



MARK WELBY
CONSULTING ARBORISTS

Arboricultural Impact Assessment

Chandigrah, Summerhouse Lane, Harefield, UB9 6HS

Reference: MW.2304.CSLH.AIA

Client: Belle Varna Developments Ltd

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Mark Welby DipArb(RFS), TechCert(ArborA), FArborA
01730 239 492 | mark@mwelby.com | www.mwelby.com
M Welby Ltd, trading as Mark Welby Consulting Arborists
Hampshire, UK





Executive Summary

Trees are a consideration in this planning application for four dwellings. Therefore, this report has been drafted to provide the information required to enable the local planning authority to meet the duty placed upon them by section 197 of the Town and Country Planning Act (as amended, 2021).

Included are a BS5837:2012 compliant tree survey, arboricultural impact assessment, and tree protection strategy that includes a method statement and tree protection plan.

Seventeen low-quality trees and tree groups are to be removed. Fourteen of these removals are proposed as good practice, due to their poor condition.

The new dwellings and associated construction are all situated outside the root protection areas of retained trees.

Provided the protection strategy is implemented as outlined, I believe this application is of low arboricultural impact, and thus acceptable.

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1. Instructions and Terms of Reference

- 1.1. In April 2023, I was instructed by Belle Varna Developments Ltd to undertake a tree survey and subsequently, in October, to produce this report to accompany a planning application for four dwellings on the site at Chandigrah, Summerhouse Lane, Harefield.
- 1.2. Following the recommendations of the British Standard¹, this report includes the necessary information to enable the local planning authority to meet the duty placed upon them by section 197 of the Town and Country Planning Act (as amended, 2021).
- 1.3. It demonstrates that the impact, both direct and indirect, of the proposal, has been assessed and where appropriate, mitigation, compensation and tree protection proposed.
- 1.4. Correct implementation of the tree protection specified within this report is critical for ensuring the retained trees are successfully protected throughout the construction process.
- 1.5. The assessment considers the impact of the proposal on the constraint presented by trees retained within the site, and those on adjacent land. Such impact can be caused directly through construction damage and indirectly from post-development resentment and pressure to detrimentally prune or remove the trees. The latter is often due to a poor juxtaposition between the proposal and the trees.
- 1.6. The root protection area (RPA) for each tree represents a minimum area in m² that shall be left undisturbed around each retained tree. This is initially represented by a circle but is fundamentally an area of rooting volume. This is often adjusted to account for constraints to root growth within the site (primarily highways and buildings). Recommendations are provided in the British Standard as to the protection of existing trees during the construction process. This is achieved by ensuring a tree protection strategy is implemented before any demolition or construction on site.

Documents Supplied

- Proposed: 1682 - Chandigrah-P-01.pdf
- Site survey: 5864.dwg

Statutory Legislation

- 1.7. According to Hillingdon Council's online service², there are no tree preservation orders on the site (checked at the time of writing), nor is the site within a conservation area.
- 1.8. However, the woodland to the east is covered by a woodland tree preservation order from 1951.

¹BS5837:2012 Trees in relation to design, demolition and construction

² <https://lbhillingdon.maps.arcgis.com/apps>

1.9. A felling licence would be required for tree removals under the 1967 Forestry Act (exemptions may apply). Tree removals required to implement *full* planning permission are exempt from the need for a licence.

2. Tree Survey Scope & Methodology

- 2.1. Tree survey data can be found on the appended plan.
- 2.2. The tree survey has been carried out following the recommendations of The British Standard and the trees are assessed objectively and without reference to any site layout proposals. Categories are based on each tree's health and condition, together with an assessment of its life expectancy if its surroundings were to be unchanged.
- 2.3. The reference numbers of surveyed trees and groups of trees are shown on the tree reference plan, which is appended to this report and based on the supplied survey drawing. Stem locations within groups may be estimated, and indicative of canopy only.
- 2.4. The tree survey was carried out from ground level only, with the aid of binoculars as necessary, following the Visual Tree Assessment³ (VTA) method.
- 2.5. Where trees are located on neighbouring land, an estimated appraisal of their quality and dimensions has been made.
- 2.6. Where stems or branches are obscured by ivy or other materials a full assessment of those parts will not be possible.
- 2.7. Tree heights were measured with a clinometer or estimated in relation to those measured.
- 2.8. Trunk diameters are measured at 1.5m above ground level, where this is not possible, then Figure C.1 of the British Standard is followed.
- 2.9. Tree canopies were markedly asymmetrical, and were measured (or estimated by pacing) in four directions using a laser measure. Symmetrical canopies are measured in one direction only, with dimensions in the remaining directions assumed to be similar. For the canopies of groups of trees, the maximum radius for each compass point is measured (more complicated groups will have further notes taken and an accurate representation will be shown on the plan).
- 2.10. All estimated dimensions are noted in the data.

