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Arboricultural Report

BS5837 Tree Survey

Tree Work Proposals

Tree Protection Method Statement & Specification

Site

**8 Carrick Drive
Sevenoaks
Kent
TN13 3BA**

Client

Mr & Mrs Bates

by

Curtis Barkel
RCArborA, F.Arbor.A, Prof Dip (RFS)

Ref: SA/1875/21

Date: 23 September 2021



Arboricultural Consultant: Curtis Barkel - RCArborA, DipArb(RFS), FARborA
Fellow and Registered Consultant of the Arboricultural Association

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Site	8 Carrick Drive, Sevenoaks, Kent. TN13 3BA.
Survey Date	02 September 2021
Report Date	23 September 2021
Surveyed by	Curtis Barkel

1.0 Instructions

- 1.1 Sylvanarb has received instructions to carry out a BS5837 tree survey and provide a tree protection specification in respect of the proposed development as detailed on the Offset Architects, Proposed Site Plan, Ref: 5129-OD-11.

2.0 Documents Supplied

- Hook Survey Partnership, Topographical Survey, Ref: S14/4528/01, dated December 2014.
- Offset Architects, Proposed Site Plan, Ref: 5129-OD-11.

3.0 Aim of Report

- 3.1 To survey existing trees in accordance with BS5837 2012: *Trees in Relation to Design, Demolition and Construction* (BS5837), in order to assess the condition and quality of trees located on/adjacent to the site
- 3.2 To advise on tree retention/removal and provide a specification for tree protection measures required to protect trees identified for retention during development works.
- 3.3 To advise on tree work required to accommodate the proposed development.

4.0 Scope of Report

- 4.1 The survey has been carried out in accordance with British Standard 5837:2012 *Trees in Relation to Design, Demolition and Construction (BS5837)*.
- 4.2 The trees have been inspected considering the current and proposed site use. The assessment categories have been allocated on the condition and merits of the individual tree irrespective of the proposed development.
- 4.3 A detailed condition survey and hazard assessment of the subject trees has not been carried out, where obvious faults have been noted a further detailed condition assessment may be recommended in the tree survey comments column (see Appendix A).
- 4.4 The 'Required Tree Works' set out in Section 11.0 detail the tree works required to accommodate the proposal.
- 4.5 Prior to tree work being carried out the Local Planning Authority is to be consulted to ascertain whether prior permission is required to carry out such work.
- 4.6 A tree with internal structural faults will often display associated external evidence of such faults, these would be noted in a visual tree inspection. However such signs are not apparent at all times of the year, for example pests and diseases or leaf size and condition. The following findings and recommendations have been drawn from the evidence present on the day of inspection.
- 4.7 All advice given in this report is based on the information available on the day of inspection. Should additional information not available or apparent on the day of inspection come to light, the right is reserved to modify the conclusions found within this report. This report is valid for 12 months notwithstanding change of site conditions, extremes of weather or other such overriding environmental changes.

5.0 Survey Method

- 5.1 The survey includes those trees located on and adjacent to the area of proposed development with a stem diameter greater than 75mm measured at 1.5m from ground level.
- 5.2 Subject trees have been allocated identification numbers prefixed with 'T'.
- 5.3 Where appropriate several trees growing closely together have been surveyed as groups. In such cases the group value is recognised and graded as a whole, as opposed to grading the individual members of the group. Groups are allocated identification numbers prefixed with 'G'.
- 5.4 Subject trees have been plotted on the arboricultural plans over the locations provided on the Topographical Survey. The locations of all trees are assumed to be accurate.
- 5.5 The survey was carried out with the help of the following inspection aids:
- Digital Clinometer To calculate tree heights
 - Diameter tape To measure stem diameters
 - Laser measure To plot trees canopy extents
- 5.6 Each tree was inspected from ground level noting external faults and features only. The inspection did not include an aerial crown inspection, detailed excavation of the root system or the use of internal decay detection equipment.

6.0 Planning Proposal/Assessment

- 6.1 Planning permission is sought for the construction of a part single storey/part two storey side extension to the existing house.
- 6.2 The layout has been designed around the arboricultural constraints presented, ensuring all key arboricultural features are successfully retained to maintain the character of the existing setting.
- 6.3 Contractor access is to be gained via the front of the property, with tree protection fencing installed across the rear garden to restrict access to the protected trees to the rear of the site.
- 6.4 One low value, ornamental crab tree is to be removed to accommodate the extension, this being in a poor structural and physiological condition is graded in BS5837 Category U and as such does not require consideration in the planning process. The loss of this tree will be of no consequence to the character of the property or the wider setting.
- 6.5 A retaining wall is provided from the proposed porch door to the front of the extension, serving to retain levels between the extension and the side boundary and ensuring levels within the Root Protection Area of the off-site hedge G2 are maintained as existing.
- 6.6 The proposed extension of the existing patio to the rear of the extension is located beyond the Root Protection Area of the adjacent trees and can be achieved without risk to the tree rooting environment.
- 6.7 It is expected that soft landscaping details and a specification for replacement tree planting will be agreed with the Local Authority under conditions attached to any planning approval granted.

