1a Shelley Close
Edgware HA8 8DX

Phase II Arboricultural Impact Assessment (AIA)
(Ref. 101 490)

Date: 10/06/2020

Prepared by:
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For 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 to assess the on and off-site trees and large shrubs/hedges in regard to the proposed development. See section 6.1.2.

NB This report does not seek to authorise any tree works (see Section 4.1).

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" (2nd edition) Dunster, Julian A., E. Thomas Smiley, Nelda Matheny, and Sharon Lilly (2017) 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 METHODOLGY

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 3rd 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. Tree Constraints.
4. Tree retention & protection

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.

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^2, 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. 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 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/large shrubs 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

In general, wild birds and bats are protected by the Wildlife and Countryside Act 1981 (schedule 1 & 5) as amended by the Countryside and Rights of Way Act 2000 and statutory instruments. It is not a defence to claim that harm was accidental/unintentional in the course of carrying out tree works (i.e. the negligence of *reckless* harm can now be applied). There is therefore an onus on the operative to check for the presence bird of nesting/bat roosts (e.g. holes, limb cracks/splits or cavities) 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. Bats and their roosts are afforded the highest protection in UK Law.

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 No. 1a Shelley Close Edgware HA8 8DX: TREE REPORT (to be read in conjunction with the appended Tree Protection Plan and Tree Survey)

6.1 THE PROPERTY AND THE DEVELOPMENT PROPOSAL

6.1.1 Site description: A large garden open area to the south of the existing property: a detached residential property. A tarmac hammer-head off Shelley Close provides off-street parking.

6.1.2 The proposal: A detached five-bedroom residential property with two off-street car parking bays.

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.

6.2 TREES ON-SITE

6.2.1 Front: A Himalayan cotoneaster (T4) with low-grade unbalanced crown form. This is the only frontage tree.

6.2.2 Rear: There is a substantive informal boundary hedge, comprised of large Portuguese laurel shrubs (S1-S6 and G1). As individuals these close-set shrubs have average suppressed C-grade crowns but collectively they provide a useful boundary screen from the multiple properties in Glendale Avenue. Within and suppressed by this hedge there is a sliver birch T1 and cockspur thorn T2. Both as such are low-grade trees.

6.3 TREES OFF-SITE

6.3.1 Properties in Glendale Avenue: In the past, the cypress T3 has been topped. Consequently this is a low-grade tree.

6.4 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)**

6.4.1 Underground Utilities: Locations of any **proposed** underground services were not identified on the provided plans. If required such services **would *not*** be sited within the Root Protection Area of the frontage retention tree T4 without prior discussion and approval from the LPA and/or a Consulting Arborist. See section 6.5.

6.4.2 CEZ 1: Root Protection Areas (RPAs)

6.4.2.1 Footprint of the Proposed Build

Main Build: There would be no RPA incursion.
Path: This would run along the RPA edge* of S1-S3 and T1. However, as these are low-grade, it would be (economically) disproportionate to specify the use of an above-ground minimal-dig Cellular Confinement System. It is likely, in any event, that within a short number of years any severed fibrous roots* from these shrubs/tree would repopulate the soil area under the new path.

** As opposed to the large structural woody roots that spread-out for a short distance from the trunk base and importantly persist for the life of a tree, the more distal fine non-woody feeder roots (function: to absorb water & essential nutrients) are much shorter lived: from a year to only 10 days. As such there is a continual annual turn-over of these feeder roots that are produced, where ground/soil conditions are favourable and as needed by the tree, to capture water and essential nutrients from unexploited areas of the surrounding soil. Therefore, the initial loss of feeder roots with this RPA incursion would not adversely impact on the physiological health and or stability these shrubs/tree. Lastly, in this sense the generic BS:5837 calculated RPA radial/m² dimension do not necessarily correlate to tree root morphology on a case by case/tree by tree basis.*

