Invicta Arboriculture
Tree and Woodland Consultancy

Pre-development Tree Survey and Report

Wellesley House School
Bromstone Road
Broadstairs
Kent
CT10 2JB

24th August 2023

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Consulting Arborist Society.com PROFESSIONAL MEMBER

Arboricultural ASSOCIATION Technician Member

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Appendices

Executive Summary

1. **Brief:** Invicta Arboriculture has been appointed to provide arboricultural advice relating to the proposed development. This survey and report has been prepared in accordance with BS5837:2012 "Trees in relation to design, demolition and construction – Recommendations.

2. **Proposal:** The planning application seeks to erect five detached dwelling houses along with associated vehicular access.

3. **Survey:** The site was surveyed on 23rd November 2022 following the guidance contained within BS5837:2012.

4. **Statutory designations**: A number of trees within the application site are subject to Thanet District Council Tree Preservation Order B/TPO/1 (1956) A44. The application site is not located within a Conservation Area.

5. **Arboricultural impact:** The arboricultural impact of the proposed scheme is considered to be moderate requiring the removal of four trees (T17, T18, T22 and T23) along with G26 and a small section of G27.

   Minor encroachment in to the RPA's of T15, T16 and T21 occurs as a result of the proposed development and is not considered detrimental to the long-term health or stability of the retained trees.

   BS5837:2012 compliant protective fencing will be erected around all retained trees.

   BS5837:2012 compliant ground protection will be utilised where construction access is required within root protection areas.

1 INTRODUCTION

1.1 **Brief:** I am instructed by Mr Robert Smith to provide a pre-development arboricultural report in accordance with BS5837:2012 in respect of trees at Wellesley House School, Bromstone Road, Broadstairs, Kent, CT10 2JB to accompany a planning application for the erection of five dwelling houses along with associated vehicular access and parking.

1.2 **Qualifications and experience:** I have based this report on my site observations and the information provided, and I have come to conclusions in the light of my experience as an arboriculturist.

I am a professional member of the Consulting Arborist Society.
I am a Technician member of the Arboricultural Association.

1.3 **Documents and information provided:** I was provided with the following documents:

- A plan of the site as existing.
- A plan of the site as proposed.

1.4 **Report limitations:** This report is only concerned with the twenty-four trees and four tree groups as shown on the site plan**.** It takes no account of any other trees. It includes a detailed assessment based on the site visit and the documents provided, listed in 1.3 above.

This report has been prepared on the basis of the proposed development and should not be interpreted as a report on tree health and safety. Whilst reasonable effort has been made to identify visible structural and physiological defects whilst undertaking the survey, trees and shrubs are living organisms; the health and stability of which can change rapidly; especially in the event of extreme weather conditions, therefore all recommendations given are valid for a period of twelve months from the date of this report.

1.5 **Collection of data:** The survey was carried out using the following inspection aids:

- Digital clinometer- To calculate the height of the trees
- Girthing tape- To measure stem diameter
- Disto D1 laser measurer – To calculate canopy spreads

2 SITE VISIT AND OBSERVATIONS

2.1 **Site visit:** I carried out a single, unaccompanied site visit on 23rd November 2022. All of my observations were from ground level within the application site. The weather at the time of inspection was sunny and bright with good visibility.

2.2 **Brief site description:** The application site is located within the residential suburbs of Broadstairs in east Kent and comprises the south eastern parcel of the school grounds. The topography of the site is relatively flat. The site is not exposed.

2.3 **Identification and location of the trees:** The trees subject to this report are scattered across the application site. I have illustrated the approximate location of the trees on the tree constraints plan included at Appendix B. All of the relevant information and measurements on it are contained within this report and the provided documents.

2.4 **Collection of basic data:** I collected information on species, height, diameter, maturity and potential for contribution to amenity in a development context. I have recorded this information in the tree survey schedule included at Appendix A. I stress that my inspection was of a preliminary nature, and did not involve any climbing or detailed investigation beyond what was visible from accessible points at ground level within the application site.

3 APPRAISAL

3.1 **Relevant references:** This inspection was undertaken in accordance with *B.S.5837:2012 Trees in relation to design, demolition and construction - Recommendations*. The trees were inspected using the Visual Tree Assessment method as documented by Mattheck and Breloer in *'The Body Language of trees'*, ODPM Research for Amenity Trees number 4, 1994.

3.2 **British Standard 5837:2012 Trees in relation to design, demolition and construction – Recommendations:** This report is set out according to the recommendations within B.S. 5837:2012 and contains the following information relating to the trees within the application site.

- Tree survey schedule (included at Appendix A)
- Tree Constraints Plan (included at Appendix B)
- Arboricultural implications assessment
- Arboricultural method statement
- Tree protection plan (included at Appendix C)

3.3 **Table 1: Tree quality assessment**

B.S. 5837:2012 Category	Survey Numbers	Total
U	T23	1
A	T13	1
B	T1, T2, T3, T4, T6, T9, T12, T14, T16, T19, T20, T21, T22, T25, G26,	15
C	T5, T7, T8, T10, T11, T15, T17, T18, T24, G27, G28, G29	12

3.3 The trees subject to this report are scattered across the application site and are comprised predominantly of broadleaved deciduous species.

3.4 T1 to T14 along with T25 and the vast majority of G27 are located outside of the application site and are unaffected by the proposed development and will be retained.

3.5 T15 (Lime) is located along the northern boundary of the application site and will be retained.

3.6 T16 (Holly) is located on the eastern boundary of the application site and is to be retained.

3.7 T17 (Horse Chestnut), T18 (Lime), T22 (Beech) and T23 (Sweet Chestnut) are located throughout the middle section of the application site and will be removed to accommodate the proposed development.

