



**101 Brookmans Avenue,  
Brookmans Park, Hatfield,  
AL9 7QG**

**Phase II Arboricultural Impact Assessment (AIA)  
(Ref. 101 310)**

**Date: 22/02/2019**

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**Local Planning Authorities that have previously seen our standard report format are directed to Sections 4-7 that contain the key relevant information for this planning application.**

## **1.0 INSTRUCTIONS & TERMS OF REFERENCE**

### **1.1 INSTRUCTIONS**

Arbol Euro Consulting Ltd. is instructed by to assess the on and (any) off-site trees in regard to the proposed development. See section 6.1.2.

Please be advised that this is a Development Control – and not a Building Control – focused document. In regard to the latter, this deals with foundation depth and design in relation to trees using NHBC/Zurich national guidance. For advice, consult with the local council Building Control Officer or an approved NHBC inspector in order to gain Full Plans Approval or a Completion Certificate. The latter are governed by the Building Act 1984 and Building Regulations 2010. As such the above Building Control issues are outside the remit of a Consulting Arborist.

Our tree reporting is in-line with BS:5837 (2012) and our tree survey assessments are consistent with the LANTRA professional tree inspector criteria. However, please be advised\* that this AIA does not necessarily provide any guarantees that the associated Local Planning Authority will agree with the opinion of the Consulting Arborist or grant planning consent based on the content and findings of this AIA report.

\* As per our Terms & Conditions.

### **1.2 PHASE 1, 2 & 3: ARBORICULTURAL IMPLICATION ASSESSMENTS (AIA) IN CONTEXT**

**1.2.1 Phase 1 (AIA1).** The initial stage for trees within the development process is a survey of those trees that should be retained and those that may/should be removed. Retention trees are allocated Root Protection Areas (RPAs) that are then detailed on a Tree Constraints Plan (TCP). The RPAs provide for sufficient rooting (soil) volume to ensure that trees are successfully retained during and after the completed development. The TCP represents Phase 1 of an Arboricultural Implications Assessment (AIA1). It indicates a notional development footprint for any given site but moreover, it *may affect the value of land* earmarked for development. The AIA1 is *only* a baseline survey. It is not intended to represent, in isolation, the supporting information for an LPA\* application: to obtain full planning permission.

\* Local Planning Authority

**1.2.2 Phase 2 (AIA2).** The next stage is for ‘site layout master planners’ to factor the tree constraints into draft layout proposals. This draft is then referred to the consulting Arborist for further implication assessment, to arrive at a ‘best fit’ scheme, which achieves site proposal viability whilst allowing for the retention of appropriate trees. This layout review represents Phase 2 of an Arboricultural Implications Assessment (AIA2). Once it has been agreed, the consulting Arborist can then prepare a supporting report to accompany the planning application. This report should demonstrate that the trees have been properly considered such that the site layout is defensible in arboricultural terms, both at the application stage and also, if necessary, at Appeal. As the proposal develops, the AIA2 also involves the consulting Arborist working as part of the development team to secure discharge of any initial (frequently pre-commencement) tree related LPA planning conditions. These will need to be formally discharged to avoid any breach of Condition and/or enforcement action.

**1.2.3 Phase 3 (AIA3).** All the effort put into the pre-application phases (AIA12) to protect retention trees is likely to fail without effective site supervision. Arboricultural Implications Assessment (AIA3) covers the *on-site project implementation*, including arranging (LPA) approved tree removal/ pruning, overseeing the installation of tree protection fencing, ground protection and any special engineering works through to periodic reporting on the retention of tree protection measures. Many if not all of the latter are usually specified as LPA planning conditions that need

to be formally discharged. All personnel associated with the construction process must be familiar with the specified Tree Protection Plans (TPP) and Arboricultural Method Statements (AMS) that affect the site. The TPP and AMS should be retained on site at all times and they should be included in the site's Project Management Plan.

**1.2.4** Phases 1–3 are in line with *BS 5837; 'Trees in relation to design, demolition and construction - Recommendations'* (2012).

### **1.3 TREES & BUILDING SUBSIDENCE/HEAVE ISSUES**

Assessing the potential influence of trees upon load-bearing soils beneath existing and proposed structures, resulting from water abstraction by trees on shrinkable soils, was not included in the contract brief and is not, therefore, considered in any detail in this report. **Arbol EuroConsulting** cannot be held responsible for damage arising from soil shrinkage or heave issues related to the retention or removal of trees on site.

### **1.4 TREE SAFETY MATTERS AND TREE RISK ASSESSMENT**

The BS:5837 tree survey is carried out in sufficient detail to gather data for and to inform the current project. Our appraisal of the structural integrity of trees on the site is of a preliminary nature and sufficient only to inform the current project. The tree assessment is carried out from ground level – as is appropriate for this type of survey - without invasive investigation. The disclosure of hidden tree defects cannot therefore be expected. Whilst the survey is not specifically commissioned to report on matters of tree safety, we report obvious visual defects that are significant in relation to the existing and proposed land use.

Lastly and to further clarify, this BS:5837 survey does not constitute a full *Visual Tree Assessment* (= TRAM\* Level 2 - *Basis Assessment*) that would ordinarily be carried out for Tree Risk Assessment reporting. In effect, this BS:5837 survey equates to a TRAM Level 1 *Limited Visual Assessment*.

\* "Tree Risk Assessment Manual" Dunster, Julian A., E. Thomas Smiley, Nelda Matheny, and Sharon Lilly (2013) International Society of Arboriculture

### **1.5 SITE OBSERVATIONS**

This report has been based on my site observations and in light of my experience. This along with my qualifications are appended to this report.

### **1.6 CAVEATS**

The author does not have formal qualifications in the areas of structural engineering or law. However, making comment on such matters from an arboricultural perspective is both within the normal scope of our instructions and also within the range of the author's experience. Notwithstanding this, specialist professional advice should be sought to clarify/confirm any observations on engineering or legal matters that this report may contain.

## **2.0 INTRODUCTION**

### **2.1 THE ASSESSMENT METHODOLOGY**

The British Standard BS:5837 *'Trees in relation to design, demolition, construction - Recommendations'* (2012) provides "guidance on the principles to be applied to achieve a satisfactory juxtaposition of trees.....with structures". The Standard recommends that trees with categories A-C (where A is the highest quality) are a material consideration in the development process. Such trees may then become a constraint for a planning proposal. Category U trees are those that will not be expected to exist for long enough to justify their consideration in the planning process (i.e. no more than 10 years). Tree categories are used with the number 1, 2, or 3 to signify whether the category was made based on arboricultural, landscape or cultural (including conservation) values respectively. The tree categories are shown on plan by colour-coding:

Category A (green colour-coded): Good examples of their species with an estimated life expectancy of at least 40 years.

Category B (blue colour-coded): Not suitable for an 'A' category due to impaired condition or a tree lacking special 'A' qualities: with an estimated life expectancy of at least 20 years.

Category C (grey colour-coded): Unremarkable trees of very limited merit or with a significant impaired condition not warranting an 'A' or 'B' category: with an estimated life expectancy of at least 10 years. See young trees below.

Category U (red colour-coded): See above.

Reasonably young trees below 150mm stem diameter would normally be given a C category (if they satisfy the retention quality criteria). However, as they are small they could be replaced/transplanted and as such they should not be regarded as a significant constraint on a development.

## **2.2 ARBORICURAL IMPACT ASSESSMENT (AIA)**

We have considered - with access permitting for 3<sup>rd</sup> party trees - the following BS:5837 (2012) recommendations:

1. Tree Categories (Quality Assessment).
2. Crown Spread measured to the four cardinal compass points for single specimens only.
3. Root Protection Areas (RPAs).
4. Tree Constraints.
5. Tree retention & protection - Tree Protection Plan (TPP) incorporating the Tree Constraints Plan & Construction Exclusion Zones (CEZs).

*N.B. Trees and shrubs are living organisms whose health and condition can change rapidly, for this reason the BS 5837 grades along with any conclusions or tree management recommendations remain valid for a period of 12 months.*

The specific tree report is documented in Section 7 of this report.

Refer to the Tree Protection Plan (TPP) incorporating the Tree Constraints Plan (TCP) for further detail.

## **3.0 GENERAL DATA**

### **3.1 GENERAL**

The three phases of an Arboricultural Implication Assessment were outlined in Section 1.1.1-1.1.4. In addition, during the development process for retention trees, there may be three and even four constraints to consider - Construction Exclusion Zone (CEZs):

- CEZ 1: Root Protection Area (see 3.1.1).
- CEZ 2: Tree Crown Protection (see 3.1.2).
- CEZ 3: Tree Dominance (see 3.1.3).
- CEZ 4: New Tree Planting Zone (see 3.1.4).

The above CEZ's are explained further below.

#### **3.1.1 CEZ 1: ROOT PROTECTION AREA (RPA)**

The RPA, calculated in m<sup>2</sup>, should be protected before and during any demolition/construction works. This ensures the effective retention of trees by preventing physical damage to (a) roots and (b) their rooting environment (typical problems - soil compaction; soil level changes and soil capping that can impede gaseous exchange to living roots\*). The RPA is based on a radial measure from the centre of the tree stem, which is calculated by multiplying the stem diameter by a factor

of twelve (or by a factor of ten when measuring basal diameter immediately above the root flare for multi-stemmed trees). With the AIA1, the RPA is only shown indicatively on the preliminary Tree Constraints Plan (TCP), as its shape may be subject to amendment as the design progresses. During the AIA2, the derived radial measure is converted by the consulting Arborist into the actual area to be protected, having due regard to prevailing site conditions and how these may have affected the tree(s).

The means of protecting the RPA will include the installation of Tree Protection Fencing prior to the start of any demolition or construction work on site, the prohibition of various harmful activities within the RPA (e.g. mechanical excavation, soil stripping & trenching, fire lighting, materials storage and creating excessive sealed surfacing), and may include the use of temporary ground protection and/or special engineering solutions where construction is proposed near to retention trees or within the RPA.

\* Roots must have oxygen for survival, growth and effective functioning.

### **3.1.2 CEZ 2: TREE CROWN PROTECTION ZONE**

This is the area above ground occupied by the tree crown (branches) and considers the required demolition/construction working space necessary for the development. The possibility of an acceptable quantum of pruning may be considered: subject to Council permission/consent (see Section 4.1.1).

