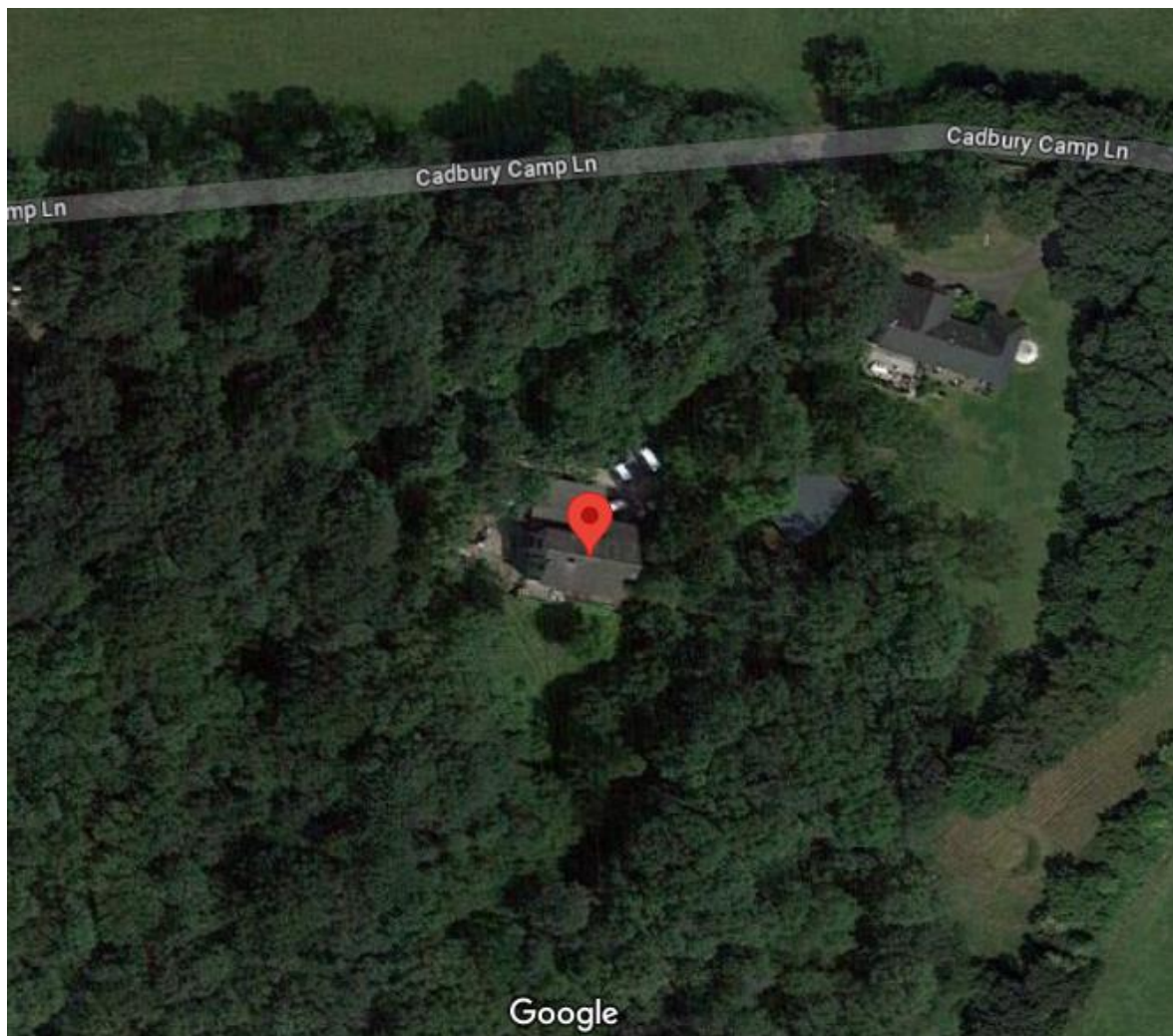




Land at Birchwood, Cadbury Camp Lane, BS20 7SA

Arboricultural Report containing:

- **Arboricultural constraints**
- **Arboricultural impact assessment (AIA)**
- **Tree protection**
- **Arboricultural method statement**



On behalf of
Mr Martin Day

Prepared by:
Deb Randall BSc TechArborA
Arboricultural Consultant
April 2024

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1.0 Instructions/Scope

- 1.1 Silverback Arboricultural Consultancy have been instructed to compile an arboricultural report containing tree survey, tree constraints plan, arboricultural impact assessment, tree protection plan and arboricultural method statement regarding trees growing at Birchwood, Cadbury Camp Lane, Bristol, BS20 7SA. This report is intended to accompany a planning application relating to the demolition of the existing dwelling and the construction of a new dwelling on the site. This document has been produced to demonstrate that the implications of the proposed development, to the existing trees, has been fully considered during the detailed design process.
- 1.2 Recommendations for the safeguarding of trees in close proximity to development are set out in, BS5837:2012 Trees in relation to design, demolition and construction – Recommendations. We have therefore carried out the assessment of the trees in accordance with that document.
- 1.3 Specifically, this report and the accompanying information are supplied to:
- Identify the constraints that trees on and adjacent to the site present to the development of the site, to inform the site design process.
 - Present information regarding the above ground constraints (crown spreads) and below ground constraints (Root Protection Areas – RPAs), in a Tree Schedule and on a Tree Constraints Plan.
 - Assess the impact of the proposed development on the trees on or adjacent to the site, and the impact that retained trees will have on the site post development.
 - Identify trees to be removed, trees to be retained and specify measures necessary to protect retained trees during the construction phases of the development.
 - Recommend necessary remedial tree works to be undertaken to trees that will be retained prior to commencement of the construction phases of the development.
 - Present information regarding the location of protective barriers or fencing and ground protection on a Tree Protection Plan.
 - Identify special engineering, excavation or protection measures intended to minimise the impact on retained trees where the site design layout requires a breach of the Root Protection area, (RPA).

- Provide an Arboricultural Method Statement for the recommended works detailing measures which should be implemented to protect retained trees during the demolition and construction phases of the development.

1.4 This report is based on a ground level assessment of the trees. A site survey was undertaken by Deb Randall BSc (Hons) TechArborA, technical member of the Arboricultural Association and a Lantra certified Professional Tree Inspector with over five years' experience in the industry. An arboricultural consultant visited the site on Tuesday 24th October 2023. The weather was bright with good visibility.

1.5 Documents Provided

- Topographic survey dwg N^o 37881YOLS-01
- Proposed site layout dwg N^o 1868_003 Rev A

2.0 Survey Methodology

2.1 The survey includes tree and shrubs with a stem diameter over 75mm at 1.5m height, located within the area shown on the plan included in this report.

2.2 All inspections were made from ground level with the use of binoculars, sounding hammer and metal probe where necessary, using the Visual Tree Assessment method (Mattheck & Breloer 1994). The presence and condition of bark and stem wounds, cavities, decay, fungal fruiting bodies and any structural defects that could affect the structural integrity of the trees have been noted.