Decaying fungal fruiting bodies of the decay fungi *Meripilus giganteus* were observed around the base of the Beech tree recorded as T22. In addition to the presence of the *Meripilus giganteus* around its base, die back is also evident throughout the high central canopy indicating that the decay within the root system is well advanced and as such the tree is considered to pose an unacceptable risk to users of the site.

T22 will therefore be removed regardless of any development proposal due to the unacceptable risk it poses to users of the site.

3.8 G25 comprises a row of Pines and Sycamores located along the southern/ roadside boundary of the application site either side of the existing electricity sub-station and are to be retained.

3.9 G26, comprising a group of low level, shrub-form Yew and Holly will be removed to enable the proposed development, whilst a small section of G27 (shrub form Laurel and cotoneaster) will also be removed.

4 TREE CONSTRAINTS PLAN

4.1 The tree constraints plan is primarily a design tool which shows the below ground constraints represented by the calculated root protection area and the above ground constraints represented by the current and ultimate heights of the trees and the potential effects of shade on any proposed development. The tree constraints plan is included at Appendix B.

4.2 **Below ground constraints:**

- The root protection area (RPA) is the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the trees viability and where the protection of the roots and soil structure is treated as a priority. The RPA is measured in m^2. The RPA is shown as a red circle on the tree constraints plan.

- The root protection area relates to the stem diameter of each tree when measured at a height of 1.5m from ground level. For single stem trees the RPA is calculated as an area equivalent to a circle with a radius of twelve times the stem diameter (or the mean diameter of the total number of stems in the case of multi-stemmed trees).

- Elements of the proposed development encroach marginally in to the RPA of T15 (Lime) as a result of the positioning of one dwelling, whereas encroachments in to the RPA's of T19 (English Oak) and T21 (Beech) occur as a result of the proposed vehicular driveway, the full extents of which are illustrated in table 2 below.

Table 2: RPA encroachments and separation distances:

Tree number	Total area of RPA M^2	Encroachment by area M^2	% Of encroachment in to RPA
T15	452.4	26.0	5.7
T19	326.9	20.0	6.1
T21	79.8	18.0	22.5

Separation distances of 7.0 meters will exist between T15 and the closest point of the proposed development, whilst separation distances of 7.3 metres and 2.3 metres exist respectively between T19 and T21 and closest point of the vehicular driveway.

The encroachment in to the RPA of T15 is considered minimal given the current land use (extensive existing hard standing) and as such no specialist foundation design is considered necessary in this instance.

Construction access will also be required within the RPA's of T15, T16, T19, T21 and G25 and as such measures for ground protection within their respective RPA's is discussed in detail at section five of this report (Arboricultural method statement).

4.3 **Above ground constraints:**

- The canopy of T15 (Lime) will be raised to six metres above ground level and the south-west facing lateral branches pruned back by a maximum of three metres, whilst the northern-most lateral branches of G25 (Sycamore/ Pine) will be reduced by a maximum

of two metres to remove encroachment from the proposed dwellings and to enable the erection of scaffolding.

- The relationship between the retained trees and proposed site layout is not considered to pose any serious constraints in terms of the amount of direct sunlight or diffuse skylight entering in to the main rooms or gardens of the new dwellings and as such post development pressure for unnecessary pruning or further tree removals following first occupancy is negated.

5 ARBORICULTURAL IMPACT ASSESSMENT

5.1 **Arboricultural impact:** The arboricultural impact of the proposed scheme is considered to be moderate requiring the removal of four trees (T17, T18, T22, T23) along with G26 and a small section of G27.

Minor encroachment in to the RPA's of T15, T19 and T21 occurs as a result of the proposed development and is not considered detrimental to the long-term health or stability of the retained trees.

BS5837:2012 compliant protective fencing will be erected around all retained trees.

BS5837:2012 compliant ground protection will be utilised where construction access is required within root protection areas.

5.2 **Presence of TPOs or conservation area designations:** The application site is subject to Thanet District Council Tree Preservation Order B/TPO/1(1956)A44.

The tree preservation order extends for twenty-two metres along the eastern boundary of the application site and tapers westwards to just ten metres at the point of the two existing site entrances incorporating tree numbers T1 to T5, T6, T9 to T13 and T17 to G25. All other trees are located outside of the TPO area.

The Tree Preservation Order however was confirmed using the area designation some sixty-seven years ago and therefore only relates to trees that were present at the time the order was confirmed and therefore it is likely, given their relatively small stem diameters (<500mm) that tree numbers T3, T9, T10, T11, T17, T18, T20, T21, T23 and G25 were not present in 1956 and are therefore not considered to be covered by the TPO.

The application site is not located within a Conservation Area.

5.3 **Effects of new buildings on amenity value on or near the site:** The effects of the proposed development are not envisaged to have any detrimental effect on the amenity value of the retained trees or surrounding landscape providing all advice given in this report is adhered to.

5.4 **Above and below ground constraints:** The above and below ground constraints are discussed in section four above and shown on the tree constraints plan at Appendix B.

5.5 **Construction processes of the proposed development or demolition needs:** There are no requirements for any demolition operations.

5.6 **Modifications proposed to accommodate trees – Ground protection:** Construction access will be required within the RPA's of T15, T16, T19, T21 and G25 and as such it will be necessary to install temporary ground protection within their RPA's and is shown as purple 'Honey' hatching on the tree protection plan at Appendix C.

A working width of three metres has been allocated for construction access within the RPA's

For pedestrian operated plant up to a gross weight of two tonne, proprietary inter-linked ground protection boards placed on top of a compression-resistant layer (e.g. 150mm depth of woodchip) shall be deemed sufficient. I include a photograph below to demonstrate this system:

No-dig construction of the vehicular driveway is shown as green 'Honey' hatching on the tree protection plan at Appendix C and discussed in detail at section six of this report.

