

LIZARD

Landscape Design and Ecology

MR AND MRS PAUL

34 WAKEFIELD WAY

ALDWICK, BOGNOR REGIS, WEST SUSSEX

Arboricultural Impact Assessment and Method Statement

Prepared by	TT
Checked by	KM
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1.0 INTRODUCTION

- 1.1 Lizard Landscape Design and Ecology has been commissioned by Mr and Mrs Paul to undertake a detailed tree survey and arboricultural impact assessment for the proposed development at 34 Wakefield Way, Aldwick, Bognor Regis, West Sussex.
- 1.2 The visit to the site was undertaken on 30th October 2019 to appraise the existing trees and vegetation within and directly adjacent to the site area.
- 1.3 The Arboricultural Impact Assessment and Method Statement provides evaluation of the direct and indirect effects of the proposed design intent on the existing vegetation and trees and recommends mitigation where necessary. The report has been produced in accordance with the provisions of BS 5837; 2012; 'Trees in Relation to Design, Demolition and Construction - Recommendations'.
- 1.4 The Arboricultural Impact Assessment and Method Statement report for the development proposals at no. 34 Wakefield Way, Aldwick, Bognor Regis, West Sussex has been prepared by Tomasz J Tandecki (BA (Hons) LA DipLA Landscape Architect; Lizard Landscape Design and Ecology) and reviewed by Keith Miller (BA (Hons) MALA CMLI; Technical Director; Lizard Landscape Design and Ecology).
- 1.5 This Arboricultural Impact Assessment and Method Statement should be read in conjunction with the associated arboricultural documentation including LLD1845-ARB-DWG-001 Tree Constraints Plan, LLD1845-ARB-DWG-002 – Tree Retention and Protection Plan and LLD1845-ARB-SCH-001 – Existing Tree Schedule and Schedule of Tree Works.

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2.0 EXISTING SITE INFORMATION

The Site

- 2.1 The site is located north-east of the settlement of Aldwick (*Grid Ref: SZ 91 19 96*) some 5.0m above Ordnance datum. The site is currently a residential garden plot situated directly adjacent to the end of terrace property of no. 34 Wakefield Way.
- 2.2 The site is accessible from Wakefield Way via the existing pedestrian footpath to the northwest and through the garage block to the south.
- 2.3 The local soil type comprises Loamy soils with naturally high groundwater with low fertility (*Cranfield Soil and AgriFood Institute (CSAI), supported by Defra*).
- 2.4 The external area of the site comprises a single semi-mature Ash tree, Cypress hedging, shrub planting, and areas of hard-standing and lawn, garden shed. The site is enclosed by an existing 1.8m brick built wall to the east, garages to the south with a section of closeboard fencing to the west and hedgerow to the north.

Existing Site Vegetation

- 2.5 The site vegetation is composed of a single semi-mature Ash tree to the north east of the garden plot located adjacent to an existing brick built wall, to the east of which extends a short line of Cypress hedging. The area is otherwise laid to amenity lawn.
- 2.6 The adjacent vegetation comprises a mature Oak tree located within the native mixed-species shrub area to the east; a small area of ornamental shrub planting is situated adjacent to the western boundary and the frontage of the house (no. 34).

3.0 DEVELOPMENT PROPOSAL

- 3.1 The development proposals include the construction a new house adjoining the end of terrace dwelling of no. 34 Wakefield Way. The proposed property development would include associated paved footpaths and patio set within a garden area.

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4.0 ARBORICULTURAL IMPACT ASSESSMENT

Effects of Development Proposals on Existing Vegetation

- 4.1 Trees are a material consideration within the planning and development process. Development proposals should therefore seek to retain existing trees wherever possible. Development proposals may potentially affect existing vegetation within a site and measures for the protection and retention of existing trees should therefore be developed as part of the proposals.
- 4.2 The development proposals would involve the following site operations that potentially impact upon the existing trees within or directly associated with the site:
- *Removal of existing vegetation not for retention;*
 - *Installation of tree protective measures: Tree Protective Barrier and Operation Zone During Construction;*
 - *Contractor movements; site access and operations;*
 - *Storage and compound;*
 - *Installation of construction elements; groundwork / general site operations;*
 - *Construction in proximity to trees: 'Pile and Beam' Construction and 'No Dig' Construction;*
 - *Installation of services and underground apparatus;*
 - *Removal of protective measures.*

