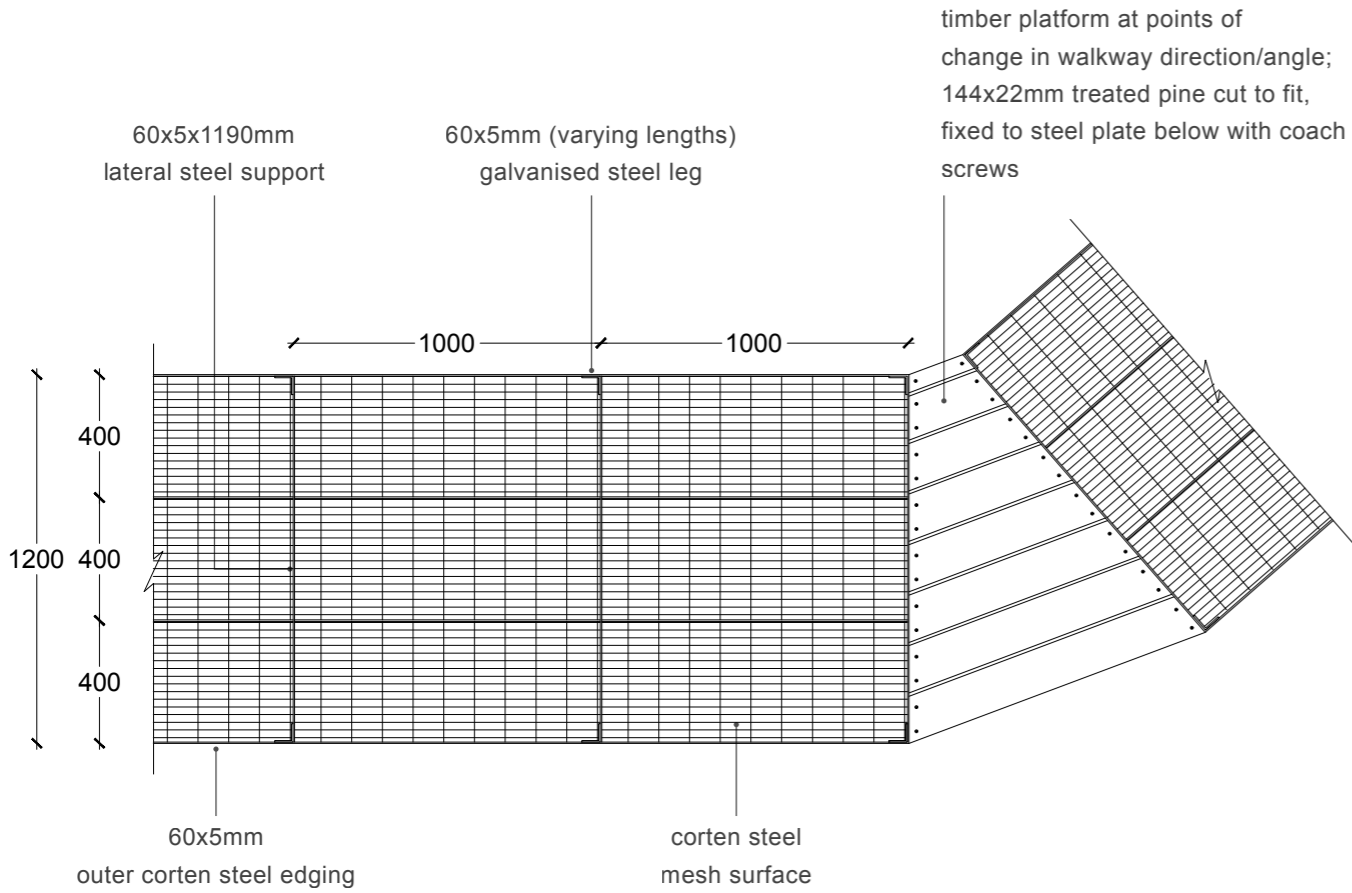


detail B

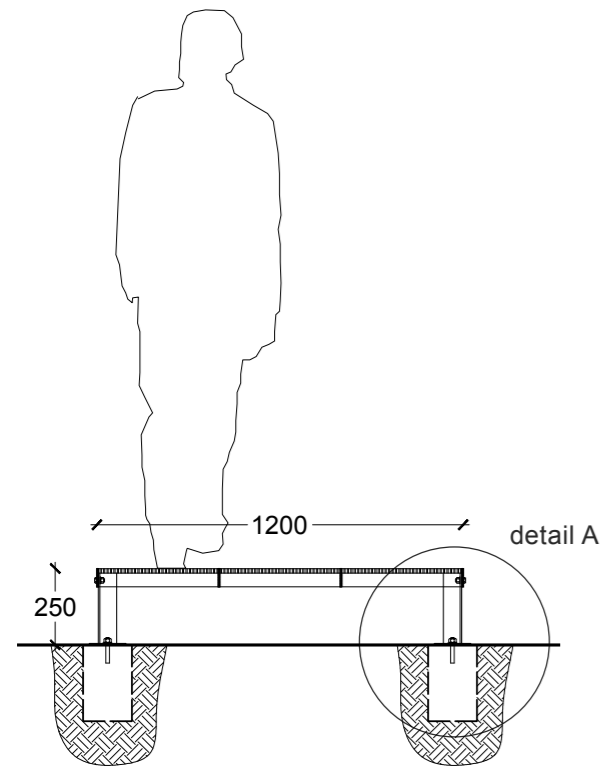


deck cross section

