

LIZARD

Landscape Design and Ecology

ACUBA DEVELOPMENTS

**276 ALDWICK ROAD
BOGNOR REGIS**

LLD1612-ARB-REP-001

Arboricultural Impact Assessment and Method Statement

Prepared by	GS
Checked by	JJ
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Planning Issue

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1.0 INTRODUCTION

- 1.1 Lizard Landscape Design and Ecology has been commissioned to undertake a dendrological survey and produce arboricultural documentation for the proposed development of land at 276 Aldwick Road, Bognor Regis.
- 1.2 The Arboricultural Impact Assessment and Method Statement report provides evaluation of the direct and indirect effects of the proposed design and where necessary recommends mitigation.
- 1.3 The Arboricultural Impact Assessment and Method Statement report for the development of land at 276 Aldwick Road, Bognor Regis has been prepared by George Sayer (*BSc(Hons) PgDip TechArborA*); Project Ecologist and reviewed by Joe Jackson (*Landscape Architect BA (Hons) LA DipLA CMLI*); Principal at Lizard Landscape Design and Ecology, Worthing
- 1.4 This written Arboricultural Impact Assessment and Method Statement should be read in conjunction with the associated tree survey documentation, including *LLD1612-ARB-DWG-001 – Tree Constraints Plan*; *LLD1612-ARB-SCH-001 – Existing Tree Schedule*; and *LLD1612-ARB-DWG-002 – Tree Retention and Protection Plan*.

2.0 EXISTING SITE INFORMATION

The Site

- 2.1 The site consists of a section of the rear garden of 276 Aldwick Road. The site area is approximately 513.0 m², and is currently formed of grassland lawn, patches of shrubs and scrub with a number of scattered trees. The site is bounded by the remainder of the garden to the south, and closeboard fences to all other aspects. The site is bounded by Aldwick Road to the south; east and north, and an area of open space and private road to the west.

Existing Site Vegetation

- 2.2 The bulk of the vegetation consists of overgrown garden trees. These are mainly conifers and are of low-moderate value. Areas of shrub and scrub of low value line the boundaries. Small poor-quality fruit trees are also present within the garden. The trees are generally not well-maintained, but due to the prominence of the location are visible features within the locality. Outside of the site are a number of low-moderate native trees and shrubs.

2.3 Four Trees are protected by individual *Tree Preservation Orders* as follows:

- **T14 - *Cupressus macrocarpa*; TPO/AW/26/10 T-1662**
- **T15 - *Cupressus x leylandii*; TPO/AW/26/10 T-1661**
- **T21 - *Fagus sylvatica* 'Purpurea'; TPO/AW/26/10 T-1660**
- **T22 - *Magnolia sp.*; TPO/AW/26/10 T-1659**

2.4 A further *Tree Preservation Order* covers the entire site and is designated as *Bognor No. 2*. This is a long-standing order which covers much of the Aldwick area, protecting the local landscape character of tree-lined residential streets and lanes.

3.0 DEVELOPMENT PROPOSAL

3.1 The scheme proposals are for the construction of a new detached dwelling on the garden area. The dwelling would be accompanied by an area of car parking and access hard surface. The access would be constructed using an existing hammerhead from the road to the west.

4.0 ARBORICULTURAL IMPACT ASSESSMENT

Effects of Development Proposals on Existing Vegetation

4.1 The proposals have been designed to minimise the impact upon vegetation within the site and avoid removal of existing trees unless absolutely necessary. All trees and shrubs requiring removal are considered unviable for retention due to their current condition; their removal would not remove screening from the boundary or alter the nature of the site. The proposals have been designed to make efficient use of the space created by the removal of poor-condition trees. The trees remaining within the site would be in relatively close proximity to the new dwelling. The pressure to continue pruning of these trees would be increased; the trees, however, are reaching maturity and as such will be of limited lifespan regardless of the proposals.

