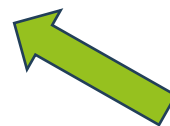


# Design options for tree root environments



Pick n Mix



# Aliens from a subterranean world – understanding their needs for survival



A large, leafy tree stands in the center of a lush green field. The sky is bright blue with scattered white clouds. In the background, there are more trees and a line of foliage.

**Objective:**

**To replicate soft landscape conditions in  
the urban realm**

**Key ingredients;**

**Water**

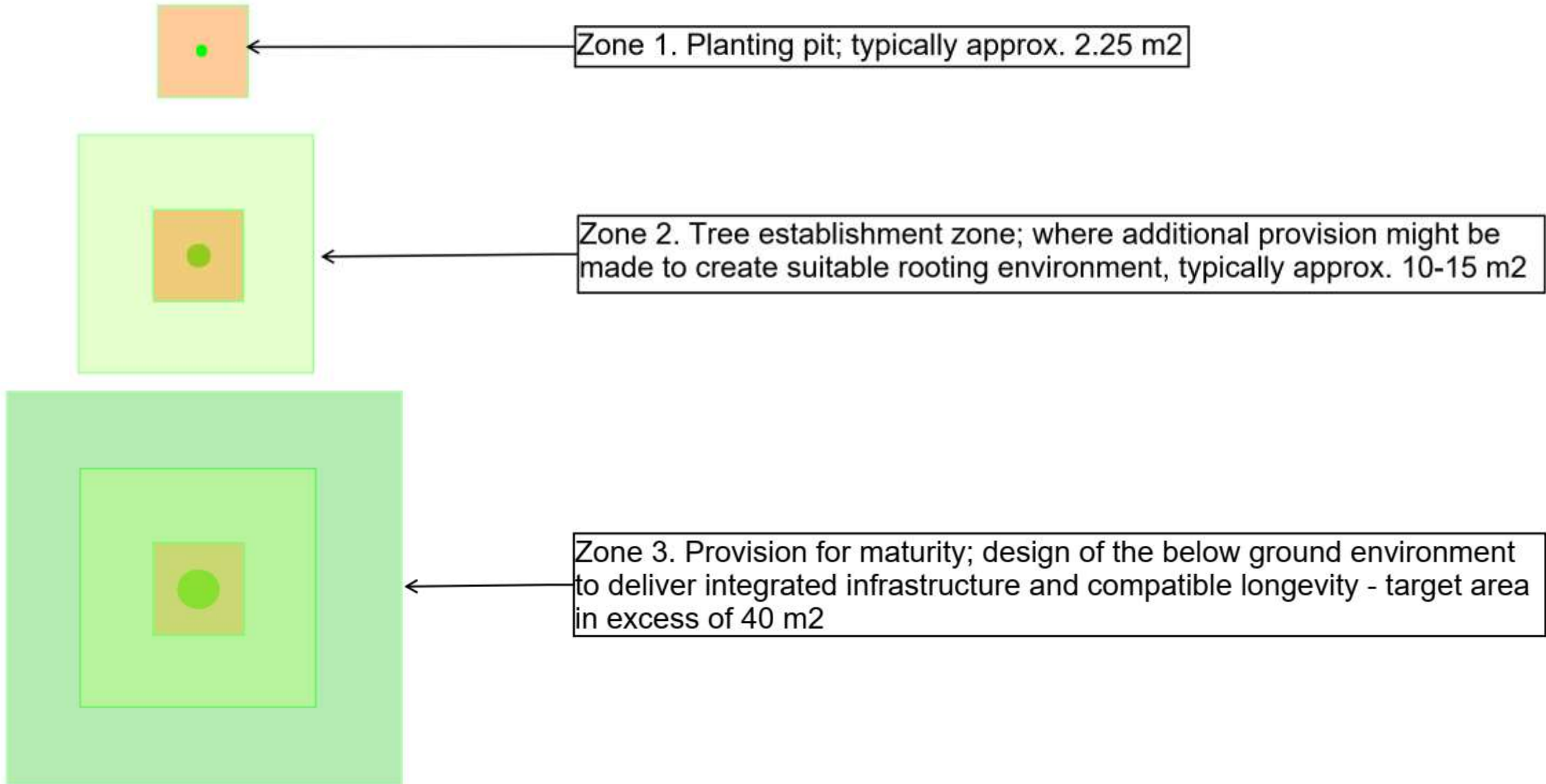
**Oxygen**

**Nutrients**

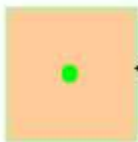
# The harsh reality that is the urban realm



