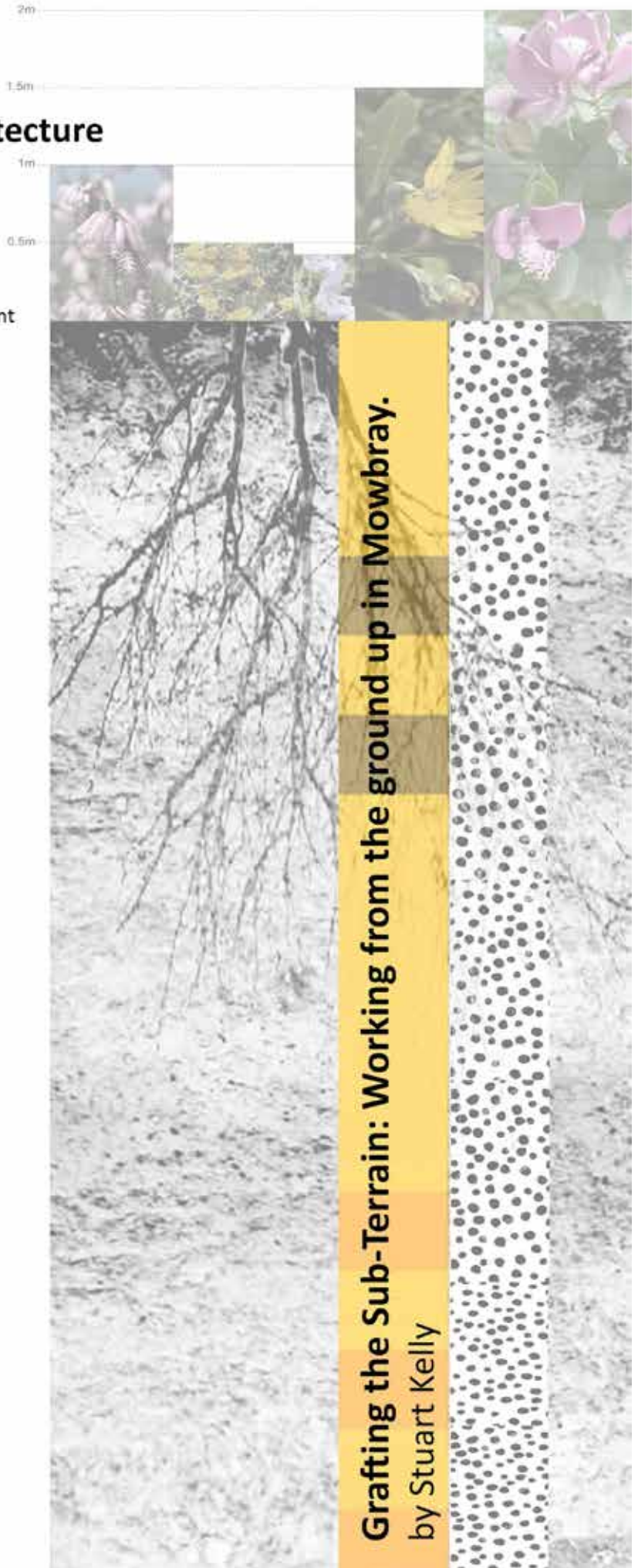


Masters in Landscape Architecture
MLA II 2016
Dissertation

Faculty of Engineering and the Built Environment
University of Cape Town



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UNIVERSITY OF CAPE TOWN

*Faculty of Engineering & the Built Environment
School of Architecture, Planning and Geomatics*

University of Cape Town

Rondebosch, Cape Town, 7701

Dissertation presented as part fulfilment of the degree of
Masters of Landscape Architecture

In the School of Architecture, Planning and Geomatics
University of Cape Town, December 2016

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- III. I am now presenting the thesis for the examination for the Degree of Masters in Landscape Architecture.

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Faculty of Engineering and the Built Environment, University of Cape Town

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Name of principal researcher, student or external applicant	Stuart Kelly	
Department	Architecture, Planning and Geomatics	
Preferred email address of applicant:	stukelly101@gmail.com	
If a Student	Your Degree: e.g., MSc, PhD, etc..	MLA
	Name of Supervisor (if supervised):	Julian Raxworthy
If this is a research contract, indicate the source of funding/sponsorship	N/A	
Project Title	Redesigning the Sub Terrain through the Concept of Grafting	

I hereby undertake to carry out my research in such a way that:

- there is no apparent legal objection to the nature or the method of research; and
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Supervisor (where applicable)	JULIAN Click here to enter text. RAXWORTHY		16 Nov 2016
HOD (or delegated nominee) Final authority for all applicants who have answered NO to all questions in Section 1; and for all Undergraduate research (Including Honours).	Assoc Prof N Click here to enter text. COETZER		29/11/16 Click here to enter a date.
Chair: Faculty EIR Committee For applicants other than undergraduate students who have answered YES to any of the above questions.	Click here to enter text		Click here to enter a date.

Contents

Section 1

Project Abstract

Grafting the Sub-Terrain: Working from the ground up in Mowbray.

Section 2

Research Study

Resembling Landscapes: Identifying Types of Relationships.

Section 3

Dissertation Presentation

Context

Analysis

Vision

Process

Research

Soil and Plants

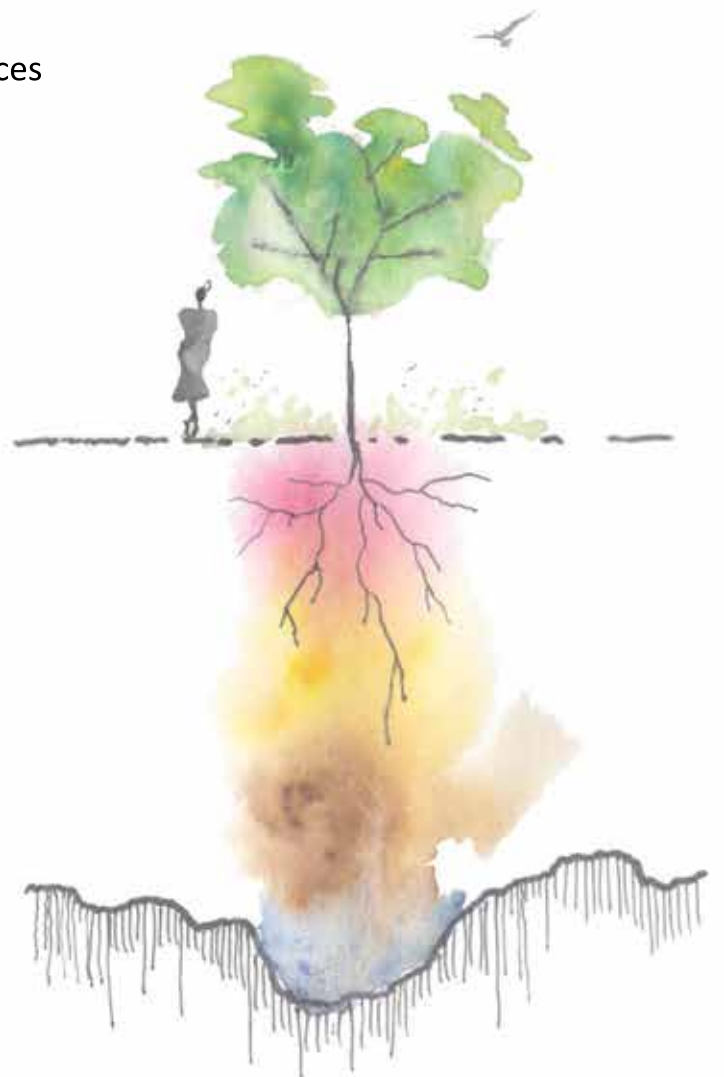
Technical Component

Sketch Plan of Station Road

Soil types and depth Plan of Station Road

Section of Station Road

Photo Montages of the envisioned spaces



Section 1

Project Abstract

Grafting the Sub-Terrain: Working from the ground up in Mowbray.



Grafting the Sub-Terrain: Working from the ground up in Mowbray.

The sub-terrain is the foundation for plant growth. Soils are important for biodiversity, supporting animal and plant life above and below the earth's surface. Soil profiles have diverse physical, chemical and biological properties and can assist in reducing pollution by harmful substances through soil absorption properties. The sub-terrain also has the ability to capture and store water to assist in providing water supply. However, soils found within the urban environment have been negatively impacted and altered by human activity resulting in poor structure and depleted properties.

Grafting is a horticultural technique used for propagation of similar productive trees, combining one plant portion with another to assist growth of the plant as an integrated whole. The concept of grafting can be applied to soils and reshaping of the sub-terrain. This will be achieved by cutting out the fragments of the current sub-terrain and inserting alternative soil types that consist of varying properties. This cut and fill of the sub-terrain can be viewed as the equivalent to grafting two similar plant species together.

Inserting fragments of improved soil profiles into portions of Mowbray's current sub-terrain has the ability to alter the current nature of the streetscape leading up to and including Mowbray's public transport hub. This rejuvenation of the sub terrain will result in improved soil profile conditions, providing the opportunity to incorporate pockets of various productive trees. Redesigning the soil profiles will result in greater biodiversity, improved ground water storage and an enhanced productive landscape, as well as create an unusual type of landscape and experience, grown from the ground up.

Section 2

Research Study

Resembling Landscapes: Identifying Types of Relationships.



Resembling Landscapes

Identifying Types of Relationships

Research Study

By Stuart Kelly



Contents

1. Abstract	1
2. Introduction	3
3. Methodology	3
4. Grafting	4
5. Relationship	5
Convenientia	6-7
Aemulatio	8-9
Analogy	10-11
Sympathies	12-13
Association	14-15
6. Conclusion	16
7. Reference	17



Abstract

Many forms of resemblances exist. This piece of literature identifies and discusses these forms of resemblances and relationships and aims to abstract ideas from the examined theory and apply these ideas to examples that may influence landscape design.

SUBMITTED BY: STUART KELLY
THESIS SUPERVISOR: JULIAN RAXWORTHY



UNIVERSITY OF CAPE TOWN
IYUNIVESITHI YASEKAPA - UNIVERSITEIT VAN KAAPSTAD

Submission in partial fulfilment of the requirements for the Masters degree in Landscape Architecture of the Faculty of Engineering and the Built Environment, University of Cape Town, South Africa. December 2016.



Introduction

Connections are formed throughout the integrated whole of existence. In the examined literature 'The Order of Things', French philosopher of Human Science Michel Foucault is concerned with epistemes. An Episteme is a formal set of unconscious thoughts that are of initial importance in shaping what is perceived as accepted knowledge during a specific time period. The following is an example a historic episteme identified by Foucault; the pre-Classical period (the later Middle ages and Renaissance up to the mid-17th century), in which people thought in terms of similitudes, resemblances and antipathies (Merquior, J. 1991: 45). It is from this period that Foucault bases his findings which have been abstracted and applied accordingly for the purpose of this study. This study aims to discuss the types of connections, relationships or resemblances that have been questioned in theory and apply these theories to landscape design.

Methodology

The method used in the following study was to identify types of resemblances from particular pieces of literature, interrogate and abstract these types through self-generated illustrations and apply these illustrations to real examples that respond to and may be used in landscape design.



Grafting

Grafting is a technique used where two similar tissues are joined together. These tissues form a particular relationship that allows for the grafted tissue to grow and live off the tissue it has been attached to. For example, refer to Figure 1., in horticulture grafting is a method of propagation. "Grafting is a technique used to combine one plant part with another to encourage growth as a unified plant. Grafting is accomplished by inserting a piece of stem (scion) onto the stem (root stock) of the plant that will serve as the root system for the unified plant." Kumar, G (2011: 1).



Figure 1.

Figure 1. Indicates two similar tissues types that have been joined together and formed a relationship through the method of grafting. This illustrates the new growth of the scion that has achieved a successful graft union with the more mature root stock.

Having mentioned in the above that a relationship is needed between two parts in order for a successful graft to be achieved it is useful to know that there are multiple types of relationships that exist, these relationships will be discussed further in the study.



Relationship

Foucault, M (2005: 19) queries the term, or idea rather, of relationship and suggests that various arrangements exist of which constitute different types of relationships. He constructs an argument by unpacking four elements that are imbedded in this idea and labels them; "The Four Similitudes" (Foucault 2005:19), meaning forms of resemblance. Similitude can be observed as an alternative to relationship as it relays the comparison or quality of state between two things. These similitudes are discussed and interrogated further:



Convenientia

This describes the closeness of something rather than the concept of similitude. According to Foucault, M (2005: 20); “Those things are ‘convenient’ which come sufficiently close to one another to be in juxtaposition; their edges touch, their fringes intermingle, the extremity of the one also denotes the beginning of the other.” This means that convenientia defines the contact and bond of objects or spaces of which the beginning and end of that object or space is blurred due to the relationship of which they own. Therefore, resemblance is attached to space in the form of altering proximity, this relationship is shown in Figure 2 and 3. Foucault, M (2005: 21) continues; “by this linking of resemblance with space, this ‘convenience’ that brings like things together and makes adjacent things similar, the world is linked together like a chain. At each point of contact there begins and ends a link that resembles the one before it.” This suggests that resemblances of an object or space before it will have a resemblance with that of the next, meaning without the binding resemblance the two adjacent will make little or no logic. This can be applied to design in the following example. Imagine a road surface that is edged with a kerb. This kerb creates a change in plane from the horizontal road surface to the vertical surface kerb. The kerb ends and another horizontal surface, soft or hard space continues. In this case the kerb blurred the edges between two horizontal surfaces and created a changeover point whilst still allowing the plane surfaces to be perceived as one.



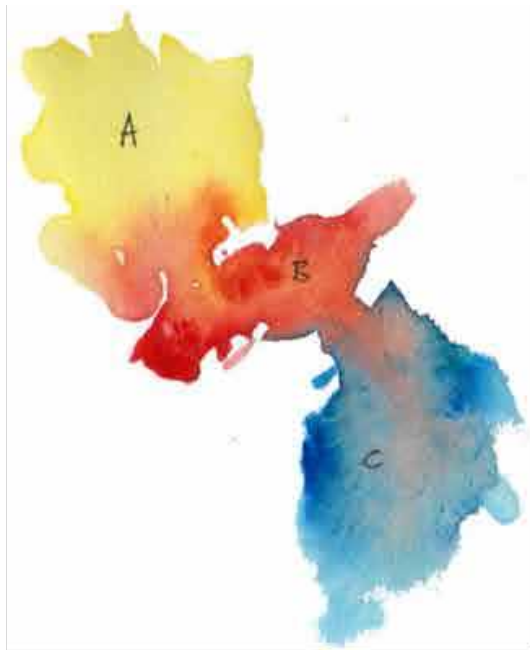


Figure 2.



Figure 3.

Figure 2. Convenientia (Proximity). Shows several parts and how their resemblance is a result of a bound sequence. A-B-C. However, if B was removed, A- -C, the resemblance would become unclear.

Figure 3. Example

Aemulatio

Aemulatio is a type of 'convenience', but is not bound by place and adjacency. It 'emulates' or resembles from a distance. Foucault, M (2005: 22) states; "Rather as though the spatial collusion of convenientia had been broken, so that the links of the chain, no longer connected, reproduced their circles at a distance from one another in accordance with a resemblance that needs no contact. There is something in emulation of the reflection and the mirror: it is the means whereby things scattered through the universe can answer one another." This suggests that objects or spaces need not possess similitude in the form of proximity, but rather inherit resemblance through the arrangement of scale, program and order, refer to Figure 4-6. For instance; imagine two entirely distant places, these places are assembled by substance. It is the arrangement of the substance within a space that will generate resemblance between the two distant places. The following is an example of how this may be applied to design. A seating space may exist at a given point. It is the interaction and nature of the user and the arrangement of the seating in that space that creates program and order that similarly may be seen in different space at a different scale. This means that the relationship produced by emulation allows for people, objects or spaces to duplicate without the need for connection and adjacency, refer to Figure 2. Foucault, M (2005: 23) reiterates; "The links of emulation, unlike the elements of convenientia, do not form a chain but rather a series of concentric circles reflecting and rivalling one another."





Figure 4.



Figure 5.



Figure 6.

Figure 2. Aemulatio (Scale, program and order). Demonstrates how a relationship is achieved over distance and although the scale may vary, the resemblance formed by program and order still exists.

Figure 5 and 6. Example



Analogy

In this instance, analogy is shaped by the overlay of both *convenientia* and *aemulatio*. This means that resemblance may occur by adjacency and proximity whilst also existing over distance. Foucault, M (2005: 24) "Its power is immense, for the similitudes of which it treats are not the visible, substantial ones between things themselves; they need only be the subtler resemblances of relations. Disencumbered thus, it can extend, from a single given point, to an endless number of relationships." Having stated this, a simple example can be established; the amount of soil particles that embrace life on earth may relate to that of stars glistening in the night's sky. In actual fact, these analogies could either be a simile where two unlike elements may be compared, or a metaphor, where two unlike elements may share something in common, refer to figure 7-9. This can be applied to design in the following example. Let's view the grafting of plants, mentioned above and apply that to the design of soils. One plant may grow off another plant. One soil type may be placed in a larger different body of soil. Their nature may be similar but not the same, however they create a relationship that allows for them to exist off each other and exceed the same outcome. Like the grafted scion on a plant will be different to that of the root stock so will the area of soils. They will both be soils, but one soils characteristics will differ to that of the soil it was grafted to. This means that although the aspects are two completely different things, they possess similar forms and functions. Having elaborated on this subject, it is logical to assume that the analogy discussed in this study refers to form and function.



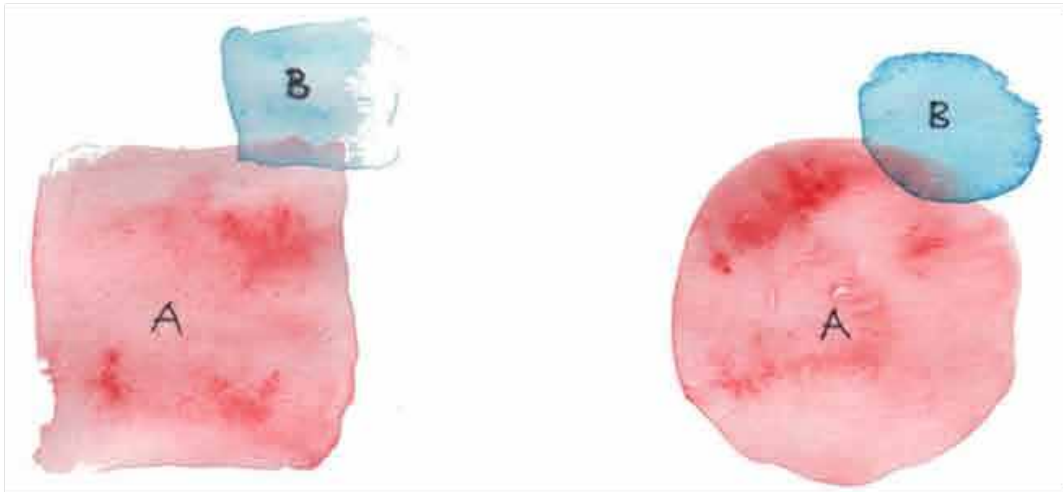


Figure 7.



Figure 8.



Figure 9.

Figure 7. Analogy (Form and function). Indicates how two unlike elements may resemble each other by comparison or by aspects they both contain. This means that even though A and B are two different things, the configuration is comparable which results in similar form and function.

Figure 8 and 9. Example



Sympathies

This term refers to something becoming so similar and too integrated that it no longer possesses the individuality it once owned. Sympathies do not pause at the instance resemblance is achieved, sympathy has the ability to adapt by merging into one form rather than resembling or fitting into many different forms. Sympathy relates to something that becomes overpowered, lost or obsolete in the place in which it was previously driven. Having said this, if something has an action, it must hold a reaction. The reaction of sympathy is antipathy. Foucault, M (2005: 27) "Antipathy maintains the isolation of things and prevents their assimilation; it encloses every species within its impenetrable difference and its propensity to continue being what it is", refer to figure 10 and 11. This suggests that without this balance, forms, objects and spaces would lack diversity. This would rule out resemblance and relationship as the entirety would consist of a widespread simplicity. Therefore, to clarify, it is legitimate to claim that sympathies relate to materiality and detail. This can be applied to design by the following example; for instance, if one designs a surface, it is the change in materiality and detail that causes the one surface to differ to the previous surface. If there are cobblestone that merge into laterite or gravel, although similar in purpose, there is a clear boundary where the type of surface starts and ends. Thus enriching the given area and limiting it to being too simplistic.





Figure 10.

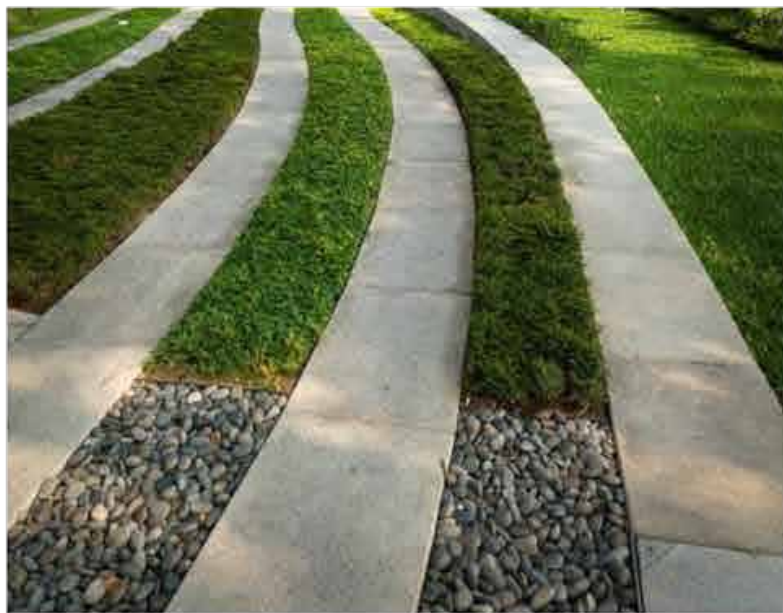


Figure 11.

Figure 10. Sympathies (Materiality and detail). Clarifies sympathy, and how it can be immersed in itself resulting in a lack of definition and diversity. Antipathy, is the opposite which forces detail whilst limiting integration where necessary.

Figure 11. Example.



The first three similitudes; (convenientia, aemulatio and analogy) are defined by sympathies. Sympathy and antipathy either hold or dissolve the aspect of which the aforementioned resemblances are structured. Foucault, M (2005: 28) “The whole volume of the world, all the adjacencies of ‘convenience’, all the echoes of emulation, all the linkages of analogy, are supported, maintained, and doubled by this space governed by sympathy and antipathy, which are ceaselessly drawing things together and holding them apart.” This suggests that because of the relationships developed by sympathy and antipathy, resemblances continue to be closely intertwined relationships that possess likeness where as something the same remains unchanged, engrossed by itself.

