

CHAPTER

9

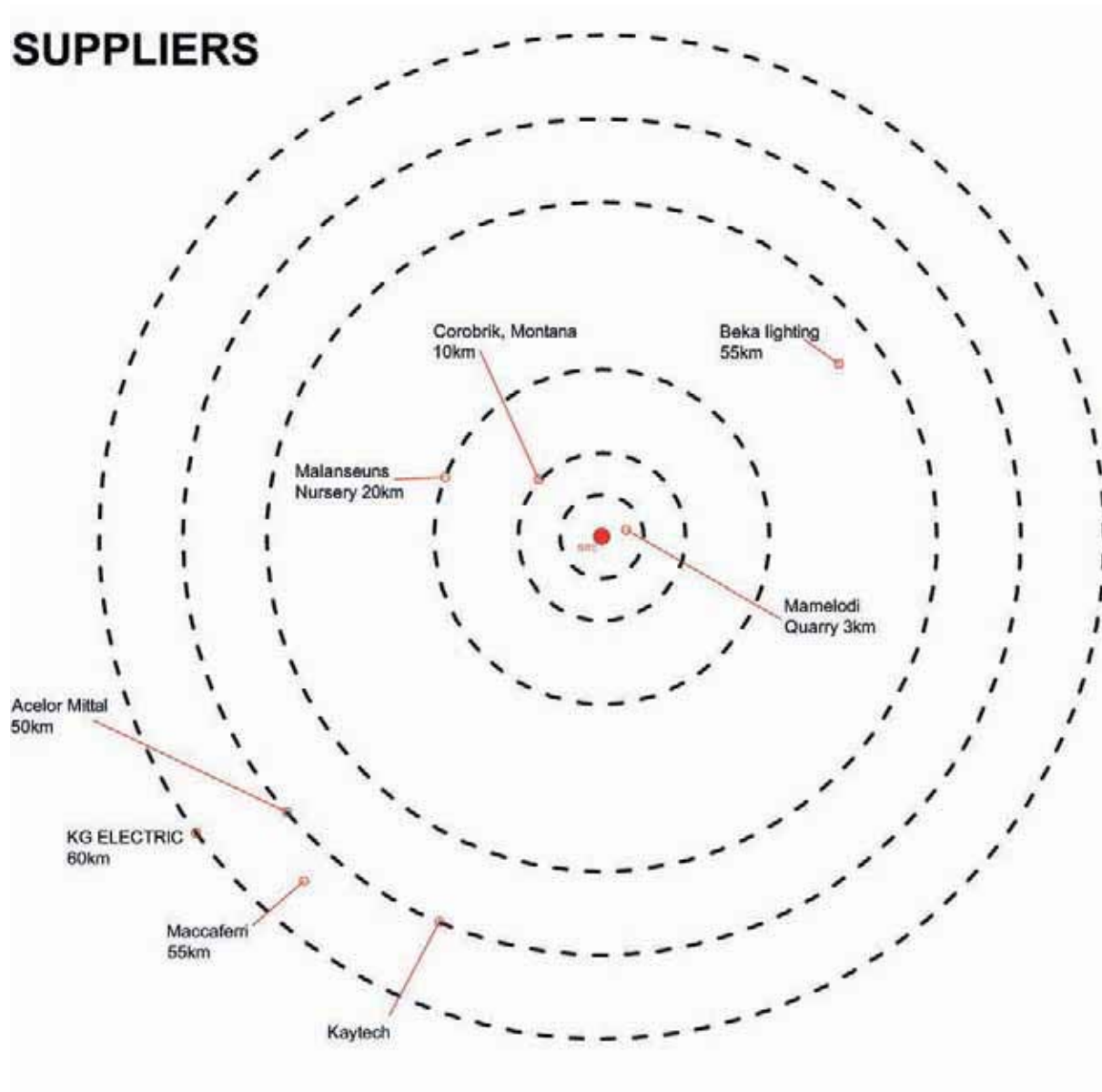
TECHNICAL RESOLUTION

9.1. INTRODUCTION

This chapter explores in detail the technical aspects of the project to meet the set design principles discussed in the last chapter. The philosophy behind the material

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9.2. MATERIAL SELECTION

Structures in public spaces are usually prone to damage due to frequent use by

choice of materials therefore from the start should aim for durable materials that

possibility of being reused and/or re-appropriated. The materials used should also

PAVING



Champagne paver (Corabrik, 2011)



Burgundy paver (Corabrik, 2011)



Gabion wall (Author, 2007)



Soilcrete paving (Author, 2008)



Mosaic tiles (Klitzner, 2010)



Exposed aggregate concrete paving (Author, 2007)



Boulders (Author, 2011)

7
h Paving



Concrete : *In situ*

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remains durability.

Clay paver

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necessary.

Soilcrete

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Gum poles

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Mild Steel 8

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Natural stone

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Tyres : #

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9.3. PLANTING PALETTE

plants that are indigenous to the area as listed in chapter 4 and is culturally and

can associate the materials.

Trees

kgotla and masaka
for pain relief. produces edible *borokhu*

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- *Bolusanthus speciosus,* u y

Rhus lancea, RL U @
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Ziziphus mucronata, ZM U

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Shrubs

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landscape.

Buddleja saligna U

spring-summer.

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Strelizia reginae;

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are usually used in the community to decorate in the tents or at church during

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Groundcovers and Climbers

° another common gardening plant in South Africa displaying
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can be used next to buildings or under trees.

" this succulent plant is selected for its drought hardiness and
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part of the year.

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healing uses.

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and/or disguising slopes.

Herbs and Vegetables

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Water plants

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- Chondropetalum tectorum*
- Cyperus papyrus*
- Gunnera perpensa*
- K*
- Juncus kraussli*
- Typha capensis*
- Phragmites australis*
- Schoenoplectus corymbosus*

Lawn and Veld Grass

Cynodon dactylon is selected for its toughness needed especially in busy public
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- Digitaria eriantha*
- Hyparrhenia hirta*
- Hyparrhenia tamba*

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TREES



Acacia tortilis (Author, 2011)



Bolusanthus speciosus (Author, 2011)



Celtis africana (Author, 2011)



Combretum erythrophyllum



Erythrina

SHRUBS



Aloe marlothii, Mokgwapha (Author, 2011)



Buddleja saligna, Matlhware (Venter, 2002)



Carrisa macrocarpa (Author, 2011)

GROUNDCOVERS & CLIMBERS



Agapanthus africanus (Author, 2010)



Bulbine frutescens



Clematis brachiata, Mogau



Dietis grandiflora

WATER PLANTS



Typha capensis (Joffe, 2007:325)



Gunnera perpensa (Joffe, 2007:326)



Antennaria effusa (Joffe, 2007:330)





Erythrina (Venter, 2002)



Rhus lancea (Author, 2011)



Ziziphus mucronata (Author, 2011)



Ehretia rigida, Morobe (Venter, 2002)



Strelitzia reginae (Author, 2011)



Tecomaria capensis (Venter, 2002)



Tulbaghia violacea (Jaffe, 2007:299)



Senecio macroglauus (Jaffe, 2007:299)

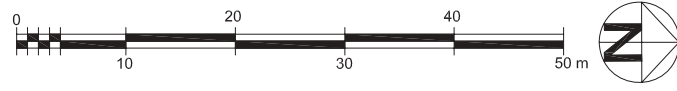


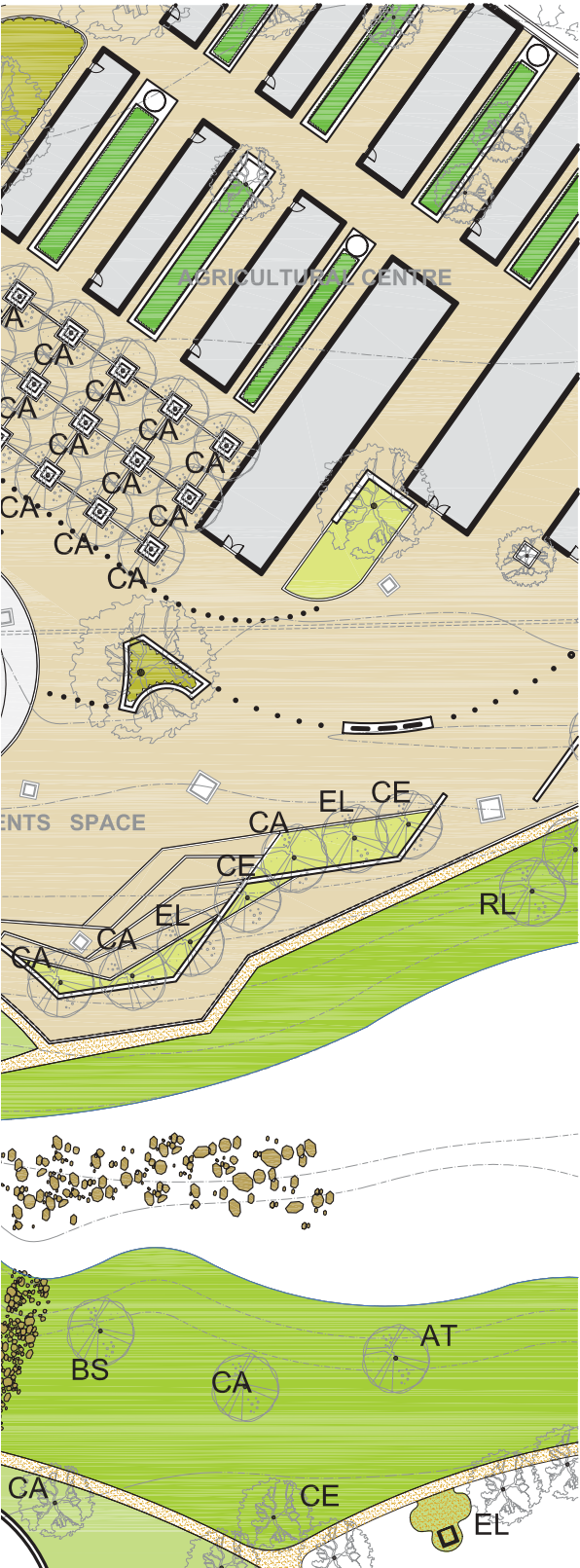
Cyperus papyrus (Jaffe, 2007:321)

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MATERIALS PLAN





LEGEND

PLANTING

TREES

- AT *Acacia tortilis*
- BS *Bolusanthus speciosus*
- CA *Celtis africana*
- CE *Combretum erythrophyllum*
- EL *Erythrina lysistemon*
- RL *Rhus lancea*
- ZM *Ziziphus mucronata*

SHRUBS

- A mix of:
- Aloe marlothi* (Mokgwapha)
 - Buddleja saligna* (Mothlware)
 - Carrisa macrocarpa*
 - Ehretia rigida* (Morobe)
 - Strelizia reginae*
 - Tecomaria capensis*

GROUND COVERS & CLIMBER

- A mix of:
- Agapanthus africanus*
 - Bulbine frutescens*
 - Clematis brachiata*
 - Dietis grandiflora*
 - Tulbaghia violacea*
 - Senecio macroglossus*

HERBS & VEGETABLES

Selected by the community

WATER PLANTS

- A mix of:
- Chondropetalum tectorum*
 - Cyperus papyrus*
 - Gunnera perpensa*
 - Juncus effusus*
 - Juncus kraussii*
 - Typha capensis*
 - Phragmites australis*

PAVING

220 x 110 x 50mm Burgundy clay paver by Corobrik

220 x 110 x 50mm Champagne clay paver by Corobrik

125mm thick In-situ exposed aggregate concrete slab, class 19/25

Broken salvaged ceramic tiles fixed to concrete base with tile fixative

150mm thick In-situ Soilcrete

In-situ Boulders



LAWN/ GRASS

CD *Cynodon dactylon* (mowed)

CD *Cynodon dactylon*

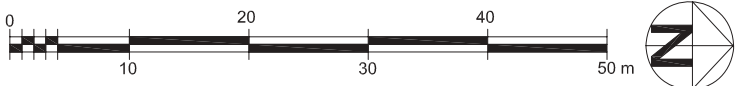
VELD GRASS

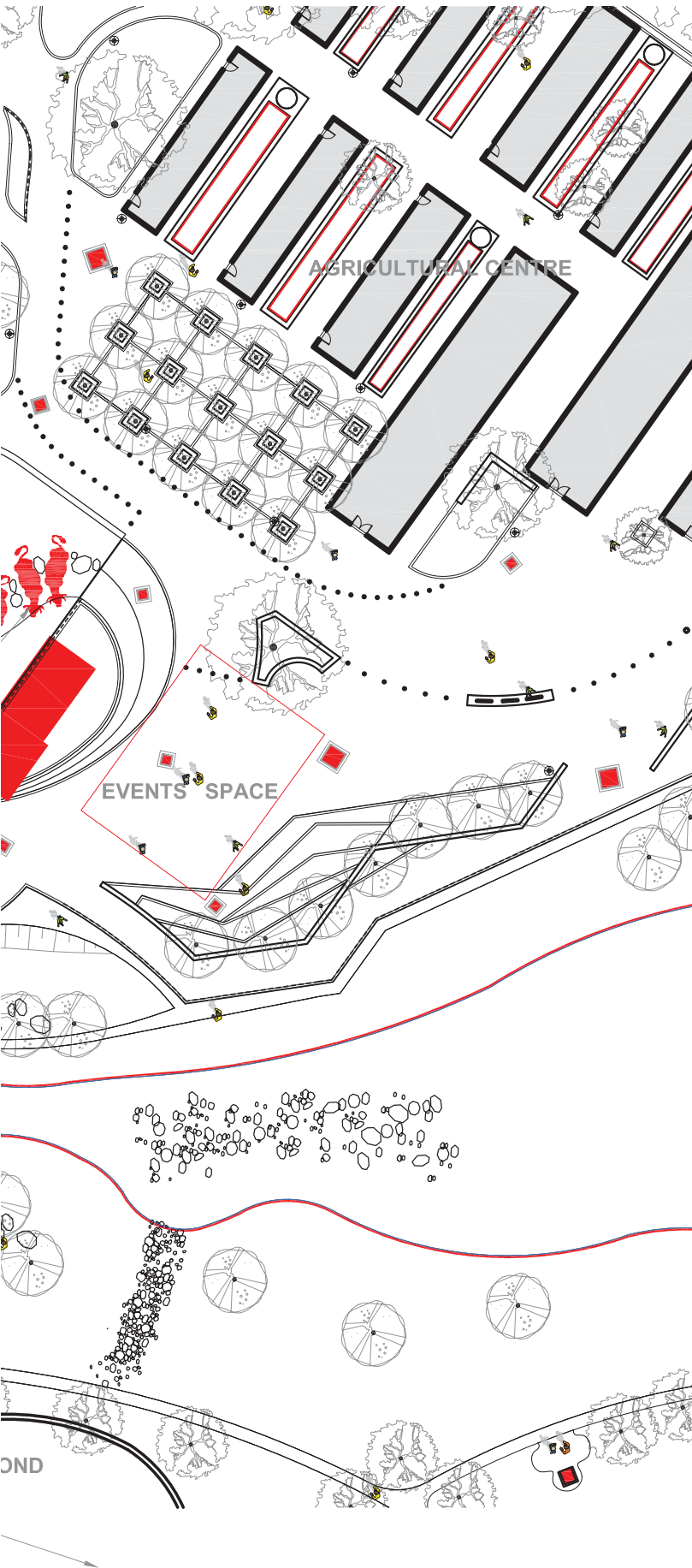
- A mix of:
- Digitaria eriantha*
 - Eragrostis biflora*
 - Eragrostis cuvula*
 - Hyparrhenia hirta*
 - Hyparrhenia tamba*





CULTURAL/ ART ELEMENTS





Mamelodi heroes, struggle fighters, icons and the *spirit of community* are celebrated through art.



Irene mall sculptures (Designing ways, 2008)



Solomon Mahlangu poster (Seidman, 1982)

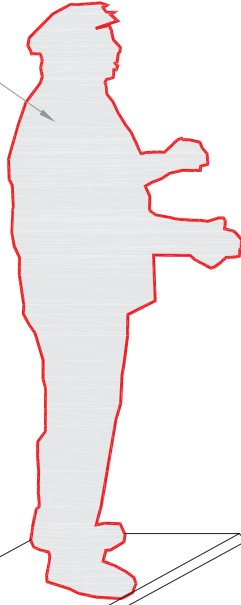


Bottle wall (Schmidt, 2006)

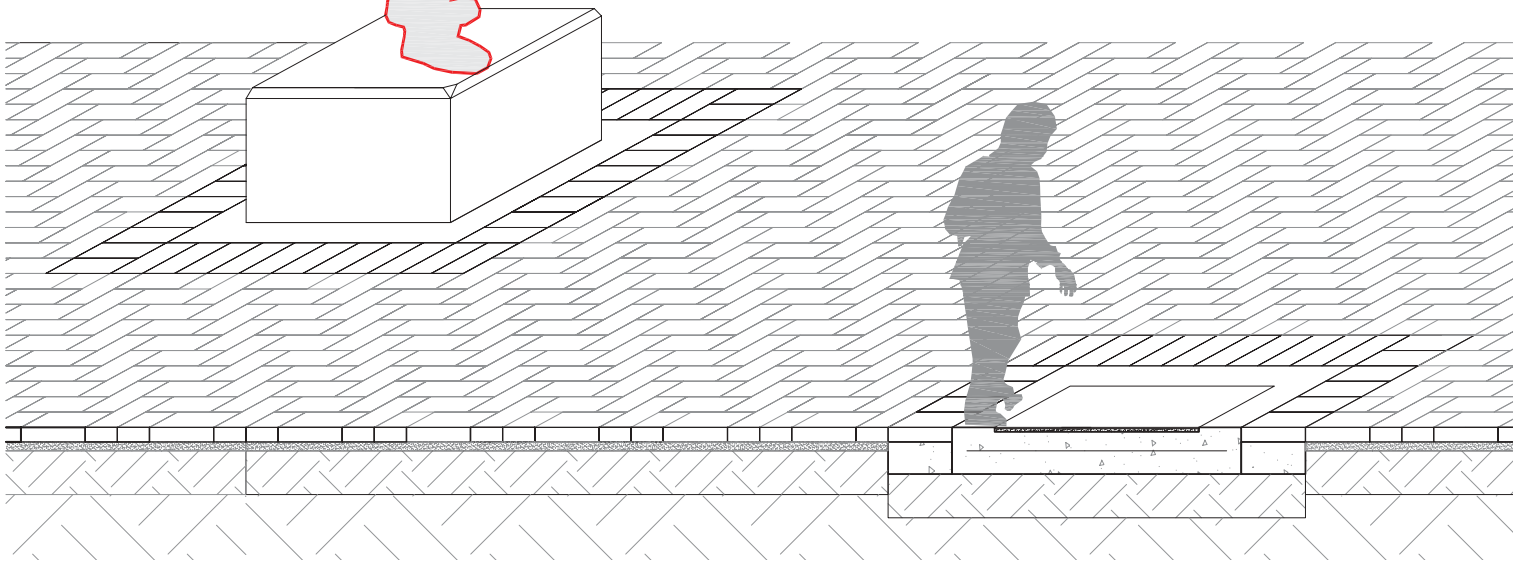


Nobel prize winners, including Desmond Tutu who studied in Mamelodi within the study area (Author, 2008)