- 4.2 The highway access uses existing infrastructure and does not require additional removal of vegetation. The highway access and parking area encroach into the RPA of a low-value spruce tree and low-value Lawson cypress tree; in the absence of mitigation these works would cause root damage and soil compaction, and the decline and eventual failure of these trees. Construction traffic may also strike and damage overhanging branches. Ground protection measures, and no-dig construction would ensure that the trees are not damaged. Crown reduction and lifting would minimise the risk of harm to trees during construction.
- 4.3 The proposed dwelling would encroach into the RPA of several low-value trees, and a moderate-value tree. In the absence of mitigation, the trenching required for the dwelling foundations would significantly damage tree roots, likely causing the decline and failure of the trees. Construction vehicles and scaffolds may also strike and damage overhanging branches. The dwelling shall be constructed using a no-dig pile-and-beam construction, to minimise the potential damage to tree roots. Ground protection measures would enable access around the construction area without causing harm to tree roots and compaction of soil. Crown reductions to the trees would minimise the risk of harm to trees during construction.
- 4.4 The development proposals would involve the following site operations that could impact upon the existing trees:
- ***Contractor movements; site access and operations; storage and compound;***
 - ***Removal of Existing Vegetation not for Retention;***
 - ***Construction of New Dwelling; Construction of Hard Surfaces;***
 - ***Ground Work / General Site Operations;***
 - ***Implementation of Soft Landscape Planting and Fencing;***
 - ***Removal of protective measures.***

Tree Retention, Protection and Removal

- 4.5 In total, 5 no. trees are 2 no. areas of shrubs are proposed for removal. This vegetation is in poor condition and is proposed for removal regardless of the proposals. The proposals have been designed to utilise the space released by the removal of these trees.

4.6 The following trees and shrubs are proposed for removal due to their condition:

- **SH05 – *Sambucus nigra*; Category U;**
- **T07 – *Cupressus x leylandii*; Category U;**
- **T10 – *Malus*; Category U;**
- **T11 – *Malus*; Category U;**
- **T12 – *Malus*; Category U;**
- **T13 – *Betula pendula*; Category U;**
- **SH19 – Mixed Species Trees and Shrubs; Category U.**

4.7 The following tree surgery works are proposed to enable the proposed development and site construction access:

- **T04 – *Picea sp.*; Category C; Crown-lift to 4.0 m height;**
- **T06 – *Chamaecyparis lawsoniana*; Category C; Crown-reduce by 1.3 m to southern aspect;**
- **T09 – *Chamaecyparis lawsoniana*; Category C; Crown-reduce by 1.1 m to south-eastern aspect;**
- **T14 – *Cupressus macrocarpa*; Category B; Crown-reduce by 1.0 m to western aspect.**

4.8 All trees; hedges; and shrubs proposed for retention shall be protected through the installation of Tree Protection Barriers. Where possible these shall protect the entire RPAs of trees. Where this is not possible for access reasons, the areas of soft ground within RPAs shall be protected within operation zones with appropriate ground protection measures.

4.9 The demolition and construction access shall utilise the existing hammerhead to access the site from the west; the site access could be constructed first to provide a working platform from which to construct the dwelling.

Impact of Loss of Existing Trees

4.10 The loss of vegetation on the site is minimal, with no boundary vegetation removal and no moderate or high-value higher-value tree proposed for removal. All trees proposed for removal require removal due to their poor condition regardless of the proposals. The impact upon visual amenity and ecology is considered to be 'negligible'. No trees covered by individual TPO are proposed to be removed. The trees proposed for removal do not provide screening or visual amenity outside of the site, and therefore their removal would not be detrimental to the area TPO.

Tree Loss Mitigation Measures

- 4.11 The tree protection measures proposed would mitigate the impact upon tree roots of low- and moderate-value trees. Five low-value trees, and two areas of low-value scrub would require removal through the proposals, although these trees are of poor condition and are recommended for removal due to their poor condition regardless of the proposals. New native hedge and tree planting is proposed along the boundaries of the garden. This planting would significantly increase the diversity of native planting and enhance the ecological value of the site, in contrast to the low value and condition of the existing tree species. These measures are considered to mitigate more than adequately for the loss of vegetation, and would result in a net gain in arboricultural; amenity; and ecological terms over the medium-long term.