5.7 **Modifications proposed to accommodate development –tree pruning/felling:** Four trees (T17, T18, T22 and T23) will be removed in order to enable the proposed development along with G26 and small section of G27. The canopy of T15 (Lime) will be raised to six metres above ground level and the south-west facing lateral branches pruned back by a maximum of three metres, whilst the northern-most lateral branches of G25 (Sycamore/ Pine) will be reduced by a maximum of two metres to remove encroachment from the proposed dwellings and to enable the erection of scaffolding.

5.8 **Infrastructure requirements – highway visibility, lighting, CCTV, services etc:** The exact routing of services is as yet unknown. The installation of services within the rooting zones of trees can have a detrimental impact on the long-term survival of retained trees leading to their unnecessary loss or root failure in high winds. The installation of services within RPA's should be avoided where possible. Where this is not possible it may be necessary to utilise a trenchless solution such as micro tunnelling, surface-launched directional drilling, impact moling or where the relative expense on low cost projects makes the use of such trenchless systems unviable, hand digging may be acceptable over short distances.

Undisclosed siting of above ground services, CCTV cameras, electrical sub-stations, refuse stores, lighting and other infrastructure requirements can lead to unnecessary pruning of tree crowns or root loss during or post development.

The trees subject to this report do not obscure highway visibility splays.

5.9 **End use of space:** The application seeks to erect five detached dwellings and associated vehicular access.

5.10 **Mitigating tree loss/ new planting:** New tree and shrub planting is proposed, the full details of which are outside the scope of this report.

5.11 **Veteran trees:** None of the trees are considered to be veterans.

5.12 **Impact of trees on buildings and vice versa and allowance for future growth:** The impact of the trees on the proposed development and vice versa and allowance for future growth has been considered. Tree size, future growth, light/shading, leaf and fruit nuisance etc. have received due attention and are not considered to be a significant issue.

6 ARBORICULTURAL METHOD STATEMENT AND TREE PROTECTION PLAN

Arboricultural Method Statement (AMS) includes a Tree Protection Plan (TPP) to identify:

- Protective fence positions therefore the Construction Exclusion Zones (CEZ) shown as a blue line on the TPP at Appendix C.
- Measurements to identify fence positioning in relation to the centre of the tree are recorded in the tree survey schedule at Appendix A.
- Ground protection shown as purple 'Honey' hatching on the TPP at Appendix C.
- No-dig driveway construction shown as green 'Honey' hatching on the TPP at Appendix C.

1.0 Construction Exclusion Zone

1.1 The Construction Exclusion Zone (CEZ) as required by the current edition (2012) BS 5837 relates to the stem diameter of each retained tree when measured at a height of 1.5m from ground level or the mean diameter of the total number of stems in the case of multi-stemmed trees.

