



TREE PITS

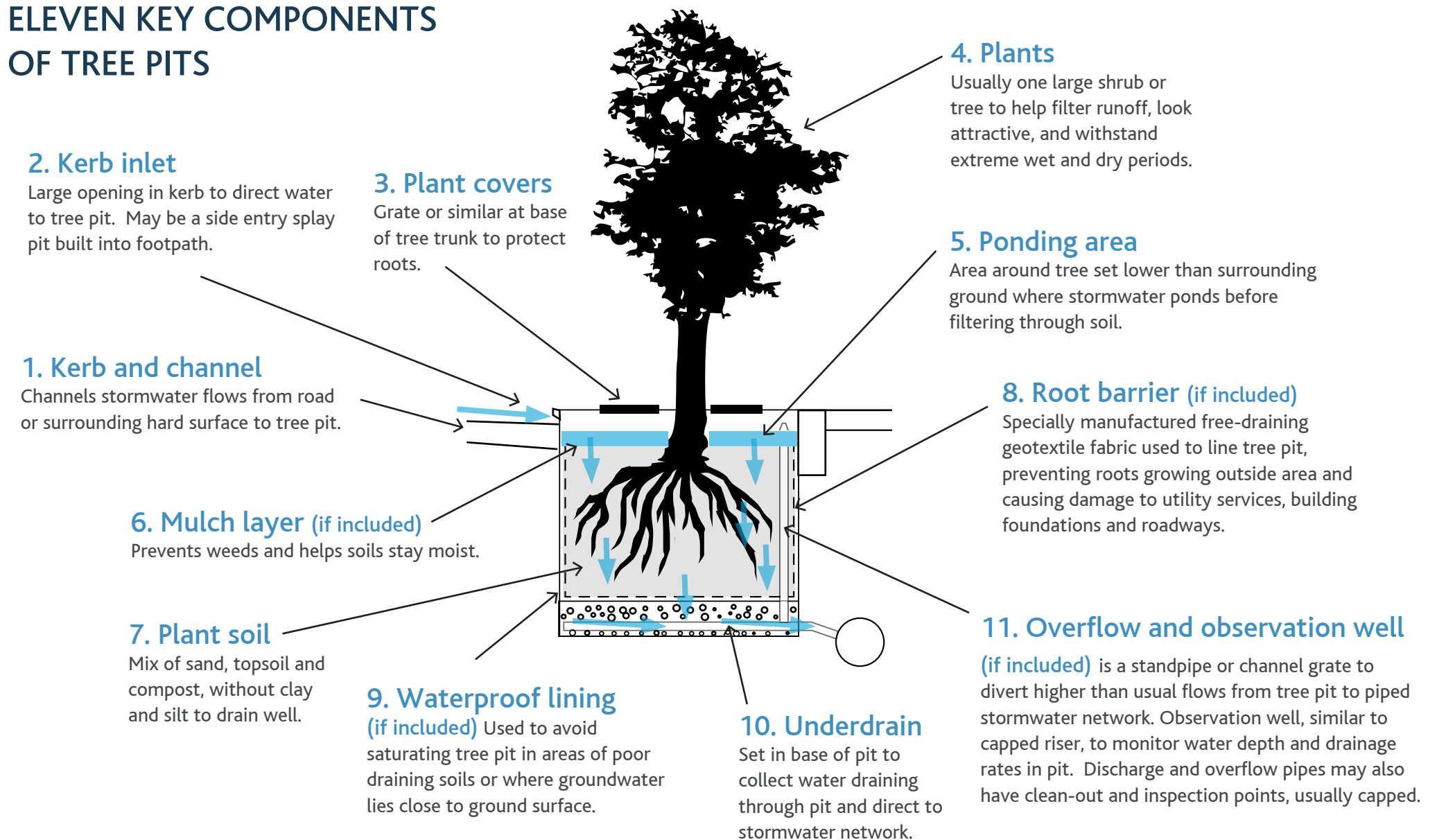
Construction Guide

STORMWATER DEVICE INFORMATION SERIES

WHAT ARE TREE PITS?

Tree pits collect stormwater runoff from small carpark areas or roads. Runoff filters through the tree roots and surrounding soil mix, trapping sediment and pollutants before flowing to a piped stormwater system.

ELEVEN KEY COMPONENTS OF TREE PITS



KEY CONSTRUCTION FACTORS

Tree pits will often be constructed during other street works. Design and location of pits will usually be detailed in construction plans. The following outlines the general construction sequence.