2.3 Tree numbers have been noted on the plan. The following details were recorded for each tree and are included in the tree schedule sheets accompanying this report:

Number: an identity number for each tree, prefixed with a 'T' which cross references locations shown on the plan with the tree survey sheets. Where a number of trees, normally of the same species, are located close together and are similar in character and requirements, they have been treated as a Group under a single Number, prefixed with a 'G'

Species: common name and botanical name in *italics*

Tree Height: approximate height in metres

Stem Diameter: diameter measured in millimetres, taken at 1.5m above ground. Where the tree is multi-stemmed the diameter is calculated in accordance with BS5837:2012

(# estimated dimensions for off-site or inaccessible trees)

Crown spread: approximate spread in metres taken at the four main compass points N, S, E, W

Crown clearance: approximate height from ground to lowest part of canopy

Age class: Young, Semi-Mature, Early Mature, Mature, Over-Mature, Veteran

Structural condition: Good, Fair, Poor

Physiological condition: Good, Fair, Poor, Dead

Observations: observations noted during tree inspections

Preliminary recommendations: recommended action to ensure the health and safety of the tree.

Remaining contribution (years): <10, 10+, 20+, 40+

BS Cat- category grading in accordance with BS 5837:2012

A - trees of high quality with an estimated remaining life expectancy of at least 40 years.

B - trees of moderate quality with an estimated remaining life expectancy of at least 20 years.

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

U - trees 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.

BS Sub Cat - sub-category grading in accordance with BS 5837:2012

1- Mainly arboricultural qualities

2- Mainly landscape qualities

3- Mainly cultural values including conservation

RPA – Root Protection Area - measured in metres from the centre of the tree stem.

2.4 Presentation of the Data Collected

- Data collected regarding individual trees and groups of trees are presented in the Tree Schedule table in appendix 1 in accordance with BS5837:2012 Trees in Relation to Construction – Recommendations.
- The data significant to the proposed site layout is also presented on the Tree Constraints Plan (Drawing Number 240226-BW-TCP-Rev B-NB&AM (appendix 2) and Arboricultural Impact Assessment Plan (Drawing Number 240328-BW-AIA-Rev B-NB&AM (appendix 3).
- All other relevant data are presented within the main body of this report.



- Trees have been allocated an individual tree number. This tree number is used to identify individual trees and/or groups of trees throughout this report, within the Tree Schedule and on all plans presented in the appendices of this report.

3.0 Report Limitations

- 3.1 Trees are living, dynamic organisms that can be affected by external conditions. It is therefore not possible to state with any certainty that a tree is safe.
- 3.2 No internal decay devices or other invasive tools to assess tree condition were used. No soil excavation or root inspection was undertaken. Except where stated, all dimensions are estimated. We were not presented with any information on the soil type and no soil samples have been taken.
- 3.3 This report has not considered the effect that trees or vegetation may have on the structural integrity of adjacent buildings or structures.
- 3.4 The survey contained within this report is not a tree safety inspection. It has been carried out in order to inform the planning process. Where clear and obvious hazards have been observed, these have been addressed in the recommendations contained within the tree schedule sheets (appendix 1). A full assessment of the levels of risk posed by trees would be informed by considering site use together with hazards present within the aerial parts of a tree(s). Changes in site use are likely to occur during, and result from, the proposed development. In the light of these changes, regular tree risk assessments are advised.
- 3.5 Tree condition can change rapidly, the recommendations contained within this report are based on the condition of the tree at the time they were inspected. Any amendments to the design or position of the proposed development will invalidate this report.
- 3.6 While this appraisal is not a tree risk assessment it nonetheless takes into account observed structural defects of the inspected trees in order to inform conclusions with regard to their retentive worth.

4.0 Legal duty

- 4.1 It is the responsibility of the tree owner to ensure that their tree(s) is in a safe and stable condition, including the effects of root activity, through duty of care in the *Occupiers Liability Act (1957 & 1984)*.
- 4.2 The Wildlife and Countryside Act, 1981 makes it an offence to disturb a nesting bird or recklessly endanger a bat or its roost. Professional advice should be sought, where relevant, before undertaking any recommended works.
- 4.3 Searches of North Somerset Council online mapping system showed the trees on site are covered by a Woodland Tree Preservation Order (TPO no. 278W). Written consent will be required for North Somerset Council prior to the commencement of any works to the trees.
- 4.4 Under the Tree Preservation Order legislation the removal of deadwood and dead trees is exempt from the requirement to obtain prior written consent from the local planning authority (LPA). It is however recommended to give the LPA five days notice, in writing, prior to the commencement of these works.

5.0 Tree and Site Assessment (to be read in conjunction with the survey schedule sheets)

- 5.1 The proposed development is for the demolition of the existing dwelling and the construction of a new dwelling on the site and a replacement roof for the existing detached garage. The area proposed for development comprises of the existing dwelling and part of the existing parking area. There are a number of trees close to the east of the house extending towards the property. The garage also has trees growing to its north and west.
- 5.2 It was found that the majority of trees were overgrown coppiced Hazel in fair or poor condition growing either side of the driveway. Three Yew trees are overgrown and encroaching onto the western side of the existing dwelling. There are a number of Ash trees on the site which are considered to be in poor condition with dieback and major deadwood throughout the canopies.
- 5.3 On inspection, evidence was found that all the surveyed Ash trees are infected by Ash dieback disease (*Hymenoscyphus fraxineus*). This was evident in the few remaining leaves in the canopies of the trees and the leaf litter around the base of the trees.



- 5.4 Ash dieback disease destroys the tree's phloem and xylem, which results in the tree being unable to move water and nutrients around its structure. This lack of water and nutrient movement will cause the branches of the tree to fail and the tree to 'die back'. The ongoing loss of nutrition and water plus the depletion of energy reserves due to the lack of foliage, causes the tree to become brittle, lose branches and make it susceptible to other pathogens such as Honey Fungus (*Armillaria*).
- 5.5 It is currently estimated that Ash dieback has a mortality rate of 90% with few trees showing any signs of resistance. (ref: Tree Council Ash Dieback Action Plan Toolkit Summer 2019). The precise speed of decline of any individual tree is currently impossible to predict and will be influenced by other factors including soil type, soil moisture levels and topography. The Tree Council identifies four classes of Ash health which can be adopted to prioritise the worst affected cases and make management more practical:
- Ash Health Class 1 = 100% - 75% remaining canopy
 - Ash Health Class 2 = 75% – 50% remaining canopy
 - Ash Health Class 3 = 50% - 25% remaining canopy
 - Ash Health Class 4 = 25% - 0% remaining canopy
- 5.6 The latest evidence nationwide and from local tree surgery teams, is that infected trees can decline rapidly becoming structurally unsound in a matter of months. It is therefore considered that the Ash trees have a very short useful life expectancy and should not be considered as a constraint to the proposed development.
- 5.7 Forty-four were surveyed. Of the trees surveyed, two trees were categorised **A**, thirteen trees were categorised **B**, six trees were categorised **U**, the remaining trees were categorised **C**. The trees were assessed and categorised in accordance with the Cascading Chart of Tree Quality Assessment contained within BS5837:2012.

6.0 Arboricultural Constraints

- 6.1 Trees have a widely spreading, shallow root system. In most cases, the majority of tree roots are situated within the top 600 mm of soil although some roots may extend down to 2m. Small feeder roots can also be expected to extend beyond the outer edge of the canopy. Roots can therefore be easily damaged by construction activity.
- 6.2 Constraints on the design of the development are presented in the Tree Schedule Sheets (appendix 1) Tree Constraints Plan (appendix 2) and the Arboricultural Impact Assessment Plan (appendix 3). These constraints are also considered in the main body of the report below and recommended remedial works and mitigating measures.
- 6.3 The Tree Constraints Plan (TCP), (appendix 2), shows the Root Protection Areas (RPAs) for the individual trees identified in the tree schedule tables. This represents the minimum area in m² which ideally, should be left undisturbed around each tree were it to be retained. The TCP/ AIA also shows a representation of the crown spread of each tree measured in four cardinal directions. The RPA has been calculated in accordance with Section 4.6 of BS5837:2012 Trees in relation to design, demolition and construction – Recommendations.