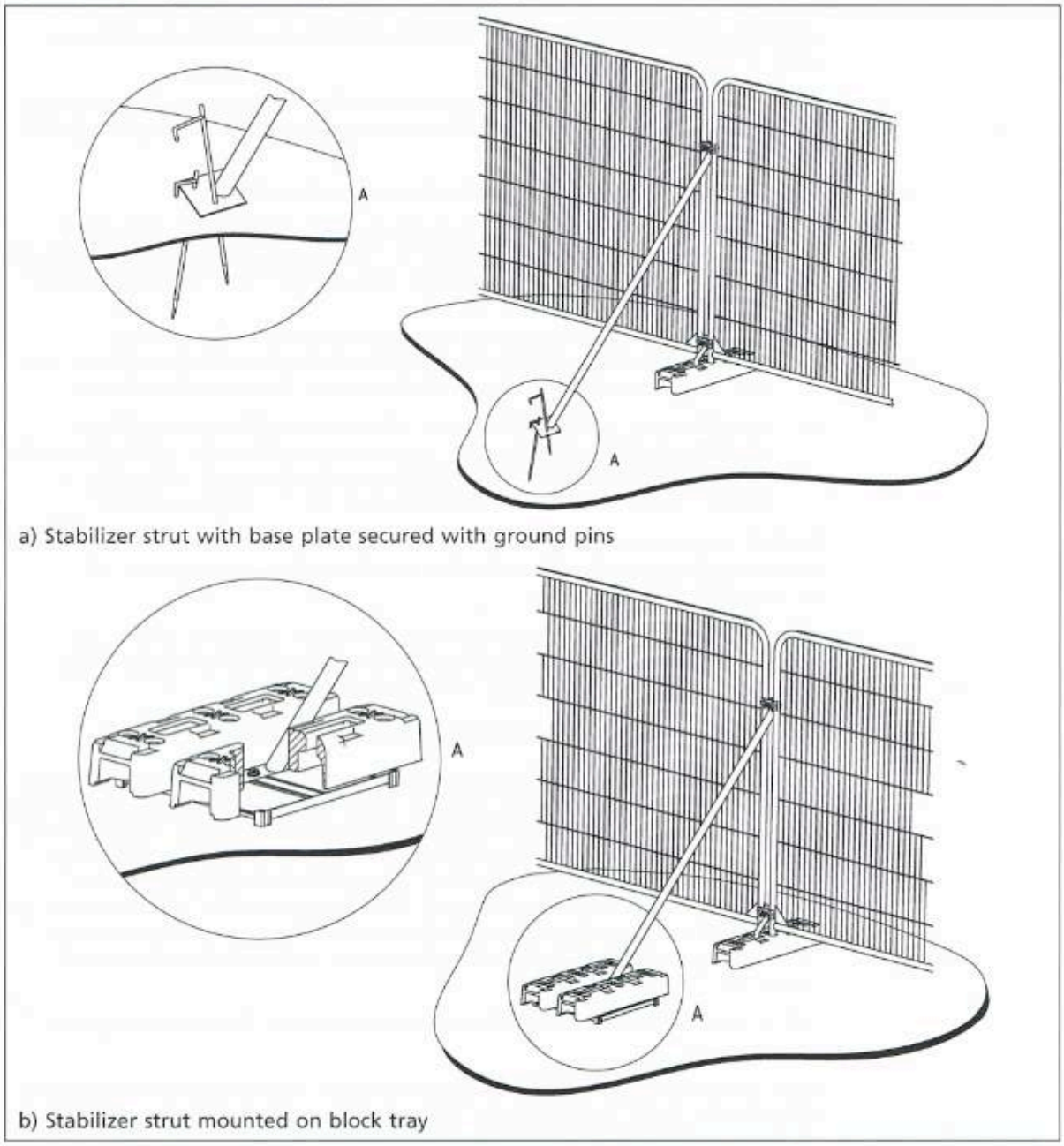
2.0 Protective Fencing

2.1 Protective fencing will be erected around all retained trees prior to the commencement of any site works e.g. before any materials or machinery are brought on site, demolition, development or the stripping of soil commences. The fence should have signs attached to it stating that this is a Construction Exclusion Zone and that **NO WORKS are Permitted** within the fence. The protective fencing may only be removed following completion of all construction works.

2.2 The fencing is required to be sited in accordance with the Tree Protection Plan enclosed within this method statement at Appendix C. The fencing shall be constructed as per figure 3 - B.S.5837: 2012 and be fit for the purpose of excluding any construction activity.

2.3 An example of protective fencing: Figure 3 - B.S.5837: 2012, is shown below...

Figure 3 **Examples of above-ground stabilizing systems**



3.0 Precautions in respect of temporary works

3.1 There are no requirements in respect of temporary works.

4.0 Access Details

4.1 Construction traffic will initially access the site via Bromstone Road via the existing vehicular entrance, prior to the formation of the new vehicular access.

5.0 Contractors car parking

5.1 Limited car parking is available on site for contractors car parking.

6.0 Site Huts and Toilets

6.1 Limited space is available on-site and away from the retained trees for all site huts and portable toilets if required.

7.0 Storage Space

7.1 Limited space is available on site and away from all retained trees for the storage of all plant, machinery and materials.

8.0 Additional Precautions

8.1 The installation of services near any tree will be undertaken in accordance with the National Joint Utilities Group Guidance Note 4 (NJUG 4): Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees. A copy of this document can be provided on request.

8.2 No storage of materials or lighting of fires will take place within the CEZ. No mixing or storage of materials will take place up a slope where they may leak into a CEZ.

8.3 No fires should be lit within 20 metres of any tree stem and will take into account fire size and wind direction so that, no flames come within 5m of any foliage.

8.4 High-sided vehicles will have access to the site. Their movements around the site will be in no way detrimental to the health or stability of the retained trees.

8.5 No notice boards, cables or other services will be attached to any tree.

8.6 Materials that may contaminate the soil should not be discharged within 10m of any tree stem. When undertaking the mixing of materials it is essential that any slope of the ground is taken in to consideration so that it does not allow contaminates to run towards a tree root area.

8.7 Post holes for new boundary fencing will be dug by hand where they extend in to the RPA's of retained trees and lined with a heavy duty plastic liner to prevent the toxic effects of the concrete used to set them in place from coming in to contact with any tree roots.

9.0 Site Gradients

9.1 I am not currently aware of the need to alter site gradients.

10.0 Demolition

10.1 There are no requirements for any demolition operations.

11.0 **Hard Surfaces**

11.1 Sections of new hard surfacing for the access driveway will be formed partially within the RPA's of T19 and T21 and will be formed using a no-dig construction methodology in accordance with good arboricultural practice and are shown on the site plan at Appendix A as purple 'Honey' hatching.

The no-dig construction will comprise of a CellWeb three-dimensional cellular confinement system (100mm thickness proposed), overlaid on to Permatex 300 geotextile (or similar), secured in place with CellWeb/Terram staking pins. The mesh will be joined using a CellWeb/ Terram stapler and staples and filled with 4/20mm clean angular stone to BS EN 13242 and 12620. The edges will be supported with suitable timber (sleeper) edging, which ideally should extend to a height greater than that of the 100mm CellWeb to enable the infilling with a wearing course of pourus open graded asphalt.

Important note The levels of the site outside of the protected RPA's will need to tie in (ramp up) to the no-dig areas.

The no-dig construction shall utilise the following methodology:

Step one:

- Remove any surface vegetation by hand.
- Fill in any hollows in the exposed ground with sharp sand or 4/20mm clean angular stone. Do not grade off high spots.
- Install timber edge supports (do not use concrete haunchings within RPA's).
- Place the geotextile over the area to be protected ensuring overlaps of 300mm minimum.

Step two:

- Place the collapsed CellWeb panel on to the geotextile and pin through one end to secure it in place.
- Expand the panel to its full length and pin through to secure in place.
- Staple all additional panels together
- Panels can be cut to shape if required using a Stanley knife of similar sharp blade.

Step three:

- Fill the voids with 4/20mm 'no-fines' clean angular stone.
- Allow for any settlement of the stone and top up as necessary.
- Lay top wearing course.

Full details of the CellWeb product are included at Appendix D of this report.