1. Kerb, channel and kerb inlet

- These may already be in place on roadway or carparks.
- Construct new kerb inlets or reform existing kerb and channel to direct stormwater runoff to tree pits.

2. Excavation

- If possible, locate underground services before excavation. Footpath and roadways carry many services - if unsure, dig carefully by hand.
- Excavate pit depth specified on plans, (usually 1-1.5m deep depending on tree species).
- Avoid compacting surrounding ground with vehicles to assist soil soakage.
- If specified, install impermeable liner.

3. Install root barrier (if included)

- Where specified, install root barriers as per manufacturer's instructions to prevent roots affecting utility services, foundations and roadways.
- Secure barrier from surface of pit to excavated walls with staples or attach to concrete edge strip, with 300mm overlap at joints, minimum 1m depth.



Fig.2 Root barrier installed to protect underdrain

4. Waterproof lining (if specified)

- If lining specified, extend it along base and sides of pit to prevent groundwater entry.
- Place lining carefully to prevent stress points and tears in material.
- Seal all seams, especially at pipe penetrations.

5. Install under drain

- Install under drain and connect to stormwater system (must not connect to sanitary sewer system).
- Underdrain generally 100-150mm diameter, with 0.5% slope (50mm over 1m).
- Pipe length within pit should be perforated but pipe either side of pit is not perforated.

6. Construct overflow and observation wells (if included)

- Construct overflow to levels shown on plans, usually just below surrounding ground surface, and above surface of tree pit. (If no levels given, construct overflow approximately 50mm below surrounding ground surface to allow ponding in tree pit.)
- Fit overflow with screen or grate to stop clogging.
- Observation wells, often similar to capped riser pipes, may also be specified.

CONSTRUCTION SEQUENCE CONT...

7. Backfill underdrain, and fill with soil mix

- Carefully backfill under drain as specified. Usually backfill is gravel with minimum 50mm cover to under drain, total depth 300mm gravel from base of pit to above underdrain.
- Backfill at low level, by hand not by excavator, and spread carefully to avoid damaging pipe work.
- Fill with approved soil mix to half total depth of pit. Do not compact soil – completely wet soil to create natural compaction.
- Soil mix for tree pits to be loam/sand mix with less than 25% clay and free of stones, stumps, roots and woody material with no noxious plant seeds. Permeability to be minimum 0.3m/day.



Fig.3 Backfilling of treepit, filling with soil mix



Fig.4 Ensure final level allows for water storage capacity

8. Plant

- Support tree or shrub while planting by holding or bracing with stakes and ties.
- Fill carefully with soil mix under and around root ball.
- Wet soil mix to compact naturally. Once drained, top up to finished specified ponding level (allowing for mulch, if specified).

9. Finish levels

- Check ponding level sits below overflow and surrounding ground as detailed on plans, usually 200-300mm lower than ground, allowing for mulch, if specified.

10. Mulch (if included)

- Place mulch to finished level, maximum 75mm deep, following contour of pit, not levelled to surrounding ground.
- Mulch to be standard landscape non-floating shredded wood or chips, free of soil, weeds, roots.
- Stones or boulders may be specified instead of mulch.

11. Test pit

- Check pit after heavy rain or by filling with hose to 200mm, to make sure water level drains completely over 24 hours.

12. Install plant covers

- Fit secure plant covers to protect plant from pedestrian or vehicle traffic.

13. Complete and tidy

- Remove erosion and sediment controls and excess materials from site.
- Reinststate surrounding surfaces to original condition, or sow with grass to stabilise.

Quick checks

- ✓ Install traffic management measures when working near roadways and instruct those on site.
- ✓ Use suitable soil mix (sand, topsoil and compost) and compact naturally by wetting.
- ✓ Put in approved tree supports.
- ✓ Check plant soil mix and mulch allows ponding area of 200-300mm deep around tree.
- ✓ Provide sediment control and block new and existing inlets and outlets from tree pit during construction.

Avoid

- ✗ Do not use fertilizers, herbicides or pesticides.
- ✗ Do not overfill pit with soil mix or mulch.
- ✗ Do not substitute root barrier fabric with alternative material.
- ✗ Do not compact soil mix.
- ✗ Do not use soil mix containing clay or silt – these do not allow good drainage.

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