

Technical Note 002

Installation of drain run

Background

An application to develop the former mushroom farm to provide mainly residential development is before the Council for determination.

The relationship between trees and development appears to be acceptable to the Council but there remains interest in the method of installing the drain run adjoining trees 2 and 3.

This note has been prepared to set out the most appropriate method of installing the drain run that result in no material harm to the trees whilst being practical to achieve the outcome. The measures proposed are in accordance with *British Standard BS5837:2012: Trees in relation to design, demolition and construction – Recommendations* (BS5837).

The drain run in relation to the trees

The proposed foul sewer drain is located on the eastern edge of the site, connecting to the existing foul drainage network in Storrington Road. It is shown in Figure 1 of this note.

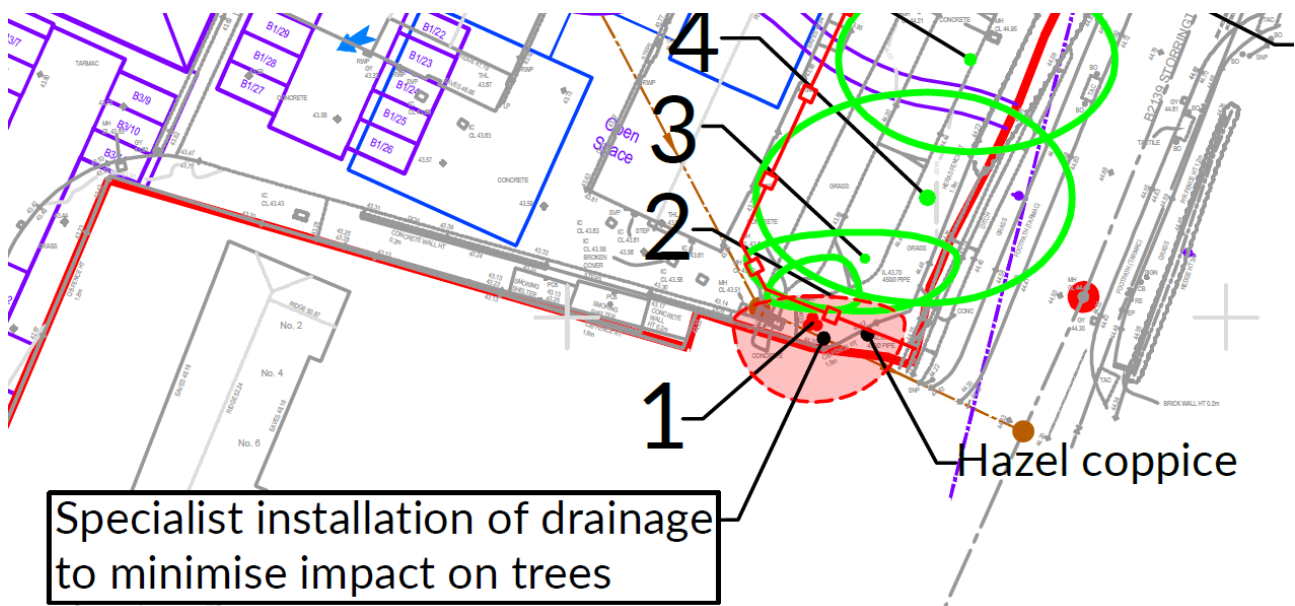


Figure 1: Location of drain run south of tree 2.

The proposed drain passes south of tree 2 and 3 and is located within their root protection areas.

Installation methods

BS5837 accepts that drainage and services may need to be located within root protection areas. It is common practice and the Standard acknowledges this and, rather than seeking to prevent it, methodologies are set out to achieve an installation whilst avoiding material harm to the trees. An extract of BS5837 is provided at Appendix 1 of this note and sets out those methods.

In this instance, given the depth of the proposed drain run, the most appropriate methods of installation are thrust boring, pipe ramming or directional drilling. They all fall under the general banner of 'trenchless installation'.

The trenchless installation techniques, as the name suggests, avoid the need for open trenching. In turn this avoids the propensity to encounter and damage roots. Roots being located mostly in the upper 600mm of soil.

The pipe is therefore installed beneath the roots and avoids disturbing them. Once the pipe is in-situ it has no bearing on the roots – it does not give rise to a change in conditions that materially impacts the tree.

At each end of the trenchless installation there is a need to excavate pits for the equipment to send the pipe through at the correct depth. These pits can be located outside the root protection area of the retained trees.

The above installation techniques are recognised by BS5837 as being appropriate and they avoid harm to the retained trees.

Summary

A foul sewer connection is proposed that passes through the root protection areas of retained trees.

To avoid harm to trees from that installation specialist techniques will need to be adopted.

The specialist techniques, as set out above, are considered appropriate by national guidance in respect of trees and development. They are in common usage and have proven successful for the installation and safeguarding trees.

The use of specialist installation, that is known to be suitable, can be secured through a condition appertaining to the consent.

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Appendix 1

Extract from BS5837

- the potential for ponding (i.e. perched water table) and the need for a drainage/runoff control system;
- the potential for adverse affects on local soil hydrology, and the possible impact of these on tree health.

7.7 Underground and above-ground utility apparatus

7.7.1 Mechanical trenching for the installation of underground apparatus and drainage severs any roots present and can change the local soil hydrology in a way that adversely affects the health of the tree. For this reason, particular care should be taken in the routing and methods of installation of all underground apparatus. Wherever possible, apparatus should be routed outside RPAs. Where this is not possible, it is preferable to keep apparatus together in common ducts. Inspection chambers should be sited outside the RPA.

7.7.2 Where underground apparatus is to pass within the RPA, detailed plans showing the proposed routing should be drawn up in conjunction with the project arboriculturist. In such cases, trenchless insertion methods should be used (see Table 3), with entry and retrieval pits being sited outside the RPA. Provided that roots can be retained and protected in accordance with 7.2.2, excavation using hand-held tools (see 7.2.1) might be acceptable for shallow service runs.

NOTE The suitability of these for differing applications is summarized in Table 3.

Table 3 Trenchless solutions for differing utility apparatus installation requirements

Method	Accuracy	Bore dia. ^{A)}	Max. sub. ^{B)} length	Applications	Not suitable for
	mm	mm	m		
Microtunnelling	<20	100 to 300	40	Gravity-fall pipes, deep apparatus, watercourse/ roadway undercrossings	Low-cost projects due to relative expense
Surface-launched directional drilling	~100	25 to 1 200	150	Pressure pipes, cables including fibre optic	Gravity-fall pipes, e.g. drains and sewers ^{C)}
Pipe ramming	~150	150 to 2 000	70	Any large-bore pipes and ducts	Rocky and other heavily obstructed soils
Impact moling ^{D)}	~50 ^{E)}	30 to 180 ^{F)}	40	Gas, water and cable connections, e.g. from street to property	Any application that requires accuracy over distances in excess of 5 m

^{A)} Dependent on strata encountered.

^{B)} Maximum subterranean length.

^{C)} Pit-launched directional drilling can be used for gravity fall pipes up to 20 m subterranean length.

^{D)} Impact moling (also known as thrust-bore) generally requires soft, cohesive soils.

^{E)} Substantial inverse relationship between accuracy and distance.

^{F)} Figures given relate to single pass: up to 300 mm bore achievable with multiple passes.