12.0 **Soft landscaping**

12.1 Soft landscaping details are outside the scope of this report.

13.0 Use of Herbicides

13.1 I am not aware of the need to use herbicides on the site.

14.0 On site Monitoring Regime

14.1 All operations will be monitored by the main contractor.

15.0 Use of subcontractors

15.1 The main contractor will be responsible for ensuring sub-contractors do not carry out any process or operation that is likely to adversely impact upon any trees adjacent to the application site.

16.0 Contingency Plan

16.1 Water should be made readily available on site and should be used to flush spilt materials through the soil and avoid contamination to tree roots. At the time of any spillage the main contractor will contact the project arboriculturist for advice.

17.0 Remedial Tree Works

17.1 The canopy of T15 (Lime) will be raised to six metres above ground level and the south-west facing lateral branches pruned back by a maximum of three metres, whilst the northern-most lateral branches of G25 (Sycamore/ Pine) will be reduced by a maximum of two metres to remove encroachment from the proposed dwellings and to enable the erection of scaffolding.

18.0 Responsibilities

18.1 It is the responsibility of the main contractor to ensure that the 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 if required.

18.2 The main contractor will be responsible for contacting the project arboriculturist or Local Planning Authority (Thanet District Council) at any time issues are raised in relation to the trees adjacent to the site.

7 RECOMMENDATIONS

7.1 **Implementation of works:** All tree works should be carried out in accordance with the 2010 revision of BS 3998 *Recommendations for Tree Work,* or as modified by more recent research. It is advisable to select a contractor from the local authority list and preferably one approved by the Arboricultural Association. Their Register of Contractors is available free from The Malthouse, Stroud Green, Standish, Stonehouse, Gloucestershire GL10 3DL; Telephone 01242 577766; Website. http://www.trees.org.uk/find-a-professional/Directory-of-Tree-Surgeons.

7.2 **Statutory wildlife obligations:** The Wildlife and Countryside Act 1981 as amended by the Countryside and Rights of Way Act 2000 provides statutory protection to birds, bats and other species that inhabit trees. All tree work operations are covered by these provisions and advice from an ecologist must be obtained before undertaking any works that might constitute an offence.

7.3 **Future considerations:** The remaining trees should be inspected on a regular basis by a qualified arboriculturist.

8 BIBLIOGRAPHY

8.1 Claus Mattheck and Helge Breloer, The Body Language of Trees. Office of the Deputy Prime Minister, Research for Amenity Trees No 4, 1994.

David Lonsdale, Principles of Tree Hazard Assessment and Management. Department for Transport, Local Government and the Regions, 1999.

British Standard 3998:2010 Recommendations for tree work

British Standard 5837:2012 Trees in relation to design, demolition and construction-Recommendations.

Mr David Sephton **Tech Cert (Arbor. A)**

Appendix A:

Tree Schedule and Explanatory Notes

- **Number:** Number of tree as shown on site plan.
- **Species:** Tree name is given using its commonly known English name.
- **Hgt:** Height is estimated using a clinometer and given to the nearest metre.
- **St Dia:** Stem Diameter. Estimated stem diameter, measured 1.5 metres above ground level and given in millimetres.
- **N-E-S-W:** Crown Spread, estimated by pacing and given in metres.
- **Cr Cl:** Crown Clearance above ground level, given in metres.
- **AC:** Age Class. young (Y), semi mature (SM), mature (M), over mature (OM), veteran(V).
- **PC:** Physiological Condition. Good (G), fair (F), poor (P), dead (D).
- **SC:** Structural Condition. Good (G), fair (F), poor (P).
- **Recommendations:** Preliminary management recommendations/ general comments.
- **ERCY:** Estimated remaining contribution in years (0-10, 10-20, 20-40, 40+).
- **Cat:** Retention Category. See table 2 below.
- **RPA Radius:** Root Protection Area Radius, given in meters.

Table 2: Retention Category's (as per cascade chart, Table 1, B.S. 5837:2012)

U	Those trees in such a condition that they cannot be realistically be retained as living trees in the context of the current land use for longer than ten years. Shaded Red on site plan.
A	High quality and value (40yrs +) 1: Mainly arboricultural values, 2: Mainly landscape values, 3: Mainly cultural values i.e. conservation. Shaded Green on site plan.
B	Moderate quality and value (20yrs +) 1: Mainly arboricultural values, 2: Mainly landscape values, 3: Mainly cultural values i.e. conservation. Shaded Blue on site plan.
C	Low quality and value (10yrs +) 1: Mainly arboricultural values, 2: Mainly landscape values, 3: Mainly cultural values i.e. conservation. Although category C trees would not be retained where they would pose a significant constraint on development, young trees with a stem diameter of less than 150mm should be considered for relocation. Shaded Grey on site plan.

