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**ARBORICULTURAL IMPLICATIONS ASSESSMENT
FOR PROPOSED REAR EXTENSION**

AT

**FERN COTTAGE
BONFIRE LANE
HORSTED KEYNES**

BY

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1. INTRODUCTION

- 1.1 Broad Oak Tree Consultants Ltd. received instructions from Mr M. & Mrs L. Oesterlin to undertake an inspection of trees located on and immediately adjacent to the site referred to as Fern Cottage, Bonfire Lane, Horsted Keynes. The purpose of the inspection was to produce a base inventory of the tree stock and an Arboricultural Implications Assessment of redevelopment proposals.
- 1.2 The proposals are for the construction of a single storey extension to the rear of the property. Details of the proposals will have been submitted by David Jenkins Design.
- 1.3 The trees were inspected on 5th March 2025 by Tim Laddiman, BSc.(Hons) M.I.C.For. M.Arbor.A., Chartered Arboriculturist and Principal Consultant of Broad Oak Tree Consultants Ltd.

2. GENERAL SITE DESCRIPTION

- 2.1 Fern Cottage is an extended semi-detached two storey house located on the south side of Bonfire Lane in a relatively level rectangular plot, narrowing to the west. The main gardens are to the west with lawns and shrub beds within maintained boundary hedges.
- 2.2 To the south is an area of garden with planting beds with a further residential garden to the south.

3. SCOPE OF TREE SURVEY

- 3.1 All trees and shrubs of 75mm diameter or more at 1.5m above ground level were included in the survey. This included trees immediately adjacent to the site.
- 3.2 For the offsite trees estimates of location, dimensions and condition had to be made.

4. DATA COLLECTION

- 4.1 All trees were inspected from the ground and no climbing or specialist investigations were undertaken. Only those trees within the site boundary could be basally inspected, with the structural integrity of the trees located outside the site unconfirmed. Each tree was inspected to the requirements of Section 4.4 of BS 5837:2012 "Trees in Relation to Design, Demolition and Construction – Recommendations".
- 4.2 The tree survey followed the numbered sequence from T1 to G9 inclusive. Tree numbers, together with BS recommended colour coding of condition, have been added to the Tree Constraints Plan, our drawing no. J66.67/01 Rev A in Appendix 2. This drawing also includes crown spreads based on four compass points and BS calculated root protection areas.

4.3 The following categories of information were obtained for each tree. A separate detailed tree survey sheet is attached in Appendix 1, together with comprehensive explanatory sheets which cover the details of the categories listed below.

- (1) Tree reference number
- (2) Species
- (3) Height in metres
- (4) Stem count
- (5) Stem diameter or equivalent in millimetres
- (6) Branch spread in metres
- (7) Age class
- (8) Height of crown clearance in metres
- (9) Physiological condition
- (10) Estimated remaining contribution in years
- (11) Category grading
- (12) Structural condition
- (13) Preliminary management recommendations

4.4 Within the assessment of physiological condition and remaining contribution, a visual inspection of each tree was undertaken to assess the crown and stem for any weak structures, deadwood, hollows, forks or other defects that might affect its stability and safety. The base of each tree was also visually inspected, together with tapping and probing, to search for signs of root lifting, bark death or decay. Where stems were heavily ivy clad, no full assessment of structural integrity could be undertaken. Clearance of the ivy would be necessary for confirmation of tree condition.

5. RISK ASSESSMENT – INFORMATIVES

5.1 Although the potential risk to someone passing beneath a tree when the tree or part of it fails is relatively remote, the risk is present. This increases significantly in areas of consistent and regular usage on a year round basis, such as footpaths, gardens and roadways. Where static structures exist, the risks become constant and an assessment is made as to whether complete or partial failure of a tree could potentially cause physical damage to such structures.

5.2 Within the scope of any tree survey it is a fact that not all risks of stem or crown failure can be covered, particularly in relation to freak occurrences of weather when even healthy trees can suffer stem snap or windblow. There is also a well known propensity for mature trees to occasionally shed limbs for no discernible reason, even on calm days. Although relatively rare, limbs may occasionally be shed and this should be acknowledged as a risk that cannot entirely be mitigated.