6.4 Trees Identified for Retention and Removal.

It is proposed to retain and protect all existing trees throughout the proposed development.

6.4.1 Trees Outside Site Boundary

There are no trees outside of the site boundary which are affected within the current proposals.

7.0 Arboricultural Impact Assessment

- 7.1 A small section of new hard surfacing is proposed within the calculated Root Protection Area of T25. Any excavation or soil compaction in this area could potentially lead to root severance or damage. This could subsequently lead to a reduction in the trees ability to take up water and nutrients, which may lead to a deterioration in the tree's health.

Where new hard surfacing is to be installed within the Root Protection Areas of T25 construction will be undertaken in accordance with Arboricultural Guidance Note 12 'The use of Cellular Confinement Systems near Trees. A Guide to Good Practice' using a Cellular Confinement System such as 'Cellweb'



7.2 Working area will be required within the calculated Root Protection Area of T42 to facilitate the construction of the proposed development. Any soil compaction in this area could potentially lead to root severance or damage.

Where working area is required within the Root Protection Area of T42, temporary ground protection will be installed in accordance with BS5837:2012 Section 6.2.3.3.

7.3 Any encroachment into the Root Protection Area (RPA) of retained trees could lead to ground compaction resulting in root damage.

Protective fencing, in accordance with BS5837:2012, will be erected to prevent any unauthorised access into the Root Protection Area (RPA) during the development works.

7.4 Storage and mixing of construction materials could lead to soil compaction of ground contamination through spillage.

All storage and mixing of materials will be undertaken outside the Root Protection Area (RPA) of the retained trees. The existing hard surfacing car park and driveway can be used to store and mix materials. If considered necessary, due to ground levels, a suitable water proof ground covering with bunds at the edges to prevent leakage will be laid over the storage, mixing area.

7.5 Overhanging and low branches could potentially be damaged during the erection of scaffolding or during the delivery of materials to site.

There is sufficient clearance under the canopies of the trees adjacent to the areas proposed for development to facilitate the proposed works. The protective fencing will enclose the branch spreads of the remaining trees preventing any potential damage to the tree canopies.

7.6 Drainage and service routes in association with the proposed development, have been planned outside the calculated Root Protection Area of any trees proposed for retained.

Should this change, installation of drainage or services runs will be in accordance with Section 7.7 (Underground and above-ground utility apparatus) of BS5837:2012.



7.7 **Shading:-** Potential shading of buildings by retained trees can lead to pressure for the pruning or removal of the trees. *BS5837: 2012 par 5.3* states that proposed buildings should be designed to take account existing trees, their ultimate size and density of foliage, and the effect that these will have on the availability of light.

There are no shading issues associated with the proposed development.

7.8 **Future growth:-** Future extension growth of branches can result in the continuous whipping of branches against the fabric of a building or damage to the roof tiles. Structures should therefore be located with due consideration for a tree's ultimate growth.

The proposed dwelling is at a sufficient distance from the retained trees for there to be no issues.

8.0 Tree Protection

The trees to be retained on site during and after development as listed in Section 6.4 will require both above and below ground protection. Above ground protection may involve remedial tree surgery works. These works, where applicable, are presented in the Tree Schedule Sheets (appendix 1) and are discussed in Section 8.1 below.

8.0.1 Below ground protection measures, based on the root protection areas (RPA), indicated in the Tree Constraints Plan (appendix 2), will involve the erection of tree protection barriers as discussed in Section 8.2. The tree protection fencing is illustrated in Tree Protection Plan (Drawing Number 240328-BW-TPP-Rev B-NB&AM) (appendix 4).

8.0.2 The potential position of tree roots as indicated in the Arboricultural Impact Assessment Plan (appendix 3) and Tree Protection Plan (appendix 4) are only guidelines based on calculations shown in *BS5837:2012 'Trees in relation to design, demolition and construction – Recommendations'*.

8.1 Recommended Remedial Tree Surgery Works

No remedial tree works are considered necessary to facilitate the proposed development.



8.2 Tree Protection Fencing

The Tree Protection Plan (appendix 4) indicates the location of the proposed tree protection barriers where appropriate. These barriers will create a Construction Exclusions Zone (CEZ) around the retained trees.

8.2.1 The Construction Exclusion Zones will be erected in accordance with the recommendations in Section 6.2 of BS5837:2012. The specifications for the barriers are presented in Figure 3 from BS5837:2012 (appendix 5).

8.2.2 It is *essential* that tree protection fencing barriers are erected before any site preparation or construction work be commenced. (Remedial tree works however, should be undertaken before such fencing is erected – See Section 8.1). Once erected the protective fencing will be retained and maintained in position for the duration of the development.

8.2.3 Should any construction activity require the repositioning of the tree protection barriers, advice will be sought from Silverback Arboricultural Consultancy and approval requested from the Local Authority Tree Officer before any of the fencing is altered.

8.3 Damage Limitation-Special Measures

Areas are identified on the Tree Protection Plan (appendix 4) where special measures will be required to minimise the impact of the proposed site layout on the retained trees where the construction works breach the RPAs.

8.3.1 Where new hard surfacing is to be installed within the Root Protection Areas of T25, construction will be undertaken in accordance with Arboricultural Guidance Note 12 'The use of Cellular Confinement Systems near Trees. A Guide to Good Practice' using a Cellular Confinement System such as 'Cellweb'.

8.3.2 Where working area is required within the Root Protection Area of T42 temporary ground protection will be installed in accordance with BS5837:2012 Section 6.2.3.3.

8.3.3 In the event of any unforeseen circumstances the project arboriculturalist will be informed immediately and will advise on suitable precautionary measures.



9.0 Arboricultural Method Statement

This section sets out the basis of the methodology for all works in relation to the proposed development in proximity to trees located within the site boundary.

9.0.1 Copies of the Arboricultural Method Statement document will be available for inspection on site and will form the basis of the management of all works relating to the trees on the site for the Site Agent/Manager following commencement of the project.

9.1 Programme of Works

- Erection of protective barriers and temporary ground protection
- Installation of no-dig surface within RPA of T25
- Demolition of existing building
- Construction of new dwelling

9.2 Tree Protection Fencing

BS5837: 2012 recommends the erection of protective fencing around retained trees before development commences. The position of the fencing is calculated using the tree's diameter (DBH) measured at 1.5m up the stem. The area within the fencing is called the Root Protection Area (RPA).

9.2.1 It is proposed to erect the protective fencing as indicated on the Tree Protection Plan (TPP) (appendix 4). This will create a Construction Exclusion Zone (CEZ).

9.2.2 The protective fencing will be constructed in accordance with BS5837:2012 'Trees in relation to design, demolition and construction – Recommendations'. This will consist of weld mesh panels positioned in rubber feet braced with stabilizer struts secured with ground pins, in accordance with Figure 3 of BS5837:2012 'Trees in relation to design, demolition and construction – Recommendations' (appendix 5).