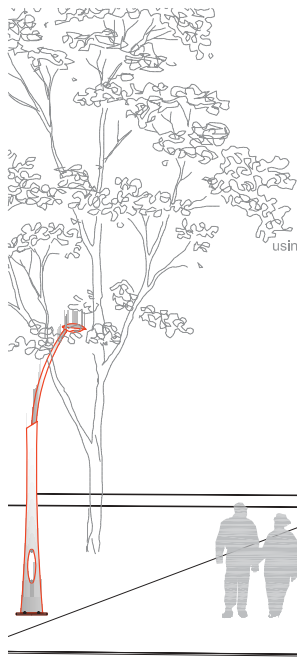
Statue of chosen and/or designed by community to stand on a raised plinth



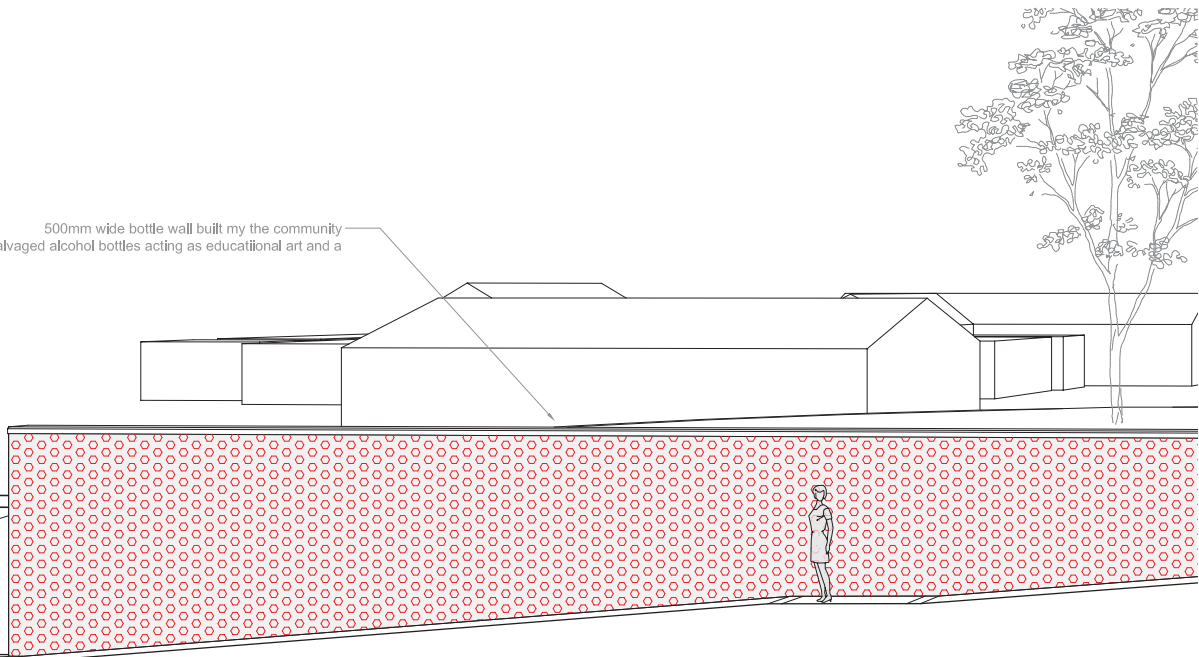
Mosaic cast onto 125mm cast in-situ concrete slab with 100mm exposed aggregate and Burgundy paver double edging

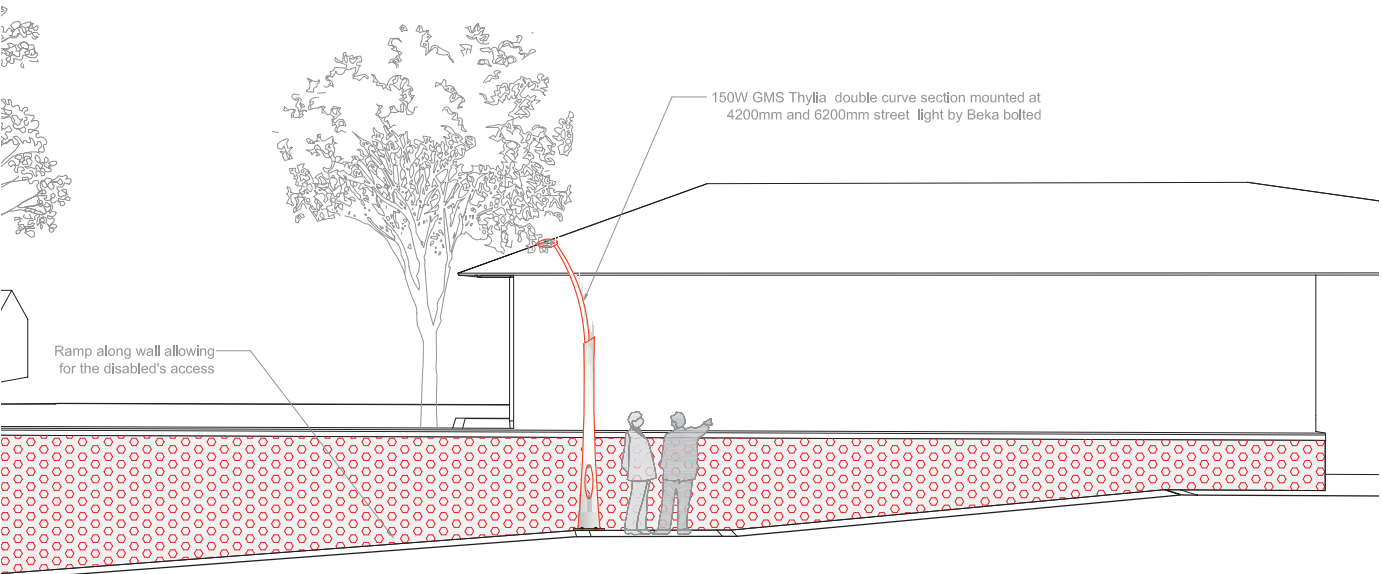
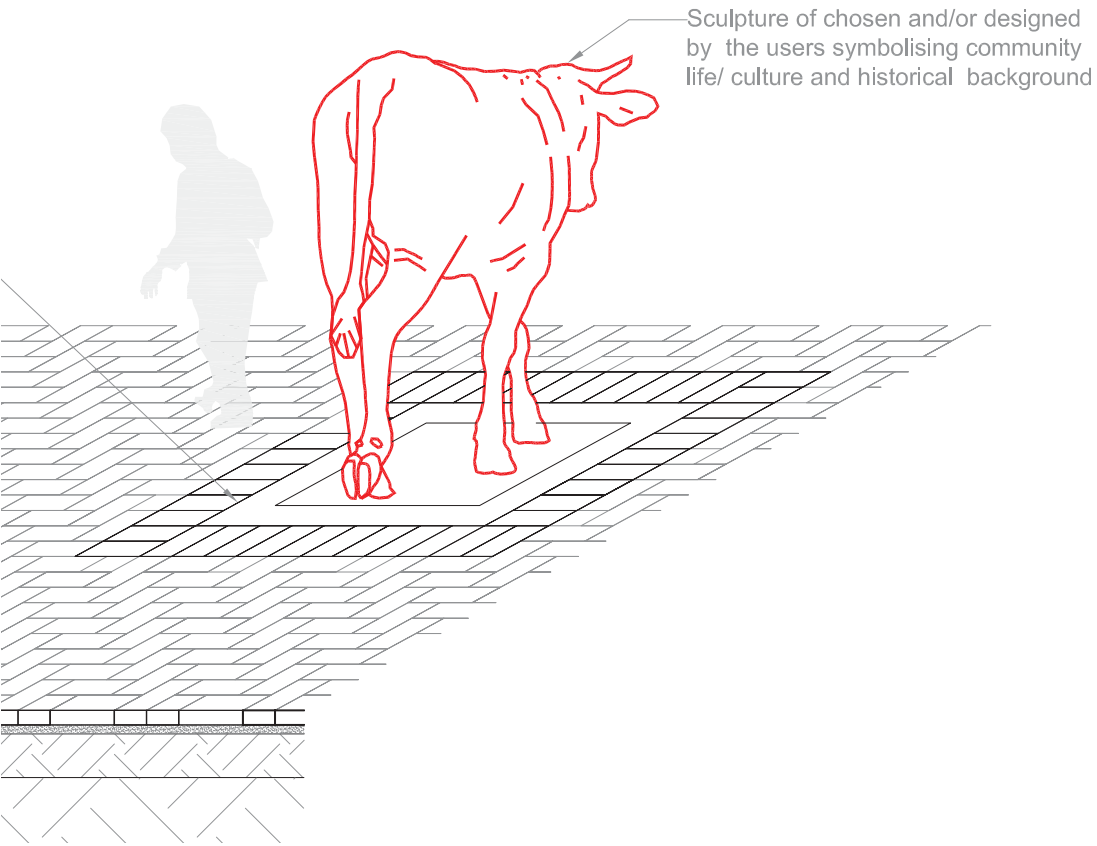


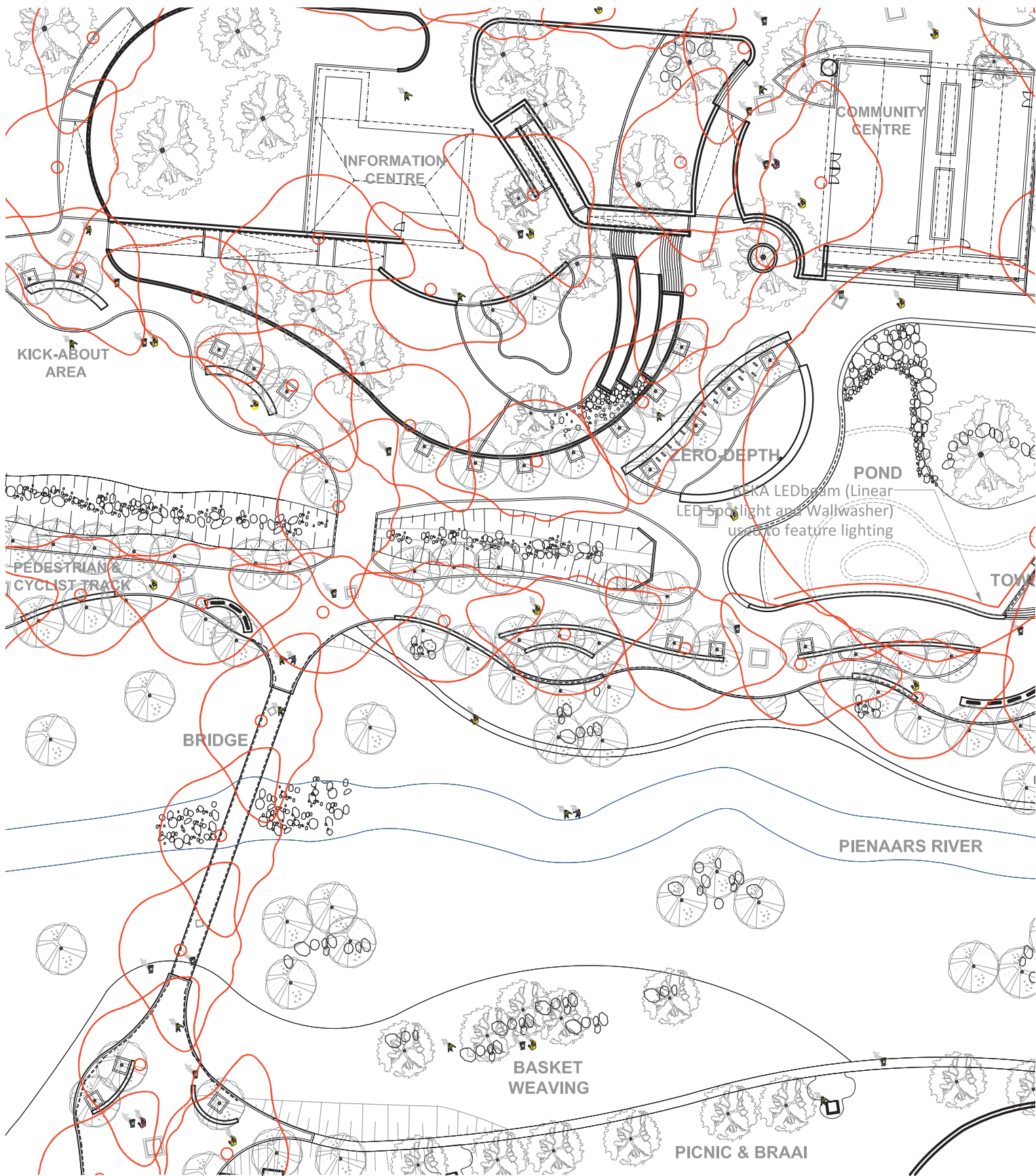
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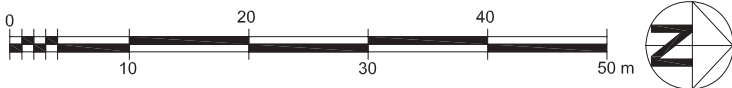
500mm wide bottle wall built by the community using salvaged alcohol bottles acting as educational art and a