6. RESULTS OF TREE INSPECTIONS

- 6.1 A total of 7 individual trees/shrubs were inspected, together with two maintained mixed species hedgerows.
- 6.2 The majority of the trees are located in adjoining gardens to the south. The small Fig, T3, growing against the rear eastern boundary fence has been heavily pruned in the last year and the Camellia T7 has been regularly pruned, along with the boundary hedges.
- 6.3 All of the trees, shrubs and hedges appear to be in a reasonable condition, with several of the trees to the south having been pruned in the last one to two years.
- 6.4 Of the trees inspected, the following is a breakdown of the various numbers of trees and groups in each BS category.

BS Category	Tree No.	Sub Total
A	-	-
B	T1, T8	2
C	T2, T3, T4, T5, G6, T7, G9	7
U	-	-
	TOTAL	9

6.5 *Interpretation of table*

- Category A** Retention most desirable. Of high quality and value and in such a condition as to be able to make a substantial contribution (a minimum of 40 years is suggested).
- Category B** Retention desirable. Of moderate quality and value and in such a condition as to make a significant contribution (a minimum of 20 years is suggested).
- Category C** Could be retained – of low quality and value. Poor crown form, heavily asymmetric, large numbers of similar species/size. Currently in adequate condition to remain until new planting could be established (a minimum of 10 years is suggested) or young trees with a stem diameter below 150mm.
- Category U** Trees for removal. Dead/dying/dangerous trees due to structural defects, fungal decay or root plate uplift. Those in such a condition that any existing value would be lost within 10 years and which should, in the current context, be removed for reasons of sound arboricultural management.

7. BS CALCULATED ROOT PROTECTION AREAS (RPAs)

- 7.1 To provide an indication of the critical areas of root plate necessary for tree survival and longevity, BS 5837:2012 requires the calculation of RPAs for trees in the BS Categories A, B and C. Calculations are not made for Category U trees which will require removal on safety grounds within 10 years.
- 7.2 The table below has been calculated using the measured stem diameters and the formula as described in Section 4.6 in BS 5837:2012. These are represented as basic circles on the Tree Constraints Plan. Where buildings, walls, services and hard surfacing exist within the indicated RPAs it is likely that the architecture of root systems will have been affected. Foundations to walls and buildings can completely obstruct root development, depending on their depth and the nature of the underlying soils. In the absence of detailed site investigations the indicated RPA circles should be used for guidance only within any development proposals.

Tree no.	Species	BS Category	Stem diameter or calculated equivalent (mm.)	BS calc. radial equiv. root protection area (m.)	BS calc. total RPA (m ²)
T1	Bay	B2	c900	c10.8	c366
T2	Field Maple	C2	c400	c4.8	c72
T3	Fig	C2	150	1.8	10
T4	Sorbus sp	C2	c250	c3	c28
T5	Sycamore	C2	c350	c4.2	c55
G6	Mixed Species	C2	<100	<1.2	<5
T7	Camelia	C2	180	2.2	15
T8	Holly	B2	c600	c7.2	c163
G9	Mixed Species	C2	<100	<1.2	<5

ARBORICULTURAL IMPLICATIONS ASSESSMENT

8. DEVELOPMENT PROPOSALS

- 8.1 The proposals are for the construction of a single storey extension to the rear of the property. Details of the proposals will have been submitted by David Jenkins Design.
- 8.2 The supplied David Jenkins Design proposed site layout has been used as the base for the Broad Oak Tree Consultants Ltd. Tree Protection Plan, drawing no. J66.67/02 in Appendix 3. This indicates measures to protect trees in accordance with BS5837:2012 requirements.

9. POTENTIAL IMPACT OF PROPOSALS ON TREES

- 9.1 The proposed single storey extension would not require any tree removal or tree pruning.
- 9.2 The proposed extension has been positioned to avoid impacting on any on or offsite tree RPAs. As such there are no grounds for a refusal based on arboricultural matters.
- 9.3 Provided the trees are appropriately protected during the works there will be no adverse impacts.