9.2.3 Once erected the protective fencing will be retained and maintained in position for the duration of the development. If it is necessary to move the protective fencing advice will be sought from Silverback Arboricultural Consultancy and approval requested from the North Somerset Council Tree Officer before any of the fencing is altered.

9.2.4 Weatherproof signage will be attached to the fencing indicating its function as illustrated (appendix 6).

9.2.5 In the CEZ (construction exclusion zone):

- There must be no alteration of ground levels, including soil stripping other than those detailed within this report.
- Any installation of drainage or services will be in accordance with Section 7.7 (Underground and above-ground utility apparatus) of BS5837:2012.
- Oil, bitumen, cement or other harmful materials will not be stored, mixed or discharged within 10m of any retained trees.
- Fires will not be lit beneath or within 10m upwind of tree canopies.

9.3 Installation of temporary ground protection.

Prior to the commencement of any construction works on site, temporary ground protection will be installed, as indicated on the TPP (appendix 4), in accordance with BS5837:2012 Section 6.2.3.3. This will be retained and maintained in position for the duration of the development.

9.3.1 The temporary ground protection will consist of a geo textile membrane placed over the existing ground. This will be topped by 100mm woodchip overlaid with a single thickness of scaffold boards.

9.4 Construction of no-dig surface within RPA of T25

This will be constructed using a three dimensional ‘Cellular Confinement System’ (CCS), such as “Cellweb” to prevent any ground compaction or potential impact on the health of the tree roots. (appendix 7)

9.4.1 The position of the new hard surfacing will be marked out, cleared of vegetation and a general level created using hand tools and clean sand where necessary. A geo textile membrane will then be laid across the surface overlaying the edges of the area by 300mm. Any joints will be overlap by a minimum of 300mm.



9.4.2 75mm 'Cellular Confinement System' (CCS) will then be laid across the area and secured with J pins in the corners and 10x J pins per panel. Adjacent panels will be stapled together. This will provide a load-bearing and permeable structure. The cellular design and perforated cell walls reduce the vertical load pressure on sub soils to tree roots and prevents damage.

9.4.3 Once the CCS is in place it will be backfilled with Type 4/20 or Type 20/40mm clean angular stone which will enable air and moisture to reach the roots and encourage healthy growth. There will be a minimum overfill of clean angular stone.

9.4.4 A porous wearing course will then be applied to a depth of 30-40mm as the finished surface. The edges of the surfacing will be retained using tantalised wooden retaining boards staked into the ground tapering down to the existing ground level with topsoil.

9.5 Supervision and Monitoring

The project arboricultural consultant will be employed to oversee operations relating to works close to or within RPAs of retained trees and to issue a site inspection report of practical completion for the following operations:

- The erection of protective barriers and temporary ground protection in accordance with TPP (appendix 4)
- Installation of no-dig surface within RPA of T25
- Monthly site inspection visits

9.5.1 A record of site visits completed by the project arboriculturalist will be maintained for inspection on site and copies are forwarded to the Local Planning Authority Tree Officer within hours of the site visit.

9.5.2 This development will be overseen Silverback Arboricultural Consultancy. If there are any alterations to the proposed working methodology necessary, works will be stopped until the arboricultural consultant has been notified and agreement reached with the Local Planning Authority Tree Officer.



10.0 Contact Details

10.1 Arboricultural Consultant

Chris Wright

Silverback Arboricultural Consultancy

E-mail: chris@silverbackarb.co.uk

10.2 Local Authority Tree Officer

Jason Cox

Tree Officer, Natural Environment Team

North Somerset Council

E-mail: jason.cox@n-somerset.gov.uk

11.0 References

Mattheck, C. and Breloer, H. (1995). The Body Language of Trees: A handbook for failure analysis. Research for Amenity Trees **4**. HMSO, London.

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

British Standard 3998:2010 - Tree Work Recommendations. British Standards Institution, London

12.0 Appendices

- Tree schedule sheets
- Tree constraints plan
- Arboricultural impact assessment (AIA)
- Tree protection plan
- BS5837:2012 Trees in relation to construction: Recommendations Protective Fencing Detail
- Protective fencing sign
- Cellular Confinement System detail

Deb Randall BSc

Arboricultural Consultant

Silverback Arboricultural Consultancy

3rd April 2024

Arboricultural Survey Birchwood, Cadbury Camp Lane

Tree Number	Common name	Botanical name	Height (m)	Number of stems	Calculated stem diameter (mm)	Crown Spread (m)				Crown Clearance (m)	Life Stage	Structural Condition	Physiological Condition	Observations	Preliminary Recommendations	Remaining contribution (yrs)	BS Category	Root Protection Area Radius (m) Area m ²
						N	E	S	W									
T01	Common Ash	<i>Fraxinus excelsior</i>	12	2	590	2	3	8	5	4	Mature	Poor	Diseased	Growing on edge of driveway and road Heavy lean to south over driveway Twin stemmed from 1m Included bark at stem union Dieback in the canopy chlorotic, sparse foliage Major deadwood in canopy over driveway Evidence of Ash Dieback Disease in canopy AHC 3 Evidence of root heave north side Ivy growing up main stem	Remove tree	<10 years	U	No RPA due to Retention Category of U.
T02	Sycamore	<i>Acer pseudoplatanus</i>	4	1	130	2	2	2	2	2	Semi Mature	Good	Good	No significant defects visible at time of inspection Suppressed by neighbouring trees	No action required at the time of inspection.	40+ Years	B2	Radius: 1.6m. Area: 8 sq m.
T03	Silver Birch	<i>Betula pendula</i>	8	1	130	2	2	0	1	4	Early Mature	Fair	Good	Growing at edge of driveway Suppressed by neighbouring trees Asymmetric crown	No action required at the time of inspection.	40+ Years	C2	Radius: 1.6m. Area: 8 sq m.
T04	Silver Birch	<i>Betula pendula</i>	8	1	170	1	1	2	1	4	Early Mature	Fair	Good	Growing at edge of driveway Suppressed by neighbouring trees Asymmetric crown	No action required at the time of inspection.	40+ Years	C2	Radius: 2.0m. Area: 13 sq m.
T05	Sycamore	<i>Acer pseudoplatanus</i>	5	1	110	1	2	2	2	1	Semi Mature	Fair	Good	Suppressed by neighbouring trees Multi- stemmed from base	No action required at the time of inspection.	20-40 Years	C2	Radius: 1.3m. Area: 5 sq m.
T06	Pedunculate Oak	<i>Quercus robur</i>	6	1	160	3	2	4	2	1	Semi Mature	Fair	Fair	Previously crown reduced Suppressed by neighbouring trees Asymmetric crown No significant defects visible at time of inspection	No action required at the time of inspection.	40+ Years	B2	Radius: 1.9m. Area: 11 sq m.