Removal of Existing Vegetation and Impact of Loss of Existing Vegetation

- 4.3 The development proposals would require removal of: *H02 – Hedge - Cupressus x leylandii* to implement the proposed footpath to the north of the proposed property. The hedge requiring removal is of poor quality and condition and is categorised as unsuitable for long term retention (*Category U*).
- 4.4 The coniferous hedge affords limited amenity, arboricultural or ecological value however the proposals should seek to mitigate the loss with replacement planting of suitable species of appropriate stock sizes. The proposed planting should include native and / or mixed species flowering shrubs in order to mitigate the removal and also enhance the species diversity and habitat potential within the site boundaries.

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Tree Retention and Protection

- 4.5 The existing vegetation encompasses 1 no. tree (*T01 Fraxinus excelsior*; Cat C) located within the site boundary to the north east of the plot and 1 no. tree (*T05 Quercus robur*; Cat C) situated within the native mixed species shrub belt located to the land adjacent to the western boundary wall.
- 4.6 The retained trees and measures for their protection have been indicated on the drawing; *LLD1845-ARB-DWG-002 – Tree Retention and Protection Plan*. The drawing sets out specific protection measures including the location of Tree Protection Fencing relating to the structural protection of canopies and the associated root environment of existing trees; Ground Protection measures are also specified which relate directly to the protection of the root environment where barriers are unable or unsuitable to provide protection.
- 4.7 Following removal of the existing coniferous hedge (*H02 Cupressus x leylandii*) Tree Protection Fencing shall be implemented to the canopy and root protection area (RPA) of Ash tree T01 (*Fraxinus excelsior*; Cat C) within the site.
- 4.8 The retention of the existing brick wall to the western boundary shall provide further physical protection through the development construction phase to Ash tree T01 and also to off-site vegetation including T05 Oak (*Quercus robur*; Cat C) and the belt of SH04 Mixed species shrubs.

Impacts through the Construction Stage

Disturbance to Root Protection Areas (RPAs)

- 4.9 In accordance with principles of *BS 5837; 2012; 'Trees in Relation to Design, Demolition and Construction - Recommendations'*, existing ground levels should be retained within the RPA to avoid damage to tree roots. Intrusion into soil within the RPA is generally not acceptable. However, limited manual excavation within the RPA might be acceptable, only as specified, undertaken carefully, using hand-held tools, and preferably by compressed air soil displacement.

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Pile and Beam Construction

- 4.10 The proposed building footprint encroaches a limited extent of the RPA of existing off-site tree: *T05 - Quercus robur*. The construction of a traditional strip foundation would potentially sever existing roots affecting the condition and longevity of the tree. It is recommended that the foundation be implemented with a 'Pile and Beam' construction method where the proposals impinge the root protection area of the tree.
- 4.11 Due to limited access and confined nature of the site, access to implement the proposed 'Pile and Beam' construction shall be made over suitably protected ground via the footpath to the north and existing garage to the south. The piling plant machinery shall therefore be of appropriate size to access the site (restricted access micro-piler). The piling rig shall also be of an operational scale to be accommodated within the overhead canopy clearance of the tree.
- 4.12 All operations associated with the piling shall be made upon appropriate ground protection within the root protection area to avoid compaction of the root environment, in accordance with BS5837:2012 '*Trees in relation to design, demolition and construction - recommendations*'.

No-Dig Construction

- 4.13 The proposals include the setting out and construction of hard landscape paved areas; paths and patios. Whilst to a limited extent the hard paving would be constructed within the RPA of existing trees to be retained: *T01 – Fraxinus excelsior* and *T05 - Quercus robur*.
- 4.14 Traditional paving requires excavation of unmade ground to accommodate the implementation of a sub-base construction upon which the hard paved surface treatment is installed, potentially damaging underlying roots of existing trees to be retained. The paving shall therefore be implemented with a permeable No-Dig Construction method in accordance with BS5837:2012 '*Trees in relation to design, demolition and construction - recommendations*'.
- 4.15 The above impacts upon existing trees and vegetation shall be mitigated in accordance with BS5837:2012 '*Trees in relation to design, demolition and construction - recommendations*' through the pre-construction, construction, and post construction phases with reference to the following methods.