Association

A fifth similitude can be added to this list of terms. Association, like convenientia, aemulatio and analogy, it too is governed by sympathy and antipathy. Although this may be seen as an oblique link to the aforementioned similitudes it is relevant to that of resemblance. This relationship is capable of resembling by proximity as well as over distances that are driven and generated by sensation. This form of resemblance creates an embedded perception that influences relationship, a deeper connection, refer to Figure 12 and 13. Ivan Pavlov referred to it as ‘Classical Conditioning’. (Bichler, O et al., 2012) “In classical conditioning, associative learning involves repeatedly pairing an unconditioned stimulus, which always triggers a reflexive response, with a neutral stimulus, which normally triggers no response. After conditioning, a response can be triggered for both the unconditioned stimulus and the neutral stimulus, the later one becoming a conditioned stimulus.” It is this ‘conditioned stimulus’ that defines the fifth similitude; ‘Association’. This concept dates back to the early nineteen hundred from an experiment based on ‘Pavlov’s dog’. In this experiment, Pavlov demonstrated how the neutral stimulus, for instance, ringing a bell, could be associated to the smell or sight of food which made his dogs salivate (Pavlov, I et al 1927). Therefore, association is constructed by memory and overtime, if repetitively occurring, will lead to the generation of resemblance. In conclusion, association is linked with experience. This can be applied to design by the following example. In design one may choose to incorporate specific fragrances, for example *Trachelospermum jasminoides*, Star Jasmine. It is the fragrance that one may experience that may unconsciously memorise a space.



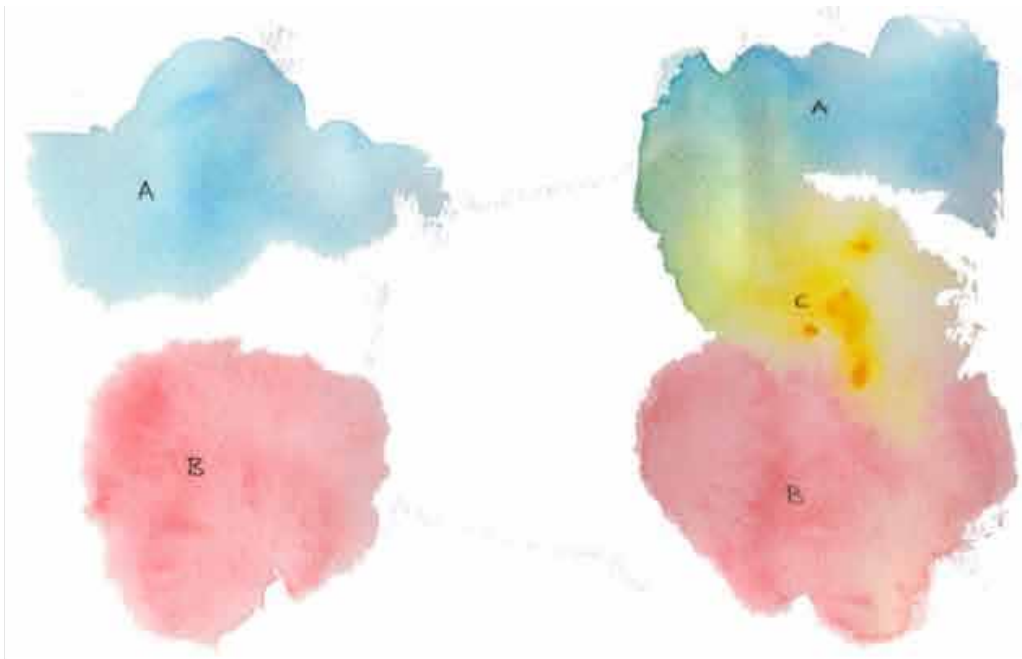


Figure 12.



Figure 13.

Figure 12. Association (Experience). Identifies that A and B are the two elements being linked by association, C. This means if something is experienced in A, that same experience occurred in B, resulting in resemblance.

Figure 13. Example



Conclusion

The literature that has been examined, expressed, abstracted and applied in this study has created an awareness of what constitutes types of relationships and forms of resemblance. These relationships are all around us and if questioned accordingly may be applied to landscape design resulting in an improved connection regarding proximity, scale, program, order, form, function, materiality, detail and experience.



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Figures

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8. Figure 2. Adapted by Stuart Kelly
9. Figure 3. <http://www.marshalls.co.uk/commercial/kerb/products/conservation-textured-kerb-145-x-255mm-webfa035200>
10. Figure 4. Adapted by Stuart Kelly
11. Figure 5. <https://templerome.wordpress.com/author/alexiskandra/>
12. Figure 6. <http://goodpixcool.com/people+sitting+sketches>
13. Figure 7. Adapted by Stuart Kelly
14. Figure 8. <http://growinggreener.blogspot.co.za/2014/07/summer-bud-grafting-cherries-plums.html>
15. Figure 9. <http://www.geo41.com/soil-and-change/#soil-degradation> and <https://soilscience.info>
16. Figure 10. Adapted by Stuart Kelly
17. Figure 11. <https://za.pinterest.com/pin/319614904781533669/>
18. Figure 12. Adapted by Stuart Kelly
19. Figure 13. <https://za.pinterest.com/pin/179792210098660304/>