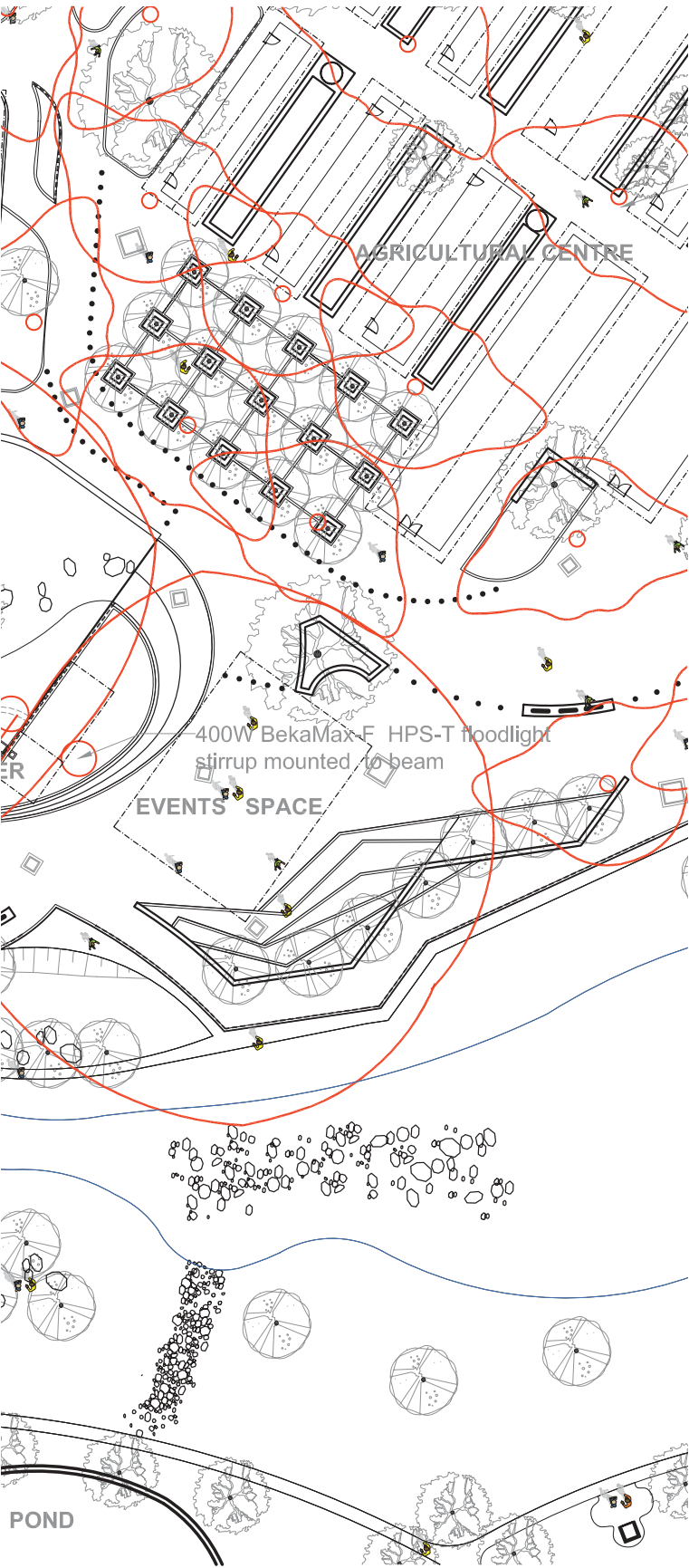






LIGHTING





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9.4. WATER MANAGEMENT

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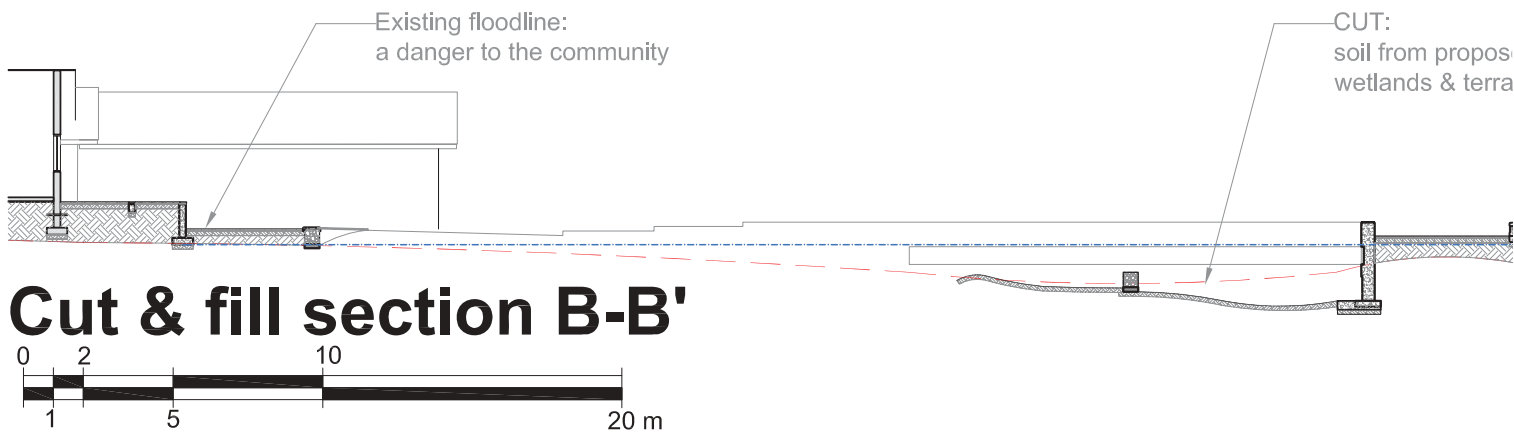
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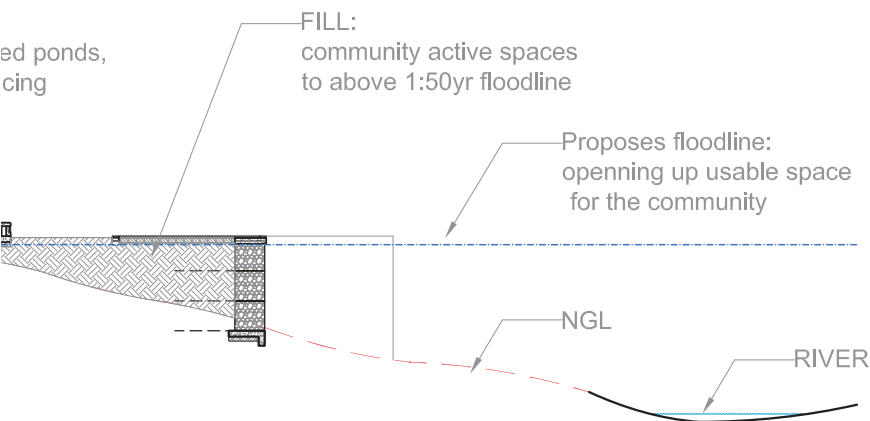
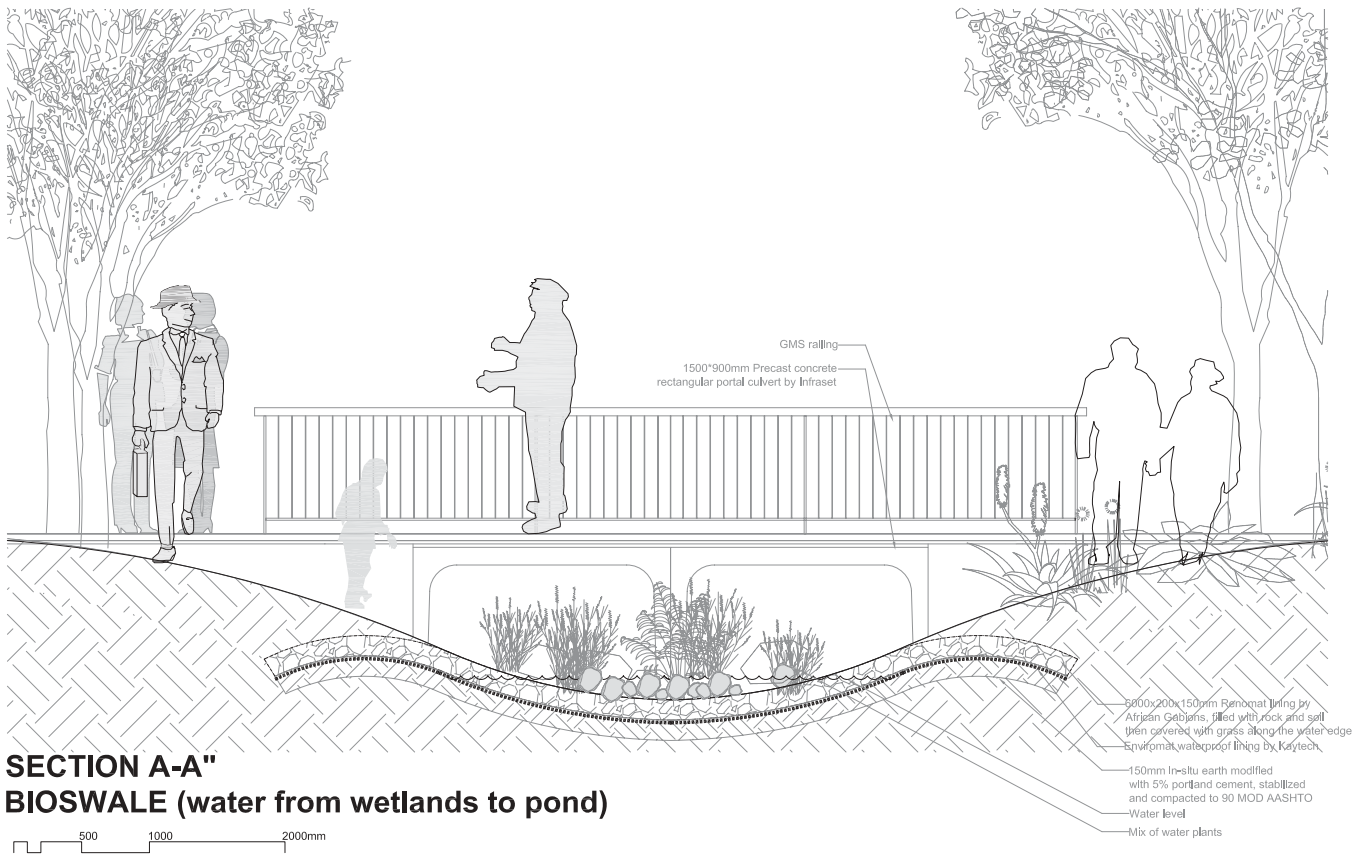
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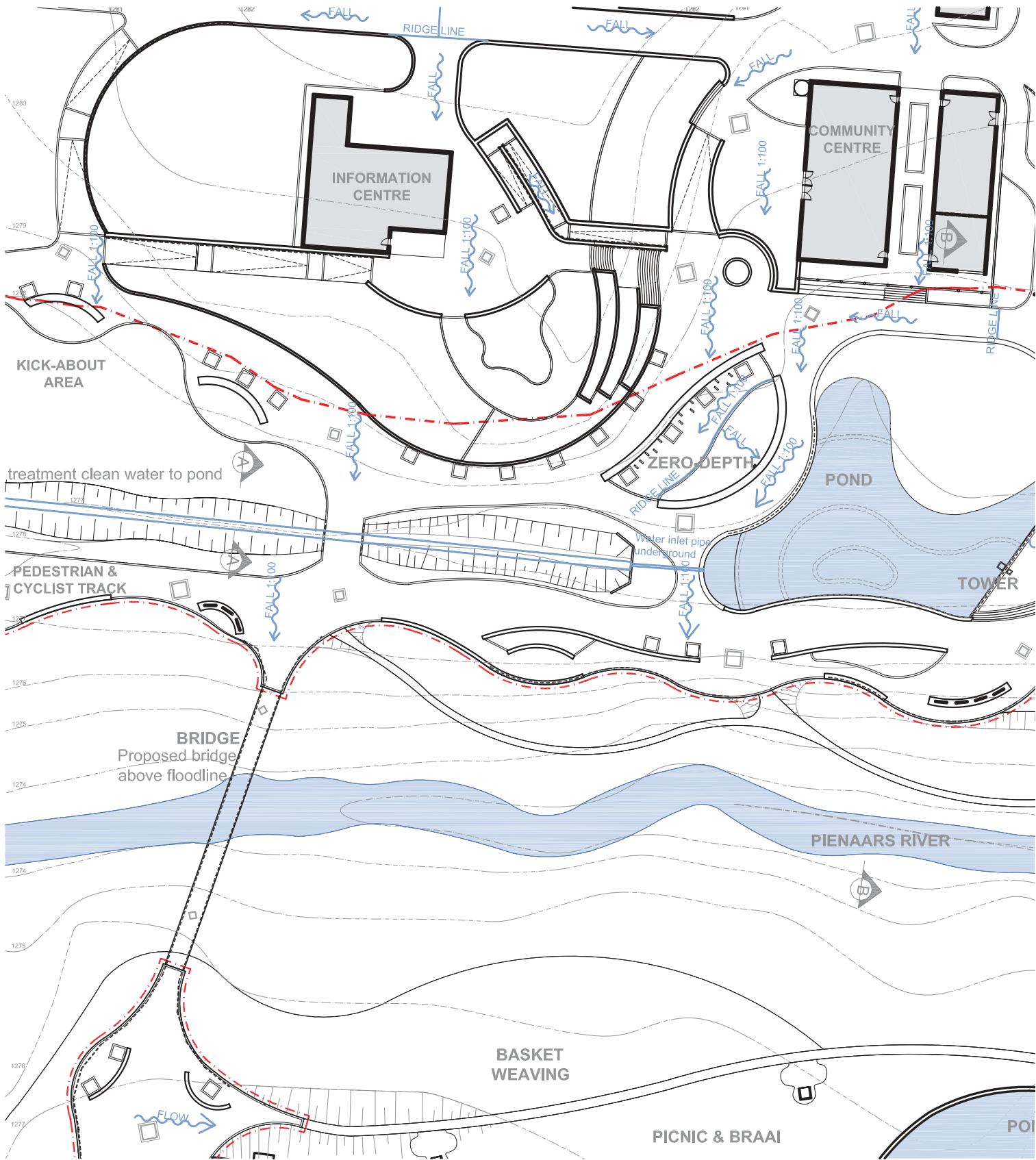
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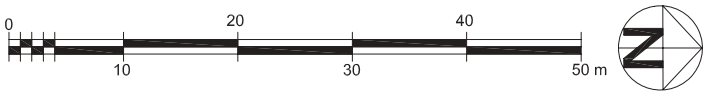
7 Cut & Fill

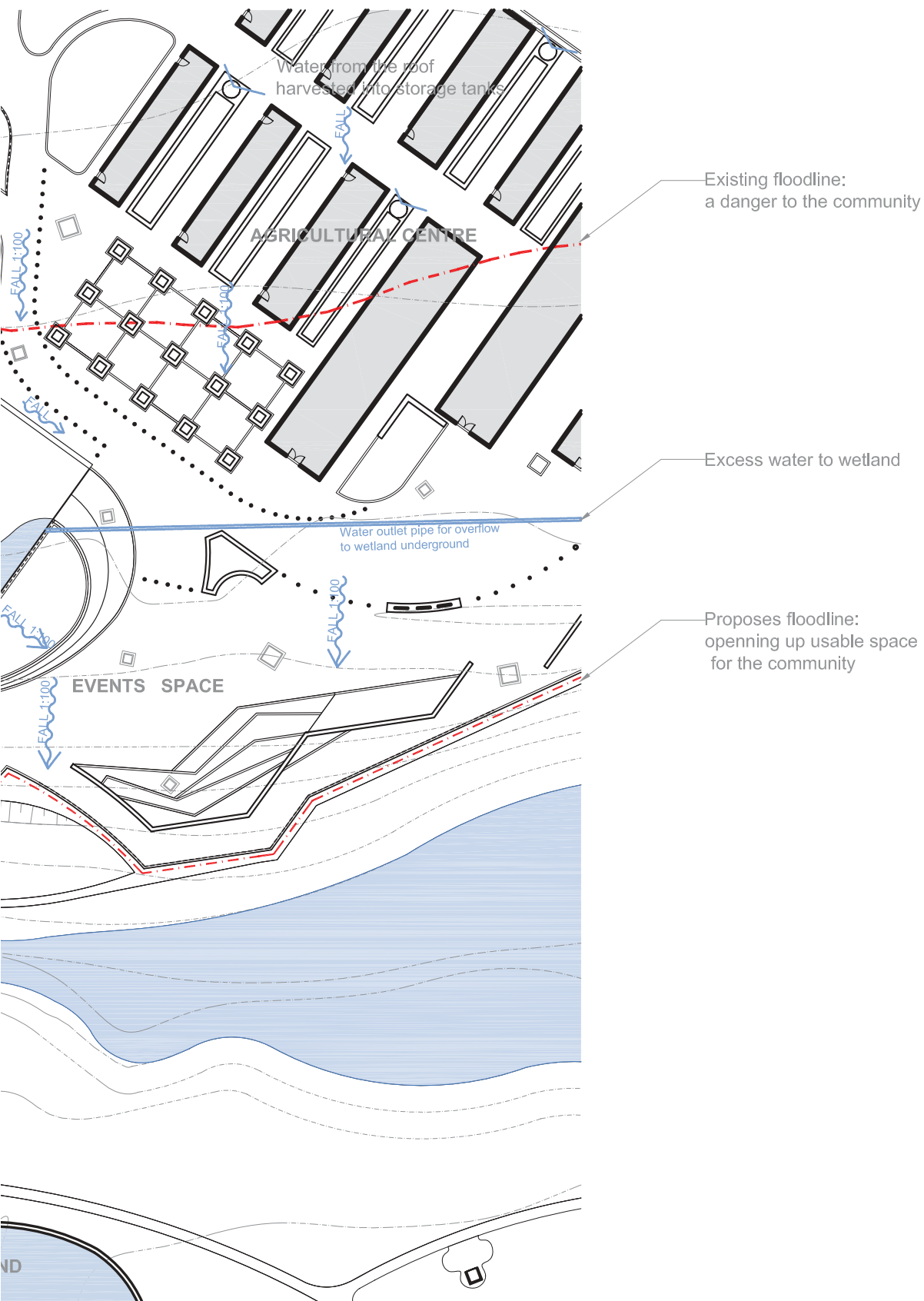


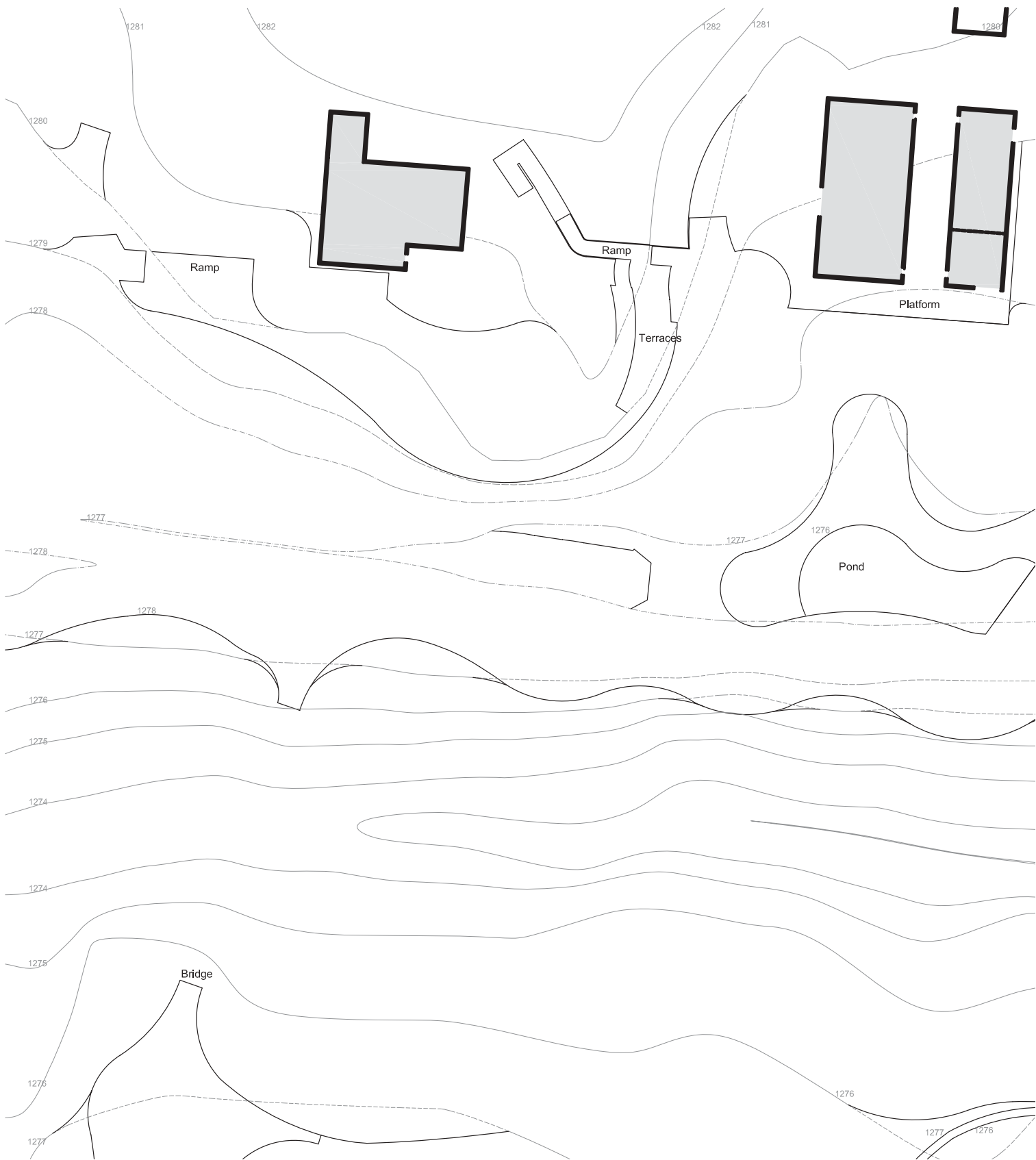




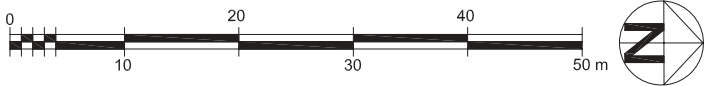
STORMWATER & FLOODLINES





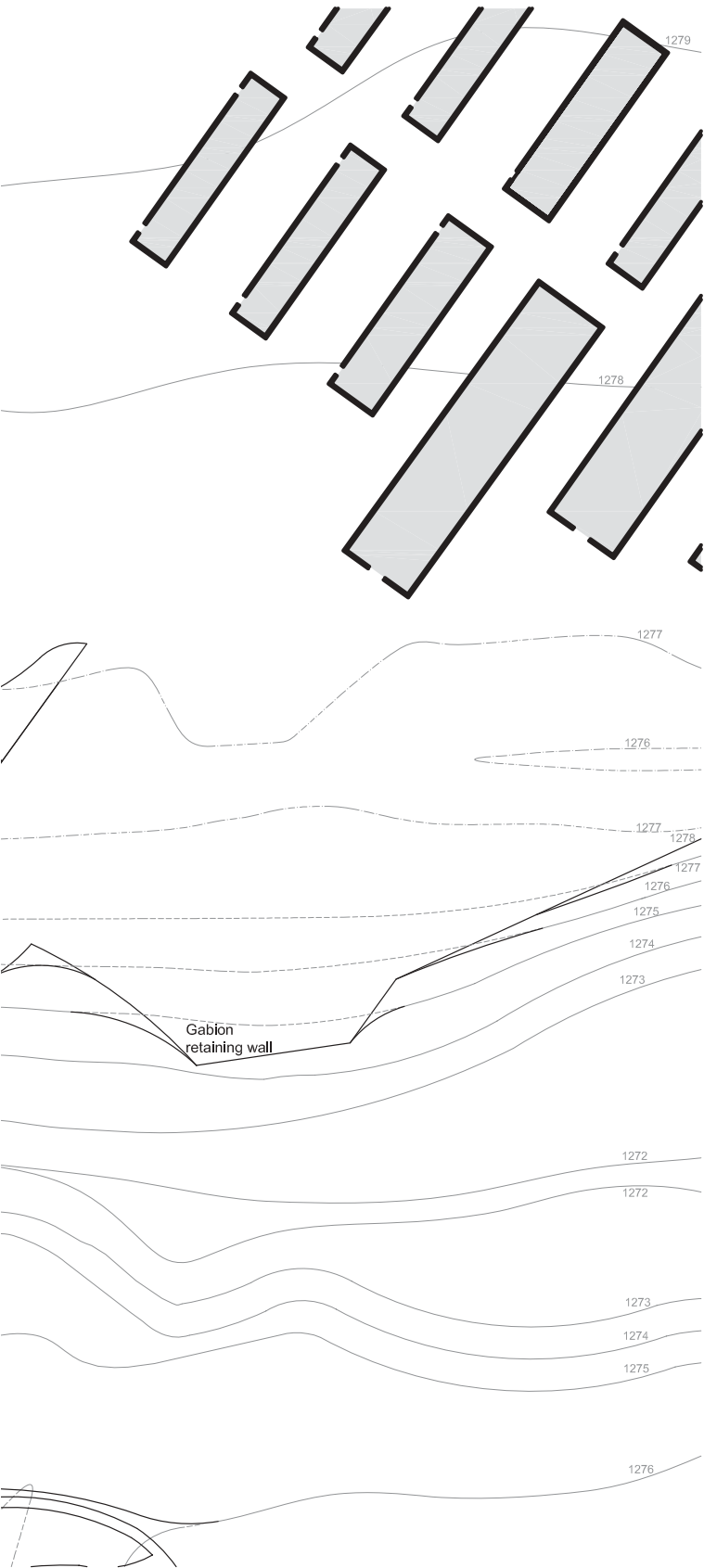


CONTOUR MANIPULATION





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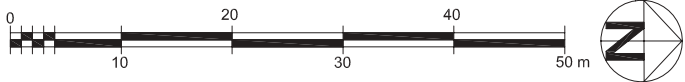
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IRRIGATION REQUIREMENTS