6.4.2.2 Construction Activity

Tree Protection Barriers (TPBs): As per the appended Tree Protection Plan, if *temporary* TPBs are installed – to establish the two Construction Exclusion Zones (CEZs) - this would afford adequate RPA protection for all retention trees. Due to restricted space for angular staking these TPBs would be booted with sections ***clamped together*** and stabilizing struts so they cannot be moved. In regard to the eastern TPBs, the low/mid-crown branches on S1-S3 would likely require tipping-back back by up to 1.5m to allow for the installation of the temporary TPBs. The high crown on the silver birch T1 would be unaffected by the TPBs.
On no account would these CEZs be used for the storage/preparation of any construction/building materials.
See new boundary fence below that we would recommend be installed at the same time as the TPBs: to also part-serve for the CEZs.
See the measured brown-arrow (for T4) as an example TPB distance guide and the Heras fencing specification in Appendix 4.

New Boundary Fence: Firstly and importantly, this would be installed at the same time as the TPBs to also part-serve for the CEZs. This would pass through the RPAs of T2 and S6

(see Note 1 on the appended TPP). To mitigate any RPA impact with the fence–post hole excavations the following would be carried out:

Method for the excavation of the fence-post holes (FPH)

1. To avoid cutting/slicing (i.e. by using a spade) through any significant (i.e. > 2.5cm dia.) tree roots, only hand-tools (e.g. forks and trowels) would be used.
2. The FPH excavation would be supervised by a suitably qualified Consulting Arborist.
3. Any roots smaller than 2.5cm diameter may be pruned back, preferably to a side branch, using a proprietary cutting tool such as by-pass secateurs. This would leave a clean cut that can more readily occlude (close) and produce secondary rooting. **NB** Large clumps of these small diameter roots should only be cut following consultation with a suitably qualified Consulting Arborist.
4. Significant roots (i.e. > 2.5cm dia.) would only be severed following consultation with a suitably qualified Consulting Arborist, as they may be essential to the tree's health, condition and/or stability. If it agreed that such roots are to be cut then this would be carried out using a sharp handsaw producing a vertical (not slanting) cut to leave a clean-cut that can more readily occlude (close) and produce secondary rooting.
5. As an alternative to point 4 above, the FPH excavation would be moved to another position.

Temporary Storage of Machinery and/or Materials: There would be adequate on-site space. See notation on the appended TPP.

Temporary Site Office: There would be adequate space on site (possibly on the area for the two car parking bays).

6.4.3 CEZ 2: Tree Crown Protection Zones

Construction Vehicle Site Access (access facilitation pruning)

As this is an open site, there would be no such issue with this proposal.

6.4.4 CEZ 3: Tree Dominance Zones

With no close-proximity large trees there would be no such issue with this proposal. The substantive informal hedge (comprised of S1-S6) could be trimmed back on a regular basis to containerise its spread and if required, the height. This would be part of the regular grounds maintenance for the property.

6.4.5 CEZ 4: New Tree Planting Zone

As per the Guarda Landscape Master Plan (ref: GUA-DR-L-001) there would be three silver birch trees and a western red cedar boundary hedge. In regard to the trees, these should be supplied as (a) container-grown Heavy Standard trees and (b) with a 12:14cm trunk girth. See principals of tree planting and aftercare in the appended Method Statement: Appendix MS(i).

6.5 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 the frontage tree T4.

6.6 TREE PROTECTION DURING CONSTRUCTION

6.6.1 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.

6.6.2 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. 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.

6.7 ARBORICULTURAL METHOD STATEMENT

6.7.1 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.

6.7.2 Site Supervision

An individual – ideally the Site Agent - must be nominated to be responsible for all arboricultural matters on site (specific responsibilities are set out in 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.

6.7.3 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.

7.0 CONCLUSIONS

7.1 DEVELOPMENT PROPOSAL & POTENTIAL IMPACT ON TREES

7.1.1 The development proposal would not require the removal of any trees. However, the low/mid-crown branches on S1-S3 would likely require tipping-back back by up to 1.5m to allow for the installation of the temporary TPBs.

