

LIZARD

Landscape Design and Ecology

MR R DANIELLS

SUNNYMEAD FARM, YAPTON, WEST SUSSEX

LLD2122-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 known as Sunnymead Farm, Yapton, West Sussex.
- 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 Sunnymead Farm, Yapton has been prepared by George Sayer (BSc(Hons) PgDip ArborA MCIEEM); Senior Ecologist and has been 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 LLD2122-ARB-DWG-001 - Tree Constraints Plan; LLD2122-ARB-SCH-001 - Existing Tree Schedule; LLD2122-ARB-DWG-002 - Tree Removal Plan and LLD2122-ARB-DWG-003 - Tree Retention and Protection Plan.

2.0 EXISTING SITE INFORMATION

The Site

- 2.1 The site is roughly rectangular and situated off North End Road, to the immediate south of the railway line, to the north of the village of Yapton. The site comprises a detached bungalow, with an accompanying dilapidated store building; polytunnel / greenhouse; swimming pool and access drive. The dwelling is surrounded by gardens. The site contained a number of caravans and other debris. The site is approximately 0.26 hectares (ha) in size and is approximately 5.0metres (m) above sea level.
- 2.2 The site is bounded on all sides by a variety of fencing styles; mixed hedges; and trees. The western boundary adjoins North End Road; the northern boundary adjoins the railway line; the southern boundary adjoins an adjacent track and private dwelling; the eastern boundary adjoins an area of grassland, possibly used for grazing horses. Soils on site are described as freely draining slightly acid loamy soils.

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Existing Site Vegetation

- 2.3 The vegetation on-site consists of a number of overgrown ornamental trees, with dense shrubs and sections of hedge to the site boundaries. To the north and east are a number of moderate-value trees, mostly sycamores. A large moderate-value walnut tree is present to the north-east of the site. These moderate-value trees are the most significant landscape features, providing visual amenity and screening. The majority of the other vegetation consists of overgrown garden vegetation of low-moderate quality and little landscape or arboricultural value.

3.0 DEVELOPMENT PROPOSAL

- 3.1 It is understood that the development proposals include the demolition of the existing buildings and structures on the site, and the construction of 5 no. dwellings, with associated access and parking hard landscape areas, and soft landscape gardens. The proposals would require the removal of the majority of the vegetation on the site, although several large trees and much of the boundary vegetation would be retained and protected. The proposals have been amended following comments in a previous application, to enable better retention of the trees on-site. This has reduced the need for specialist construction and ground protection.

4.0 ARBORICULTURAL IMPACT ASSESSMENT

Effects of Development Proposals on Existing Vegetation

- 4.1 The impacts upon vegetation within the site would be moderate, due to the density of existing overgrown vegetation on the site. Where possible the proposals have been designed to minimise the impact upon existing trees, in particular the large sycamore and walnut trees and the sections of hedge which provide good features and screening from the adjacent railway.
- 4.2 A small area of parking spaces encroaches upon the moderate-value walnut tree. In the absence of mitigation, the works are likely to cause a decline in quality and value of the tree with the potential failure of the tree in the future. To prevent this, a small area of no dig construction surrounded by operation zones will be utilised. No dig construction will be utilised within areas of the trees RPA and the area of proposed hard surface to avoid harm to existing roots and allow the continued exchange of air and water to the soil beneath. A ground protection zone will be implemented to enable construction access over the root protection areas.

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- 4.3 Where the existing building requires demolition within RPAs of trees proposed for retention, demolition without mitigation might result in harm to tree roots beneath or near the foundations, and damage to overhanging canopies. Crown-reduction of 2no. tree canopies, and an appropriate demolition method shall be specified to minimise disturbance and risk of damage to trees.
- 4.4 At the highway access, a small number of low-value trees would require removal. Several other low value trees are proposed for retention through the use of no-dig construction. A small soakaway and area of parking results in a minor encroachment of RPAs; these are proposed to be manually excavated for the first 600mm to ensure no significant roots are present.
- 4.5 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;
 - ¿ Demolition of Existing Buildings;
 - ¿ Construction of New Dwellings; Construction of Hard Surfaces;
 - ¿ Ground Work / General Site Operations; Installation of Services;
 - ¿ Implementation of Soft Landscape Planting and Fencing.