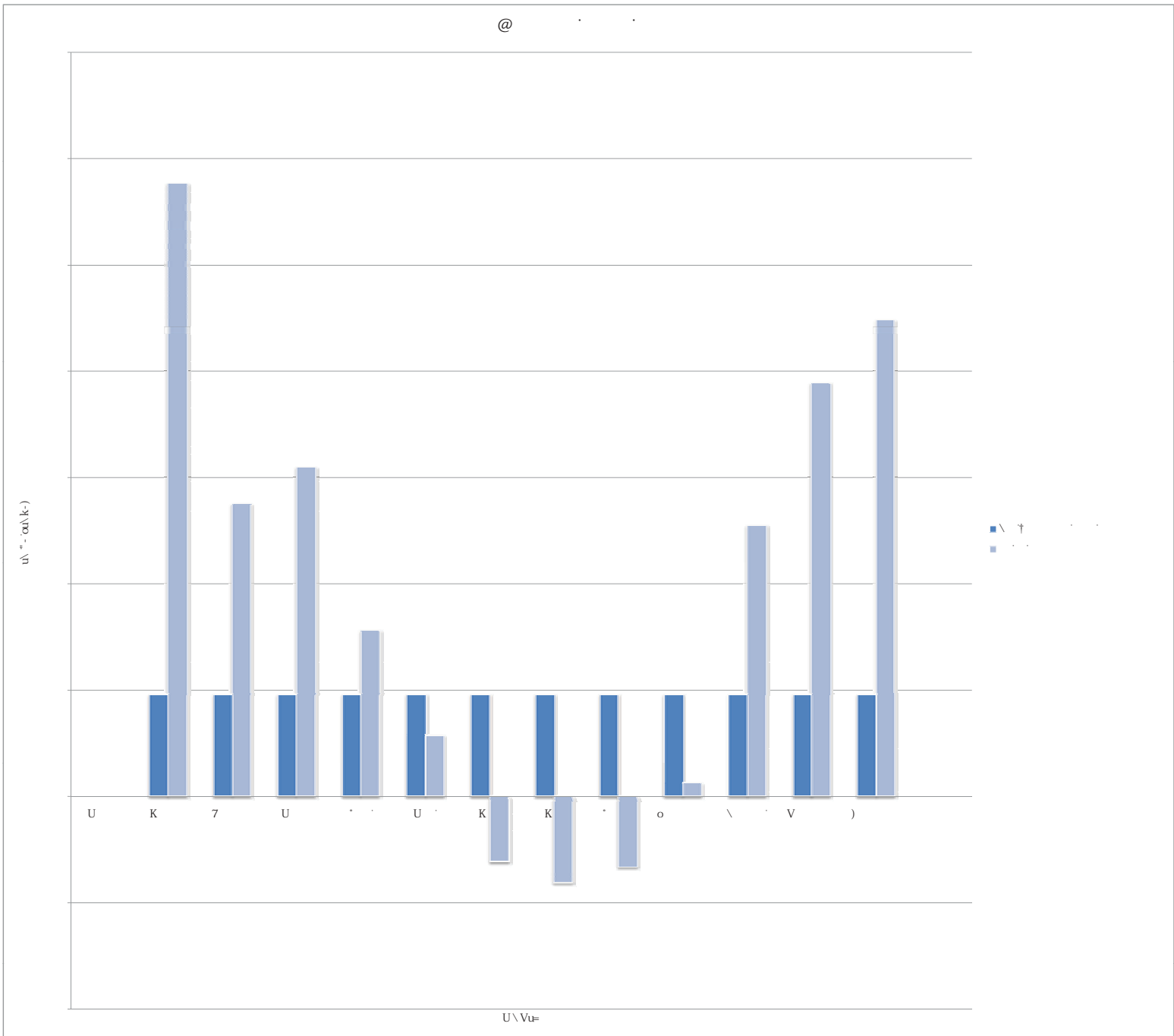


9.4.3. Water budgets

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7 Water needs graph (Author,





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7 Water
budget table (Author,

9.5. LIGHTING

The lighting design for the bridge is a key element in creating a safe and inviting environment. The design focuses on providing adequate illumination for pedestrian safety while also highlighting the architectural features of the bridge. The lighting scheme includes a combination of ambient lighting, task lighting, and accent lighting. The ambient lighting is provided by recessed linear fixtures along the bridge deck, ensuring a uniform level of illumination. Task lighting is provided by wall-mounted fixtures at the bridge entrance and exit, helping to define the bridge's boundaries. Accent lighting is used to highlight the bridge's structural elements, such as the piers and the railing. The lighting design also takes into account the surrounding environment, including the trees and the river, to create a harmonious and aesthetically pleasing scene. The lighting fixtures are selected for their durability and energy efficiency, ensuring that the bridge is well-lit for many years to come. The lighting design is a critical component of the overall bridge design, and it plays a significant role in the bridge's success as a public space.

7 Bridge



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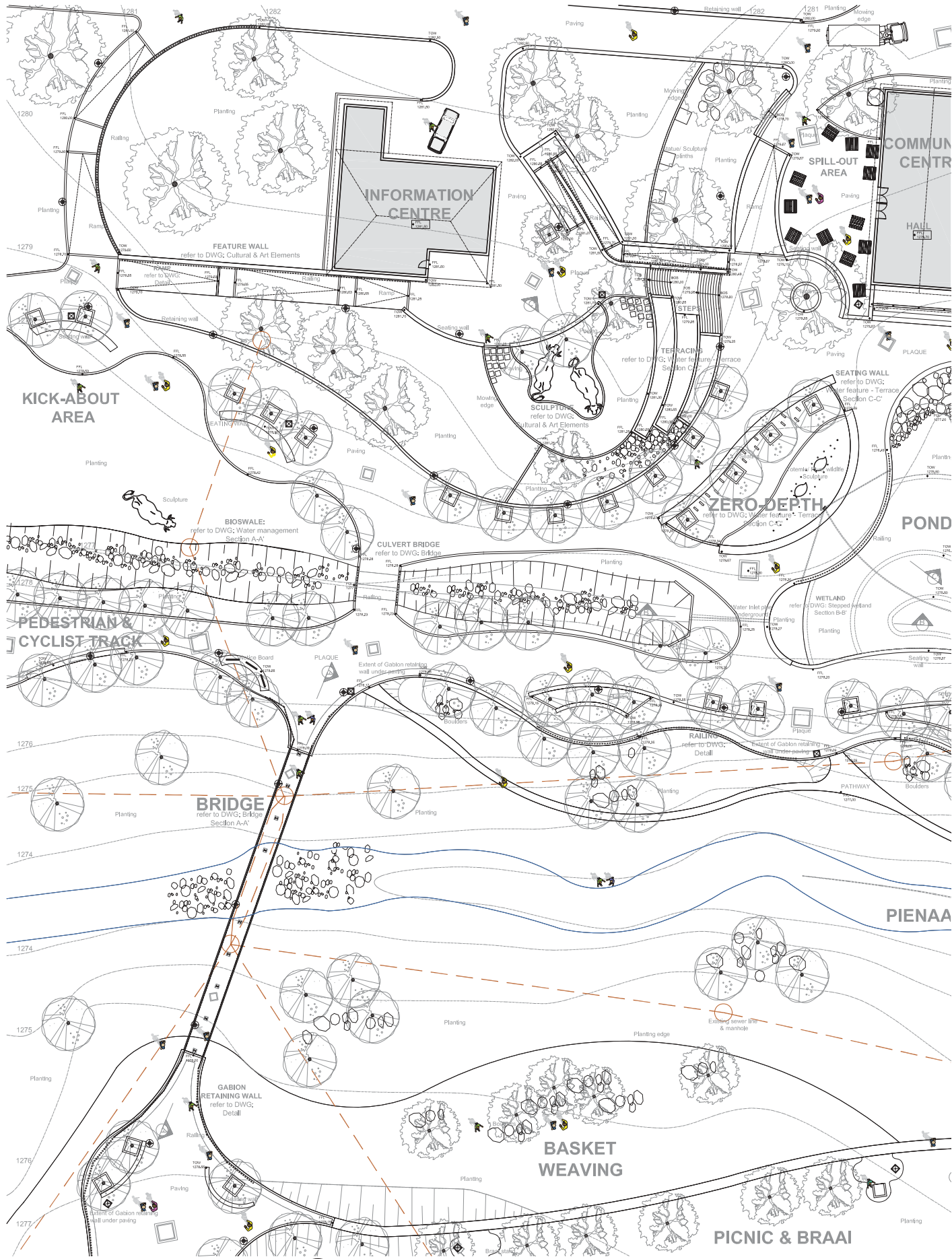
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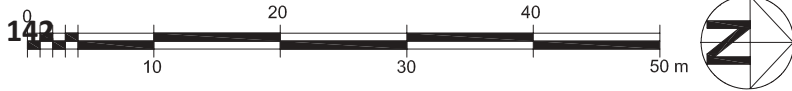
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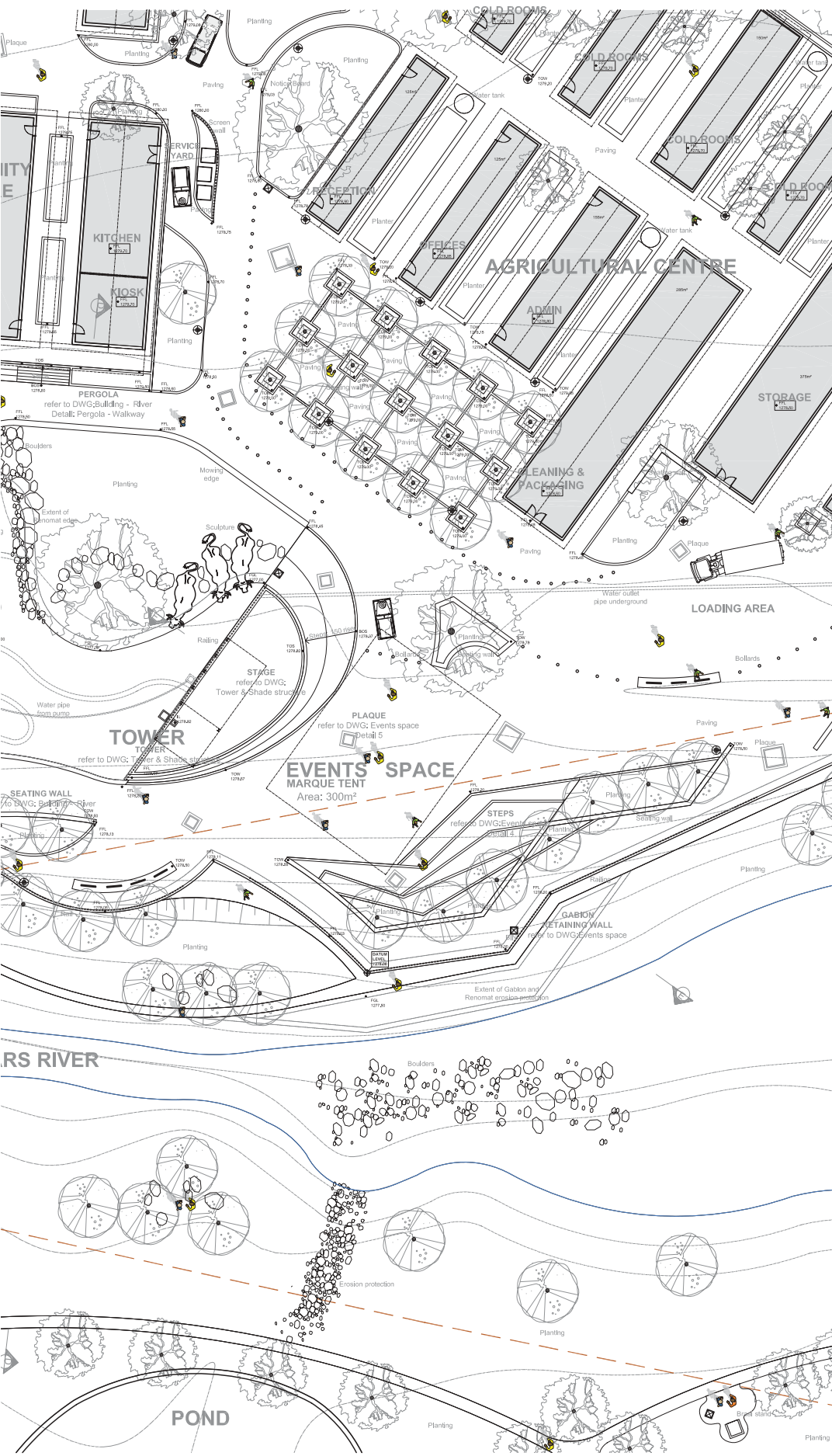


9.6. TECHNICAL DETAILS



REFERENCE PLAN





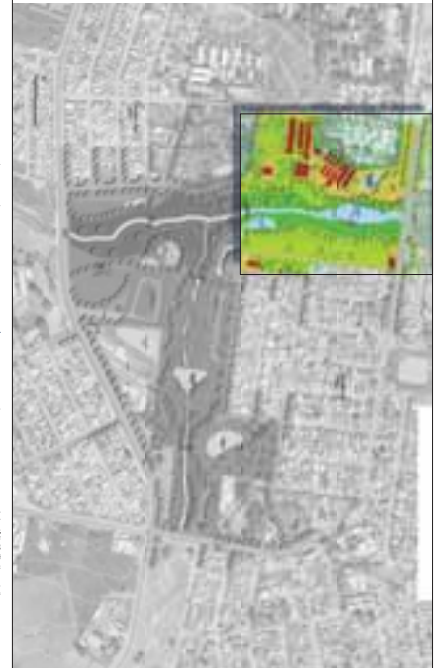
LEGEND

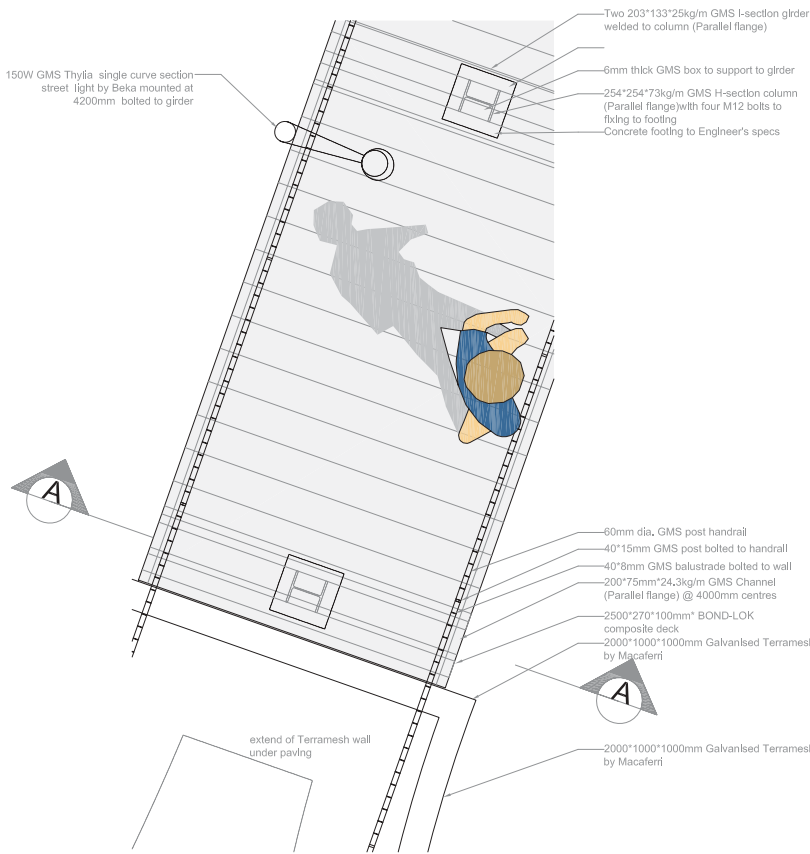
- POST TOP LIGHT
- LITTERBIN
- MARQUE-TENT AREA
- SEATING WALL
- TREE SURROUND
- PLAQUE
- TABLES, CHAIRS & UMBRELLAS
- BOLLARD
- HANDRAIL
- SCREEN WALL
- SEWER LINE
- RIVER WATER LINE
- SECTION/DETAIL NO:
- DWG NO:
- NEW TREES
- EXISTING TREES