Arising from the above, the means of protecting CEZ 2 is likely to include providing an adequate separation distance between retention trees and new buildings. This will relate to the CEZ 3: below.

### **3.1.3 CEZ 3: TREE DOMINANCE ZONE**

This is the area above ground dominated by the tree in relation to issues of shading, seasonal debris and the safety apprehension by the site owner/occupier. This area is assessed by considering the height and spread of the tree (now and in the future) relative to the proposed buildings, cross-referenced with the intended end-use. As such, what is assessed is the likely psychological effect of the tree(s) on the end-user.

The purpose of identifying CEZ 3 is to protect trees from post-development pressure by the site's end-users, who may, if resentful of the trees, seek to procure excessive pruning treatments (i.e. the bad practice of topping & lopping) or even to have them removed. This is a common Local Planning Authority (LPA) concern, which may lead to application withdrawals, refusals and/or dismissed Appeals.

The means of protecting CEZ 3 is likely to include optimising the site layout and room type (especially in relation to new residential dwellings), such that any adverse impacts of trees are reduced to an acceptable minimum. The key principle is to ensure adequate separation distances between trees and new buildings: notably with habitable space & primary windows.

### **3.1.4 CEZ 4: NEW PLANTING ZONE**

In some cases, it may be appropriate to identify and protect areas (see soil conservation below) intended for new landscape planting, which can fail to establish if the soil has been heavily compacted or contaminated during the demolition/construction process. The means of protecting CEZ 4 will either be by fencing prior to the start of construction/demolition works or by pre-planting soil remediation once construction has finished. Topsoil protection in areas destined for new planting is frequently an economic measure, saving on soil structure remediation and tree (failure) replacement costs.

**NB** Soil conservation is the process of protecting soil from degradation within a defined area. The physical, chemical and biological properties of a native soil can take hundreds of years to develop but can be destroyed in minutes (i.e. by demolition/construction traffic). Soil conservation is the most effective way to protect soil for future tree planting.

## **4.0 STATUTORY CONTROLS**

### **4.1 PLANNING LEGISLATION (TREES)**

#### **4.1.1 STATUTORY TREE PROTECTION**

Trees can be protected in law – via Tree Preservation Orders (TPOs) or by virtue of them growing in a Conservation Area (CA) – by the Government’s Town & Country Planning Act 1990. (the Act). Trees may also be protected by Planning Conditions. If any of these apply, written LPA permission/consent is required before protected trees can be pruned or felled\*. Contravention of the Act may carry a fine of up to £20,000 and a criminal record.

\* Exceptions include those trees that are dead/hazardous or those that are causing an actionable nuisance to a third-party. In any event, evidence must be provided to defend the removal of such trees.

#### **4.1.2 TREES ON/OFF SITE**

We are advised by the client that the site is not within a CA and that none of the on-site trees are subject to any TPOs. However, if required and before any tree works are carried out, this should be double-checked with the LPA. If any statutory (tree) protection is confirmed then advance LPA permission/consent would be required.

### **4.2 WILDLIFE LEGISLATION**

All wild birds are protected during the nesting season by the Wildlife and Countryside Act 1981 as amended by the Countryside and Rights of Way Act 2000. It is not a defence to claim that harm was accidental in the course of carrying out work. There is therefore an onus on the operative to check cracks, splits, cavities, loose bark etc. for the presence of birds prior to carrying out work. The bird nesting season is considered to run from March to August, but due to the vagaries of climate change, nesting birds can be found outside of this core period. Work can be carried out in the nesting season, subject to the above checks. Bats and their roosts are afforded the highest protection in UK and European Law. The above advice as for nesting birds should be followed and Natural England informed if bats are found. Particular attention should be paid to splits in branches, before reducing end weight by pruning, causing splits to close which can squash residing bats.

## **5.0 WILDLIFE HABITATS**

A cursory assessment of wildlife habitat values of trees and hedgerows on the site was carried out during the survey. No protected or exceptional habitats were identified and details were not recorded. However, trees and hedgerows of most species provide valuable nesting sites for a wide range of birds and it is likely that nesting birds will be present on the site during the period March to September. We have not been made aware of the presence of roosting bats and have not identified any obvious signs of roost sites. However, this does not mean that roost sites are absent.

## **6.0 UNDERGROUND SERVICES**

### **6.1 LOCATION**

Locations of proposed underground services were not identified on the provided plans. For the proposed house 1 and 2, it is likely, however, that the existing utilities would be used. On no account would any new utility runs be located/trenched within the Root Protection Area (RPA) of the frontage oak T19 without prior discussion and approval from the LPA and or a Consulting Arborist. See section 7.5. For the remaining proposed houses 3-5, new underground services would be required. As above, on no account would any new utility runs be located/trenched within the Root Protection Area (RPA) of the off-site oak T1 without prior discussion and approval from the LPA and or a Consulting Arborist. See section 7.5.

**7.0 No. 101 Brookmans Avenue Brookmans Park, Hatfield, AL9 7QG: TREE REPORT**  
(to be read in conjunction with the appended Tree Protection Plan and Tree Survey)

**7.1 THE PROPERTY AND THE DEVELOPMENT PROPOSAL**

**7.1.1 Site description:** A large detached property accessed off the road via a gravel driveway that opens out to provide a large car parking area and also access to a substantial (rear) detached garage that is also accessed via a side-gate leading off Golf Club Road. The front garden is surrounded, along its road-side boundaries with Brookmans Avenue and Golf Club Road, by well-managed beech hedging. Of note there is a large prominent frontage protected oak (TPO'd). See section 7.2 below. The rear garden is extensive and largely laid to lawn with some boundary trees. See section 7.2 below.

**7.1.2 The proposal:** Demolition of the existing property to be replaced with five detached houses (1-5). Whilst for house 1 a new driveway would come off Brookmans Avenue, for house 2, the existing driveway would (largely) be used. Each of these aforementioned houses would have two car parking bays, a frontage wheelie-bin store and rear garden shed. New driveways off Golf Club Road would be installed for houses 3-5: each property with three car parking bays. As above, these properties would have a frontage wheelie-bin store and a rear garden shed.

The location and detail of the proposed development and the positioning and numbering of the trees can be found plotted on the Tree Protection Plan at Appendix 2. **NB** The original of this plan was produced in colour – a monochrome copy should not be relied upon.

**7.2 TREES ON-SITE**

**7.2.1 Front:** The oak T19 is a prominent tree in the immediate locale and correspondingly merits a B-grade. The cypress T20 has good crown form and the beech hedges H4 and H5 are well-managed. These also merit B-grades.

**7.2.2 Side:** As above, the well-managed beech H3 merits a B-grade. Whilst the cypress hedge H2 provides some useful screening it is in close building proximity (questionable medium-long term retention) and so only merits a C-grade.

**7.2.3 Rear:** Whilst the well-managed hedge H4 merits a B-grade, the remaining trees (T3-T6 and T12-T15) are low-grade trees due either to their topped, suppressed and unnatural crown form.

**7.3 TREES OFF-SITE**

**7.3.1 No. 99 Brookmans Avenue:** The cypress group G1 contains trees with good crown form. In contrast, the cypress T11 is a suppressed C-grade tree. Both silver birches T21 and T22 have been heavily lopped and topped and are correspondingly low-grade trees. Due to their topped/suppressed crown the cherry T16 and cypress T17 are also low-grade trees.

**7.3.2 Brookmans Avenue:** The two street trees T18 and T23 have good crown form and clearly merit B-grades.

**7.3.3 Land at rear of subject site in Golf Club Road:** There are five trees and one group (T2, T7-T10 and G2) none of which are of any merit save providing some boundary screening.

**7.3.4 Land east of subject site in Golf Club Road:** Despite losing its upper crown in the past, the oak T1 retains good form and clearly merits a B-grade.



## 7.4 **IMPACT PROPOSAL ON TREES** (to be read in conjunction with the Tree Protection Plan - TPP - at Appendix 2 and the Arboricultural Method Statement at Appendix 3)

### 7.4.1 **CEZ 1: Root Protection Areas (RPAs)**

#### 7.4.1.1 **Footprint of the Proposed Build**

**Proposed Five Houses:** There would no significant RPA incursion with any of these properties.

#### **Frontage Driveway - Cellular Confinement Systems (CCS)**

Firstly, the house 3 driveway T1 RPA incursion (see black-hatched area on the appended TPP) would be an acceptable at only 3.7%\*. A CCS would not therefore be required for this driveway section. **NB** It follows that the smaller T1 RPA driveway edge incursion for house 4 is even less.

\* RPA of 408.71m<sup>2</sup> with incursion of 15.14m<sup>2</sup> = 3.7%. **NB** This is below the maximum 20% recommended in BS:5837 (2012).

The existing frontage (*already compacted*) gravel driveway for house 2 would be renewed (new surfacing) and slightly extended. As this would be within the RPA of T19, this driveway section (mauve shaded on the appended TPP) would be installed using a minimal/no-dig CCS\*\*. We would recommend that if possible the existing sub-base be retained and used for the news CCS driveway. A site specific installation Method Statement (MS) would be obtained from ProtectaWeb (Wrekin Products Ltd.) and the product installed in accordance with this MS (**NB** As advised by Wrekin Products Ltd. the MS is free of charge)\*\*\* <https://www.wrekinproducts.com/protectaweb-tree-root-protection/>

The final finished level(s) of the CCS driveway should *match-in* with adjacent new build and notably DPC's and not vice versa.

\*\* ProtectaWeb Tree Root Protection System: 150mm thick - see Appendix 6.

\*\*\* Or other recognised and approved CCS.

#### Principals of a CCS

- Designed to be installed without the need for soil excavation therefore eliminating the need for tree root severance and to sustain the vascular function of the woody roots that may extend outwards from beyond the CCS system.
- Comprised of an expandable cellular mattress that is then in-filled with a clean stone sub-base above a geotextile membrane. The honeycomb-like structure is made of robust high density polythene that is stretched out and filled with clean angular material. The strength of the structure comes from the binding together of the infill, but with a CCS system this is achieved without compaction or a reduction in (rainwater & oxygen) permeability.
- Perforated cell walls allow the infill to bind with the contents of adjacent cells but with sufficient space for movement of water and air to nearby underlying tree roots. As the infill contains no fines and the geotextile layers prevent clogging from particles washing into the system, the structure remains permeable and protects tree roots.
- The *required* permeable surface finish over the CCS ensures aqueous and gaseous exchanges can still occur in the underlying soil. See the use of a Permeable Resin Bonded Surface (see section and the 'use in action' in Kew Gardens photo below).
- Edging options: Where edging is required for light structures (e.g. footpaths) above-ground pegs and treated timber edging may be acceptable. Where more substantial hard surface areas are required (e.g. access road & driveways) the use

of pinned sleepers, gabions or non-invasive haunch kerbing can provide appropriate solutions.