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Tree Retention, Protection and Removal

4.6 A number of low-quality trees, and sections of shrub and hedge would require removal to accommodate the proposals. In addition, three moderate-value trees would require removal. The following vegetation would require removal:

- ¿ TG01 - *Corylus avellana*, *Malus* sp., *Pyrus* sp.; Category C;
- ¿ SH02 - *Prunus laurocerasus*; Category C;
- ¿ H03 - *Ligustrum ovalifolium*; Category C;
- ¿ TG04 - *Cupressus x Leylandii*; *Picea* sp.; Category C; Removal of 3 of 4 trees ~
- ¿ T05 - *Taxus baccata*; Category C;
- ¿ TG06 - *Corylus avellana*; Category C;
- ¿ T07 - *Chamaecyparis lawsoniana*; Category C;
- ¿ T09 - *Cupressus macrocarpa*; Category U;
- ¿ TG10 - *Cupressus* sp.; Category B;
- ¿ TG16 - *Acer pseudoplatanus*; Category C; Removal of 1 of 5 trees;
- ¿ T17 - *Sambucus nigra*; Category C;
- ¿ T19 - *Prunus* sp.; Category C;
- ¿ T20 - *Sambucus nigra*; Category C;
- ¿ H21 - *Ligustrum ovalifolium*;
- ¿ TG22 - *Malus* sp.; *Prunus* sp.; Category C;
- ¿ T23 - *Picea* sp.; Category C;
- ¿ T 24 - *Pyrus* sp.; Category C;
- ¿ T 25 - *Salix* sp.; Category C;
- ¿ T 26 - *Cupressus* sp.; Category B;
- ¿ SH27 - Understorey Shrubs & Trees; Category C; Partial removal retaining boundary vegetation;
- ¿ T 28 - *Juglans regia*; Category C.

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- 4.7 The following trees would require tree surgery works as specified below:
- ¿ T14 - Malus sp.; Category C; Crown-reduction of 2.1 m to the south;
 - ¿ TG18 - Acer pseudoplatanus; Category B; Crown-reduction of 2.7 m to the west;
 - ¿ SH27 - Understorey Shrubs & Trees; Category C; Pruning of retained boundary shrubs into neater hedge.
- 4.8 Where construction access is required over unmade ground within RPAs, the ground shall be protected within operation zones. The level of protection required shall be proportionate to the weight of traffic proposed to cross the ground. No-dig construction shall be utilised to protect the roots of the large moderate-value walnut tree.
- 4.9 Where the existing building requires demolition within RPAs of trees proposed for retention, crown-reduction of canopies and an appropriate demolition method shall be utilised to minimise disturbance and risk of damage to trees. The method shall involve working from the south and east to avoid RPAs, and using a 'top-down, pull-back' method to pull material away from trees onto existing hard surfaces. Vehicles shall operate from existing hard surfaces, ground outside of RPAs or on appropriate ground protection measures only, with no tracking over unmade ground within RPAs. Tree barriers shall be installed to allow demolition, then moved into the site to protect as much of the RPAs as possible once demolition is complete.
- 4.10 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.
- 4.11 Any construction within tree RPAs shall be undertaken using an appropriate 'no-dig' construction method suitable to the surface being constructed. Any fences shall be manually installed within RPAs.
- 4.12 The demolition and construction access shall utilize the existing access to the west of the site along North End Road.

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Impact of Loss of Existing Trees

- 4.13 The loss of vegetation on the site is a high proportion of the vegetation present; this is unavoidable due to the scale of the site and density of vegetation. The vegetation proposed for removal consists of overgrown garden trees and shrubs of little overall value. The site will become more open for the near future; the site is heavily overgrown at present and as such this is considered a necessity, with the site currently requiring constant management to prevent scrub encroachment. Boundary vegetation, including the majority of the moderate-value trees, are to be retained and protected, and formed into a neater hedge to avoid any loss of visual amenity. Non-native trees such as the large cypresses will be removed and replaced with ecologically-valuable species. Replacement tree and hedge planting to the boundaries shall re-provide screening and wildlife habitat over the longer-term.
- 4.14 Overall given the scale and nature of the site and vegetation present, the overall impact of the loss of vegetation is considered to be low in the longer term. Ecological functionality and visual amenity of the site is to be preserved through retention and reinforcement of boundary vegetation, resulting in no significant impacts beyond the site itself.