Section 3

Dissertation Presentation

Context

Analysis

Vision

Process

Research

Soil and Plants

Technical Component

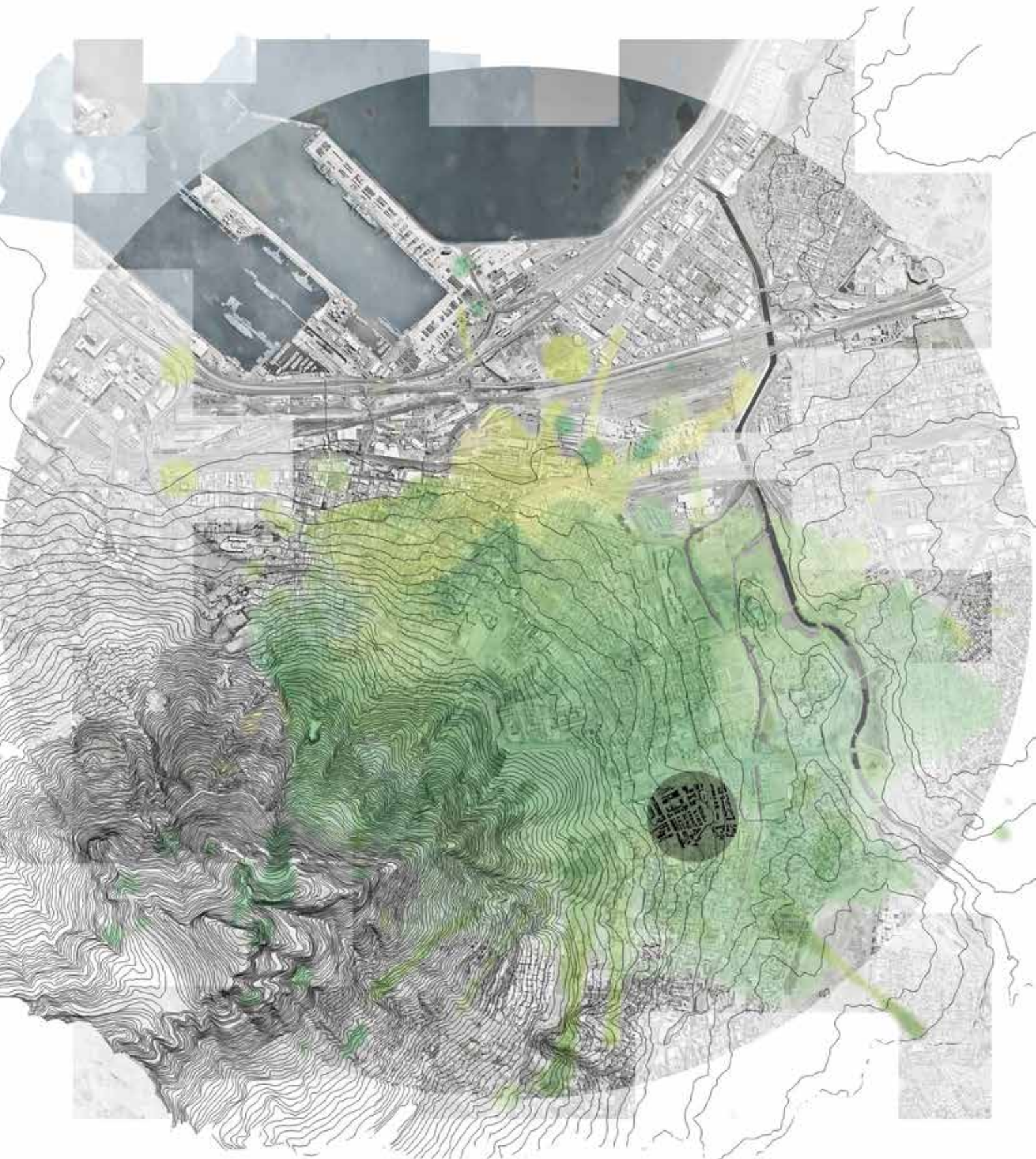
Sketch Plan of Station Road

Soil types and depth Plan of Station Road

Section of Station Road

Photo Montages of the envisioned spaces





Contextual Map, Cape Town
Identifying Mowbray
Scale 1:20 000



Station Road

Upper Durban Road

Main Road

Railway



Mowbray
Current Infrastructure
Scale 1: 5000



Building Footprint



Property Boundaries



● Train Station



● Bus Station



Public Transport Routes and Stations



Current Drainage system



Existing Street Trees



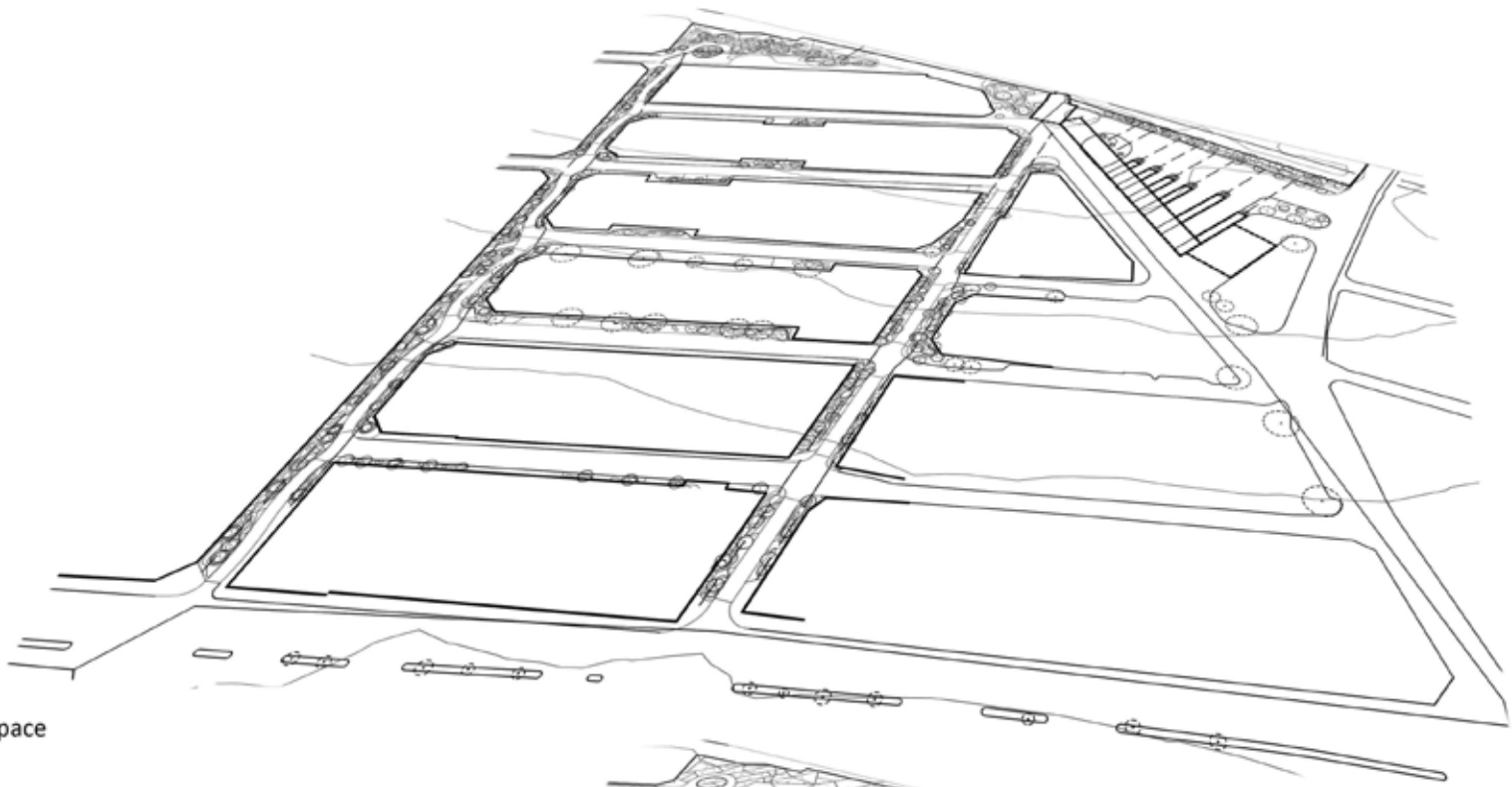


Mowbray
Design way-in
Scale 1: 5000

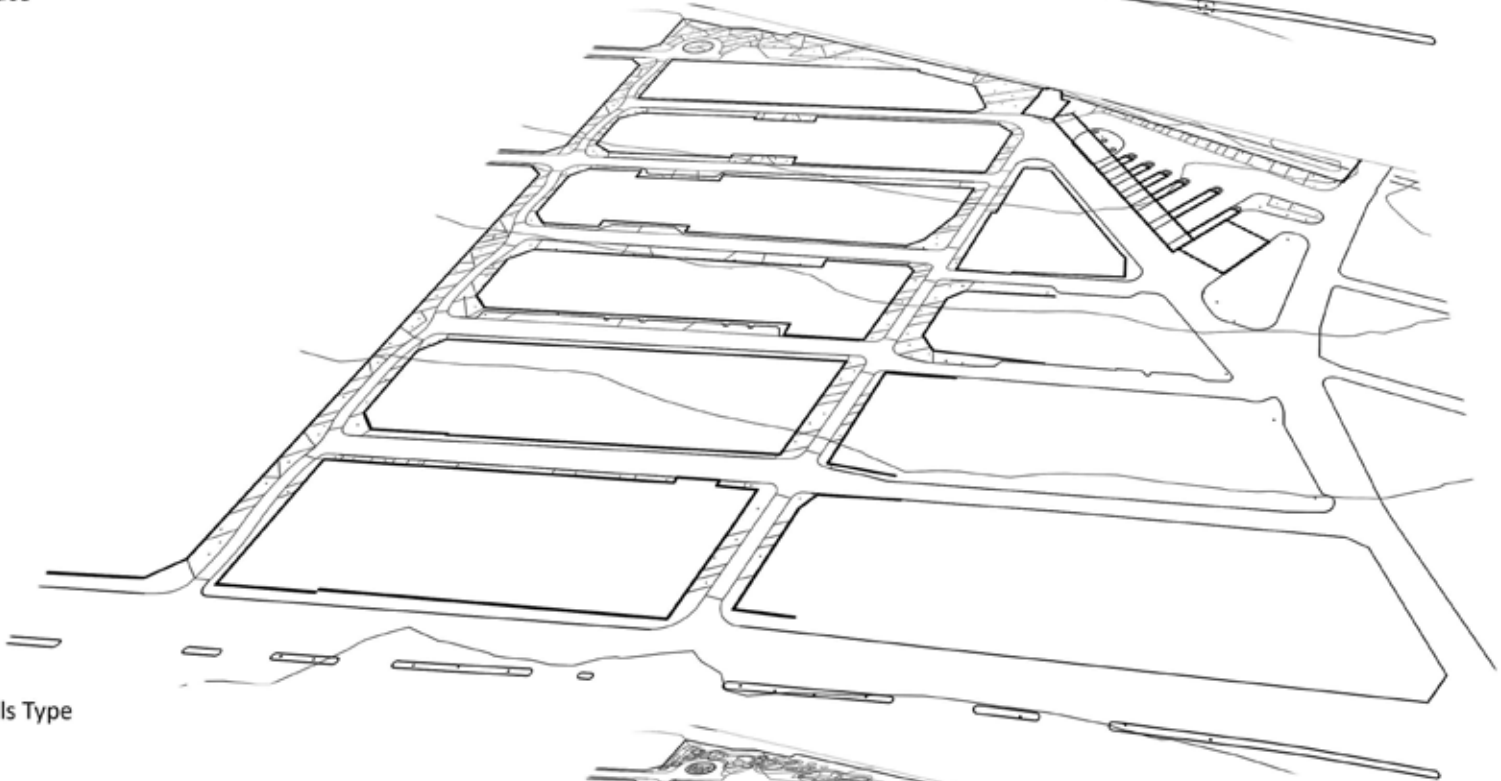


Re-envisioning Mowbray
Streets Leading to Transport Hubs

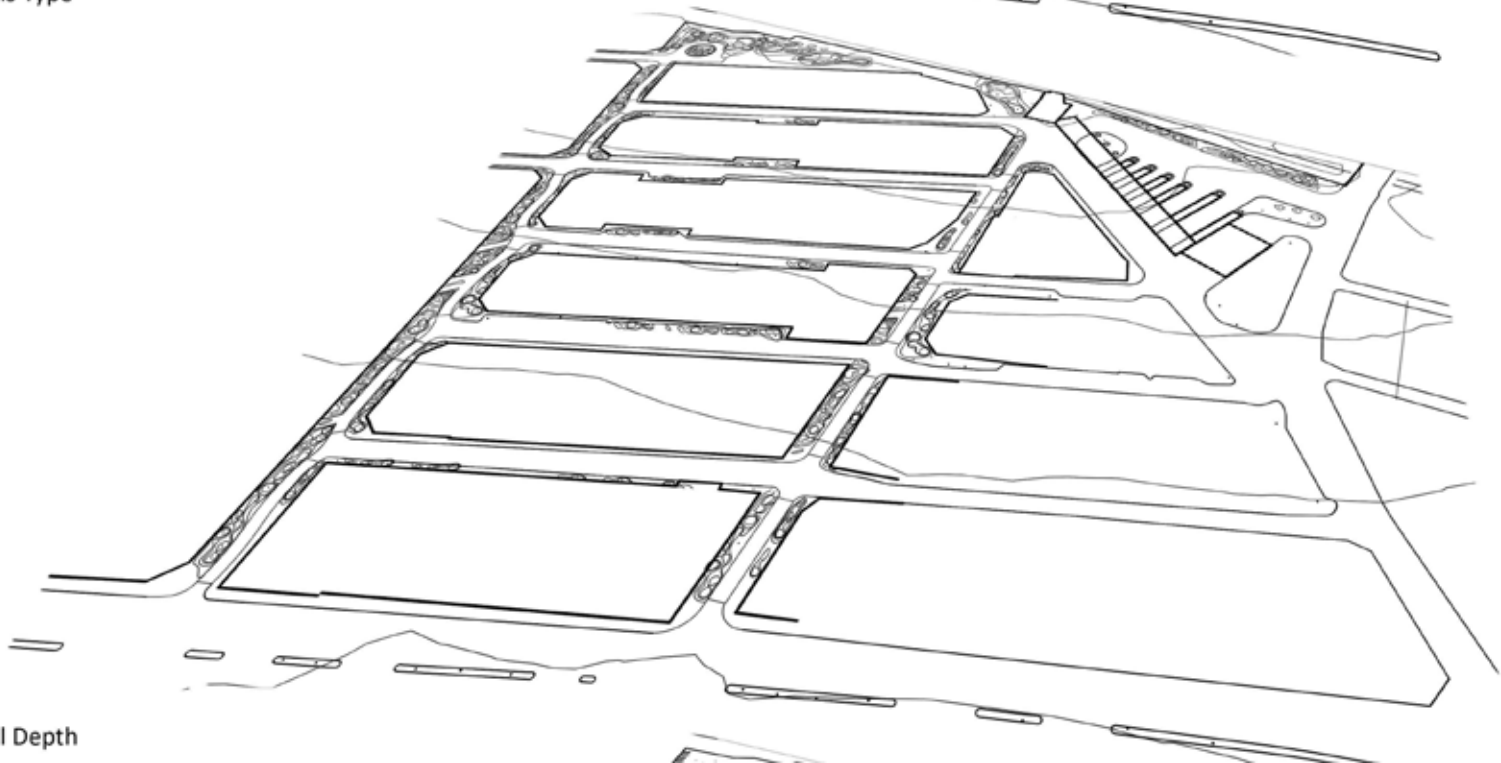




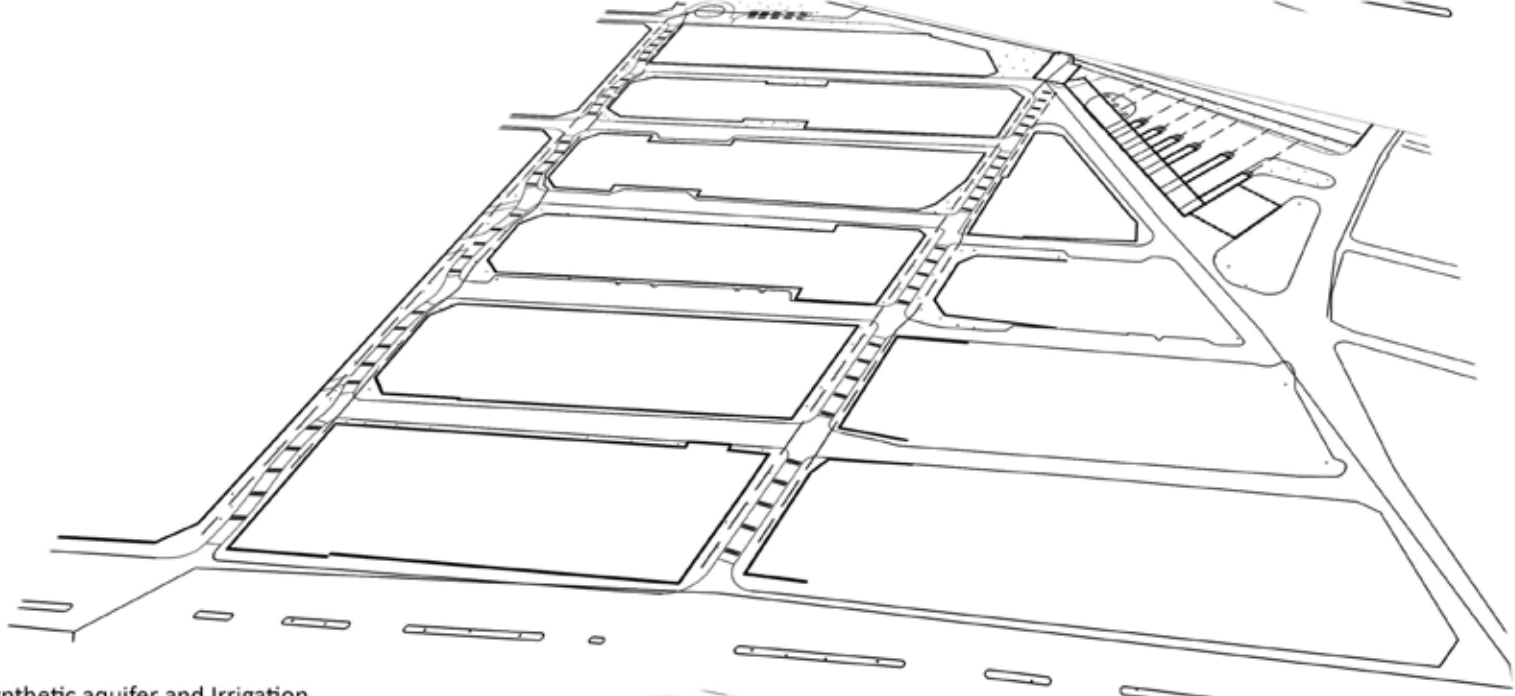
Space



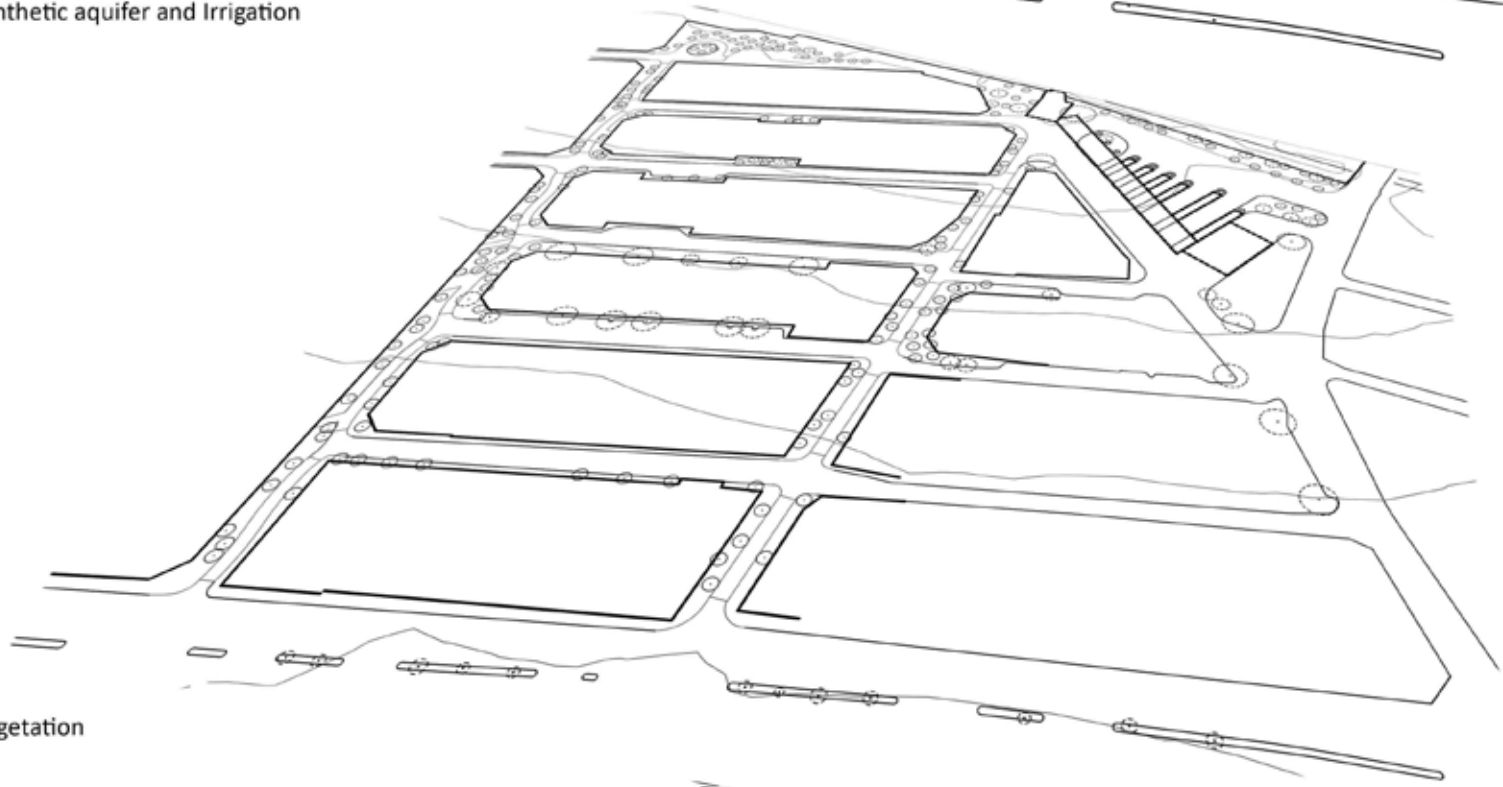
Soils Type



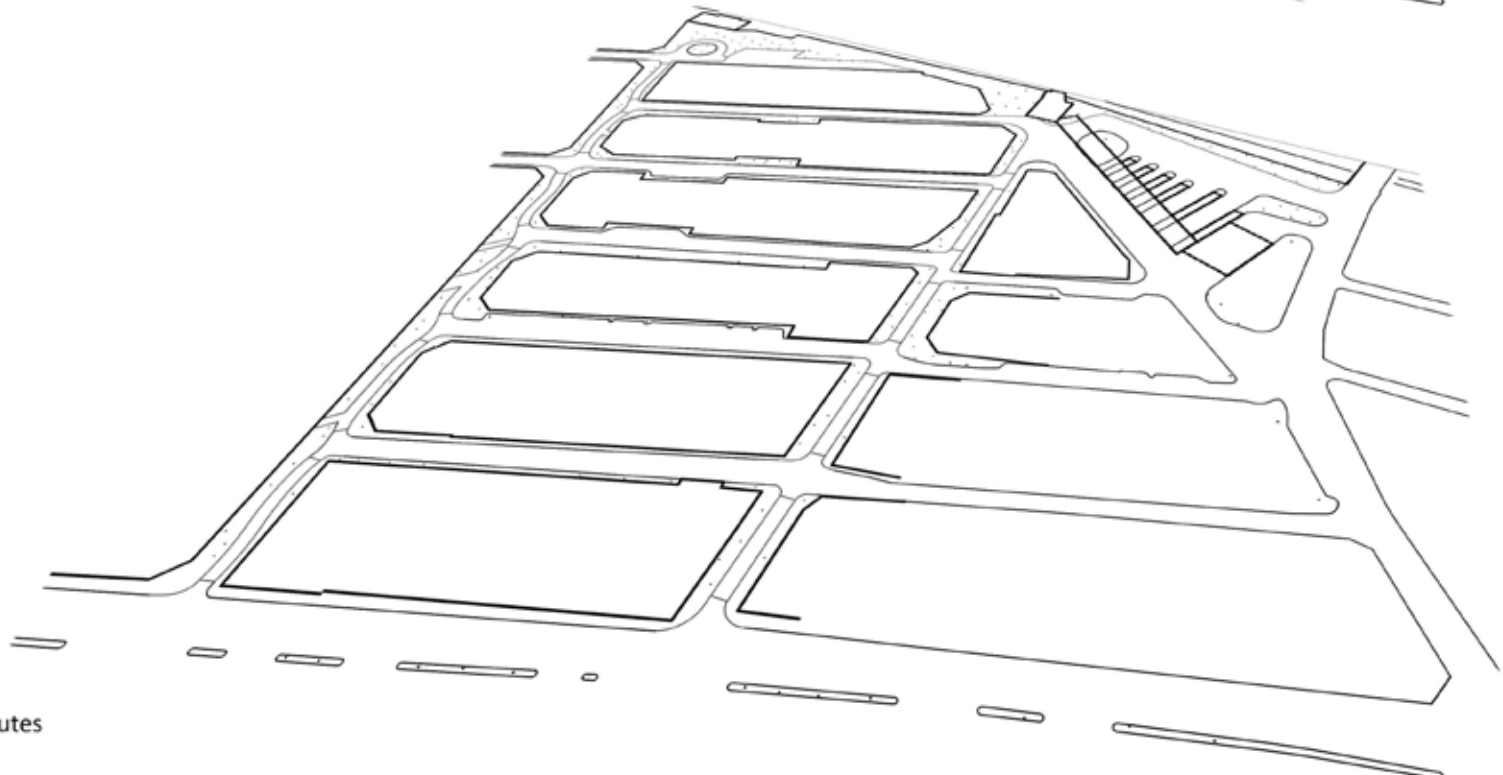
Soil Depth



Synthetic aquifer and Irrigation



Vegetation



Routes



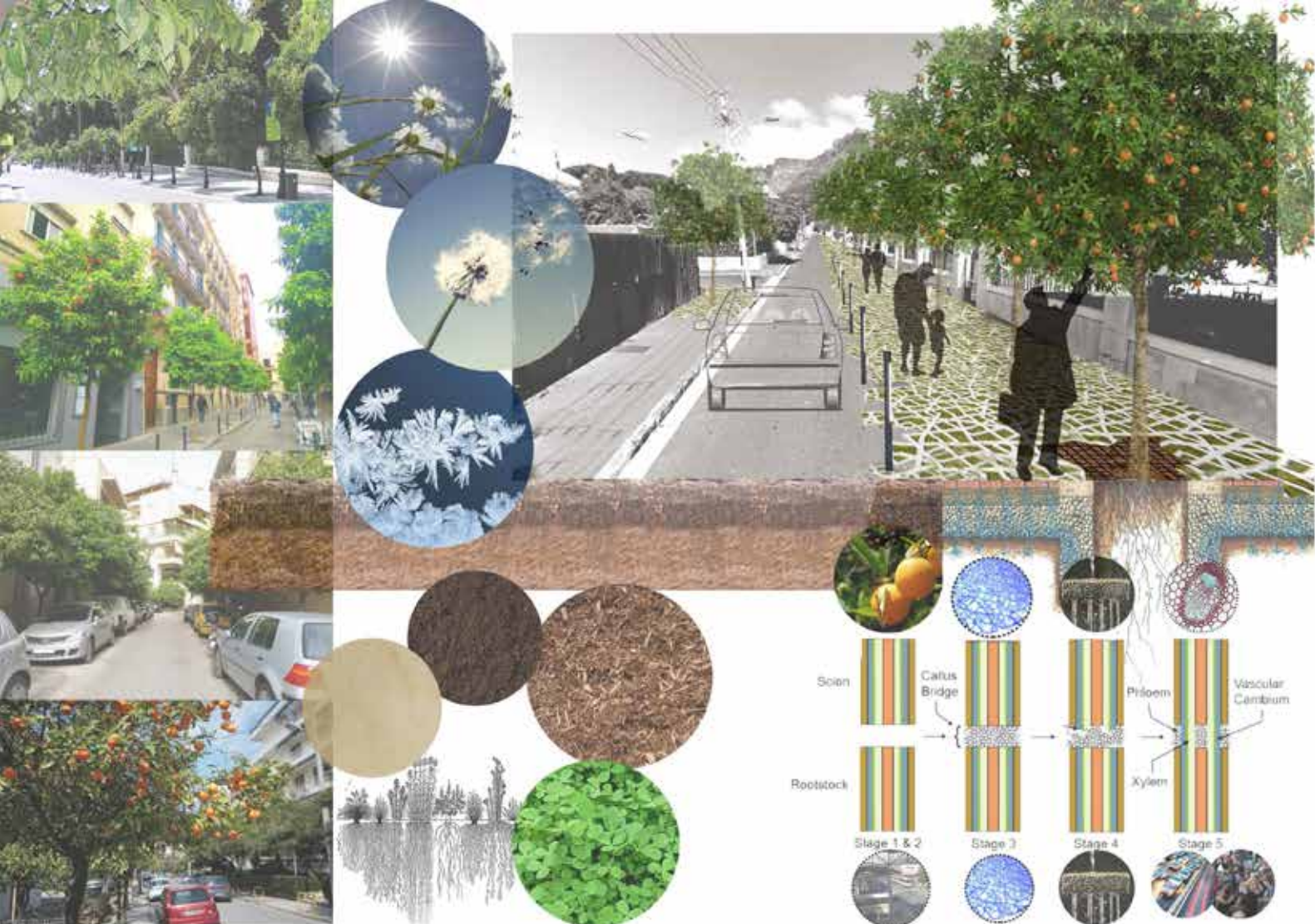
Extended Vision
Connecting Devils Peak with the Liesbeek River Trail
Scale 1:10 000



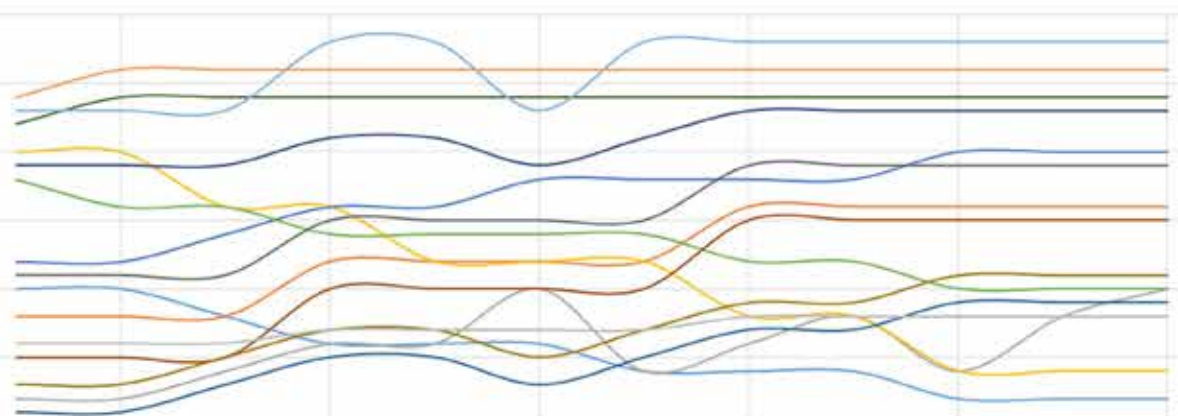




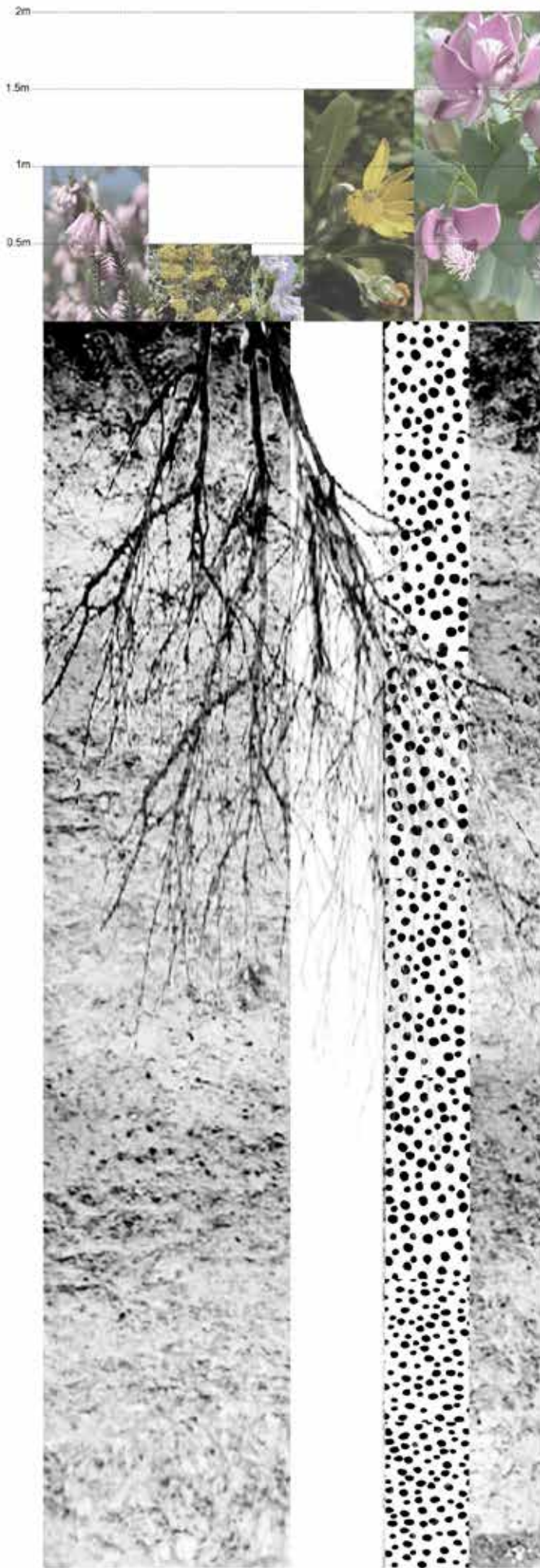




Particle Size	0.075-0.25		0.25-0.075		0.075-0.002		0.002-0.0002		0.0002-0.00002		0.00002-0.000002	
	Sand	Loamy sand	Sandy loam	Loam	Silt loam	Silt	Sandy clay loam	Clay loam	Silty clay loam	Sandy clay	Silty clay	Clay
Sand	85-100	70-90	42.5-85	22.5-52.5	0-50	0-20	45-80	20-45	0-20	45-65	0-20	0-45
Silt	0-15	0-30	0-50	27.5-50	50-100	80-100	40-72.5	15-52.5	40-60	0-20	40-60	0-40
Clay	0-10	0-15	0-20	7.5-27.5	0-27.5	0-12.5	20-35	27.5-40	27.5-40	35-55	40-60	40-100
Sand		92.5	80	63.75	37.5	25	10	62.5	32.5	10	55	20
Silt		7.5	15	25	38.75	75	90	56.25	33.75	50	20	50
Clay		5	7.5	10	17.5	18.75	8.25	27.5	33.75	33.75	45	50
Texture	Coarse	Coarse	Moderately coarse	Medium	Medium	Medium	Moderately fine	Moderately fine	Moderately fine	Fine	Fine	Fine
Tendency to form Structure	Low	Low	Low	Medium	Medium	Medium	Moderate	High	High	High	High	High
Compaction/Bulk Density	Very Low 1.75	Very Low 1.75	Low 1.55	Medium	High 1.4	Very High 1.35	Low 1.55	Moderate 1.45	High 1.4	Low 1.55	High 1.4	Very High 1.35
Percolation	Very high	Very high	High	High	Moderate	Moderate	Moderate	Low	Low	Very Low	Very Low	Very Low
Capillary Action	Very Low	Very Low	Low	Moderate	Moderate	High	High	High	High	Very high	Very high	Very high
Porosity	Very high	High	High	Moderate	Moderate	Moderate	Moderate	Low	Low	Very Low	Very Low	Very Low
Nutrient Holding Capacity	Very Low	Very Low	Low	Moderate	Moderate	Low	Moderate	High	High	Very high	Very high	Very high
Temperature	Low	Low	Low	Moderate	Moderate	Moderate	Moderate	High	High	High	High	High
Organic Matter	Low	Low	Low	Moderate	Moderate	Moderate	Moderate	High	High	High	High	High
Cation Exchange CEC	Very Low	Very Low	Low	Moderate	Moderate	Low	High	High	Very high	Very high	Very high	Very high
N:P:K	Low	Low	Low	Moderate	Moderate	Low	Moderate	High	High	High	High	High
Ca	Low	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate
Mg	Low	Low	Low	Moderate	Moderate	Low	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate
S	Low	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate
pH	Low	Low	Low	Moderate	Moderate	Moderate	Moderate	High	High	High	High	High
Biological Properties	Very Low	Low	Moderate	Very high	Very high	Moderate	Very high	High	High	Low	Low	Very Low



Investigating Soil Types



Erica baueri
Albertinia heath
1m x 30cm



Helichrysum cymosum
Gold carpet
50cm x 50cm



Osteospermum incanum
Grey tickberry
1.5m x 1m



Polygala myrtifolia
September bush
2m x 1.8m



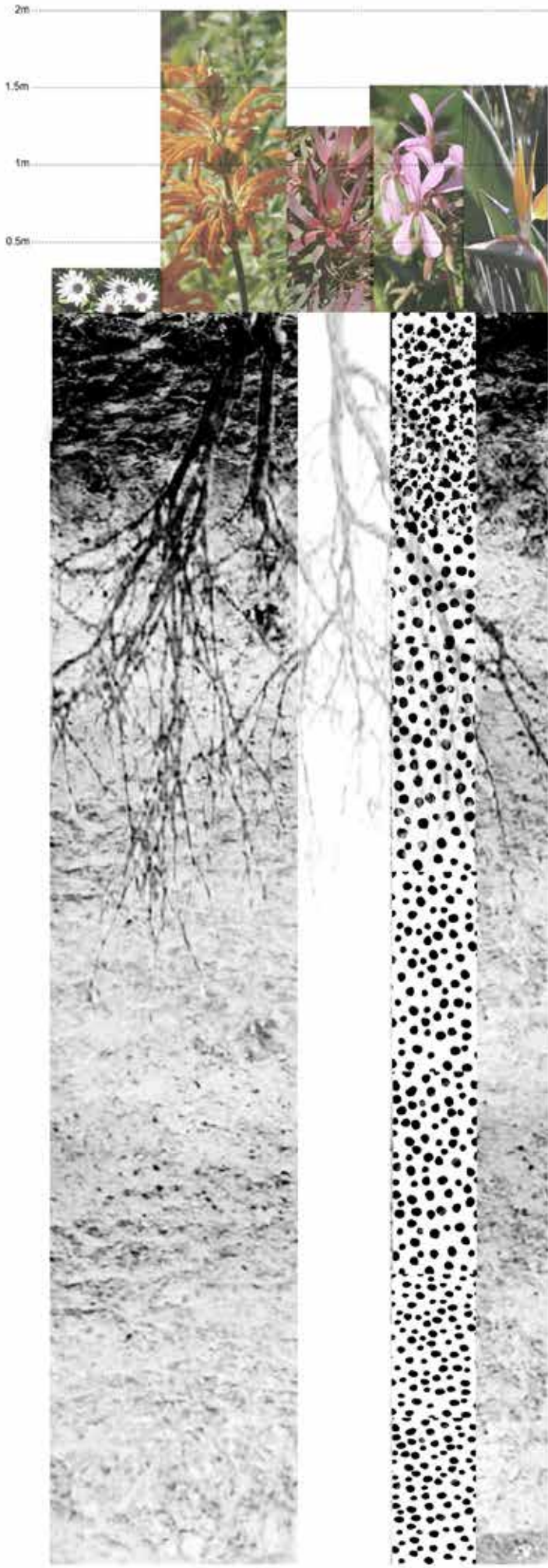
Salvia muiirii
Wild sage
40cm x 40cm

1

Sand

Consists of less than 10 percent clay, less than 15 percent silt and more than 80 percent sand.

