Arboricultural Method Statement for

Proposed Excavations within New Square Lawn at Lincoln's Inn, London, WC2A 3TL

Prepared for:

The Honourable Society of Lincoln's Inn

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1.0 Introduction

1.1 This Arboricultural Method Statement has been prepared to address the excavation of a trench to the northern end of the western boundary of New Square Lawn, Lincoln's Inn, London, WC2A 3TL as part of works to install 3 electric vehicle charging points.

1.2 This Arboricultural Method Statement has been prepared to ensure that the approved works are undertaken with minimal risk of damage to the root system and rooting environment of the mature London plane tree growing to the northern boundary of New Square Lawn.

2.0 Statutory Protection

2.1 The site is located in the Bloomsbury Conservation Area. Due to the Conservation Area status all the trees with a stem diameter in excess of 75mm are subject to protection under the Conservation Area legislation. Notwithstanding specific exemptions in general terms, a Conservation Area (CA) prevents the cutting down, uprooting, topping, lopping, wilful damage to or wilful destruction of trees without submitting 6 weeks prior notification to London Borough of Camden.

2.2 If on receipt of the treeworks notification the LPA wish to stop works from proceeding then a Tree Preservation Order (TPO) must be served, if 6 weeks pass from submission of the CA tree works notification then providing a TPO has not been served the treeworks can be undertaken subject to agreement from the tree owners.

2.3 No vegetation is to be removed or pruned to facilitate the proposed works. Conservation Area and Tree Preservation Order protection of trees covers wilful damage to both the above and below ground parts of the tree. Damage to the root system of a protected tree is a potential offence under the Conservation Area and Tree Preservation Order legislation.

2.4 The Conservation Area status does not preclude the presence of Tree Preservation Orders which may also serve to protect the trees.

3.0 Arboricultural Background Information

3.1 The two main possibilities for injury to trees during and following the construction works are from direct and indirect damage.

- Direct Damage can be defined as injury resulting from physical contact including contact with machinery or fire, and excavation of the root area.
- Indirect Damage can be defined as injury resulting from activities that take place near the tree such as level changes, compaction of the soil, or contamination by chemical spillage in proximity to the root plate.

3.2 The protection of the above ground parts of trees is relatively straightforward this can be achieved by controlling site activities and by erecting barriers to define the working area and restrict access.

3.3 The protection of the unseen root system and rooting environment is less straightforward as root growth is not predictable. Tree roots are opportunistic they grow most prolifically in areas where conditions are favourable and will be deflected by natural features and man-made structures, when hostile conditions are encountered root growth will be limited.

3.4 It is generally agreed that the majority of tree roots, even for a mature tree are found in the top 90cm of the soil and these roots are vulnerable to sudden changes in the rooting environment. These roots absorb the moisture and nutrients needed for growth and contrary to popular belief mature trees in the UK do not have a deep taproot that obtains moisture from great depth.

3.5 An ideal soil for tree root growth is about 50% pore space (in urban areas this is often significantly reduced), these pores, the spaces between soil particles, are filled with water and air. Construction activity can compact the soil and can dramatically reduce the amount of pore space. This not only inhibits root growth and penetration but also decreases oxygen levels within the soil and reduces the available soil moisture that is essential to the growth and function of the existing roots.

3.6 For retained trees it is essential that the structurally important roots will remain undisturbed, these important larger roots radiate outwards from the trunk, they are characterised by being relatively few in number and tapering rapidly from the base of the tree. Even for mature trees they are only 2-3m in length, at this length they are likely to be 2-5cm in diameter and they have lost their rigidity and physical strength. (See Tree Root Systems AAIS 1995).

3.7 To assist with the protection of trees during planning and construction works the British Standards Institute published 'BS5837:2012 Trees in relation to design, demolition and construction – Recommendations'. This document provides information on the protection of trees during the development process. It includes a calculator for Root Protection Areas (RPA) which aims to ensure a sufficient volume of soil and proportion of the root system is protected to maintain the health and vigour and ensure the longevity of the trees.

3.8 The Root Protection Area is not related to the canopy spread of the tree; in simple terms it is an area for open grown trees the Root Protection Area is normally shown as a circle which has a radius that is calculated as a multiple (x12) of the trunk diameter. For trees with a trunk diameter >1250mm the Root Protection Area is capped with a radius of 15m with a total area of 707m^2.

3.9 The RPA does not show the expected extent of root growth but indicates an area of ground considered necessary to support the tree both at the time of surveying but into the future. Post development works it is thought that the tree will adapt to the changes in its rooting environment providing it has retained a sufficient proportion of its root system and a sufficient area/volume of soil area is available for the tree.

3.10 Damage to trees (including their root systems) may impact on their health, stability and or vitality sometimes becoming apparent many years after works have been completed. Damage to above and below ground parts of trees may result in the partial or complete structural failure of the tree and increases the risk of personal injury. Appropriate tree protection measures and appropriately specified, supervised and implemented works can significantly reduce the risk of damage to the retained trees. It is therefore essential that before works are undertaken this report is read by all parties and the guidelines are followed by all contractors.

4.0 Arboricultural Site Supervision

4.1 To ensure that the trenching works are undertaken with minimal disturbance to the retained tree stock, an Arboricultural Clerk of Works (ACoW) as defined in BS5837 (2012) will be appointed to undertake any inspections of the site. Subject to instruction from the Honourable Society of Lincolns Inn Peter Wilkins of Ruskins Tree Consultancy will fulfil the role of ACoW.