- Installing a CCS will assist in achieving part of SUDs (Sustainable Urban Drainage) solution for on-site hard surfacing.
- Permeable Resin Bonded Surface Care & Maintenance (*if used*): In general, resin bonded surfaces should be regularly swept\* clean, removing leaves and detritus material – this will prevent moss growth and help to maintain the surface’s permeability. Periodic Cleaning General: cleaning of the surface can be carried out by cold pressure washing up to a maximum 150 bar rating to remove dirt and grime. The water should be applied using a fan type lance which should be kept 200mm above the installed resin bonded surface. Care should be taken to prevent damage to the surface with excessive water pressure. Light coloured resin bonded surface blends may show tyre marks, removal by pressure washing as detailed above may be required.

\* Hard bristle yard-brush



Kew Gardens (London): Resin Bonded Gravel used across a root-plate of the TROBI Champion Ginkgo

**Rear Sheds:** The rear sheds (brown-shaded on the appended TPP) for houses 3-5 would be erected after the main build has been complete: with all machinery removed off-site and the Tree Protection Barriers (see below) removed. **NB** As lightweight structures with minimal foundations there would be no significant RPA edge impact on T12, T13 and T14.

**House 1 wheelie-bin store:** As with the sheds above, this store would be a lightweight structure with minimal foundations. As such there would be no significant RPA impact on T19.

#### 7.4.1.2 Construction Activity

**Temporary Storage of Machinery and/or Materials:** This project within a large site. At this time the location of storage areas – for a build that is likely to be phased - is not known. There would, however, be adequate on-site space.

**Temporary Site Office(s):** Again within this large site, the location of such offices is not known but there would be adequate on-site space.

**Tree Protection Barriers (TPBs).** As per the appended Tree Protection Plan, if *temporary* staked TPBs are installed – to establish Construction Exclusion Zones at the front, side and rear - this would afford adequate RPA protection for all trees. See appendix 4. Due to restricted space for angular staking alongside H1, G2, H2, H3 and H5 (small section adjacent to neighbouring boundary) the Heras TPB panels would be booted with sections ***clamped together*** so they cannot be moved.

**Temporary Ground Protection (TGP):** Prior any construction/demolition, this would be installed to protect the RPA incursion into the build site (area designated for the four frontage car parking bays) from the oak T19. In general, for wheeled or track construction traffic within retention tree Root Protection Areas (RPA's), ideally the TGP would be specified by an engineer to accommodate the likely vehicular loading. We recommend the use of Durabase (<http://terrafirma.gb.com/>), Ground Guards ([www.greentek.org.uk](http://www.greentek.org.uk)) or Eve-Trackway (<http://www.evetrakway.co.uk/>) due to their recognised *anti-soil compaction* properties (i.e. to protect underlying tree roots).

**Note 1:** If other similar TGP systems are used they must also have recognised *anti-soil compaction* properties (i.e. to protect underlying [RPA] tree roots).

**Note 2:** It is vital that the TGP is in place before any demolition/construction works begin on site.

**Note 3:** On no account - referring to leakage - would there be any mixing/preparation of noxious substances (e.g. wet mortar or concrete) on the TGP: unless prepared on top of thick heavy-duty polythene sheeting.

**Note 4:** To prevent leakage into the soil area under the TGP, any diesel would be carried in a portable bunded bowser and petrol would be stored in a ventilated tool box.

#### **Temporary Scaffolding incorporating planked Ground Protection**

This would be installed over and protect the RPA incursion into the 'build site' from G2 and T2: see the BS:5837 (2012) drawing specification below (with platform options).

**NB I** On no account - referring to leakage - would there be any mixing/preparation of noxious substances (e.g. wet mortar or concrete) on this ground protection planking: unless prepared on top of thick heavy-duty polythene sheeting.

**NB II** Any diesel would be carried in a portable bunded bowser and petrol would be stored in a ventilated tool box.

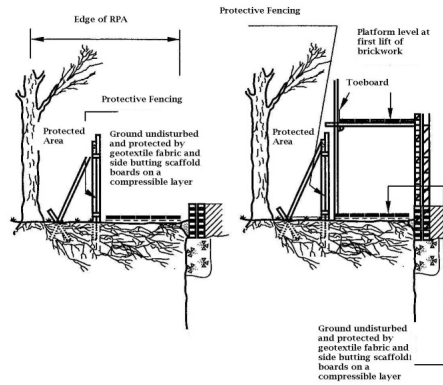


Figure 3 - Scaffolding within the RPA

## 7.4.2 CEZ 2: Tree Crown Protection Zones

### Construction Vehicle Site Access (access facilitation pruning)

There would be two access routes off Golf Club Road for demolition and construction traffic. See Note 2 on the appended TPP. There would be sufficient low-crown clearance under the off-site oak T1. The entrance(s) off Brookmans Avenue would only be used by construction staff vehicles (i.e. not for demolition and construction traffic). See notation on the appended TPP.

## 7.4.3 CEZ 3: Tree Dominance Zones

Houses 3-5 are set back away (21+m at nearest point) from the off-site oak T1. There would therefore be no CEZ 3 issue with this tree. Apart from the frontage oak T19 - where there is no significant material change with houses 1 and 2 and the existing property - there are no large close proximity trees.

## 7.4.4 CEZ 4: New Tree Planting

A Master (landscape) Plan has been produced by Guarda Landscape that includes twelve new trees.

## 7.5 UNDERGROUND UTILITIES

Service runs would enter properties using junctions from existing services where at all possible and located outside retention tree RPA\*s. New or replacement underground services should not be installed within RPA\*s without prior consultation with the LPA. **NB** If incursion into the RPAs is unavoidable then services routing should be achieved by either thrust boring or hand excavation. For more information regarding underground services, reference should be made to the National Joint Utilities Group (NJUG) Publication Volume 4: Issue 1. *Guidelines for the Planning, Installation & Maintenance of Utility Apparatus in Proximity to Trees* 2007.

\* RPAs of frontage oak T19 and off-site oak T1.

## 7.6 TREE PROTECTION DURING CONSTRUCTION

**7.6.1 Tree Protection:** The protection of retention trees is *paramount* to the granting of planning permission, the discharge of tree protection Planning Conditions, the design of the development and the future health, stability and success of the trees. It is widely recognised that mature trees add value to both land and property values.

**7.6.2 The Root Protection Area (RPA):** RPAs around retention trees should be maintained by the erection of a *temporary* tree protection barrier (TPB) as described at Appendix 4 to this report. Whilst it is crucial to note that this TPB should not be moved, one section (*only*) can be placed in a boot so it can be moved to allow for (pedestrian) access to the garden for maintenance activities (e.g. grass mowing). The position and extent for the TPB will normally concur with the radius/squared area of the RPA. This staked-off area shall be known as the **Construction Exclusion Zone (CEZ)**. The integrity of the TPB to protect **CEZs** should be maintained for the duration of the entire development works. The **CEZs** are marked-up on the appended Tree Protection Plan.

## **7.7 ARBORICULTURAL METHOD STATEMENT**

### **7.7.1 Purpose & Use**

In consideration of the above issues, we have included an Arboricultural Method Statement (AMS) at Appendix 3, which details working methods in relation to trees. This AMS lays down the methodology for any demolition and/or construction works that may have an effect upon trees on and adjacent to this site. It is essential within the scope of any contracts - related to this development - that this AMS is observed and adhered to. It is recommended that this document forms part of the work schedule and that specifications are issued to the building contractor(s) and these should be used to form part of their contract.

### **7.7.2 Site Supervision**

An individual – ideally the Site Agent - must be nominated to be responsible for all arboricultural matters on site (specific responsibilities in section 7 of the appended Arboricultural Method Statement). This person must:

- be present on site for the majority of the time;
- be aware of (a) the Tree Protection Plan and (b) the tree protection measures to be installed and maintained throughout the build;
- have the authority to stop any work that is causing, or has the potential to cause, harm to any retention trees;
- be responsible for ensuring that all site operatives are aware of their responsibilities toward on/off site trees and the consequences of the failure to observe these responsibilities;
- make immediate contact with the designated Consulting Arborist (contact number listed on the appended AMS) in the event of any tree related problems occurring, whether actual or potential.

### **7.7.3 AMS Adoption**

If conflicts between any part of a tree and the build arise in the course of the development these can – and should be – resolved quickly and at little costs if a qualified and experienced Consulting Arborist is contacted promptly. Lack of such care will likely lead to the decline and even death of affected trees: often with legal ramifications. The loss or damage to retention trees can spoil design, affect site sale ability and reflects badly on the construction and design personnel involved. Conversely, trees that have received careful handling during construction add considerably to the appeal and value of the finished development. **NB** Failure to comply with the requirements of the AMS may result in a breach of a condition notice(s) and/or the suspension of work on site.

## **8.0 CONCLUSIONS**

### **8.1 DEVELOPMENT PROPOSAL & POTENTIAL IMPACT ON TREES**

**8.1.1** The development proposal would not require the removal of any trees or tree pruning works.

**8.1.2** As plotted on the Tree Protection Plan at Appendix 2, with the implementation (in a timely manner) of the tree protection measures specified in this report there should be no CEZ 1 (RPA) impact on the retention trees.

**8.1.3** There would be no CEZ 2, CEZ 3 or CEZ 4 issues with this application.

**8.1.4** See Arboricultural Method Statement at Appendix 3. Active random monitoring by a Consulting Arborist throughout the development process is strongly recommended (AIA3: Phase 3).

**8.1.5 New Landscaping:** A Master (landscape) Plan has been produced by Guarda Landscape that includes twelve new trees.