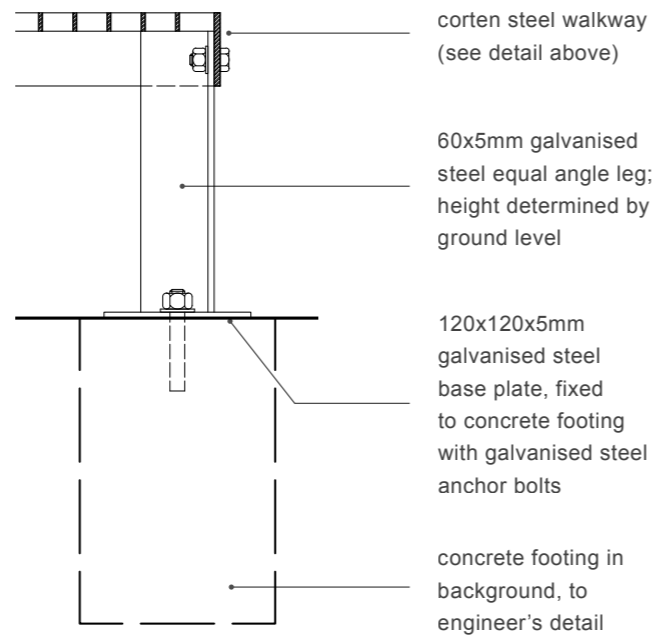
MAKING ~ walkway



plan

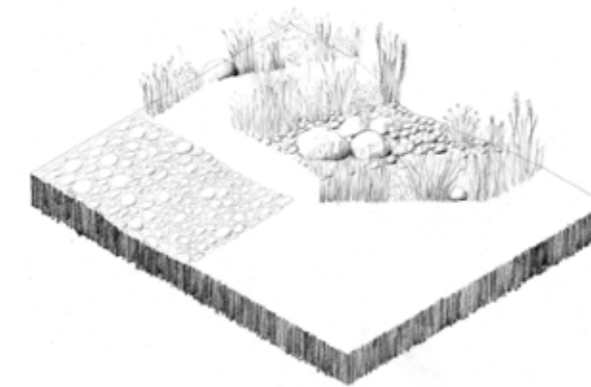