4.2 The Arboricultural Clerk of Works role shall be to:

a. To assess the specification and methodology of the proposed works and ensure these works have the minimum impact on the retained trees.

b. Brief the workers on the necessity to protect the retained trees.

c. To mark out the footpath route and mark out areas for different footpath specifications

d. To ensure the agreed methodology is followed by direct on-site supervision.

e. To prune roots using clean sharp pruning tools during manual excavation (if necessary).

f. To provide direction on tree protection issues as they arise.

g. To monitor and photograph the works undertaken.

4.3 All site operatives are briefed on the Tree Protection Issues as part of the site induction process to ensure that all site working staff are aware of the potential for tree damage.

4.4 Arboricultural monitoring site visits will be undertaken at regular intervals during the footpath construction process. A site inspection sheet including photographs will be prepared after each visit.

4.7 To deal with any incidents or queries involving trees, the Arboricultural Clerk of Works will provide a contact number that will be answered during all the hours of works on site. The London Borough of Camden tree officer will be informed of any incidents involving trees.

5.0 Proposed Works

5.1 The proposed works are for the excavation of a trench 750mm deep to the northern end of the western boundary of New Square Lawn, Lincoln's Inn, London, WC2A 3TL as part of works to install 3 electric vehicle charging points

5.2 The route of the trench is located within the Root Protection Area of the London plane growing to the northern edge of New Square Lawn.

5.3 All Works will be undertaken with al machinery and vehicles located within the existing parking bay

5.4 All site personnel will be properly briefed before any works commence. Arboricultural supervision as outlined in Section 5 is essential to minimise the risk of misunderstanding and misinterpretation.

5.5 Ongoing work will be inspected regularly, with photographic records and on completion, the work must be signed off by the Arboricultural Clerk of Works to confirm compliance of this method Statement by the contractor.

5.6 The working area will be fenced-off using suitable fencing Heras or pedestrian barriers this fencing will prevent public access into the work zone but also serve to prevent any direct damage to the trees.

5.7 A spill kit will be available throughout the excavation process as a precaution to assist with any contaminant spillages.

5.8 Trenching Works

5.9 The trenching works will be undertaken under direct Arboricultural Supervision. For these sections of trench:

- All excavation within the lawn area that falls within the Root Protection Area of retained trees shall be overseen by the Arboricultural Clerk of Works.
- Ground protection should be installed within the lawn area to allow pedestrian access along the eastern side of the trench line. This can be plyboard, Tuff track mats or similar.
- All machinery and vehicles will remain within the existing parking bays.
- The turf can be removed manually or using a mechanical turf cutter. Excavation should commence using hand tools and an airspade. Appropriate tools for hand-digging may include a pick, mattock, shovel, spade, trowel, fork.
- Where possible clumps of small roots, including fibrous roots, should be retained. When digging by hand, a fork should be used to loosen the soil and help locate any substantial roots.
- If deemed necessary by the Arboricultural Clerk of Works to avoid damage to roots an airspade may be required to excavate sections of the trench.
- All roots in excess of 15mm diameter shall be retained, taking care not to damage the bark and wood of any retained roots. The roots shall be
- Roots up to 15mm diameter shall be neatly pruned with sharp secateurs by the ACoW.
- >15mm diameter tree roots will be retained across the trench and cabling installed beneath or above them.
- The exposed retained roots should be wrapped in damp hessian to protect the roots and prevent desiccation.

- Cutting roots >15mm diameter will only be undertaken in exceptional situations where retention will prevent the installation of services. Root severance of roots >15mm diameter may only be undertaken by the Arboricultural Clerk of Works using either handsaw or secateurs.
- The cabling / ducting will be installed and the trench backfilled at the earliest opportunity avoiding leaving open trenches overnight.
- A spill kit will be available throughout the excavation process as a precaution to assist with any contaminant spillages.

5.10 Airspade Excavation Guidelines

- The airspade will be used by a suitably experienced and trained operator under direct supervision by the Arboricultural Clerk of Works or the Arboretum Arborist.
- The compressor for the airspade will be located within the existing car parking bays.
- The compressor will be fitted with airline filters to prevent contamination of the ground around root systems.
- A spill kit will be available throughout the excavation process
- The working area will be fenced off to prevent any debris flying beyond the working area.
- The airspade will be used in short bursts to loosed soil around roots. This soil will then be manually moved out of the excavation trench.
- >15mm diameter tree roots will be retained across the trench and cabling installed beneath or above them.
- Wherever possible tree roots will be retained and cabling installed beneath them. This includes any areas of dense fibrous roots that may be exposed during the excavation process. Any roots that are exposed will be immediately wrapped or covered with damp hessian to prevent drying out.
- Root severance of roots >15mm diameter may only be undertaken by the Arboricultural Clerk of Works using either handsaw or secateurs.
- The cabling / ducting will be installed and the trench backfilled at the earliest opportunity avoiding leaving open trenches overnight.

6.0 Conclusion

6.1 The protection of existing trees during the proposed works can be achieved by following the guidance outlined in this report.

6.2 Direct supervision by the Arboricultural Clerk of Works will ensure the trenching works are undertaken to the highest standards whilst avoiding direct and indirect damage to the tree resource.