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Tree Condition Assessment Prepared for

> The Treehouse 73a Glenholt Road Plymouth Devon PL6 7JD

Prepared by A.C. Kimberlee BSc (Hons) Arboriculture, M Arbor A, PTI.

Date: 2023

Version: 1



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Appendix 1: Individual Tree Risk Survey

Appendix 2: Site Map showing location of trees

Client:	Louise Marsh	Ref:	AK/548/200923
Location:	The Treehouse 73a Glenholt Road Plymouth Devon PL6 7JD		
Date of site Inspections:	29 th August 2023		
Survey Inspector(s):	Aran Kimberlee BSc (Hons)	Arboricul	ture M Arbor A, PTI.
Report Author:	Aran Kimberlee BSc (Hons)	Arboricul	ture M Arbor A, PTI.
Signature:	flimble	Date:	20 th September 2023

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1.0 Instruction and Purpose of Report

- 1.1 I have been verbally instructed by Louise Marsh to carry out a tree safety inspection of the significant trees growing in and on the boundaries of 73a Gelnholt Road, Plymouth in Devon.
- 1.2 The purpose of my inspection was to assess the structural integrity of the trees onsite and the level of risk the trees might pose to persons and property and to give appropriate recommendations, if any, for management of the trees. If significant defects are observed in relation to targets then the risk of harm will be assessed using the Quantified Tree Risk Assessment (QTRA) system. The method of which is detailed below in section 4.0 of this report.
- 1.3 In addition, give appropriate recommendations, if any, for management of the trees in report format.

2.0 Report Methodology & Limitations

- 2.1 I carried out the survey on the 29th August 2023. The weather was fine and the visibility good.
- 2.2 The inspection process consisted of a general ground based visual assessment only. Any cavities or areas of decay that are accessible from ground level may have been probed with a thin metal instrument to assess the significance and extent of any decay. A nylon sounding hammer may also have been used to help detect the presence of any internal decay in the main trunk and/ or larger stems. Binoculars may have been used in order to assist inspection of the upper canopy. Where a further more detailed inspection is required this will be indicated within the recommendations.
- 2.3 The assessment consisted of an above ground inspection only and soil type has not been ascertained on site. Therefore, this report makes no reference to the possible effects of tree roots and shrinkable soils, and any possible effects on building foundations or underground services.
- 2.4 Unless otherwise specified in the recommendations, this report is valid for 12 months from the date of site inspection. The condition of trees can change due to the effects of pests and disease or following severe weather conditions or other abiotic factors. The report is valid only for typical weather conditions. Healthy trees or parts of healthy trees may fail in unusually high or unpredictable winds or violent storms and, as the consequences of such weather phenomena are unforeseeable, the author of this report cannot be held liable for any such failures.

- 2.5 The conclusions of this report will remain valid for 12 months from the date of the inspection, but any alteration or deletion from this report will invalidate it as a whole.
- 2.6 The trees on site have been tagged. A map showing the location of the trees has been included in appendix 2 of this report.

3.0 Site Details

- 3.1 73a Glenholt Road (The Treehouse) is a detached cabin style property designed and incorporated within a woodland area to the rear of the houses along Glenholt Road in Plymouth. The site is high in tree cover and has a number of wooden cabins and sheds located along the southern boundary.
- 3.2 The site appeared to be moderately sheltered to the prevailing south westerly winds.
- 3.3 Soil type on-site has not been ascertained.
- 3.4 No checks have been carried out to ascertain any legal protection such as Tree Preservation Orders or Conservation Areas that might cover the site. However, it is my understanding that the wooded area is covered by a Woodland TPO by Plymouth City Council.

4.0 Condition of Trees and Groups of Trees

4.1.1 The woodland is a mature Pedunculate Oak (*Quercus robur*) and Beech (*Fagus sylvatica*) dominated woodland with an understorey of mainly Hazel (*Corylus avellana*) and Holly (*Ilex aquifolium*). The oak trees appear to have been historically coppiced and the regrowth is now mature with clump forming multi-stemmed specimens. Coppicing is an old form of tree and hedgerow management whereby straight fast growth can be cut in a cycle to just above ground level. A stool will then develop at this cut point and become larger year upon year. If the new growth is not managed or cut in a cycle, then the new growth can develop into very large, etiolated stems. These trees are known as lapsed coppiced to be used for timber or could have even been used historically for naval uses, given the location, size and age of the regrowth.



Photograph 1: Trees growing around and incorporated in house design.

- 4.1.2 The trees which are directly overhanging The Treehouse have been previously cut back to prevent overshading and branches encroaching on the property. I recommend this to be continued every 3-5 years.
- 4.2 T1440 is a large beech tree growing in the south-western corner of the woodland. The main trunk of the tree bifurcates at approximately 4 metres from ground level and there is a significantly included union between the two primary stems.