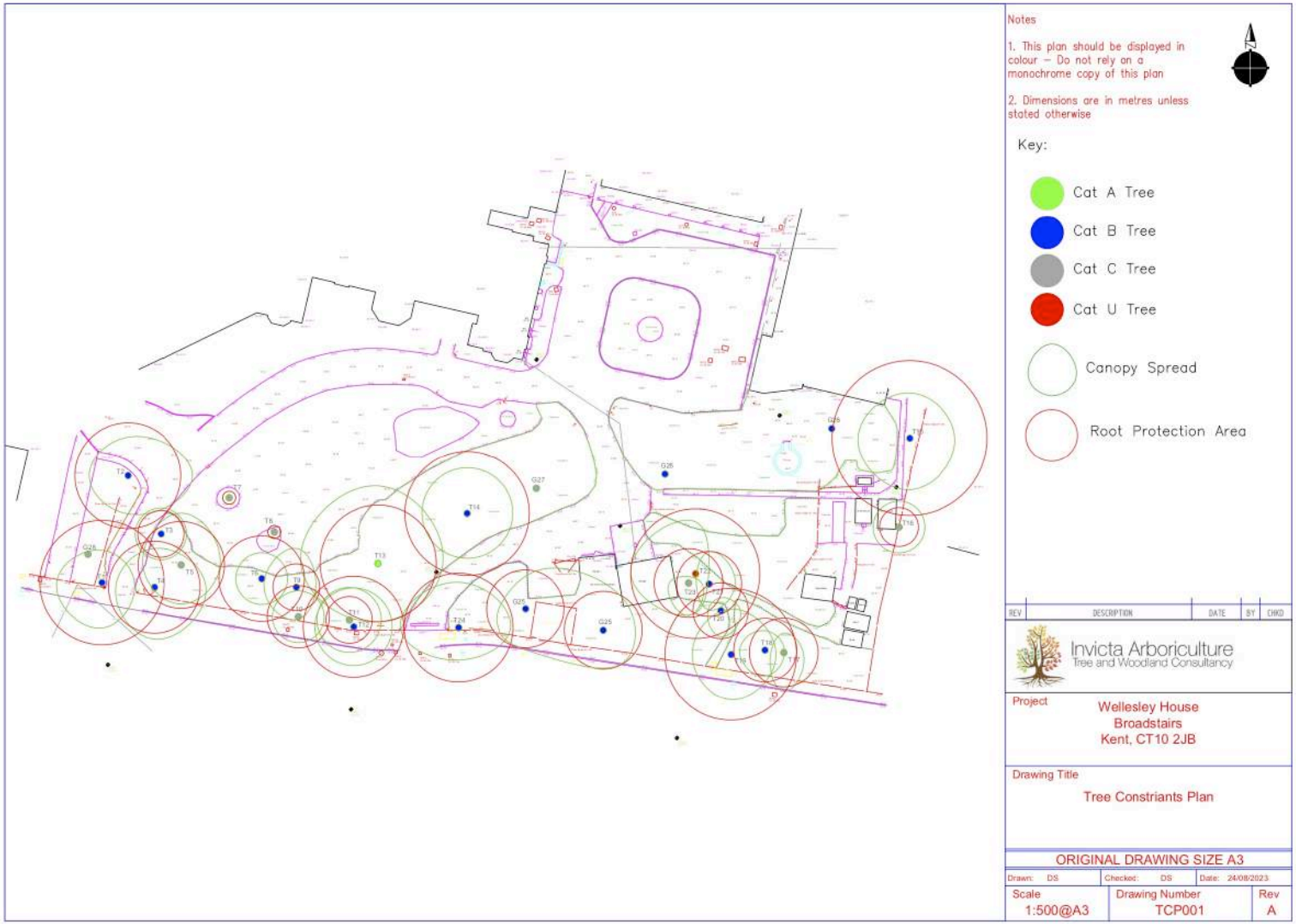
Appendix A:

B.S. 5837:2012- Tree Survey Schedule: Wellesley House, Bromstone Road, Broadstairs, Kent, CT10 2JB.