5.0 ARBORICULTURAL METHOD STATEMENT

Protection and Retention of Existing Trees and Habitats

5.1 The Contractor shall exercise due care when performing operations beneath the canopy of existing mature trees and vegetation designated for protection and avoid at all times damage to the roots, trunk and branches. The Contractor shall train all members of the construction workforce operating within the proximity of valued habitats and make such persons aware that there shall not be, without having sought prior notification, the following operations undertaken within the protected areas:

- *Dumping of spoil or rubbish, excavation or disturbance of topsoil, parking of vehicles or plant, storing of materials or placing of temporary accommodation within an area which is the larger of the branch spread of the tree or an area with a radius of half the tree's height, measured from the trunk, and within the specified tree Root Protection Areas;*
- *Roots exceeding 25mm in diameter must not be severed. If unintentionally severed; notice shall be given, and specialist arboricultural advice sought;*
- *Changes to the level of the ground within the specified tree Root Protection Areas;*
- *Vegetation clearance to site boundaries should take place outside the bird nesting season (nesting season: March-September inclusive) or alternatively under a watching brief from a suitability qualified ecologist.*

Tree Surgery

5.2 Any significant defects found in the trees during the course of the scheduled work shall be reported to the *Arboricultural Consultant*. All scheduled and arising tree work shall be undertaken by an approved and qualified tree surgeon in accordance with *BS 3998: 2010 'Tree Work: Recommendations'*. Care should be taken to avoid damage to neighbouring trees to be retained. Branches in confined spaces shall be removed and taken down in sections. All arisings shall be transported and disposed of away from site to the Contractor's tip.

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Removal of Existing Vegetation

- 5.3 All existing vegetation designated for removal are to be removed in accordance with the *LLD1845-ARB-DWG-002 -Tree Retention and Protection*. All tree work and removal shall be carried out in accordance with *BS 5837:2012*. Prior to the removal of vegetation, the required work and their positions shall be agreed on site with the *Arboricultural Consultant*. Vegetation shall be removed prior to the erection of the Tree Protective Fencing. Care should be taken during the Vegetation Clearance process to avoid any damage to any trees which are designated to be retained.
- 5.4 The removal of shrub or scrub material within the Root Protection Area of any tree to be retained shall employ a Manual Removal method; the use of hand tools shall be used in order to maintain the ground surface of the Root Protection Area and reduce any damage to existing tree roots within the protected root zone. Adjacent trees shall not be utilised as anchors or levers to facilitate the removal of adjacent vegetation.
- 5.5 Vegetation clearance should take place outside the bird nesting season (*nesting season: March-September inclusive*) or alternatively under a watching brief from a suitability qualified ecologist.