10. TREE PROTECTION FENCING

10.1 *Location of fencing*

- 10.1.1 The Tree Protection Plan indicates the proposed location of protective fencing based on the calculated tree protection areas and space available.

10.2 *Design of fencing*

- 10.2.1 Protective fencing to comprise weldmesh panels securely fixed together with scaffold ties set within rubber/plastic feet to form a continuous barrier. Feet to be pinned to the ground with road pins/short scaffold bars or panel joins back braced. Waterproof signs to be attached to every 5th panel declaring "TREE ROOT PROTECTION ZONE – KEEP OUT" or similar wording. Fencing to be constructed in accordance with Fig 3 of Section 6.2 of BS5837:2012.

- 10.2.2 Examples of the fencing specification and signage required are included in Appendix 4.

10.3 *Timing of fencing*

- 10.3.1 Protective fencing is to be erected prior to commencement of site works and remain in place until completion of construction. The location and suitability of the fencing can be confirmed to the local authority by an arboricultural consultant prior to commencement of construction.

10.4 Additional precautions

- 10.4.1 Potentially injurious materials such as fuels, oils, chemicals and cement will be stored at least 20m from any stem, or in a bunded storage vessel. No fires will be lit within 5m of the drip line of any retained tree. No level changes will occur, either raising or lowering within the protected areas. A list of these additional precautions are included on the Tree Protection Plan.

11. SITE OPERATIONS AND MATERIALS STORAGE

- 11.1 Details of site zoning cannot be specified by an Arboriculturalist as these are commonly determined by contractors on the basis of Health & Safety Assessments. However, the robust protective fencing will define the remaining site space available for storage and operations.
- 11.2 As this is a small scale development the requirement for storage space is minimal and materials will be delivered on an “as and when” needed basis in appropriate quantities for the space available.
- 11.3 The area of garden to the side of the house provides ample space for temporary materials storage given the small quantities involved, without impinging on any tree crowns or RPAs.

12. SERVICES/DRAINAGE/SOAKAWAYS

- 12.1 Based on the supplied layout, any new services, drainage or soakaway alignments should be located outside root protection areas. If incursion into the protective areas of retained trees is unavoidable, then the routing should be obtained either by hand tool excavation or air spade, supervised by an arboricultural consultant. Any works within the protective areas will need to be undertaken to the requirements of NJUG Volume 4 “Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees”.

13. ARBORICULTURAL METHOD STATEMENT

- 13.1 Section 6.1 “Arboricultural Method Statement” of BS5837:2012 indicates that an Arboricultural Method Statement is only required if operations/access are required within the RPA of retained trees. Therefore, provided the Tree Protection Plan is adhered to, there is no requirement for an Arboricultural Method Statement and there should not be any conflicts between retained trees and the proposals.

14. SUMMARY

- 14.1 The proposed single storey extension to the rear has been positioned to avoid any adverse impact on any on or offsite tree canopies or root systems. As such there are no grounds for a refusal based on arboricultural matters.
- 14.2 The Tree Protection Plan can be referred to as an approved drawing or in a specifically worded condition to ensure that the retained trees are appropriately protected during the construction works.

Tim Laddiman
Chartered Arboriculturist
Broad Oak Tree Consultants Ltd.

APPENDIX 1

TREE SURVEY EXPLANATORY SHEET

Height	in metres (estimated where ground uneven or access restricted).
Stem count	number of stems
Stem diameter	in mm. at 1.5m. above ground level.
Branch spread	radial spread in metres at four main compass points (estimated where no access).
Age class	Young - Y Semi Mature - SM Mature - M Over mature - OM Veteran - V
Height of crown clearance	in metres. Normally range of heights of outer branches above ground level, e.g. 2-4m.
Physiological condition	Good, Fair, Poor, Dead, Variable
Estimated remaining contribution	in years e.g. less than 10, 10-20, 20-40, 40+
Category grading	see attached sheet
Structural condition	comment on presence of defects, decay, crown form, past management, deadwood, other features worthy of note. N.B. If trees are ivy clad, no full structural assessment will have been possible.
Preliminary management recommendations	requirements of further investigations, works necessary to alleviate potential hazards based on current setting and levels of access. NB: Works that may be necessary in relation to development are not included here