# Rooting environment zones in hard landscape



# Rooting environment zones

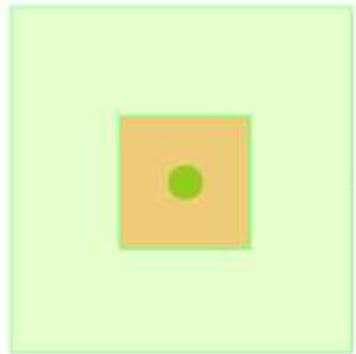


Zone 1. Planting pit; typically approx. 2.25 m<sup>2</sup>

**Zone 1:** A hole in the ground large enough to plant a standard – extra heavy standard tree and provide a small amount of good quality growing medium (max 2.0 m<sup>3</sup>), usually capped with a permeable surface such as a metal grill.

- Compilation of growing medium should consider surface finish and envisaged loading of the planting pit i.e. potential for compaction
- Planting pit will usually incorporate irrigation/aeration pipe
- **Too frequently, this is still the full extent of provision made to ensure the tree's success, resulting in; a limited chance of survival, low chance of healthy establishment and poor chance of reaching maturity, along with an unnecessarily high chance for negative impact to other infrastructure.**

# Rooting environment zones

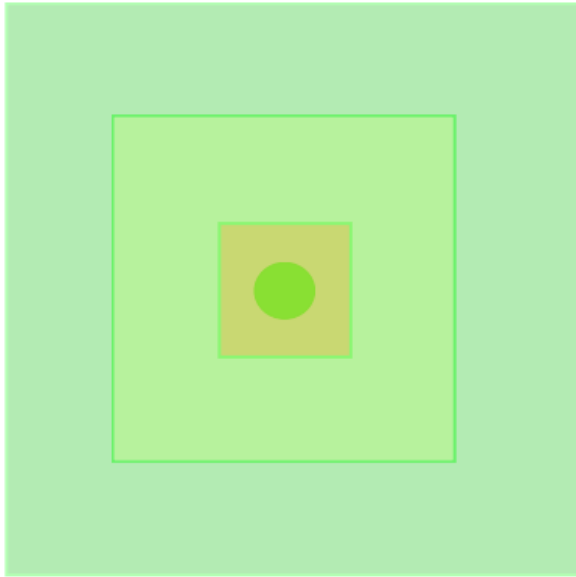


Zone 2. Tree establishment zone; where additional provision might be made to create suitable rooting environment, typically approx. 10-15 m<sup>2</sup>

**Zone 2:** Over the last decade or so we have seen increased provision to enable tree establishment in the urban environment and Zone 2 is where the majority of recent product and technique innovation has been focussed.

- The key principle being; to provide a load bearing substructure to hard surfacing, that can accommodate uncompacted growing medium which contains those key ingredients we have identified
- The main challenges being; limited available space, other demands on that space, loading to which the surface will be subject and of course, COST of these systems.

# Rooting environment zones



Zone 3. Provision for maturity; design of the below ground environment to deliver integrated infrastructure and compatible longevity - target area in excess of 40 m<sup>2</sup>

**Zone 3:** This is the most challenging of all, as it requires a holistic change in mindset to the way we design and manage the subterranean urban landscape.

Such change is critical to achieving maturity and longevity of our urban treescape.

Main areas of opportunity for innovation and change:

