Bradfield Development Authority

Building Two Advanced Manufacturing Research Facility

Section 4.55 Modification Report
Appendix D – Landscape Report

21 November 2025

AMRF BUILDING 2
LANDSCAPE ARCHITECTURE

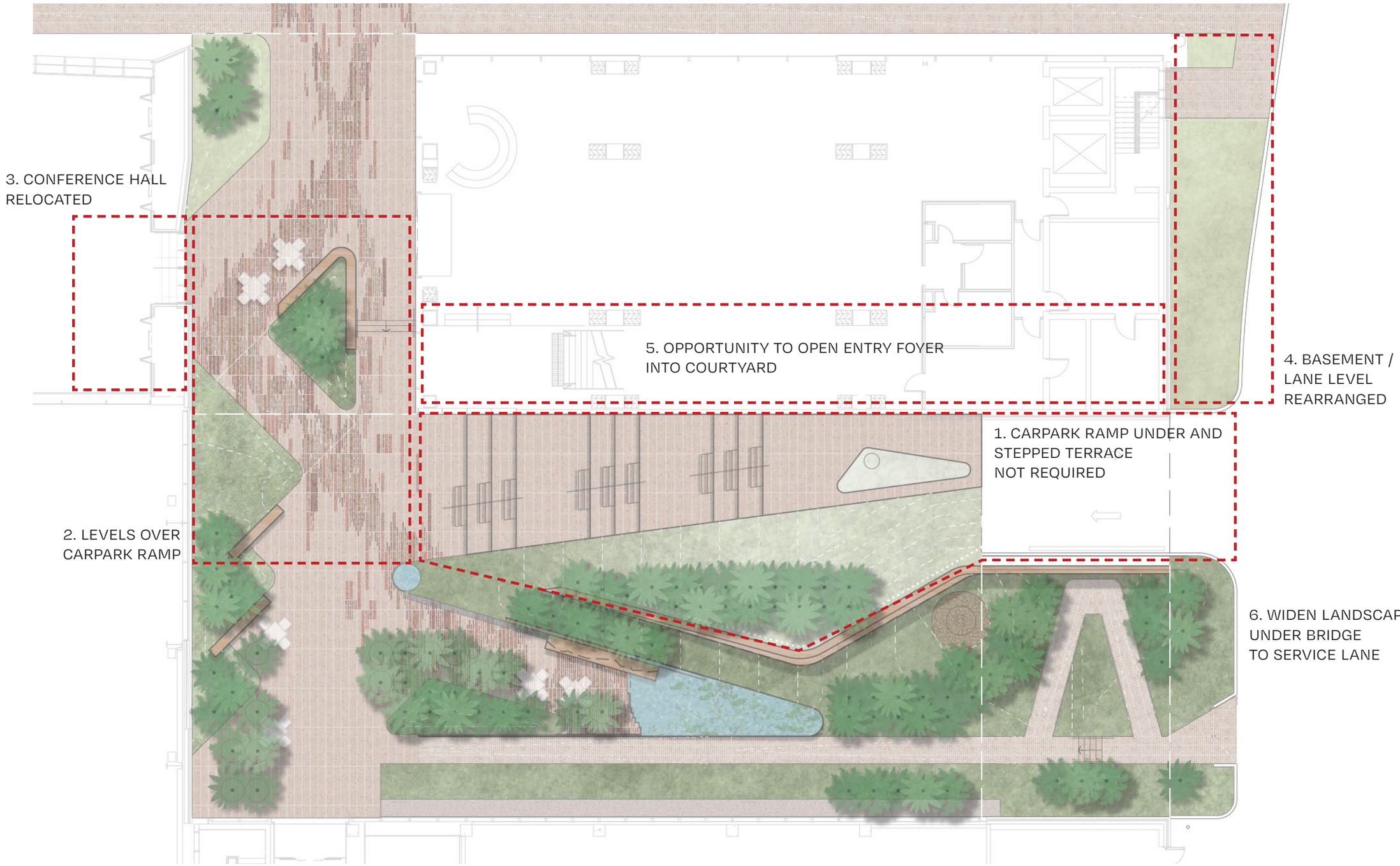
21 NOVEMBER 2025 PREPARED FOR BDA

S4.55 MODIFICATION SUBMISSION

TYRRELL STUDIO

INTRODUCTION

Original SSDA



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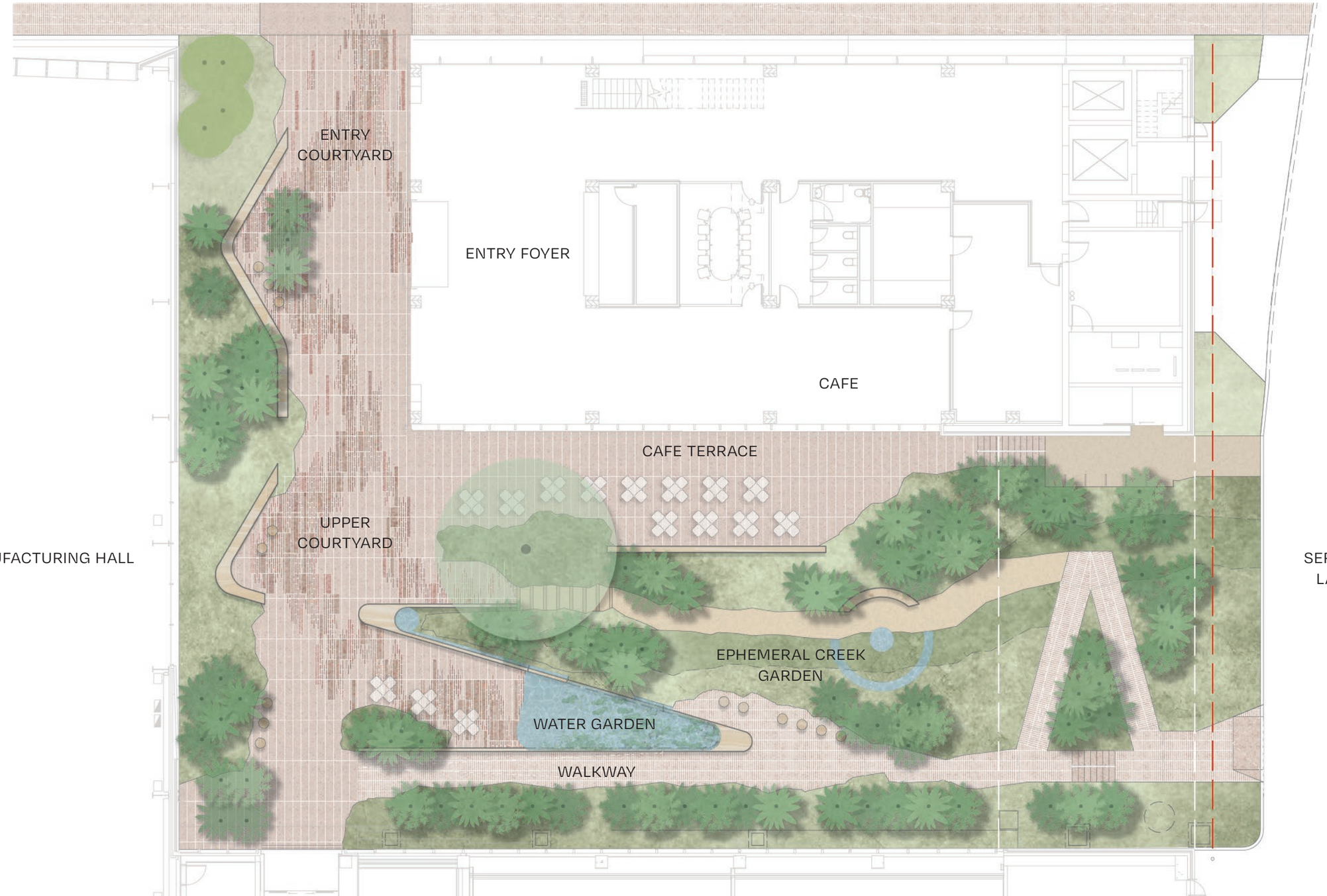
Stage 2



1:200 0 2.5 5 7.5 10m

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Stage 1

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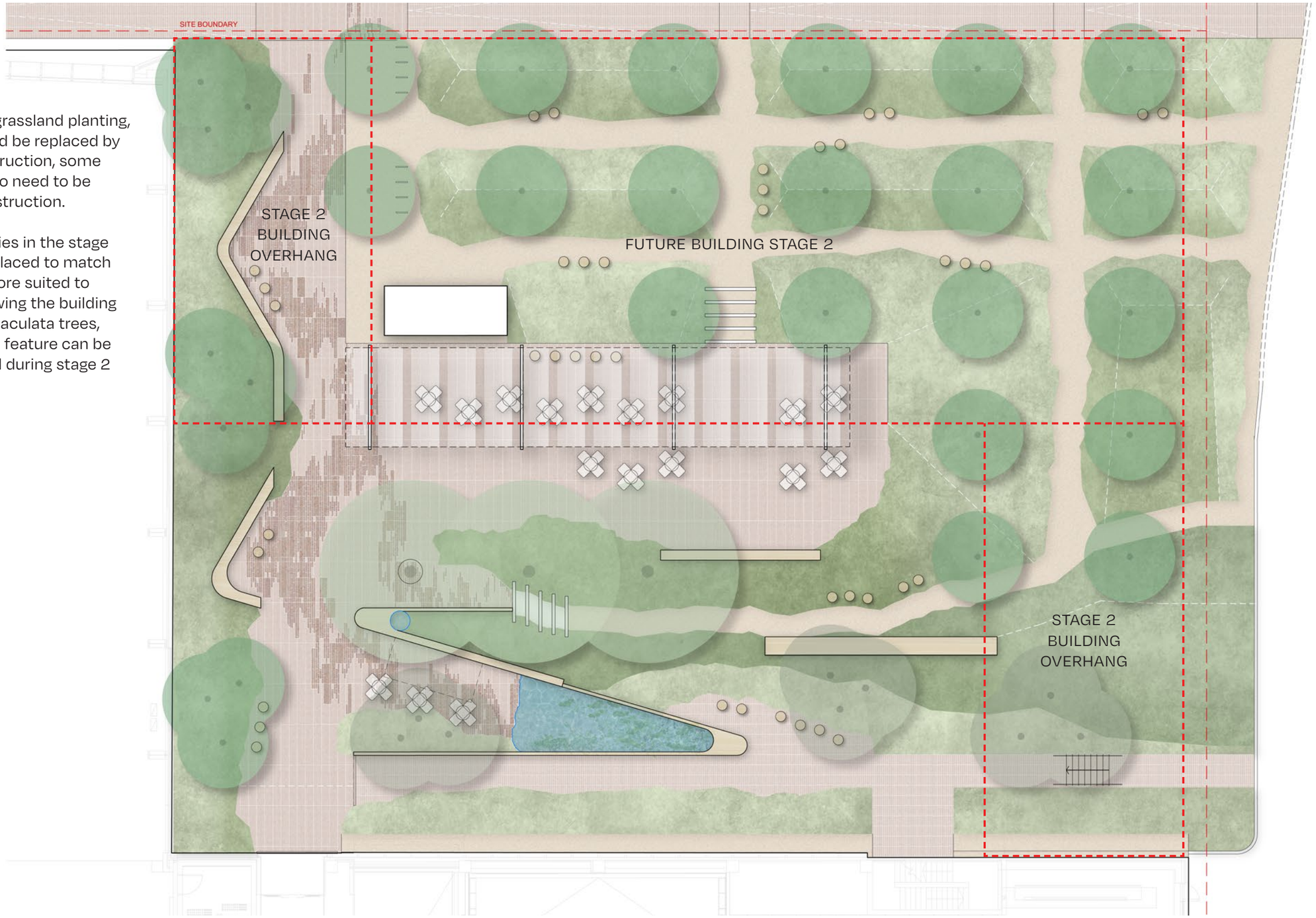
Landscape Plan
Comparison between Stage 1 & 2

In stage two the grid of trees, grassland planting, shade structure and cafe would be replaced by the new building. during construction, some of the adjacent paving may also need to be removed and re-laid after construction.