Arboricultural Survey Birchwood, Cadbury Camp Lane

Tree Number	Common name	Botanical name	Height (m)	Number of stems	Calculated stem diameter (mm)	Crown Spread (m)				Crown Clearance (m)	Life Stage	Structural Condition	Physiological Condition	Observations	Preliminary Recommendations	Remaining contribution (yrs)	BS Category	Root Protection Area Radius (m) Area m ²
						N	E	S	W									
T07	Hazel	<i>Corylus avellana</i>	6	3	340	5	4	3	2	1	Mature	Fair	Fair	Multi- stemmed from base Suppressed by neighbouring trees Asymmetric crown Minor deadwood in canopy over driveway Previously coppiced	Recoppice	20-40 Years	C2	Radius: 4.1m. Area: 53 sq m.
T08	Pedunculate Oak	<i>Quercus robur</i>	7	2	250	10	2	1	1	1	Mature	Poor	Fair	Heavy lean to north Major deadwood in canopy Suppressed by neighbouring trees Asymmetric crown	No action required at the time of inspection.	20+ Years	C2	Radius: 4.2m. Area: 55 sq m.
T08a	Common Hawthorn	<i>Crataegus monogyna</i>	9	1	260	7	6	1	0	4	Mature	Fair	Fair	Heavy lean north Suppressed by neighbouring trees Asymmetric crown Major deadwood in canopy	No action required at the time of inspection.	20+ Years	C2	Radius: 3.1m. Area: 30 sq m.
T09	Sycamore	<i>Acer pseudoplatanus</i>	11	1	360	6	5	4	6	0	Mature	Fair	Good	Minor deadwood in canopy over bridleway to north Suppressed by neighbouring trees Asymmetric crown Epicormic growth around base	No action required at the time of inspection.	20-40 Years	B2	Radius: 4.3m. Area: 58 sq m.
T10	Pedunculate Oak	<i>Quercus robur</i>	15	1	570	4	8	7	5	4	Mature	Fair	Good	No significant defects visible at time of inspection Suppressed by neighbouring trees Asymmetric crown Major deadwood in canopy	No action required at the time of inspection.	40+ Years	B2	Radius: 6.8m. Area: 145 sq m.
T11	Hazel	<i>Corylus avellana</i>	6	3	210	3	2	5	4	1	Mature	Poor	Fair	Multi- stemmed from base Suppressed by neighbouring trees Asymmetric crown Previously coppiced Previously failed limbs	Recoppice	20-40 Years	C2	Radius: 2.5m. Area: 20 sq m.

Arboricultural Survey Birchwood, Cadbury Camp Lane

Tree Number	Common name	Botanical name	Height (m)	Number of stems	Calculated stem diameter (mm)	Crown Spread (m)				Crown Clearance (m)	Life Stage	Structural Condition	Physiological Condition	Observations	Preliminary Recommendations	Remaining contribution (yrs)	BS Category	Root Protection Area Radius (m) Area m ²
						N	E	S	W									
T12	Hazel	<i>Corylus avellana</i>	6	3	220	3	6	6	0	1	Mature	Fair	Fair	Multi- stemmed from base Suppressed by neighbouring trees Asymmetric crown Previously coppiced Over extended branches to east and south Major deadwood in canopy	Recoppice	20-40 Years	C2	Radius: 2.6m. Area: 21 sq m.
T13	Sycamore	<i>Acer pseudoplatanus</i>	8	1	130	3	2	2	2	2	Early Mature	Good	Good	Growing on bank 1m above driveway held by retaining wall No significant defects visible at time of inspection	No action required at the time of inspection.	40+ Years	B2	Radius: 1.6m. Area: 8 sq m.
T14	Common Ash	<i>Fraxinus excelsior</i>	9	1	160	1	1	1	1	3	Early Mature	Fair	Diseased	Growing on bank 1m above driveway held by retaining wall Suppressed by neighbouring trees Evidence of Ash Dieback Disease in canopy AHC 3 Major deadwood in canopy	Remove tree	<10 years	U	No RPA due to Retention Category of U.
T15	Hazel	<i>Corylus avellana</i>	7	3	240	3	3	5	2	1	Mature	Fair	Fair	Growing out of retaining wall, exposed roots Minor deadwood in canopy over driveway Multi- stemmed from base Suppressed by neighbouring trees Asymmetric crown Previously coppiced	No action required at the time of inspection.	20-40 Years	C2	Radius: 2.9m. Area: 26 sq m.
T16	Wild Cherry	<i>Prunus avium</i>	14	1	320	4	4	4	4	2	Mature	Fair	Good	Twin stemmed from 3m Included bark at stem union Minor deadwood in canopy No significant defects visible at time of inspection	No action required at the time of inspection.	20-40 Years	B2	Radius: 3.8m. Area: 45 sq m.

Arboricultural Survey Birchwood, Cadbury Camp Lane

Tree Number	Common name	Botanical name	Height (m)	Number of stems	Calculated stem diameter (mm)	Crown Spread (m)				Crown Clearance (m)	Life Stage	Structural Condition	Physiological Condition	Observations	Preliminary Recommendations	Remaining contribution (yrs)	BS Category	Root Protection Area Radius (m) Area m ²
						N	E	S	W									
T17	English Yew	<i>Taxus baccata</i>	14	1	570	8	6	5	7	1	Mature	Fair	Good	Growing adjacent to garage Previously crown lifted over garage No significant defects visible at time of inspection	Cut back branches on West side from building	40+ Years	B2	Radius: 6.8m. Area: 145 sq m.
T18	Common Ash	<i>Fraxinus excelsior</i>	16	1	340	0	0	5	5	8	Mature	Poor	Diseased	Canopy bias to Southwest over garage Decay cavity at base of stem north side Suppressed by neighbouring trees Asymmetric crown Dieback in the canopy chlorotic, sparse foliage Major deadwood in canopy Evidence of Ash Dieback Disease in canopy AHC 4	Remove tree	<10 years	U	No RPA due to Retention Category of U.
T19	Hazel	<i>Corylus avellana</i>	7	3	210	4	3	1	1	0	Mature	Fair	Fair	Multi- stemmed from base Suppressed by neighbouring trees Asymmetric crown Previously coppiced Branches extending over driveway Hung up snapped branch Prolific ivy throughout canopy	No action required at the time of inspection.	20-40 Years	C2	Radius: 2.6m. Area: 21 sq m.
T20a	Sycamore	<i>Acer pseudoplatanus</i>	10	1	360	7	0	1	7	1	Mature	Poor	Fair	Growing on top of 1m retaining wall Heavy lean northwest Suppressed by neighbouring trees Asymmetric crown	No action required at the time of inspection.	20+ Years	C2	Radius: 4.3m. Area: 58 sq m.
T21	Pedunculate Oak	<i>Quercus robur</i>	12	1	420	3	3	2	7	1	Mature	Fair	Fair	Slight lean to west Overextended branch to west Suppressed by neighbouring trees Asymmetric crown Major deadwood in canopy	No action required at the time of inspection.	20-40 Years	C2	Radius: 5.0m. Area: 79 sq m.

Arboricultural Survey Birchwood, Cadbury Camp Lane

Tree Number	Common name	Botanical name	Height (m)	Number of stems	Calculated stem diameter (mm)	Crown Spread (m)				Crown Clearance (m)	Life Stage	Structural Condition	Physiological Condition	Observations	Preliminary Recommendations	Remaining contribution (yrs)	BS Category	Root Protection Area Radius (m) Area m ²
						N	E	S	W									
T23	Pedunculate Oak	<i>Quercus robur</i>	14	1	450	3	6	4	7	2	Mature	Fair	Good	No significant defects visible at time of inspection Minor deadwood in canopy Suppressed by neighbouring trees Asymmetric crown	No action required at the time of inspection.	40+ Years	B2	Radius: 5.4m. Area: 92 sq m.
T24	English Yew	<i>Taxus baccata</i>	12	1	710	6	6	5	5	1	Mature	Fair	Good	No significant defects visible at time of inspection Major deadwood in canopy Previously twin stemmed, now decayed Suppressed by neighbouring trees Asymmetric crown	No action required at the time of inspection.	40+ Years	B2	Radius: 8.5m. Area: 227 sq m.
T25	English Yew	<i>Taxus baccata</i>	10	2	600	5	3	5	3	1	Mature	Fair	Good	Twin stemmed from base Suppressed by neighbouring trees Asymmetric crown Ivy growing up main stem Previously reduced on west side Major deadwood from canopy shading	No action required at the time of inspection.	40+ Years	C2	Radius: 7.2m. Area: 163 sq m.
T26	English Yew	<i>Taxus baccata</i>	14	3	660	4	4	6	4	1	Mature	Good	Good	No significant defects visible at time of inspection Multi- stemmed from base Major deadwood from canopy shading	No action required at the time of inspection.	40+ Years	B2	Radius: 7.9m. Area: 196 sq m.