Particle size:
Sand: 2,00 - 0,05mm
Silt: 0,05 - 0,002mm
Clay: 0,002mm>



Dimorphotheca fruticosa
Rankmagniet
30cm x 1m



Leonotis leonurus
Wild daga
2m x 1.5m



Leucadendron salignum
Geelbos
50cm-2m



Pelargonium zonale
Horseshoe pelargonium
1.5m x 1.5m



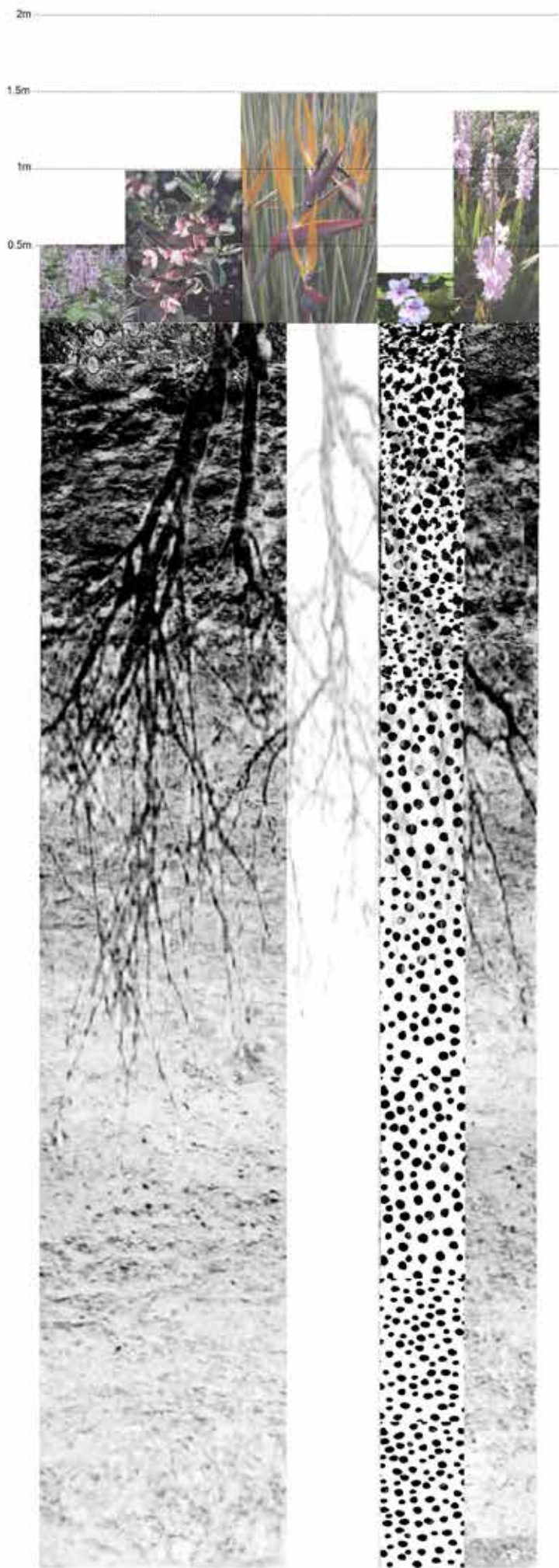
Strelitzia reginae
Bird-of-paradise flower
1.5m x 1.5m

2

Loamy sand

Consists of less than 15 percent clay, less than 30 percent silt and between 70 and 90 percent sand.

Particle size:
Sand: 2,00 - 0,05mm
Silt: 0,05 - 0,002mm
Clay: 0,002mm>



Plectranthus ambiguus
30cm-50cm x 40cm



Podalyria sericea
Silver sweet pea
1m x 1m



Strelitzia juncea
Crane flower
1.5m x 1.5m



Streptocarpus formosus
Cape primrose
30cm x 50cm



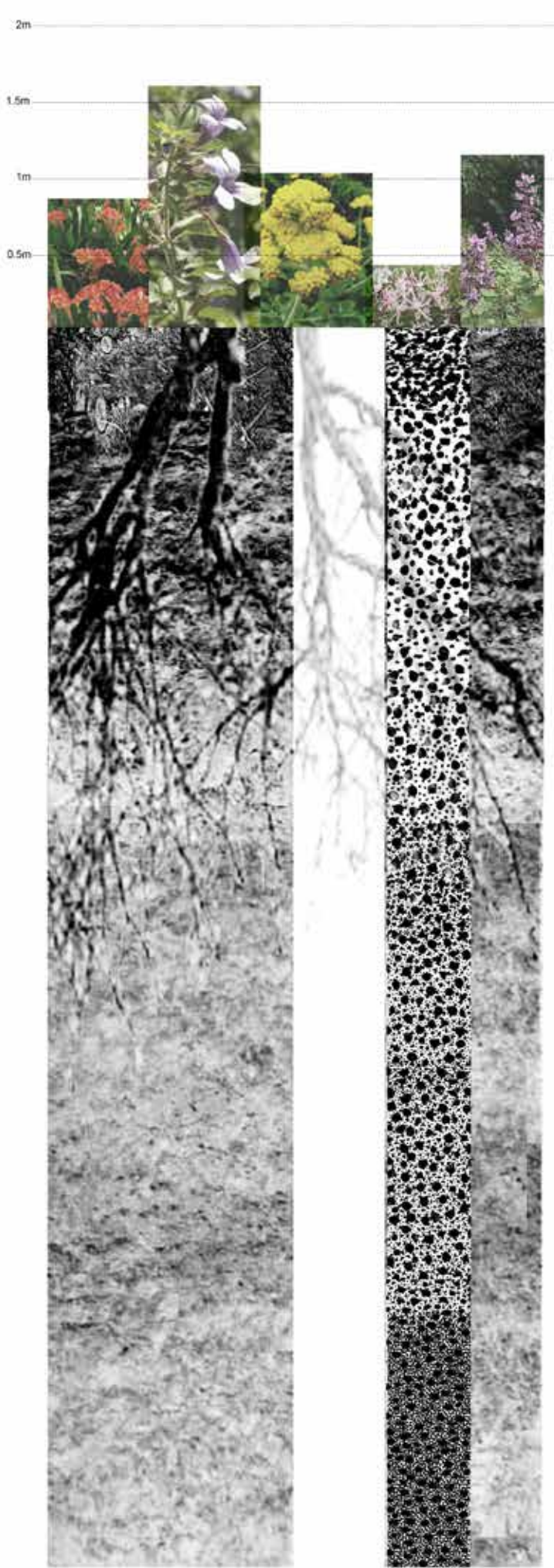
Watsonia marginata
Kanolpypie
50cm-2m

3

Sandy loam

Consists of less than 20 percent clay, less than 50 percent silt and between 40 and 80 percent sand.

Particle size:
Sand: 2,00 - 0,05mm
Silt: 0,05 - 0,002mm
Clay: 0,002mm>



Clivia miniata
Bush lily
40cm-70cm x 50cm



Dyschoriste thunbergiiifolia
Purple bells
1.6m x 1.6m



Helichrysum umbraculigerum
Woolly umbrella helichrysum
1m x 1m



Nerine krigel
Corkscrew nerine
30cm-45cm



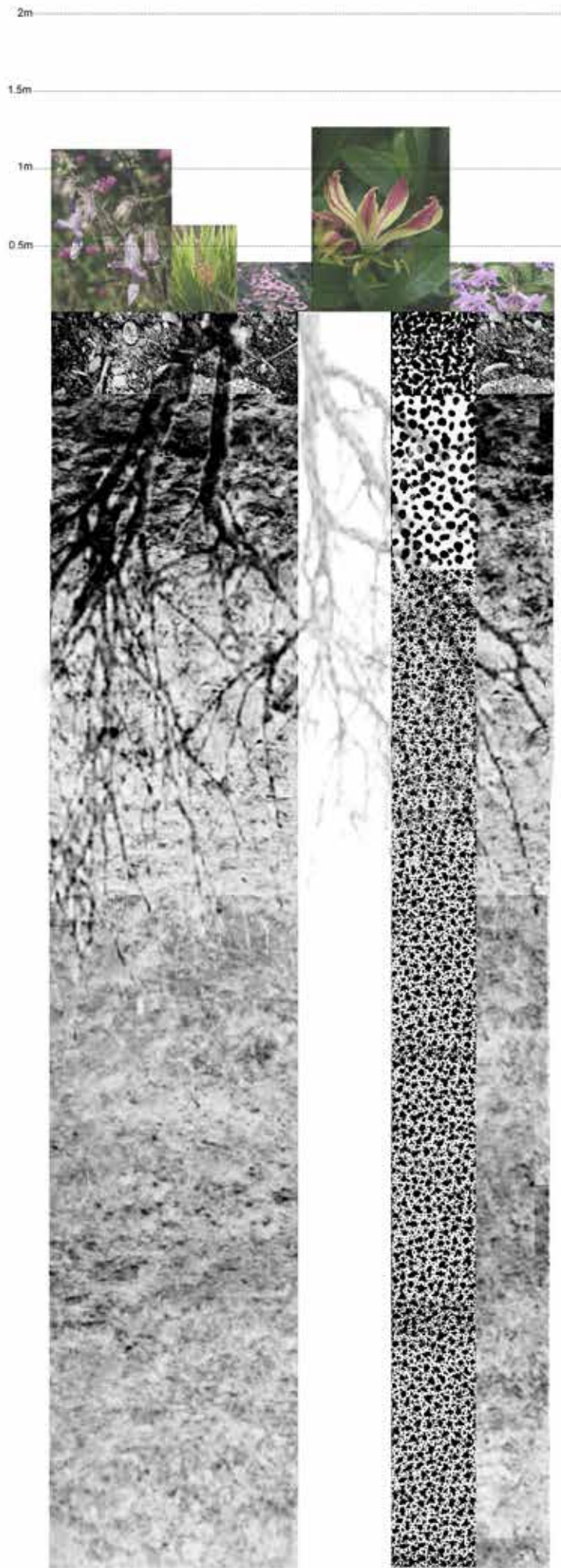
Syncolostemon obermeyeriae
Soutpansbergsalie
1.2m x 1m

4

Loam

Consists of between 8 and 28 percent clay, between 28 and 50 percent silt and between 22 and 53 percent sand.

Particle size:
Sand: 2,00 - 0,05mm
Silt: 0,05 - 0,002mm
Clay: 0,002mm>



Ceratotheca triloba
1.2m x 40cm



Chasmanthe floribunda
Cobra lily
60cm x 1m



Diasca integerrima
Twinspurs
30cm x 30cm



Gloriosa superba
Flame lily
1.25m x 1m



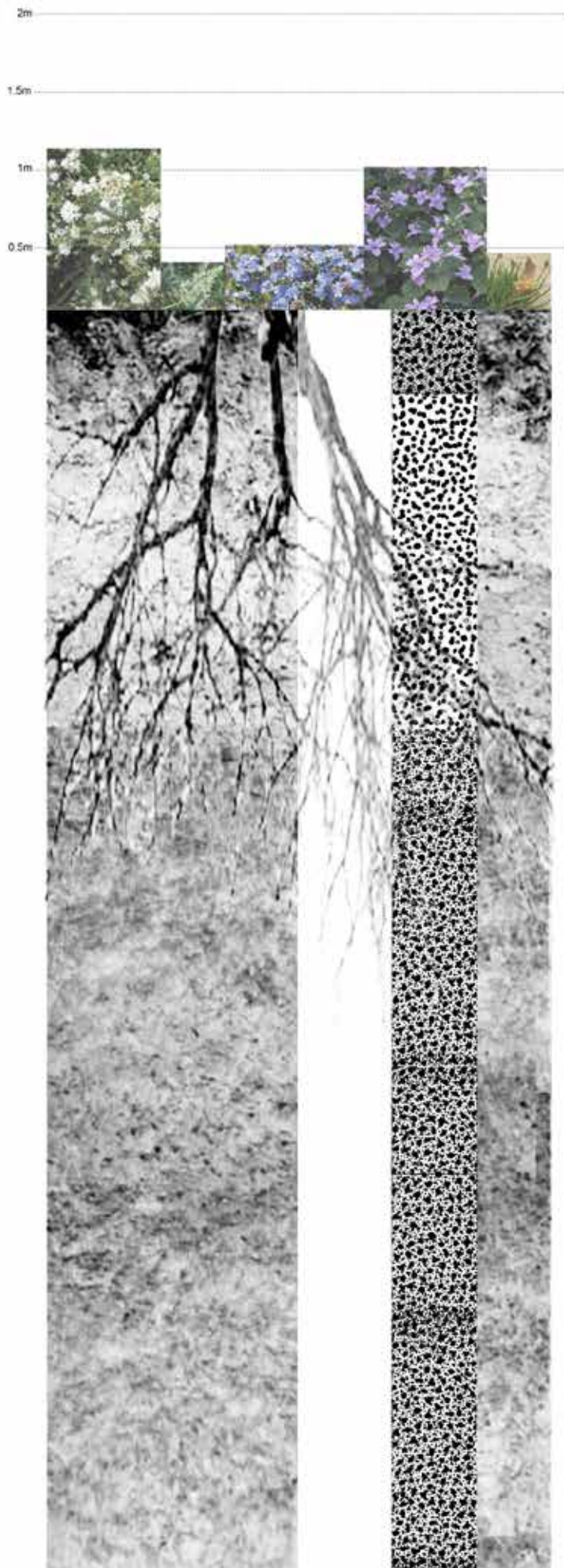
Streptocarpus primulifolius
Cape promise
30cm x 50cm

5

Silt loam

Consists of less than 28 percent clay, more than 50 percent silt and less than 50 percent sand.

Particle size:
Sand: 2,00 - 0,05mm
Silt: 0,05 - 0,002mm
Clay: 0,002mm>



Agathosma apiculata
Garlic buchu
1.2m x 1m



Albuca bracteata
Pregnant onion
30cm x 30cm



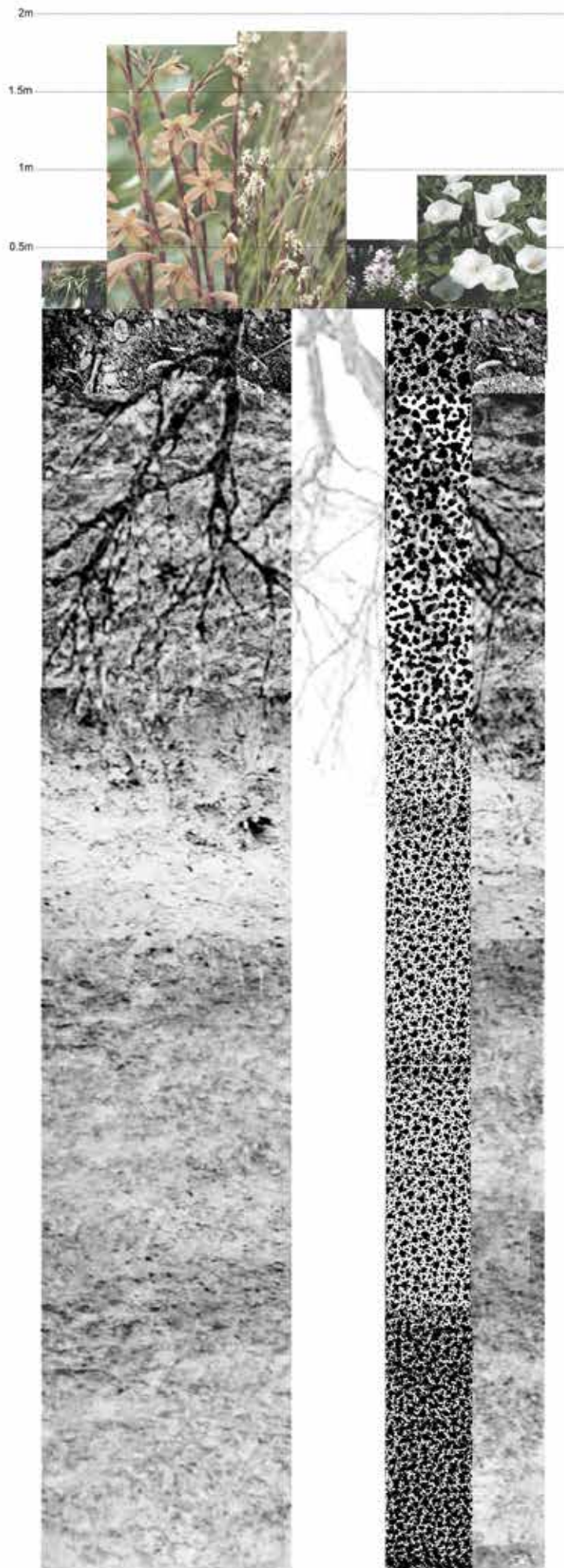
Anchusa capensis
Cape forget-me-not
50cm x 50cm



Baleria repens
Bush violet
1m x 1m



Bulbine fruticenses
Snake flower
20cm-30cm x 40cm



Aloe nubigena
Graskop cliff aloe
15cm x 20 cm



Watsonia meriana
Lakpypie
60cm-2m



Restio dispar
1.75m x 1.3m



Wurmbea stricta
Vleibloemetjie
20cm-50cm



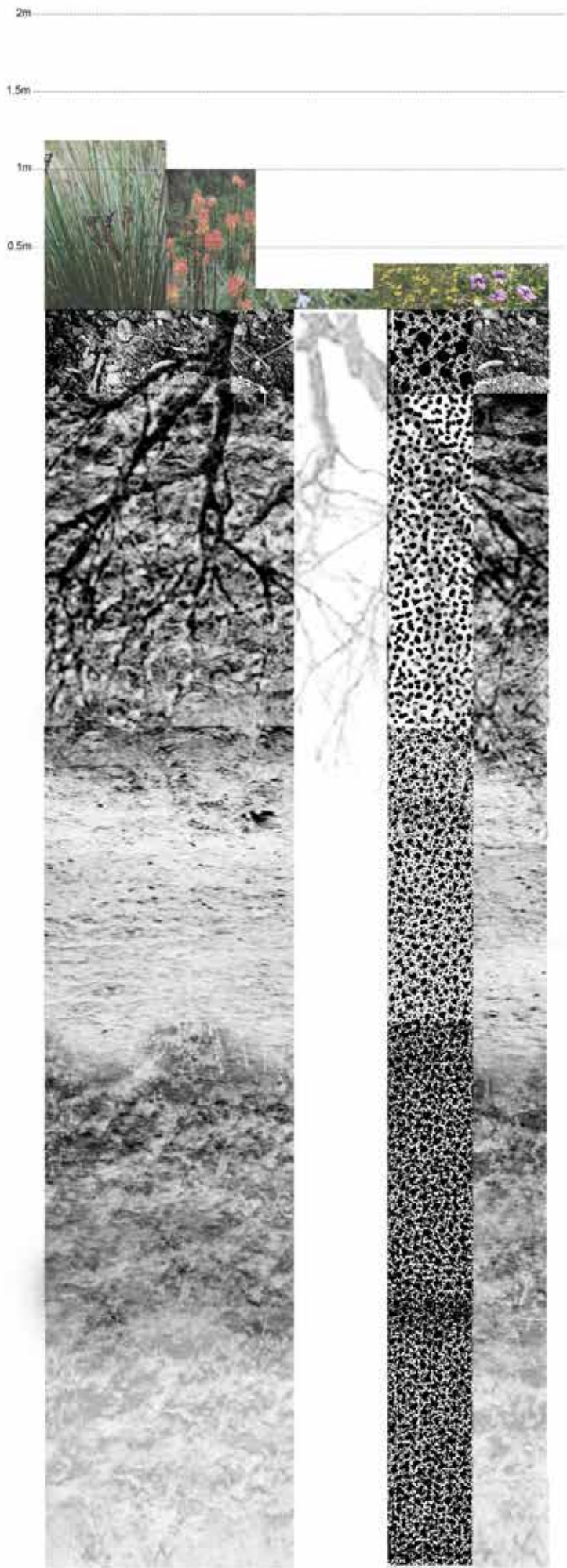
Zantedeschia aethiopica
Arum lily
95cm x 60cm

7

Sandy
clay
loam

Consists of between 20 and 35 percent clay, between 40 and 73 percent silt and between 45 and 80 percent sand.

Particle size:
Sand: 2,00 - 0,05mm
Silt: 0,05 - 0,002mm
Clay: 0,002mm>



Juncus kraussii
Biesie
1.2m x 1m



Kniphophia bruceae
Red hot poker
1m x 1.2m



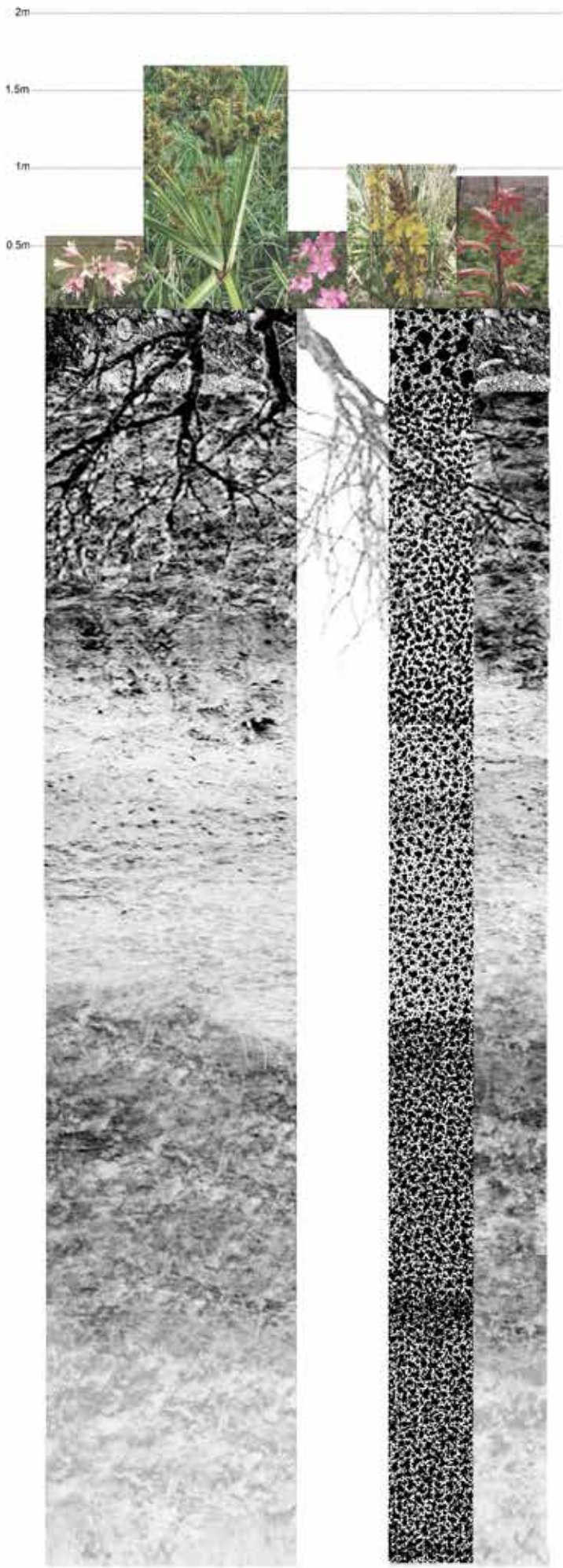
Lobelia anceps
Swamp lobelia
5cm x spreading



Monopsis lutea
Yellow lobelia
30cm x 50cm



Monopsis undentata
Wild violet
30cm x 50cm



Crinum bulbispermum
Orange River Lily
55cm- 95cm



Cyperus dives
Giant sedge
1.7m x 1.5m



Orphium frutescens
Sea rose
60cm x 30cm



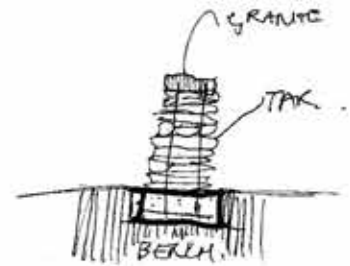
Wachendorfia thrysisiflora
Bloodroot
1m x 1m



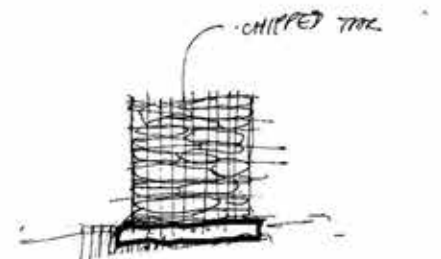
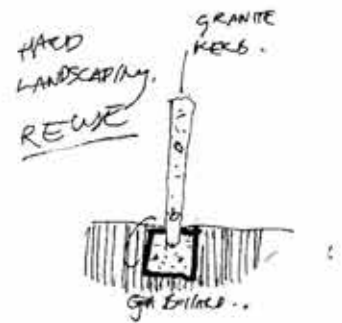
Watsonia angusta
Rooikanolpypie
90cm – 1.2m