The understorey planting species in the stage 2 courtyard will need to be replaced to match the stage 2 scheme, and be more suited to the shaded environment following the building construction. the Corymbia maculata trees, central paving, walls and water feature can be protected within the courtyard during stage 2 construction.



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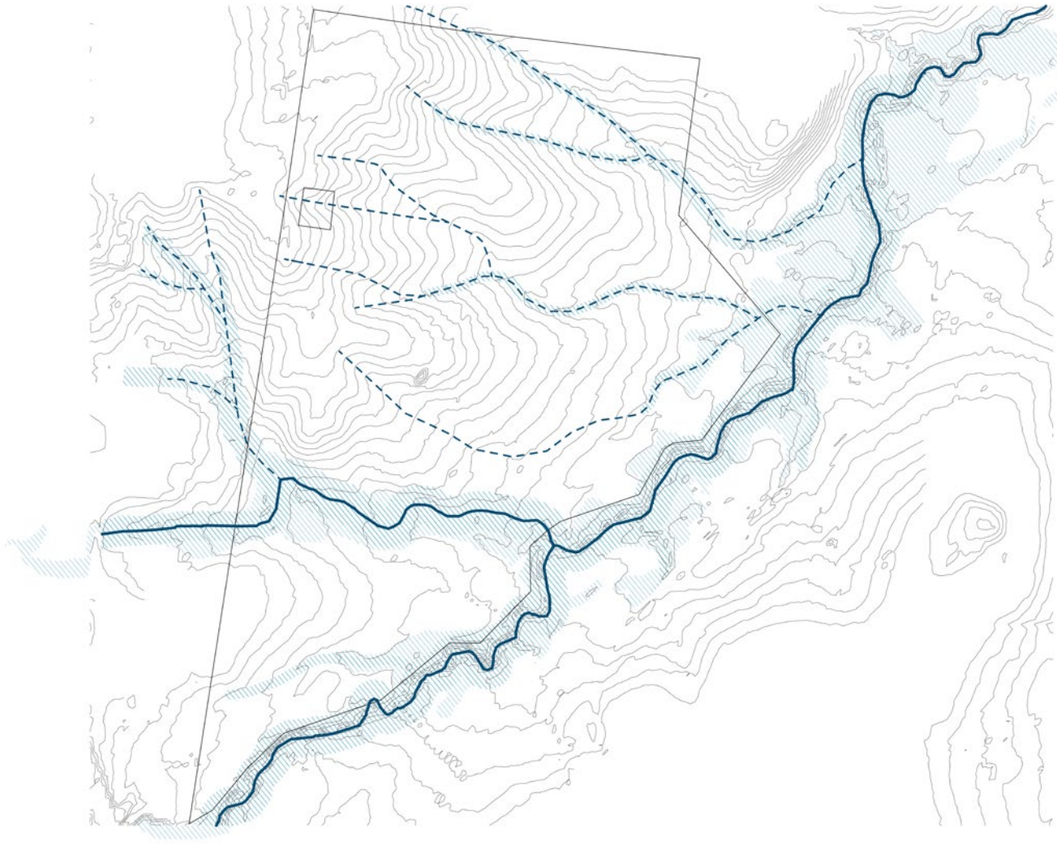
LANDSCAPE CONCEPT

Landscape Concept
Ephemeral Ponds and Creeks

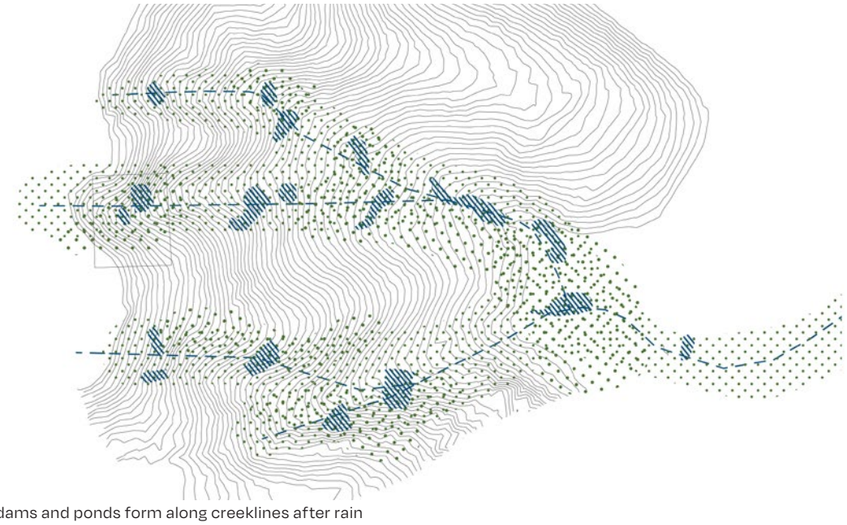
The broader setting of the Western Sydney landscape is of gently undulating terrain, peppered with farm dams and intermittent watercourses.

The typically dry landscape responds to water, with ephemeral ponds and creeks that fill after rain. The rain carves out creeklines that follow the contours of the landscape as the water drains into the larger watercourse.

Dark greens and rusty tones of the rushes mark the path the creek takes through the otherwise dry landscape as an echo of ephemeral creekline and ponds.



Ephemeral creek lines leading into Thompson's Creek



A sequence of dams and ponds form along creeklines after rain

Rust-coloured reeds and sedges mark intermittent creeklines

Lush character of creeks after rain

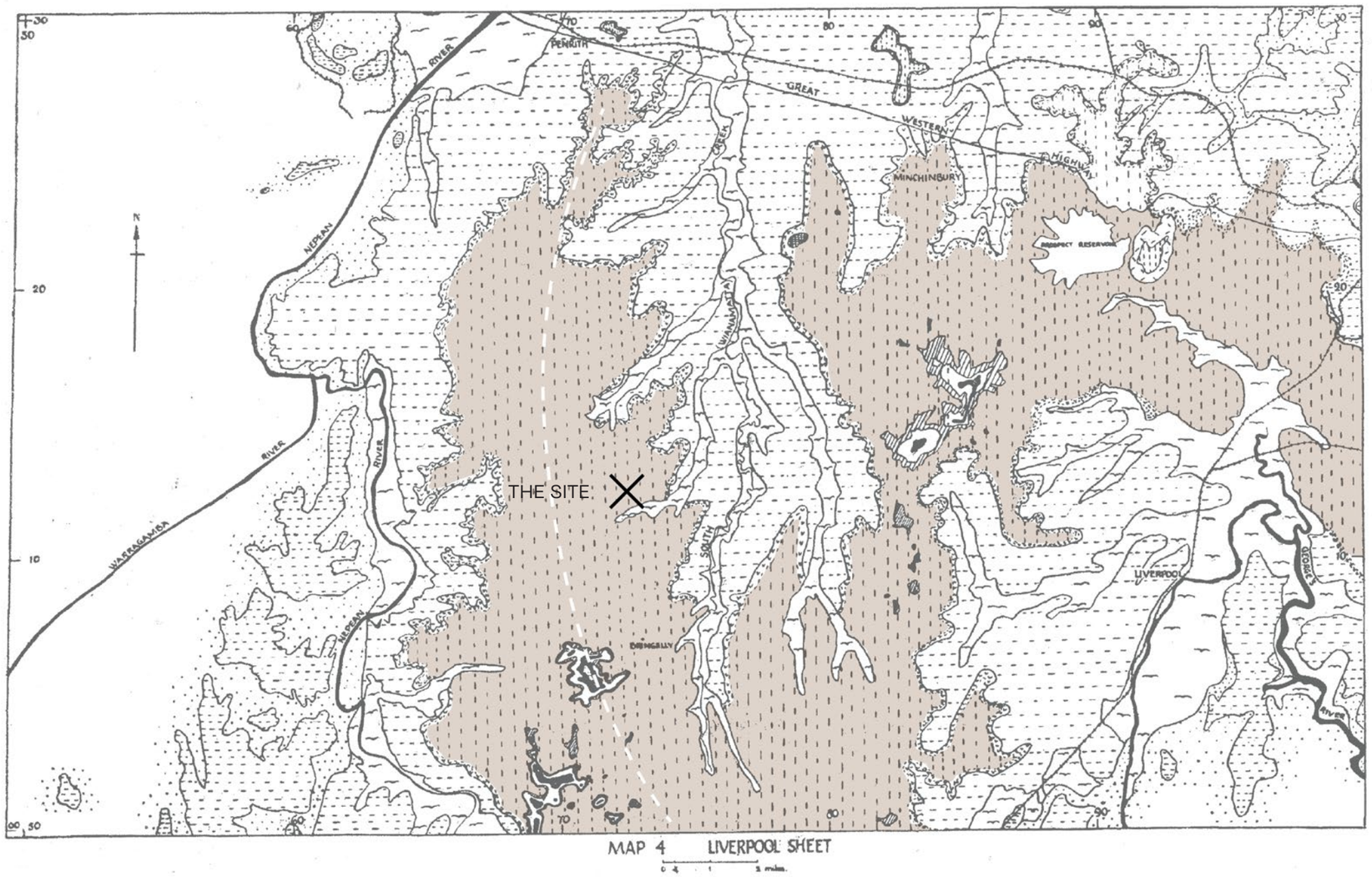
Broad water courses across floodplains

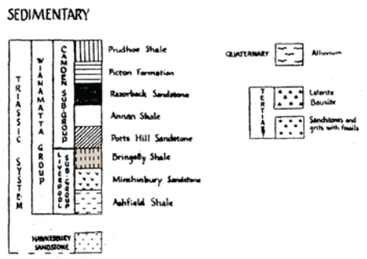
Landscape Concept
Geology: Wianamatta Shales

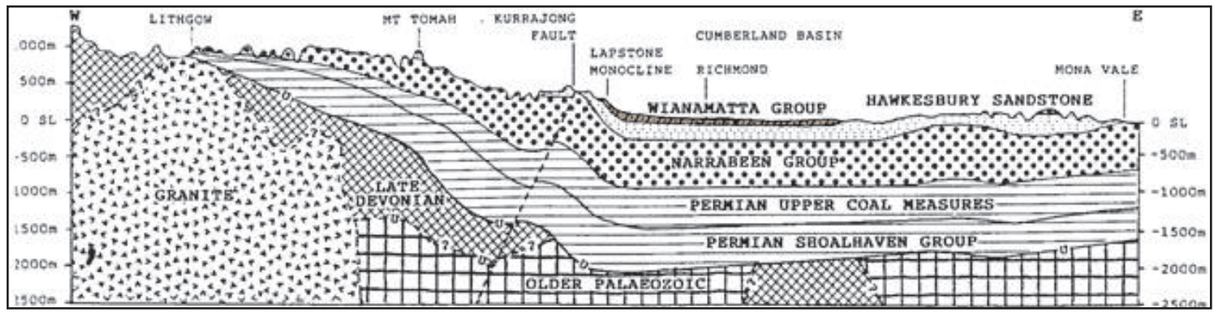
The Wianamatta Group is the youngest geological layer overlaying the Hawkesbury Sandstone that forms much of the Sydney Basin. Formed from the deposits of the historic delta during the Triassic, the Wianamatta Group is comprised of fine grained sedimentary rocks in three distinct layers:

Bringelly Shale formed from the alluvium of the marshy plains.
Minchinbury Sandstone formed from the deposition of sand from historic coastlines.
Ashfield Shale formed from clayey marine depositions.