7.1.2 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.

7.1.3 There would be no CEZ 2 or CEZ 3 issues with this application.

7.1.4. CEZ 4 – New Tree/Hedge Planting: As per the Guarda Landscape Master Plan (ref: GUA-DR-L-001) there would be three silver birch trees and a western red cedar boundary hedge.

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

7.1.6 Site Supervision Responsibilities: This would be an essential element during the proposed build to ensure effect tree protection. See section 6.0 in the appended in the Arboricultural Method Statement.

8.0 RECOMMENDATIONS

8.1 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.

8.2 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.

9.0 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.

10.0 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 3rd 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
(see appended at end of report)
2 pages

APPENDIX 2

TREE CONSTRAINT AND PROTECTION PLANS
(see appended to the report)

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

APPENDIX 3

ARBORICULTURAL METHOD STATEMENT
5 pages

ARBORICULTURAL METHOD STATEMENT (AMS)

Site: No. 1a Shelley Close Edgware HA8 8DX

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 works: with written LPA permission for any protected trees/shrubs.
3. Erect *temporary* Tree Protection Barriers (TPBs) to establish the fenced-off Construction Exclusion Zones (CEZ): ***before*** any construction works begin on-site.
4. Route underground services: not within the RPAs of any retention trees.
5. Main construction works.
6. Site Supervision Responsibilities
7. Remove TPBs
8. New Tree Planting

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 WORKS

1. Before the erection of the *temporary* Tree Protection Barriers (see below) tip-back the low/mid-crown branches on S1-S3 by up to 1.5m to allow for the installation of the temporary TPBs (see section 3.0 below)
2. All operatives must be equipped with and use personal protective equipment (PPE) in accordance with current Health & Safety Executive current directives and industry codes of practice.
3. Performance of all arboricultural operations and use of equipment must be in accordance with current Health & Safety Executive current directives and industry codes of practice.

3. ERECT *TEMPORARY* TREE PROTECTION BARRIERS (TPBs)

1. Following completion of the pruning works and prior to construction, the main contractor will erect the TPBs 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 two fenced-off **Construction Exclusion Zones**: CEZs (marked up on the TPP). **NB I** The new boundary fence (see section 5.0 below) will also be installed at the same time as TPAs to also part-serve for the CEZs. **NB II** Due to restricted space for angular staking these TPBs shall be booted with sections ***clamped together*** and stabilizing struts so they cannot be moved.
2. On no account shall these CEZs be used for the storage/preparation of any construction/building materials.
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. ROUTE UNDERGROUND SERVICES

1. Service runs will enter the property using junctions from existing services where at all possible. Replacement/new underground services shall not be installed within RPA*s without prior consultation with the LPA and if RPA incursion 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 the frontage tree: T4

5. MAIN CONSTRUCTION WORKS

1. There will be a *temporary* Site Office.
2. **New Boundary Fence:** This will pass through the RPAs of T2 and S6 (see Note 1 on the appended TPP). To mitigate any RPA impact with the fence–post excavations the following would be carried out:

Method for the excavation of fence-post holes (FPH)

- To avoid cutting/slicing (i.e. by using a spade) through any significant (i.e. > 2.5cm dia.) tree roots, only hand-tools (e.g. forks and trowels) shall be used.
- FPH excavation shall be supervised by a suitably qualified Consulting Arborist.
- Any roots smaller than 2.5cm diameter may be pruned back, preferably to a side branch, using a proprietary cutting tool such as by-pass secateurs. This would leave a clean cut that can more readily occlude (close) and produce secondary rooting. **NB** Large clumps of these small diameter roots should only be cut following consultation with a suitably qualified Consulting Arborist.
- Significant roots (i.e. > 2.5cm dia.) will only be severed following consultation with a suitably qualified Consulting Arborist, as they may be essential to the tree's health, condition and/or stability. If it agreed that such roots are to be cut then this would be carried out using a sharp handsaw producing a vertical (not slanting) cut to leave a clean-cut that can more readily occlude (close) and produce secondary rooting.
- As an alternative to the above point, the FPH excavation would be moved to another position.