Amygdalus persica
 Peach
 Sandy loam
 Full Sun

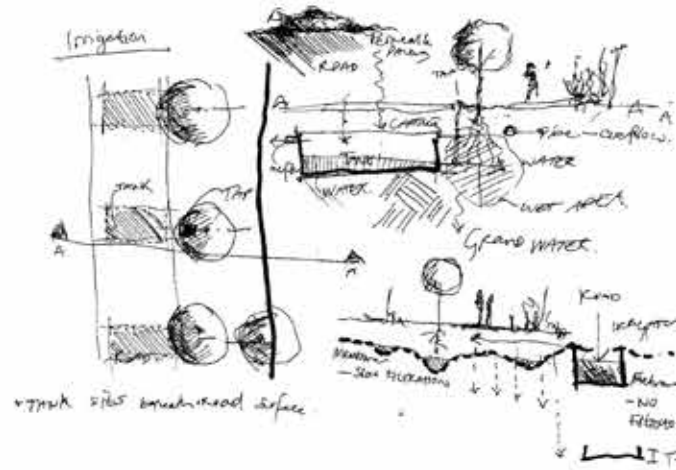


Citrus x limon
 Lemon
 Sandy loam
 Full sun

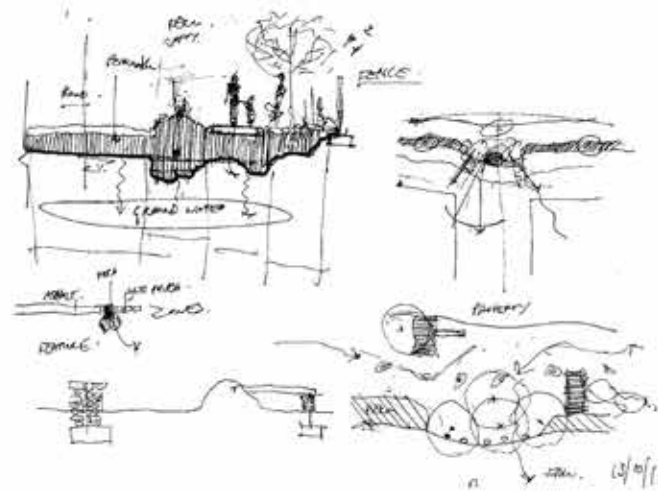
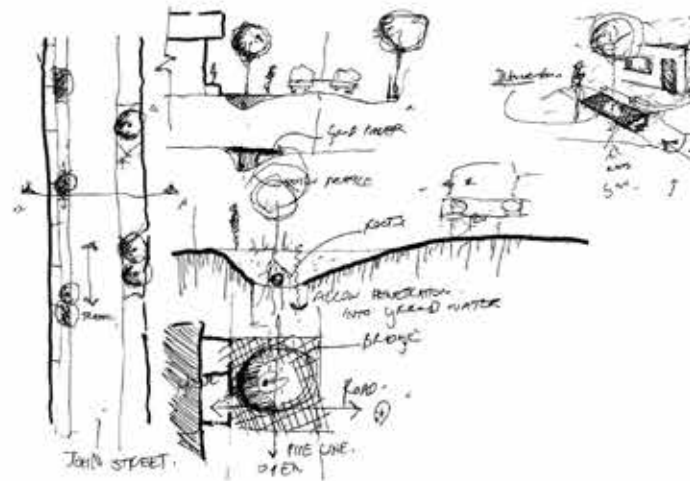




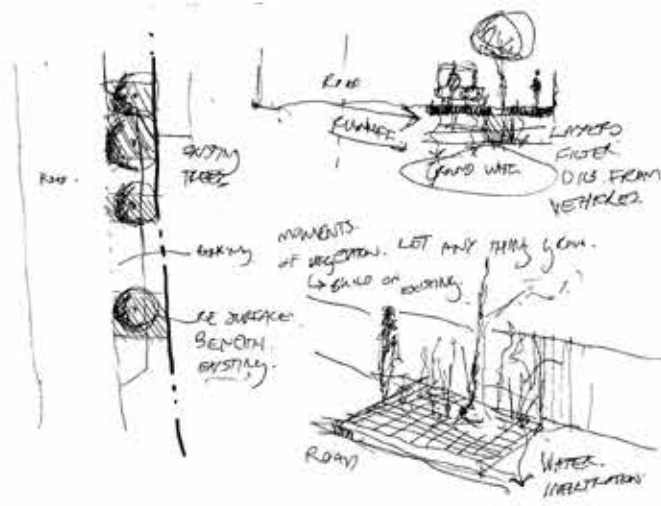
Citrus sinensis
 Orange
 Sandy loam
 Full sun



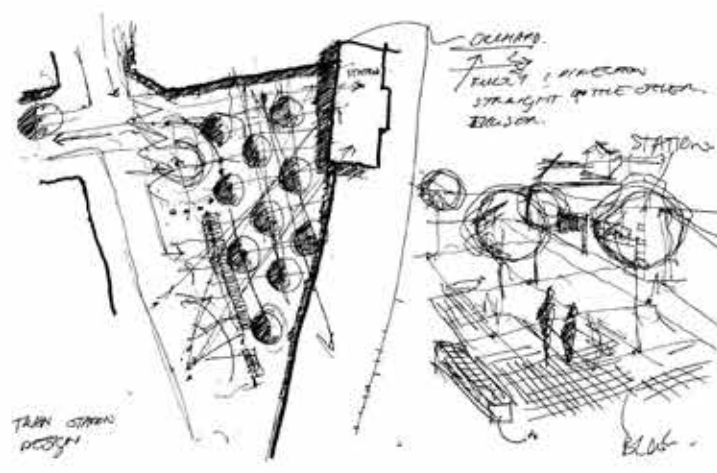
Malus domestica
 Apple
 Loam
 Full sun



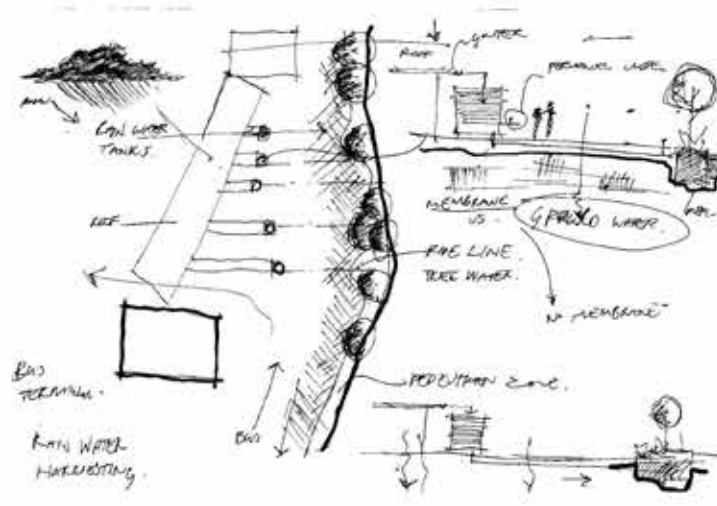
Punica granatum
Pomegranate
Loamy sand
Sun