7.0 Primary Tree Protection Considerations

- 7.1 The Sevenoaks DC online map system shows that the property is not located within a Conservation Area, however a group of trees along the rear boundary of the property are protected by Tree Preservation Order (Ref: 1A of 1956); this TPO may include subject trees T2 and T3.
- 7.2 Should the proposal be approved, those trees identified for retention on the submitted arboricultural plans are likely to additionally be protected under conditions attached to the planning approval, this may restrict all tree work operations on the property.
- 7.3 The majority of damage to tree root systems during development occurs either at the early stages of works when protection measures have not been suitably installed, or during the final stages when protective measures, having been adequate during construction works, are taken down prematurely.
- 7.4 The tree protection measures specified in this report are to be maintained throughout the duration of all works associated with the build.
- 7.5 An individual, such as the Contract Manager, is to be identified as a point of contact for arboricultural affairs during development. This individual is to be fully aware of the arboricultural requirements on the site and is to be responsible for the monitoring and enforcement of tree protection measures.
- 7.6 The Contract Manager is to ensure that all contractors and operatives visiting the site are aware of the reason and location of tree protection measures prior to commencing any works associated with the development.

8.0 Operations Resulting in Damage to Trees

8.1 The following operations are likely to result in significant damage to trees. Damage resulting from these operations may take immediate effect resulting in the rapid death of a tree, or alternatively may result in years or even decades of gradual decline and ultimate early death.

8.2 *Compaction of Soil*

Whether from repeated pedestrian passage or due to just a single passing of a vehicle, soil compaction within a Root Protection Area will inevitably lead to root death and may ultimately greatly reduce the longevity of a tree.

8.3 *Storage or Spillage of Toxic Materials*

The following materials commonly used on development sites are toxic to trees:

- Builders Sand (due to salt content)
- Cement
- Fuels
- Tarmac

The uncontrolled storage or use of such materials on unsealed surfaces within 10 metres of trees is likely to be detrimental to their long-term health.

8.4 *Excavations / Soil Grading / Lowering of Levels*

Contrary to popular belief nearly all of a tree root system is located within the top 1 metre of soil, often with the majority of roots found within 600mm of the soil surface.

The Root Protection Area is the *minimum* area of protection required to retain a tree. The full root system of a tree will extend beyond this, usually to a distance at least equivalent to the height of the tree.

8.5 *Raising of Levels*

Roots absorb both oxygen and water from the soil and therefore develop in free-draining, aerated conditions.

Where levels are raised over tree roots the availability of oxygen is reduced and moisture filtration hindered, tree roots will subsequently be starved of oxygen and water leading to root death, potential disease and reduced longevity.

9.0 Tree Protection Measures

9.1 *Monitoring and Maintenance*

- 9.1.1 The trees identified for retention are likely to be protected under planning conditions, as well as trees T2 and T3 potentially protected by TPO. To cause damage to protected trees, even unintentional damage, is an offence carrying potentially heavy penalties. It is imperative that the recommended tree protection measures are installed in accordance with the following recommendations and maintained throughout development.
- 9.1.2 The contract manager is to be instructed to ensure that the protection of retained trees is maintained throughout the development of the site.
- 9.1.3 The location and reason for tree protection measures is to be highlighted at the induction of all new contractors involved with the project.

9.2 *Tree Protection Fencing*

- 9.2.1 Tree protection fencing is to be installed in the locations specified on the Tree Protection Plan at Appendix B. The fenced off areas are to be treated as Construction Exclusion Zones, with no contractor access permitted without the prior approval of the Local Authority Tree Officer.
- 9.2.2 Tree protection fencing is to be installed upon completion of tree removal work (see Section 11.0) and prior to the commencement of any other development operations.
- 9.2.3 Suitable barriers 'fit for the purpose of excluding construction activity and appropriate to the degree and proximity of work...' (BS5837: s. 6.2.2.1) are to be installed. It is recommended that Heras type fencing be used with the fence bases pinned into place and the panels braced to ensure the barrier remains rigid throughout the development phase, a specification is provided at Appendix B.
- 9.2.4 Informative signs (model sign provided at Appendix B) are to be laminated and attached to the fencing.
- 9.2.5 The fencing is to be maintained throughout the construction phase and only removed immediately prior to landscaping works.