The weathering of the Wianamatta group produces fine clayey soils that characterise the Cumberland Plain. The resulting soil are often red (haematite) in well drained slopes or yellow (goethite) in poorly drained locations. The Parkland City and AMRF site lie on the Bringelly Shales, coloured brown in the plan.








Bringelly Shale


Minchinbury Sandstone


Ashfield Shale

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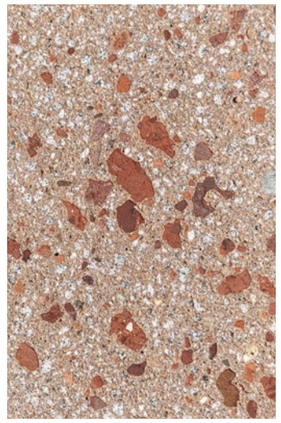
Landscape Concept: Paving
Wianamatta Shales and Western Sydney Soils

Stonekast - Recycled brick aggregate with custom colour oxides

CUSTOM 1:
Burnt Umber - 4.15% Grey Cement

CUSTOM 2:
Tan FAJ - 4.15% Grey Cement

CUSTOM 3:
Tan FAJ - 8.3% Grey Cement



CUSTOM 4:
Cinnamon Buff - 4.15% Grey Cement

CUSTOM 5:
Red BBB-A1 - 4.15% Grey Cement

CUSTOM 6:
Terra Cotta - 8.3% Grey Cement

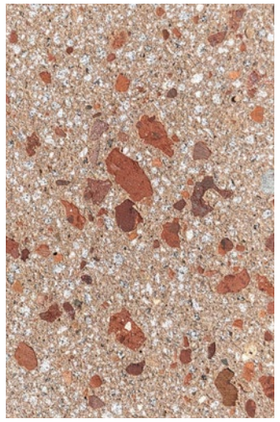
Bringelly Shale

Minchinbury Sandstone

Ashfield Shale

Landscape Concept: Paving
Colours and Sizes

CUSTOM 2:
Tan FAJ - 4.15% Grey Cement



CUSTOM 4:
Cinnamon Buff - 4.15% Grey Cement

Stonekast - Recycled brick aggregate with custom colour oxides
PV1A and PV1B Preferred Pavers

CUSTOM 1:
Burnt Umber - 4.15% Grey Cement

CUSTOM 3:
Tan FAJ - 8.3% Grey Cement

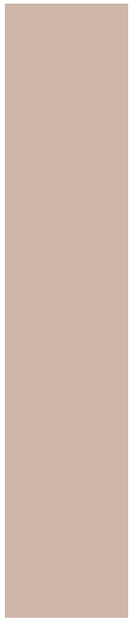
CUSTOM 5:
Red BBB-A1 - 4.15% Grey Cement

CUSTOM 6:
Terra Cotta - 8.3% Grey Cement

Stonekast - Recycled brick aggregate with custom colour oxides
PV1C Preferred Pavers

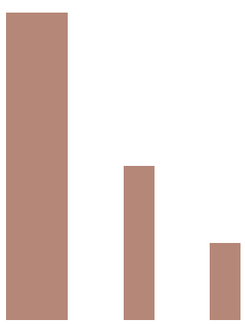
CUSTOM 2,4

PV1A
100x500mm units



CUSTOM 2,4

PV1B
400x2000mm units



CUSTOM 1,3,5,6

PV1C (size varies)
1000x200mm units
100x500mm units
250x100mm units

TYRRELL STUDIO

Stonekast Sustainability
Material Supply Chain and Production Methods

Australian Made
All products are made in Australia.

Australian Sourced
98% of material is sourced within Australia, within over 75% of raw materials sourced within 130km.

Material Recycling
Fine waste is recycled back into the product and concrete is crushed for road base.

Water Recycling
Water used in production is used over and over again with the water filter plant.

Energy
All machinery in the plant uses PLC technology to keep power usage at a minimum.

Product Lifecycle
Concrete has a long life cycle, and when required, is accepted back free of charge to be recycled.

Sustainability
Award winning for its Sustainability systems.

Reuse and recycling

FINE WASTE RECYCLING:

STONEKAST recycles fine waste. Fine waste is created during the finishing cycle of the production process. STONEKAST has incorporated equipment in our plant to capture this material and then it is recycled back into the production process to manufacture new material. By re-using these super-fine materials we have been able to reduce our cement usage while improving the strength and quality of the product.

CONCRETE WASTE RECYCLING:

During the production process damage to material can occur creating a defective product. These materials are recycled by STONEKAST in two ways. Firstly, if the damage is minor the product can be processed into a smaller tile through our cutting system therefore reducing the waste created. Secondly, if any material cannot be re-worked then it is crushed into a workable material which is re-used commonly for road base.

WATER RECYCLING:

STONEKAST has installed a new Water Recycling Plant in 2022. This plant is able to recycle water used in the process of finishing and re-use this in the manufacture of new material. We are also able to reuse water over and over again during the finishing of material. All new material is now made with recycled water.

Landscape Concept: Planting
Cumberland Plain: Entry Courtyard and Rooftops

Colourful shrubs and grasses
The entry foyer open space is co-located with the AMRF Park. It faces north and acts as an arrival space and entry into the AMRF Stage 2 building.

The planting design will draw the parkland character into this space by using native flowering shrubs at the point of arrival into the building. This space acts as a transition from the Cumberland Plain landscape of the park, into the dry rainforest character of the courtyard beyond.

Fiona Brockhoff's garden in Sorrento arranges native shrubs and grassy tussocks in gravel to invite sitting and walking.

Native Thyme
Prostanthera incisa

Narrow-leaf Myrtle
Austromyrtus tenuifolia

Australian indigo
Indigofera australis

Tree Violet
Melicytus dentatus

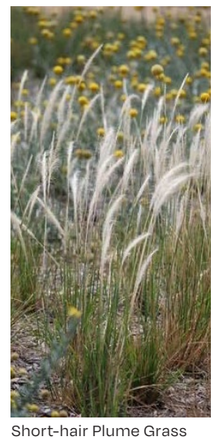
Coffee Bush
Breynia oblongifolia

Rice Flower
Ozothamnus diosmifolius

Wedge Guinea Flower
Hibbertia diffusa

Winter Apple
Eremophila debilis

Tussock Grass
Poa labillardieri



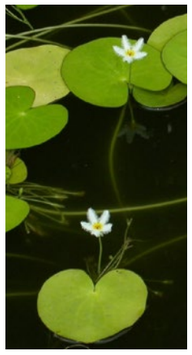
Short-hair Plume Grass
Dichelachne micrantha

Landscape Concept: Planting
Dry Rainforest: Courtyard

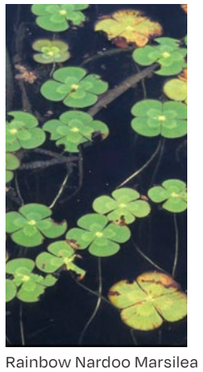
Lush, layered planting
The central courtyard is protected from the northern sun by the administration and workplace building, offering the opportunity for a cooler microclimate, an ideal respite from the often hot and exposed Western Sydney landscape.

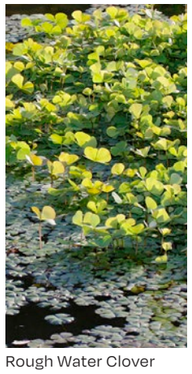
The courtyard draws on the character of Western Sydney's ephemeral waterways, with pools of connected water, lush planting of ferns and other species related to the creeklines of the region. This planting type is now rare in the Western Sydney landscape, due to agricultural expansion. This courtyard offers an opportunity to return this character to Country and tell the story of the former ephemeral pond landscape of these creeklines.

A selection of native aquatic plants will thrive at different depths in and around water features.