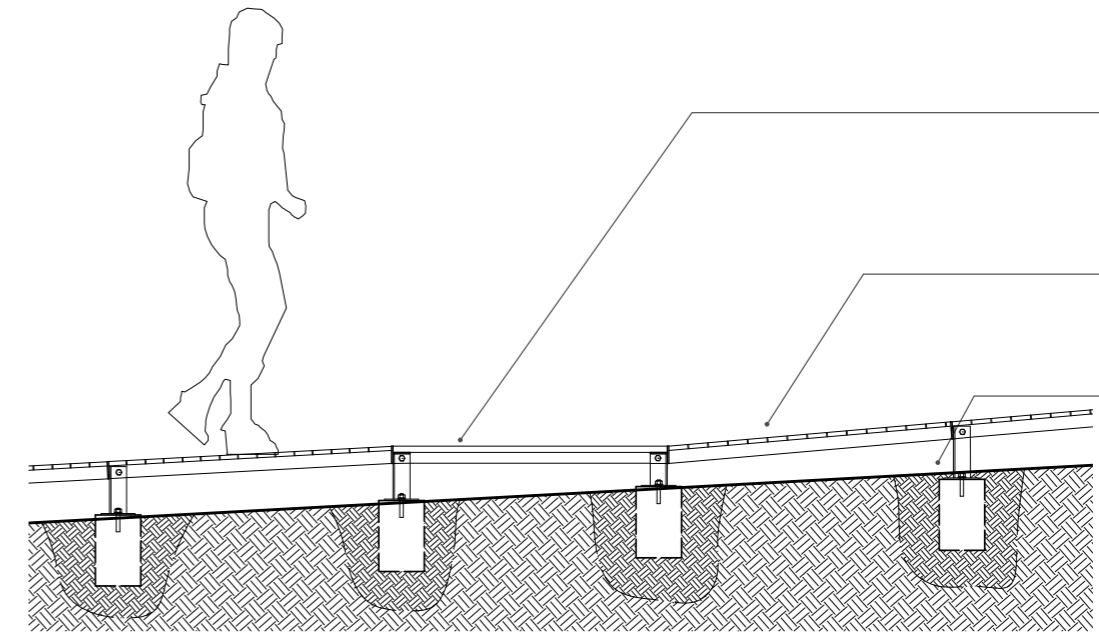


cross section

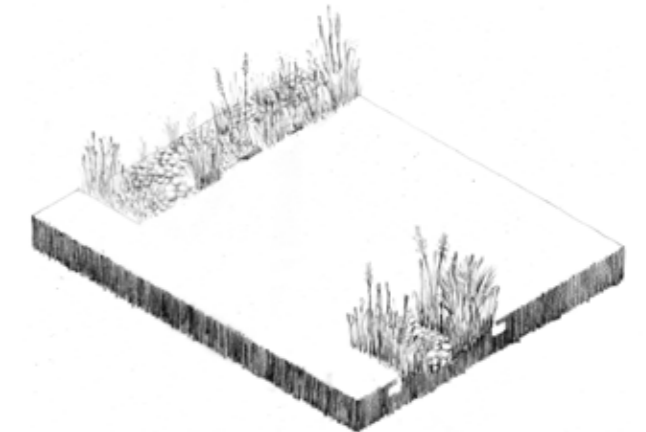
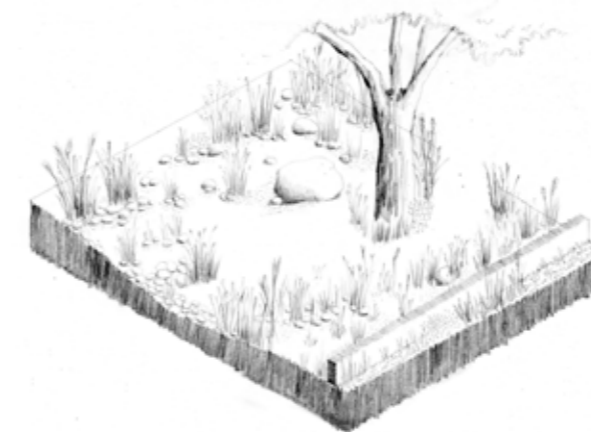