³ Mattheck, C. & Breloer, H., 1998. The Body Language of Trees: A Handbook for Failure Analysis. London: H.M.S.O.

3. Arboricultural Impact Assessment

Proposal

3.1. The plan is to build four dwellings on the site. Their layout and location of which can be seen on the appended plan.

The Site and Existing Trees

3.2. There are trees on the site. However, most are self-seeded and predominantly ash that are showing signs of Ash Dieback (*Hymenoscyphus fraxineus*).

3.3. All trees have been categorized as either low quality (category C) or poor quality (category U).

3.4. There are no trees of moderate or high quality on the site.

Tree Removals

3.5. Seventeen trees and groups are to be removed. Of these, fourteen will be removed as good practice due to their poor condition, regardless of this proposal.

Tree Surgery

3.6. There are no plans for any tree surgery work at this stage.

Construction Impact

3.7. All dwellings and associated construction proposals are situated outside the RPAs of retained trees.

Supervision & Monitoring

3.8. Some sites require more arboricultural involvement during the construction process than others. This is typically commensurate with the pressure on retained trees and the complexity of the tree protection strategy.

3.9. It is my opinion that regular monitoring visits would not be necessary for this project.

Service & Utility Provisions

3.10. There is adequate space to service the site whilst avoiding all RPAs.

Summary

3.11. Provided the tree protection strategy is implemented as outlined in the following method statement, it is my opinion that this application is of **low** arboricultural impact, and thus acceptable.

4. Arboricultural Method Statement

- 4.1. The tree protection on this site is subject to implementation as detailed in the following sections.
- 4.2. The recommendations of the British Standard have been applied where viable. Where deviations from the preferred approach are required, the impact on any retained trees is minimised through a combination of supervision from an arboriculturist and adherence to the associated method statement.
- 4.3. The strategy must be followed to avoid not only impact upon the trees but to adhere to any planning conditions, once permission is granted.
- 4.4. The information within this section must be passed to the site foreman and cascaded to all relevant personnel involved in the project.
- 4.5. Any questions about the content or its implementation shall be directed to **Mark Welby Consulting Arborists at 01730 239492** before action is taken.
- 4.6. A tree protection plan showing the types of tree protection and their locations is appended. It includes the tree survey data, existing site features and the approved construction. The plan must be read in conjunction with this method statement.

Phasing

- 4.7. It is essential that the following phasing is followed if trees are to be effectively protected throughout construction.

1	Tree removals
2	Installation of protection barriers & ground protection
3	Confirmation that tree protection barriers are installed to be sent to LPA
4	Demolition & site clearance phase
5	Construction Phase
6	Removal of tree protection barriers upon completion of work

Table 1: Timing of operations in relation to trees

- 4.9. The above has been drafted at the planning stage. Shall any of the protection measures prove incompatible with elements of the build program, contact the project arboriculturist to discuss options.

Pre-start Confirmation

4.10. The most important step in the tree protection process: confirmation that the tree protection barriers are in place must be forwarded to the LPA before any external work starts. This may be a photographic record sent via email.

Construction Exclusion Zone (CEZ)

4.11. The CEZ is a root-sensitive area where construction activities are to be excluded. The default method of doing so is through the installation of tree protection barriers. If construction access is required in the CEZ then ground protection can be used to facilitate this.

4.12. It is the responsibility of everyone engaged in the construction process to respect the tree protection measures and observe the necessary precautions within and adjacent to them.

