TREE AWARE UK LTD
Arboricultural Consultancy

Tree Schedule, Kiln Place, London

Species	Size	Roots	Number	Notes
Please refer to “Proposed Indicative Landscape Plan” Draw no “116_P_02P” “Rev E” for tree species and location details.				

Tree planting specification

TREE PLANTING

General

All tree planting and maintenance to be carried out in accordance with BS 8545:2014 ‘Trees: from nursery to independence in the landscape; Recommendations.’

Where formative / remedial pruning of shoot or root is required to be carried in accordance with BS 3998: 2010 Tree planting shall be carried out by competent, qualified and experienced horticultural operatives, familiar with tree planting operations and the interpretation of planting plans and specifications.

Carefully remove any pot or root covering, on pot grown and root wrapped root balls carefully tease out roots from the root ball to encourage them to grow away from it. Cleanly prune back all damaged roots and shoots to sound wood with a sharp knife or secateurs. While the planting preparations are being made lay the tree down out of the way, wet exposed roots and cover them to prevent root death by drying.

Planting Stock

All plant materials should comply with the minimum requirements of BS 8545:2014 ‘Trees: from nursery to independence in the landscape; Recommendations.’ BS 3936: Parts 1 (Specifications for Trees and Shrubs) and 4 (Specifications for Forest Trees); also with BS 5236 (Recommendations for cultivation and planting of trees in the advanced nursery stock category) and BS 4043 (Recommendations for transplanting semi-mature trees).

Trees should be supplied packaged in accordance with the recommendations of BS 3936 (Nursery stock). Note: Under no circumstances should roots be allowed to dry out. Always ensure the roots remain covered and moist at all times throughout transportation, storage and planting operations.

Excavation of tree pits

Excavate tree pit as a square with a slightly raised centre, 250mm deeper than the depth of the root system and wide enough to accommodate the roots when fully spread plus a minimum additional width of 250mm from root tips to pit sides all around.

Scarify pit sides and base

Break up the smeared sides and bottom of the tree pit by scarifying to a depth of 150mm mixing in a 50mm layer of the approved organic matter at the same time. Smeared sides prevent roots and water from leaving the pit resulting in stunted growth or death of the tree.

Supply organic matter, sand and fertiliser and mix into excavated topsoil.

Thoroughly break up the excavated topsoil and mix together with 35 grams of Compo Triabon fertiliser, an approved organic matter (35 litres minimum) and horticultural sand in the following proportions; excavated topsoil = 50% : organic matter = 25% : Horticultural Sand = 25%, to make a tree planting soil. The finished tree soil should have a general particle size as small as is reasonably possible. Organic matter to be one of the following; Composted bark, well-rotted horse manure, well-rotted spent mushroom compost, well-rotted leaf mould from broad leaf trees excepting Ash, Poplar and Sycamore leaves, or other well-rotted organic material subject to approval by contract administrator. Organic matter to be free from contaminants including rubbish, stones and non-rotted organic items. Horticultural sand to be washed and clean, other sands such as builder's sand are not acceptable.
Use the tree planting soil to make a well consolidated soil mound in the centre bottom of the tree pit of a height that positions the soil mark on the stem base at the same level as the surrounding ground.

Supply and install tree stake.

Stake to be softwood, peeled chestnut, larch or oak, free from projections, large knots, and edge knots and with a pointed lower end. Length 1800mm - 2000mm, cross section 70mm - 100mm. Install stake vertically by driving into base of pit, top of stake should finish just below the level of the lowest branch.

Plant tree and secure to stake with tree ties

Place the tree into the pit ensuring the roots are fully spread over the mound and trunk is no more than 50mm from and parallel to stake. Allow for adjusting the height of the mound to make the soil mark on the stem level with the ground surface. While keeping the tree in this position backfill the pit with the tree planting soil in layers of 150 - 200mm deep each, gently consolidating each layer before placing the next to ensure there are no voids created in the fill or damage caused to roots. Fix the tree trunk to the stake using approved rubber ties and spacing blocks, one tie and block 30mm below the top of the stake and one halfway down the stake. Secure the ties to the stake using nails to BS 1202: Part 1: 2002 galvanised, 25mm long with 10mm diameter head.
At the appropriate stage supply and install a full-height, steel tree guard all in accordance with manufacturer's recommendations. Dependent upon the branching structure of the tree stock as supplied, a ¾ or ½ tree guard may have to be substituted for the full tree guard.