Water Snowflake
Nymphoides indica


Entire Marshwort
Nymphoides geminata

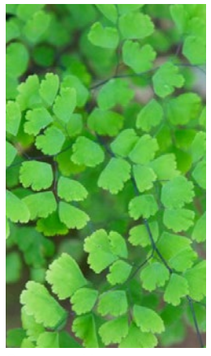

Rainbow Nardoo Marsilea mutica


Rough Water Clover
Marsilea hirsuta


Variable Water Milfoil
Myriophyllum variifolium


Spotted Gum
Corymbia maculata


Lacy Tree Fern
Cyathea cooperi


Common Maidenhair
Adiantum aethiopicum

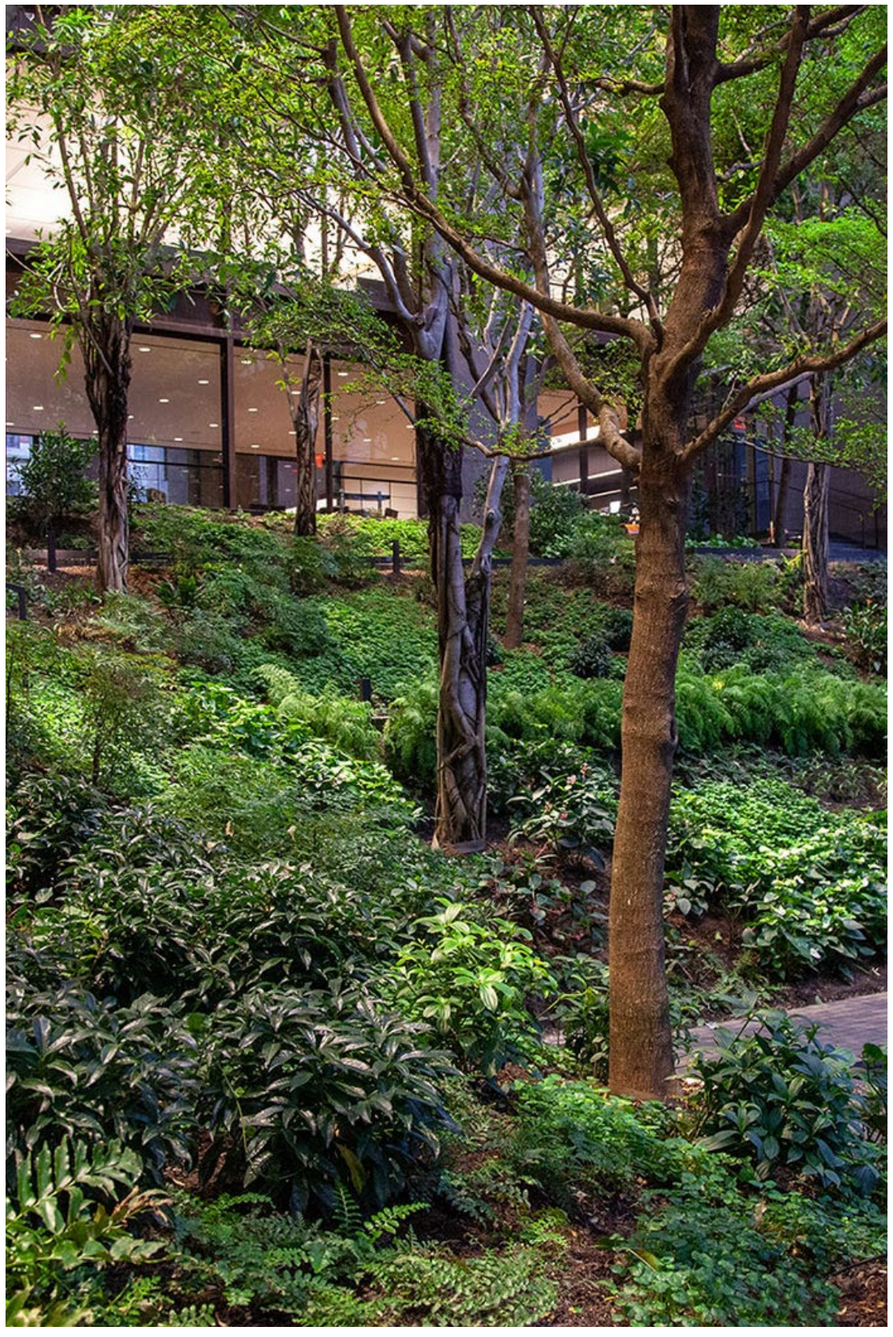

Narrow-leaf Myrtle
Austromyrtus tenuifolia


Australian Indigo
Indigofera australis

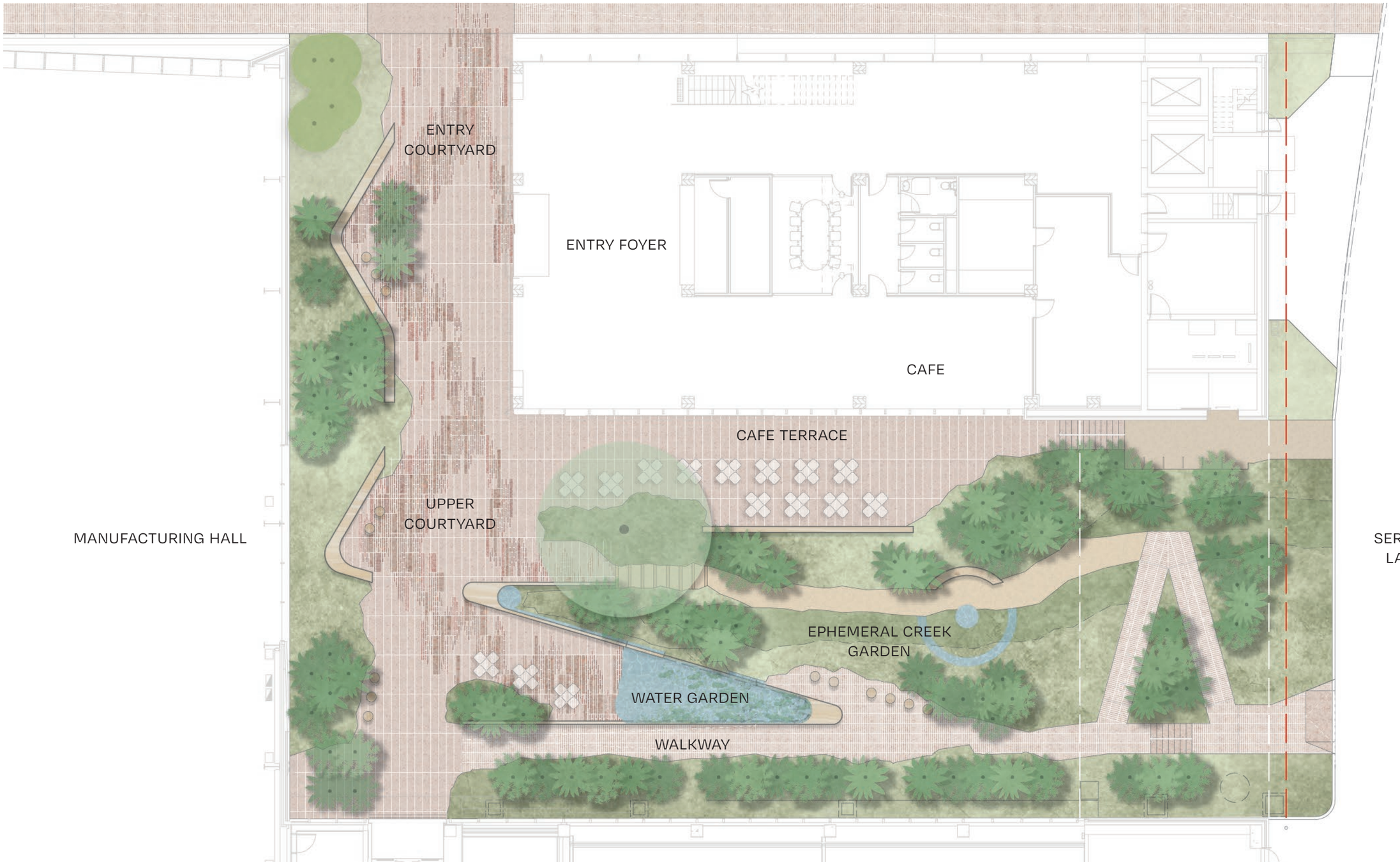

Necklace Fern
Asplenium flabellifolium


Kidney Weed
Dichondra repens


Native Violet
Viola hederacea


The Ford Foundation Atrium, New York by Dan Kiley
Layering of canopy trees above, protecting tree fern understorey, and groundcovers below.

Landscape Plan
Revised Scheme Design



1:200 0 2.5 5 7.5 10m

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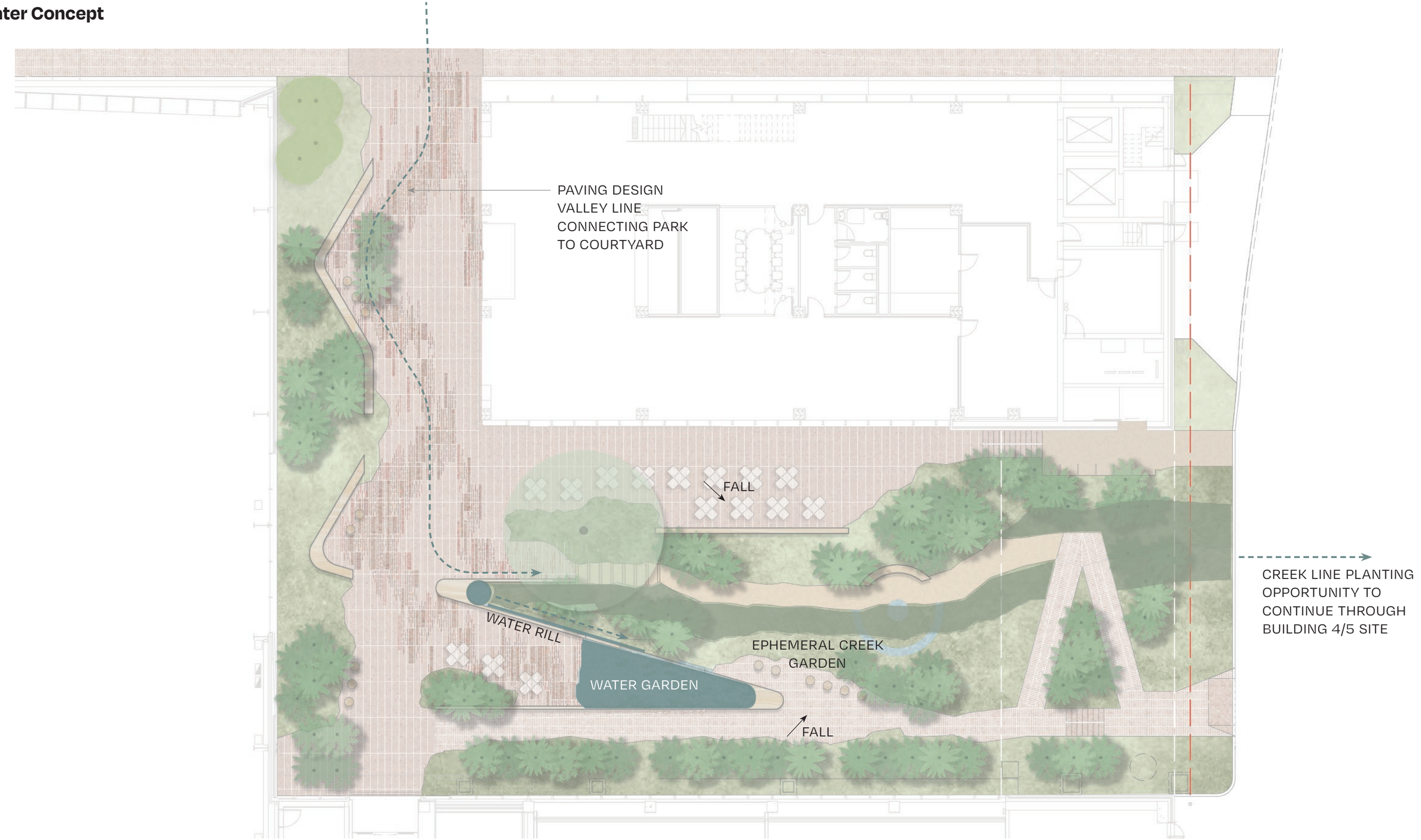
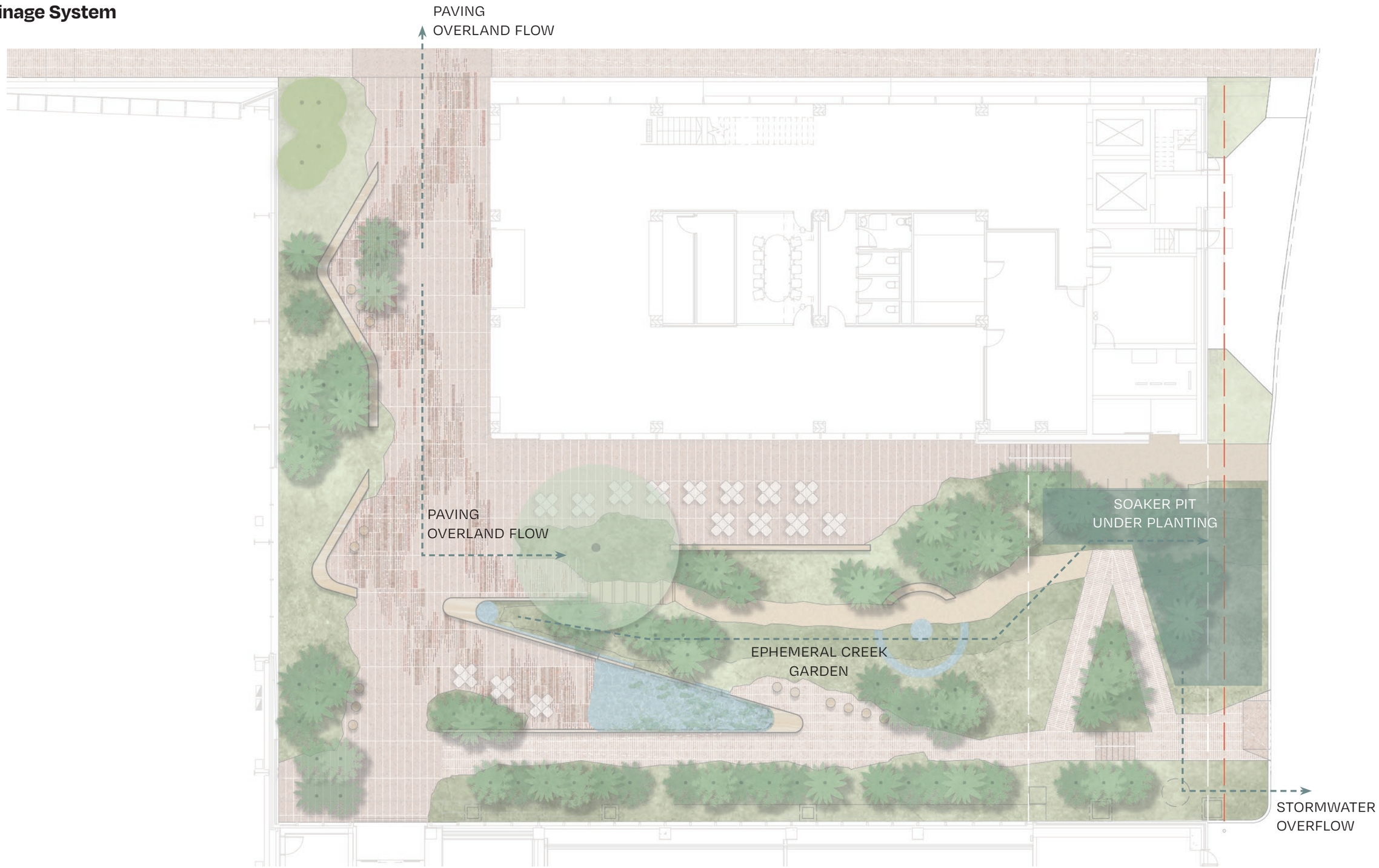
Landscape Plan
Water Concept