Included unions or bark inclusions can form where stems or branches growing in close contact to one another can form inherently weak unions to a main trunk or subsidiary stems. This is where the union of the two stems or branches do not unite with one another, and the presence of the stem bark ridge rolls inward and creates bark to bark contact. As the two members grow, load stress (usually from wind and weight) creates pressure between the two stems and the tree produces adaptive growth to compensate for the weak union. This can be observed as an increased formation of wood on either side of the union and is commonly known as a compression fork. The increasing stimulus of growth around the union, the presence of 'pursed lips', cracking and / or watermarking on the main trunk can indicate that a stem or branch is poorly attached and could be represent a high risk of failure.

I believe that the sub-dominant stem growing to the east and towards the cabin has the highest risk of failure and therefore, I recommend reducing this stem via thinning by removing 3-4 dominant stems approximately 4 metres. In addition I recommend installing a flexible (4ton) cable bracing system between three stems in a triangular formation at approximately 12-14 metres in height from ground level.





Photographs 2 and 3: T1440 beech with included unions.

4.3 T1441 is a small twin stemmed oak tree which leans heavily towards the footpath and track which leads to Glenholt Campsite. The tree has significant basal decay on both stems and has a high risk of failure. I recommend removing both stems or reducing to a deadwood monolith.



Photograph 4: T1442 oak with decay and twin stems leaning over track.

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- 4.4 T1442 is a small oak growing close to the cabin/ music room. The crown of the tree is mostly dead and may fall towards the property. This tree could be reduced further and left as standing deadwood. T1443 is an oak tree to the east of T1442 with a large broken hanging branch in the lower crown. The risk of harm is very low with this branch. The branch could remain as habitat for wildlife or be removed.
- 4.5 Another large beech is located further down the slope in the woodland towards the northern boundary. T1444 has a large, decayed cavity on the western aspect of the main trunk from 1 -2 metres in height. Reactive wood has partially closed the damaged area, but it is likely that the decay extends further up the main trunk close to the main union. The main trunk bifurcates at approximately 4 meters above ground level with a significantly included union between both stems. The union appears to be cracking and has large 'ear' formations on both sides of the union. Therefore, I recommend a stainless-steel cable brace be installed (6-8 ton) using static steel cables and eye bolts at appropriately 3-5 metres above the included union.



Photographs 5 and 6: T1444 beech tree with cavities and cracking union.

4.6 T1445 is a mature oak tree with significant cambial dysfunction reasonably close to the main house. There are signs of good reactive growth around the decayed areas and the decay in the main trunk on the eastern aspect of the stem appeared not to

extend into the main trunk and was largely confined to the sapwood. I recommend monitoring this tree regularly.

4.7 The risk associated with unpredictable branch loss due to factors such as summer branch drop cannot be quantified. Should these trees lose additional, relatively healthy and structurally sound branches within the period covered by this report, I advise that these trees would then require re-assessment as soon as possible after the event.

5.0 Tree Risk Assessment

- 5.1 The Quantified Tree Risk Assessment (QTRA) system applies established and accepted risk management principles to tree safety management. Firstly, the targets (persons and property) upon which trees could fail are assessed and quantified, thus enabling tree managers to determine whether or not and to what degree of rigour a survey or inspection of the trees is required. Where necessary, the tree or branch is then considered in terms of both impact potential (size) and the probability of failure. Values derived from the assessment of these three components (target, impact potential and probability of failure) are combined to calculate the probability of significant harm occurring.
- 5.2 The system moves the management of tree safety away from labelling trees as either "safe" or "unsafe", thereby requiring definitive statements of tree safety from either tree surveyors or tree managers. Instead, QTRA quantifies the risk of significant harm from tree failure in a way which enables tree managers to balance safety with tree value and operate to a predetermined limit of reasonable or acceptable risk.
- 5.3 The QTRA system also require an allocated target range; mapping of land use by road classification; estimated levels of pedestrian occupation; and estimated structure values. Whilst surveying I only saw a brief glimpse of site usage on the site and therefore, I advise that my target appraisal is considered against the knowledge of site managers or users.
- 5.4 The target ranges can vary from each site. The ones used during the risk assessment are as follows:
- Target 1: Estimated pedestrian usage 720-73 per hour; property repair or replacement cost £2 000 000 £200 000 and/or 47000 4800 vehicles per day at 30 mph.
- Target 2: Estimated pedestrian usage 72-8 per hour; property repair or replacement cost £200 000 £20000 and/or 4700 480 vehicles per day at 30 mph.
- Target 3: Estimated pedestrian usage 7-2 per hour; property repair or replacement cost £20 000 £2000 and/or 470 48 vehicles per day at 30 mph.
- Target 4: Estimated pedestrian usage 1-per hour 3 per day; property repair or replacement cost £2000 £200 and/or 47 6 vehicles per day at 30 mph.
- 5.5 Should the client consider this estimate to be inaccurate they should report back to Dartforest Limited so that the risk assessment can be refined.