Water tree in.

Ensure each tree is well watered in with a minimum of 20 litres per tree. Following settlement of the soil make up soil levels with the tree soil made to ensure coverage up to the stem soil mark.

Mulch around base of tree.

Mulch around the base of the planted trees in a 500mm radius from the trunk to a depth of 75mm with medium grade pulverised bark of 5mm - 65mm size, with a maximum wood content of 10% and a maximum fines content of 20%. The mulch should be free from pests, diseases, fungi, weeds and seeds.

Previously Prepared Planting Pit Within Hard standing (may or may not include root cells)

Where a previously prepared planting pit including or not including root cells has been constructed (typically within hard standing). Excavation of tree pits and Scarify pit sides and base will not be required. Mulching should take place underneath tree pit grate if used. Any final construction of the tree pit post planting in terms of finishing should be carried out in accordance with the product manufactures instructions.

Maintenance

Watering visits through the first three years during periods of drought only. Irrigate each tree with of 35 litres of water per visit.
When the surface soil is dry ensure the soil is sufficiently wetted such that run-off is minimised by applying 10 litres first then the remainder of the irrigation 20 – 30 minutes later. Where installed the irrigation pipe should be used.
Visit once per week during the drought period up to a maximum of twenty visits, further visits being authorised as appropriate by the issue of an additional order. Contract administrator must be given 2 days' notice of every watering visit so work can be verified for payment.
In the first three years visit four times during the growing season (April to September) to manually cut down weed growth and check ties and supports for stability making adjustments as necessary for the benefit of the trees.

Defects

Any plants or replacement plants that fail to establish and make normal growth within three years of planting shall be replaced at the contractors own expense.

Tree Guard details

Due to the location of the trees being within a public accessed area the risk of vandalism is high and as such a tree guard should be used of an appropriate standard.

Suggested Tree Guard Specification
Approximate specification Height: 195cms (6ft 5inches) Diameter: 63cms (2ft 1inches) Weight: 50kgs (approx) A classic iron tree guard is perfect for farms, public & private parks, gardens and public open space. With welded steel cage construction, they are strong enough to withstand most vandalism attempts. The upright gap spacing should be no more than 9.4cms. Each tree guard should be split able.

Soils Specification

Soil generally.
Handling and working of soil should only take place in dry conditions and when the soils in question have moisture content below that likely to result in structure damage when handled. This is particularly important in the case of soils with high percentages of clay or silt.
In-situ soils on site should be protected from damage during the construction phase of development by either being securely fenced such that they are kept free of all construction, construction plant, machinery, vehicles, personnel, digging and scraping, service runs, water-logging, changes in level, building materials and all other operations, personnel, structures, tools, storage and materials, for the duration of the construction phase. Or where this is not possible the soil should be protected from damage by use of ground protection as specified in sections 6.2.3.1 - 6.2.3.5 pages 21/22 of BS 5837: 2012.
Where soils have been compacted they are to be de-compacted when soil moisture levels are at an optimum, using physical levering tools either manual or machine powered, pneumatic tools including lance injection and air spade, or by mulching with well-rotted organic matter to encourage the activity of microbial and insect life to bio-turbate the impacted zone over time. The methods used will depend upon the preference of the local planning authority and project arboriculturalist, who will take into account the site specifics in selecting the most appropriate treatment.
Where soils have become contaminated, dig out the affected portion to the full depth of contamination and replace with clean, as-dug soil taken from the same soil formation or from as near the locality as is practical. Lay it to same original topsoil and subsoil depths, consolidating carefully in 200mm layers. Avoid causing any compaction or other damage to the soil structure during emplacement. All contaminated soils and materials to be removed off site to a waste management facility licensed to deal with such waste.
All soils, their composition, depth and handling will be in accordance with both BS 3882: 2015 'Specification for topsoil' and BS 8601: 2013 'Specification for subsoil'. If contradictions arise between the requirements for this project and the provisions of the British Standards, the local authority arborist will decide upon the most appropriate action.