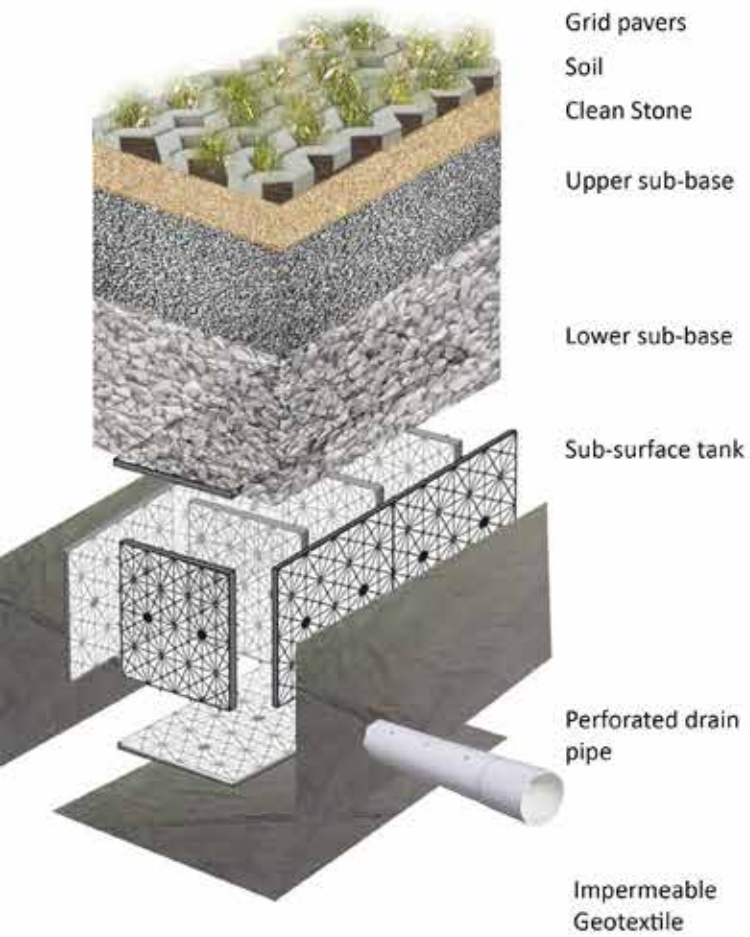
Prunus domestica
Plum
Loam
Full sun



Pyrus calleryana
Pear
Sun/ light shade
Sandy clay loam



Fruit tree species list



Grid pavers
Top Soil

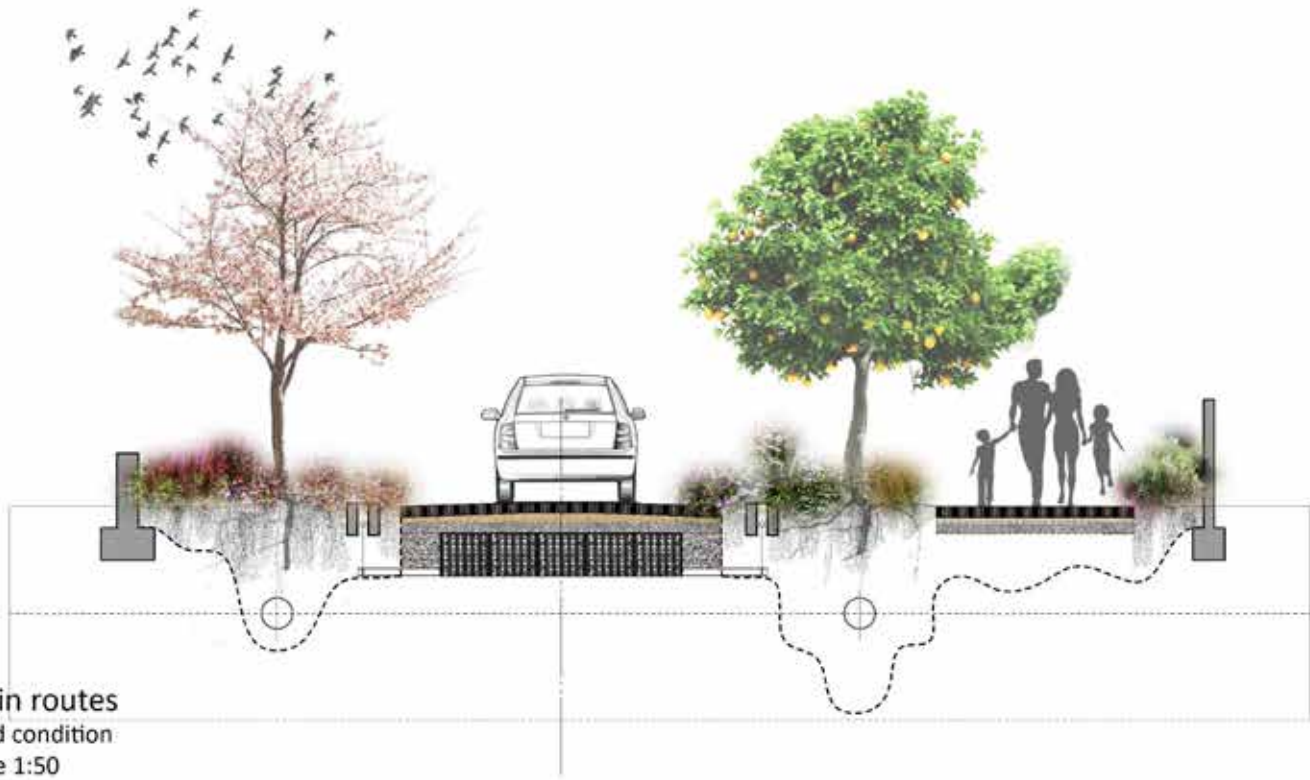
Sub Soil

Perforated drain pipe

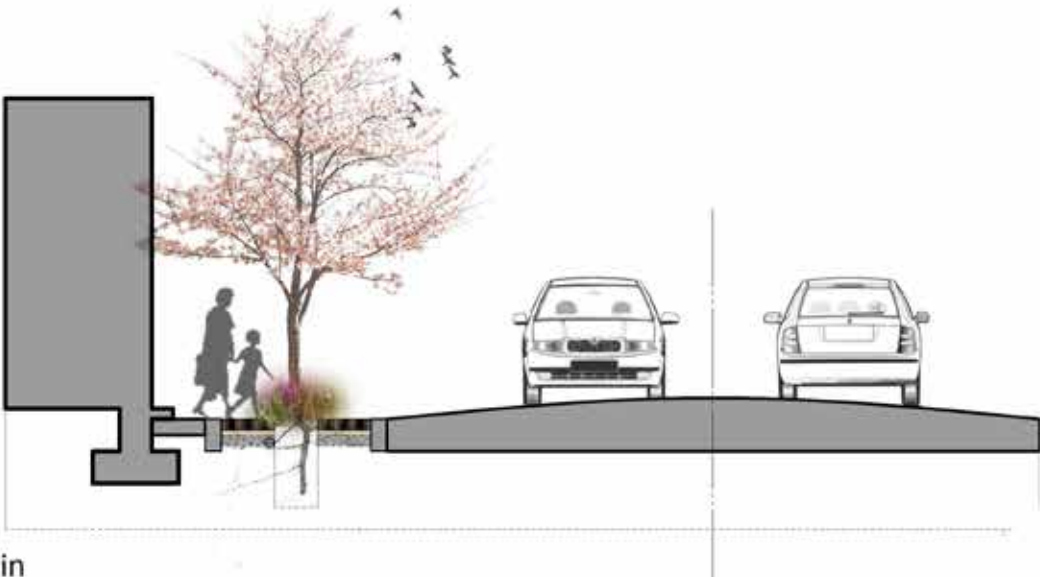
Permeable Geotextile
Slow Infiltration



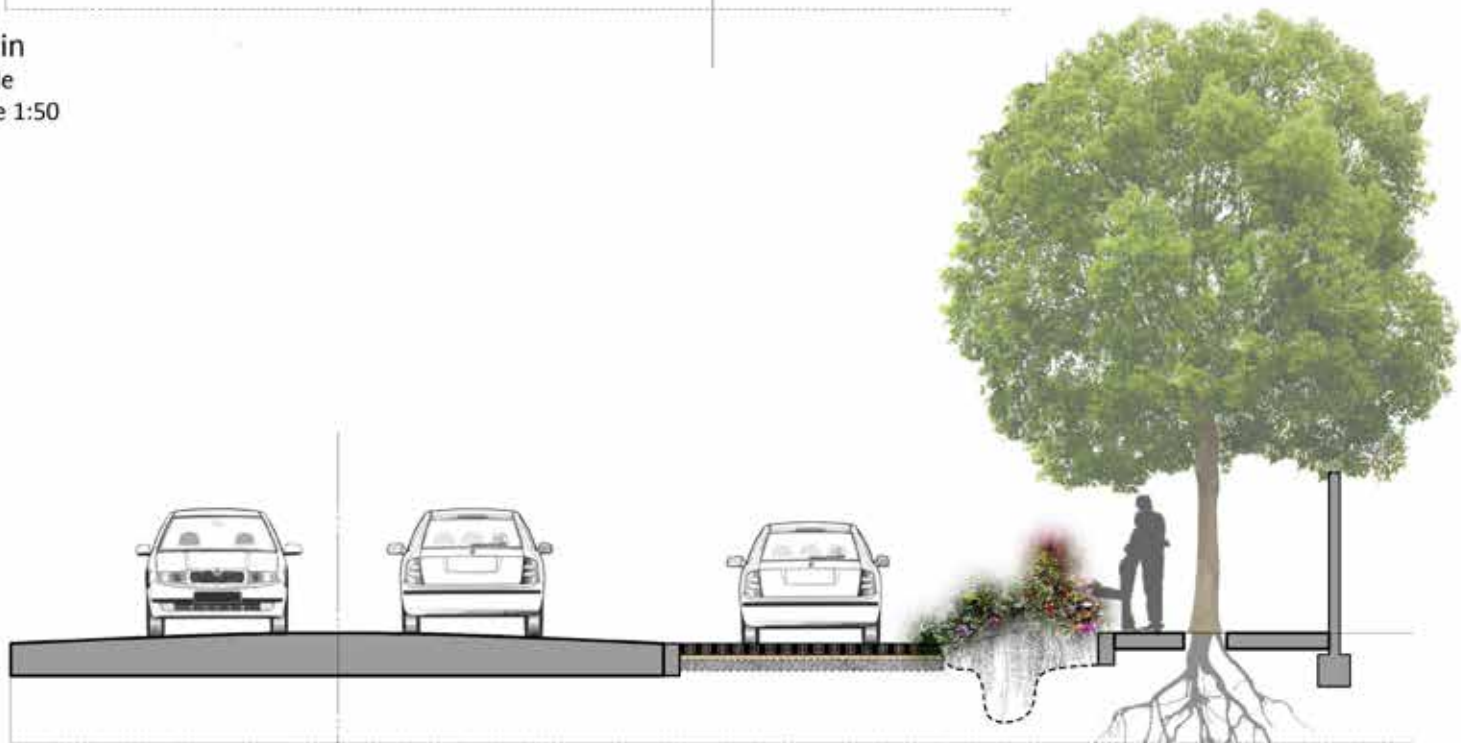
Harvesting systems



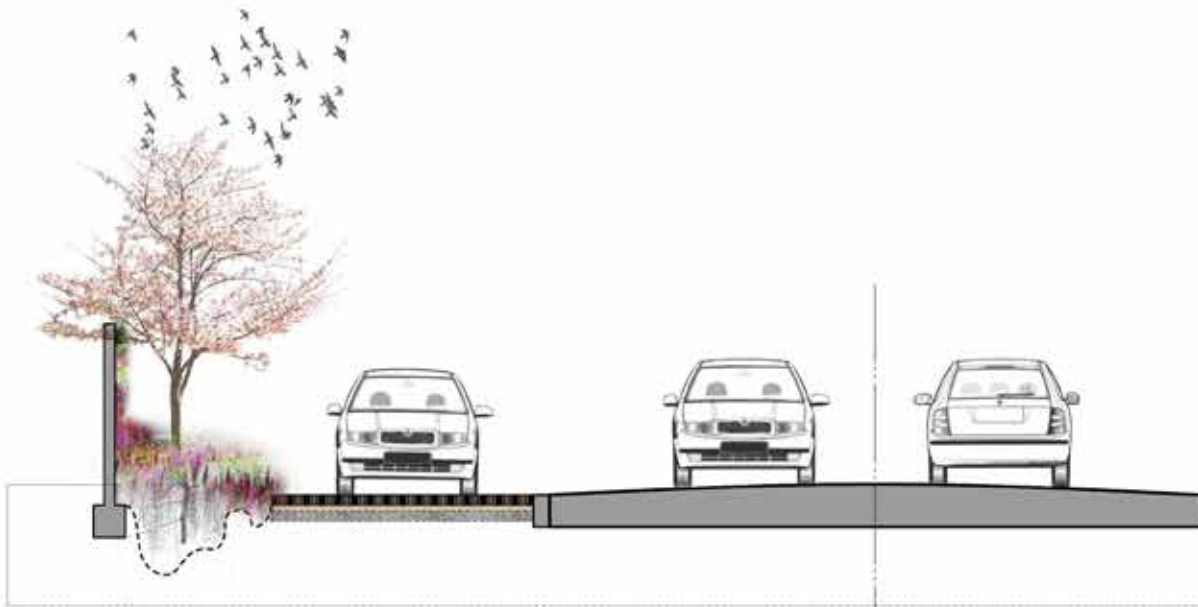
Main routes
Road condition
Scale 1:50



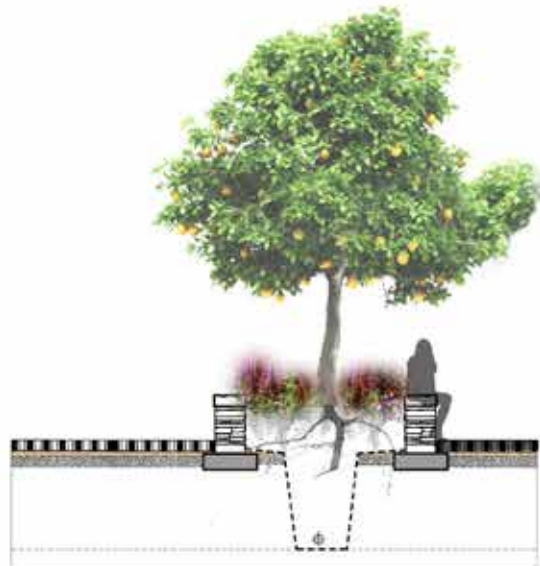
Drain
Swale
Scale 1:50



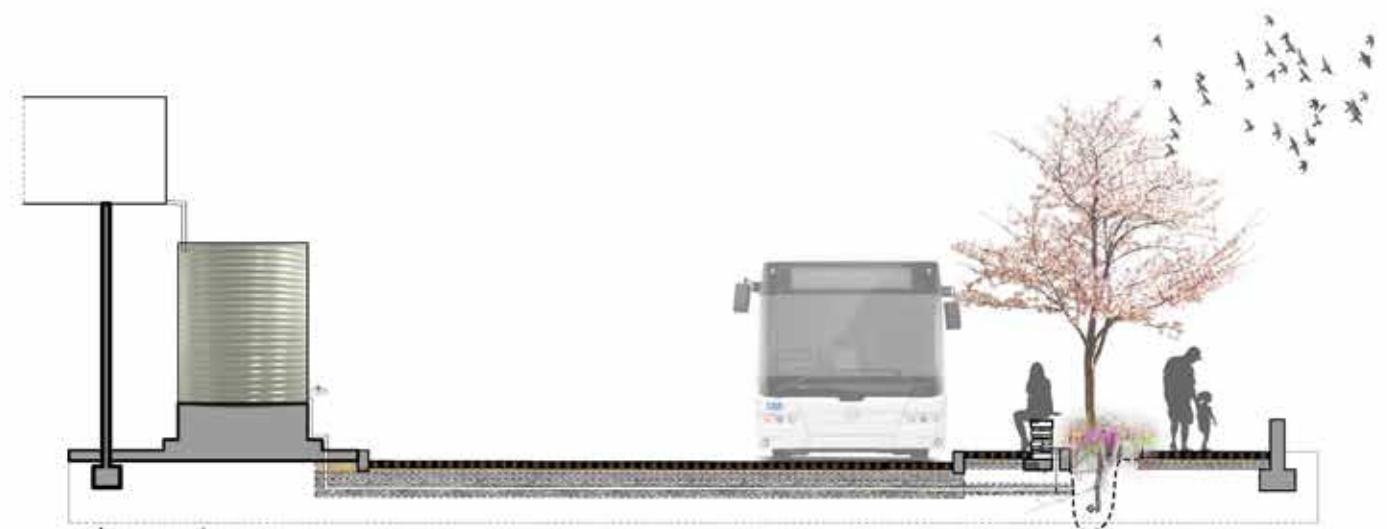
Existing Tree
Berm
Scale 1:50



Vertical surface
Fence
Scale 1:50

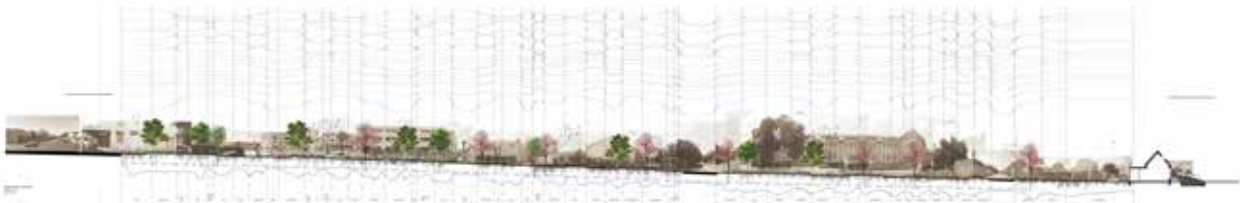


Elevated surface
Seating
Scale 1:50

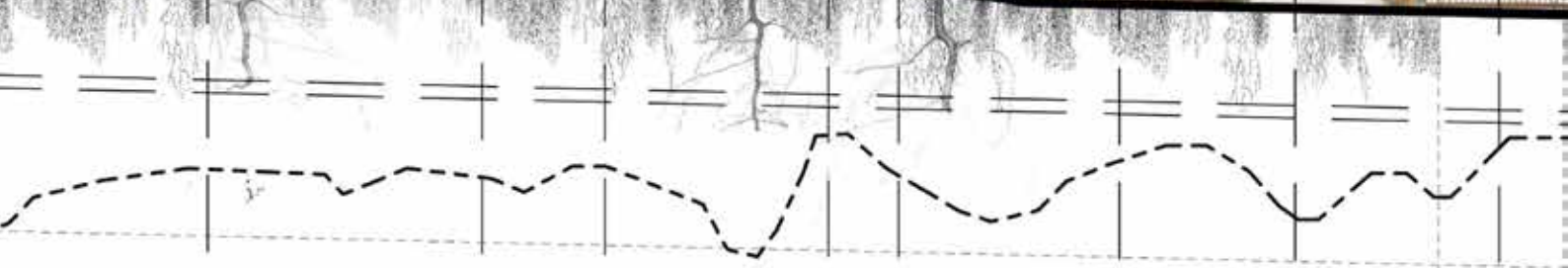
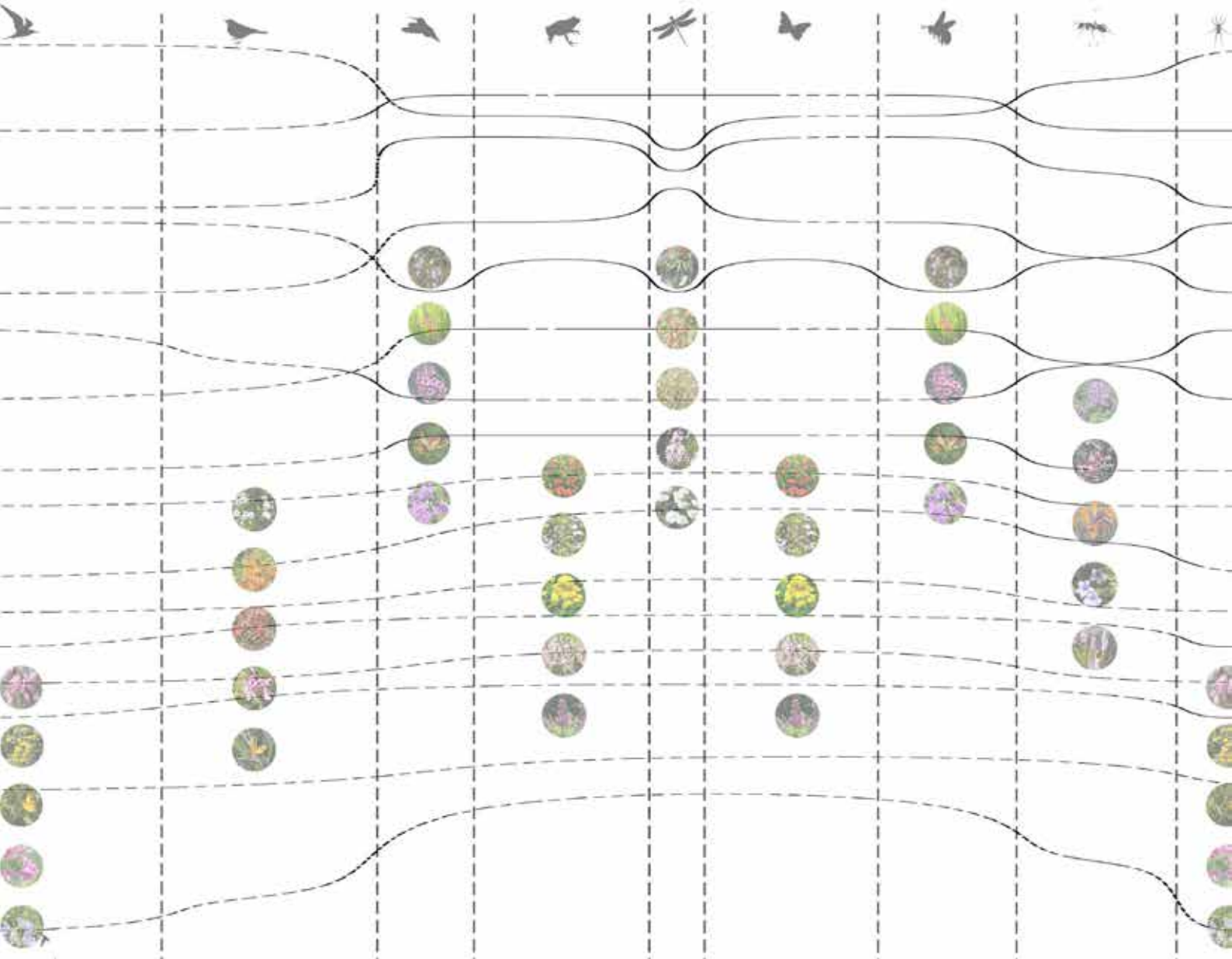


Rainwater harvesting
Roof and tank system
Scale 1: 75

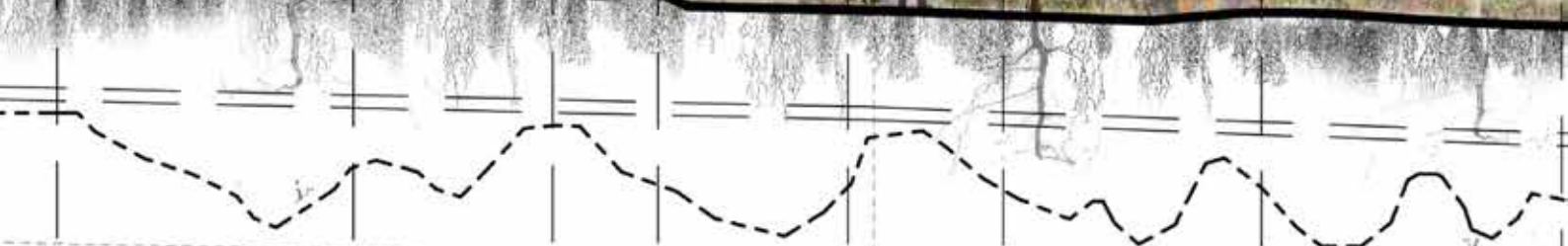
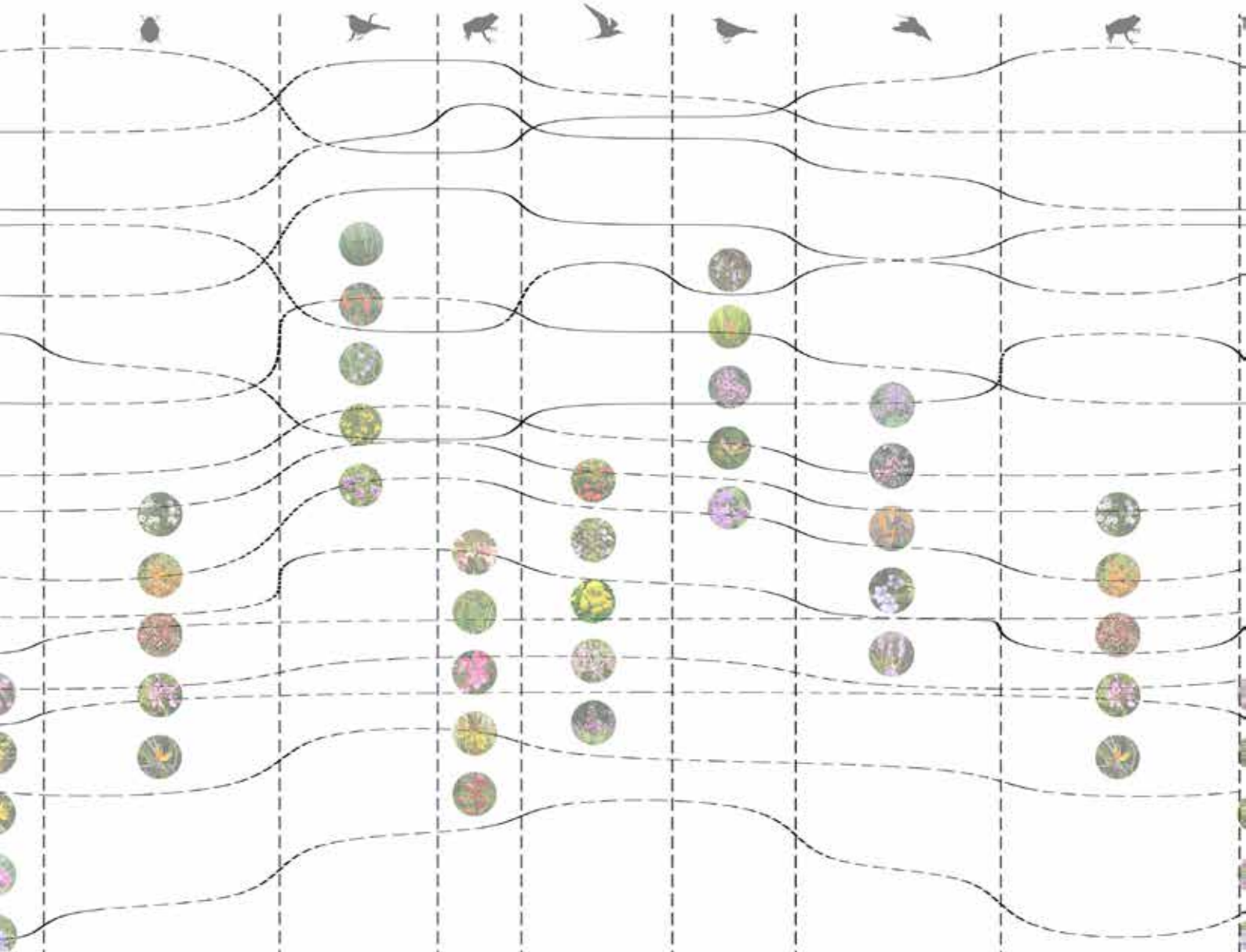
Station Road is 270m in length stretching from Main Road to the Mowbray Train Station. This image captures the essences of the street above and below ground by indicating the various soil types, their altering properties as well as plant and species diversity.



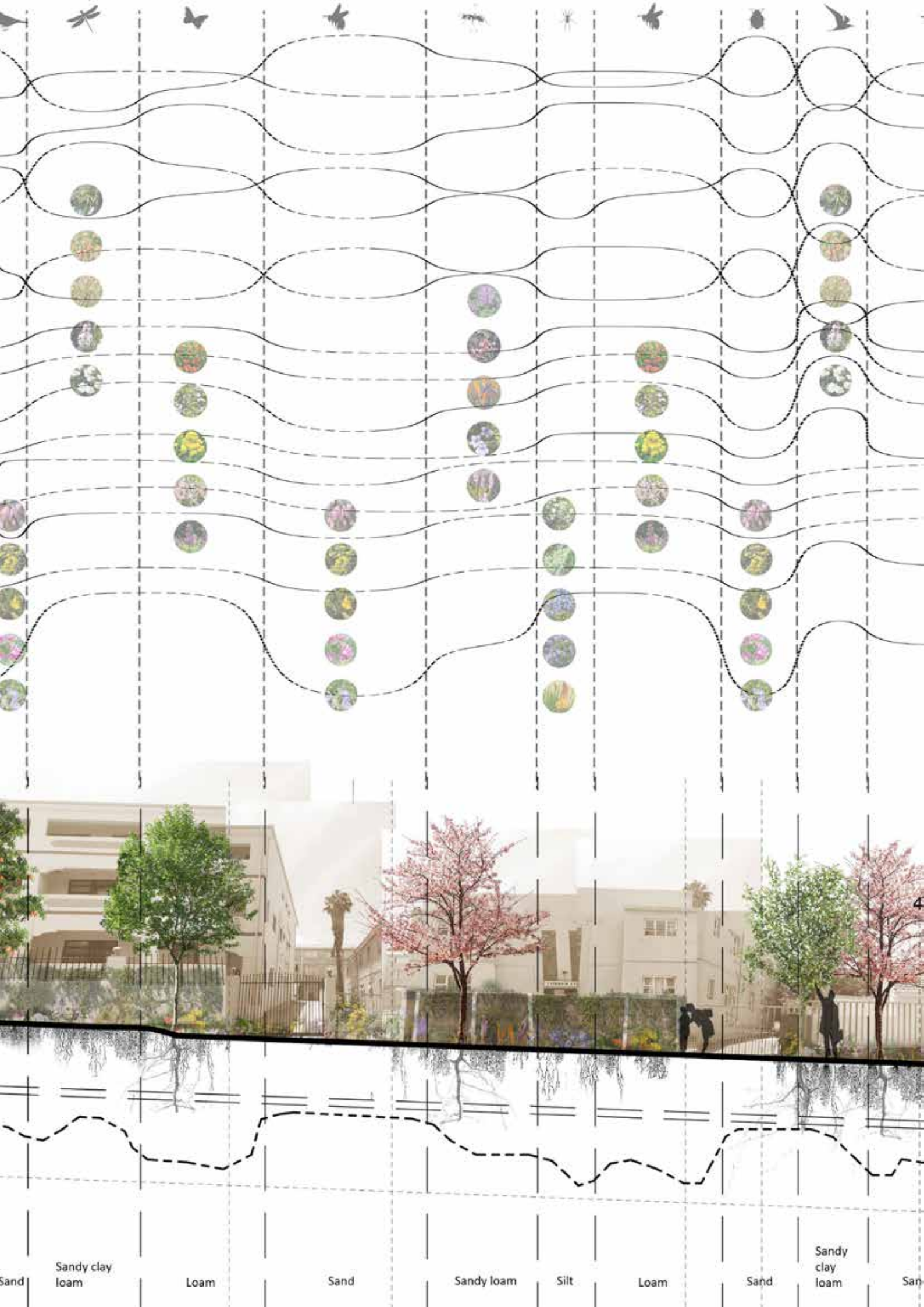
N
Station Road, Mowbray
Section on A-A
Scale 1:500

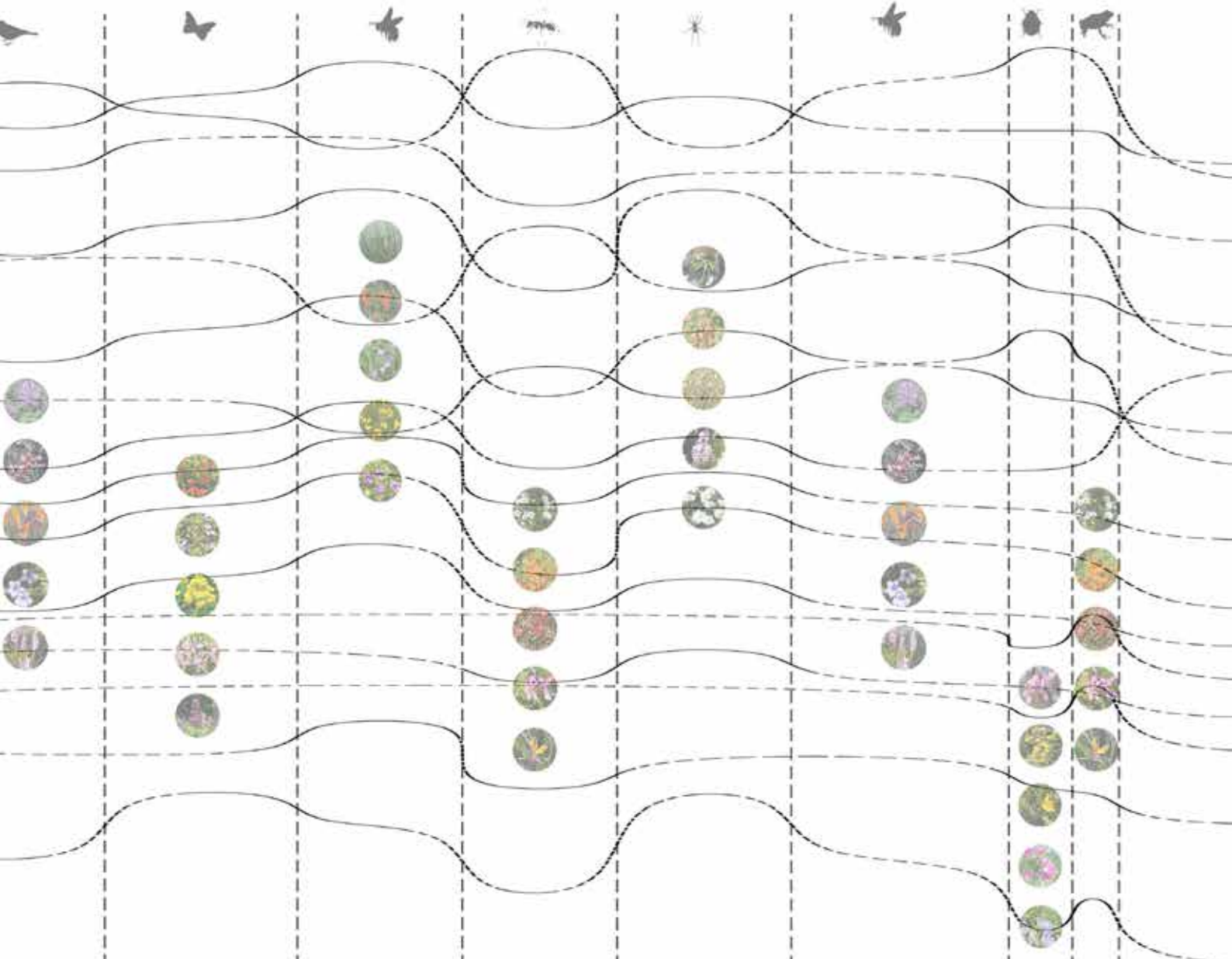


Sand	Loamy sand	Silt loam	Loam	Sandy clay loam	Loam	Silt loam	Sandy loam	Sand

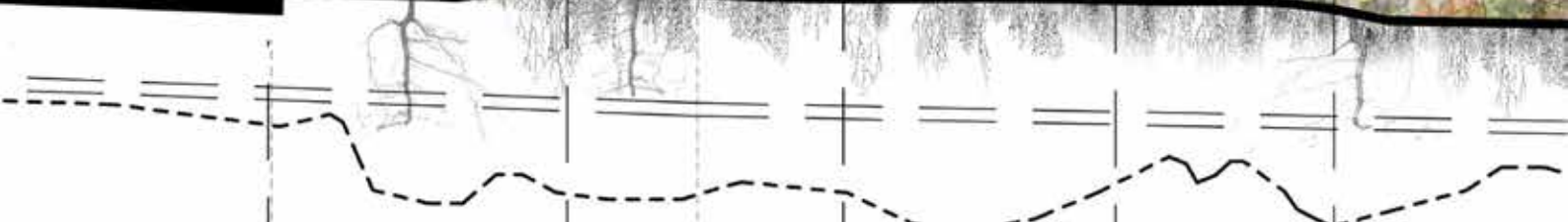
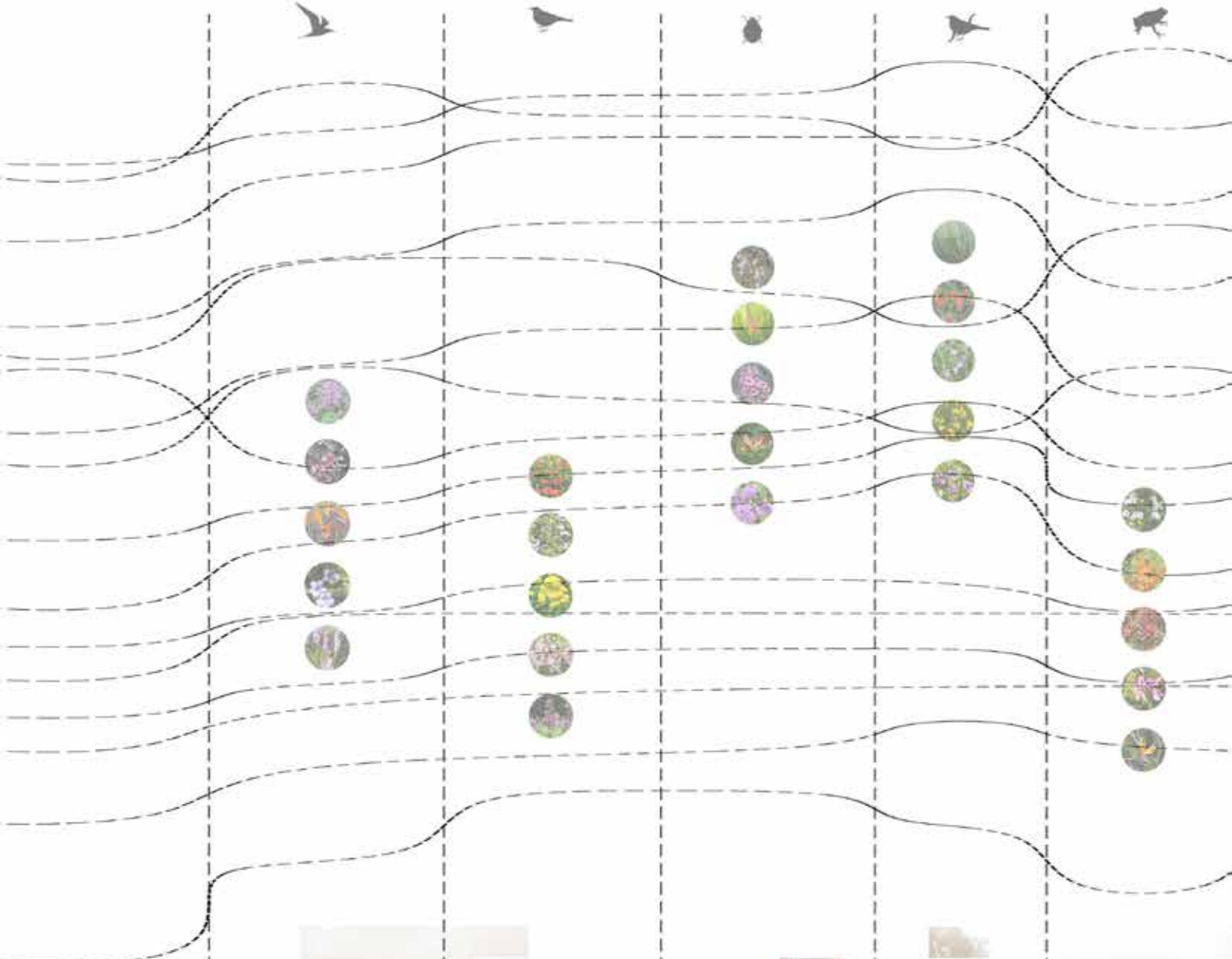