3. **Storage of Construction Material/Equipment**: See area plotted on the appended TPP.
4. **Construction Exclusion Zone (CEZ):** 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 CEZ and enclosed by the TPB.
5. 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 and braced **Tree Protection Barriers** and **Construction Exclusion Zones**. As such the TPP shall be clearly displayed on the wall of the site hut/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.

6. 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 iii).
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.

7. REMOVAL OF *TEMPORARY* TREE PROTECTION BARRIERS (TPBs)

1. The TPBs will be removed only upon completion of the construction.

8. NEW TREE PLANTING (see Appendix MS(i) below)

1. With the completion of the construction and the removal of the TPBs, the new trees and hedge can be planted. As per the Guarda Landscape Master Plan (ref: GUA-DR-L-001): three silver birch trees and a western red cedar boundary hedge.
2. Trees to be supplied as (a) container-grown Heavy Standards and (b) with a 12:14cm trunk girth. **NB** Container-grown stock can be planted at anytime, but require plenty of watering to aid establishment.
3. Tree planting must only be undertaken by fully trained and competent staff.
4. If weather and ground conditions permit, trees must be planted immediately after arrival on site. All planting periods should avoid very dry spells or extreme wet weather.

APPENDIX MS(i)
PLANTING & AFTER-CARE (PRINCIPLES) OF CONTAINER-GROWN STANDARD TREES

Planting:

1. Excavate a **square tree-pit** to a depth of 450mm and at least 750mm across (i.e. enough space into which to place the root-ball with a wide gap around it into which soil can be back-filled). The excavated soil must be kept for back-filling with the exception of sub-soil or inferior material that should be discarded. Unless soils are in extremely poor condition, added fertilisers are unnecessary. When the correct depth is reached (see point 4 below), the bottom of the tree-pit should be lightly broken up to aid root penetration and drainage. All glazed (clay) sides must be loosened. Tree pits must not be left open over night.
2. Before planting, all young trees should be pruned to remove all dead wood and weak or crossing branches to encourage the development of a well-shaped/developed crown. All damaged roots must be cleanly removed. All branch pruning cuts should conform with the natural target pruning methodology and in accordance with **BS 3998 (2010) 'Tree Work-Recommendations'**.
3. Remove the tree from its container. If roots are coiled around the shape of the pot they should be gently loosened to prise them out. Any trees that are pot-bound (i.e. with thick girdling roots running around the shape of the pot) should be rejected and returned to the supplier.
4. Trees must be planted so that the joint of root and stem (***nursery mark***) is level with the finished planting height. An L-shaped perforated irrigation tube should be installed before the tree is planted so that irrigation water can be directed down this tube and under and along base of the root-ball (see section 7.0). Backfill should consist of the excavated top-soil (no sub-soil or inferior material).
5. Use only a short (no more than 1/3 height of the tree) single/double tree-stake to allow trunk movement and trunk-base thickening. To prevent chaffing, the tree-tie(s) should form a figure of eight or have a spacer between the tree and the stake. **IMPORTANT:** Remove tree-stakes after 2-3 years.
6. Tread gently to firm the root-ball into position.
7. Immediately water the tree to saturate the soil preferably using a full watering with fine (sprinkler) rose fitted to avoid soil surface run-off. Subsequent irrigation will be required (see section 4.0) during the spring and summer months: at least weekly at a rate of 10-15 litres of water. And every other day during the height of summer or during long periods of hot weather.
8. To control weed growth and keep moisture in the soil add mulch: a 10cm deep layer of wood-chips/bark-chippings around the tree base. This should cover an area at least 1m dia. See strimmer/mower damage in section 9 below.

NB Keep mulch away from the trunk base or fungal rot may result.