5.0 ARBORICULTURAL METHOD STATEMENT

Protection and Retention of Existing Habitats – Scattered Trees

- 5.1 The Contractor shall exercise extreme 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 Root Protection Areas;***
- ***Roots exceeding 25 mm 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 Root Protection Areas;***
- ***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.***

Contractor Movements. Site access and operations. Storage and Compound Areas

- 5.2 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. The compound shall be fenced (*2.0m minimum height Heras Weld Mesh Fencing*) and shall allow designated contractor access without obstruction for construction vehicles entering the site.
- 5.3 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.
- 5.4 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*.

Removal of Existing Vegetation

- 5.5 All existing trees to be designated for removal are to be removed in accordance with the *LLD1612-ARB-DWG-002 – Tree Retention and Protection Plan*. All tree work and removal shall be carried out in accordance with *BS 5837:2012*. Trees designated for removal and felling shall be clearly marked on site with white paint. Prior to the removal and felling of trees, the required work and tree positions shall be agreed on site with the Landscape Architect / Arboricultural Consultant. Trees shall be felled prior to the erection of the Tree Protective Fencing. Care should be taken during the tree removal process to avoid any damage to any trees which are designated to be retained.
- 5.6 Stumps shall be removed and cut away so that the top of the stump shall be at least 450 mm below the final topsoil level in order that the site can be reinstated in accordance with the existing site levels. Stumps are to be treated with an approved herbicide to be agreed with the Landscape Architect. Where the depth is greater than 450 mm the areas shall be backfilled with topsoil to the required level.

- 5.7 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.
- 5.8 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

- 5.9 Tree surgery works are proposed and detailed within the *LLD1612-ARB-SCH-001 – Existing Tree Schedule*. Any significant defects found in the trees during the course of the scheduled work shall be reported to the Landscape Architect / 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

Tree and Vegetation Management

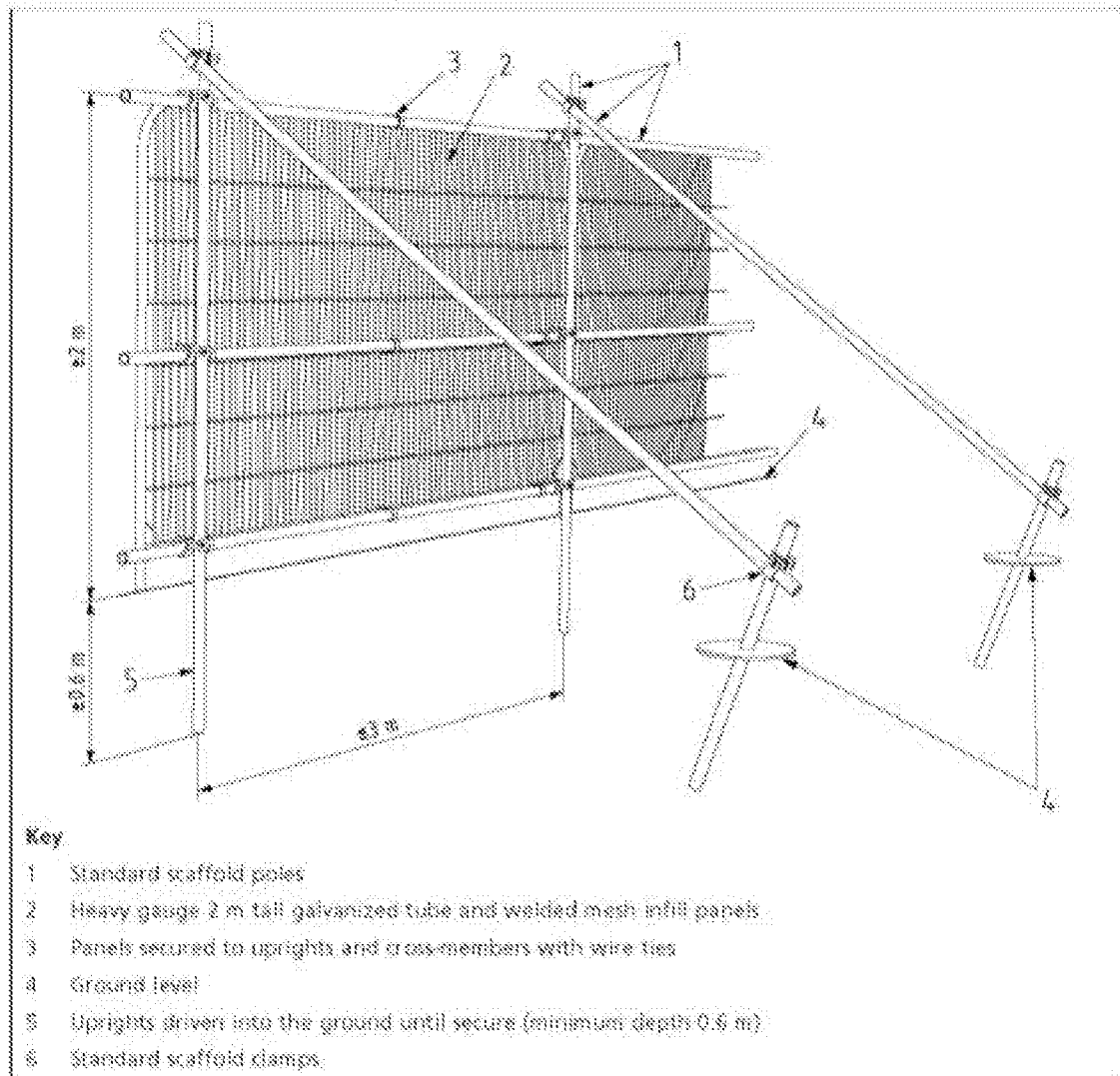
- 5.10 For Tree and Vegetation Retention and Removal Proposals refer to the accompanying *LLD1612-ARB-SCH-001 - Existing Tree Schedule*.