## **9.0 RECOMMENDATIONS**

### **9.1 EXECUTION OF CONTRACT**

It is recommended that the Architect specifies in writing to the building contractor that tree care conditions apply to the execution of the contract. Lack of care frequently results in the damage, decline and eventual death of trees. This can adversely affect design aims & site sale-ability, and reflects poorly on the contractors and design personnel involved. Trees that have been the recipients of careful handling during construction add considerably to the appeal and value of finished developments.

### **9.2 PROPOSED REVISIONS TO THE SCHEME**

We advise that all proposed revisions in respect of external layout, orientation of primary windows, location of underground services, external surfacing and/or landscaping; having implications for retention trees should be referred to us for review.

## **10.0 OCCUPIERS LIABILITY ACTS**

Attention is drawn to the provisions of the Occupiers liability Acts (England & Wales - 1957 & 1984), which place a responsibility upon landowners to ensure the safety of others entering their land whether by invitation or permission: inclusive of trespassers. There is a special responsibility to ensure the safety of children, who may be unaware of hazards. Annual inspections of trees by a competent person, or following storm events, together with implementation of any remedial tree work recommendations, should ensure compliance with the legislation regarding the above legislation.

## **11.0 REFERENCES**

- *BS 5837; 2012 'Trees in relation to design, demolition and construction - Recommendations'* British Standards Institute, London
- *BS 3998; 2010 'Tree Work Recommendations'* British Standards Institute, London
- *NJUG Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees' 2007* National Joint Utilities Group (NJUG) Volume No. 4: No. 1.
- Arboricultural Practice Note 12; 2007 – AAIS
- *'Availability of Sunshine'* BRE - CP 75/75
- *'Tree Roots in the Built Environment'* 2006 - Dept. for Communities & Local Government (DCLG).
- *'Up by Roots: healthy soils & trees in the built environment'* 2008 James Urban, International Society of Arboriculture.
- *'Arboriculture'*; 1999 3<sup>rd</sup> edition R. Harris, J. Clarke & N. Matheny. Prentice Hall.
- *'Soil Management for Urban Trees'* 2014 International Society of Arboriculture, Best Management Practice series.

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APPENDIX 1

TREE SURVEY SCHEDULE

5 pages



## HEADINGS & ABBREVIATIONS

<b>TREE NO.</b>	REFERENCE NUMBER. REFER TO PLAN OR NUMBERED TAGS WHERE APPLICABLE
<b>SPECIES:</b>	COMMON NAME (LATIN NAMES AVAILABLE ON REQUEST)
<b>AGE RANGE/LIFE STAGE:</b>	Y = YOUNG, SM = SEMI MATURE, EM = EARLY MATURE, M = MATURE, PM = POST MATURE
<b>HEIGHT:</b>	ESTIMATED AND RECORDED IN METRES. APPROXIMATELY 1 IN 10 TREES ARE MEASURED USING A CLINOMETER AND THE REMAINDER ESTIMATED AGAINST THE MEASURED TREES
<b>CROWN SPREAD:</b>	MAXIMUM CROWN RADIUS MEASURED TO THE FOUR CARDINAL COMPASS POINTS FOR SINGLE SPECIMENS ONLY (MEASUREMENT FOR TREE GROUPS - MAXIMUM RADIUS OF THE GROUP)
<b>CROWN CLEARANCE &amp; DIRECTION OF GROWTH:</b>	HEIGHT IN METERS OF CROWN CLEARANCE ABOVE ADJACENT GROUND LEVEL (TO INFORM ON GROUND CLEARANCE, CROWN/STEM RATIO AND SHADING)
<b>STEM DIA/MULTI-STEM DIA:</b>	STEM DIAMETER - MEASURED AT APPROXIMATELY 1.5 METRES ABOVE GROUND LEVEL OR A COMBINATION OF STEMS FOR MULTI-STEMMED TREES
<b>VITALITY:</b>	A MEASURE OF PHYSIOLOGICAL CONDITION. D = DEAD, MD = MORIBUND, P = POOR, M = MODERATE, N = NORMAL
<b>ESTIMATED REMAINING CONTRIBUTION:</b>	RELATIVE USEFUL LIFE EXPECTANCY (YEARS)
<b>BS 5837 CATEGORY &amp; SUB-CATEGORY GRADING:</b>	A = HIGH QUALITY AND VALUE, B = MODERATE QUALITY AND VALUE, C = LOW QUALITY AND VALUE, U = UNSUITABLE FOR RETENTION: SUB-CATEGORY REFERS TO ARBORICULTURAL (1), LANDSCAPE (2) & CULTURAL/CONSERVATION VALUES (3).
<b>BS 5837 RPA:</b>	ROOT PROTECTION AREA - BS 5837 (2012) ANNEX D (THE RECOMMENDATIONS STATE THAT THE RPA SHOULD BE CAPPED AT 707 M <sup>2</sup> )
<b>BS 5837 RADIUS:</b>	PROTECTIVE DISTANCE - RADIUS FROM THE CENTRE OF THE STEM TO THE LINE OF TREE PROTECTION (CONSTRUCTION EXCLUSION ZONE - CEZ) AND PROTECTIVE BARRIER

<b>SITE:</b>	101 BROOKMANS AVENUE, BROOKMANS PARK, HATFIELD, AL9 7QG
<b>CLIENT:</b>	Whitemount Projects Ltd
<b>BRIEF:</b>	CARRY OUT A PHASE II ARBORICULTURAL IMPACT ASSESSMENT ON THE PROPOSED DEVELOPMENT AT THE ABOVE SITE.

<b>SURVEYOR:</b>	R. BALL
<b>ASSESSMENT DATE:</b>	21/02/2019
<b>VIEWING CONDITIONS:</b>	SUNNY – CLEAR
<b>JOB REFERENCE:</b>	101 310

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TREE HEDGE GROUP NO.	SPECIES (COMMON NAME)	AGE RANGE/ LIFE STAGE	HEIGHT (m)	RADIAL CROWN SPREAD (m)				CROWN CLEARANCE & DIRECTION OF GROWTH (m)	STEM/ MULTI-STEM* DIA. (mm)	VITALITY	COMMENTS/STRUCTURAL MORPHOLOGY	PRELIMINARY MANAGEMENT	CATEGORY & SUB-CATEGORY GRADING BS 5837	BS 5837 RPA RADIUS (m)	BS 5837 RPA (m <sup>2</sup> )
				N	E	S	W								
T1	Turkey Oak <i>Third-party tree with no access to fully survey</i>	M	25	8	9	9	6	9	Est. 950	N	<ul style="list-style-type: none"> <li>Lost upper crown in past but retains good crown form: prominent in street-scene</li> </ul>	? See access	B2(?) See access	11.40	408.2
T2	Norway Spruce <i>Third-party tree with no access to fully survey</i>	EM	16	4	4	3	4	0.5	Est. 350	N	<ul style="list-style-type: none"> <li>Southern crown suppressed by H2</li> </ul>	? See access	C2(?)	4.2	55.4
T3	Atlas Blue Cedar	EM	9	1.8	1.8	1.8	1.8	2.5	360	N	<ul style="list-style-type: none"> <li>Average tree</li> </ul>	NATS	C2	4.3	58.6
T4	Ornamental Apple	EM	7	3	2.5	3	3.5	1.9	255	N	<ul style="list-style-type: none"> <li>Highly suppressed by adjacent trees</li> </ul>	NATS	C2	3.1	29.4
T5	Lawson Cypress	EM	9	3	3.5	3	1.5	-	* 290; 80 x 3	N	<ul style="list-style-type: none"> <li>Suppressed by adjacent on-site T12</li> </ul>	NATS	C2	3.8	46.7
T6	Common Beech	SM	8	1.9	1.9	1.9	1.9	1.5	260	N	<ul style="list-style-type: none"> <li>Unlikely to develop into a fine tree due to light competition from adjacent trees</li> </ul>	NATS	C2	3.1	30.6
T7	Norway Spruce <i>Third-party tree with no access to fully survey</i>	EM	9	1.8	1.8	1.8	1.8	4.0	Est. 250	N	<ul style="list-style-type: none"> <li>Crown suppressed by adjacent trees</li> </ul>	? See access	C2(?) See access	3.0	28.2
H1	Leyland Cypress (x approx 11)	SM-EM	9-11	1.7	1.7	1.7	1.7	-	Est. Av. 250	N	<ul style="list-style-type: none"> <li>Informal but prominent boundary hedging that provide useful screening</li> </ul>	NATS	B2	3.0	28.2

**TREE SURVEY SCHEDULE**

<b>SITE:</b>	101 BROOKMANS AVENUE, BROOKMANS PARK, HATFIELD, AL9 7QG
<b>CLIENT:</b>	Whitemount Projects Ltd
<b>BRIEF:</b>	CARRY OUT A PHASE II ARBORICULTURAL IMPACT ASSESSMENT ON THE PROPOSED DEVELOPMENT AT THE ABOVE SITE.

<b>SURVEYOR:</b>	R. BALL
<b>ASSESSMENT DATE:</b>	21/02/2019
<b>VIEWING CONDITIONS:</b>	SUNNY – CLEAR
<b>JOB REFERENCE:</b>	101 310

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TREE HEDGE GROUP NO.	SPECIES (COMMON NAME)	AGE RANGE/ LIFE STAGE	HEIGHT (m)	RADIAL CROWN SPREAD (m)				CROWN CLEARANCE & DIRECTION OF GROWTH (m)	STEM/ MULTI-STEM* DIA. (mm)	VITALITY	COMMENTS/STRUCTURAL MORPHOLOGY	PRELIMINARY MANAGEMENT	CATEGORY & SUB-CATEGORY GRADING BS 5837	BS 5837 RPA RADIUS (m)	BS 5837 RPA (m <sup>2</sup> )
				N	E	S	W								
T8	English Oak <i>Third-party tree with no access to fully survey</i>	EM	10	6	3	5	3	3.5	Est. 320	N	• Crown suppressed by adjacent trees	? See access	C2(?) See access	3.8	46.3
T9	Norway Spruce <i>Third-party tree with no access to fully survey</i>	EM	10	1.4	1.4	1.4	1.4	2.0	Est. 220	N	• Crown suppressed by adjacent trees	? See access	C2(?) See access	2.6	21.9
T10	Norway Spruce <i>Third-party tree with no access to fully survey</i>	EM	9	1.8	1.8	1.8	1.8	1.5	Est. 300	N	• Crown suppressed by adjacent trees	? See access	C2(?) See access	3.6	40.1
T11	Lawson Cypress <i>Third-party tree with no access to fully survey</i>	6	6	1.8	1.8	1.8	1.8	-	Est. 350	N	• Crown suppressed by adjacent trees	? See access	C2(?) See access	4.2	55.4
T12	Norway Maple	EM	8.5	3.8	3.8	3.8	3.8	2.0	540	N	• Topped in past now with average crown form	NATS	C2	6.4	131.9
T13	Cherry	M	6.5	7	6	6	6	1.6	465	N	• Southern crown suppressed by adjacent trees – average crown form	NATS	C2	5.5	97.9