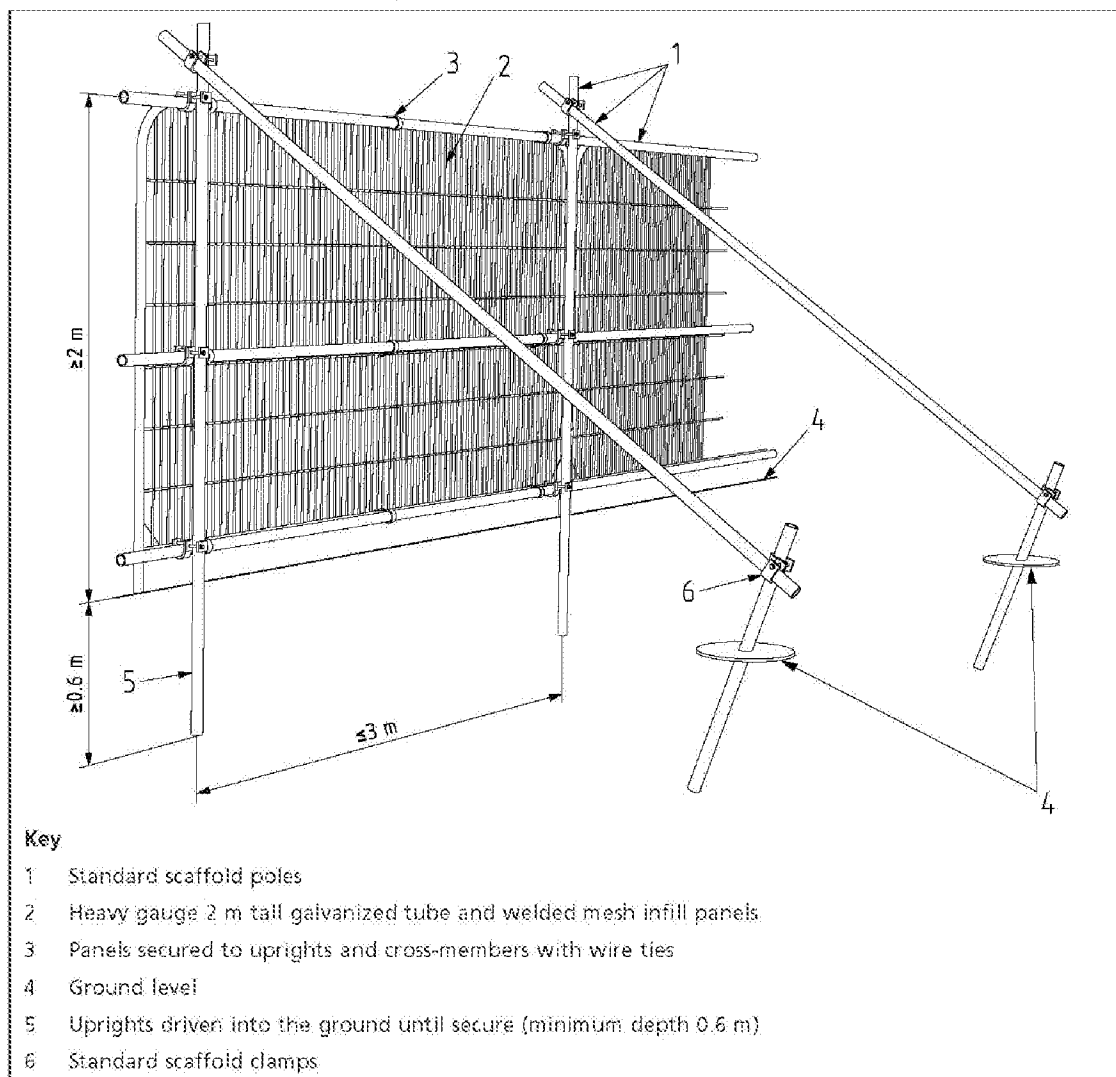
Tree Protection Barriers

- 5.6 All trees to be retained on site shall be protected with barriers erected around the area of mature vegetation in accordance with *BS 5837; 2012; 'Trees in Relation to Design, Demolition and Construction - Recommendations'*. The barrier shall be installed, protected and maintained during the main works by the Contractor who shall be responsible for protecting any area beneath the canopy of the existing trees and within the specified tree Root Protection Areas.
- 5.7 The installed protective barrier shall be 2.0 metres minimum height 'Heras' Welded Wire Mesh Fencing secured to a scaffolding framework, set into the existing ground, and positioned to the outside edge of the existing tree Root Protection Area. Where existing ground conditions do not allow for the above method, the Welded Wire Mesh Fencing Panels may be mounted on concrete or rubber feet, supported on the inner side with stabiliser struts fixed on a block tray or secured with ground pins; and positioned as specified.

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- 5.8 The barrier should be strained, and fixed to fences, walls, knee rails where possible to provide a complete protected area (Refer to Figure 2 and Figure 3 below; © British Standards Institute 2012). All tree protection to be in accordance with BS 5837: 2012; 'Trees in Relation to Design, Demolition and Construction - Recommendations' set out as specified within drawings LLD1845-ARB-DWG-002 – Tree Retention and Protection Plan.