CASCADE CHART FOR TREE QUALITY ASSESSMENT

TREES FOR REMOVAL				
Category and definition	Criteria			Identification on plan
Category U Those in such a condition that any existing value would be lost within 10 years and which should, in the current context, be removed for reasons of sound arboricultural management	- 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 R category 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 (e.g. Dutch elm disease), or very low quality trees suppressing adjacent trees of better quality NOTE Habitat reinstatement may be appropriate (e.g. R category tree used as a bat roost: installation of bat box in nearby tree.)			DARK RED
TREES TO BE CONSIDERED FOR RETENTION				
Category and definition	Criteria - Subcategories			Identification on plan
	1. Mainly arboricultural values	2. Mainly landscape values	3. Mainly cultural values, including conservation	
Category A Those of high quality and value: in such a condition as to be able to make a substantial construction (a minimum of 40 years is suggested)	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 which provide a definite screening or softening effect to the locality in relation to views into or out of the site, or those of particular visual importance (e.g. avenues or other arboricultural features assessed as groups)	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)	LIGHT GREEN
Category B Those of moderate quality and value: those in such a condition as to make a significant contribution (a minimum of 20 years is suggested)	Trees that might be included in the high category, but are downgraded because of impaired condition (e.g. presence of remediable defects including unsympathetic past management and minor storm damage)	Trees present in numbers, usually as groups or woodland, such that they form distinct landscape features, thereby attracting a higher collective rating than they might as individuals but which are not, individually, essential components of formal or semi-formal arboricultural features (e.g. trees of moderate quality within an avenue that includes better, A category specimens), or trees situated mainly internally to the site, therefore individually having little visual impact on the wider locality	Trees with clearly identifiable conservation or other cultural benefits	MID BLUE
Category C Those of low quality and value: currently in adequate condition to remain until new planting could be established (a minimum of 10 years is suggested), or young trees with a stem diameter below 150mm.	Trees not qualifying in higher categories	Trees present in groups or woodland, but without this conferring on them significantly greater landscape value, and/or trees offering low or only temporary screening benefit.	Trees with very limited conservation or other cultural benefits	GREY
NOTE Whilst C category trees will usually not be retained where they would impose a significant constraint on development, young trees with a stem diameter of less than 150mm should be considered for relocation				

Tree ref. no.	Species	Height (m.)	Stem Count	Stem diameter or equivalent (mm.)	Branch spread (m.)				Age class	Ht. of crown clearance (m.)	Physiological condition	Estimated remaining contribution (years)	Category grading	Structural condition and Notes	Preliminary management recommendations
					N	E	S	W							
T1	Bay	11	Multi	c900	6	7	c5	5.5	M	3.5+	Unconfirmed	20-40	B2	Multi-stemmed near ground level. Open crown. Past crown raising. Minor deadwood and crown thinning	
T2	Field Maple	7	1	c400	4.5	2	<5	4	M	2.2+	Unconfirmed	20-40	C2	Heavily reduced in past on several occasions. Crowded to E	
T3	Fig	2.6	Multi	150	2	0	1.5	2.5	Y	1.5+	Fair	20-40	C2	Heavily reduced recently. Multi-stemmed <1.5m	
T4	Sorbus sp	8	3	c250	3	4	<4	2	SM	2+	Unconfirmed	20-40	C2	Crowded. Three stems <2m	
T5	Sycamore	7	5	c350	3.5	2.5	c4	c4	SM	2+	Unconfirmed	20-40	C2	Part reduced in past year. Multi-stemmed <2m. Previously heavily reduced	
G6	Mixed Species	<2.5	Multi	<100	<1	<1	<1	<1	M	0+	Good	40+	C2	Mixed species evergreen hedge. Regularly maintained	
T7	Camelia	3	Multi	180	2.5	3	0.5	2	M	1.6+	Good	20-40	C2	Twin stemmed near ground level, multi-stemmed <1m. Pruned. Crowded to S	
T8	Holly	10	Multi	c600	4.5	6	c5	4	M	2+	Unconfirmed	20-40	B2	Multi-stemmed <1m. Slight crown thinning	
G9	Mixed Species	<2	Multi	<100	<1	<1	<1	<1	M	0+	Good	40+	C2	Maintained hedge.	