<b>SITE:</b>	101 BROOKMANS AVENUE, BROOKMANS PARK, HATFIELD, AL9 7QG
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<b>SURVEYOR:</b>	R. BALL
<b>ASSESSMENT DATE:</b>	21/02/2019
<b>VIEWING CONDITIONS:</b>	SUNNY – CLEAR
<b>JOB REFERENCE:</b>	101 310

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TREE HEDGE GROUP NO.	SPECIES (COMMON NAME)	AGE RANGE/ LIFE STAGE	HEIGHT (m)	RADIAL CROWN SPREAD (m)				CROWN CLEARANCE & DIRECTION OF GROWTH (m)	STEM/ MULTI-STEM* DIA. (mm)	VITALITY	COMMENTS/STRUCTURAL MORPHOLOGY	PRELIMINARY MANAGEMENT	CATEGORY & SUB-CATEGORY GRADING BS 5837	BS 5837 RPA RADIUS (m)	BS 5837 RPA (m <sup>2</sup> )
				N	E	S	W								
G1	Lawson Cypress (x4) <i>Third-party trees with no access to fully survey</i>	EM	9-12	2	2	2	2	-	Est. Av. 400	N	• Well-spaced tree group with largely non-competing crowns	? See access	B2(?)	4.8	72.3
T14	Atlas Blue Cedar	EM	11	3	3.5	3	2	-	355	N	• Crown suppressed by trees in G1	NATS	C2	4.2	57.1
T15	Leyland Cypress	EM	7	1.6	1.6	1.6	1.6	-	360	N	• Regularly clipped with unnatural globular crowned tree	NATS	C2	4.3	58.6
T16	Cherry <i>Third-party tree with no access to fully survey</i>	EM	9	5	5	5	5	?	Est. 350	N	• Average tree with topped crown form	? See access	C2(?) See access	4.2	55.4
T17	Lawson Cypress <i>Third-party tree with no access to fully survey</i>	EM	9.5	1.7	1.7	1.7	1.7	-	Est. 300	N	• Suppressed by H3	? See access	C2(?)	3.6	40.7
H2	Leyland Cypress (x6)	SM	6.9	1.4	1.4	1.4	1.4	-	Est. Av. 160	N	• Average screening hedge but in close building (shade nuisance) proximity	NATS	C2	1.9	11.5
G2	Lawson Cypress (x3) <i>Third-party tree with no access to fully survey</i>	EM	14	2.5	2.5	2.5	2.5	1.7	Est. 300	N	• Average linear tree group that provides some useful boundary screening	? See access	C2(?) See access	3.6	40.7

<b>SITE:</b>	101 BROOKMANS AVENUE, BROOKMANS PARK, HATFIELD, AL9 7QG
<b>CLIENT:</b>	Whitemount Projects Ltd
<b>BRIEF:</b>	CARRY OUT A PHASE II ARBORICULTURAL IMPACT ASSESSMENT ON THE PROPOSED DEVELOPMENT AT THE ABOVE SITE.

<b>SURVEYOR:</b>	R. BALL
<b>ASSESSMENT DATE:</b>	21/02/2019
<b>VIEWING CONDITIONS:</b>	SUNNY – CLEAR
<b>JOB REFERENCE:</b>	101 310

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TREE HEDGE GROUP NO.	SPECIES (COMMON NAME)	AGE RANGE/ LIFE STAGE	HEIGHT (m)	RADIAL CROWN SPREAD (m)				CROWN CLEARANCE & DIRECTION OF GROWTH (m)	STEM/ MULTI-STEM* DIA. (mm)	VITALITY	COMMENTS/STRUCTURAL MORPHOLOGY	PRELIMINARY MANAGEMENT	CATEGORY & SUB-CATEGORY GRADING BS 5837	BS 5837 RPA RADIUS (m)	BS 5837 RPA (m <sup>2</sup> )
				N	E	S	W								
H3	Beech (x approx. 30)	Y-SM	3.0	1.2	1.2	1.2	1.2	-	Est. Av. 50	N	• Well-managed formal hedge that provides useful semi-evergreen boundary screening	NATS	B2	0.60	1.1
H4	Beech (x approx. 45)	SM	3.5	1.3	1.3	1.3	1.3	-	Est. Av. 50	N	• Well-managed formal hedge that provides useful semi-evergreen boundary screening	NATS	B2	0.60	1.1
H5	Beech (x approx. 40)	SM	3.5	1.3	1.3	1.3	1.3	-	Est. Av. 70	N	• Well-managed formal hedge that provides useful semi-evergreen boundary screening	NATS	B2	0.8	2.2
T18	Cherry <i>Street Tree</i>	EM	6.5	3	5	3	4	1.9	290	N	• Tree with good form	NATS	B2	3.4	38.5
T19	English Oak	M	19	6	9	9	8	3.5	1110	N	• Prominent site frontage tree with good crown form: ivy-clad trunk	To prevent the crown from becoming smothered with ivy remove trunk-ivy using hand-tools only so as not to damage any underlying tree bark	B2	13.3	557.3
T20	Lawson Cypress	EM	15	2.5	2.5	2.5	2.5	-	520	N	• Frontage (street-scene) tree with good form	NATS	B2	6.2	122.3

<b>SITE:</b>	101 BROOKMANS AVENUE, BROOKMANS PARK, HATFIELD, AL9 7QG
<b>CLIENT:</b>	Whitemount Projects Ltd
<b>BRIEF:</b>	CARRY OUT A PHASE II ARBORICULTURAL IMPACT ASSESSMENT ON THE PROPOSED DEVELOPMENT AT THE ABOVE SITE.

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<b>ASSESSMENT DATE:</b>	21/02/2019
<b>VIEWING CONDITIONS:</b>	SUNNY – CLEAR
<b>JOB REFERENCE:</b>	101 310

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TREE HEDGE GROUP NO.	SPECIES (COMMON NAME)	AGE RANGE/ LIFE STAGE	HEIGHT (m)	RADIAL CROWN SPREAD (m)				CROWN CLEARANCE & DIRECTION OF GROWTH (m)	STEM/ MULTI-STEM* DIA. (mm)	VITALITY	COMMENTS/STRUCTURAL MORPHOLOGY	PRELIMINARY MANAGEMENT	CATEGORY & SUB-CATEGORY GRADING BS 5837	BS 5837 RPA RADIUS (m)	BS 5837 RPA (m <sup>2</sup> )
				N	E	S	W								
T21	Silver Birch <i>Third-party tree with no access to fully survey</i>	SM	6	1.6	1.6	1.6	1.6	2.5	Est. 280	N	<ul style="list-style-type: none"> <li>Heavily lopped and topped in past</li> </ul>	? See access	C2(?) See access	3.3	35.4
T22	Silver Birch <i>Third-party tree with no access to fully survey</i>	SM	6	1.6	1.6	1.6	1.6	2.5	Est. 190	N	<ul style="list-style-type: none"> <li>Heavily lopped and topped in past</li> </ul>	? See access	C2(?) See access	2.2	16.3
T23	Hawthorn <i>Street tree</i>	EM	7	2	3	3	3	1.9	360	N	<ul style="list-style-type: none"> <li>Tree with good crown form</li> </ul>	NATS	B2	4.3	58.6

## APPENDIX 2

### TREE PROTECTION PLAN

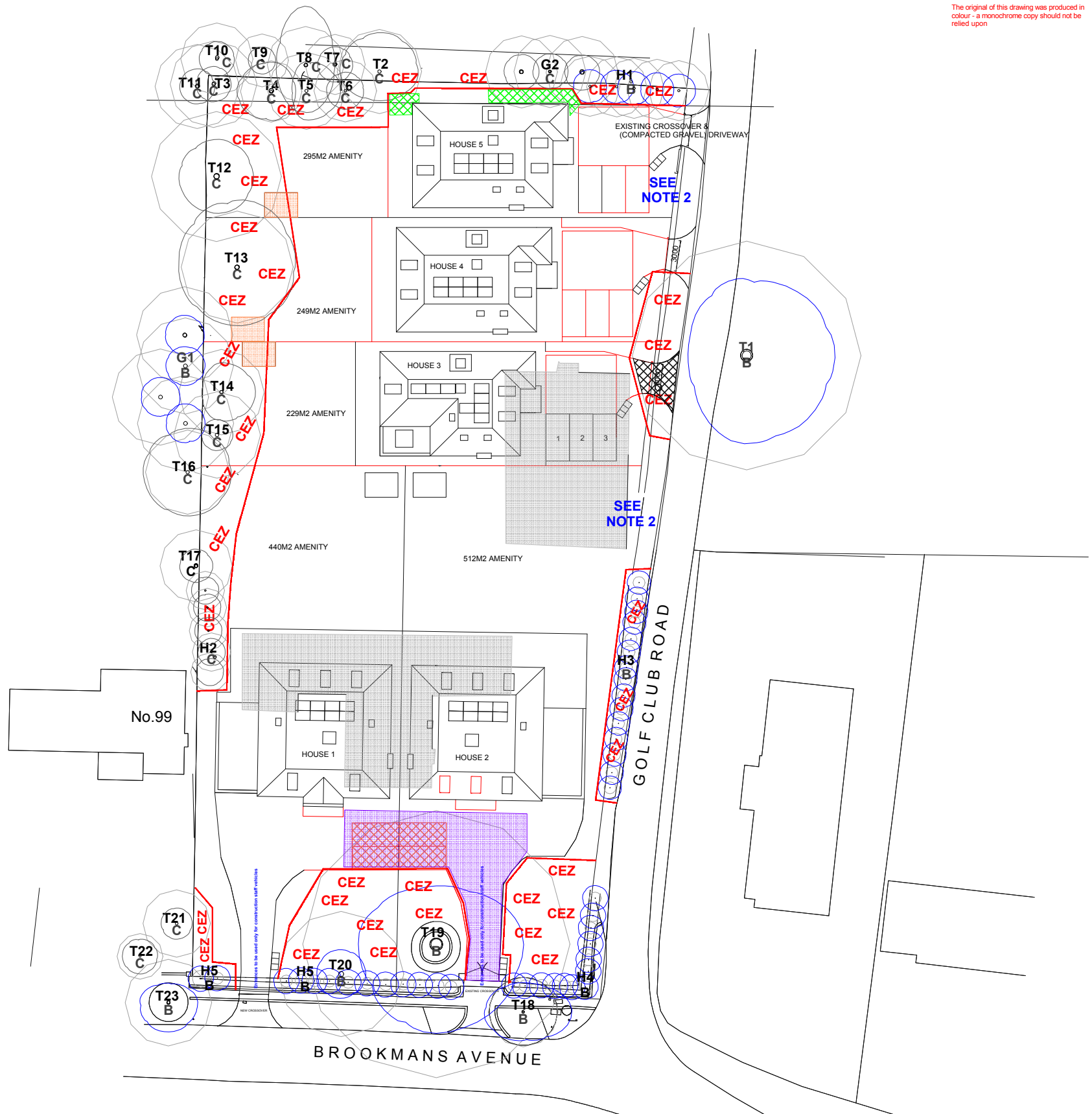
**NB** The original of this plan was produced in colour – a monochrome copy should not be relied upon.  
1 page only