5.6 QTRA Advisory Thresholds

Thresholds	Description	Action
1/1 to 1/1000	Unacceptable Risks will not ordinarily be tolerated	Control the risk
	Unacceptable (Where imposed on others) Risks will not ordinarily be tolerated	Control the riskReview the risk
1/1000 to 1/ 10 000	Tolerable (by agreement) Risks may be tolerated if those exposed to the risk accept it, or the tree has exceptional value	 Control the risk unless there is broad stakeholder agreement to tolerate it, or the tree has exceptional value Review the risk
1/ 10 000 to 1 000 000	Tolerable (Where imposed on others) Risks are tolerable if as low as reasonably possible (ALARP)	 Assess costs and benefits of risk control Control the risk only where a significant benefit might be achieved at reasonable cost Review the risk
1/ 1 000 000 or less	Broadly Acceptable Risk is already as low as reasonably possible (ALARP)	No action currently requiredReview the risk

Source: Quantified Tree Risk Assessment User Manual V5.1.3

- 5.7 The risk of harm from W1, T1442, T1443 and T1445 has been calculated at 1/ 1 000 000 which is within the Broadly Acceptable threshold (Risk is already ALARP). The recommended tree works should be considered in terms of both risk management and long-term management of the tree.
- 5.8 The risk of harm from T1440, T1441 and T1444 has been calculated within the Tolerable threshold (Where imposed on others) Risks are tolerable if as low as reasonably possible (ALARP). At this risk level the owners of the tree should consider the costs required against the benefits of risk control.

6.0 Recommendations

Tree No.	Species	Observations	Recommendations	Work Priority
W1	Mixed Broadleaf woodland	 Woodland compartment with house located within and around trees. Historic coppice oak stems with beech and understorey of holly and hazel. 	 Continue pruning oaks overhanging house every 3-5 years. 	Low – Works to be carried out within 12 months
T1440	Beech	 Large tree in south western aspect of site, Main trunk bifurcates at approx. 4 m with significantly included union and large 'ear' formation. Sub-dominant stem leaning out towards cabin. 	 Reduce sub-dominant eastern stem by approx. 4 metres by removing 3-4 dominant stems. Install 4 ton flexible bracing system between three stems in a triangular formation at approx. 12- 14m in height. 	Medium - Works recommended within 6 months
T1441	Oak	• Twin stemmed tree leaning over track and footpath with significant decay at base.	• Fell or monolith at approx. 6 metres in height.	Medium - Works recommended within 6 months
T1442	Oak	• Small dead tree near cabin.	 Reduce to deadwood monolith at approx. 7-8 m 	Low – Works to be carried out within 12 months
T1443	Oak	 Large oak in woodland with large broken hanging branch in crown on eastern aspect. Low risk of harm 	 Remove broken hanging branch or retain for habitat feature considering risk level. 	Low – Works to be carried out within 12 months
T1444	Beech	 Main trunk bifurcation at approx, 4 m with included union and cracking/ bark movement at union. Cavities partially occluded on western aspect of main trunk with decay. Decay appears to extend up through main trunk to weakened fork. 	 Install 6-8 ton steel cable brace, using stainless steel bolts and cables at 3-5 metres above union between two main stems. 	Medium - Works recommended within 6 months
T1445	Oak	 Oak with cambial dysfunction and minor decay on main trunk with good signs of reactive growth. 	• Monitor	Low – Works to be carried out within 12 months

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- 6.1 In the event of any new defects, concerns or the occurrence of seasonal fungal fruiting bodies on any of the trees with high targets, Dartforest Limited should be contacted as soon as possible in order to re-assess the tree/s and update this report.
- 6.2 All tree works should be undertaken to BS3998:2010 Recommendations for Tree Works. It is strongly recommended that any tree surgery works are undertaken by highly skilled and qualified contractors.

End AK/548/200923

7.0 Bibliography

British Standards Institution (2010) British Standard Recommendations for Tree Work -BS 3998:2010

Fay N, Dowson D, Helliwell R (2005) <u>Tree Surveys: A guide to</u> <u>good practice</u> *Guidance Note No. 7 Arboricultural Association*

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Mattheck C. and Breloer H. 1994 The Body Language of Trees: A handbook for failure analysis TSO

Matteck C and Bethge K 1998 <u>The Structural Optimization of Trees</u> *Springer-Verlag, Naturwissenschaften*

Mitchell A (1974) <u>Collins field GuideTrees of Britain and Northern Europe</u> *Harper Collins Publishers*

QTRA Tree Safety Management (2014) Quantified <u>Tree Risk Assessment User</u> <u>Manual Version 5</u>