4.13. Inside the exclusion zone, the following shall apply:

- No mechanical excavation whatsoever;
- No excavation by any other means without arboricultural site supervision;
- No hand digging without a written method statement having first been approved by the project arboriculturist;
- No lowering of levels for any purpose (except removal of grass sward using hand tools);
- No storage of plant or materials;
- No storage or handling of any chemical including cement washings;
- No vehicular access (unless ground protection is installed);
- No fire lighting.

4.14. In addition to the above, further precautions are necessary adjacent to trees:

- No substances injurious to tree health, including fuels, oil, bitumen, cement (including cement washings), builder's sand, concrete mixing and other chemicals shall be stored or used within or directly adjacent to the protection area of retained trees;
- No fire shall be lit such that flames come within 5m of tree foliage.

4.15. Variations from the above may be specified in the following sections of this method statement. This is only acceptable where detailed and will typically be subject to supervision by the arboriculturist.

Protection Barriers

4.16. Barriers must be fit to exclude construction activity and appropriate to the degree and proximity of work around the retained tree(s). Barriers shall be maintained to ensure that they remain rigid and complete.

4.17. See Appendix i for barrier specifications.

4.18. The default specification comprises a vertical and horizontal scaffold framework, well-braced to resist impacts. The vertical tubes shall be spaced at a maximum interval of 3 m and driven securely into the ground. Onto this framework, welded mesh panels shall be securely fixed. Care shall be exercised when locating the vertical poles to avoid underground services and, in the case of the bracing poles, also to avoid contact with structural roots. If the presence of underground services precludes the use of driven poles, an alternative specification shall be prepared in conjunction with the project arboriculturist that provides an equal level of protection. Such alternatives could include the attachment of the panels to a free-standing scaffold support framework.

4.19. On smaller projects or those where the level of construction is less intensive, alternative specifications may be acceptable (see Appendix i), subject to agreement with the project arboriculturist and written approval LPA (local planning authority).

Ground Protection

4.20. If required to facilitate access within the CEZ (or as shown on the appended tree protection plan), ground protection is to be installed. If not already included on the tree protection plan, it must be approved in writing by the local planning authority before implementation. The ground protection must be capable of supporting the expected loads and avoiding rutting, compaction and damage to the soil: as advised in section 6.2.3 of the British Standard.



GP1: Tree protection barriers and scaffold ground protection



GP2: Tree protection barriers & trackmat ground protection

4.21. Stages of ground protection installation:

1. If required, dismantle barriers and re-erect them to protect any newly exposed CEZ not to be covered by ground protection;

2. Any shrubs, saplings or trees to be removed, are to be cut or ground out to just below ground level rather than grubbed or winched out, which can damage the roots of retained trees;
3. Lay woven geotextile over the existing ground surface by hand;
4. Cover the area with a compressible layer (200mm of woodchip, for example), using hand tools only;
5. Cover compressible layer with side butting scaffold boards, plywood boards or proprietary trackway/trackmats;
6. Confirm surface is acceptable for use with the project arboriculturist;
7. Area ready for construction access;
8. Any scaffolding required within the area will be erected with the uprights placed on spreader boards;
9. The boarding will be left in place until the construction works are finished.

4.22. A single thickness of boarding laid on the soil surface will provide sufficient protection for pedestrian loads. However, for wheeled or tracked construction traffic movements within the RPA, ground protection will involve the use of temporary geocell/cellular confinement systems, reinforced concrete slabs or track-board systems details of which are to be specified by the project engineer and approved for use by the project arboriculturist and local authority before construction commences.

4.23. Track-boards can be sourced from Trakmats Europe Ltd, 0845 6435388, www.trakmatseurope.com, or groundguards.com

4.24. There is to be no excavation within the ground protection area whatsoever. This includes the installation of services and associated utilities, without prior approval.

Site Induction

4.25. All site staff are to be briefed on the tree protection strategy for the site as part of the general site induction procedure. This can be carried out by the site manager once he has been briefed by the project arboriculturist.

4.26. In general, this will include the following:

1. Explanation of the purpose of the tree protection barriers and any ground protection
2. Explanation of the demolition procedures near trees
3. Explanation of the sensitive/supervised excavation areas
4. What to do if access is needed within a protected area for any reason

5. What to do if damage occurs to any tree protection barriers and how to contact the project arboriculturist if necessary.