The original of this drawing was produced in colour - a monochrome copy should not be relied upon

**NOTES**

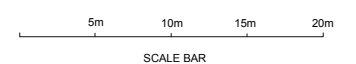
1. The existing build footprint is shaded gray.
2. Access routes for demolition and construction traffic off Golf Club Road.
3. The rear sheds (brown-shaded) for Houses 3-5 to be erected after the main build has been complete: with all machinery removed off-site and the TPBs removed.
4. On no account would any new utility runs be located/trenched within the Root Protection Area (RPA) of the off-site/frontage oak T1/ T19 without prior discussion and approval from the LPA and/or a Consulting Arborist.



THIS TREE PROTECTION PLAN MUST BE READ IN CONJUNCTION WITH THE ARBORICULTURAL METHOD STATEMENT THAT ACCOMPANIES THE TREE REPORT (IN APPENDIX 3)

**KEY**

- Root Protection Area (RPA)  
Crown Spread  
BS: 5837 Retention Grade
- Temporary Staked Tree Protection Barrier (TPB)
- CEZ = Construction Exclusion Zone**
- Temporary Scaffolding incorporating planked Ground Protection
- Temporary Ground Protection (over frontage car parking bays)
- Driveway Cellular Confinement Systems





APPENDIX 3

ARBORICULTURAL METHOD STATEMENT  
5 pages

**ARBORICULTURAL METHOD STATEMENT**  
**Site: 101 Brookmans Avenue Brookmans Park, Hatfield, AL9 7QG**

**To be read in conjunction with the Tree Report sections 6-8 and Tree Protection Plan at Appendix 2.**

NB The original of this plan was produced in colour – a monochrome copy should not be relied upon.

This AMS lays down the methodology for any demolition and/or construction works that may have an effect upon trees on and adjacent to this site. It is essential within the scope of any contracts - related to this development - that this AMS is observed and adhered to. It is recommended that this document forms part of the work schedule and that specifications are issued to the building contractor(s) and these must be used to form part of their contract.

Consulting Arborist contact details: Russell Ball – mob. No. 078844 26671

### **SEQUENCE OF WORKS**

From commencement of the subject development, the following methodology will be implemented in the manner and sequence described:

1. Pre-commencement site meeting.
2. Arboricultural pruning and/or removal works.
3. Erect *temporary* staked Tree Protection Barriers (TPB) to establish the fenced-off Construction Exclusion Zones (CEZ): **before** any demolition and/or construction works begin on-site.
4. Install *temporary* ground protection (TGP): **before** any demolition and/or construction works begin on-site.
5. Route underground services: not within the RPAs of any retention trees.
6. Main construction works.
7. Site Supervision Responsibilities
8. New Frontage Driveway: Cellular Confinement System.
9. Remove TGP, TPBs and Scaffolding.

#### **1. PRE-COMMENCEMENT SITE MEETING**

To outline on-site working methods in relation to trees prior to any demolition and/or construction activity, a site meeting of the following shall take place:

- Client
- Architect/Planning Consultant
- Structural Engineer
- Main Contractor
- LPA Arboricultural Officer (*optional*)
- Consulting Arborist
- Site Agent

#### **2. ARBORICULTURAL PRUNING AND/OR REMOVAL WORKS**

1. None required

#### **3. ERECT *TEMPORARY* STAKED TREE PROTECTION BARRIERS (TPB)**

1. Following completion of the tree works and prior to demolition and/or construction, the main contractor will erect the TPB as per the appended Tree Protection Plan (TPP) and as detailed in the '*Tree Protection Barrier Specification*' at Appendix 4 of this report. See also Appendix MS(ii) below. This will establish the fenced-off **Construction Exclusion Zones**: CEZs (marked up on the TPP).
2. Due to restricted space for angular staking alongside H1, G2, H2, H3 and H5 (small section adjacent to neighbouring boundary) the Heras TPB panels shall be booted with sections **clamped together** so they cannot be moved. See also Appendix MS(i) below.
3. Prior to commencement of any site demolition, construction, preparation, excavation or material deliveries, the Consulting Arborist will inspect installation of the TPB and the CEZs. Any damage occurring to the TPB during the demolition or construction phase will be made good by the main contractor.
4. Excavation will not occur at a distance of less than 300mm from the TPB.

#### **4. INSTALL *TEMPORARY* (ANTI SOIL-COMPACTION) GROUND PROTECTION (TGP)**

1. Prior any construction/demolition, the TGP shall be installed to protect the RPA incursion into the build site (area designated for the four frontage car parking bays) from the oak T19. In general, for wheeled or track

construction traffic within retention tree Root Protection Areas (RPA's), ideally the TGP will be specified by an engineer to accommodate the likely vehicular loading. We recommend the use of Durabase (<http://terrafirma.gb.com/>), Ground Guards ([www.greentek.org.uk](http://www.greentek.org.uk)) or Eve-Trackway (<http://www.evetrakway.co.uk/>) due to their recognised anti-soil compaction properties (i.e. to protect underlying tree roots). **Note 1:** If other similar TGP systems are used they must also have recognised *anti-soil compaction* properties (i.e. to protect underlying tree roots) **Note 2:** It is vital that the TGP is in place before any demolition/construction works begin on site.

2. There must be no mixing/preparation of noxious substances (e.g. cement) on the TGP surface.
3. To prevent leakage into the soil area under the TGP, fuels, oils, chemicals & cement must be carried in a portable bunded bowser and petrol must be stored in a ventilated tool box.
4. The areas designated for ground protection must be clearly marked on the Architects plan drawing and/or Tree Protection Plan (TPP).

## 5. ROUTE UNDERGROUND SERVICES

1. Service runs will enter the property(ies) using junctions from existing services where at all possible. For houses 1 and 2, on no account shall **any new utility runs** be located/trenched within the Root Protection Area (RPA) of the frontage oak T19 without prior discussion and approval from the LPA and or a Consulting Arborist\*. For the remaining houses 3-5, new underground services would be required. As above, on no account shall **any new utility runs** be located/trenched within the Root Protection Area (RPA) of the off-site oak T1 without prior discussion and approval from the LPA and or a Consulting Arborist\*.

\* For more detailed information regarding underground services, reference should be made to the National Joint Utilities Group (NJUG) Publication Volume 4: Issue 1. 'Guidelines for the Planning, Installation & Maintenance of Utility Apparatus in Proximity to Trees' 2007.

## 6. MAIN CONSTRUCTION WORKS

1. There will be no *temporary* site office.
2. Before commencing work on site, all operatives must be briefed by the **Site Agent/Contract Manager** on the importance of protecting both on and off-site trees. The basis of this briefing will be the protection measures as set out on the Tree Protection Plan (TPP) including the position of staked **Tree Protection Barriers**, **Temporary Ground Protection**, **Scaffolding Ground Protection** and **Construction Exclusion Zones**. As such the TPP shall be clearly displayed on the wall of the site office. **NB** During the demolition and/or construction the **Site Agent/Contract Manager** will be responsible for all tree protection measures. See also **Site Supervision Responsibilities** below.
3. There must be no (a) storage of construction material/equipment or (b) preparation of noxious substances (e.g. cement) in any area designated as the Construction Exclusion Zone (CEZ) and enclosed by the TPB.
4. **Temporary Scaffolding incorporating planked Ground Protection:** To be installed over and protect the RPA incursion into the 'build site' from G2 and T2: see the BS:5837 (2012) drawing specification below (with platform options). **NB I** On no account - referring to leakage – shall there be any mixing/preparation of noxious substances (e.g. wet mortar or concrete) on this ground protection planking; unless prepared on top of thick heavy-duty polythene sheeting. **NB II** Any diesel should be carried in a portable bunded bowser and petrol shall be stored in a ventilated tool box.

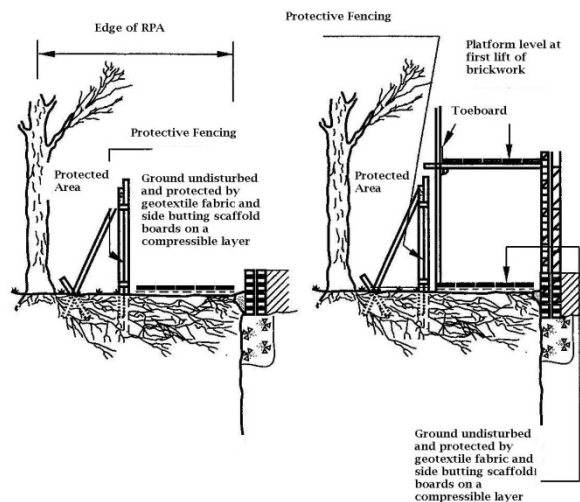


Figure 3 - Scaffolding within the RPA

5. **Rear Sheds:** The rear sheds (brown-shaded) for Houses 3-5 to be erected after the main build has been complete: with all machinery removed off-site and the Tree Protection Barriers have been removed.
6. **Site Access:** There will be two access routes off Golf Club Road for demolition and construction traffic. See Note 2 on the appended TPP. The entrance(s) off Brookmans Avenue shall only be used by construction staff vehicles (i.e. not for demolition and construction traffic). See notation on the appended TPP.
7. Fires on site will be avoided if possible. Where they are unavoidable they will not be lit in a position where heat could affect foliage or branches. The potential size of a fire and the wind direction must be taken into account when determining its location and it should be attended at all times until safe enough to leave.