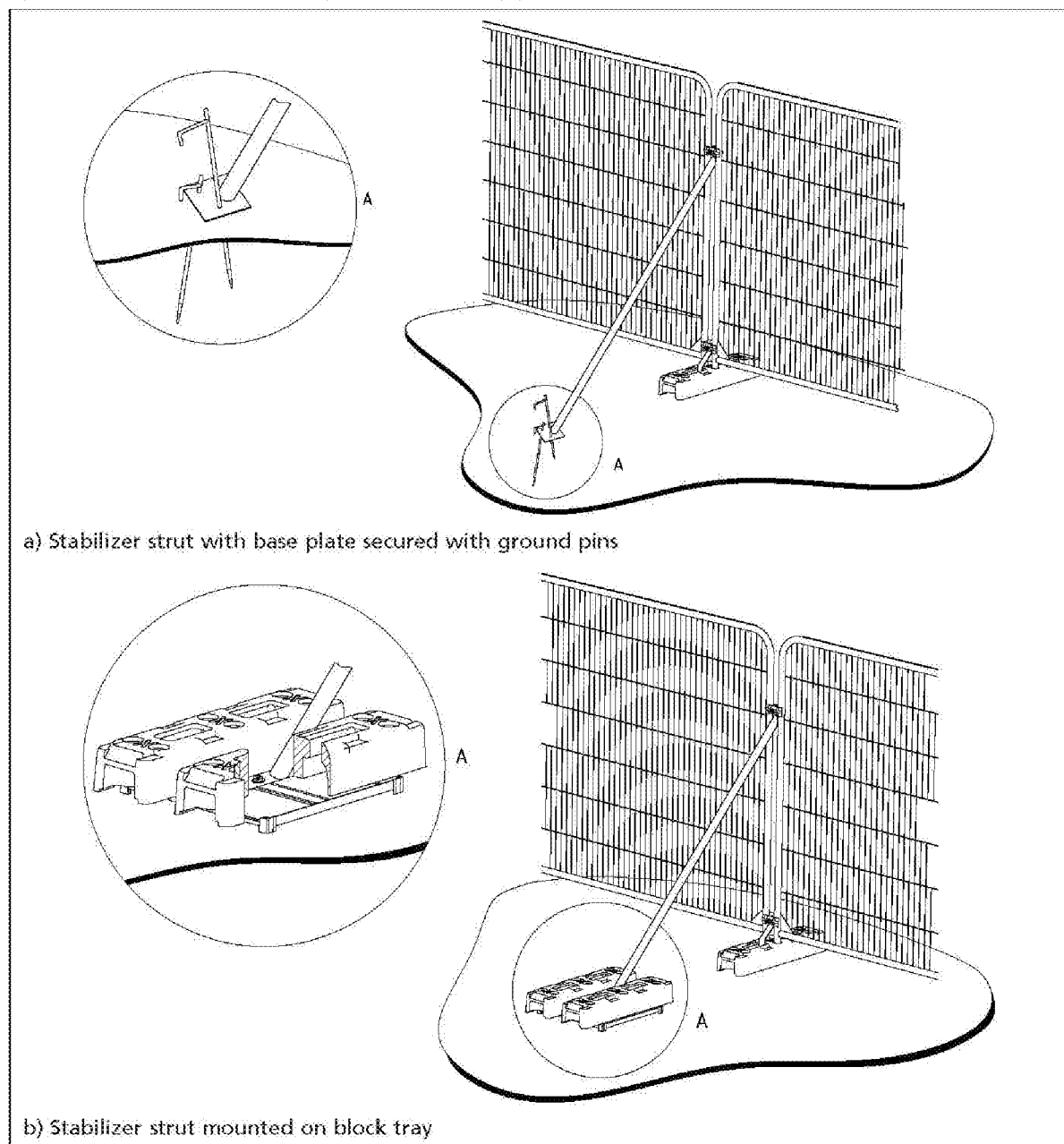
Figure 2 Default specification for protective barrier



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Figure 3 Examples of above-ground stabilizing systems