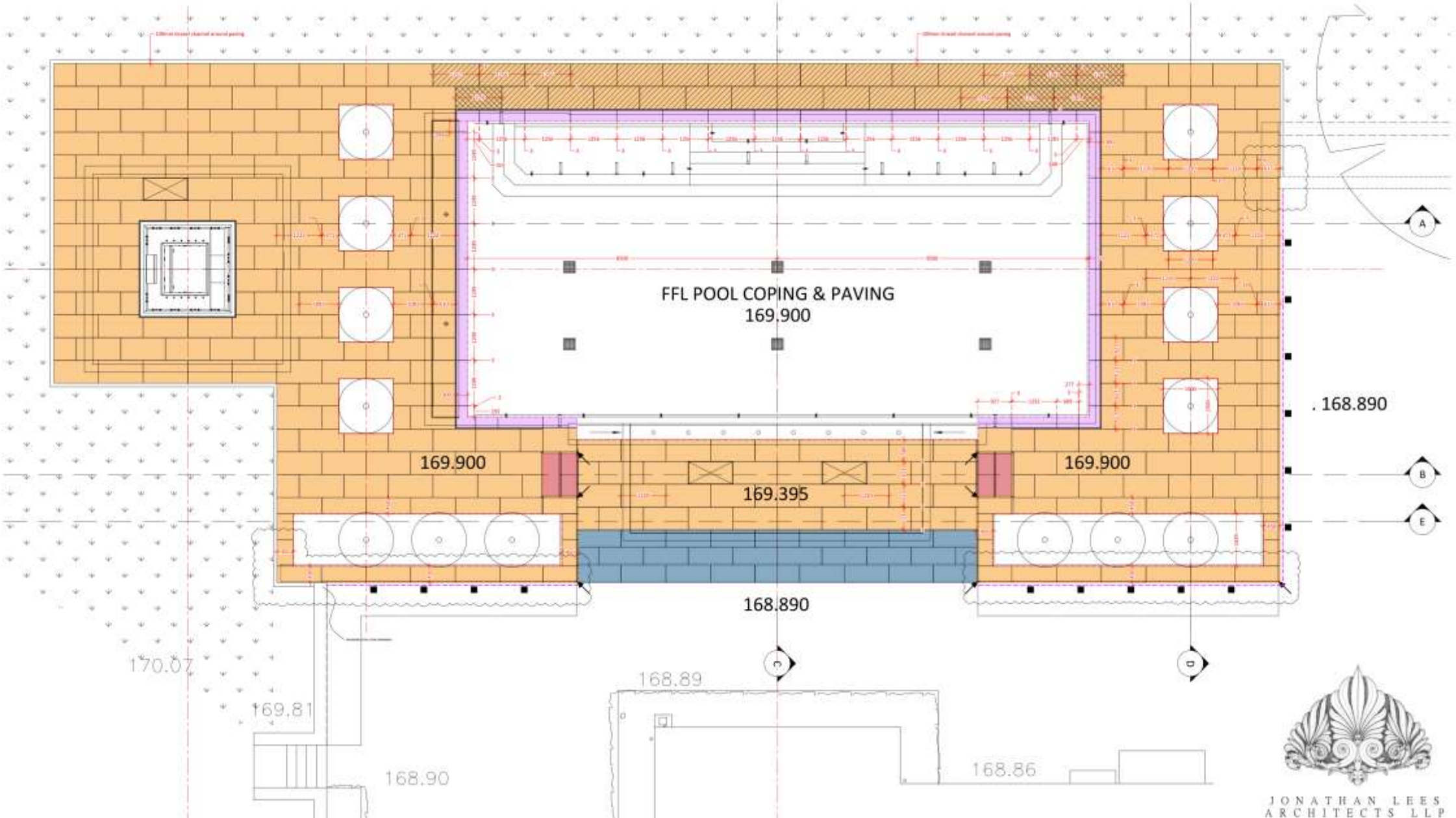
- New build – the blank canvas offers maximum opportunity
- Regeneration and restoration projects
- Infrastructure installation and/or improvement projects