Protection and Retention of Existing Vegetation

- 5.11 The Contractor shall exercise extreme care when performing operations beneath the canopy of existing mature trees and vegetation and within the specified Root Protection Areas designated for protection and avoid at all times damage to the roots, trunk and branches of existing trees proposed to be retained.
- 5.12 All excavations, cultivation and grading beneath the canopy of existing mature trees and within the specified Root Protection Areas of the existing trees and vegetation shall be carried out using hand tools, taking care not to damage or disturb any existing tree roots.

- 5.13 All trees to be retained on site shall be protected with Tree Protective Barriers, consisting of fencing erected around the area of mature vegetation in accordance with *BS 5837; 2012 'Trees in Relation to Design, Demolition and Construction - Recommendations'*. The fencing 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 Root Protection Areas.
- 5.14 The installed protective barriers 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 stabilizer struts fixed on a block tray or secured with ground pins; and positioned as specified. The fencing 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 drawing *LLD1612-ARB-DWG-002 – Tree Retention and Protection Plan*.

Figure 2 Default specification for protective barrier

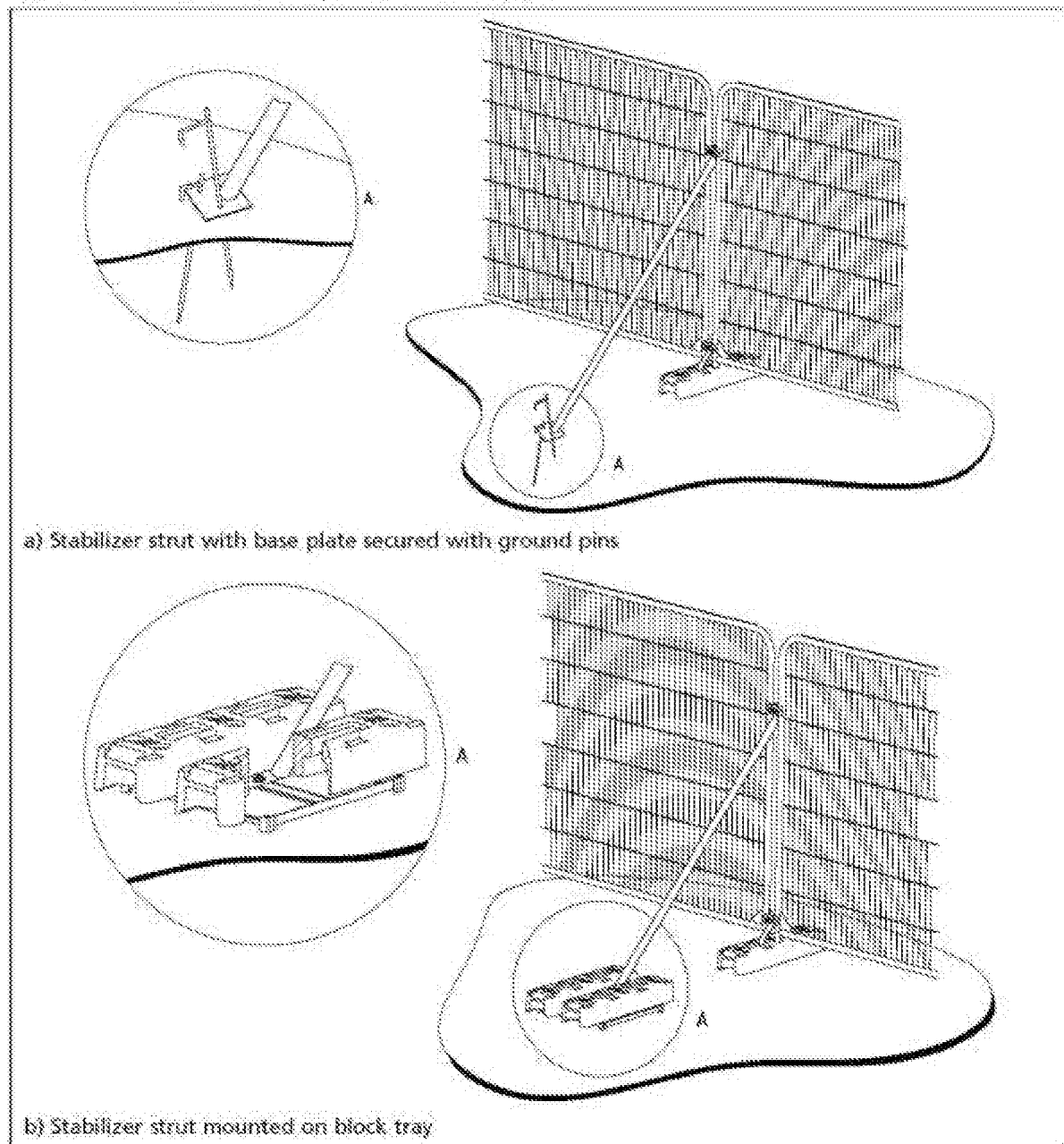


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Figure 3 Examples of above-ground stabilizing systems



- 5.15 Day-glo ribbons shall be maintained during the main works by the Main Contractor attached to the top of the fencing to ensure that the fencing is clearly visible during the works. The tree protection fencing shall display all-weather notices starting '*Construction Exclusion Zone – NO ACCESS*'.
- 5.16 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 Landscape Architect / Arboricultural Consultant.* Repositioning of the protective barriers during the course of the contract as the contract works progress shall need prior agreement with the Landscape Architect / Arboricultural Consultant.
- 5.17 Within the protected areas the following activities must not take place;
- ***No vehicles are to be used in the fenced off areas;***
 - ***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.***
- 5.18 Existing service runs should always be used wherever possible. Where the proposed routing of services impinges upon the root protection area of any existing tree to be retained, the routing shall be undertaken in accordance with a manual excavation method; to be carefully hand dug and routed most directly to and from the exterior of the tree root protection area radius. Services are to be trenched and routed together wherever possible to create the minimum impact upon the tree roots of the existing trees to be retained. Trench excavation across the tree root protection area radius beside an existing tree shall be avoided, whereby tree roots will become severed. Where services are to cross the edge of an existing tree root protection area, they should be routed through existing tree roots, via a hand dug ducting sleeve, avoiding damage to existing tree roots within the root protection zone.
- 5.19 Phasing of the construction works should be considered to minimise the requirement for ground protection and avoid vehicular movements over unmade ground.