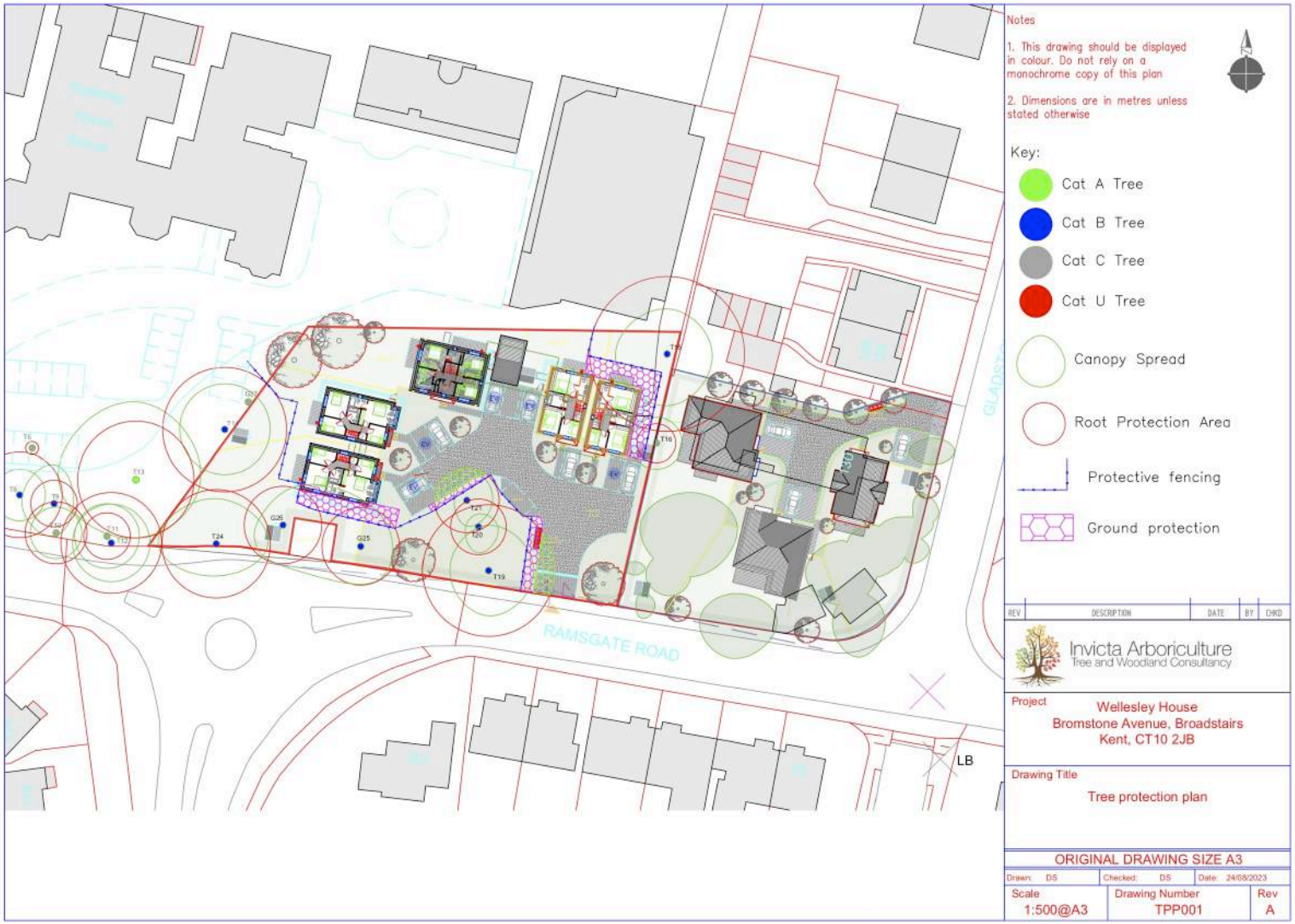
Number	Species	HGT	St Dia	N-S-E-W	CC	Age	PC	SC	Recommendations	E.R.C.Y	Cat	RPA Radius	RPA M^2
1	False Acacia	18	800	5-7-5-7	6	M	G	G	None - Retain	20+	B1	9.6	289.5
2	Beech	17	680	6-6-10-6	4	M	G	G	None - Retain	20+	B1	8.2	209.2
3	Holly	11	300	4-4-4-4	0	M	G	G	None - Retain	20+	B1	3.6	40.7
4	Poplar	16	590	6-8-6-8	4	M	G	G	None - Retain	20+	B1	7.1	157.5
5	Weeping Ash	20	560	8-6-6-6	5	M	G	F	None - Retain	10+	C1	6.7	141.9
6	Cupressus spp	11	550	4-4-4-4	1	M	F	F	None - Retain	20+	B1	6.6	136.8
7	Willow	3	80	1-1-1-1	1	Y	G	G	None - Retain	10+	C1	1.0	2.9
8	Oak	5	80	1-1-1-1	1	Y	G	G	None - Retain	10+	C1	1.0	2.9
9	Beech	12	300	6-5-3-5	3	S/M	G	G	None - Retain	20+	B1	3.6	40.7
10	Griselinia litoralis	4	400	4-4-4-4	0	M	F	F	None - Retain	10+	C1	4.8	72.4
11	Holm Oak	8	300	5-5-5-5	2	M	F	F	None - Retain	10+	C1	3.6	40.7
12	Beech	13	650	6-6-6-6	3	M	G	G	None - Retain	20+	B1	7.8	191.1
13	Beech (Cut Leaf)	15	750	12-9-10-12	4	M	G	G	None - Retain	40+	A1	9.0	254.5
14	Norway Maple	15	800	7-7-7-7	2	M	G	F	None - Retain	20+	B1	9.6	289.5
15	Lime	17	1000	7-8-7-8	3	M	G	G	Retain -Crown lift to six metres	20+	B1	12.0	452.4
16	Holly	9	250	4-4-4-4	1	M	G	G	None - Retain	10+	C1	3.0	28.3
17	Horse Chestnut	10	440	3-6-3-2	4	M	G	F	Remove to enable proposed development - Previously approved	10+	C1	5.3	87.6
18	Lime	16	410	4-3-4-3	4	M	G	G	Remove to enable proposed development - Previously approved	20+	B1	4.9	76.0
19	English Oak	16	850	7-7-7-6	6	M	G	G	None - Retain	20+	B1	10.2	326.9
20	Beech	14	360	4-3-2-4	4	M	G	G	None - Retain	20+	B1	4.3	58.6
21	Beech	17	420	5-4-4-2	5	M	G	G	None - Retain	10+	B1	5.0	79.8

22	Beech	17	870	8-6-2-10	8	M	F	P	Remove regardless of development proposal - Meripilus giganteus at base with associated dieback in high canopy	0-10	U	10.4	342.4
23	Sweet Chestnut	10	440	1-5-2-3	4	M	G	F	Remove to enable proposed development	10+	C1	5.3	87.6
T24	Holm Oak	16	700	7-6-5-9	4	M	G	G	None - Retain	20+	B1	8.4	221.7
G25	Pines/ Sycamore	12	500	4-4-4-4	5	M	G	G	None - Retain	20+	B2	6.0	113.1
G26	Yew/Holly	5	250	4-4-4-4	0	M	G	G	None - Retain	10+	C2	3.0	28.3
G27	Holly/ Cotoneaster	8	300	6-6-6-6	0	M	G	G	Partial removal required to enable proposed development	10+	C2	3.6	40.7
G28	Various shrubs	5	300	4-4-4-4	0	M	G	G	None - Retain	10+	C2	3.6	40.7

Appendix B: Tree Constraints Plan.



Appendix C: Tree Protection Plan.



Appendix D: CellWeb Product Information.

CI/SfB

Common Arrangement R12

Uniclass
L81208/L81210

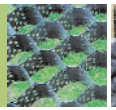
CellWeb

Tree Root Protection System

Geosynthetics

CellWeb

Tree Root Protection System



CellWeb Tree Root Protection System provides a flexible and permeable solution for protecting tree roots while creating a strong stable surface for traffic.

With increased urbanisation and more redevelopments of existing properties, the need to be mindful of the impact on the surrounding environment is more important than ever.