9.3 *General Protection Measures*

- 9.3.1 No access into the Construction Exclusion Zones is permitted without the prior approval of the LPA Tree Officer.
- 9.3.2 Other than approved development no level changes, service runs or storage of materials are permitted within the specified RPA's.
- 9.3.3 No fires are permitted where flames will reach within 5m of a tree canopy.
- 9.3.4 No storage or discharge of materials harmful to tree health is permitted on unsealed surfaces within 10m of any retained tree, including storage of fuels, tarmac, cement and oil.
- 9.3.5 No cement mixing is to be carried out on unsealed surfaces within 10m of any retained tree.
- 9.3.6 Details of proposed soft or hard landscaping within Root Protection Areas is to be submitted for approval by the LPA Tree Officer in order to avoid damage to tree root systems.

10.0 *Service / Drainage Installation/All other excavations*

- 10.1 No trenching or excavations are to be carried out within the specified Root Protection Areas shown on the Tree Protection Plan without prior arboricultural consultation.
- 10.2 It is imperative that any such works proposed within the Root Protection Areas of retained trees be first approved by the Project Arboriculturist. Any root damage associated with trenching operations may result in trees being left in an unsafe condition.
- 10.3 Service/drainage runs will ideally avoid Root Protection Areas and where possible be laid within one combined trench.
- 10.4 Particular care is required to ensure that all tree roots larger than 25mm diameter encountered during excavations are not severed or damaged. Should roots of 25mm or larger be encountered all excavation work is to cease and further advice is to be sought from the arboricultural advisor or LPA tree officer prior to continuing.

11.0 Required Tree Works

11.1 Table 1 provides details of the tree work required to accommodate the proposal.

Table 1: Proposed Tree Work

Tree No.	Schedule of Works
T1	Fell and grind/grub-out stump.

- 11.2 The specified tree work is considered to be required to accommodate the proposed development. It will be assumed, unless the LPA informs otherwise, that the removal of T1 may be carried out under the planning approval without any additional notification of intent or application for tree works.
- 11.3 The tree work is to be carried out prior to the commencement of any development operations on the site.
- 11.4 Upon completion of the tree work the prescribed tree protection measures are to be installed as detailed on the Tree Protection Plan (CD/TPP/1875-02).

Appendix A

Tree Survey Data & Plan

Tree Survey Key

<i>Tree No.</i>	Tree Number - cross-referenced with tree numbers shown on Tree Survey Plan.		
<i>Hgt (m)</i>	Height - estimated in metres.		
<i>Dia. at 1.5m (mm)</i>	Stem Diameter - in millimetres taken at 1.5m above highest adjacent ground level		
<i>No. of Stems</i>	Number of main stems arising from below 1.5m above ground level. M = Multi-stemmed tree.		
<i>Crown Spread N,E,S,W (m)</i>	Given as a radial measurement in metres from the centre of the stem to the extremity of the canopy at the four main compass points NESW.		
<i>Crown Cl/nce (m)</i>	Crown Clearance - Height in metres of crown above adjacent ground level.		
<i>Age Class</i>	Y	Young	Staked or recently established tree at the fast growing early stage of establishment.
	SM	Semi mature	An established tree at a stage of rapid growth with increasing future growth potential
	M	Mature	A tree that is at a stage of constant growth nearing ultimate canopy size.
	V	Veteran	A mature tree, often of great ecological or heritage importance, that has reached a stage of natural decline.
<i>Physiological Condition</i>	Provides some evidence of the general well being of the tree. Assessed by comparison of growth characteristics with similar species in the locality and/or from personal experience.		
	Given in four classifications:		
	G	Good	
	F	Fair	
	P	Poor	
	D	Dead	

Preliminary Mgt Recommendations for tree work to bring the trees to an acceptable and safe standard in context with the current site use.

Category Category of quality assessment allocated to a tree derived from an individual's potential contribution to a site: considering tree health, condition, age and value. Full description given on Table 1 of BS5837:2012 'Trees in Relation to Demolition, Design and Construction'.
Trees are colour coded on the attached Tree Survey plan.

Given in four categories:

A - Green - Trees of high quality and value
(likely to contribute a further 40+ years)

B - Blue - Trees of moderate quality and value
(likely to contribute a further 20-40 years)

C - Grey - Trees of low quality and value
(likely to contribute a further 10-20 years)

U - Red - Trees which may require removal on health and safety grounds, be in decline, infected by significant pathogens or, due to their current condition would lose their existing value within 10 years.