TYRRELL STUDIO

Landscape Plan
Drainage System



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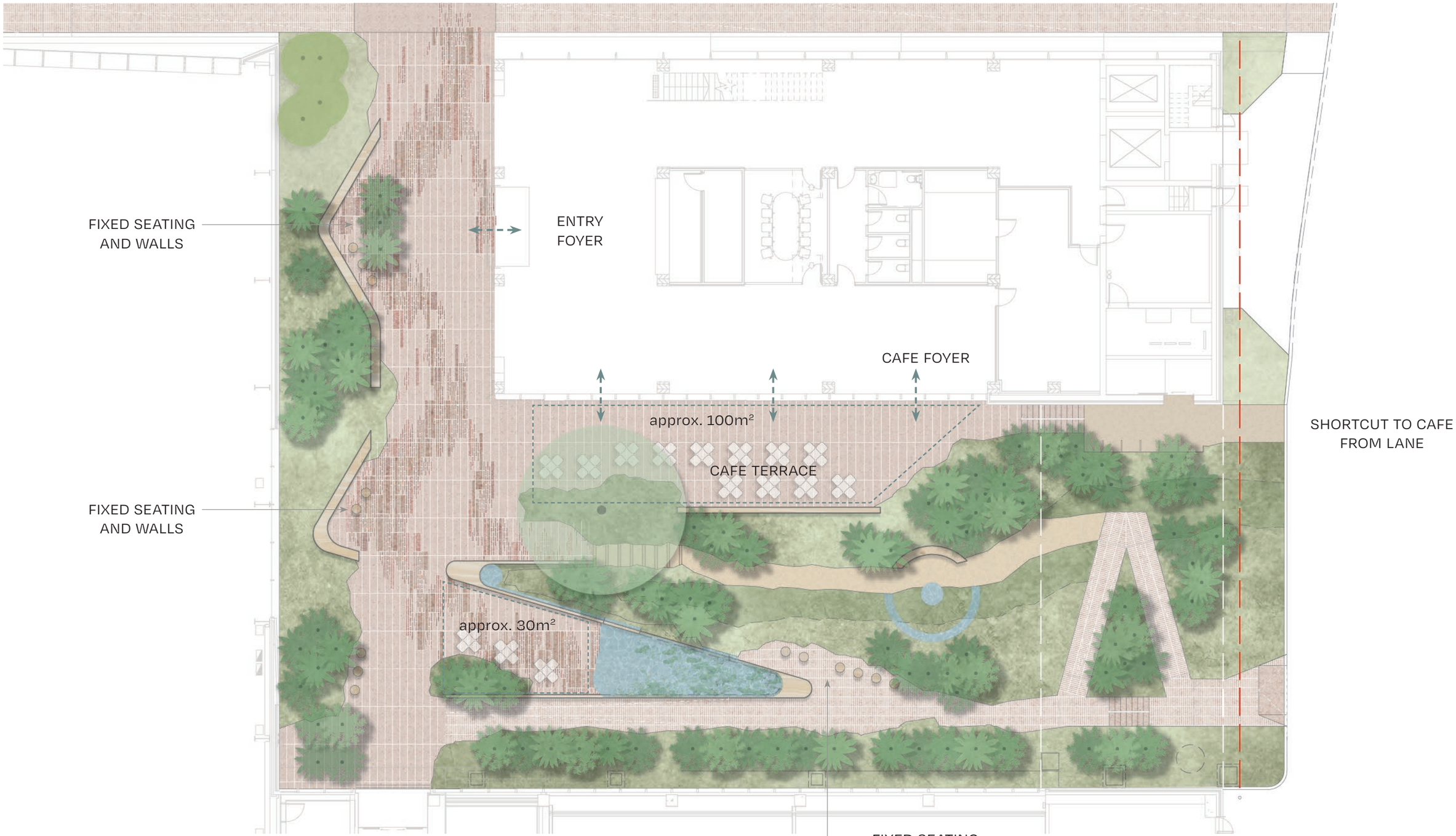
Landscape Plan
Cafe and Seating Areas



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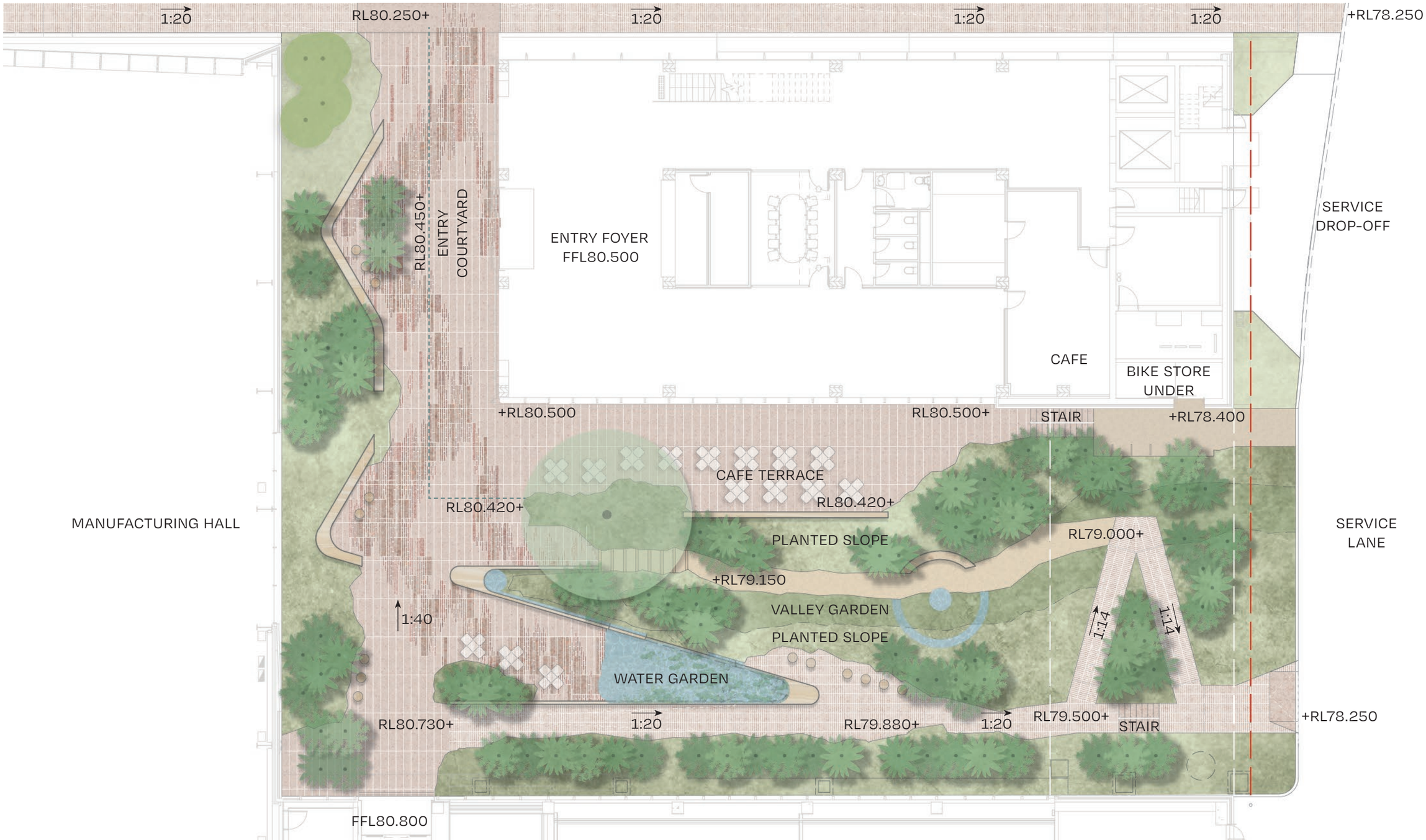
Landscape Plan
Servicing and Levels



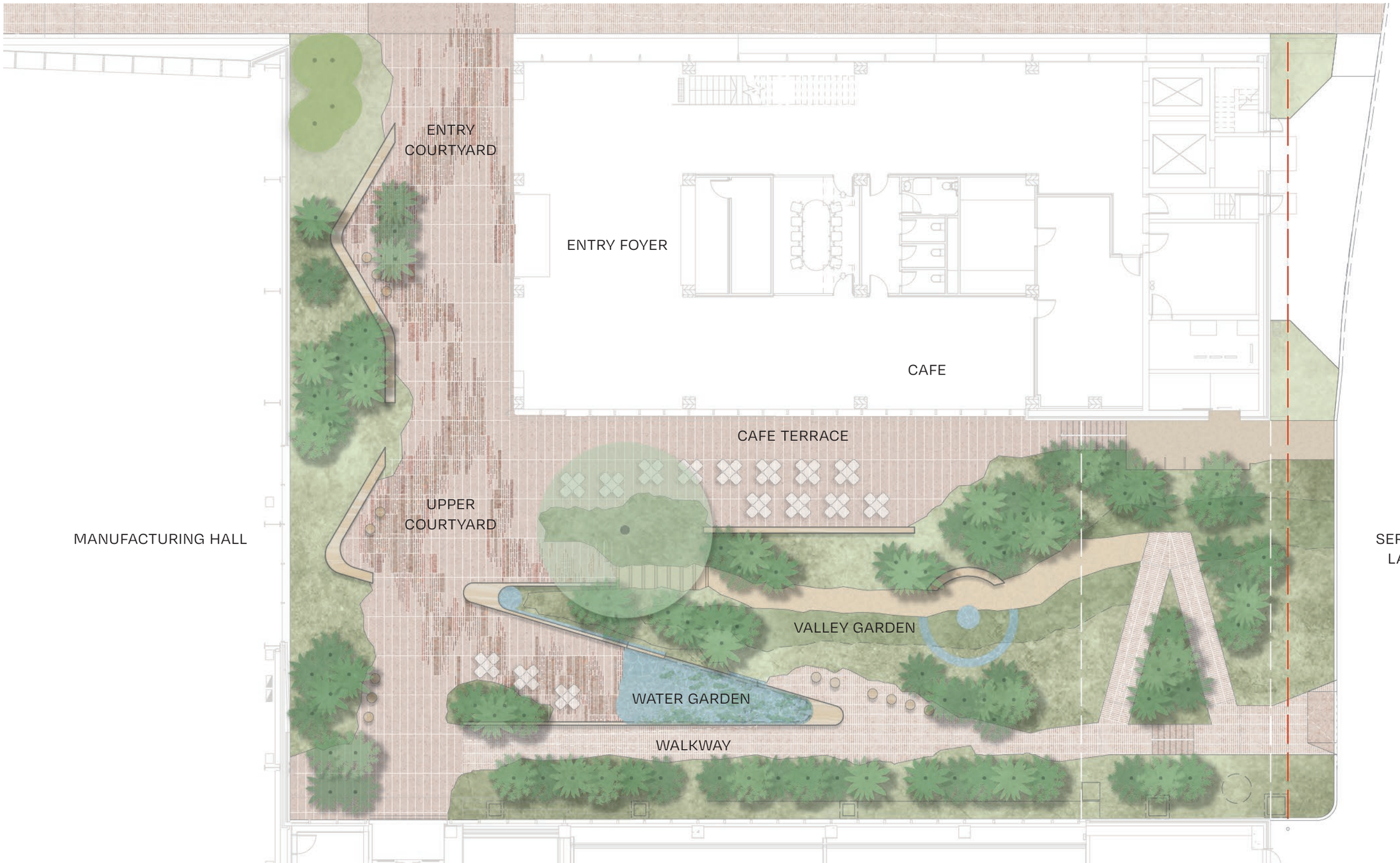
TYRRELL STUDIO

Landscape Views
Upper Courtyard looking east

Landscape Views
Courtyard looking west

Landscape Views
Research Labs entry into courtyard

Illustrated Landscape Plan



1:200 0 2.5 5 7.5 10m

TYRRELL STUDIO

Stage 2 Site Porosity Plan

This plan shows the area breakdown for porous areas within the site. The breakdown considers deep soil, areas over structure, building undercrofts, and whether the ground treatment is planted or hardscape. Total site area is 5996sqm.