Arboricultural Survey Birchwood, Cadbury Camp Lane

Tree Number	Common name	Botanical name	Height (m)	Number of stems	Calculated stem diameter (mm)	Crown Spread (m)				Crown Clearance (m)	Life Stage	Structural Condition	Physiological Condition	Observations	Preliminary Recommendations	Remaining contribution (yrs)	BS Category	Root Protection Area Radius (m) Area m2
						N	E	S	W									
T27	Common Ash	<i>Fraxinus excelsior</i>	14	1	340	2	0	0	2	12	Mature	Poor	Diseased	Suppressed by neighbouring trees Asymmetric crown Dieback in the canopy chlorotic, sparse foliage Major deadwood in canopy Evidence of Ash Dieback Disease in canopy AHC 4 Previously twin stemmed, now decayed Stem hollow, decayed, cracked Major decay cavity at base of stem	Remove tree	<10 years	U	No RPA due to Retention Category of U.
T28	Common Ash	<i>Fraxinus excelsior</i>	14	2	360	0	0	0	5	10	Mature	Poor	Diseased	Twin stemmed from 0.5m Root damage, exposed roots Stem hollow, decayed, cracked Suppressed by neighbouring trees Asymmetric crown Dieback in the canopy chlorotic, sparse foliage Major deadwood in canopy Evidence of Ash Dieback Disease in canopy AHC 3	Reinspect annually to monitor decline	<10 years	U	No RPA due to Retention Category of U.
T29	Hazel	<i>Corylus avellana</i>	8	3	190	4	1	1	6	1	Mature	Fair	Fair	Multi- stemmed from base Suppressed by neighbouring trees Asymmetric crown Previously coppiced	No action required at the time of inspection.	20-40 Years	C2	Radius: 2.3m. Area: 17 sq m.
T30	Hazel	<i>Corylus avellana</i>	7	3	230	1	5	0	6	1	Mature	Fair	Fair	Multi- stemmed from base Suppressed by neighbouring trees Asymmetric crown Previously coppiced Major deadwood in canopy	No action required at the time of inspection.	20-40 Years	C2	Radius: 2.7m. Area: 23 sq m.

Arboricultural Survey Birchwood, Cadbury Camp Lane

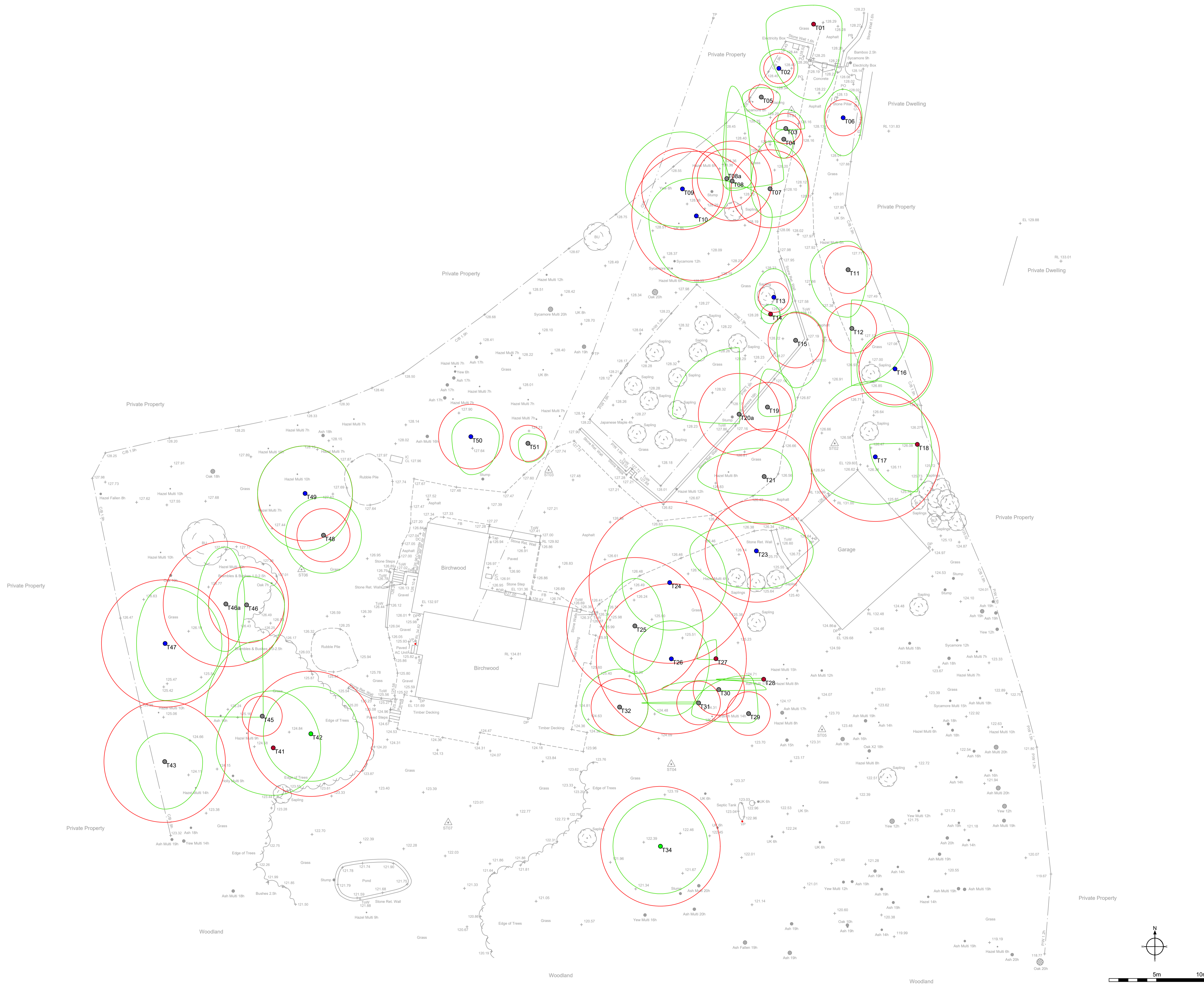
Tree Number	Common name	Botanical name	Height (m)	Number of stems	Calculated stem diameter (mm)	Crown Spread (m)				Crown Clearance (m)	Life Stage	Structural Condition	Physiological Condition	Observations	Preliminary Recommendations	Remaining contribution (yrs)	BS Category	Root Protection Area Radius (m) Area m ²
						N	E	S	W									
T31	Common Dogwood	<i>Cornus sanguinea</i>	6	2	190	0	0	0	6	1	Mature	Poor	Fair	Twin stemmed from base Suppressed by neighbouring trees Asymmetric crown Dead limb collapsed Minor deadwood in canopy	No action required at the time of inspection.	20+ Years	C2	Radius: 2.3m. Area: 17 sq m.
T32	Whitebeam	<i>Sorbus aria</i>	7	3	250	4	3	3	4	1	Mature	Fair	Fair	Multi- stemmed from base Bark damage, no callous Included bark at stem union Stem hollow, decayed, cracked	No action required at the time of inspection.	20+ Years	C2	Radius: 3.0m. Area: 28 sq m.
T34	English Yew	<i>Taxus baccata</i>	14	3	530	5	5	5	5	1	Mature	Good	Good	No significant defects visible at time of inspection Multi- stemmed from base	No action required at the time of inspection.	40+ Years	A1,2	Radius: 6.3m. Area: 125 sq m.
T41	Common Ash	<i>Fraxinus excelsior</i>	17	2	500	6	5	5	6	6	Mature	Fair	Diseased	Twin stemmed from base Suppressed by neighbouring trees Asymmetric crown Dieback in the canopy chlorotic, sparse foliage Major deadwood in canopy Evidence of Ash Dieback Disease in canopy AHC 4 Ivy growing up main stem	Remove tree	<10 years	U	No RPA due to Retention Category of U.
T42	English Yew	<i>Taxus baccata</i>	12	3	550	5	5	5	5	0	Mature	Good	Good	No significant defects visible at time of inspection Multi- stemmed from base Major deadwood from canopy shading	No action required at the time of inspection.	40+ Years	A1,2	Radius: 6.6m. Area: 137 sq m.