Loamy sand	Clay loam	Silty clay loam	Loam	Silt loam	Sandy loam	Loamy sand
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dy loam	Loam	Clay loam	Loamy sand	Sandy clay loam	Sandy loam	Sand	Loamy sand
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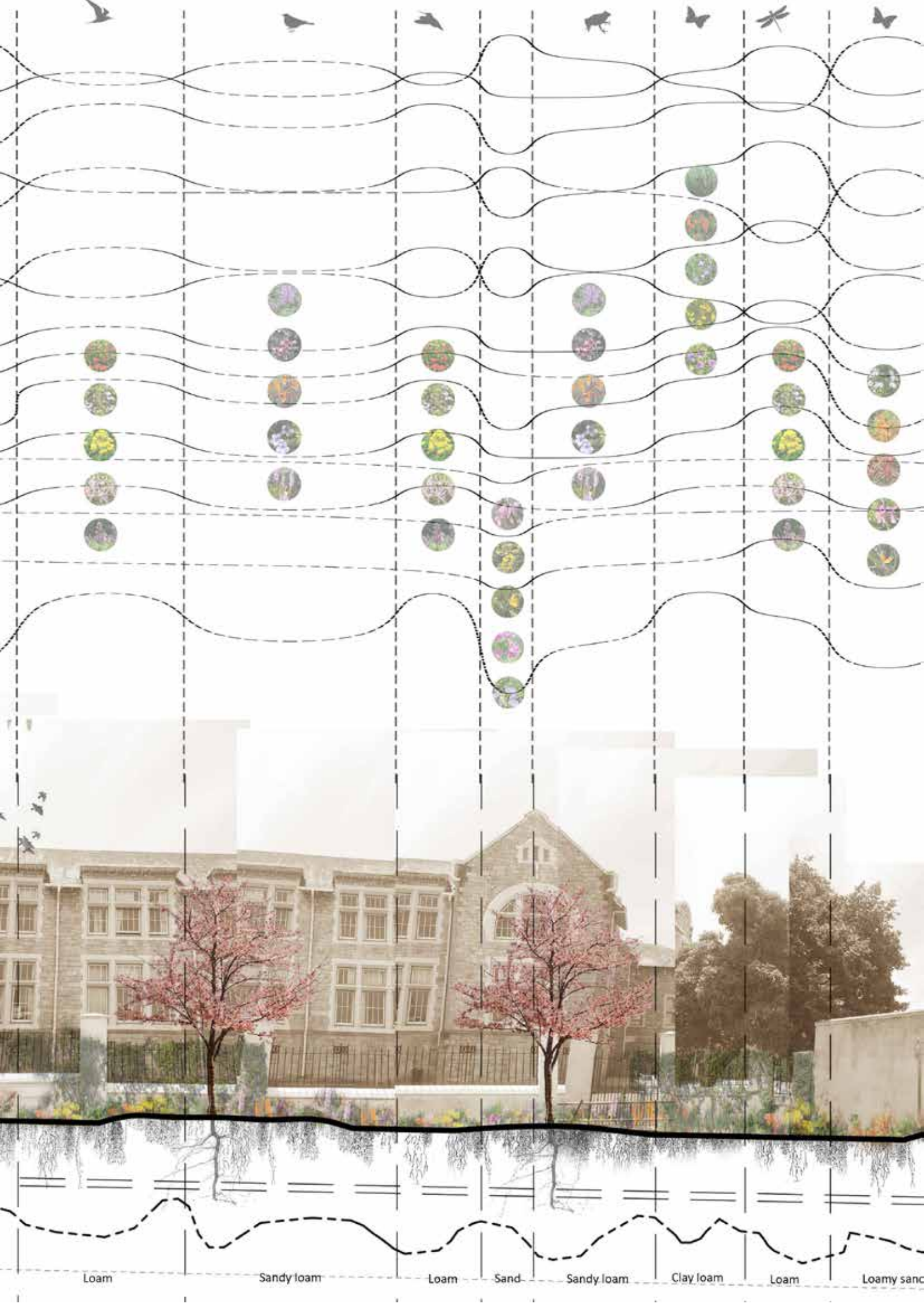
Sandy loam