Tree Surgery

- 4.27. Should any pruning work be required, the following must be adhered to once any requisite permissions are obtained.
- 4.28. All work will be carried out under BS3998⁴ industry best practice and in line with any works already agreed upon with the council.
- 4.29. The statutory protection⁵ ⁶ will be adhered to. If further advice is required, particularly if bats are discovered during tree work, it will be obtained from Natural England or other competent persons and recommendations adhered to.
- 4.30. The stumps of any trees removed from within the Construction Exclusion Zone or the RPAs of retained trees will be either cut flush to ground level and left in situ or ground out using a stump grinder. They will not be winched out.
- 4.31. All operations shall be carefully carried out to avoid damage to the trees being treated or neighbouring trees. No trees to be retained shall be used for anchorage or winching purposes.

Installation of Underground Services

- 4.32. Mechanical trenching for the installation of underground apparatus and drainage severs any roots present and can change the local soil hydrology in a way that adversely affects the health of the tree. For this reason, particular care must be taken in the routeing and methods of installation of all underground apparatus. Wherever possible, apparatus must be routed outside RPAs. Where this is not possible, it is preferable to keep the apparatus together in common ducts. Inspection chambers shall be sited outside the RPA.
- 4.33. Where underground apparatus is to pass within the RPA, detailed plans showing the proposed routeing must be drawn up in conjunction with the project arboriculturist. In such cases, trenchless insertion methods shall be used: Microtunnelling, Surface-launched directional drilling, Pipe ramming or Impact moling (see BS5837:2012 Table 3), with entry and retrieval pits being sited outside the RPA. Provided that roots can be retained and protected, excavation using hand-held tools might be acceptable for shallow service runs. If this is the case, the following methodology must be followed:

⁴ BS3998:2010- Recommendations for Tree Work. London: British Standards Institute

⁵ Wildlife and Countryside Act. (1981) London: HMSO.

⁶ Conservation of Habitats and Species Regulations (2017) London: HMSO.

4.34. Stages for installing services:

1. Contact project arboriculturist to hold pre-start site meeting and 'toolbox' talk before starting work.
2. Remove just enough tree protection fencing to allow access to the area and facilitate trenching.
3. Remove any surface vegetation or existing hard surfaces using hand tools.
4. Using an air-pick excavate the trench, keeping to the minimum dimensions required.
5. Roots occurring in clumps of 25 mm diameter and over are encountered they will be retained and kept damp by covering with hessian (re-wetted as required). If required, these shall be severed only following consultation with an arboriculturist; as such roots might be essential to the tree's health and stability.
6. Feed in services.
7. Backfill the trench with 200-300mm depth of excavated soil, or a mixture of excavated and imported topsoil to BS3882: 2015, firming down with heels.
8. Repeat step 7 until the trench is filled.
9. Re-erect tree protection fencing as per the approved plan.

4.35. The method of excavation above, for trenching within RPAs, is using air excavation. This tool utilises compressed air to remove soil from around tree roots causing minimal damage and can be run off a typical site compressor. I can provide details of contractors supplying air excavation services if required.

4.36. Alternatively, trenchless technology, such as thrust boring can be used in some instances and is particularly effective as it can pass directly under the tree, at a depth which is likely to avoid almost all impact on the roots of the subject tree. As no access/thrust pits will be located within the RPAs of the subject trees, the need for arboricultural supervision is limited.

4.37. Reference can be made to NJUG Vol 4⁷ for guidance, but any approach must be approved by the project arboriculturist and brought to the attention of the local authority tree officer.

Fencepost/Hoarding Installation in RPA

4.38. Stages for installing wooden posts:

No plant machinery is to be used in the area for whatever reason

1. Remove TPF to allow access to the area. If working inside the tree's RPA, ground protection boarding must be used to avoid compaction and contamination of the root zone.

⁷ National Joint Utilities Group. (2010). Volume 4: NJUG Guidelines For The Planning, Installation And Maintenance Of Utility Apparatus In Proximity To Trees (Issue 2) - Operatives Handbook. NJUG.