Arboricultural Survey Birchwood, Cadbury Camp Lane

Tree Number	Common name	Botanical name	Height (m)	Number of stems	Calculated stem diameter (mm)	Crown Spread (m)				Crown Clearance (m)	Life Stage	Structural Condition	Physiological Condition	Observations	Preliminary Recommendations	Remaining contribution (yrs)	BS Category	Root Protection Area Radius (m) Area m ²
						N	E	S	W									
T43	Pedunculate Oak	<i>Quercus robur</i>	16	1	530	3	4	5	3	6	Mature	Fair	Poor	Tree appears to be in decline Dieback in the canopy chlorotic, sparse foliage Major deadwood throughout canopy, hanging over adjacent bridleway Suppressed by neighbouring trees Asymmetric crown	Remove dead wood (major greater than 25mm).	20+ Years	C2	Radius: 6.4m. Area: 129 sq m.
T45	Hazel	<i>Corylus avellana</i>	5	2	180	8	0	0	6	0	Mature	Poor	Fair	Heavy lean to north Branches over extended to north Multi- stemmed from base Fractured limbs - storm damage Hung up snapped branch Suppressed by neighbouring trees Asymmetric crown Major deadwood in canopy	Coppice tree	20+ Years	C2	Radius: 2.1m. Area: 14 sq m.
T46	Pedunculate Oak	<i>Quercus robur</i>	10	1	330	3	4	6	1	1	Early Mature	Fair	Good	No significant defects visible at time of inspection Suppressed by neighbouring trees Asymmetric crown Major deadwood in canopy	No action required at the time of inspection.	40+ Years	C2	Radius: 4.0m. Area: 50 sq m.
T46a	Pedunculate Oak	<i>Quercus robur</i>	14	1	550	6	2	5	3	1	Mature	Fair	Good	No significant defects visible at time of inspection Suppressed by neighbouring trees Asymmetric crown Major deadwood in canopy	No action required at the time of inspection.	40+ Years	C2	Radius: 6.6m. Area: 137 sq m.
T47	English Yew	<i>Taxus baccata</i>	15	1	560	6	6	6	3	1	Mature	Good	Good	No significant defects visible at time of inspection Suppressed by neighbouring trees Asymmetric crown Major deadwood in canopy	No action required at the time of inspection.	40+ Years	B2	Radius: 6.7m. Area: 141 sq m.

Arboricultural Survey Birchwood, Cadbury Camp Lane

Tree Number	Common name	Botanical name	Height (m)	Number of stems	Calculated stem diameter (mm)	Crown Spread (m)				Crown Clearance (m)	Life Stage	Structural Condition	Physiological Condition	Observations	Preliminary Recommendations	Remaining contribution (yrs)	BS Category	Root Protection Area Radius (m) Area m ²
						N	E	S	W									
T48	Hazel	<i>Corylus avellana</i>	9	3	230	4	4	4	4	0	Mature	Fair	Good	Multi- stemmed from base Included bark at stem union Bark damage well calloused Suppressed by neighbouring trees Major deadwood in canopy	No action required at the time of inspection.	20-40 Years	C2	Radius: 2.8m. Area: 25 sq m.
T49	Pedunculate Oak	<i>Quercus robur</i>	16	1	420	5	5	6	5	6	Mature	Good	Good	No significant defects visible at time of inspection Major deadwood in canopy Suppressed by neighbouring trees	No action required at the time of inspection.	40+ Years	B2	Radius: 5.0m. Area: 79 sq m.
T50	Sycamore	<i>Acer pseudoplatanus</i>	10	1	280	2	3	4	2	1	Early Mature	Fair	Good	No significant defects visible at time of inspection Suppressed by neighbouring trees Asymmetric crown	No action required at the time of inspection.	40+ Years	B2	Radius: 3.4m. Area: 36 sq m.
T51	Common Hawthorn	<i>Crataegus monogyna</i>	7	1	160	1	2	2	1	1	Mature	Good	Good	No significant defects visible at time of inspection	No action required at the time of inspection.	20-40 Years	C2	Radius: 1.9m. Area: 11 sq m.



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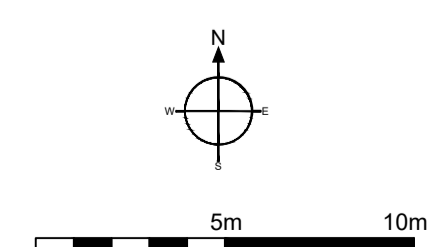
Site: Birchwood

Drawing Title: Tree Constraints Plan	1:200 @ A1
Drawing Number: 240227-BW-TCP-Rev B-NB&M	February 2024

Key:

- Category A
- Category B
- Category C
- Category U

Category Crown Spread
 Root Protection Area
 Tree Number



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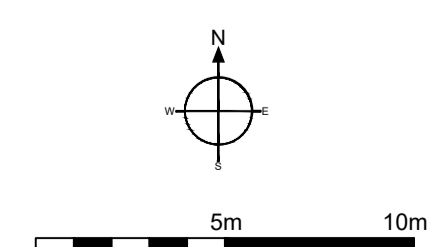
Site: Birchwood

Drawing Title: Arboricultural Impact Assessment	1:200 @ A1
Drawing Number: 240328-BW-AIA-Rev B-NB&AM	March 2024

Key:

- Category A
- Category B
- Category C
- Category U

Category Crown Spread
 Tree Number
 Root Protection Area



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Site: Birchwood

Drawing Title: Tree Protection Plan	1:200 @ A1
Drawing Number: 240328-BW-TPP-Rev B-NB&AM	March 2024

Key:

- Category A (Green circle)
- Category B (Blue circle)
- Category C (Grey circle)
- Category U (Red circle)
- Tree Protection Fencing (Pink line)
- Temporary Ground Protection (Hatched area)
- Existing Hard Standing (Blue area)
- No Dig Construction (Blue hatched area)