## 7. SITE SUPERVISION RESPONSIBILITIES

1. It will be the responsibility of the main contractor to ensure that any tree protection planning conditions attached to planning consent are adhered to at all times and that a monitoring regime in regards to tree protection is adopted on site.
2. The main contractor must assign tree protection monitoring duties to one or more individuals working at the site, who will be responsible for all tree protection monitoring and supervision (see the *Site Personnel Induction Form* at Appendix MS ii).
3. The individual(s) assigned tree protection monitoring duties must:
  - Be present on site for the majority of the time;
  - Be aware of (a) the Tree Protection Plan and (b) the tree protection measures to be installed and maintained throughout all phases of the development;
  - Be responsible for ensuring all tree protection measures are adhered to as detailed in the Arboricultural Impact Assessment (AIA) report and Arboricultural Method Statement (AMS);
  - Ensure all site operatives without exception read and understand the tree protection and control measures detailed in the AMS;
  - Keep on file all individual Site Personnel Induction Forms which must be signed by all site operatives (including sub contractors) indicating they have read and understood the control measures detailed within the AIA report and AMS;
  - Maintain a written record of Tree Protection / Construction Exclusion Zone inspections, to be kept up to date by the person(s) who have been designated the inspection and monitoring duties;
  - Have the authority to stop any work that is causing, or has the potential to cause, harm to any retention trees;
  - Be responsible for ensuring that all site operatives including sub contractors are aware of their responsibilities toward on/off site trees and the consequences of the failure to observe these responsibilities;
  - Make immediate contact with the Consulting Arboriculturist in the event of any tree related problems occurring, whether actual or potential. (Contact details including telephone number and email address are listed on the Title Page).
4. The Construction Exclusion Zone fencing, ground protection and all signs must be maintained in position at all times and checked on a regular basis by the on site person(s) who have been designated that responsibility.
5. The main contractor will be responsible for contacting the Local Planning Authority and the Consulting Arboriculturist at any time issues are raised relating to the trees on site.
6. If at any time pruning works are required, permission must be sought from the Local Planning Authority first and then carried out in accordance with BS 3998:2010 Tree Work – Recommendations (As updated).
7. The main contractor will ensure the build sequence and phasing is appropriate to ensure that no damage occurs to the trees during the construction processes. Protective fences will remain in position and undisturbed until completion of ALL construction works on the site.
8. The main contractor will be responsible for ensuring all site operatives including sub-contractors do not carry out any process or operation that is likely to adversely impact upon any tree on site.

## 8. NEW FRONTAGE DRIVEWAY: 3D CELLULAR CONFINEMENT SYSTEM (CCS)

1. The existing frontage gravel driveway (for house 2) shall be renewed (new surfacing) and slightly extended. As this is within the RPA of T19, this driveway section (mauve shaded on the appended TPP) would be installed using a minimal/no-dig CCS. A site specific installation Method Statement (MS) should be obtained from ProtectaWeb\* (Wrekin Products Ltd.) and the product installed in accordance with this MS (**NB** As advised by Wrekin Products Ltd. this MS is free of charge). See generic MS at Appendix 6. Contact: [laura.perrett@wrekinproducts.com](mailto:laura.perrett@wrekinproducts.com) / [roy.partington@wrekinproducts.com](mailto:roy.partington@wrekinproducts.com) (tel. no. for Roy Partington: 07496 920 640). The project evaluation by a Wrekin Products Ltd Engineer will determine the correct size and product specification required at the site. As such the construction will be to an engineer designed specification.

\* Or a similar industry recognised CCS

2. The new CCS section will be laid over the existing ground without excavation other than the removal by hand of surface vegetation and minor (<100mm high) surface irregularities or loose soil to a depth of not more than 150mm.
3. Any sub-base of the existing drive shall be **retained** and used for the news CCS driveway.
4. In regard to the CCS due consideration will be given to the principles with the Communities and Local Government publication “Guidance on the Permeable Surfacing of Front Gardens” (2008) Product Code: 08 COMM 05532. ISBN: 978-1-4098-0485-7
5. The final finished surface will be of a porous material agreed with Local Planning Authority.
6. Edge restraints to the no-dig section of the CCS will be constructed from pressure treated timber boards secured to timber posts, or other means agreed with Local Planning Authority. In the installation of edge restraints, there will be no excavation of ground other than that described at (1.0) above. All timber will be treated in compliance with BS 4072 (Wood Preservation by Means of CCA Compositions).
7. **Importantly**, when CCS are used for driveways/paths this may increase final finished surface levels that should be accounted for: notably in respect to matching property (for example, damp-proof levels & overall building height) and garage access.

9. **REMOVAL OF TEMPORARY GROUND PROTECTION (TGP), TREE PROTECTION BARRIERS (TPB) AND SCAFFOLDING**

1. The TGP, TPB and scaffolding will be removed only upon completion of the construction works and the CCS driveway installation works.

**APPENDIX MS(i)**

Figure 2 Default specification for protective barrier

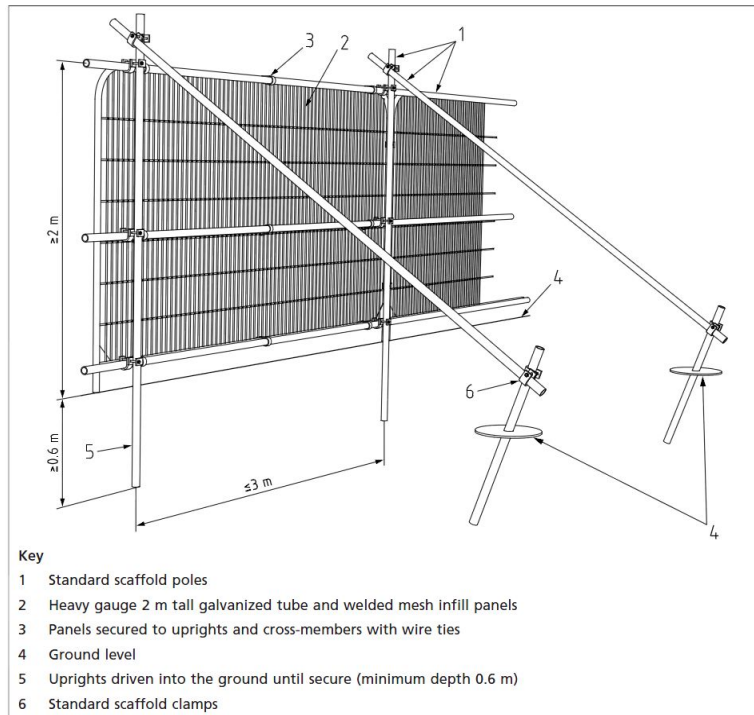
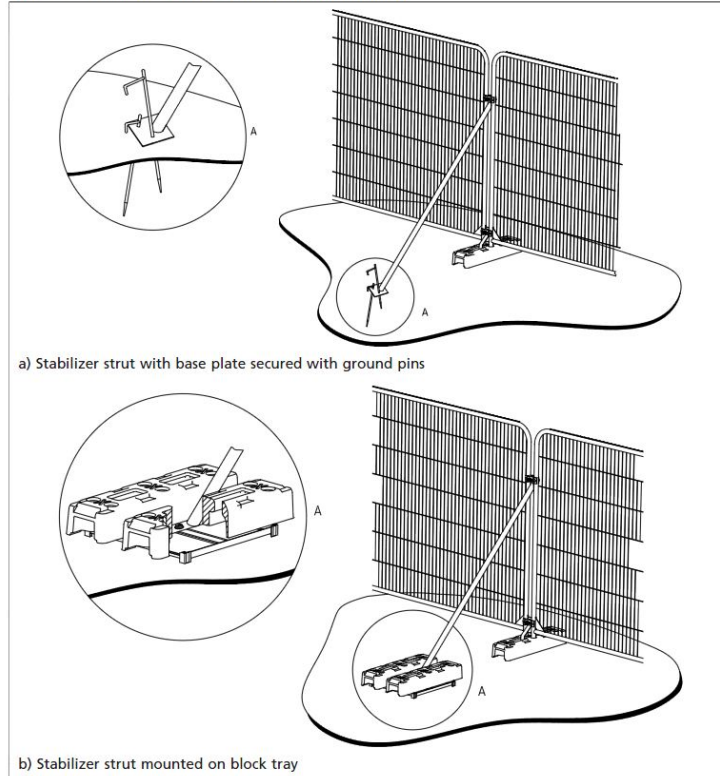


Figure 3 Examples of above-ground stabilizing systems



**APPENDIX MS(ii)**  
Site Personnel Induction Form

**Name:**

**Site Address:**

**Date:**

Declaration	Tick to Confirm
I have read and understand the Arboricultural Method Statement and the requirements to be employed / actioned at the site regarding tree protection.	
I understand that all tree protection measures (fencing and ground protection) must not be moved or disturbed throughout the development project without prior agreement with the Consulting Arboriculturist.	
I understand that certain operations must only be undertaken under supervision of the Consulting Arboriculturist or a suitably qualified Arborist and/or must not be undertaken without their approval.	
I acknowledge that any concerns I have regarding the protection of trees at and adjacent to the development site will be brought to the attention of the Site Manager/Supervisor.	
I acknowledge that I must not cause direct or indirect damage to any on site or neighbouring tree, either above or below ground level during the course of my daily operational duties.	