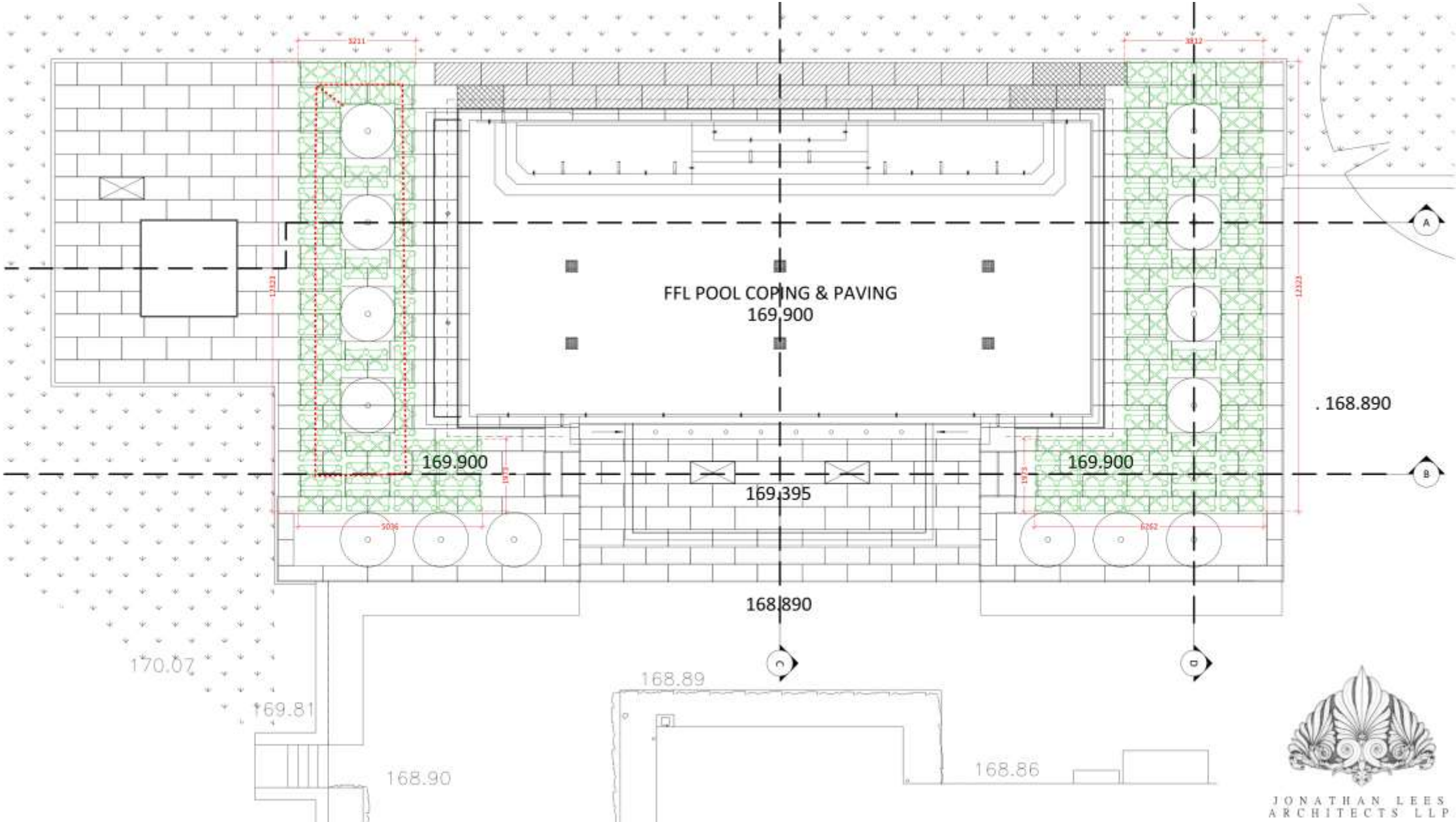
# Your palette of design options – some pros & cons



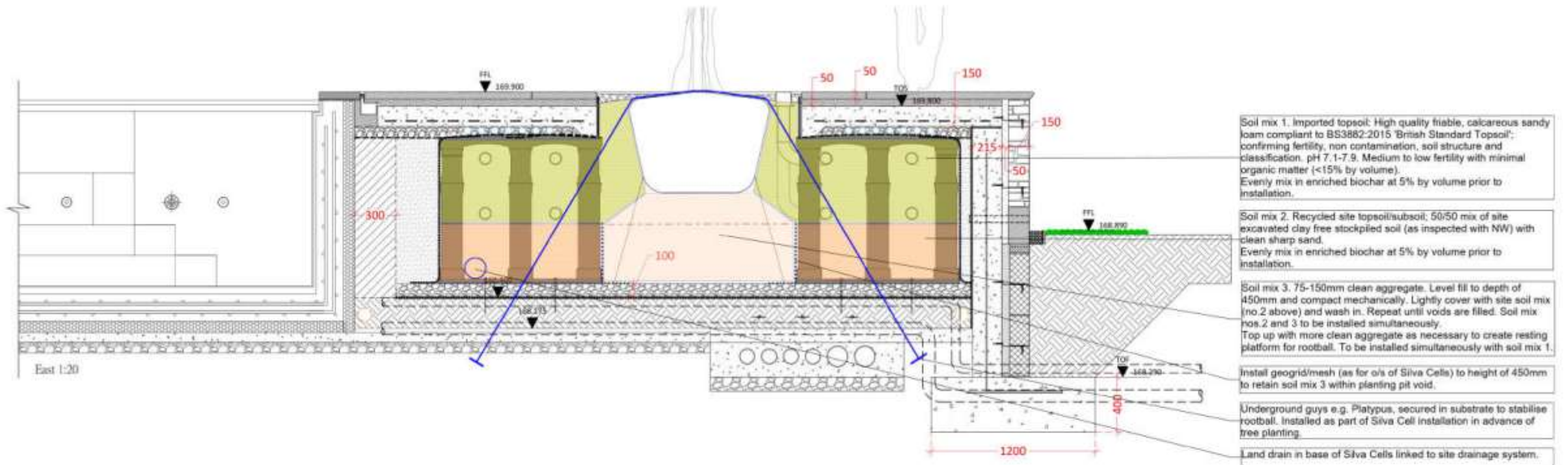
# Case study 1: Crating system incorporating skeletal soil