A provisional category may be allocated pending further advised inspection/tree work.

RPD (m) Root Protection Distance - The distance in metres of the radius of a circle depicting the root protection area required for an individual tree.

RPA (m) Root Protection Area – The total area of ground to be protected around an individual tree.

(p) Provisional quality assessment category – the highest expected category is allocated to the tree based on an incomplete preliminary visual inspection due to limited access i.e. ivy clad, basal growth, dense undergrowth or off-site tree.

(e) Estimated figure due to obstruction such as ivy or off-site tree.

Tree Survey Data

TREE NO	SPECIES	HEIGHT (m)	DIAMETER AT 1.5m or arf (mm)	NO. OF STEMS	CROWN SPREAD N,E,S,W (m)				CROWN CL/NCE (m)	AGE CLASS	PHYSIOLOGICAL CONDITION	STRUCTURAL CONDITION	PRELIMINARY MGT RECOMMENDATIONS	ESTIMATED REMAINING CONTRIBUTION	CATEGORY	RPD (m)	RPA (m ²)	NOTES
G1	Laurel	2	<100	M	1	1	1	1	0	Young	Good	Good		>40	C2	1.2	5	
G2	Beech Hedge	2 to 3	<100	1	1	1	1	1	0	Semi-mature	Good	Good		>40	C2	1.2	5	Off-site, containing some Yew and Holly
T1	Malus	6	200	1	1	1	1	1	2.5	Mature	Poor	Poor		< 10	U	2.4	18	Originally twin-stemmed, one stem removed, asymmetric, decayed pruning wounds, sparse foliage.
T2	Lime	17	500e	1	4	8	8	4	5	Semi-mature	Good	Good		>40	B1	6.0	113	Off-site
T3	Oak	12	610	1	5	5	3	1	5	Semi-mature	Good	Fair	Assess top, likely re-pollard.	>40	B1	7.3	168	Suppressed form, topped at 6m, potential decay.

Table 1 (BS5837:2012) – Cascade Chart for Tree Quality Assessment.

Category & Definition		Criteria (Including subcategories where appropriate)			Identification On Plan
TREES UNSUITABLE FOR RETENTION (See Note)					
<p>Category U</p> <p>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>	<ul style="list-style-type: none"> 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 (i.e. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning) Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline 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>NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve; see 4.5.7.</p>			DARK RED	
TREES TO BE CONSIDERED FOR RETENTION					
Category & Definition	Criteria — Subcategories				
	1 Mainly arboricultural values	2 Mainly landscape values	3 Mainly cultural values, including conservation		
<p>Category A</p> <p>Trees of high quality With an estimated remaining life expectancy of at least 40 years</p>	Trees that are particularly good examples of their species, especially if rare or unusual, or essential components of groups, or of 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)	LIGHT GREEN	
<p>Category B</p> <p>Trees of moderate quality With an estimated remaining life expectancy of at least 20 years</p>	Trees that might be included in the high category, 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	MID BLUE	
<p>Category C</p> <p>Trees of low quality With an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150mm</p>	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	GREY	

Appendix B

Tree Protection Measures

- **Tree Protection Plan**
- **Tree Protection Specification**
- **Tree Protection Warning Sign**