**Signed:**.....

APPENDIX 4  
TREE PROTECTION BARRIER  
SPECIFICATION  
(1 page only)

## TREE PROTECTION BARRIER SPECIFICATION

The Root Protection Area (RPA) and Construction Exclusion Zone (CEZ) enclosed by temporary protective fencing must:

1. Be erected prior to any site works, demolition or construction works, delivery of site accommodation or materials and must remain for the duration of the demolition/construction works. All-weather notices should be attached to the barriers with the following wording: **“CONSTRUCTION EXCLUSION ZONE – NO ACCESS”**
2. Be protected by temporary protective fencing and other measures as specified and as defined by area (m<sup>2</sup>) on the drawings (Tree Protection Plan - TPP).
3. Preclude the storage or tipping of all materials and substances, in addition, toxic substances such as fuels, oils, additives, cement, or other deleterious substances within 5.0 metres of an exclusion zone.
4. Any incursion into the Root Protection Area (RPA) and Construction Exclusion Zone (CEZ) as indicated on the Tree Protection Plan (TPP) must be by prior arrangement, following consultation with the Local Planning Authority.

### Protective Fencing Type:

#### Temporary Tree Protection Barrier (Specification taken from BS:5837 -2012)

Figure 2 Default specification for protective barrier

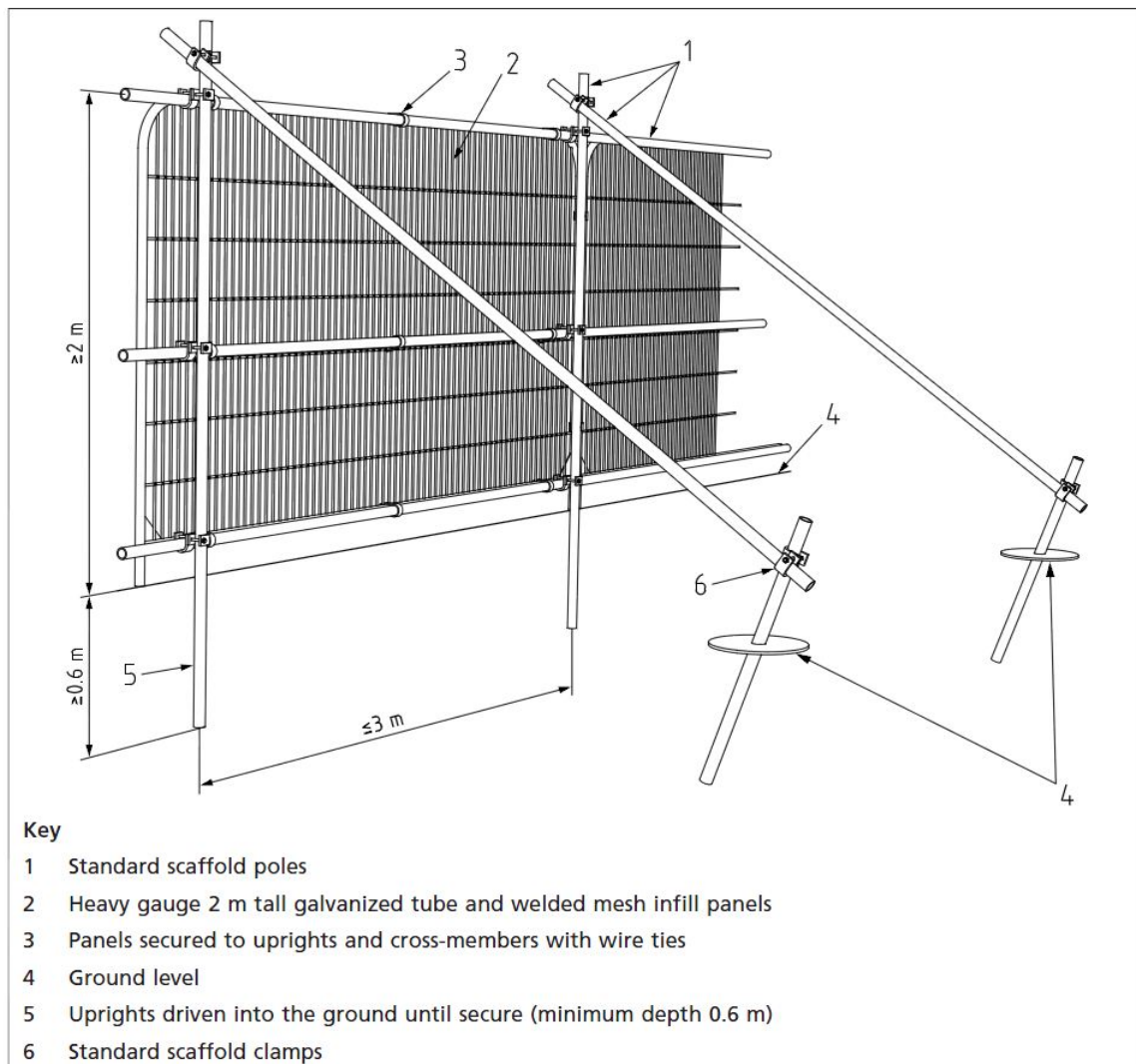
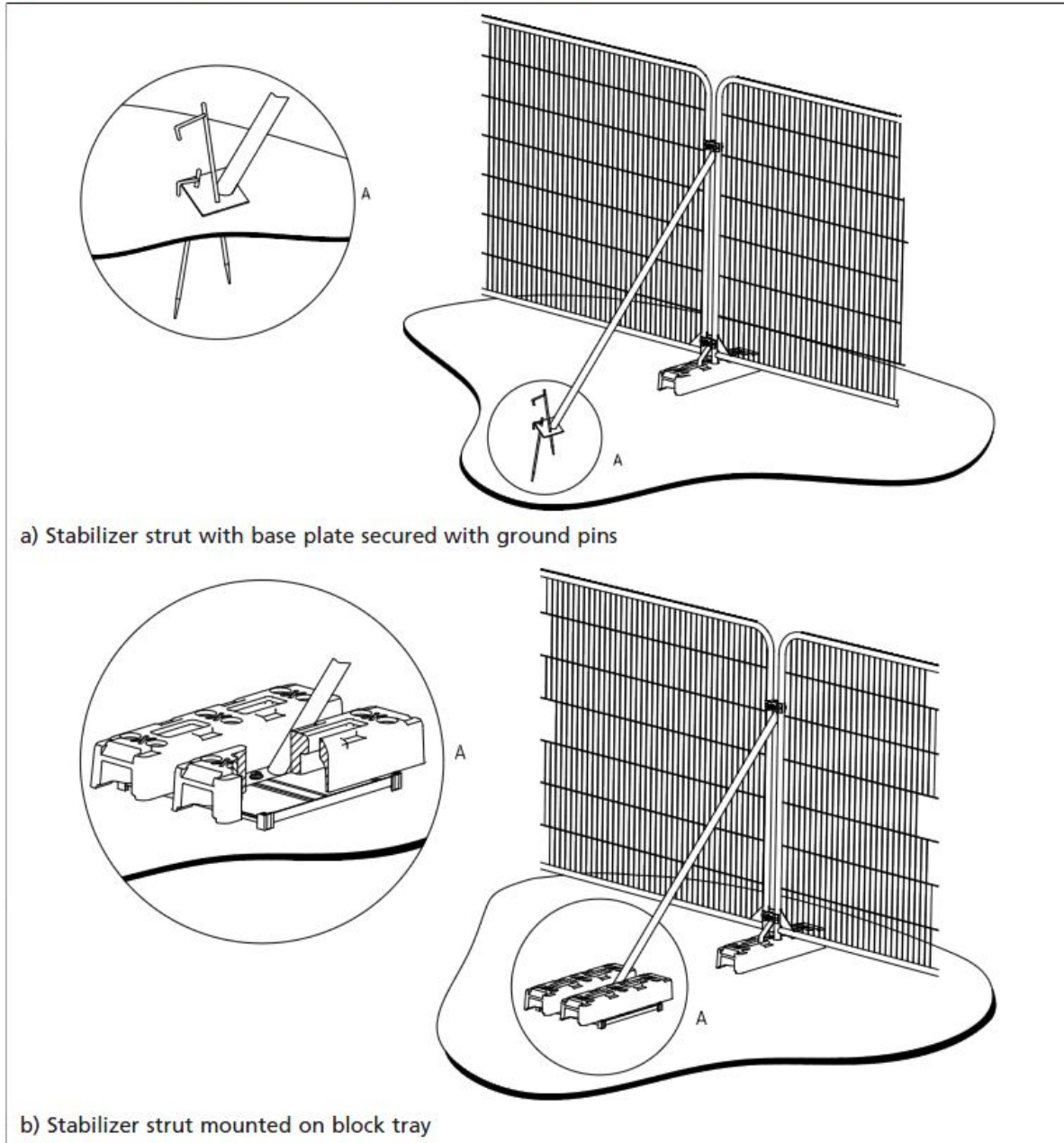




Figure 3 Examples of above-ground stabilizing systems



APPENDIX 5  
OUTLINE CURRICULUM VITAE AND PROFESSIONAL EXPERIENCE

Russell Ball BSc. (Hons.), P.G. Dip. LM, CBiol., MSB.  
Chartered Biologist

### Qualifications

- BSc. (Hons.) Botany (Manchester University).
- Post Graduate Diploma: Landscape Management (Manchester University).
- Royal Society of Biology **Chartered Biologist** (since 1995).
- International Society of Arboriculture **Certified Arborist** No. UI 1287A (2017)
- L<sub>ANTRA</sub> Approved **Professional Tree Inspector** (Ref: HO00178227 504187)
- International Society of Arboriculture **Qualified Tree Risk Assessor** (ID: 2148)

### Professional Experience (1984-2012)

- Tree Works Contractor.
- Harrow Council: Assistant Tree Officer (Parks Dept.)
- London Tree Officers Association: Executive Officer.
- International Society of Arboriculture (European office): Senior Executive.
- Arbol Euro Consulting: Technical Director (**Madrid, Spain**).
- Harrow Council: Principal Tree Preservation (TPO) Officer. During my employ with Harrow Council I served on the Executive Committee of the "*London Tree Officers Association*".
- Arbol Euro Consulting Ltd: Technical Director (**London, UK**).

### Professional Memberships

- International Society of Arboriculture (ISA). President of the ISA UK/I Chapter (2010-2012).
- Arboricultural Association
- Consulting Arborist Society
- Royal Society of Biology
- Royal Horticultural Society (Chelsea Flower Show *Silver-Gilt* medal Winner: *Rainforest Belize* – 1996)

### Contact Details

- Mobile: 078844 26671
- Email: [russell@arboleuro.co.uk](mailto:russell@arboleuro.co.uk)