Zone	Area (sqm)	Porosity Factor (%)	Porous Factor Area (sqm)
AMRF2 Site Area	5996		
Courtyard			
Planting Areas			
Planting Over Deep Soil	347	100%	347
Planted Building Setback Edges Over Deep Soil	51	100%	51
Planting In Undercroft Over Deep Soil	214	100%	214
Planting Over Structure	0	50%	0
Planted Water Feature	23	0%	0
Paving Areas			
Paving Over Structure/On Slab	32	0%	0
Unit Paving Over Ground	510	50%	255
Permeable Paving Over Deep Soil Zones	34	50%	17
Permeable Paving In Undercroft Over Deep Soil Zones	51	50%	26
Paved Building Setback Areas	64	50%	32
Rooftops			
Biosolar Roof Planting	964	50%	482
Total Porous Area (sqm)			1423
Site Porosity (%)			23.7%
Total Open Space Area (sqm) (not incl. roof)	1326		
Open Space Area Percentage of Site (%)	22.1%		

TYRRELL STUDIO

Stage 2 Tree Canopy Plan

This plan shows the area breakdown for tree canopies within the site.

ZONE	Area (sqm)	AMRF2 Site (%)	Total (ARMF1+AMRF2) Site (%)
AMRF2 Site Area	5996		
AMRF1 Site Area	6251		
Total Site Area (S1+S2)	12247		
Tree Canopy Areas			
Tree Canopy - AMRF2 Stage 2 In Courtyard	399	6.7%	3.3%
Tree Canopy - AMRF1	1575		12.9%
Tree Canopy Total	**1974**	**6.7%**	**16.1%**

TYRRELL STUDIO

AMRF2 STAGE 1

TYRRELL
STUDIO

Landscape Concept: Planting
Cumberland Plain: Entry Courtyard and Courtyard

Cumberlans Plain Native Grassland
The variation in microclimates requires a shift to a temporary landscape planting palette that is based on the Cumberland Plain Woodland.

Grassland mounds mimic the rolling hills of the cumberland plain framed with a band of trees, framing the courtyard in the clearing.

In the temporary absence of the administration and workplace building the grid of trees will offer some shade and cooling, as well as a defensible space for the building. Furthermore, they establish and define a clearly traced edge between park and building site, which in turn creates smaller usable spaces within the grid nestled in and amongst dense grasses.

Bluberry Ash
Elaeocarpus reticulatus

Flowing grassland in the Cumberland Plain framed by mown paths accentuate the topography of the landscape

Plumegrass
Dichelachne micrantha

Purple Wiregrass
Aristida ramosa

Little Grasstree
Xanthorrhoea minor

Grass Lily
Murdannia graminea

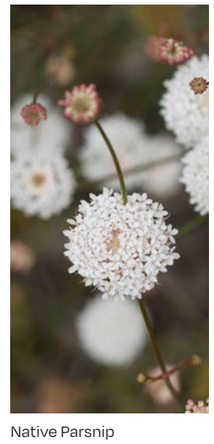
Grey Tussock Grass
Poa sieberiana

Common Everlasting
Chrysocephalum apiculatum

Pale Vanilla Lily
Arthropodium milleflorum

Yellow Rush Lily
Ticoryne elatior

Chocolate Lily
Arthropodium stricta



Native Parsnip
Trachymene incisa

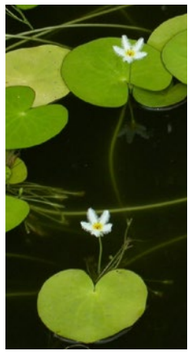
Landscape Concept: Planting
Ephemeral Creek Garden

Ephemeral Creek Garden
The Valley Garden draws on the character of Western Sydney's ephemeral waterways, with pools of connected water, lush planting of ferns and other species related to the creeklines of the region. The sedge planting cuts through the courtyard planting scheme, establishing a dichotomy between the dense grasses and sedge planting. This planting type is now rare in the Western Sydney landscape, due to agricultural expansion., offering an opportunity to return this character to Country and tell the story of the former ephemeral pond landscape of these creeklines.

Spotted Gum
Corymbia maculata

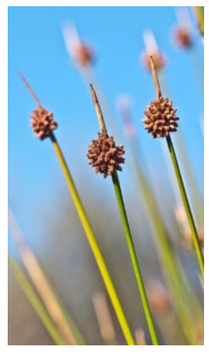
River Sheoak
Casuarina cunninghamiana

A selection of native aquatic plants will thrive at different depths in and around water features.



Water Snowflake
Nymphoides indica

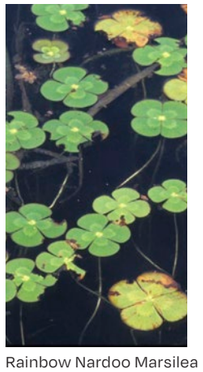
Entire Marshwort
Nymphoides geminata



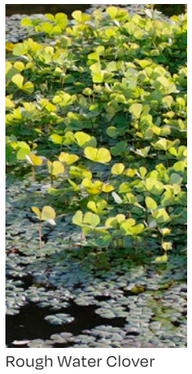
Knobby Clubrush
Ficinia nodosa

Common Rush
Juncus usitatus

Tall Sedge
Carex appressa



Rainbow Nardoo Marsilea mutica

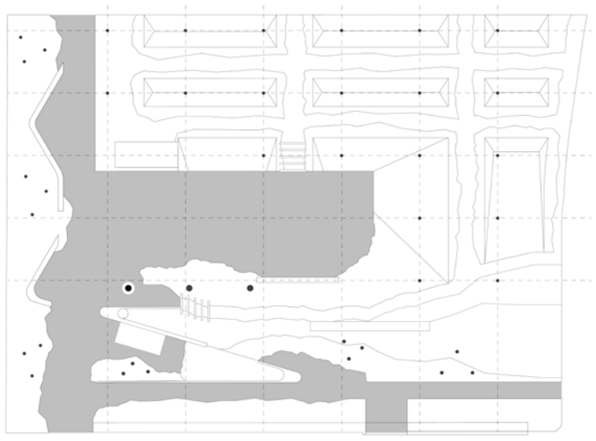


Rough Water Clover
Marsilea hirsuta

Variable Water Milfoil
Myriophyllum variifolium

Stage 1 Landscape Concept

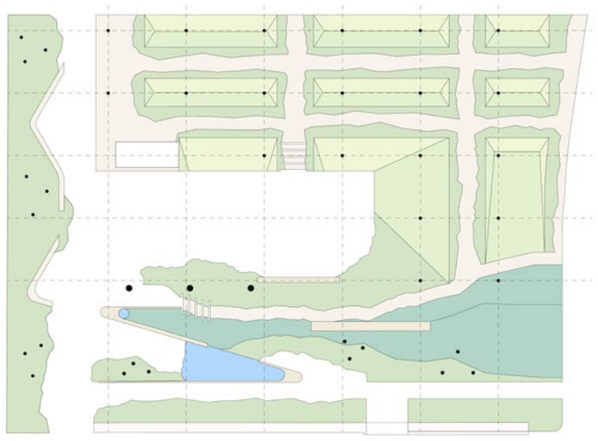
Maintain central courtyard elements



Maintain components of courtyard design.

Linking Research Labs to the AMRF Park and maintaining parts of the ridge and valley concept.

Set in a field of the Western Sydney Cumberland Plain landscape

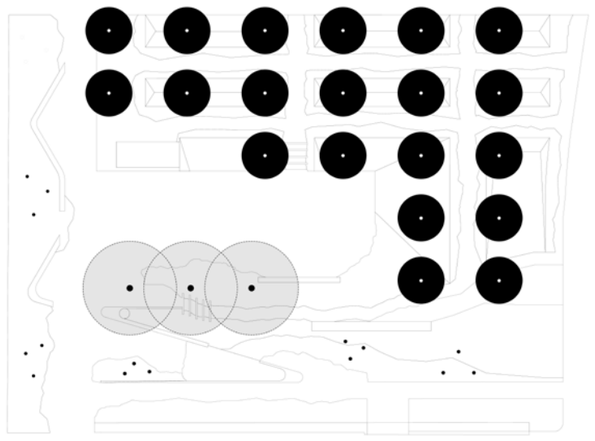


Frame with a field of gentle landform mounds to envoke the undulating Western Sydney landscape beyond.

Creating subtle shaded spaces within the planted areas that people can use.

Microclimates requires a shift to a temporary landscape planting palette that is based on the Cumberland Plain Woodland.