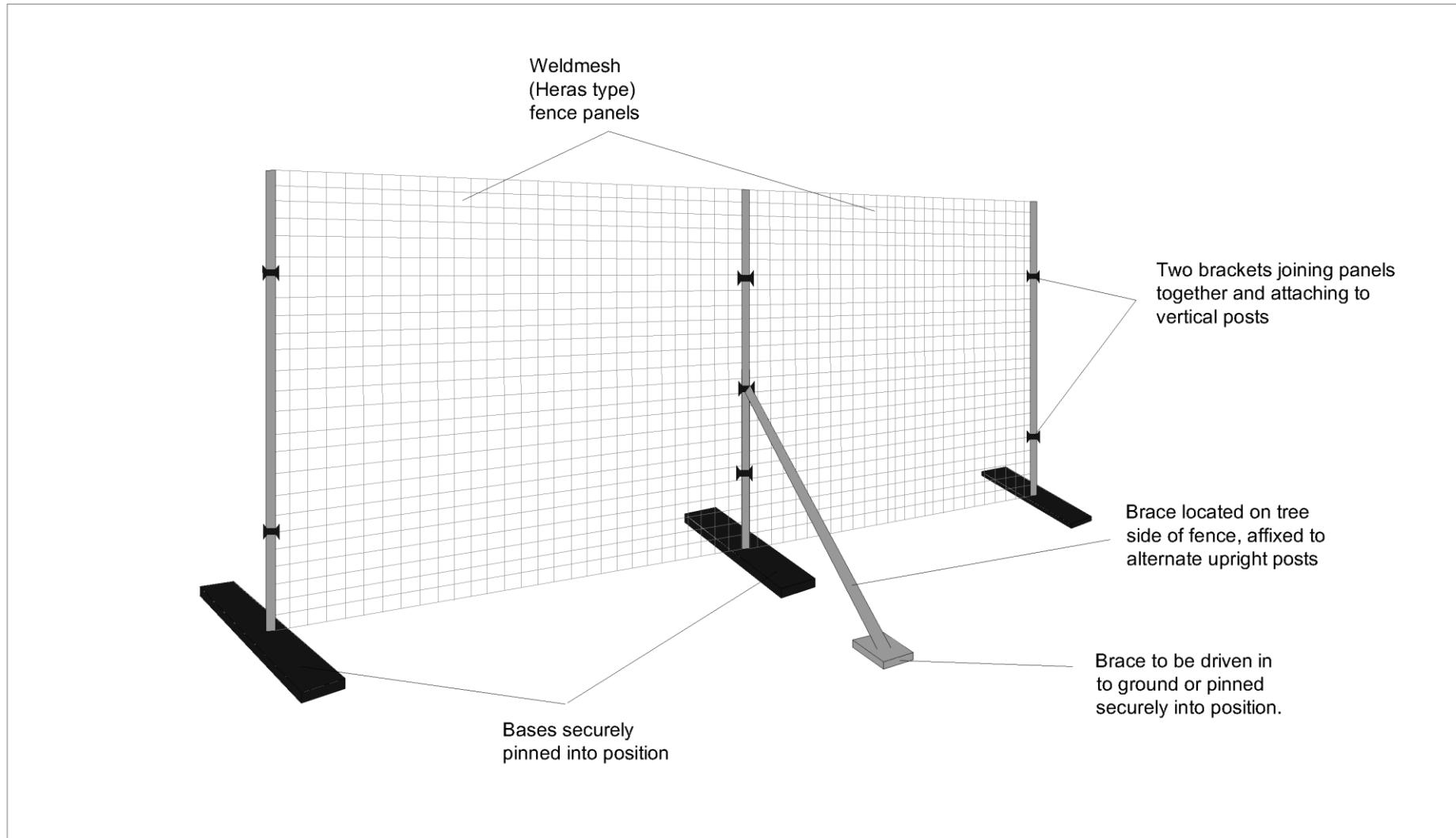
Principles of Tree Protection

- i) The majority of damage to tree root systems on development sites occurs either at the early stages of development when protection measures have not been installed promptly enough, or at the final stages of development when protective fencing, having been adequate throughout development, is taken down prematurely.
- ii) The tree protection measures described are to be installed prior to the commencement of any other works associated with the proposal.
- iii) The contract manager is to be made aware of their responsibility to ensure tree protection measures are maintained throughout the development of the site.

General Precautions

- No materials that are likely to have an adverse effect on tree health such as oil, bitumen or cement will be stored or discharged on unsealed surfaces within 10 metres of the trunk of a retained tree. Consideration for the slope of the ground is to be considered when discharging or storing materials that are potentially harmful to trees.
- No fires to be lit where flames could extend to within 5m of foliage, branches or trunks of trees.
- No signs, cables or other items are to be attached to trees.
- Details of service runs have not been provided. Service runs are to avoid Root Protection Areas and will ideally be laid within one combined trench. Trenching operations are to be carried out in accordance with NJUG Vol.4.
- Should tree roots over 25mm in diameter be encountered whilst carrying out any excavations within the vicinity of retained trees advice from the arboricultural advisor or LPA tree officer is to be sought prior to continuing with works.
- Any proposed level changes within Root Protection Areas are to be approved by the Local Authority Tree Officer prior to work being carried out.

Tree Protection Fencing



Type 2: Tree Protection Fencing

Site Address:
8 Carrick Drive
Sevenoaks
Kent
TN13 3BA

By: C. Barkel
Date: Sept 2021
Ref: TL/TPF/Spec2
Scale: NTS

Tree Protection Fencing Specification
To be installed in locations shown in **RED** on
Tree Protection Plan Ref: CD/TPP/1875-02



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

!KEEP OUT!

Protected Trees

No Contractor Access Without Local Authority Permission

**REPORT ANY DAMAGE TO TREES OR FENCING IMMEDIATELY TO SEVENOAKS DC TREE OFFICER
Tel: 01732 227000**



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