Loam

Silt loam

Clay loam

Loamy sand



Loam

Sandy loam

Loam

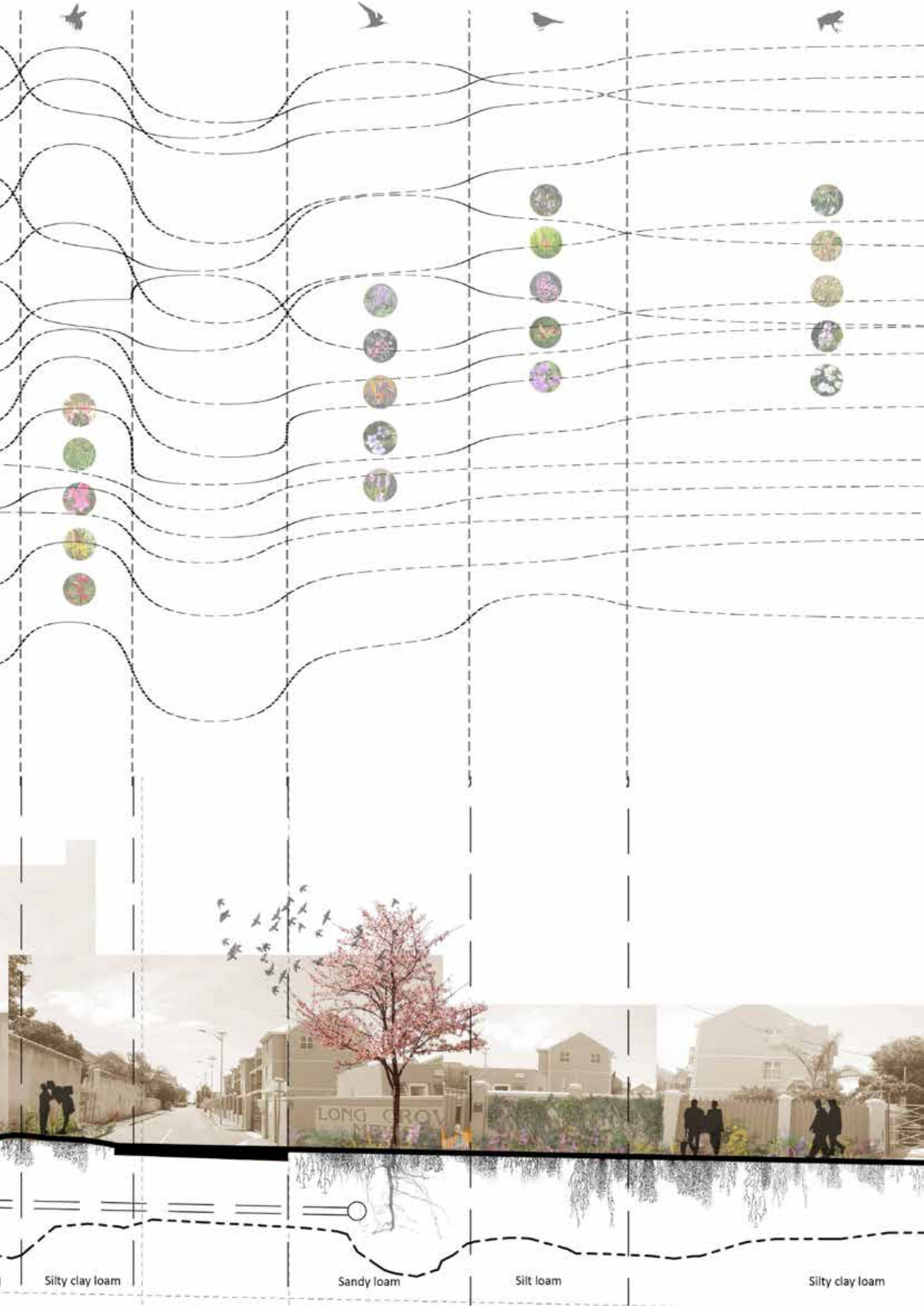
Sand

Sandy loam

Clay loam

Loam

Loamy sand



Silty clay loam

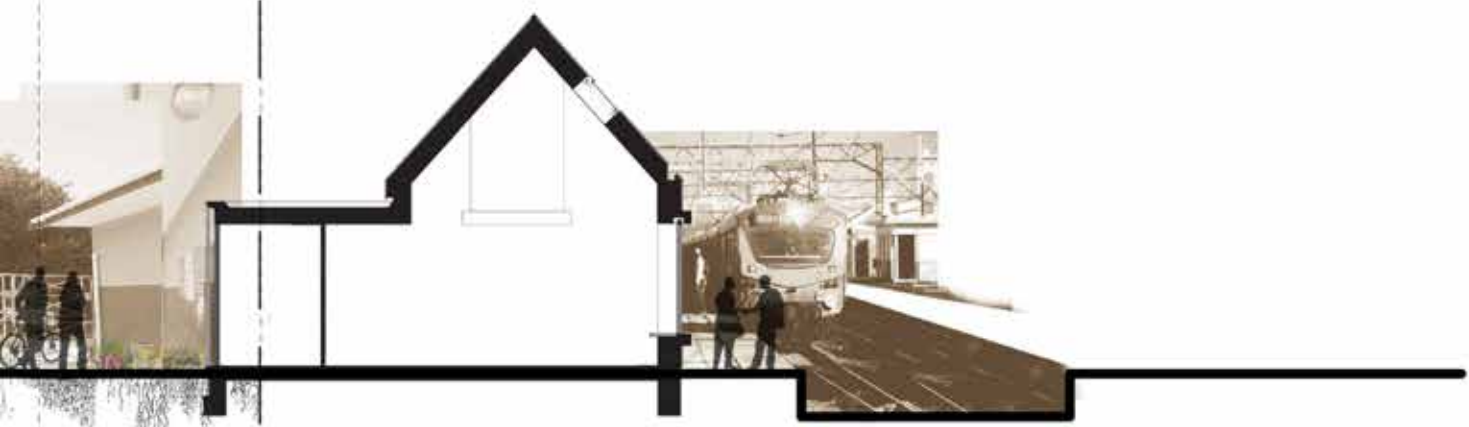
Sandy loam

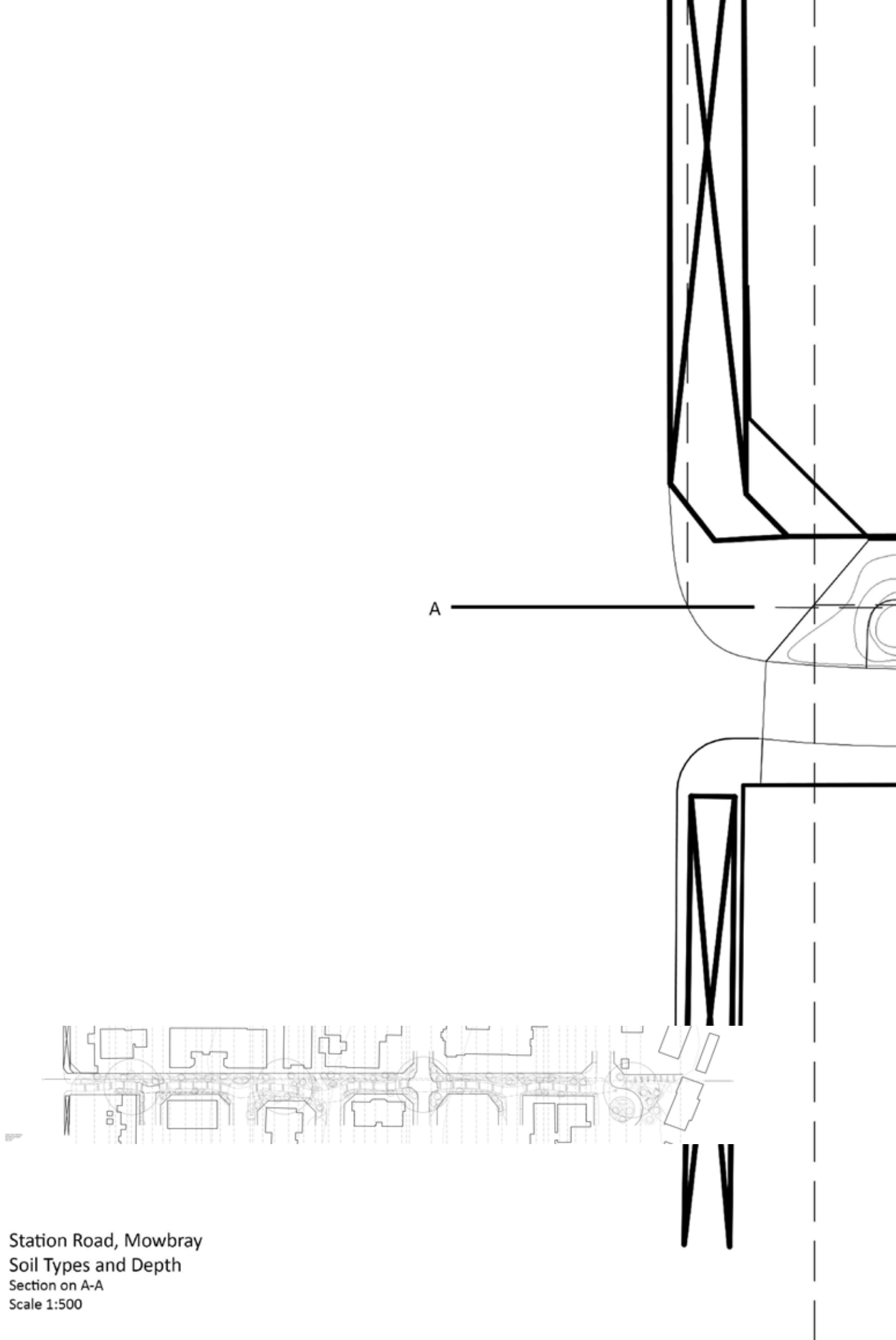
Silt loam

Silty clay loam



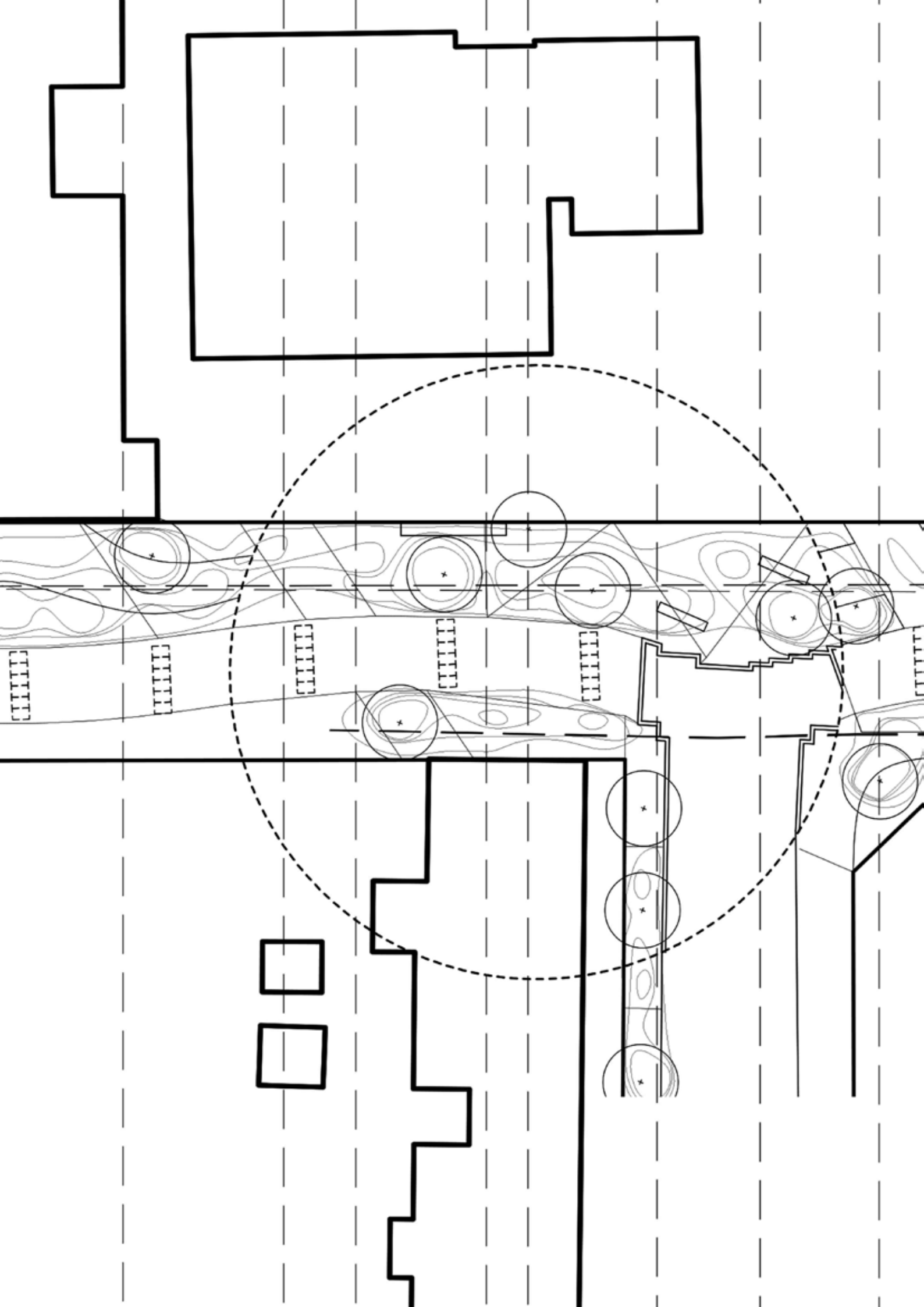
8

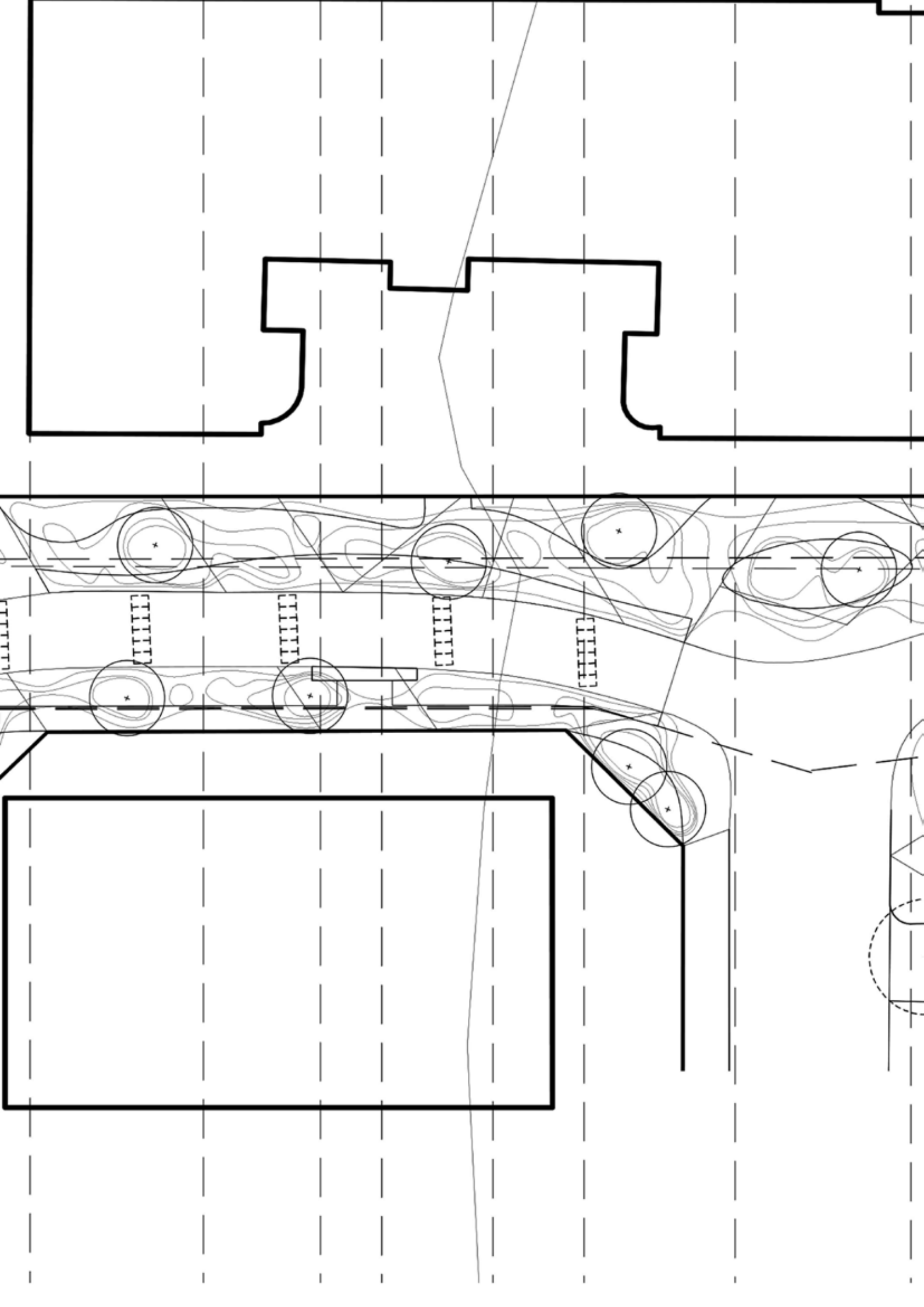


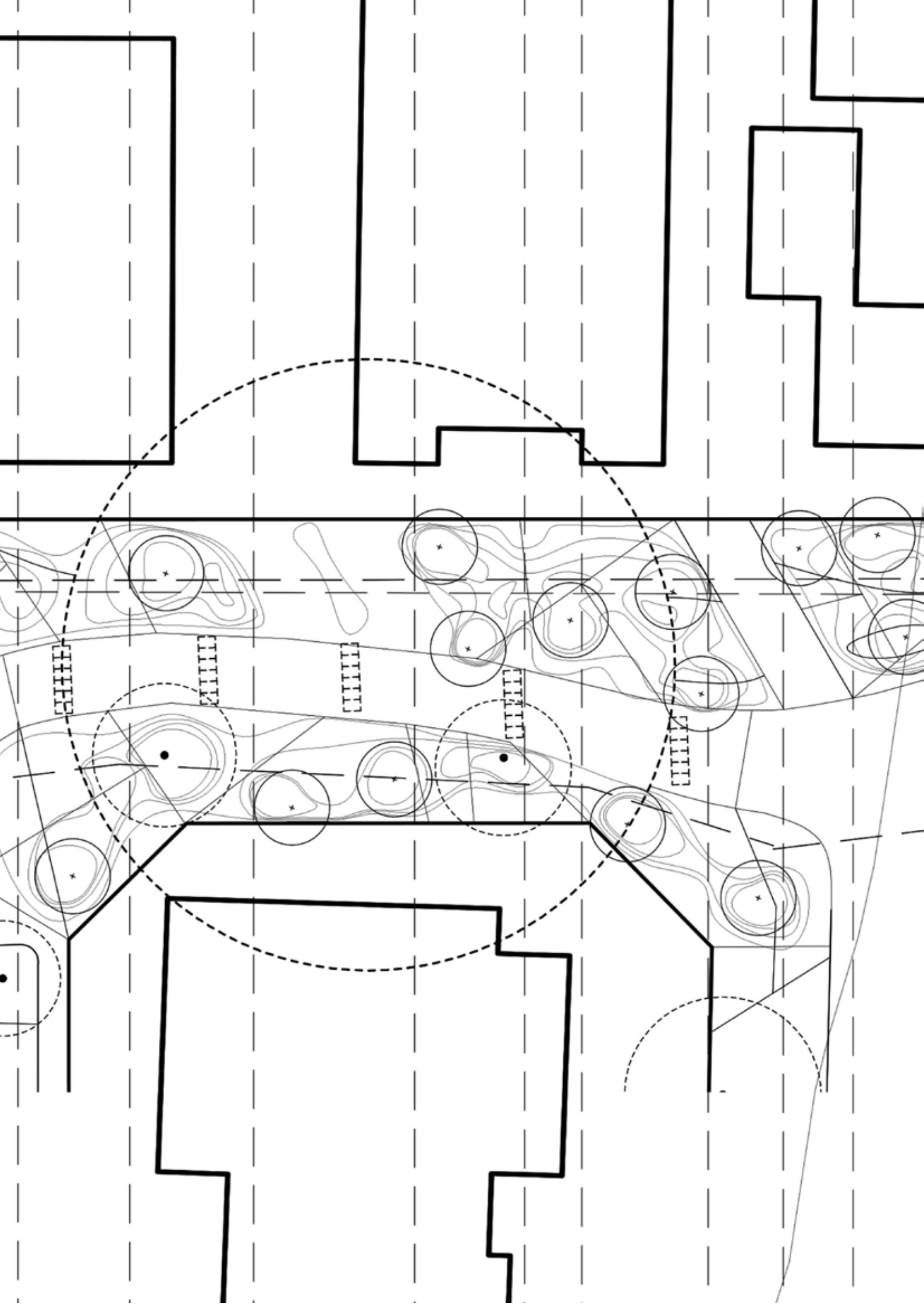


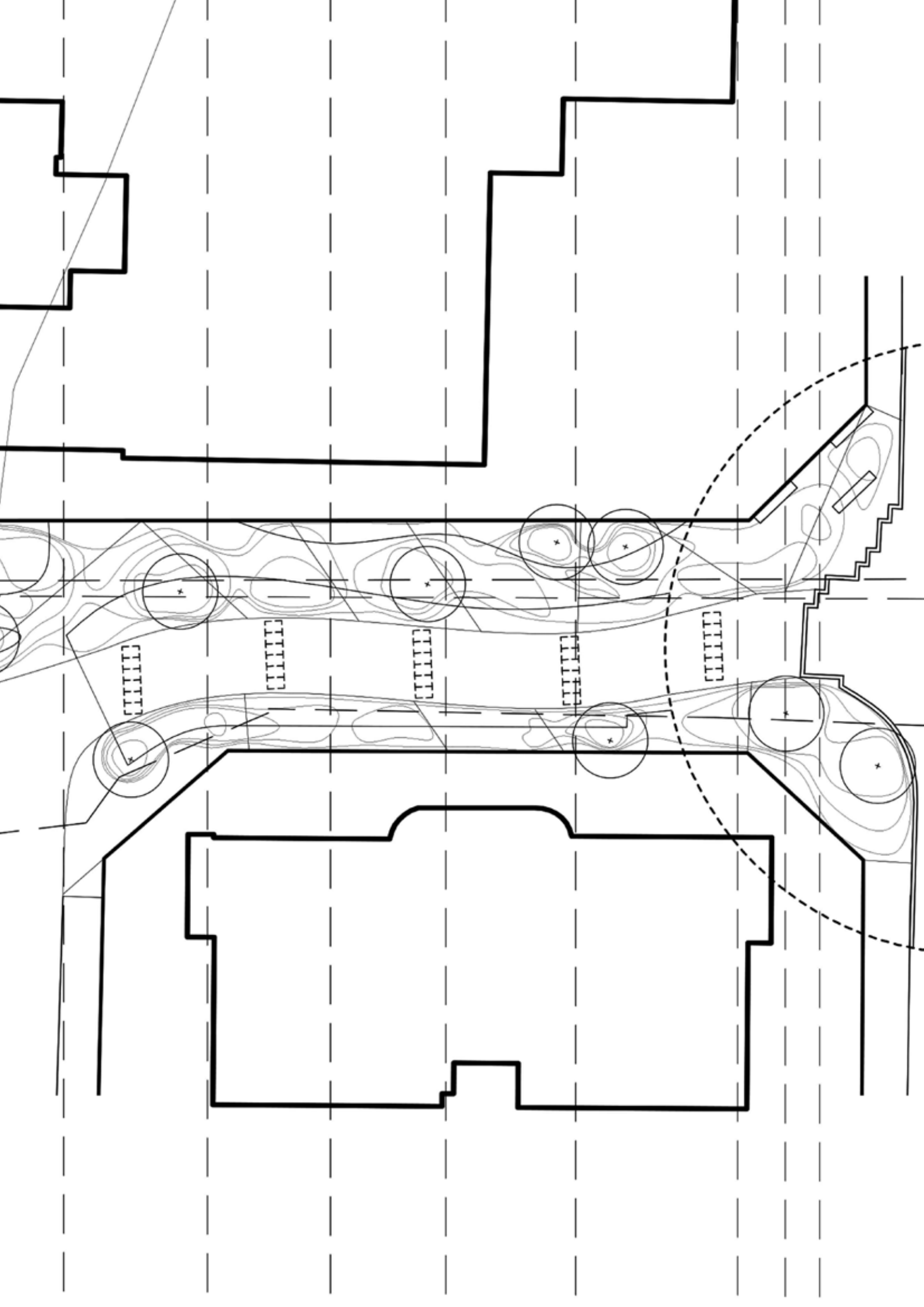
Station Road, Mowbray
Soil Types and Depth
Section on A-A
Scale 1:500

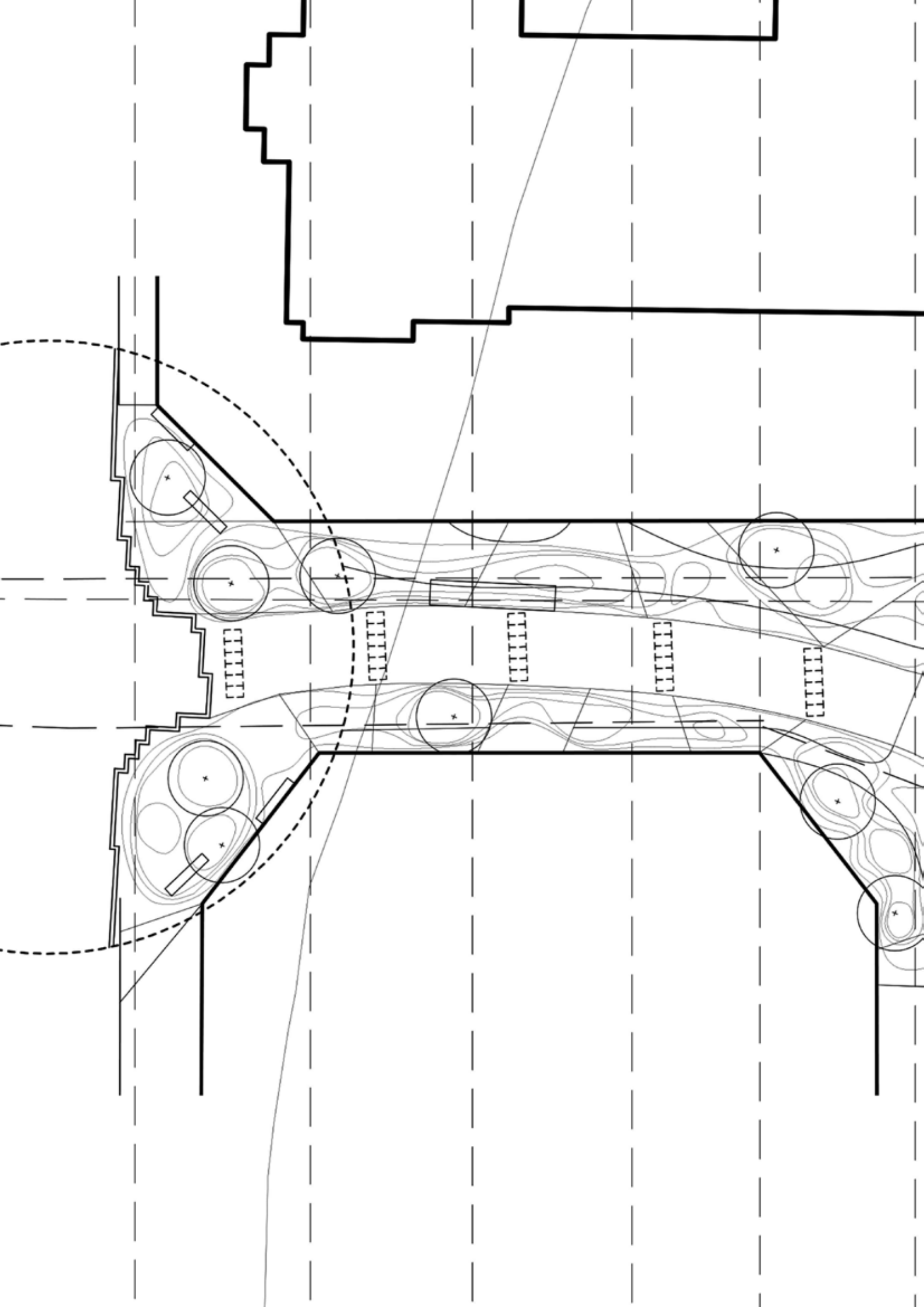


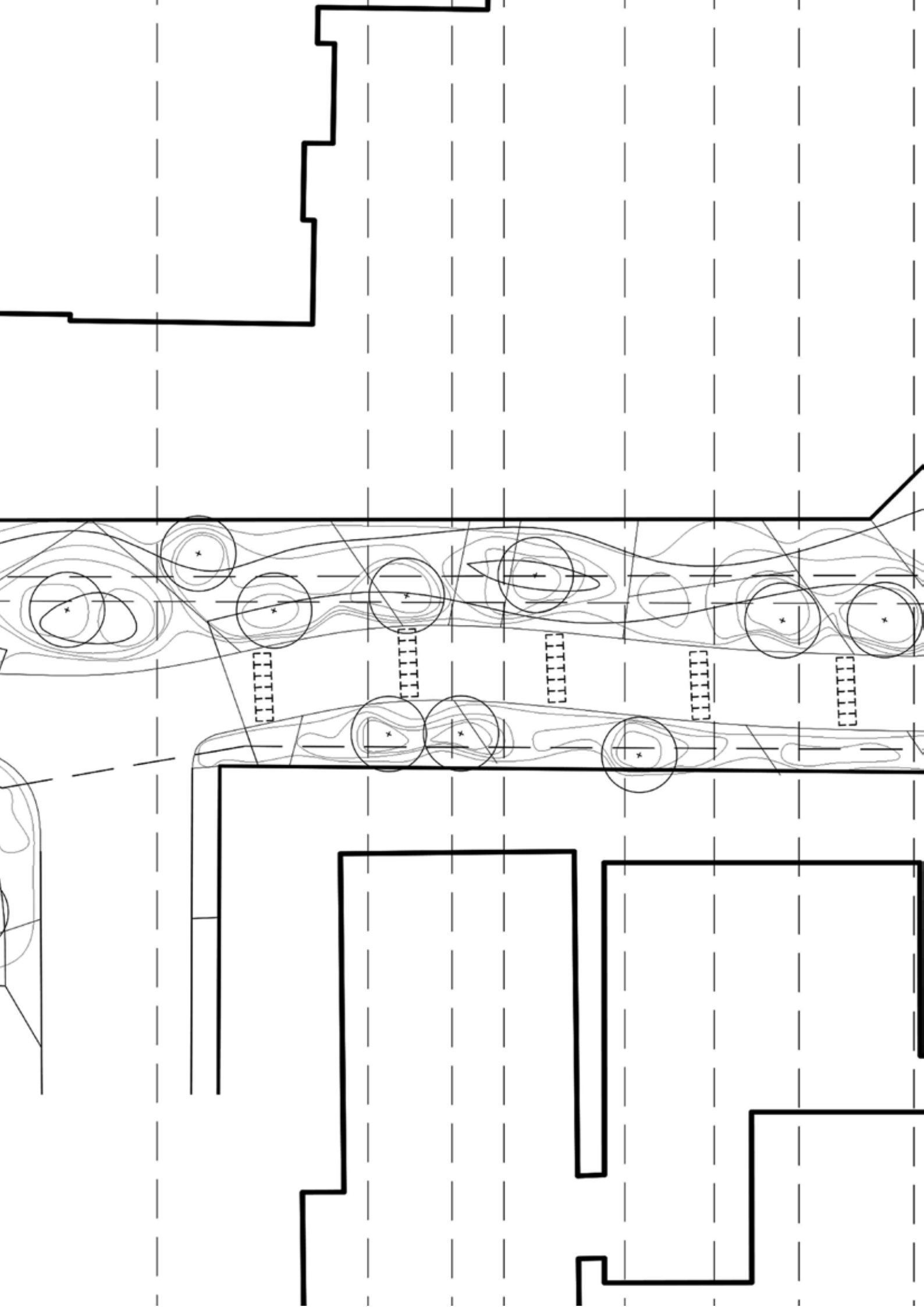


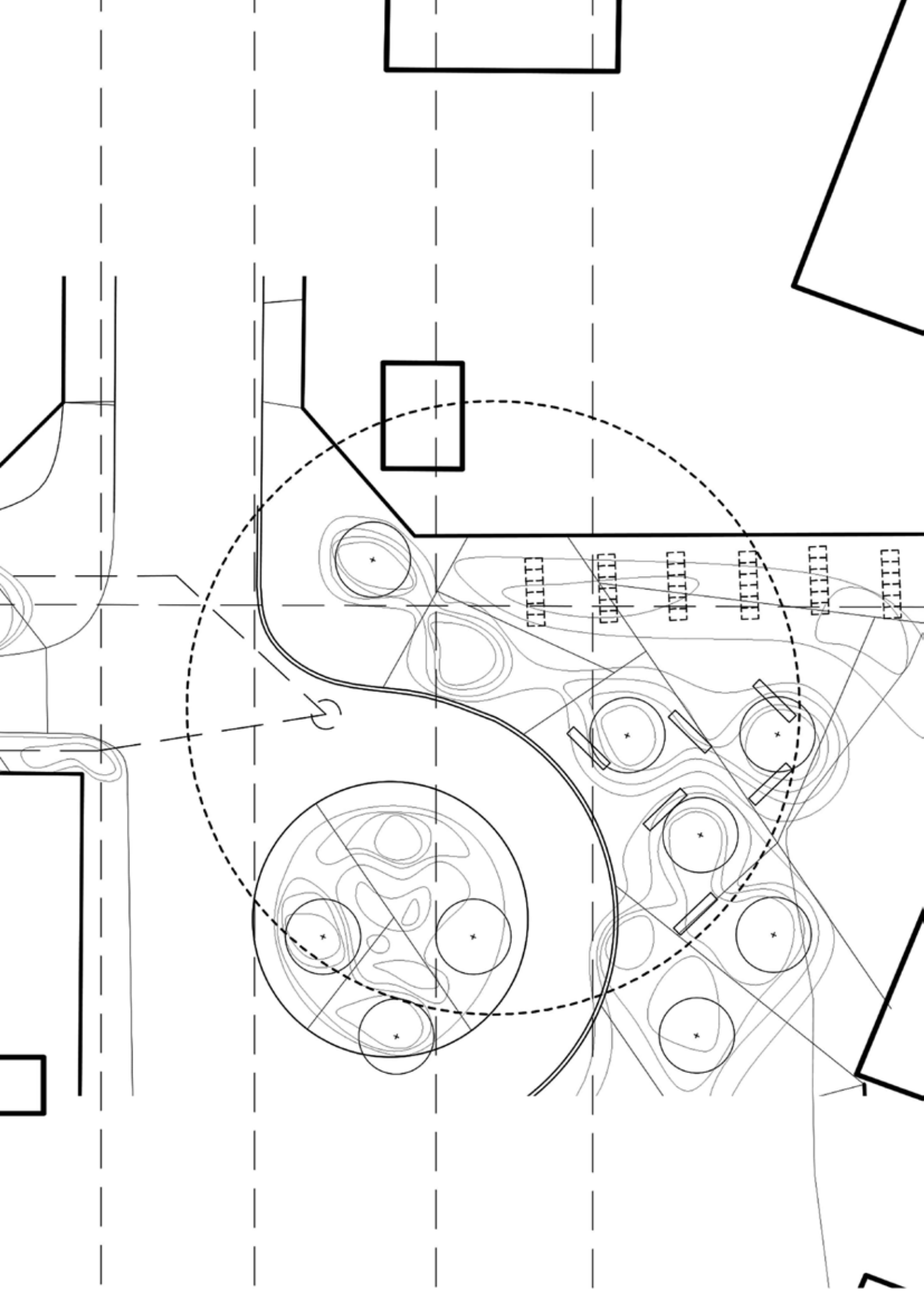


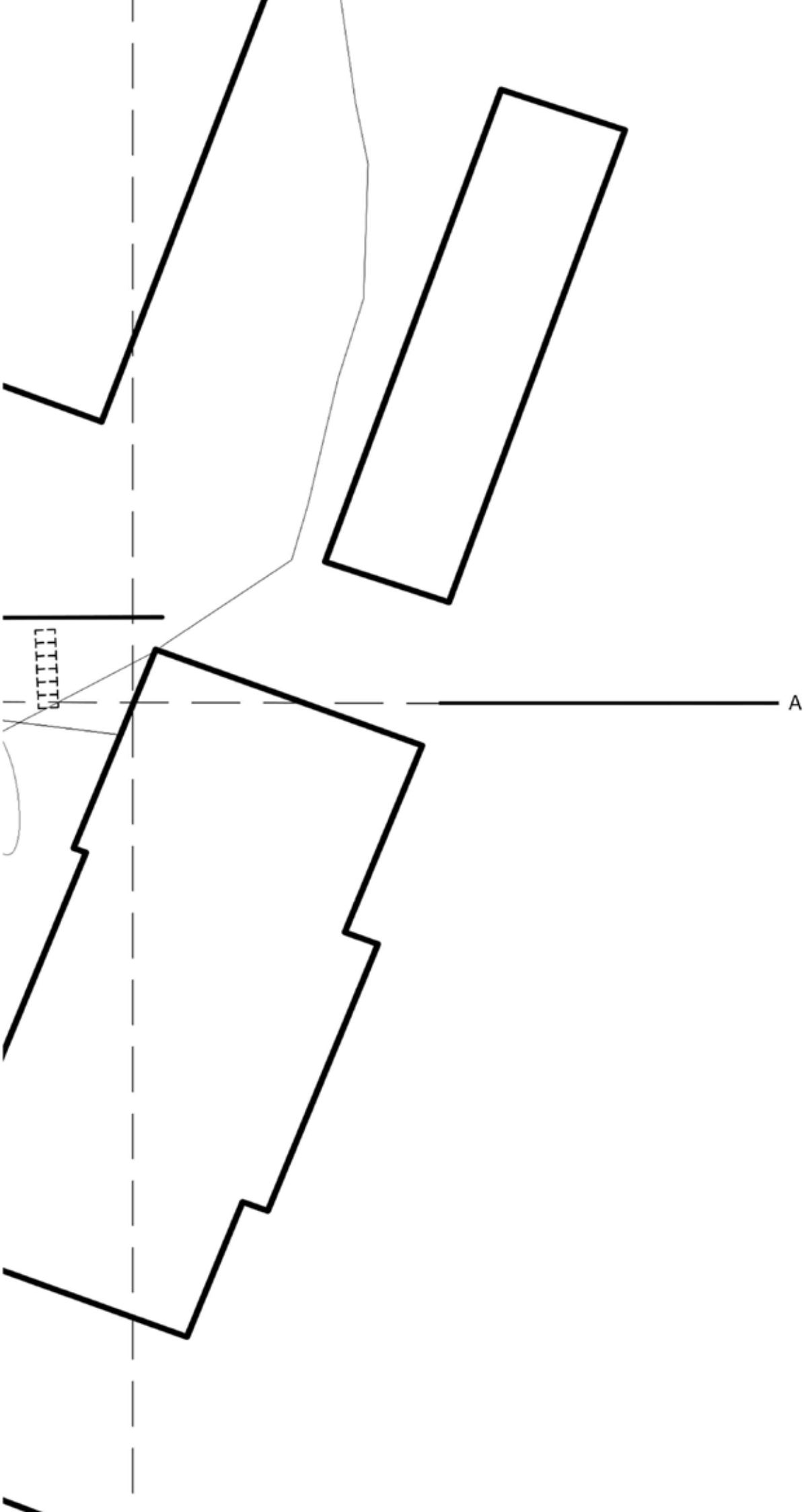


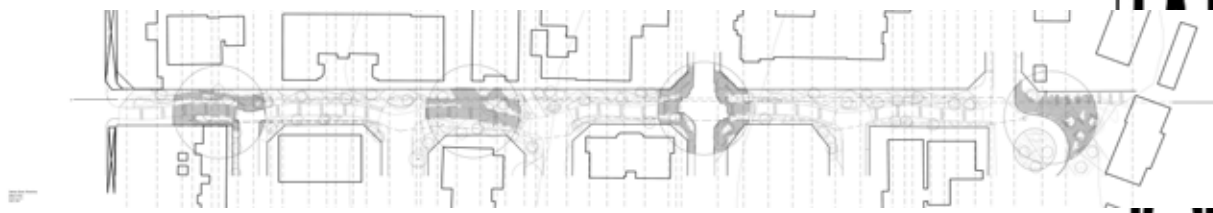












A

Station Road, Mowbray

Sketch Plan

Section on A-A

Scale 1:500