ABBREVIATIONS

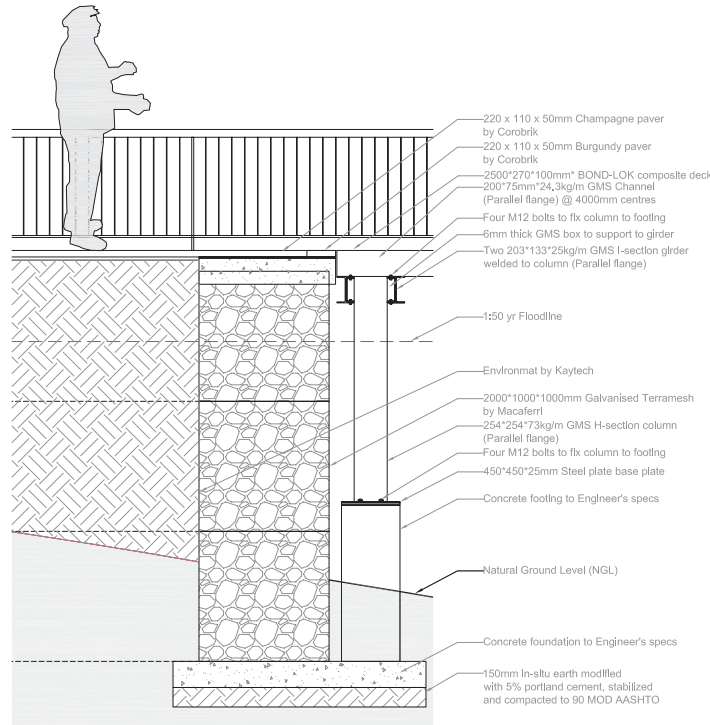
- TOC Top of channel
- TOG Top of gabion
- TOP Top of paving
- BOS Bottom of steps
- TOS Top of steps
- TOW Top of wall
- TOD Top of decking
- FFL Finished floor level
- GRL Grid level
- IL Inlet level
- S/W Stormwater
- P/C Pre-cast concrete

LOCALITY PLAN SCALE 1:5000

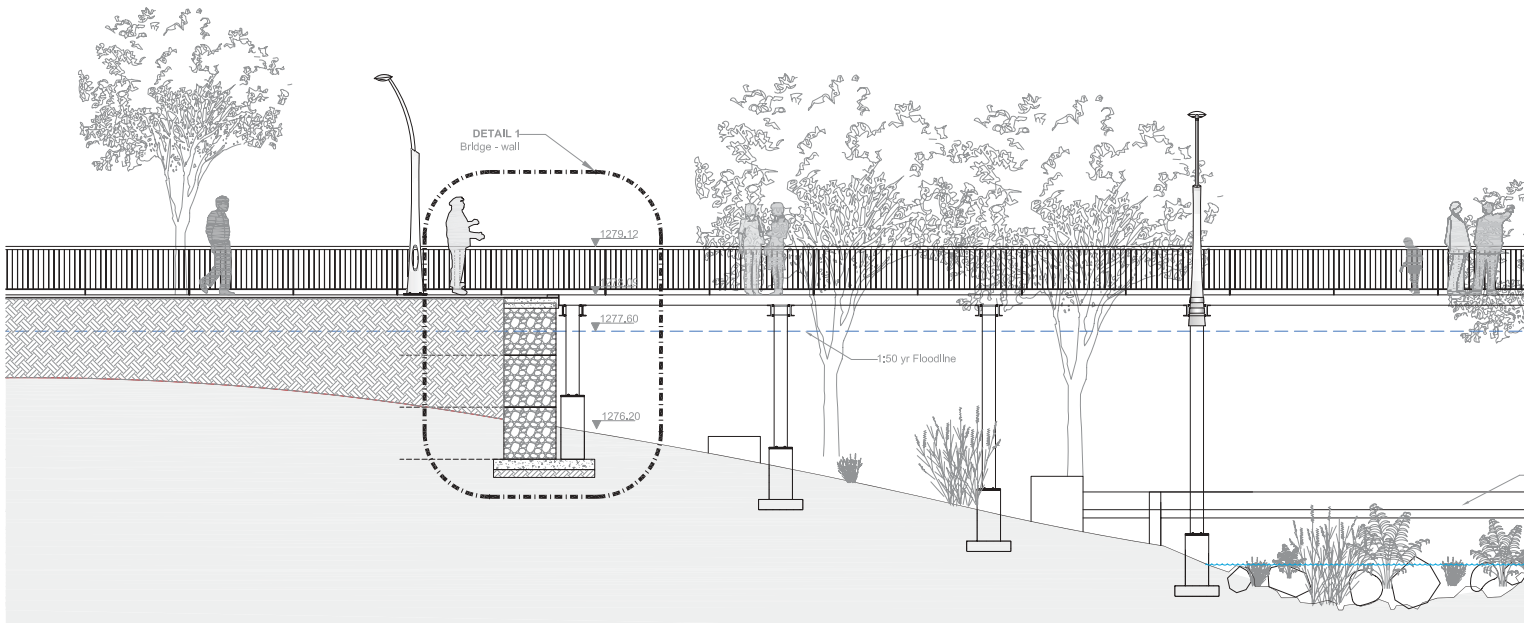




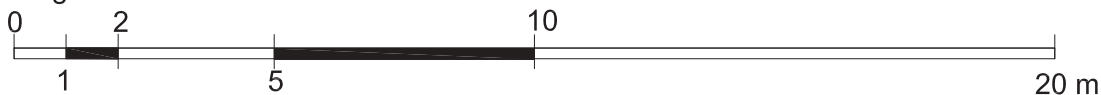
DETAIL PLAN
Bridge

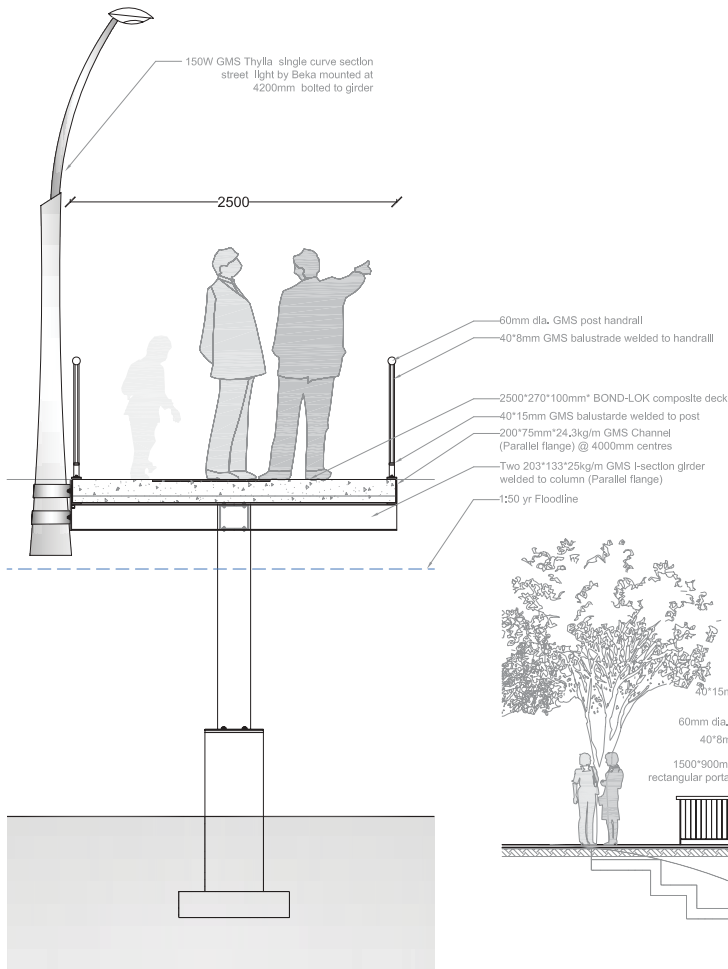


DETAIL 1
Bridge - Wall



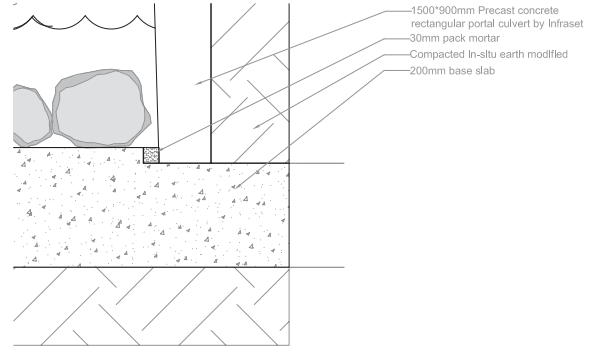
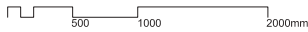
SECTION A-A'
Bridge



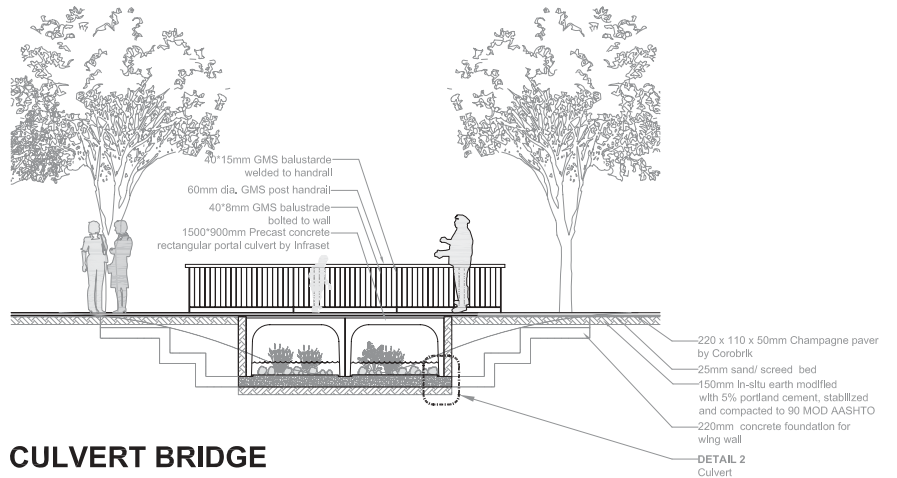


SECTION DETAIL A-A'

Bridge

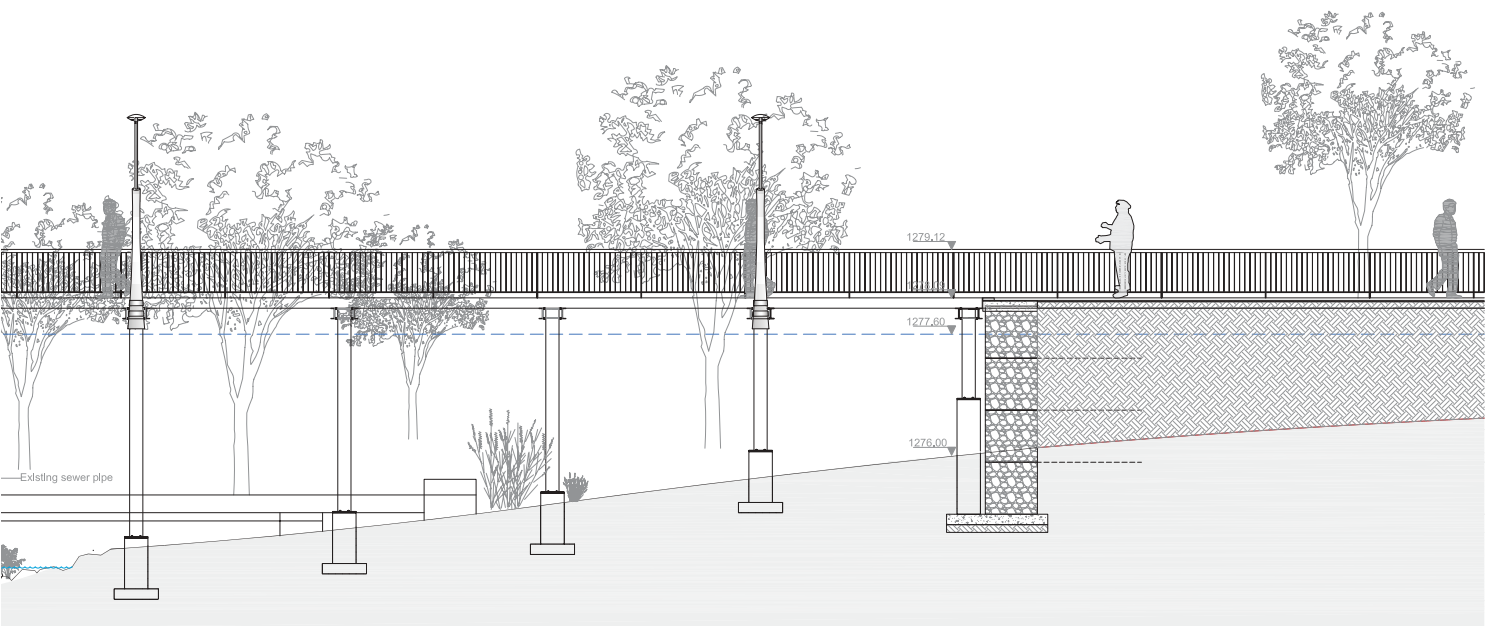
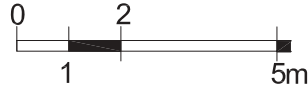


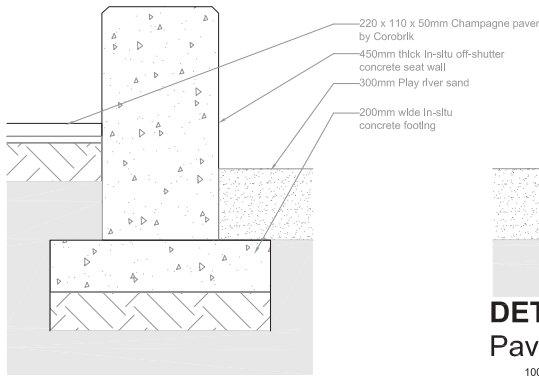
DETAIL 2



CULVERT BRIDGE

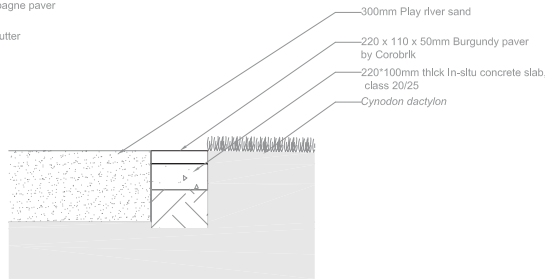
Scale 1:50





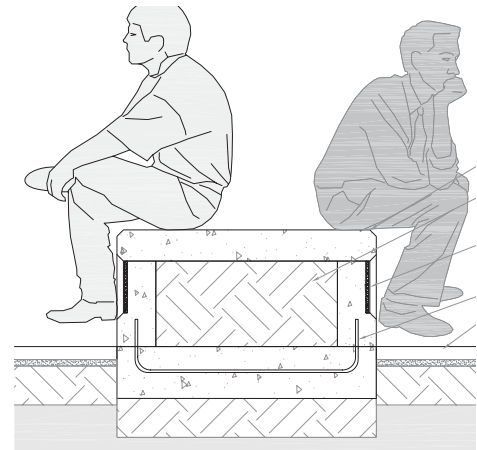
DETAIL 1
Seat wall

100 200 500 1000mm



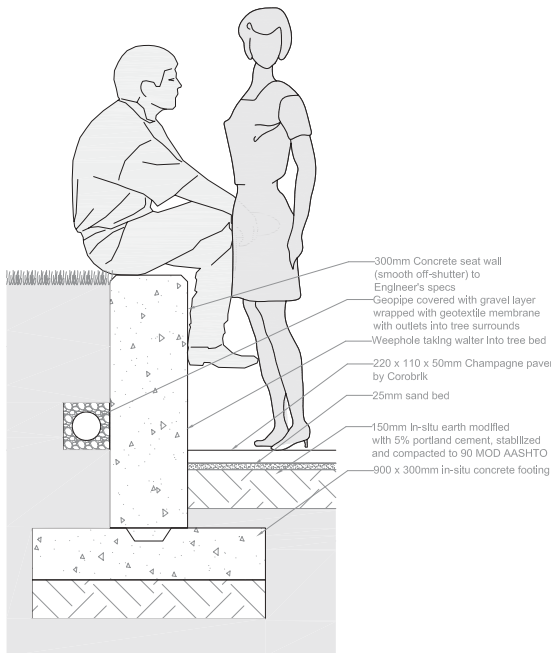
DETAIL 2
Paving edge

100 200 500 1000mm



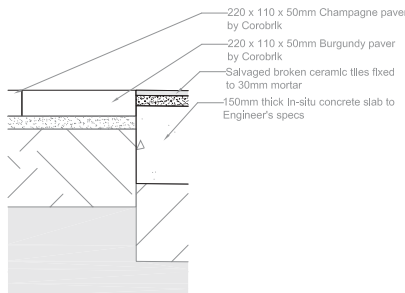
DETAIL 4
Double Seat wall

100 200 500 1000mm



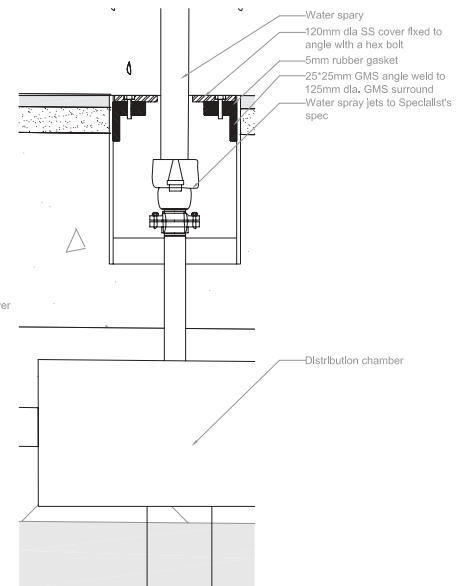
DETAIL 3
Terrace wall

100 200 500 1000mm



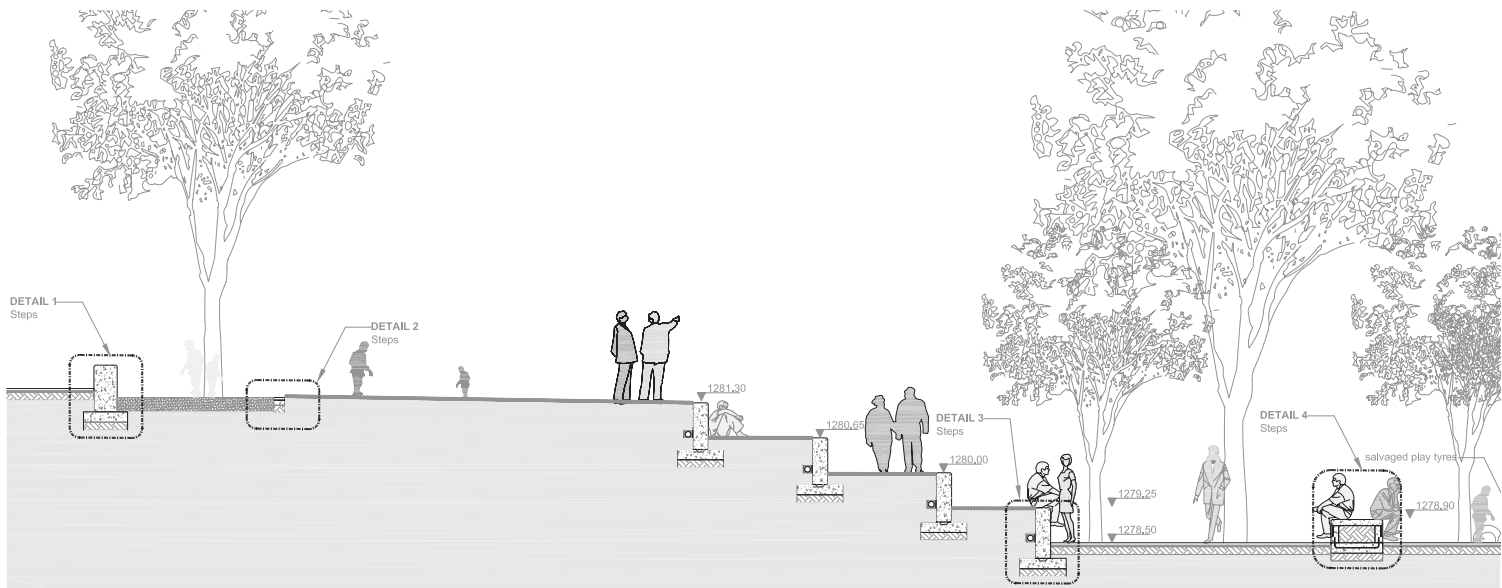
DETAIL 5
Paving edge

100 200 500mm



DETAIL 6
Water Jets

100 200mm



SECTION C-C'
Water feature - Terrace

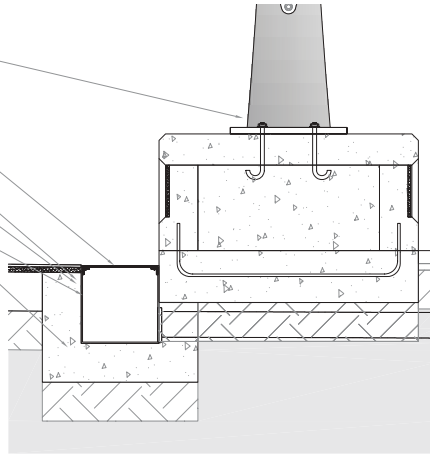
0 1 2 5 10 20 m



150W GMS Thylla double curve street light section mounted at 4200mm by Beka bolted to concrete seating with 10mmØ Galvanised steel anchor bolt