# Case study 1: Crating system incorporating skeletal soil



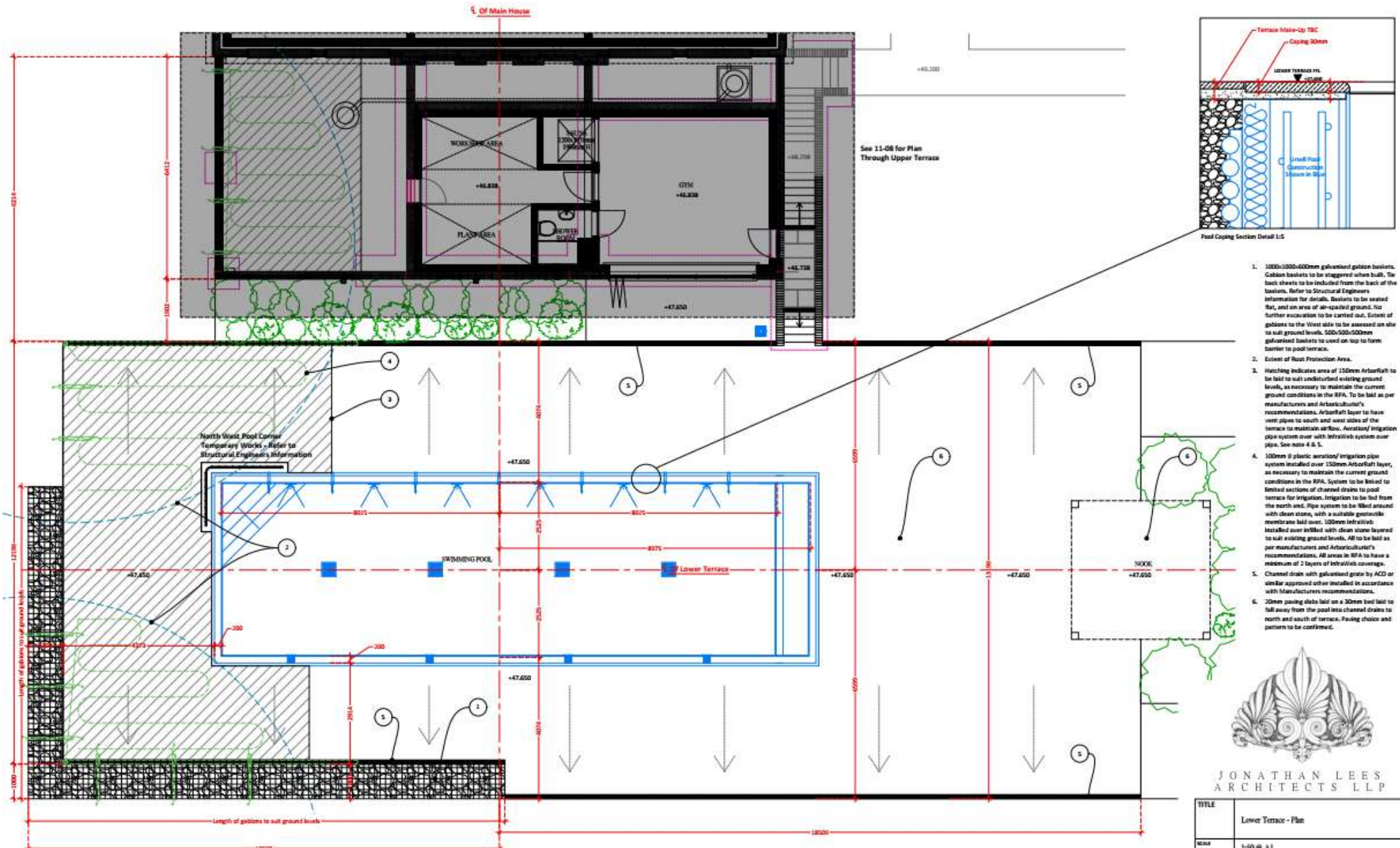
# Case study 1: Crating system incorporating skeletal soil



