3E Deep soil zones

Deep soil zones are areas of soil not covered by buildings or structures within a development. They exclude basement car parks, services, swimming pools, tennis courts and impervious surfaces including car parks, driveways and roof areas.

Deep soil zones have important environmental benefits, such as allowing infiltration of rain water to the water table and reducing stormwater runoff, promoting healthy growth of large trees with large canopies and protecting existing mature trees which assist with temperature reduction in urban environments. Deep soil zones may be constrained by the size of the lot or the location of a proposed development. To provide shade and amenity for residents they can be co-located with communal open space.

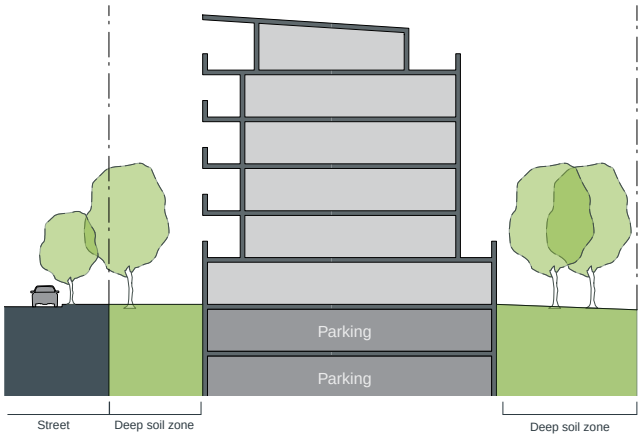

Figure 3E.1 Opportunities for deep soil zones are increased when parking levels are contained within the building footprint

Table 2 Suggested soil volumes on sites with sand, clay, alluvial, transition and disturbed soils

Tree size	Height	Spread	Soil volume
Large trees	13-18m	16m	80m^3
Medium tree	9-12m	8m	35m^3
Small tree	6-8m	4m	15m^3

Note: On sandy sites with reduced soil volumes, the number of trees planted is proportional to the available soil volume

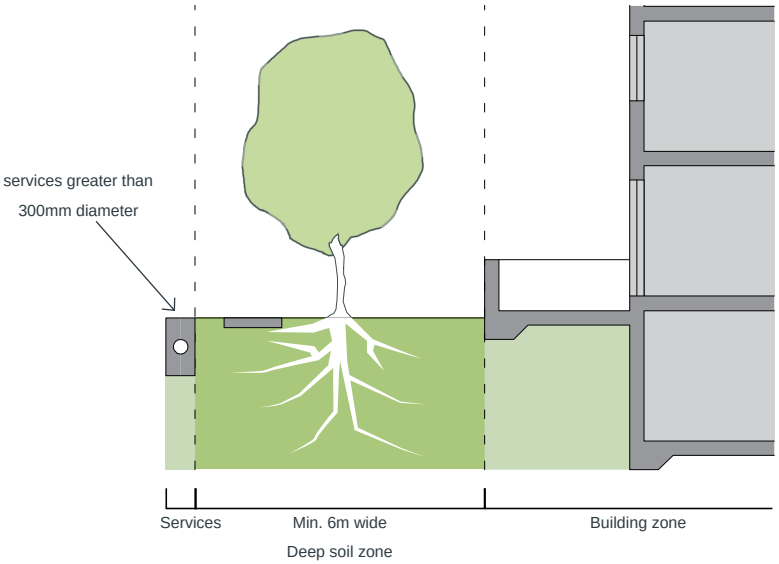

Figure 3E.2 Diagram showing the minimum dimension of deep soil zones for sites greater than 1,500m^2

Figure 3E.3 Deep soil zones promote the growth of larger trees which improve amenity and local microclimate

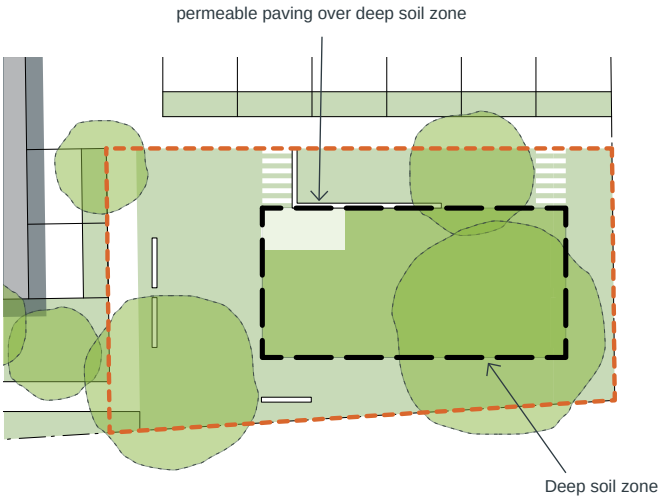

Figure 3E.4 Pedestrian pathways and paving which is specifically designed for tree root growth can occupy up to 10% of the deep soil zone

Objective 3E-1

Deep soil zones provide areas on the site that allow for and support healthy plant and tree growth. They improve residential amenity and promote management of water and air quality

Design criteria

1. Deep soil zones are to meet the following minimum requirements:

Site area	Minimum dimensions	Deep soil zone (% of site area)
less than 650m^2	-	7%
650m^2 - 1,500m^2	3m	
greater than 1,500m^2	6m	
greater than 1,500m^2 with significant existing tree cover	6m	

Design guidance

On some sites it may be possible to provide larger deep soil zones, depending on the site area and context:

- 10% of the site as deep soil on sites with an area of 650m^2 - 1,500m^2
- 15% of the site as deep soil on sites greater than 1,500m^2

Deep soil zones should be located to retain existing significant trees and to allow for the development of healthy root systems, providing anchorage and stability for mature trees. Design solutions may include:

- basement and sub basement car park design that is consolidated beneath building footprints
- use of increased front and side setbacks
- adequate clearance around trees to ensure long term health
- co-location with other deep soil areas on adjacent sites to create larger contiguous areas of deep soil

Achieving the design criteria may not be possible on some sites including where:

- the location and building typology have limited or no space for deep soil at ground level (e.g. central business district, constrained sites, high density areas, or in centres)
- there is 100% site coverage or non-residential uses at ground floor level

Where a proposal does not achieve deep soil requirements, acceptable stormwater management should be achieved and alternative forms of planting provided such as on structure