2. Dig postholes using hand tools, avoiding damage to the protective bark covering larger roots. Roots smaller than 25mm in diameter may be pruned back using either secateurs or a hand saw, leaving a clean cut.
3. Damage or severance of roots above 25mm diameter must be avoided. If roots of this size are discovered, the hole shall be relocated. If there are a large number of such roots it may be necessary to relocate the hole by half a fence panels length and adjust the fence panels accordingly.
4. Line holes with non-porous lining, for example, a durable polyethene bag.
5. Insert post and fill post-hole with concrete to just below ground level.
6. Trim polyethene to ground level and fill with clean topsoil.
7. Reinstall TPF as approved.

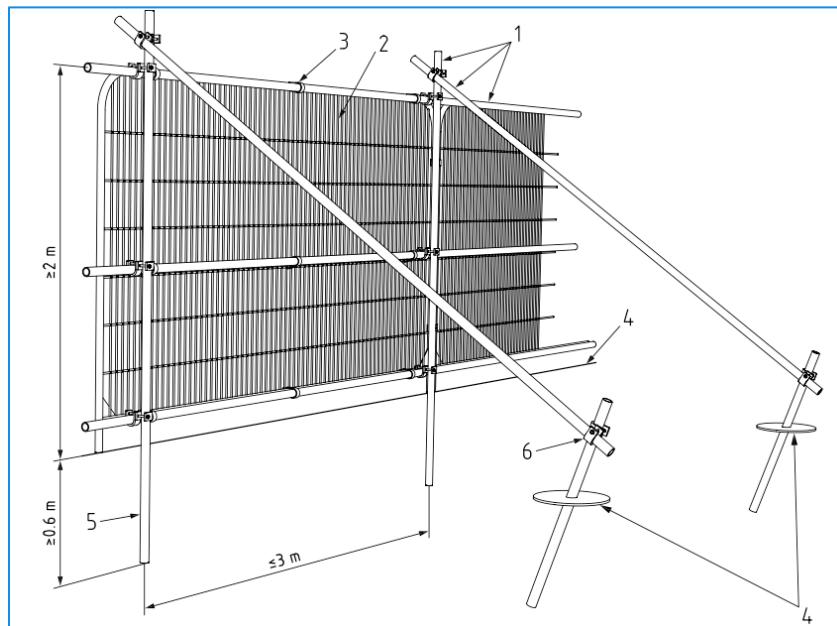
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i.

Tree Protection Barriers



1 Standard scaffold poles

2 Heavy gauge 2 m tall galvanised tube and welded mesh infill panels

3 panels secured to up rights and cross members with wire-ties

4 ground level

5 uprights driven into the ground until secure (minimum depth 0.6 m)

6 Standard scaffold clamps

TPF1: Default specification for protective barrier (Fig 2 from BS5837:2012)



TPF 2: Alternative fencing option: scaffold uprights with backstay



TPF 4: Plastic barrier for low intensity areas of construction

TPF 3: Alternative fencing option: on boots with backstay



TPF 5: Chain-link for low intensity areas on large projects



ii.

Tree Categories Explained

BS5837:2012 Table 1 -Cascade chart for tree quality assessment

Category and definition	Criteria (including subcategories where appropriate)		
Trees unsuitable for retention (see Note)			
Category U Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years	<p>*Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning)</p> <p>*Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline</p> <p>*Trees infected with pathogens of significance to the health and/or safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality</p> <p><i>NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve; see 4.5.7.</i></p>		
	1 Mainly arboricultural qualities	2 Mainly landscape qualities	3 Mainly cultural values, including conservation
Trees to be considered for retention			
Category A Trees of high quality with an estimated remaining life expectancy of at least 40 years	Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups or formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)
Category B Trees of moderate quality with an estimated remaining life expectancy of at least 20 years	Trees that might be included in category A, but are downgraded because of impaired condition (e.g. presence of significant though remediable defects, including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation	Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality	Trees with material conservation or other cultural value
Category C Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150mm	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories	Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value; and/or trees offering low or only temporary/transient landscape benefits	Trees with no material conservation or other cultural value



III.

Protection Plan

Plan on following page