5.20 Arboricultural supervision is recommended at the following stages of work;

- ***Installation / checking of tree protection measures;***
- ***Method statement briefing for site staff;***
- ***Checking of ground protection measures prior to first use;***
- ***Supervision of manual excavation;***
- ***Specification and Installation of 'No-Dig' Construction;***
- ***Removal of tree protection measures.***

Ground Protection Measures – Operation Zone During Construction

5.21 While construction work is commencing on the proposed highway access and pedestrian footpath within retained tree RPAs, the existing ground levels within the RPAs of trees to be retained are to be protected.

- ***For pedestrian access only, protection should consist of a single thickness of scaffold boards placed either on top of a driven scaffold frame, so as to form a suspended walkway, or on top of a compression-resistant layer (100 mm depth of woodchip), laid onto a geotextile membrane;***
- ***For pedestrian-operated plant up to a gross weight of 2 t, proprietary, inter-linked ground protection boards placed on top of a compression-resistant layer (150 mm depth of woodchip), laid onto a geotextile membrane should be used;***
- ***For wheeled or tracked construction traffic exceeding 2 t gross weight, an alternative system (e.g. proprietary systems or pre-cast reinforced concrete slabs) to an engineering specification designed in conjunction with arboricultural advice, to accommodate the likely loading to which it will be subjected.***

5.22 The ground protection should be in place for the duration of the construction period in accordance with *BS 5837:2012 - 'Trees in Relation to Design, Demolition and Construction - Recommendations'*. When construction work is completed the ground protection can be removed.

Tree Protection Measures – ‘No-Dig’ Construction

- 5.23 A 'no-dig' Construction method shall be employed during the construction of the highway access and parking area within tree RPAs, in order to avoid damage to existing tree roots and localised compaction of subsoil within the tree root protection areas of trees proposed for retention.
- 5.24 Existing surfacing materials shall be left undisturbed and retained during the construction period for as long as possible in order to protect the tree root protection area of the existing trees to be retained; existing soft ground layers shall be removed carefully by hand within the existing tree root protection areas. A geo-textile filter membrane (*TDP 115 Non-woven Geotextile Fabric or equal and approved.*) and ground stabilising geo-mesh (*'TDP SN20 GeoGrid' or equal and approved*), shall be rolled out over the existing ground level and evenly covered with a No Fines - Open Graded Aggregate (*in accordance with Highways Agency Specification; Clause 805 (Type 3) or equal and approved.*)
- 5.25 The granular fill for the highway access shall be incorporated within a 3 dimensional GeoCell (*Terram Geocell 25/15 or equal and approved*) and shall ensure a minimum supportive construction depth of 150 mm for light vehicle traffic.
- 5.26 A geo-textile filter membrane is to be laid over the granular fill construction (*Geotextile filter membrane to be TDP 115 Non-woven Geotextile Fabric or equal and approved.*) A permeable system and construction method shall be installed over the prepared sub-base layers. A bedding layer of crushed aggregate (*to BS EN13242; range size; 4 - 14 mm*) is to be laid level and compacted above the Geotextile filter membrane to a depth of 50 mm. A permeable top layer, which could consist of (*for example*) gravel within a retention grid (*Bodpave 85 or equal and approved*); resin-bound gravel; permeable block paving or permeable asphalt shall then be installed above the bedding layer to create the terrace areas.
- 5.27 Any kerbs or edge restraints shall also be of 'no-dig' construction within RPAs; these shall be formed of pinned timber sleepers; or a standard kerb construction installed on top of the cellular layer.

Tree Protection Measures – Pile-and-Beam Construction

- 5.28 The construction of foundations within the RPA of retained trees shall be carried out using small diameter piles, with a concrete beam installed upon the piles to minimise disturbance to root zone of mature trees. The beam and weight of the building shall rest upon the piles rather than the ground, avoiding compaction. Where possible an air space shall be allowed beneath the building, with rainwater directed to tree RPAs from the roof.
- 5.29 Location and density of piles shall be subject to site / ground investigation; however, the intention shall be to avoid piles nearer to trees. The construction details shall be to the engineer's specification. All piling shall be carried out from an appropriate piling mat or hard surface.



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