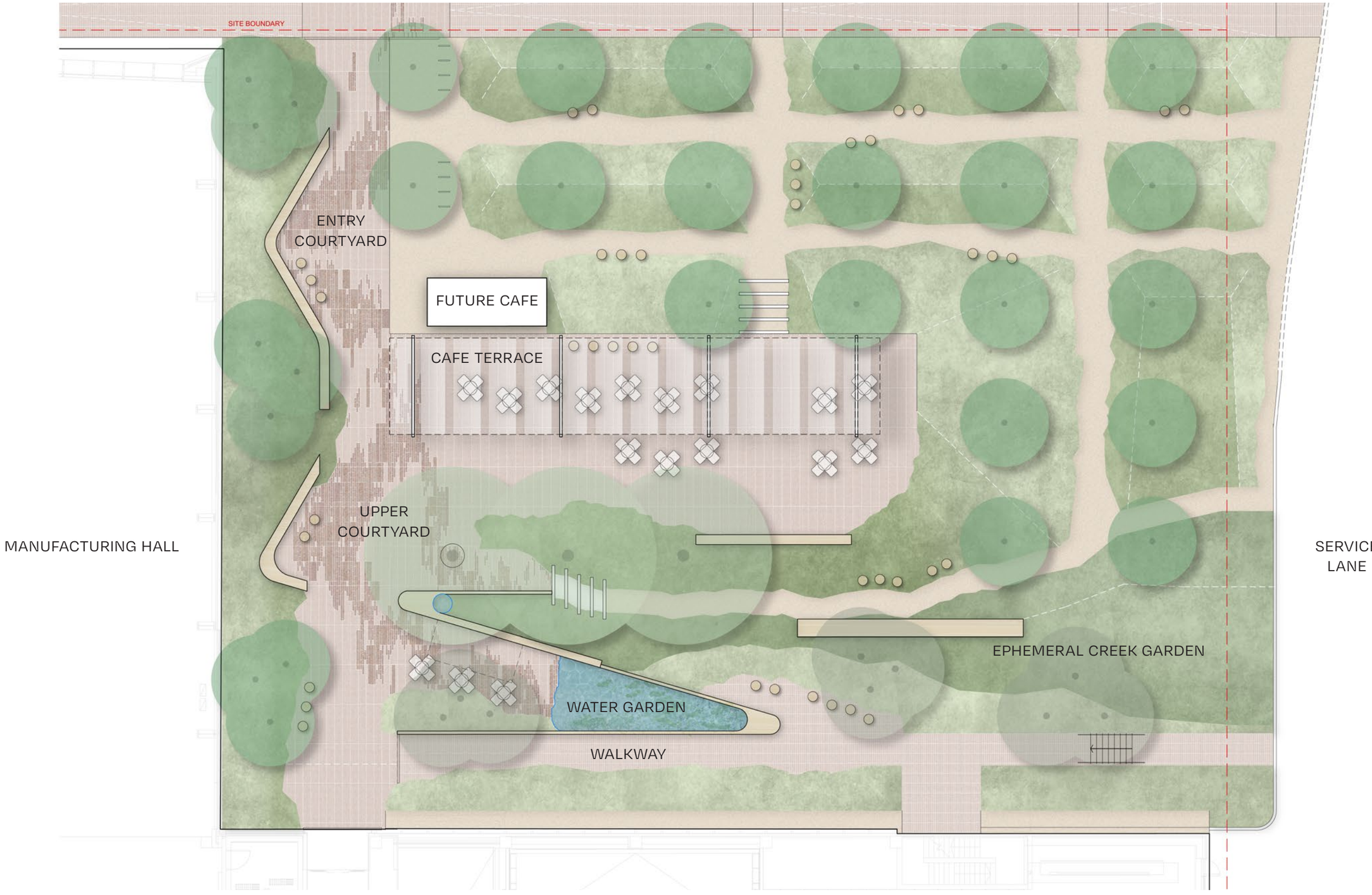
Courtyard protected by a frame of temporary trees



Frame with a band of trees, framing the courtyard in the clearing.

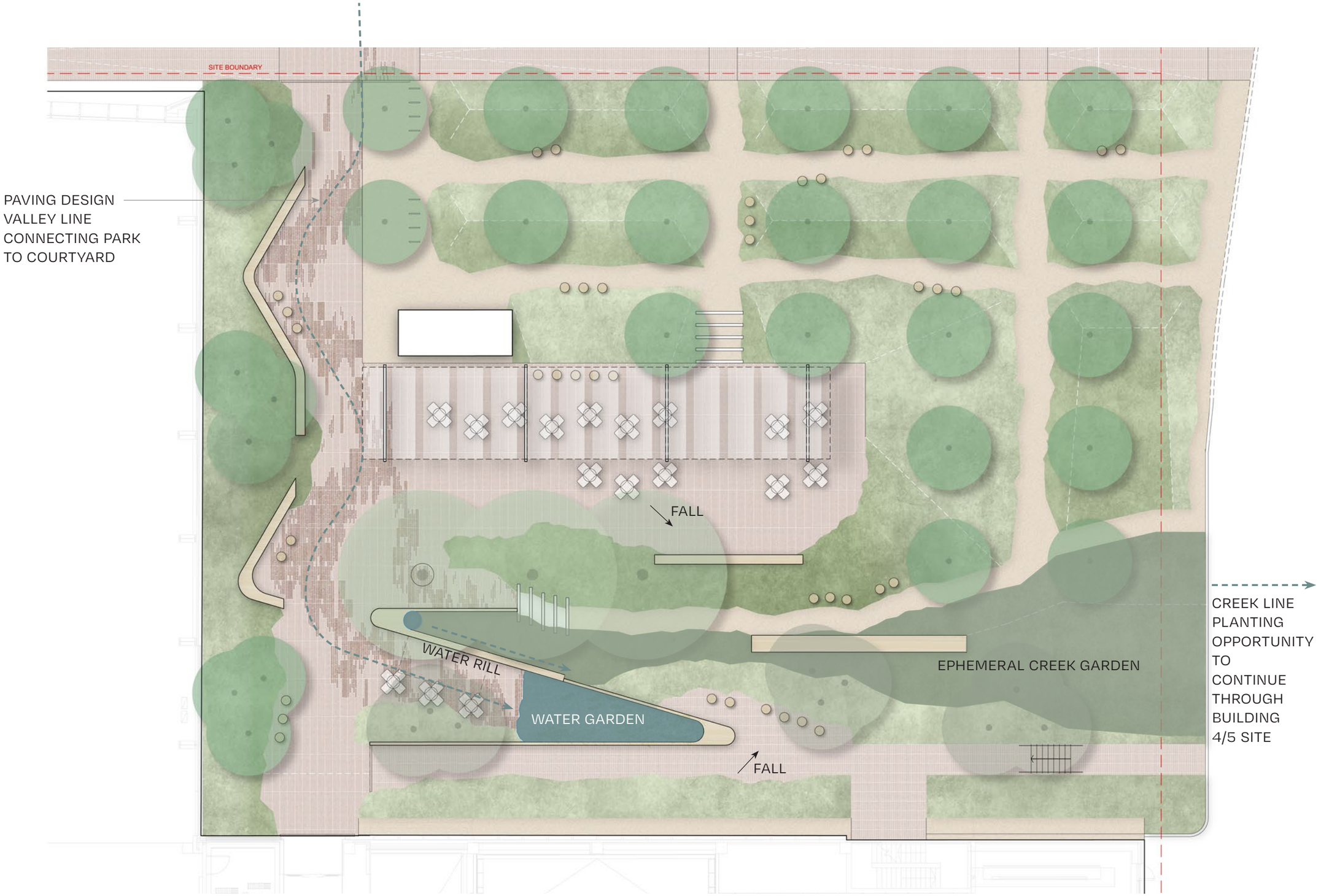
Trees will offer:
- some shade and cooling
- a defensible space for the building
- a clearly defined edge between park and building site
- smaller usable spaces within the grid

Landscape Plan
Stage 1 Scheme Design



TYRRELL STUDIO

Landscape Plan
Water Concept



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Landscape Plan
Drainage System

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Landscape Plan
Cafe and Seating Areas

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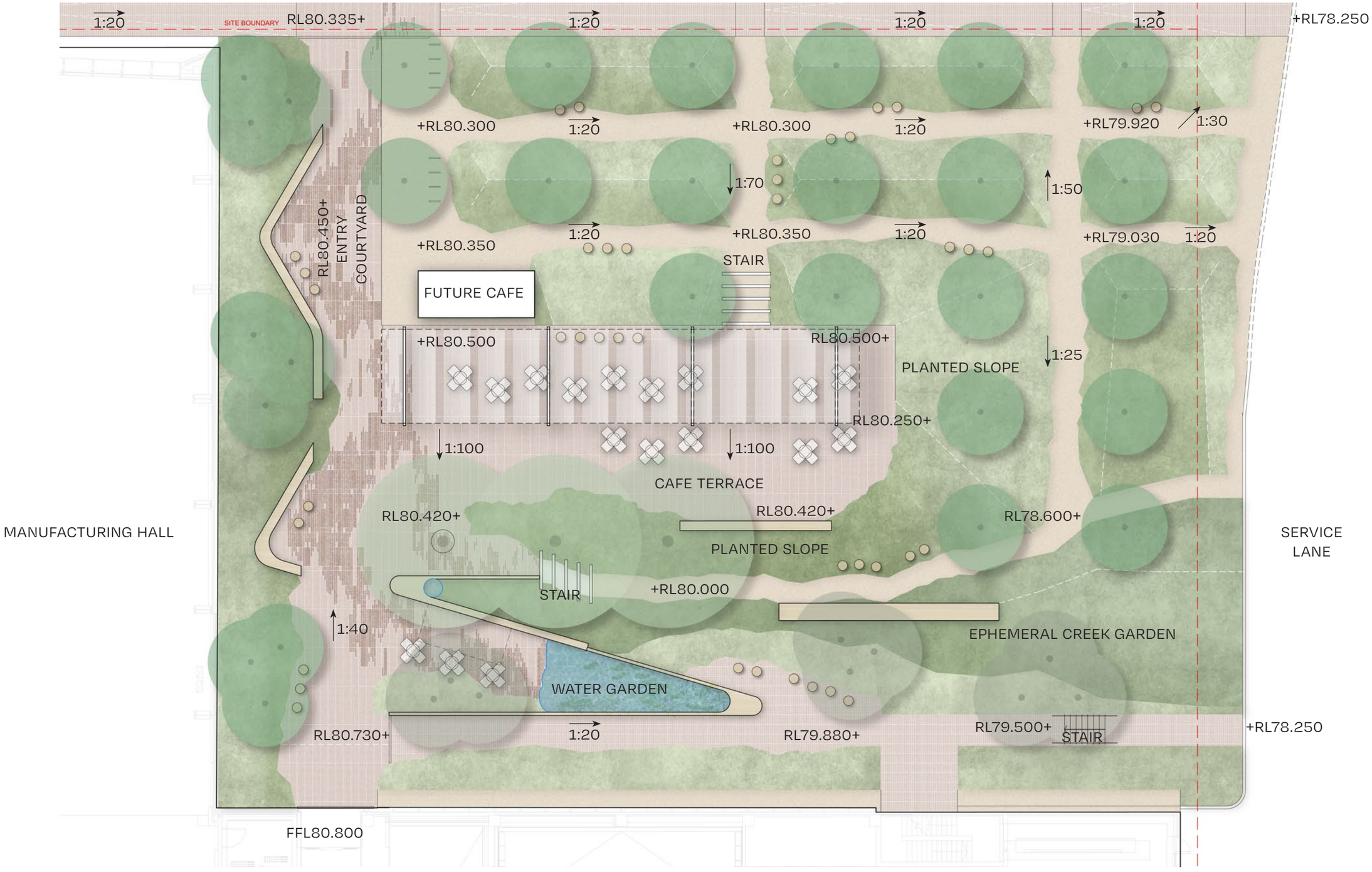
Landscape Plan
Servicing and Levels