APPENDIX 2

FERN COTTAGE
BONFIRE LANE
HORSTED KEYNE

FREE CONSTRAINTS PLA

T1 - G9 Tree numbers

BS Category of Condition

BS Condition A	0
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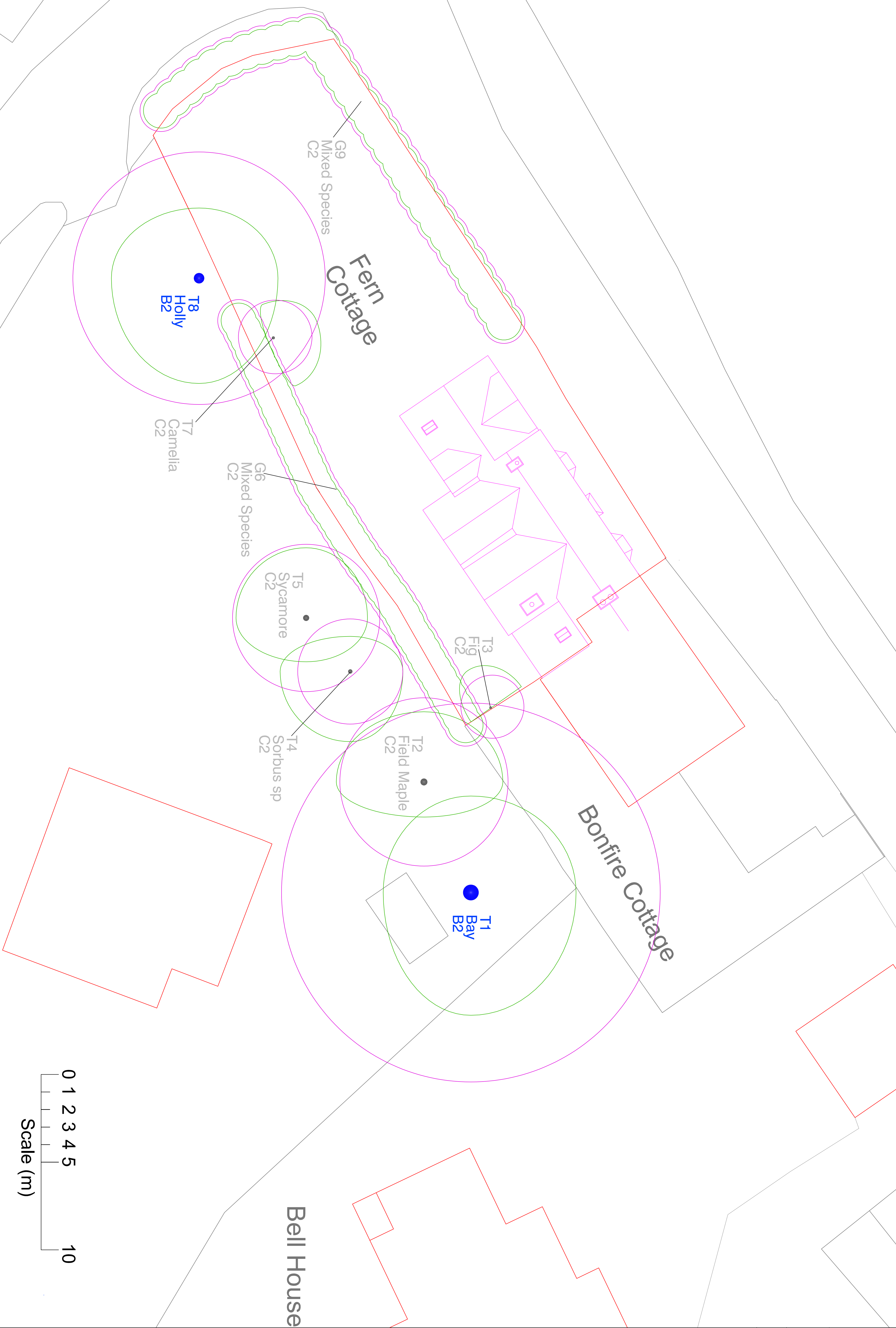
T1	BS Condition B
----	----------------