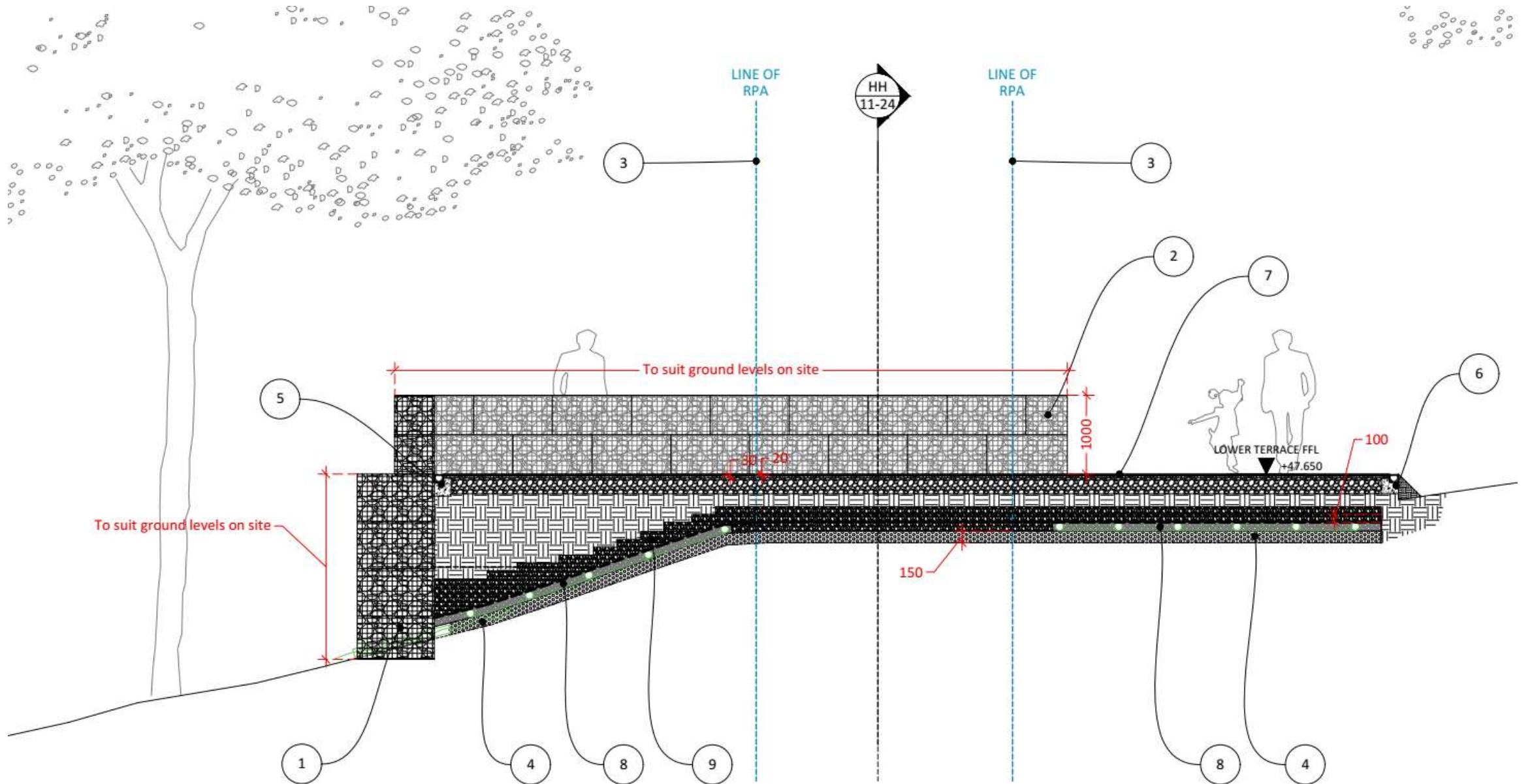
# Case study 1: Crating system incorporating skeletal soil



# Case study 2: Construction within RPA of existing trees



# Case study 2: Construction within RPA of existing trees



# Case study 2: Construction within RPA of existing trees





# Summary:

## Embrace and promote:

- Innovation
- Education
- Collaboration
- Integration

## To deliver :

- Maturity
- Sustainability
- Compatibility
- Longevity

**of our urban treescapes**