9. In order to avoid mower/strimmer damage to tree trunk bases (i.e. bark stripping), grass seed/turf ***should not*** be laid within a 0.5m (min.) radius around trees.
10. **IMPORTANT:** Remove tree-stakes after 2-3 years.

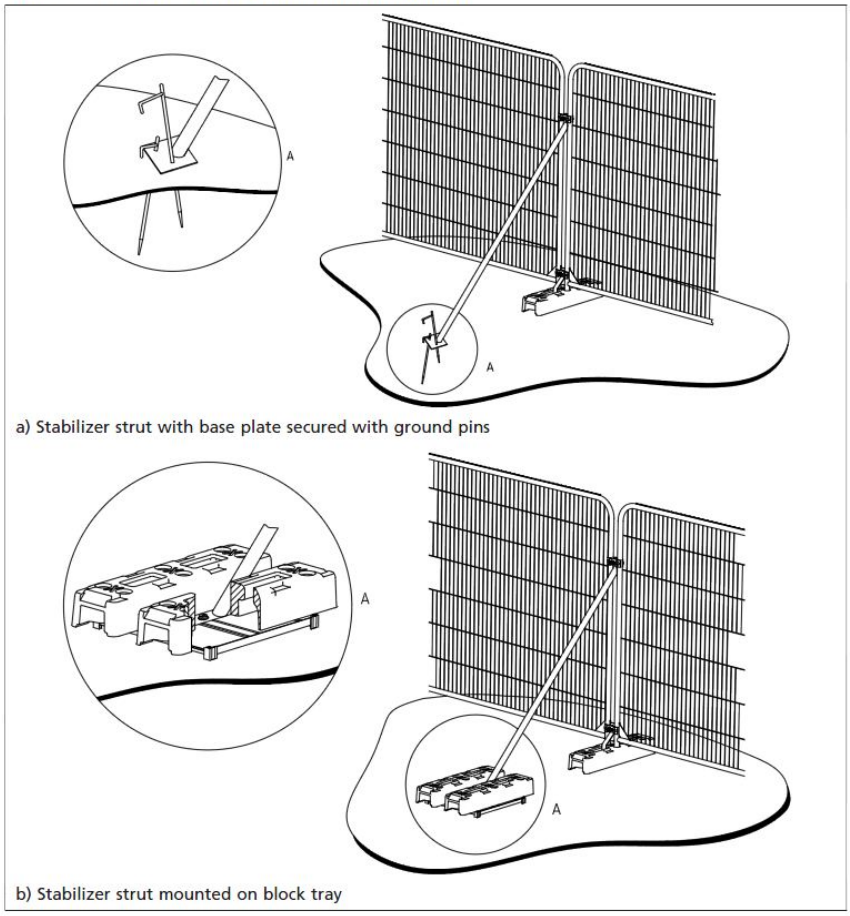
After Care:

The after-planting maintenance period for container-grown standard trees is twenty-four months after first bud-break. During this period such after-care works must include the following:

- Watering during dry summer months.
- Checking stakes and adjusting tree-ties at least twice per year (**NB** tree-ties are a *temporary* measure and should ideally be removed after three years).
- Weed control preferably by mulch reapplication (see point 8 above).
- Stake removal ideally after 3-4 years. Before the stake is removed completely gently rock the tree from side to side to check that the root-ball is firmly anchored in the ground. If this lifts out of the ground then re-tie the tree and carry out this procedure the following year.