Tree Loss Mitigation Measures

- 4.15 The tree and ground protection measures proposed would mitigate the impact upon tree roots of moderate-value trees and hedges. New boundary vegetation, hedge and shrub planting is proposed within the proposals, and a small number of existing small trees and shrubs could be re-sited rather than removed completely. The existing trees proposed for removal are largely of poor form and mostly coniferous, creating dense shade on the site. The new planting would be of native deciduous trees suited to the location. These measures are considered to mitigate adequately for the loss of vegetation, and would result in no net loss in arboricultural and amenity terms over the medium-long term, with better management of boundary vegetation likely resulting in a net gain in visual amenity to the surroundings.



Summary of Impacts

- 4.16 The proposals by their nature require the removal of a moderately high proportion of the site vegetation. Most of this is of low quality although several trees are of moderate quality. The proposals have been designed to retain and improve boundary vegetation and larger, moderate quality trees, and allow enough space for the future growth of both roots and canopies. Trees and vegetation lost will be compensation for through replacement planting of native species. The proposed residential development can be supported in the context of the existing mature vegetation proposed to be retained and protected within the development scheme on the basis that the tree protection and mitigation measures outlined in this report are put in place within the development scheme and the construction phase.

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5.0 ARBORICULTURAL METHOD STATEMENT

Protection and Retention of Existing Habitats - Scattered Trees / Shrubs
Hedgerows

- 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.

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- 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 LLD2122-ARB-DWG-002 'Tree Removal 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.

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Tree Surgery

- 5.9 Tree surgery works are proposed and detailed within the LLD2122-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 LLD2122-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.

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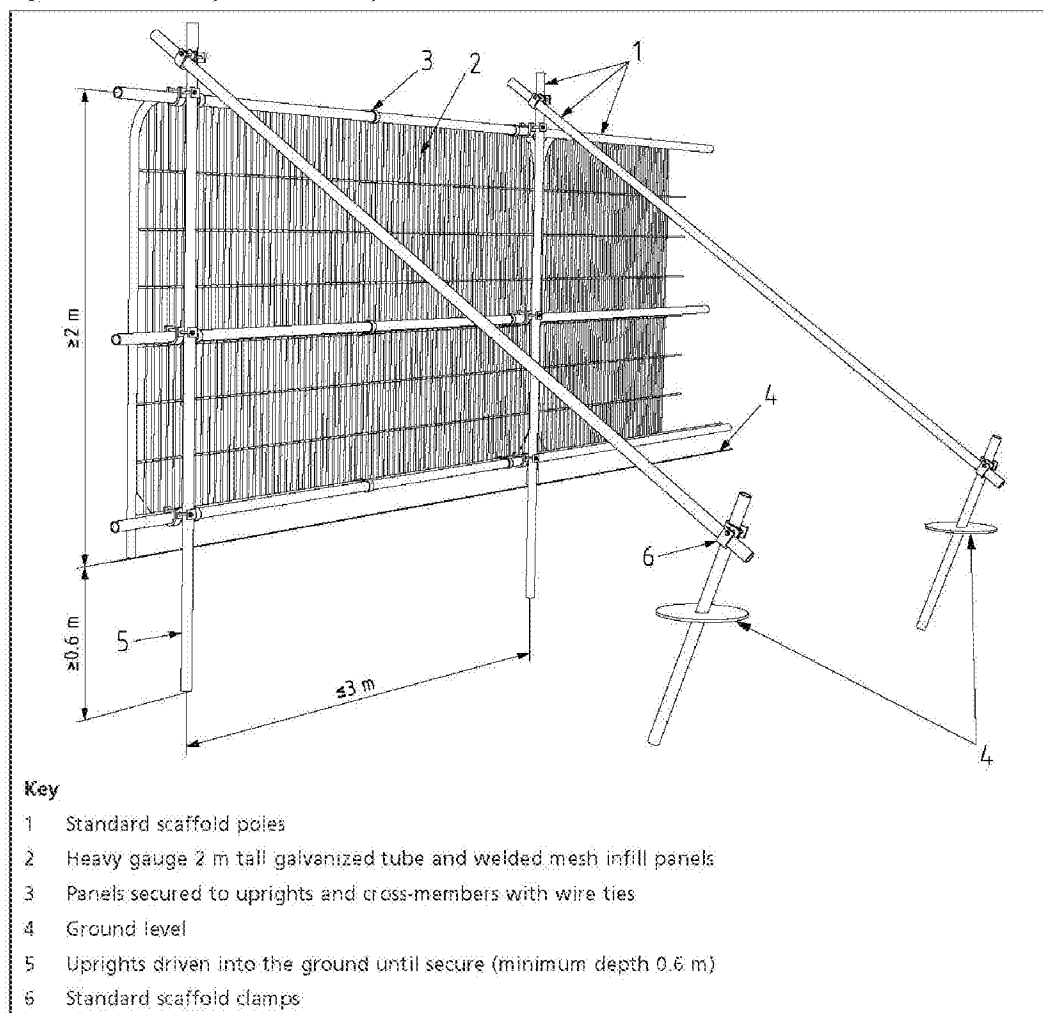
- 5.14 The installed protective barriers shall be 2.0 metres minimum height 'Heras' Welded Wire Mesh Fencing secured to a scaffolding framework, set into the existing ground, and positioned to the outside edge of the existing Tree Root Protection Area. Where existing ground conditions do not allow for 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 LLD2122-ARB-DWG-003 - Tree Retention and Protection Plan.