- 120mm Concrete seat slab (smooth off-shutter)
- 150mm In-situ earth fill modified with 5% portland cement, stabilized and compacted to 90 MOD AASHTO
- Salvaged broken ceramic tiles fixed to 25mm setback on seating with tile fixative
- Rebar
- 220 x 110 x 50mm Champagne paver by Corobrik

290*290*5mm thick SS grating plate with 10mm dia openings at 50 c/c fixed to angle with a hex bolt
5mm rubber gasket
25*25mm GMS angle weld to 125mm dia. GMS sleeve
300*300*5mm GMS box with 100mm dia drainage pipe outlet
150mm thick In-situ concrete slab to Engineer's specs



DETAIL 7
Drainage box

100 200 500 1000mm

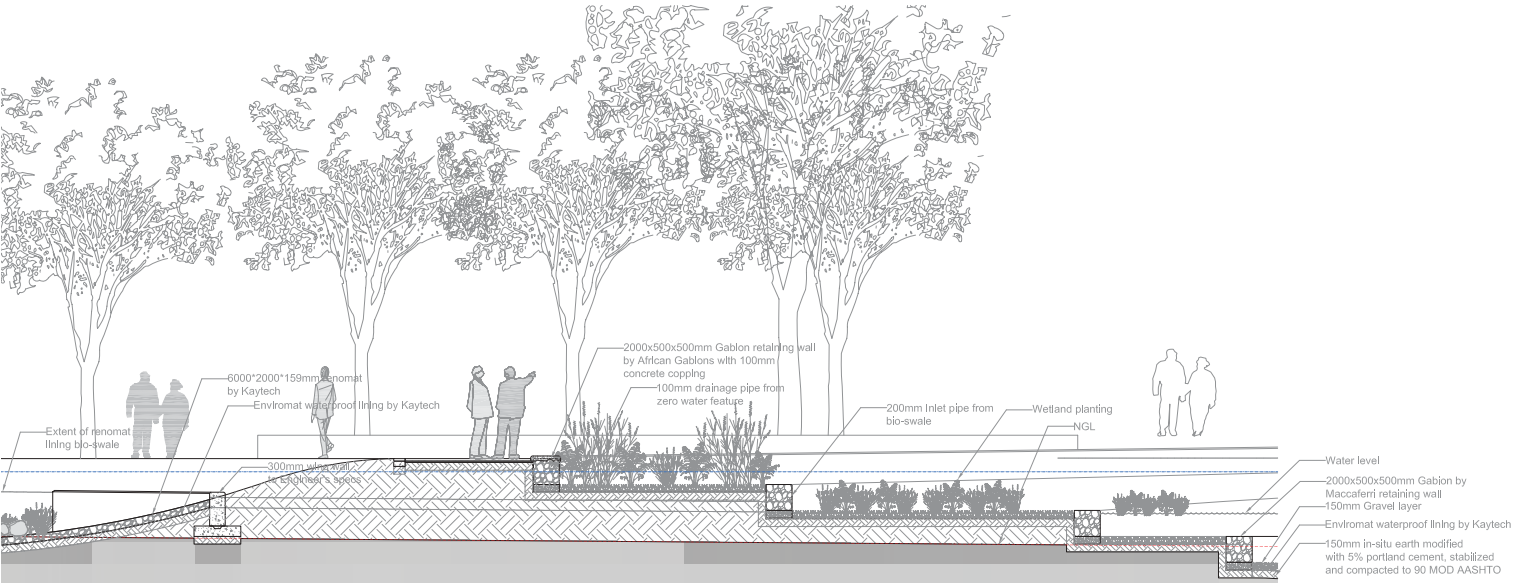
290*290*5mm thick SS grating plate with 10mm dia openings at 50 c/c fixed to angle with a hex bolt
5mm rubber gasket
25*25mm GMS angle weld to 125mm dia. GMS sleeve

Salvaged broken ceramic tiles fixed to 30mm mortar
300*300*5mm GMS box

150mm thick In-situ concrete slab to Engineer's specs

DETAIL 7
Drainage box

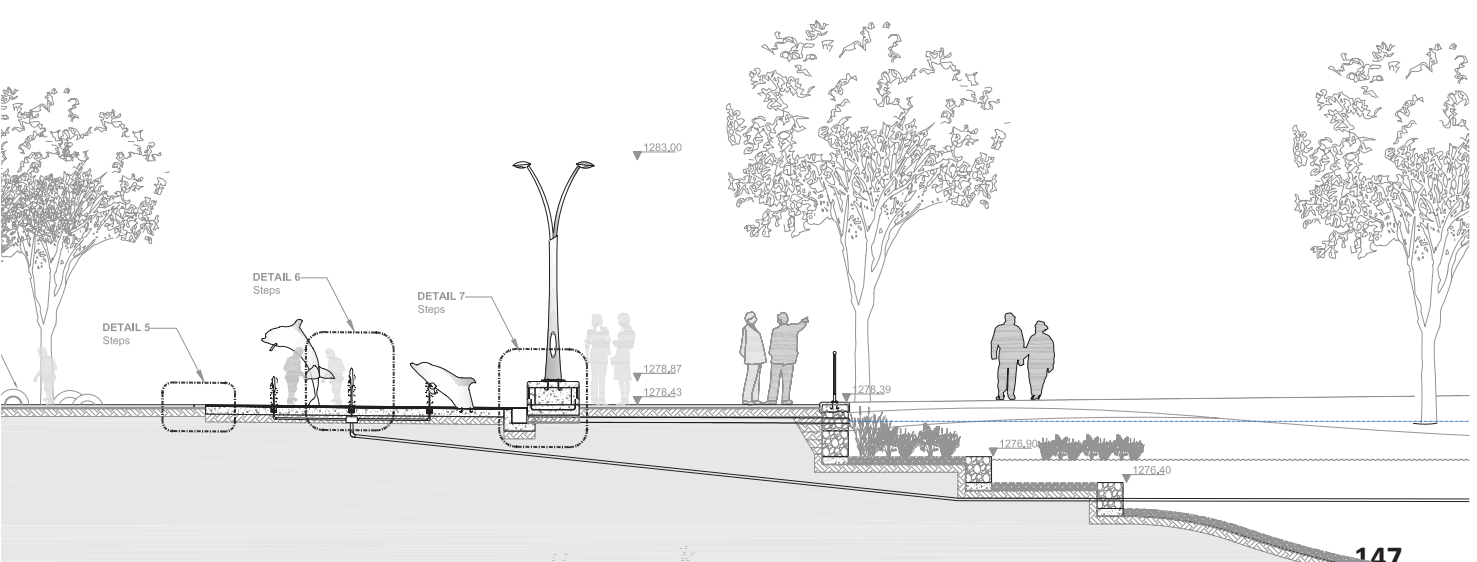
100mm

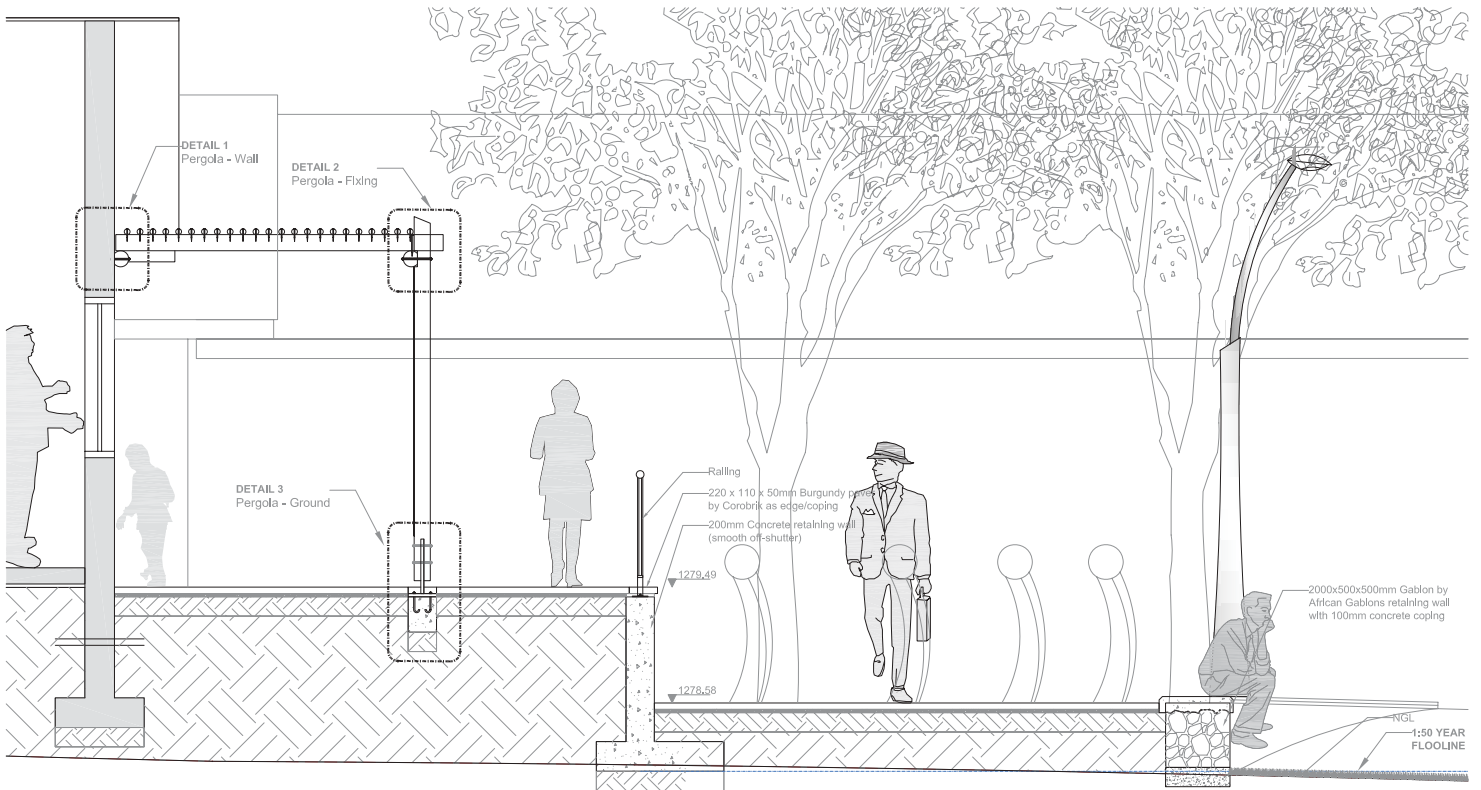
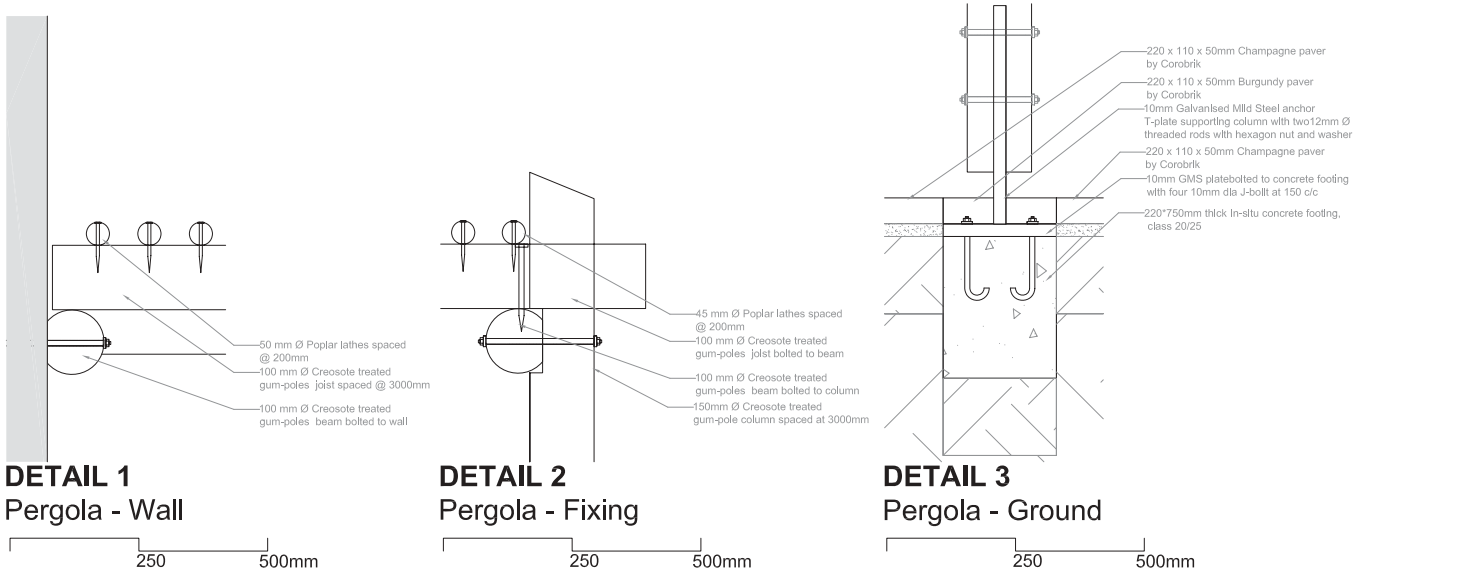


SECTION B-B'
Stepped Wetland

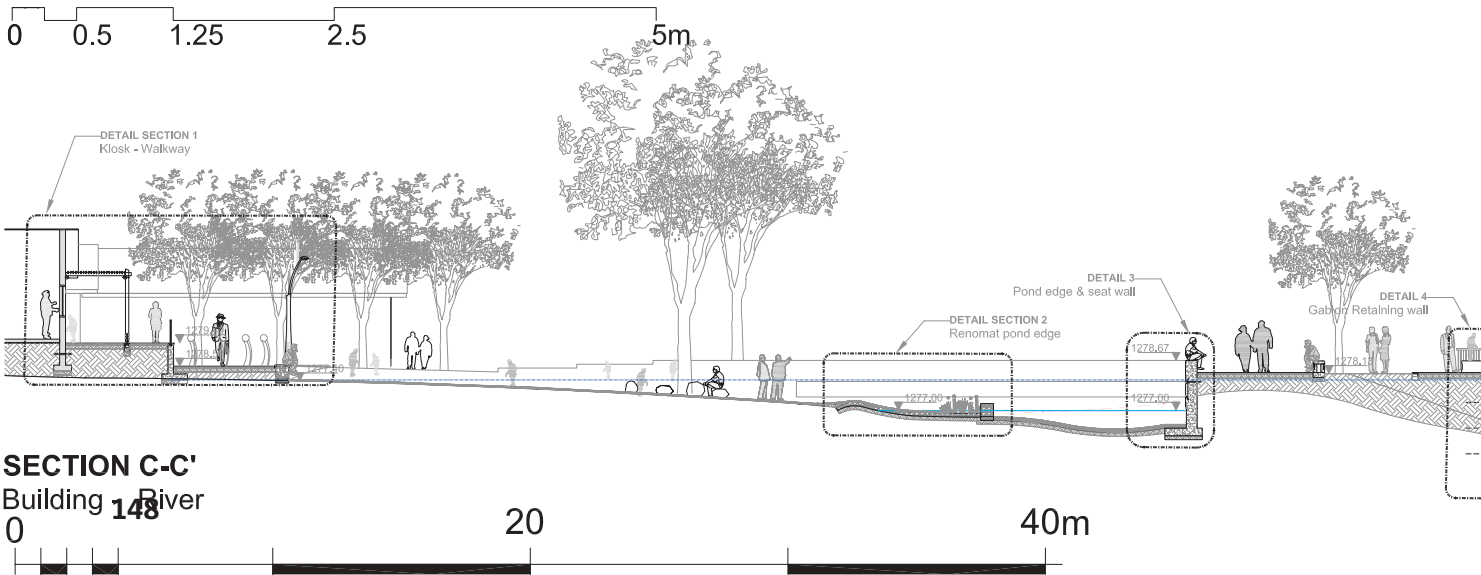
0 1 2 5m

- Water level
- 2000x500x500mm Gabion by Maccaferri retaining wall
- 150mm Gravel layer
- EnviroMat waterproof lining by Kaytech
- 150mm In-situ earth modified with 5% portland cement, stabilized and compacted to 90 MOD AASHTO