Topsoil.

Imported topsoil for use on site shall be of a sufficiently robust ratio of clay, silt, sand, and organic matter to enable it to withstand a reasonable amount of careful transport and handling without loss of structural integrity. It shall contain a sufficient fine fraction to enable it to have and retain the necessary fertility for planting stock to be able to survive and thrive. In addition its physical properties shall allow for appropriate levels of water ingress and drainage, gaseous exchange and microbial/insect activity.

Imported topsoil quantities shall allow for a consolidated, settled depth of 200mm for grassed areas and 450mm for shrub and other planting beds. Quantities for tree pits shall be determined by the depth and spread of the root systems of the tree stock, the depth of existing in-situ topsoil and the need for additional depth of topsoil where the existing is thin or denatured.

Subsoil.

Imported subsoil should be as detailed in the general section above and should sufficiently robust ratio of clay, silt and sand to enable it to withstand a reasonable amount of careful transport and handling without loss of structural integrity.

Before the emplacement of topsoil, the surfaces of in-situ or imported subsoil shall be sufficiently cultivated and roughened to form a good integrated interface with the topsoil above allowing for free water, gas and root penetration.

Soil structure and the effects of compaction – some informative/advisory notes.

Soil structure

Soils develop a specific structure consisting of small individual aggregations made mainly of clay, silt, sand and organic matter which are separated by air spaces. These aggregations are called *peds* - (the soil particles) and the air spaces between them are called the soil pore space. This is the realm of the roots, insects, fungi and micro-organisms. The ratio of particle to pore space varies with soil type but as a rule of thumb it is 50:50.

Soil compaction

Soil compaction is the destruction of the soil structure through compression of the soil caused by anything from regular pedestrian traffic to heavy vehicular traffic. One pass of a vehicle may compact to a depth of 300mm. Compaction is more easily caused and the effects worse in wet conditions and on clayey soils.

Effects

Compaction may completely eliminate all of the pore space and peds in a soil, making it into a hard, dense, undivided mass; root extension growth will be restricted or physically impossible. Soil insects and micro-organisms beneficial to soil and root health will die-off. Access to air for respiration is cut off, suffocating roots which then die back. Rainfall, unable to penetrate the soil, either washes directly off the surface taking nutrients from the top layer of the soil with it or forms pools making stagnant conditions. Without water infiltration any surviving roots are effectively subject to drought conditions and are unable to take up water and nutrients.

Affected trees and other plants will then go into decline and may die.

Remedial action

The sooner action is taken to remedy a compacted soil the better the chances of minimising the negative effects on trees and plants.

Compressed air injection techniques have been widely used in the past but recent research has shown the fissuring effects of this are less extensive than was originally thought, though it is still a useful technique.

Air spades are a fairly new technique requiring specialist equipment, but are now quite widely available. They are best used in the dormant season as damage to fine roots occurs and its use is best combined with well-rotted organic matter mixed in with the returned soil and as nutrient mulch on the completed soil surface. The results can be very positive to tree health. It is important to use a compressor with a minimum cubic-feet-per-minute of 175. Arborists typically use a 185 CFM air compress and set the PSI at 100 or more. Dry ground is best irrigated some time before beginning work. A low-tech solution is to break up the compaction with a heavy-duty garden fork by pushing in to full depth at close spacings and levering back to lift and fissure the soil, again followed by application of nutrient mulch such as garden compost, horse manure, leaf mould etc. all well-rotted.

If nothing else is done, the soil should be scarified to 50 - 60mm depth followed an application of nutrient mulch with a controlled release nitrogen fertiliser which would be better than nothing. In time the insects, fungi and micro-organisms living in the mulch should move down the soil profile ameliorating the compaction as they go. SCN25/09/09