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Figure 2 Default specification for protective barrier

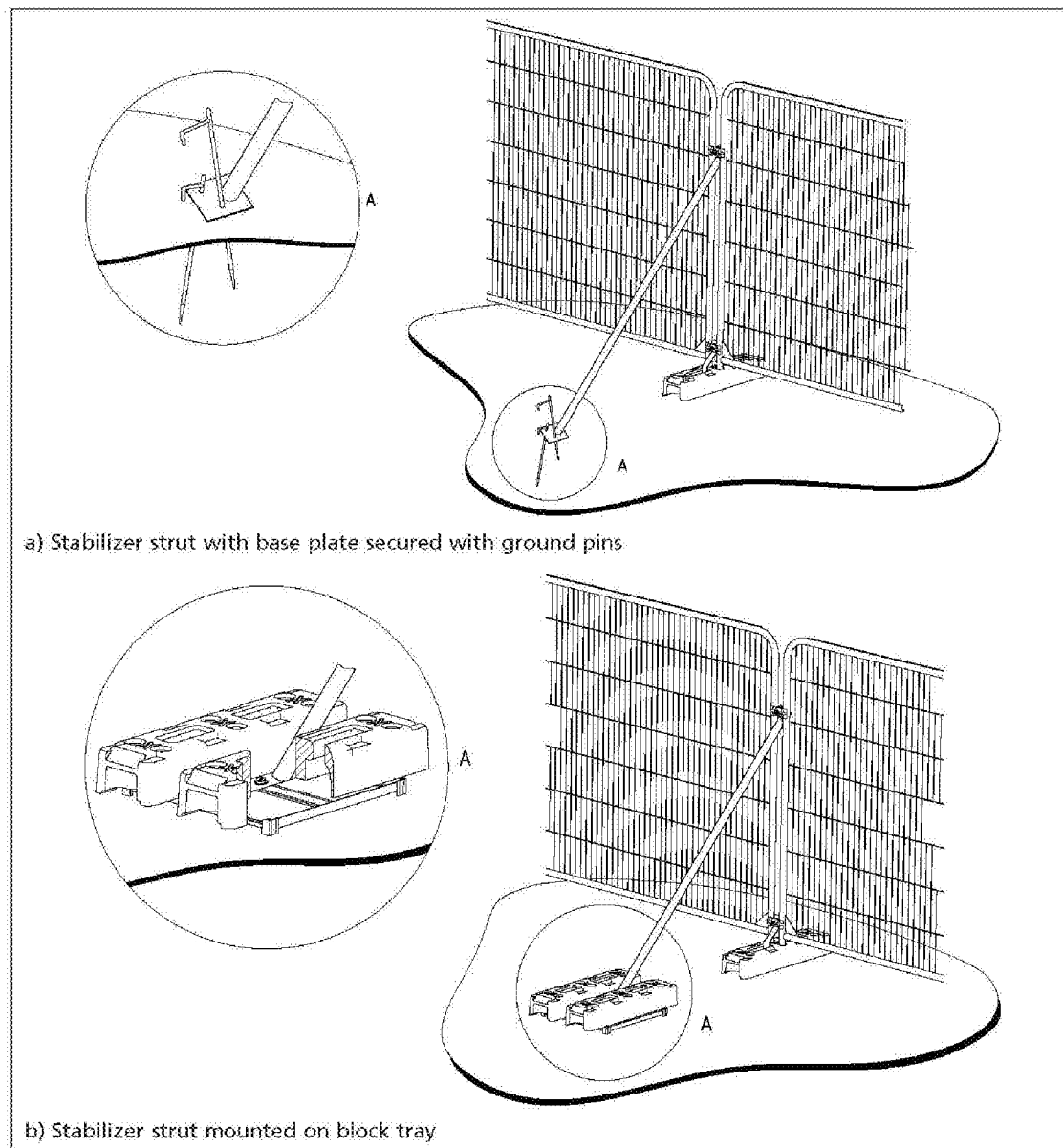


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Figure 3 Examples of above-ground stabilizing systems



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- 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 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.

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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 and tree protective barriers prior to first use;
- ¿ Supervision of manual removal of foundations and hard surfaces within tree RPAs;
- ¿ Specification and installation of :No-Dig ~ construction;
- ¿ Removal of tree protection measures.

Ground Protection Measures ~ Operation Zone During Construction

5.21 While demolition and construction work is commencing adjacent 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 (such as 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.

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- 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 While construction work is commencing on the proposed driveway and parking area within retained tree RPAs, the existing ground levels within the RPAs of trees to be retained are to be protected.
- 5.24 A 'no-dig' Construction method shall be employed, 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.
- 5.25 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 is to be laid over the ground level (Geotextile filter membrane to be TDP 115 Non-woven Geotextile Fabric or equal and approved).
- 5.26 A 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.) The granular fill shall be incorporated within a 3 dimensional GeoCell (Terram Geocell 22/20 or equal and approved) and shall ensure a minimum supportive construction depth of 200 mm for both frequent vehicle traffic, and construction traffic if required.
- 5.27 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) resin-bound gravel; permeable asphalt or permeable block paving shall then be installed above the bedding layer to create the terrace areas.

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- 5.28 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.