Appendix 1: Individual Tree Risk Survey APPENDIX 2: INDIVIDUAL TREE RISK SURVEY

Site:	The Treehouse, 73a Glenholt Road, Plymouth, Devon, PL6 7JD Surveyor: Aran Kimberlee											
Client:	Louise Marsh Assessment Date: 29 th August								3		3	ŧ
Brief:	VTA Asse	VTA Assessment of significant trees growing within the boundaries of the site listed above Viewing Conditions: Good								d	artf	orest
						/200923				Physics - cognitive and a		
Tree no.	Species	Age Range	Height (m)	Stem dia. (mm)	Vitality	Targets and Comments	Management	Target Range	Size Range	Prob Range		Inspection Frequency
W1	Mixed Broadleaf woodland	М	Up to 24	Up to 800	G	 Woodland compartment with house located within and around trees. Historic coppice oak stems with beech and understorey of holly and hazel. 	 Continue pruning oaks overhanging house every 3-5 years. 	2	Prop	6	<1M	1
T1440	Beech	М	23	770	G	 Large tree in south western aspect of site, Main trunk bifurcates at approx. 4 m with significantly included union and large 'ear' formation. Sub-dominant stem leaning out towards cabin. 	 Reduce sub-dominant eastern stem by approx. 4 metres by removing 3-4 dominant stems. Install 4 ton flexible bracing system between three stems in a triangular formation at approx. 12-14m in height. 	2	Prop	4	30К	1
T1441	Oak	SM	17	Up to 240	М	 Twin stemmed tree leaning over track and footpath with significant decay at base. 	 Fell or monolith at approx. 6 metres in height. 	3	3	3	500K	1

KEY-

HEADINGS & ABBREVIATIONS

REF:	TREE REFERENCE NO.
AGE RANGE:	Y= YOUNG, SM= SEMI MATURE, EM= EARLY MATURE, M = MATURE, PM = POST MATURE
STEM DIA:	STEM DIAMETER MEASURED AT A HEIGHT OF APPROXIMATELY 1.3 METRES
VITALITY:	A MEASURE OF PHYSIOLOGICAL CONDITION.
	G= GOOD, M= MODERATE, P= POOR, MD = MORIBUND, D= DEAD,
QTRA RISK RATING:	RISK OF SIGNIFICANT HARM , 1,000 = RISK INDEX (E.G. RISK INDEX 20 = RISK OF SIGNIFICANT HARM 1 IN 20,000)

INSPECTION FREQUENCY: PERIOD (IN YEARS) TO NEXT INSPECTION BY COMPETENT PERSON

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Appendix 1: Individual Tree Risk Survey

APPENDIX 2: INDIVIDUAL TREE RISK SURVEY

Site:	The Tree	house, 7	3a Glenh	olt Road,	Plymout	h, Devon, PL6 7JD	Surveyor: Aran Kimberlee					
Client:	t: Louise Marsh Assessment Date: 29th August 2023							*	#			
Brief:						C	dartforest					
Tree no.	Species	Age Range	Height (m)	Stem dia. (mm)	Vitality	Targets and Comments	Management	Target Range	Size Range	Prob Range	Risk Index	Inspection Frequency
T1442	Oak	SM	16	240	D	Small dead tree near cabin.	 Reduce to deadwood monolith at approx. 7-8 m 	3	3	4	<1M	1
T1443	Oak	М	22	490	м	 Large oak in woodland with large broken hanging branch in crown on eastern aspect. Low risk of harm 	 Remove broken hanging branch or retain for habitat feature considering risk level. 	4	1	6	<1M	1
T1444	Beech	м	25	730	G	 Main trunk bifurcation at approx, 4 m with included union and cracking/ bark movement at union. Cavities partially occluded on western aspect of main trunk with decay. Decay appears to extend up through main trunk to weakened fork. 	 Install 6-8 ton steel cable brace, using stainless steel bolts and cables at 3-5 metres above union between two main stems. 	3	1	4	400K	1

KEY-

KLI-	
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Site:	: The Treehouse, 73a Glenholt Road, Plymouth, Devon, PL6 7JD Surveyor: Aran Kimberlee								a .					
Client:	Louise M	arsh					Assessment Date:	29 th /	August 2	2023				
Brief:	VTA Asse	ssment	of signifi	cant trees	growing	within the boundaries of the site listed above	Viewing Conditions:	ditions: Good			d	darttorest		
							Job Reference:	AK/548/200923						
Tree no.	Species	Age Range	Height (m)	Stem dia. (mm)	Vitality	Targets and Comments	Management		Target Range	Size Range	Prob Range	Risk Index	Inspection Frequency	
T1445	Oak	М	23	580	М	 Oak with cambial dysfunction and minor decay on main trunk with good signs of reactive growth. 	Monitor		3	1	5	<1M	1	

KEY-

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