T2	BS Condition C
----	----------------

BS Condition U

BS calculated for protection areas

The root protection areas have been calculated using the measured stem diameters and the formula as described in article 6.6 in BS8387:2012. These are presented as basic circles on the Tree Constraints Plan. Where buildings, walls or other structures are present within the root protection areas, they may completely obstruct root development and so the root protection circles are underlying soils. In the absence of any such structures, the indicated root protection circles should be used for guidance within any redevelopment proposals.



A vertical scale bar labeled "Scale (m)" with markings from 0 to 10. The scale is oriented vertically, with 0 at the top and 10 at the bottom. Major tick marks are labeled at 0, 1, 2, 3, 4, 5, and 10. There are also minor tick marks between the major ones, indicating increments of 0.5 units.

APPENDIX 3

T1 - G9 Tree numbers

0	BS Condition A
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BS Condition C	T2
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protection areas

Ilrespan

Protective fencing location

TREE PROTECTION INFORMATION

Protective fencing to comprise

signs to be attached to every 5th

Ground protection measures to comprise a single thickness of side

Buildings in proximity to protective

are to be regarded as sacrosanct
none of the following are to occur

- Siting of any temporary structure

- Excavations, soil/turf stripping,

- Location of temporary drainage supplies or any other temporary

- Additionally, no fires shall be lit

requirements of NJUG Volume 4
"Guidelines for the Planning,

the Arboricultural Consultant

Scale: 1:100 at A1

05/06/2025

APPENDIX 4

BS5837:2012: FENCING SPECIFICATIONS

Figure 2 Default specification for protective barrier

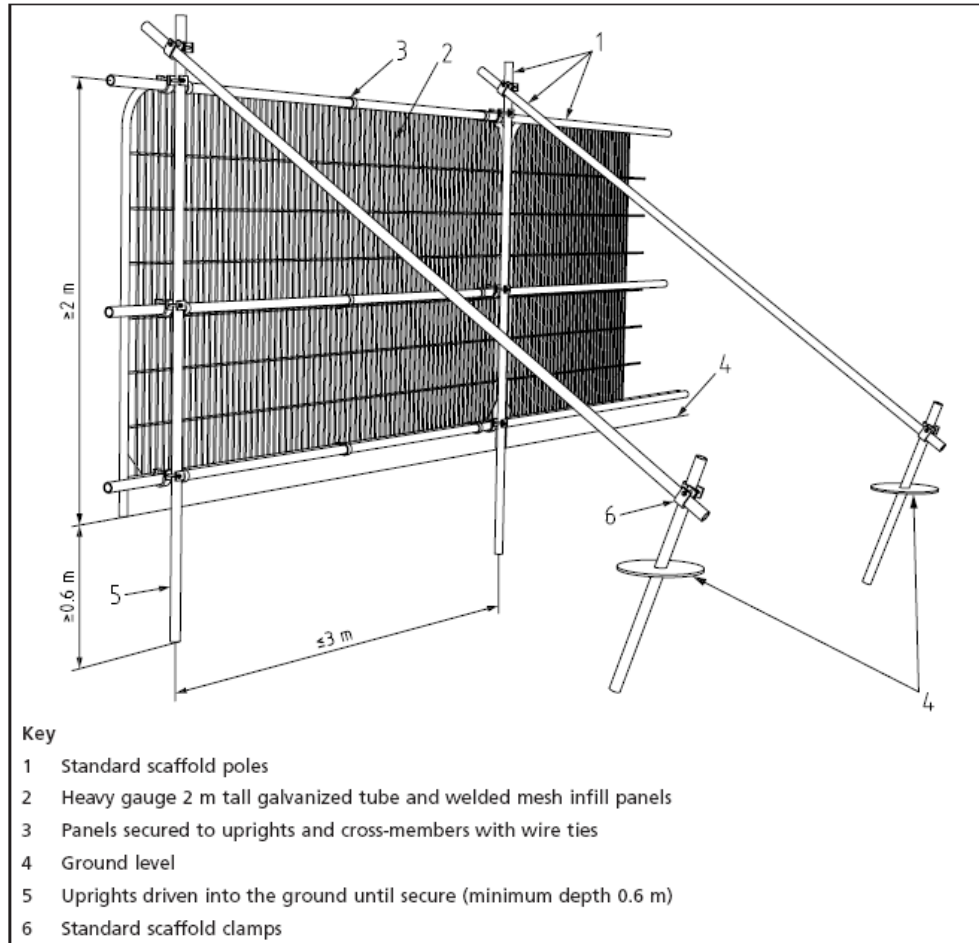
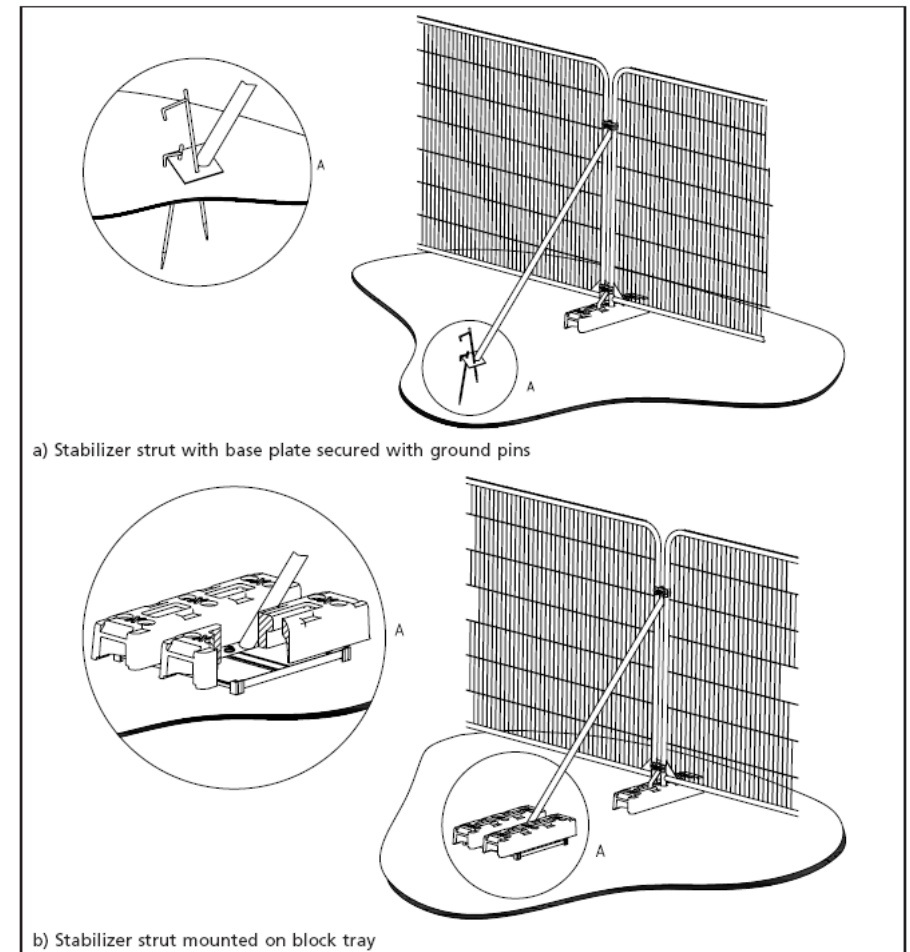


Figure 3 Examples of above-ground stabilizing systems





**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 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