detail A

walkway continued

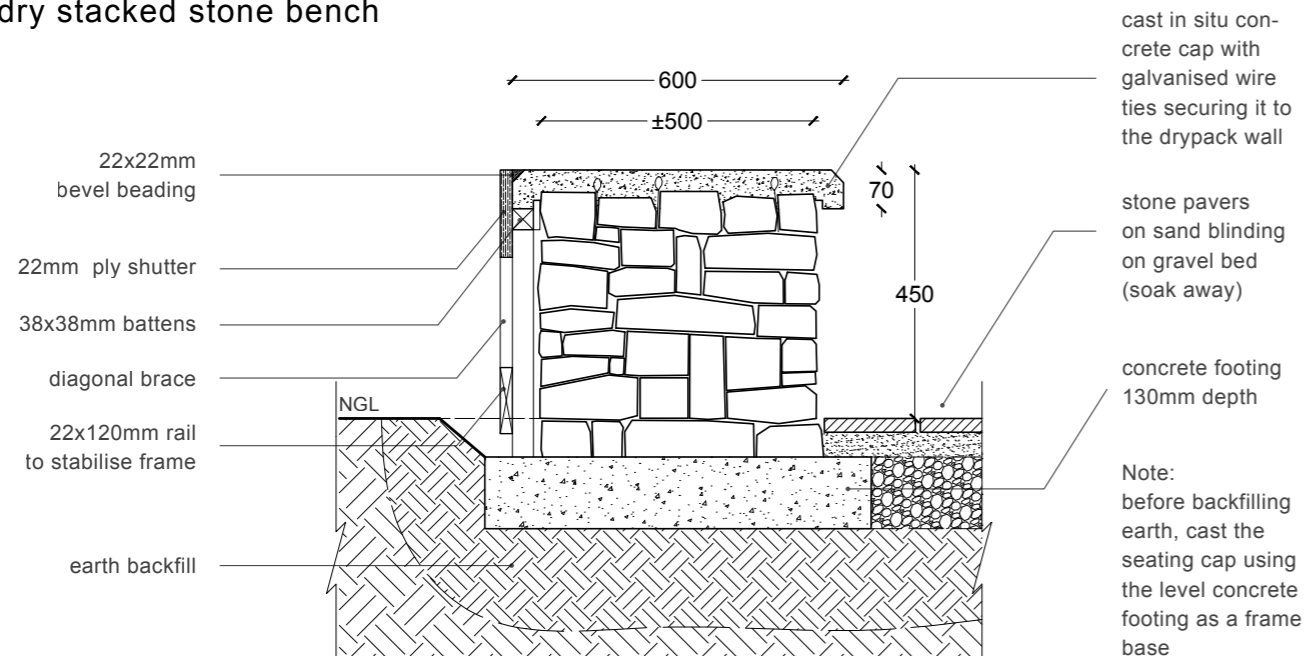


planting conditions



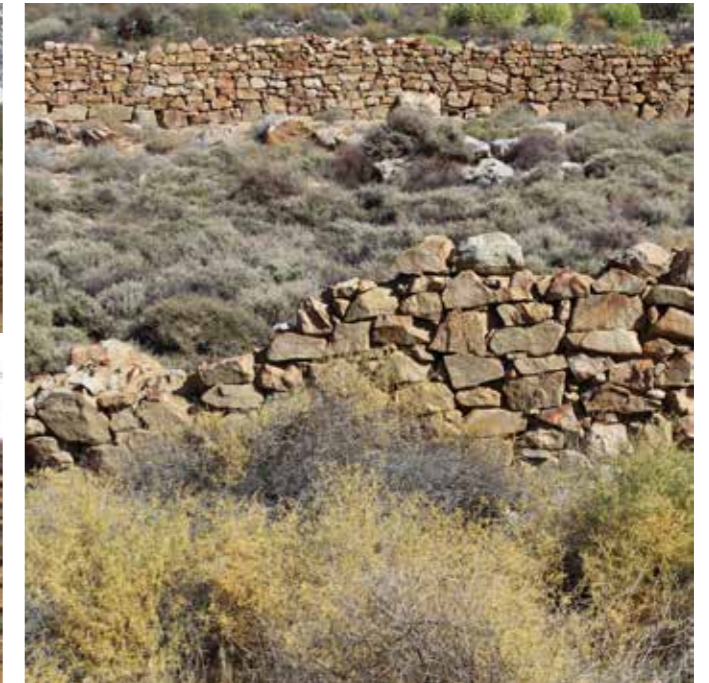
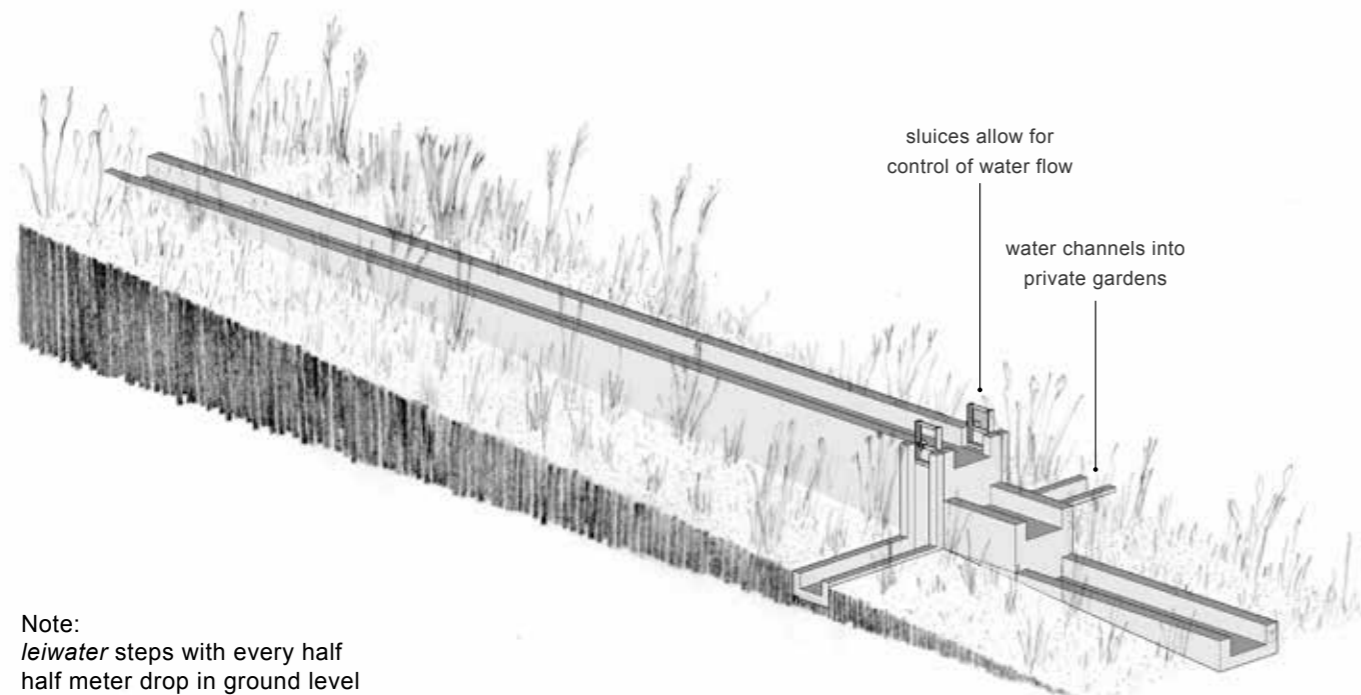
MAKING ~

dry stacked stone bench



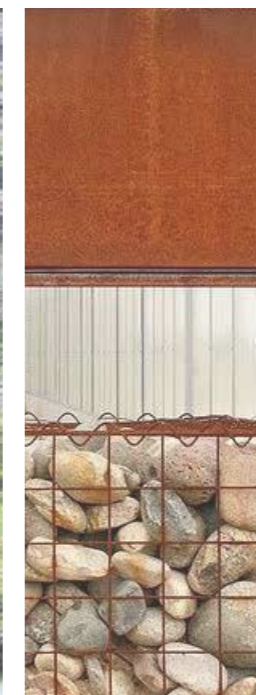
cross section with concrete shutter detail

leiwater stepping with slope



DOMINANT MATERIALS:

dry stacked stone wall (above are examples from the Cederberg area, showing the accessible potential for this construction approach); thick oversized gabion walls; earthen concrete (see below) -- here, concrete mix includes pigments/sample of local earth, thus is given a hue that mirrors the landscape



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