- 5.29 The no-dig construction of the proposed parking area could be constructed prior to construction of the dwellings, such that this can then be used as construction access with the final wearing layer added once construction of the dwellings is complete.

Tree Protection Measures - Manual Excavation and Demolition of Existing Structures

- 5.30 All excavation-related operations within proximity of nearby trees (including demolition of existing structures) shall be executed with due care and attention using hand-held tools only, in order not to disturb exposed ground and any existing tree roots present within it. Roots over 25mm diameter or those occurring in clumps must not be severed without Arboricultural advice. Roots below such size may 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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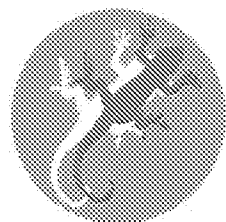
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- 5.31 When buildings are being demolished adjacent to existing trees, a 'top down, pull back' method should be employed whereby demolition is undertaken inwards within the building footprint, in accordance with BS 5837:2012 'Trees in Relation to Design, Demolition and Construction - Recommendations'. Where existing building foundations or areas of hard standing exist within the root protection areas of existing trees; these hard surfaces shall be removed and excavated where reasonably practicable by manual methods and excavated back to the level of the base of the existing hard standing sub-base. The soiled root zone within the tree root protection areas of existing adjacent trees should remain unaffected, and further protected with tree root protection barriers and ground protection measures such as operation zones where appropriate. Foundations within RPAs can remain in-situ if this does not impact development. Any machinery used within RPAs as part of demolition must track over and operate from existing or new hard surfaces, or operation zones with appropriate ground protection measures.
- 5.32 The locations of tree protective barriers have been designed to allow for demolition of the existing buildings; once demolition is complete these must be repositioned to protect as much of the RPAs as possible. The relocation of the barriers must be confirmed with the arboriculturalist before other works in this area can commence.

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