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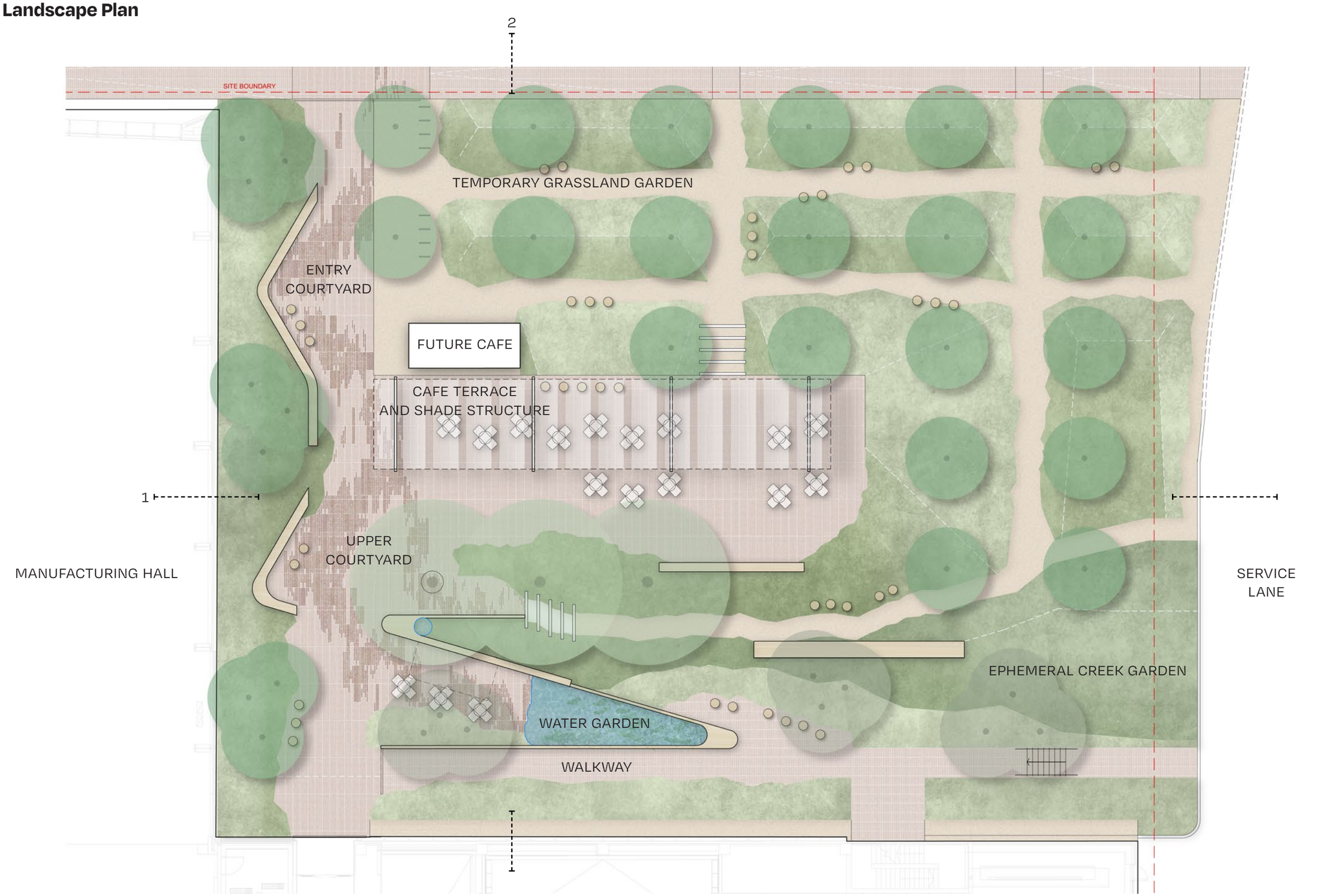
Landscape Views
Cafe Terrace, looking west

Landscape Views
Upper Courtyard, looking north east

Landscape Views
Ephemeral Creek Garden walk, looking west

Illustrated Landscape Plan



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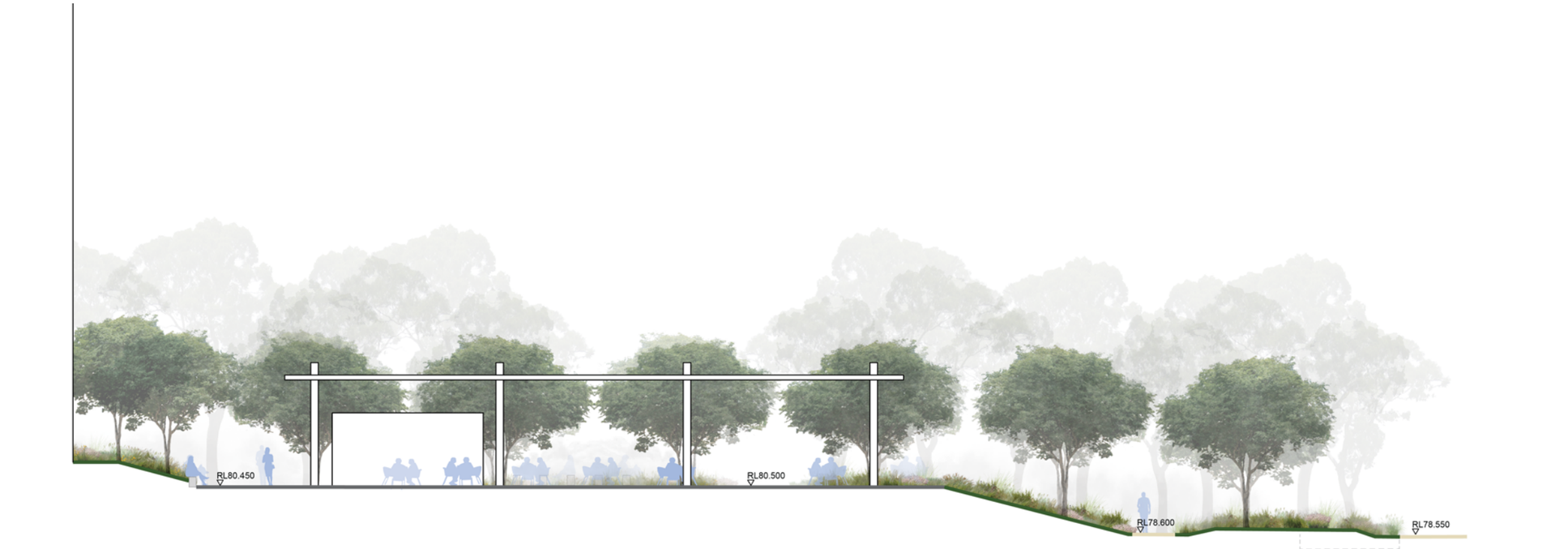
Landscape Section 1



AMRF

ENTRY COURTYARD

FUTURE CAFE

19m
PAVED COURTYARD SPACE

PLANTED SLOPED MOUND

10m
GRASSLAND PLANTING

SERVICE LANE

1:200

0 2 4 10m

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Landscape Section 2

1:200

0 2 4 10m

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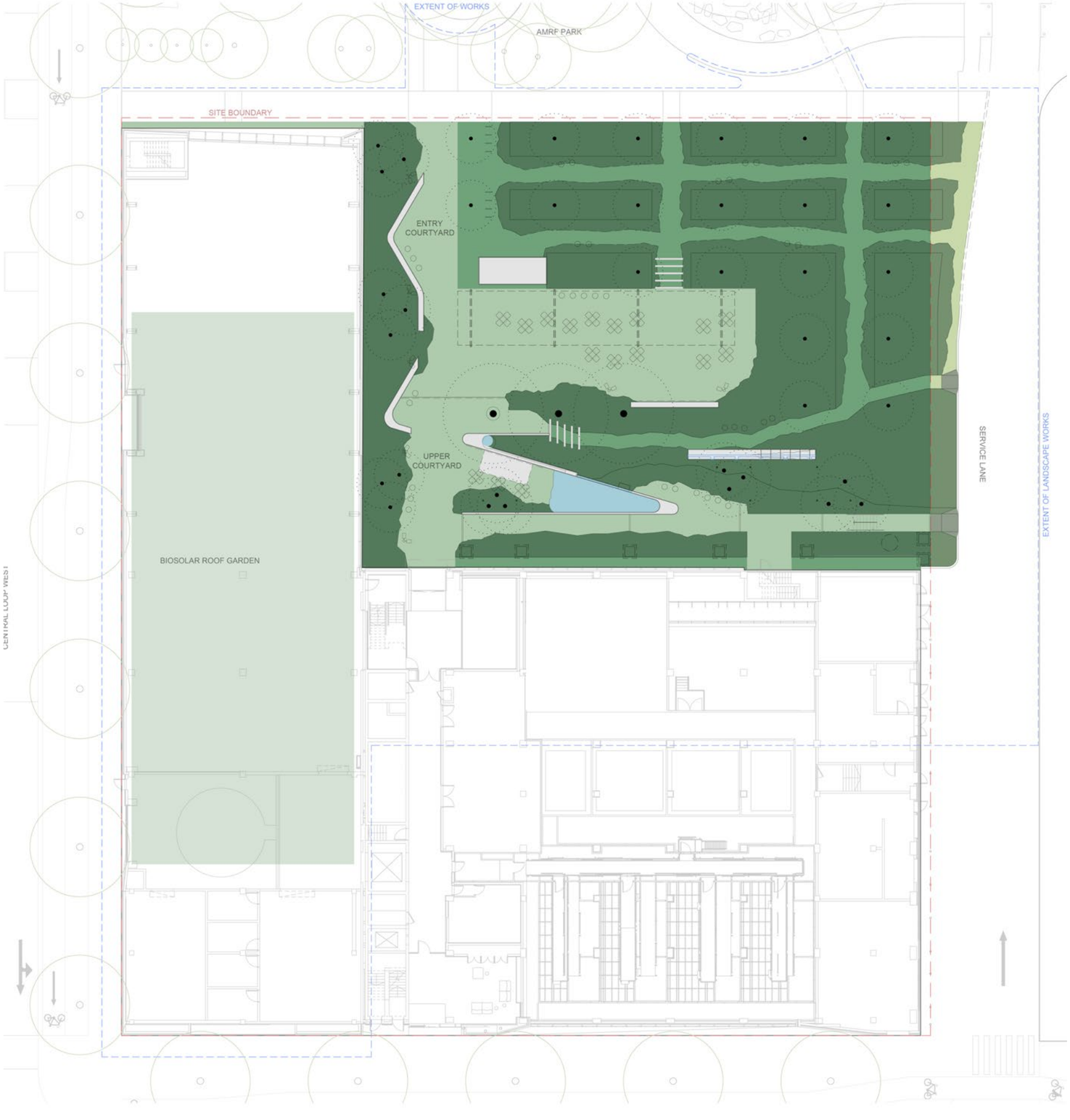
Stage 1 Site Porosity Plan

This plan shows the area breakdown for porous areas within the site. The breakdown considers deep soil, areas over structure, building undercrofts, and whether the ground treatment is planted or hardscape. Total site area is 5996sqm.

Zone	Area (sqm)	Porosity Factor (%)	Porous Factor Area (sqm)
AMRF2 Site Area	5996		
Courtyard			
Planting Areas			
Planting Over Deep Soil	1097	100%	1097
Planted Building Setback Edges Over Deep Soil	0	100%	0
Planting In Undercroft Over Deep Soil	0	100%	0
Planting Over Structure	0	50%	0
Planted Water Feature	23	0%	0
Paving Areas			
Paving Over Structure/On Slab	9	0%	0
Unit Paving Over Ground	560	50%	280
Permeable Paving Over Deep Soil Zones	292	50%	146
Permeable Paving In Undercroft Over Deep Soil Zones	0	50%	0
Paved Building Setback Areas	21	50%	11
Rooftops			
Biosolar Roof Planting	964	50%	482
Total Porous Area (sqm)			2016
Site Porosity (%)			33.6%
Total Open Space Area (sqm) (not incl. roof)	2002		
Open Space Area Percentage of Site (%)	33.4%		



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Stage 1 Tree Canopy Plan

This plan shows the area breakdown for tree canopies within the site.

ZONE	Area (sqm)	AMRF2 Site (%)	Total (ARMF1+AMRF2) Site (%)
AMRF2 Site Area	5996		
AMRF1 Site Area	6251		
Total Site Area (S1+S2)	12247		
Tree Canopy Areas			
Tree Canopy - AMRF2 Stage 1 In Courtyard	374	6.2%	3.1%
Tree Canopy - AMRF2 Stage 1 Tree Grid	320	5.3%	2.6%
Tree Canopy - AMRF1	1575		12.9%
Tree Canopy Total	**2269**	**6.2%**	**18.5%**

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