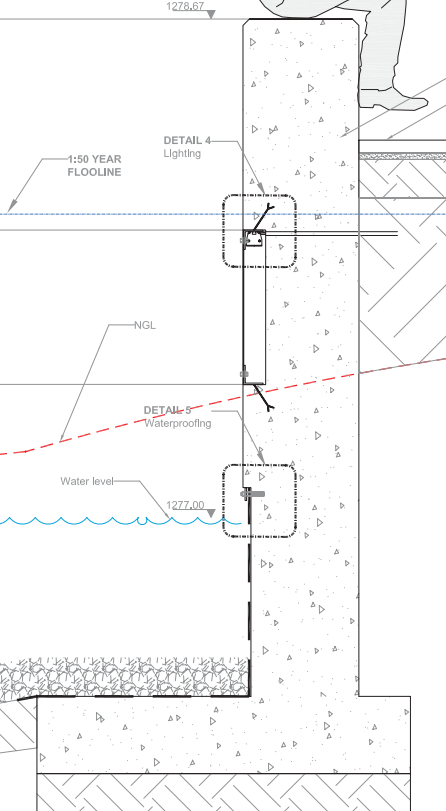
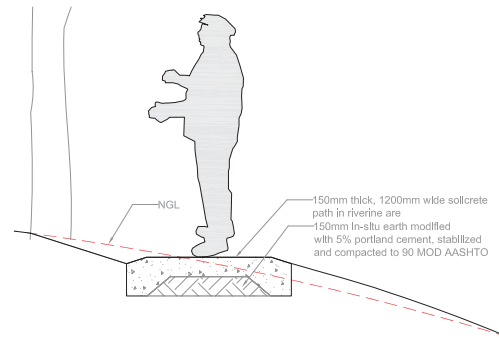
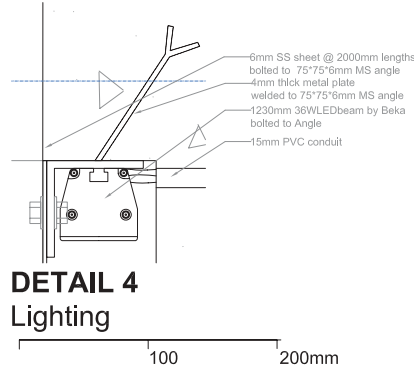
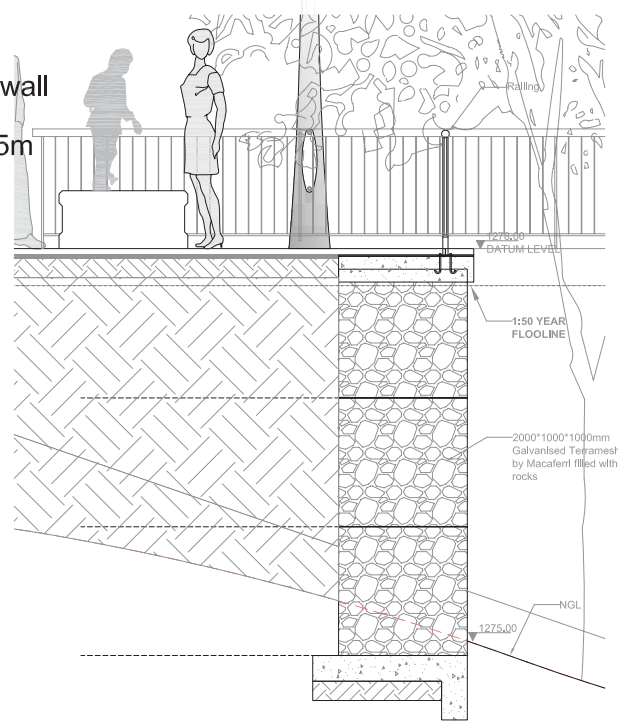
DETAIL SECTION 1
Pergola - Walkway





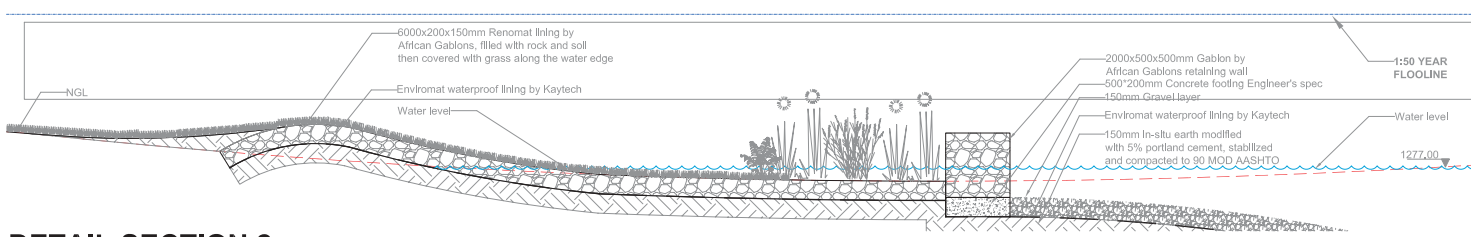
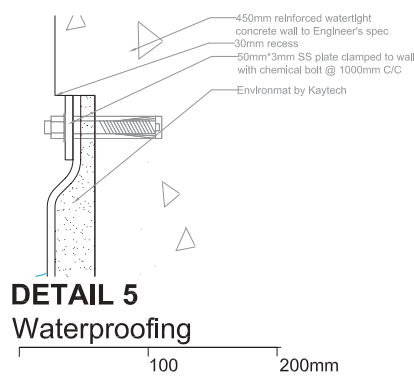
DETAIL SECTION 4 Terramesh retaining wall

0 0.5 1.25 2.5m



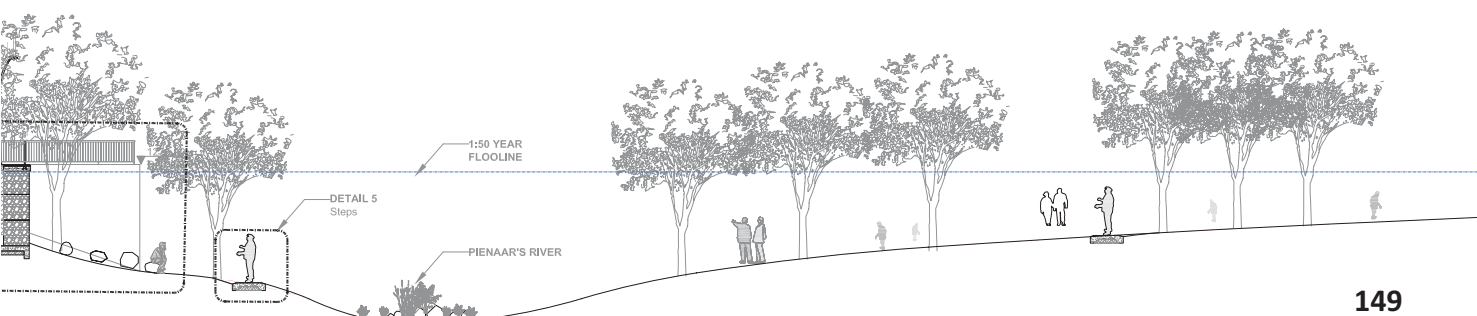
**DETAIL SECTION 3
Pond edge & seat wall**

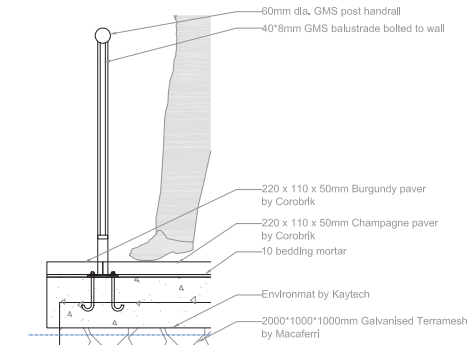
250 500 1250mm



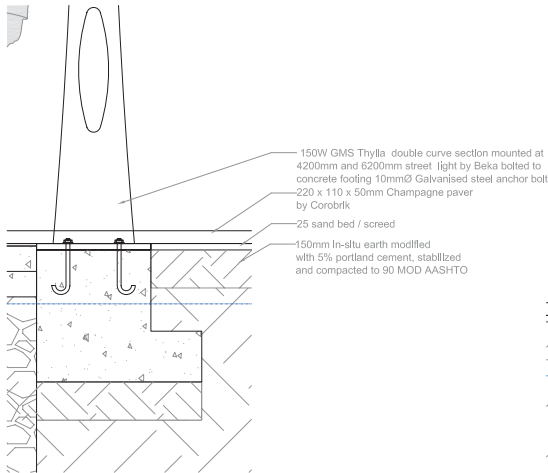
**DETAIL SECTION 2
Renomat pond edge**

0 0.5 1.25 2.5 5m

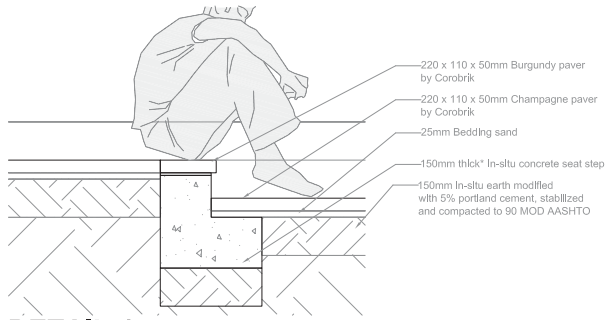




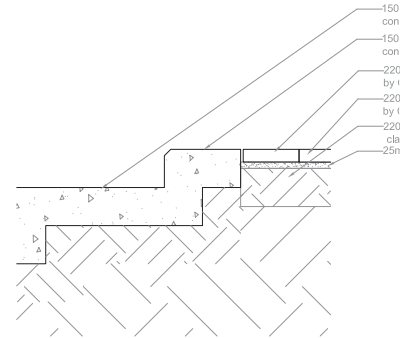
DETAIL 1
Railing



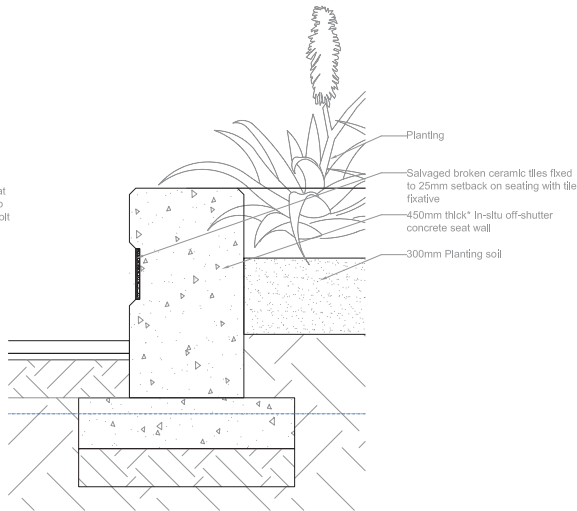
DETAIL 2
Lighting fixture



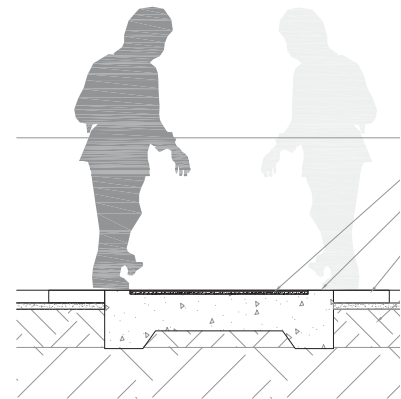
DETAIL 4
Seat steps



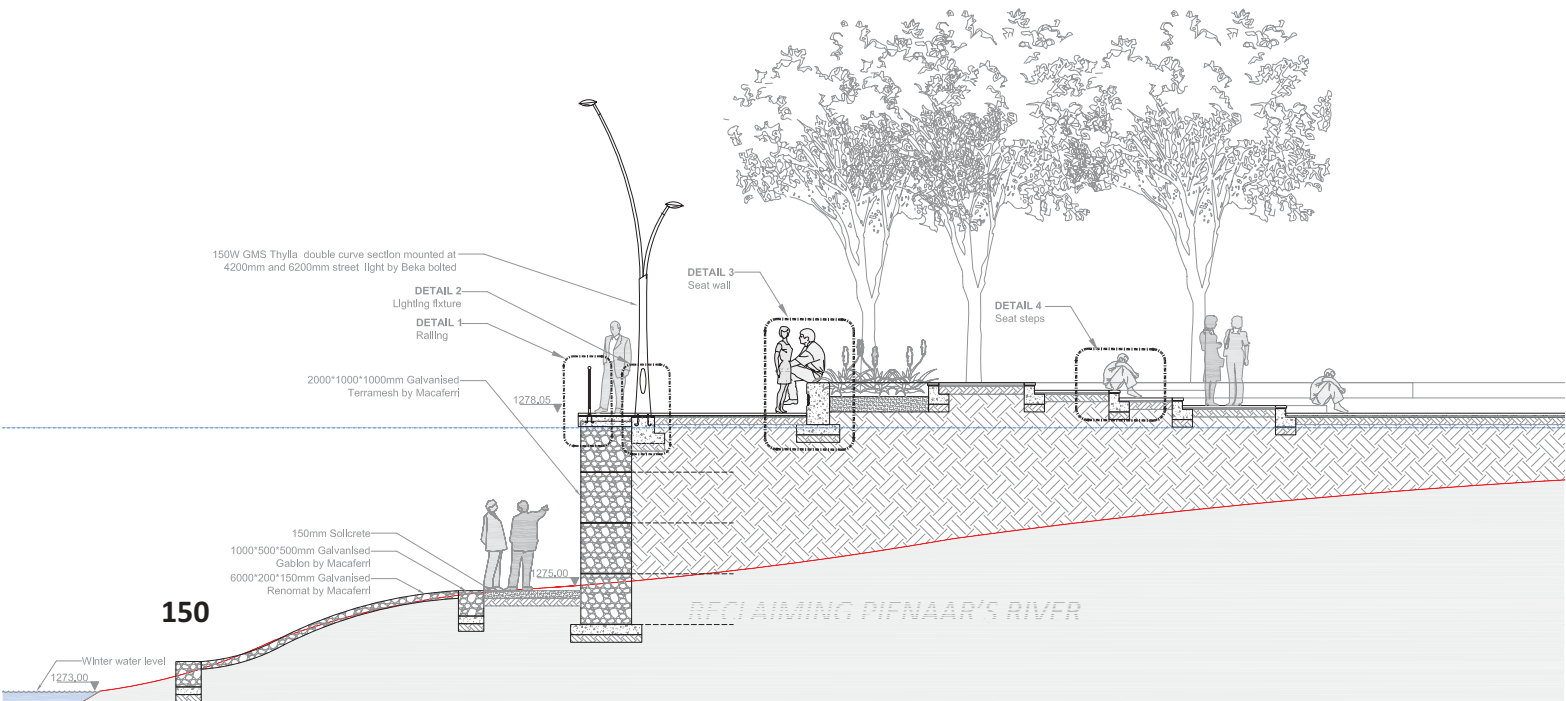
DETAIL 6
Steps

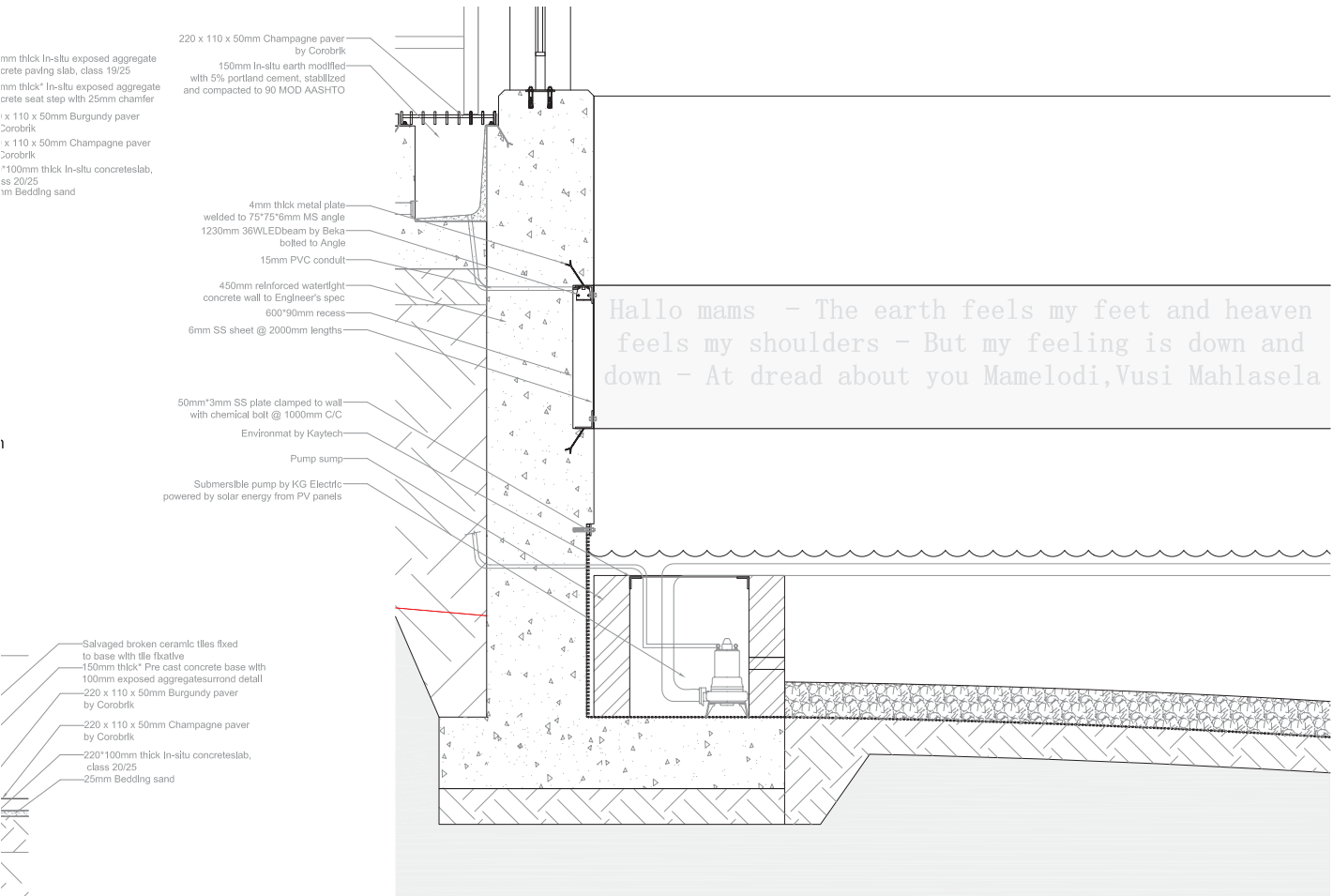


DETAIL 3
Seat wall



DETAIL 5
Mosaic 'plaque'