- 5.9 Day-glo ribbons shall be maintained during the main works by the Main Contractor attached to the top of the barrier to ensure that the fencing is clearly visible during the works. The tree protection barrier shall display all-weather notices starting '*Construction Exclusion Zone – NO ACCESS*'.
- 5.10 All such barriers shall be maintained for the full contract period. All necessary excavations, earthworks and cultivation beneath the canopy spread of any existing tree; shrub or hedge shall be undertaken by hand. *No commencement of construction operations should occur prior to the inspection of the installed tree and ground protection by the Arboricultural Consultant.* Repositioning of the protective barrier during the course of the contract as the contract works progress shall need prior agreement with the *Arboricultural Consultant*.
- 5.11 Within the protected areas the following activities must not take place;
- *No vehicles are to be used in the fenced off areas;*
 - *No materials are to be stockpiled or stored;*
 - *No chemicals are to be stored;*
 - *No excavation or increase in the soil level shall occur;*
 - *No fires shall be lit on site.*

Ground Protection Measures

- 5.12 Where construction operations require activity within the exposed unmade ground of existing tree Root Protection Areas, temporary ground protection measures should be implemented allowing for limited access and operations during the construction period.
- 5.13 A '*Ground Protection Zone*' shall allow for the passage of construction vehicles and operational machinery and shall be implemented without intrusion or change of existing ground levels within the defined Root Protection Areas of existing trees. The ground protection measures should be implemented prior to the main construction works and should remain in place for the duration of the construction period.
- 5.14 Ground protection must be fit for the purpose of supporting the level of traffic / plant machinery within Root Protection Areas without being distorted or causing compaction of underlying soil. The appropriate solutions include:

- *For pedestrian movements or the erection of scaffolding within the RPA – single layer of scaffold boards either on top of a driven scaffold frame, to form a suspended walkway, or on top of a compression-resistant layer, e.g. 100 mm depth of woodchip laid onto a geotextile;*
- *For pedestrian-operated plant (up to a gross weight of 2 t) – proprietary, inter-linked ground protection boards or panels laid on top of a compression-resistant layer, e.g. 150 mm depth of woodchip laid onto a geotextile membrane;*
- *For vehicular access / plant machinery (exceeding a gross weight of 2 t) – an alternative system subject to engineer's specification appropriate for expected loads, designed in consultation with the project Arboricultural Consultant.*

5.15 The surface material should be contained with edging type requiring no excavation. Where proposed levels of any new access routes do not ascertain minimum required depth for installation of traditional kerbs, other solutions should be sought:

- Timber edging boards and spikes would be considered appropriate for pathways;
- Timber sleepers should be used as a kerb edge restraint for vehicular areas and anchored with non-intrusive pinning (such as road pins) in order to maintain the existing levels within the specified Root Protection Areas.

Manual Excavation

5.16 Where the development proposals include the implementation of underground services such as services, cables, pipe work, installation of fences; a '*Manual Excavation Method*' must be implemented using hand held tools to minimise the impact on existing trees. The excavation should be executed with due care and attention not to disturb exposed unmade ground and any existing tree roots present within it.

5.17 Roots over 25mm diameter or those occurring in clumps must not be severed without Arboricultural advice. Tree roots below such size should be cut cleanly using specialised hand tools only and to the minimum extent to allow provision. All exposed roots should be immediately wrapped in dry Hessian to avoid drying. On completion of the excavation and at the earliest opportunity the wrapping should be removed, and the roots surrounded and protected with a loose granular fill (*clean washed sharp sand or topsoil free of contaminants or matter injurious to rooting systems*) prior to backfilling the excavation to the desired levels.

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New Structures in Proximity to Trees - 'Pile and Beam' Construction

- 5.18 The use of traditional strip footings can result in damage to roots and subsequent failure of trees and should therefore be avoided. For the purpose of retention of tree T05 - *Quercus robur*, root damage shall be minimised by implementation of pile and beam construction techniques. Site-specific and specialist advice regarding foundation design should be sought from the Project Engineer. The following aspects of the design should be accounted for:

Piles

- The optimal location shall be determined through site investigation, to avoid damage to roots important for the stability of the tree, by means of hand tools or compressed air soil displacement (air lance), to a minimum depth of 600mm.
- The smallest practical pile rig should be used to facilitate works below the canopy spread and within the RPA of existing Oak tree T05 while operating over protected ground (*'Ground Protection Zone - Operation Zone During Construction'*).
- The smallest practical pile diameter should be used to minimize the risk of striking a major root.
- To protect the soil and adjacent roots from the potentially toxic effects of uncured concrete, the use of sleeved bored pile or screw pile should be considered.