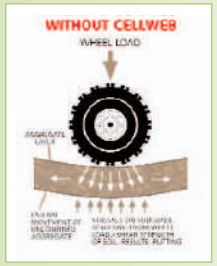
The demand for building site access, driveways and parking around existing trees can have a potentially fatal impact on the tree if carried out incorrectly. Tree preservation orders (TPO's) ensure that trees are not wilfully damaged. However the need for vehicle access over and around tree roots can still cause the following problems:

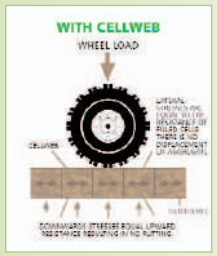
Problems:

- Compaction of subsoils (especially by construction traffic) causing oxygen and nutrient depletion
- Creating an impermeable surface that prevents water reaching the roots
- Changes in ground level and water table
- Damage caused during excavation
- Contamination of the subsoil

By using CellWeb Tree Root Protection System you can avoid these problems and ensure the tree's long-term future. BS 5837:1991 (revised 2005) and APN 1 provide information for the protection of trees during the construction process, and CellWeb is a well-established solution that conforms to these guidelines.

Product features

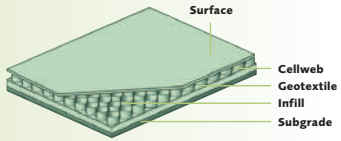




Cellweb's patented design with its unique cellular structure and perforated cell walls reduces the vertical load pressure on tree roots and prevents damage. With clean granular materials as infill, air and moisture can reach the roots to encourage healthy growth.

With no-dig solutions being the preferred option of most Arboricultural Consultants and Tree Officers, CellWeb is ideal as only the surface vegetation need be removed. As well as avoiding disruption to the roots this reduces installation time and saves money.

What's more CellWeb also cuts down the depth required for the sub base – in most cases by 50% for further cost savings. CellWeb also significantly reduces surface rutting, increasing the long-term performance of the finished surface.



Using CellWeb for tree root protection gives you these benefits:

- Reduced depth of excavation required
- Preventing the compaction of subsoils
- Preventing oxygen and nutrient depletion
- Environmentally sound
- Quick, easy and cost-effective installation
- Free technical support available

CellWeb gives you the cost-effectiveness you need at the same time as helping to preserve trees.

Access road for the National Lake District Parks Authority.

Site before construction pictured above.

CellWeb during installation.

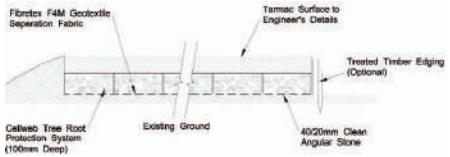
Final surfacing.

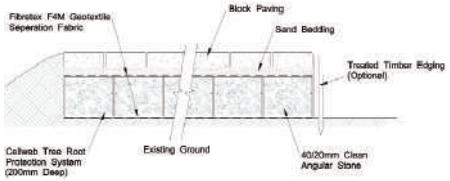
Final surfacing

The CellWeb Tree Root Protection is totally confined within the clean stone sub base, therefore you can choose whichever surface materials are most appropriate for your installation. Some materials are more suitable than others and serious consideration should be given to the porosity of the surface for continued healthy growth of the tree. An ideal surfacing are DuoBlocks: a grass reinforcement and gravel retention system. Geosynthetics can supply these systems for a visually attractive surface that also has the advantage of being fully porous.

Loose or bonded gravels can be used as an alternative hard landscaping and CellWeb can also be used with block paviors whose porous joints will permit moisture and air transfer to the roots. Where planning allows, porous asphalt is yet another possible surfacing treatment.

Call our sales office on 01455 617 139 for more information.





Geosynthetics Ltd is a leading dis

stributor of geosynthetic materials in the UK

Please call
01455 617 139
or email sales@geosyn.co.uk
for further information.

Wide product range

Large stock holding

Next day delivery

Design service

Onsite support

See all products online at geosyn.co.uk

Geosynthetics

Quality assurance

Certified quality

Cellweb™ is manufactured in accordance with an ISO 9001 Quality Management System with perforated walls, and a comprehensive range of cell diameters and depths. The perforated system improves the frictional interlock of infill material giving greater stability and facilitating lateral drainage.

Advice and product selection

Geosynthetics Limited has been supplying the CellWeb Tree Root Protection System for many years and as a result have acquired a vast amount of experience and knowledge. No two contracts are the same, and we understand the factors that need to be taken into account to specify the right CellWeb product for the right situation.

We provide a FREE consultation, design and advisory service to give you the reassurance that your project will be cost-effective and beneficial to existing trees. The service includes product selection, CAD drawings and full installation instructions and will help you from conception stage all the way through to completion.

Call our sales office on 01455 617 139 for specification details and project specific design assistance.

Geosynthetics Ltd is committed to offering the best solutions for soil stabilisation, erosion control, drainage and environmental protection problems.

Well trained staff are always available to discuss which materials are best suited to any particular application.

Technical specification

Product Specifications

Properties	Standard Cell	Large cell
Material	Virgin HDPE	Virgin HDPE
Wall thickness	1.25mm	1.25mm
Seam welding	Ultrasonic to 100% of seam length	Ultrasonic to 100% of seam length
Cell depth	75, 100, 150, 200 and 300mm	75, 100, 150, 200 and 300mm
Width of expanded panel	2.56m	2.56m
Length of expanded panel	8.1m	13.72m
Cell diameter (expanded)	259 x 224mm	508 x 475mm

Please call - **01455 617 139**
or email sales@geosyn.co.uk for more technical advice and further information.

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