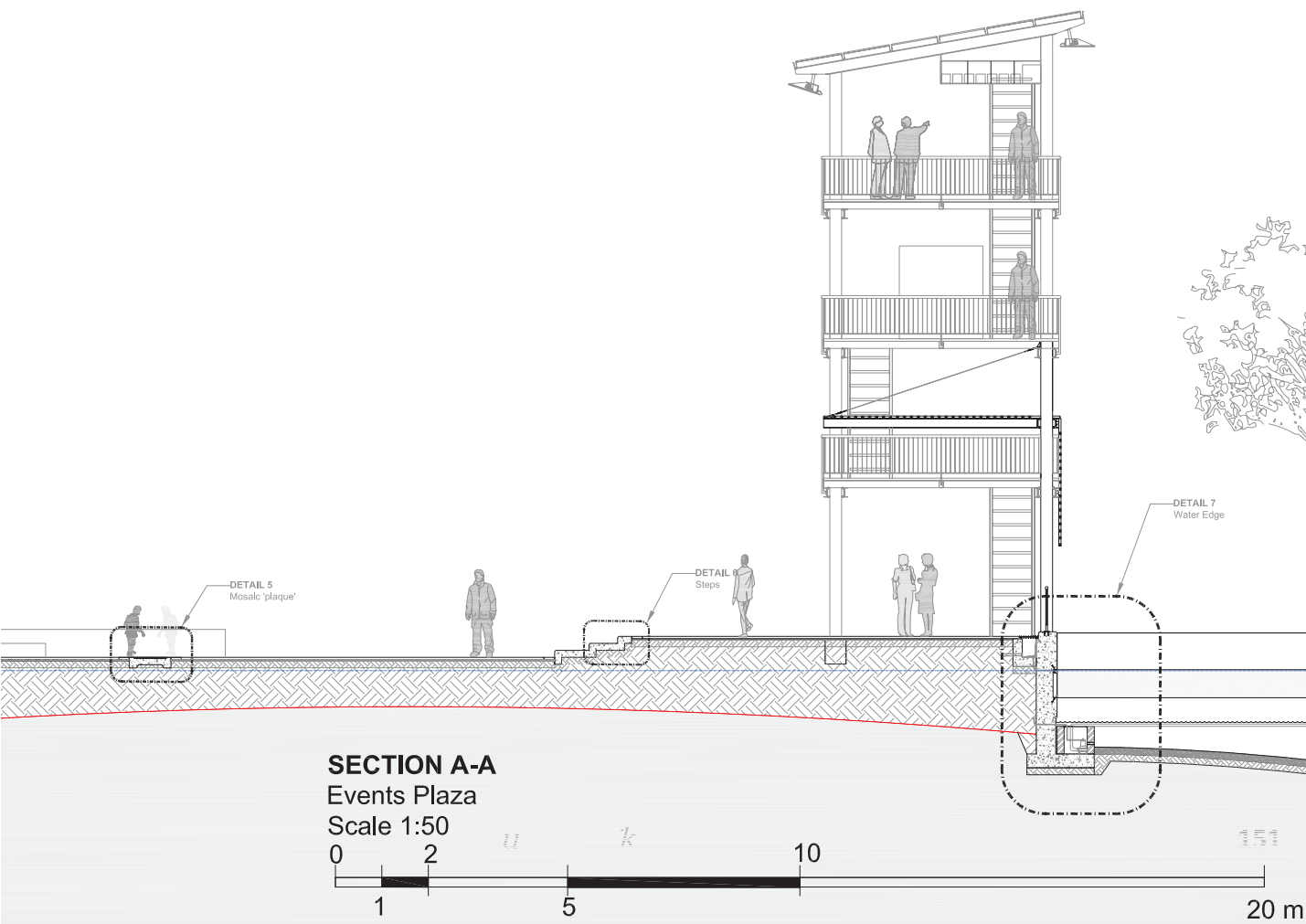


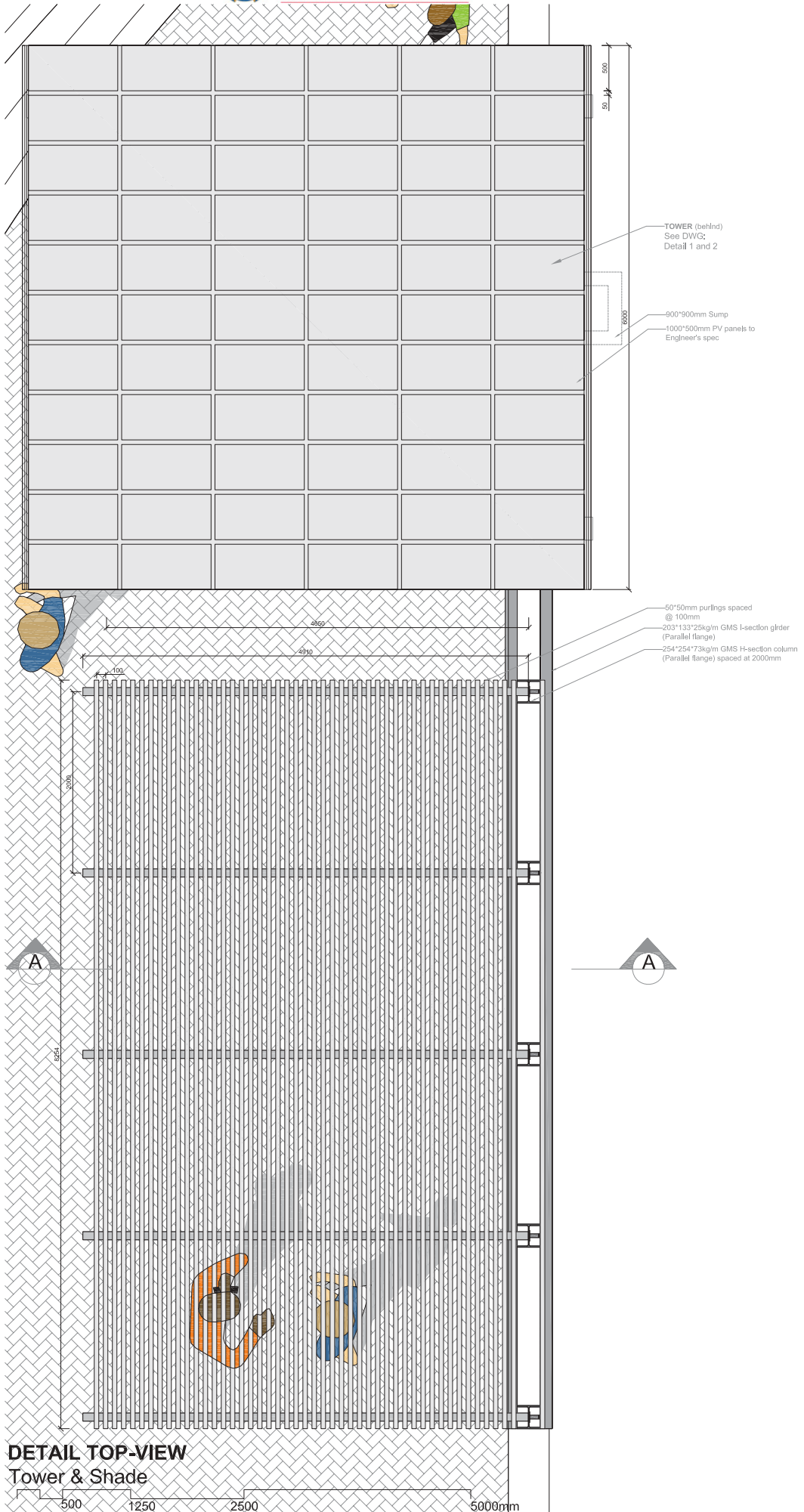


Hallo mams - The earth feels my feet and heaven feels my shoulders - But my feeling is down and down - At dread about you Mamelodi, Vusi Mahlasela

DETAIL 7

Water edge





TOWER (behind)
See DWG;
Detail 1 and 2

TOWER (behind)
See DWG;
Detail 1 and 2

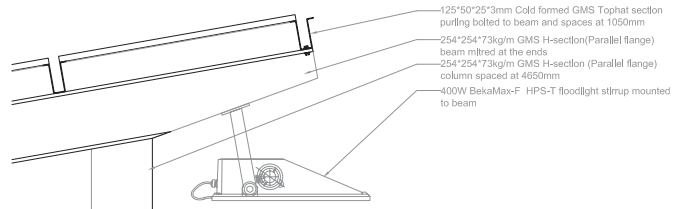
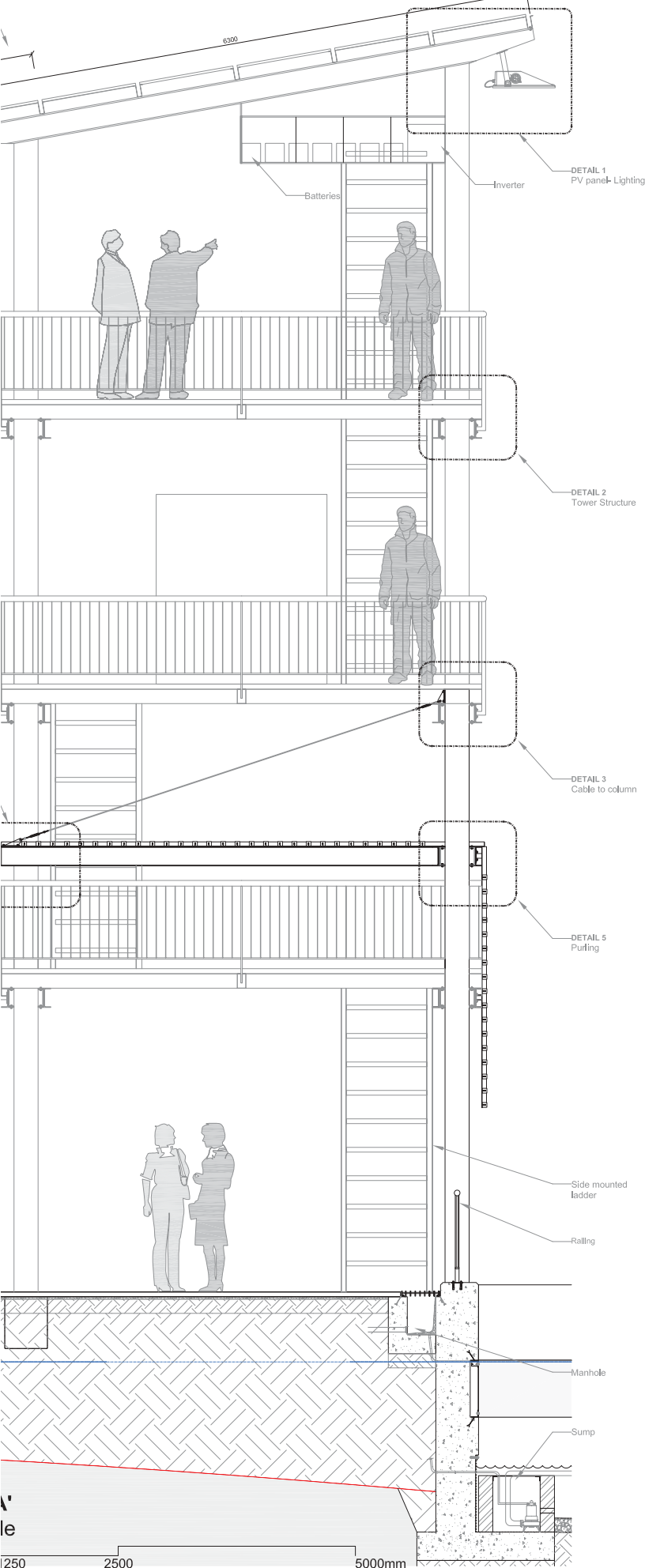
900x900mm Sump
1000x500mm PV panels to
Engineer's spec

60x50mm purlings spaced
@ 100mm
203x133x25kg/m GMS I-section girder
(Parallel flange)
254x254x73kg/m GMS H-section column
(Parallel flange) spaced at 2000mm

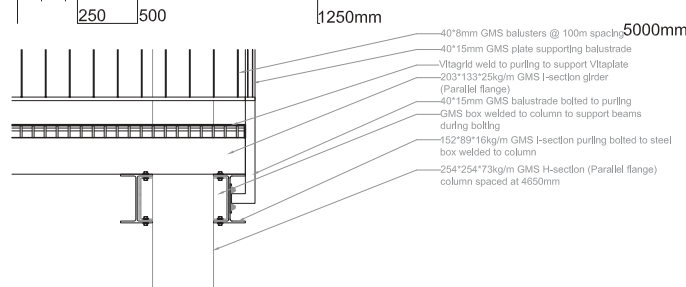
DETAIL 4
Cable to beam

DETAIL TOP-VIEW
Tower & Shade

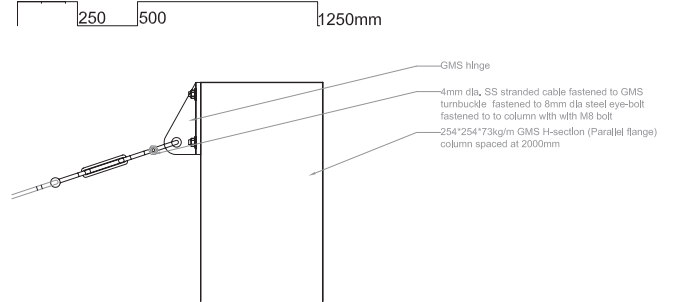
SECTION A-A
Tower & Shade



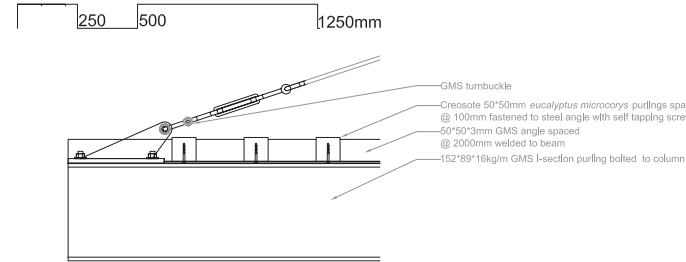
DETAIL 1
PV panel roof & Lighting



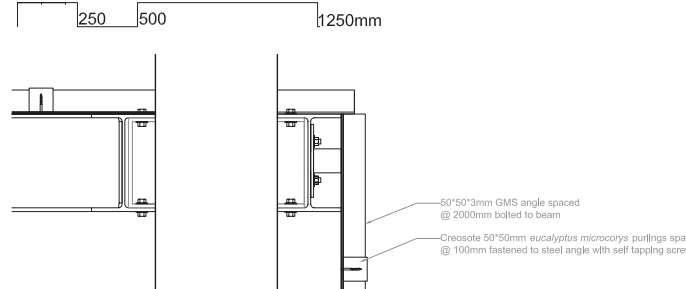
DETAIL 2
Tower structure



DETAIL 3
Cable to column (Shade)



DETAIL 4
Pergola - Ground (Shade)



DETAIL 5
Purling (Shade)

9.7. SUSTAINABILITY RATING

9.7.1. Sustainable Building Assessment Tool (SBAT)

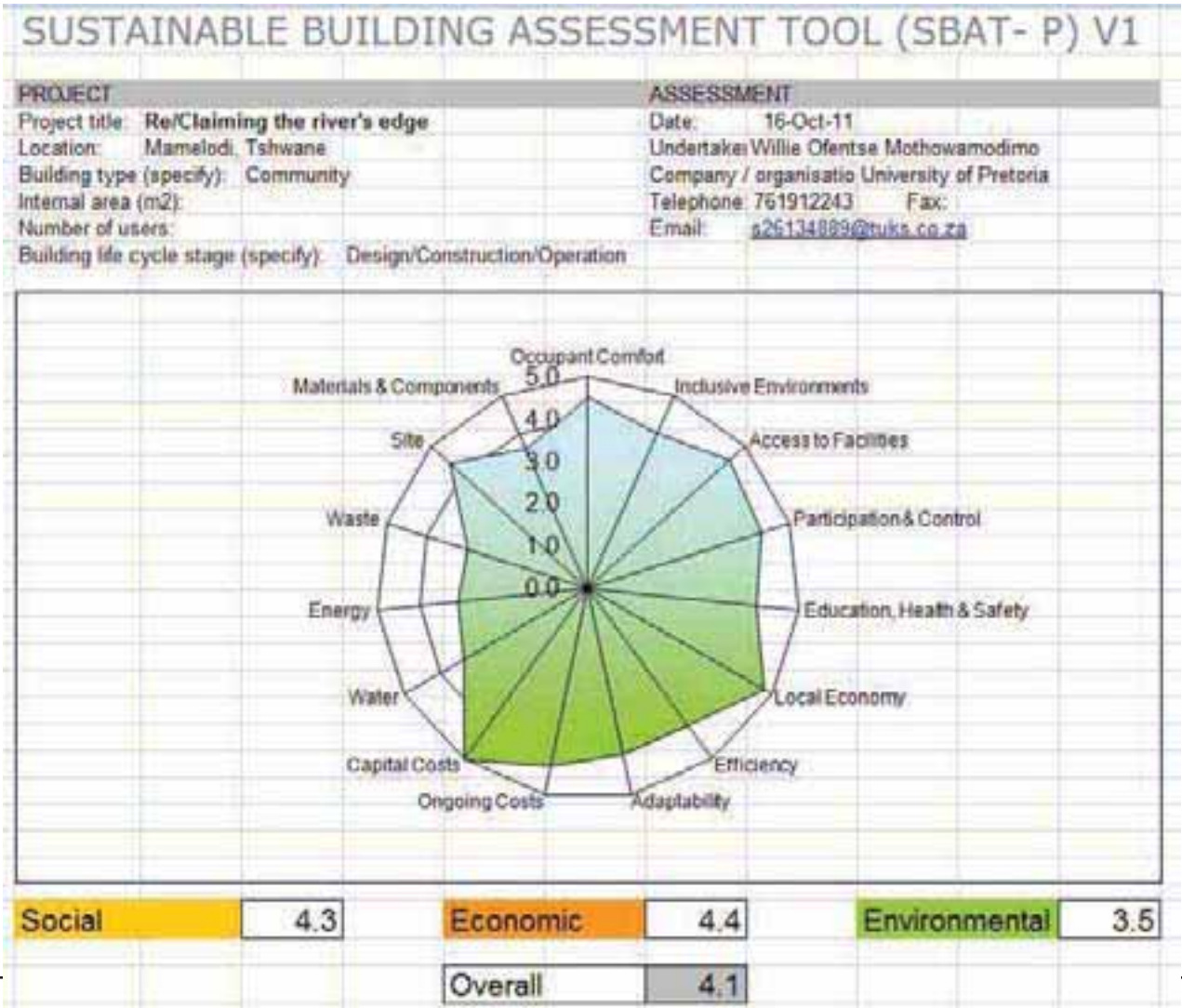
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 8
 7

Social: 4.3
 Economic: 4.4
 Total: 4.1

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7
k SBAT





9.8. CONCLUSION

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