Beams

- laid at or above ground level and cantilevered as necessary to avoid tree roots identified by site investigation.

Services in Proximity to Existing Trees

- 5.19 The location and direction of new services should be designed to allow for services to be routed away from the RPAs of existing trees. Existing service runs should always be used wherever possible.
- 5.20 Where the proposed routing of services impinges upon the tree RPA of any existing tree to be retained; the routing should be undertaken as a minimum standard in accordance with *NJUG Volume 4, issue 2: 'Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees'*.

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- 5.21 A 'Manual Excavation Method' to be followed to carefully hand dug and route the apparatus most directly to and from the exterior of the RPA radius.
- 5.22 Services are to be routed together wherever possible to create the minimum impact upon the roots of the existing trees to be retained. Trench excavation across the tree Root Protection Area radius beside an existing tree should be avoided, whereby tree roots would become severed. Where services are to cross the edge of an existing RPA, they should be routed via a hand dug ducting sleeve, avoiding damage to roots.

Tree Protection Zone - No Dig Construction Method

- 5.23 A 'No Dig Construction' method shall allow for the implementation of pedestrian access footpaths and patio without intrusion or change of existing ground levels within the Root Protection Areas of existing trees.
- 5.24 A permeable surface treatment shall be laid in accordance with *BS 5837; 2012; 'Trees in Relation to Design, Demolition and Construction - Recommendations'* over the existing ground which will allow water to flow through to the tree roots and allow for nutrient and gaseous exchange.
- 5.25 The surface material shall be contained with timber edging boards and spikes for pathways in order to maintain the existing levels within the Tree Root Protection areas.
- 5.26 Proposed hard landscape paving within the RPA of trees *T01 – Fraxinus excelsior* and *T05 - Quercus robur* shall be created with a Permeable Surface Treatment to allow water flow and natural nutrient and gaseous exchange.

Contractor Movements - Access and Operations - Storage Compound Areas

- 5.27 The Contractor Site Compound shall be located outside of any prescribed tree Root Protection Area and shall be permitted for the storage and securement of materials only within a temporary compound.
- 5.28 The compound area shall be located so as to not incur damage or injury to the root systems or canopy of any existing trees or vegetation within or adjacent to the site, in accordance with *BS 5837:2012 – 'Trees in Relation to Design, Demolition and Construction – Recommendations'*. All site operations associated with the usage of the compound area shall be undertaken with due care and attention so as to negate damage of the surrounding environment.

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- 5.29 All site operations and construction procedures for the duration of the construction period shall seek to protect the existing site vegetation and root protection areas in accordance with *BS 5837:2012*.

6.0 Arboricultural Method Statement – Notes; General

- 6.1 The principles and recommendations of *BS 5837; 2012; 'Trees in Relation to Design, Demolition and Construction - Recommendations'* shall be adhered to at all times in order to prevent damage or undue stress upon the existing trees, soils and roots potentially impacted upon by the development proposals.
- 6.2 Destruction of soil structures through soil compaction, excavation or contamination shall be avoided at all times within the Root Protection Areas. Physical damage to existing trees to be retained; roots, stems, branches shall be prevented wherever possible.
- 6.3 All tree protection measures are to be carried out, on site and within the development proposals, in accordance with the relevant approved drawings accompanying this Method Statement.
- 6.4 Arboricultural Supervision shall be required at the following stages of work;
- Pre-commencement meeting;
 - Installation of Tree Protection measures;
 - Method Statement briefing for site staff;
 - Removal of Tree Protection measures.
- 6.5 The method statements relating to the tree protection measures are set out as outlined above; following the above measures of habitat protection, impact to existing trees and vegetation is considered mitigated.

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