APPENDIX MS(ii)

Figure 3 Examples of above-ground stabilizing systems



a) Stabilizer strut with base plate secured with ground pins

b) Stabilizer strut mounted on block tray

APPENDIX MS(iii)
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

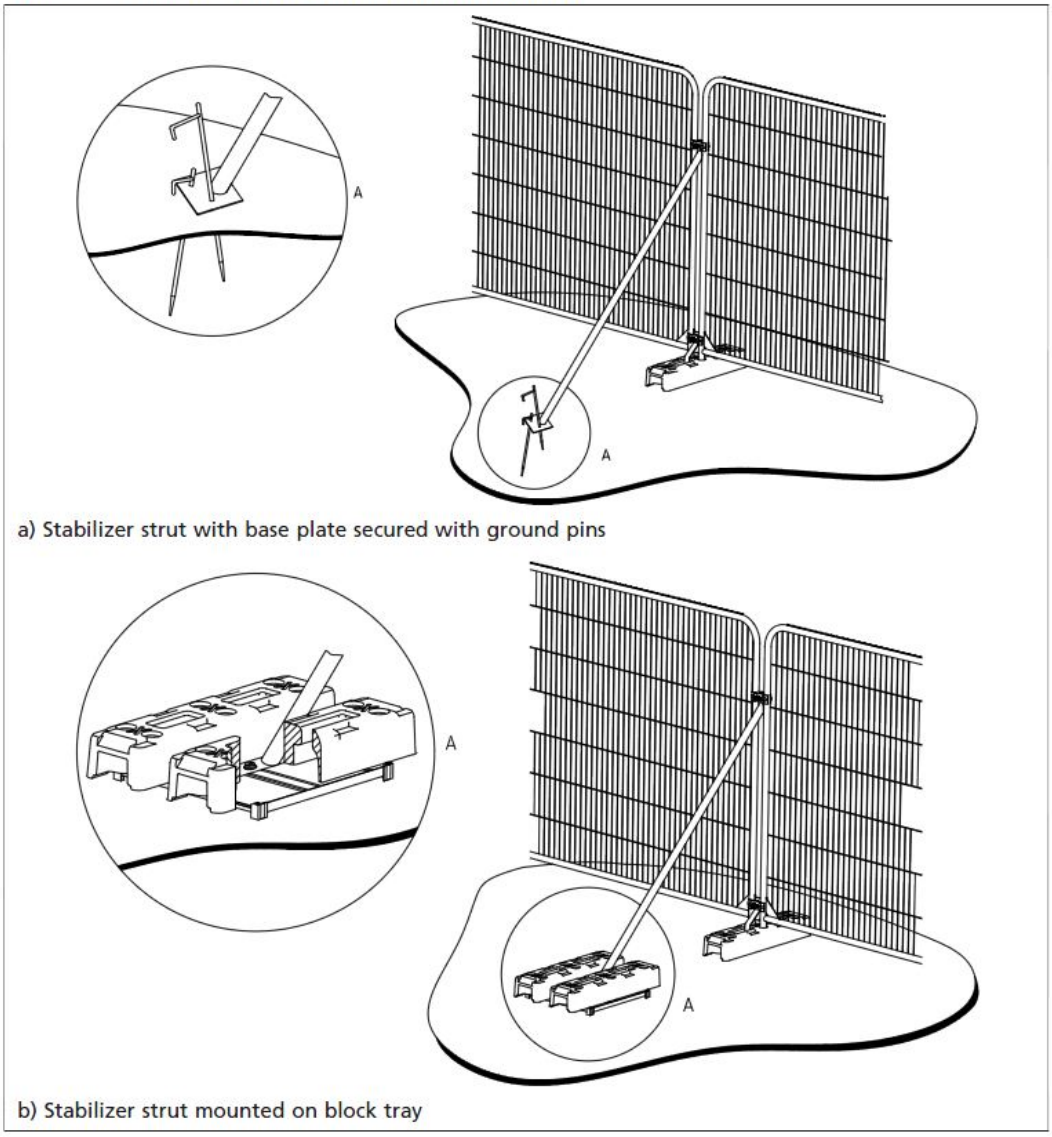
TREE PROTECTION BARRIER SPECIFICATION

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^2) 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.

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

Figure 3 Examples of above-ground stabilizing systems



APPENDIX 5

OUTLINE CIRRICULUM 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)
- *LANTRA* 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

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