Category Legend:

- Category (Green circle)
- Crown Spread (Red circle)
- Tree Number (Number in circle)
- Root Protection Area (Red circle)

BS 5837:2012 – TREES IN RELATION TO DESIGN, DEMOLITION AND CONSTRUCTION – RECOMMENDATIONS

EXAMPLES OF ABOVE-GROUND STABILIZING SYSTEMS

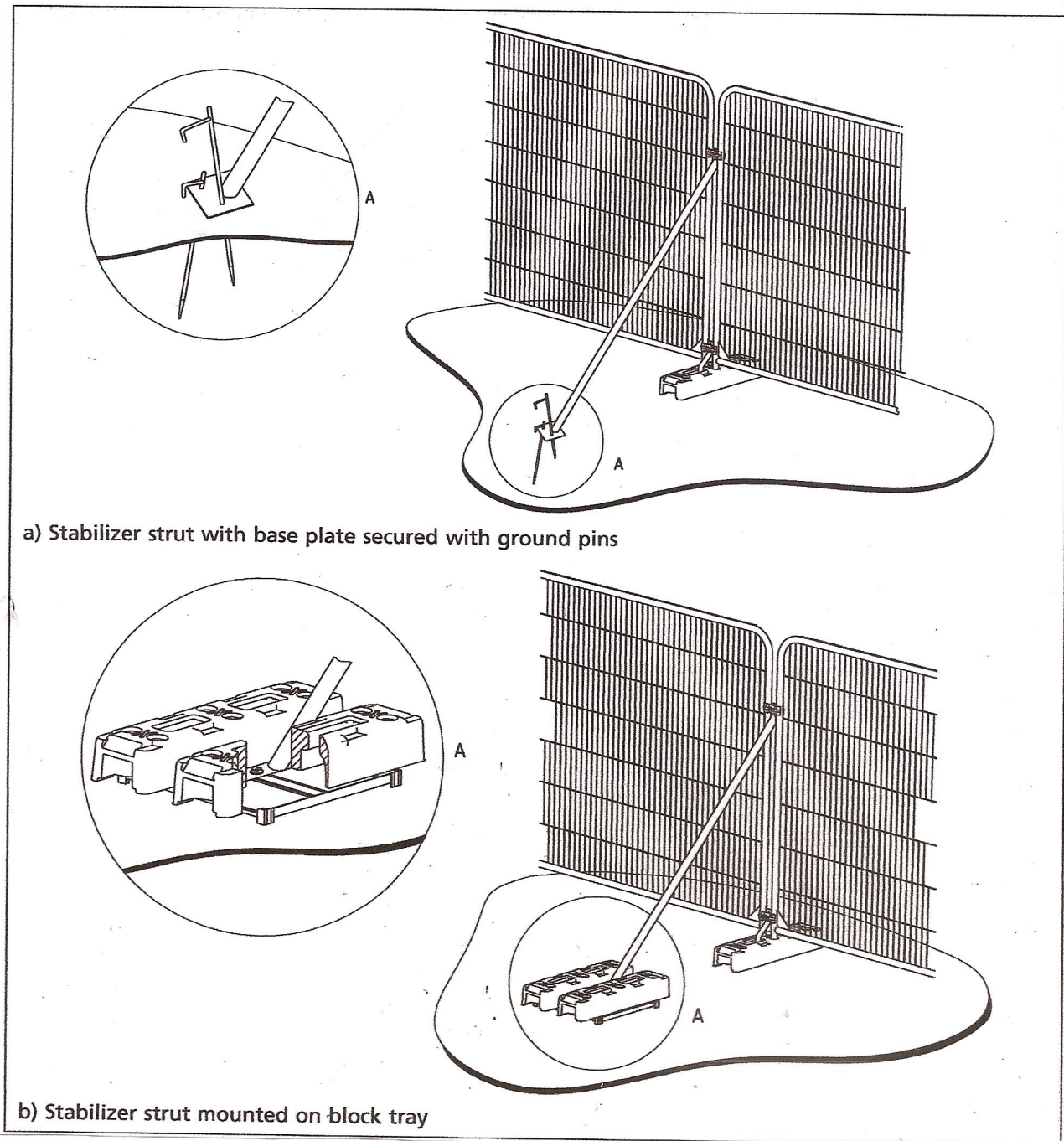


Figure 3 Examples of above-ground stabilizing systems



**PROTECTIVE FENCING. THIS
FENCING MUST BE
MAINTAINED IN ACCORDANCE
WITH THE APPROVED PLANS
AND DRAWINGS FOR THIS
DEVELOPMENT.**



**TREE PROTECTION AREA
KEEP OUT !**

**(TOWN & COUNTRY PLANNING ACT 1990)
TREES ENCLOSED BY THIS FENCE ARE PROTECTED BY
PLANNING CONDITIONS AND/OR ARE THE SUBJECTS OF A
TREE PRESERVATION ORDER.
CONTRAVENTION OF A TREE PRESERVATION ORDER MAY
LEAD TO CRIMINAL PROSECUTION**

**ANY INCURSION INTO THE PROTECTED AREA MUST BE
WITH THE WRITTEN PERMISSION OF THE LOCAL
PLANNING AUTHORITY**

Cellweb® TRP

Tree Root Protection

Cellweb® TRP is a 3D cellular confinement tree root protection system. The system provides a 'no dig' solution for the construction of new hard surfaces within root protection areas (RPAs). Cellweb® TRP has been designed and independently tested to comply with recommendations made in Arboricultural Practice Note 12 and BS 5837 2012 – Trees in relation to design, demolition and construction.



Cellweb® TRP Key Functions

Cellweb® is a 'no dig' solution which is constructed directly on the existing ground surface. This eliminates the requirement for excavation, preventing root severance.

Cellweb® is a completely porous system allowing continued water permeation and gas exchange between the rooting environment and atmosphere.

Cellweb® spreads point loads, minimising increases in soil compaction within the rooting environment. This maintains an open graded soil structure allowing continued root growth, water, gas and nutrient migration.

The Cellweb® TRP system comprises the following three components

Treetex™ Geotextile. Following minimal ground preparation the Treetex™ is laid onto the existing ground and top soil. This acts as a separation layer, separating the system above from the soil and rooting environment below. Treetex™ performs as a hydrocarbon pollution control measure in accordance with BS5837, holding 1.7lt of oil per square meter.

Cellweb® 3D Cellular Confinement. The Cellweb® is installed on top of the Treetex™ layer. This is fixed to the ground using ten steel J pins per panel. The panels can be cut to the required shape and adjoining panels can be connected using heavy duty staples or cell ties.

4-20mm Clean Angular Stone. The expanded Cellweb® is infilled with a 4-20mm clean angular stone. The confined angular stone locks together to produce a rigid stone mattress, while maintaining air pockets for continued water permeation and gas exchange. The low fines content of the stone prevents the Treetex™ layer from becoming blocked over time.

Which depth of Cellweb® TRP?

The Cellweb® System is provided in four different depths; 200mm, 150mm, 100mm and 75mm. The depth required is determined by the proposed traffic loadings and the site ground conditions. Geosynthetics in house engineering department can provide a free site specific technical recommendation. For free technical and engineering support please contact Geosynthetics Ltd 01455 617139 or the full installation guide can be found on our website www.geosyn.co.uk.

Indicative Cellweb with overfill

