



# Arboricultural Impact Appraisal

in Relation to Proposed Construction of Detached Garage at



**16 Brookes Lane,  
Whalley, Lancashire,  
BB7 9RG**

Prepared by:

**Bowland**   
Tree Consultancy Ltd

June 2026

**ARBORICULTURAL IMPACT APPRAISAL  
16 BROOKES LANE, WHALLEY**

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**ARBORICULTURAL IMPACT APPRAISAL  
16 BROOKES LANE, WHALLEY**

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**PROJECT DETAILS**

**Project No.:** BTC3449

**Site:** 16 Brookes Lane, Whalley, Lancashire, BB7 9RG

**Agent:** Peter Hitchen Architects

**Council:** Ribble Valley Borough Council

**Survey Date:** 05 May 2026

**Surveyed by:** Christopher Forster Arboricultural Technician

**Prepared by:** Dan Brown FdSc MArborA

**Checked by:** Dan Brown FdSc MArborA

**Date of Issue:** 01 June 2026

**Version No:** 1



ARBORICULTURAL IMPACT ASSESSMENT	
Site:	16 Brookes Lane, Whalley, Clitheroe, BB7 9RG
Survey Date:	05 May 2026
Report Date:	13 May 2026
Prepared By:	Dan Brown FdSc MArborA
Report Ref:	BTC3449
Agent for Client:	Peter Hitchen Architects

**Introduction and Rationale.** Bowland Tree Consultancy Ltd was instructed to carry out an appraisal of trees in relation to the projected impacts of a proposed development at the above site and, in turn, to advise on appropriate mitigation measures for retained trees where identified to be necessary.

In this respect, a survey of trees, in accordance with BS5837:2012 - Trees in Relation to Design, Demolition and Construction – Recommendations, and the disclaimer at page 5, was carried out on 05 May 2026.

In consideration of the above, a brief overview of the observations, findings and recommendations are set out below, along with comments on any issues raised, whilst a Tree Survey Schedule (TSS) and Tree Constraints Plan (TCP), Tree Impact Plan (TIP) and Tree Protection Plan (TPP) are also appended.

The TCP shows the existing trees and their associated constraints, the TIP also shows an overlay of the development under consideration. In turn, the TCP, TIP and TPP are based on the site survey plan provided by the agent for the client, and for the purposes of this appraisal are assumed to be accurate.

The surveyed vegetation predominantly consists of various deciduous broadleaf tree species as individual trees and tree groups including Sycamore, Lawson Cypress, Silver Maple, Campbell's Magnolia, Silver Birch, Rowan, Goat Willow, Cherry Laurel and Rhododendron (see TSS). The trees range from young to mature in age, and stand at heights of up to 19 metres, with maximum diametrical crown spreads of up to approximately 16 metres and stem diameters range up to 870 millimetres.

Tree dimensions and other pertinent information such as structural defects and physiological deficiencies, along with recommendations for remedial management works, are included in the appended TSS.

According to Ribble Valley Borough Council's website, the site is partially located within a Conservation Area, with tree T1, T3 and tree groups G1 and G2 falling within this statutory designation.

The trees were appraised in accordance with BS5837:2012 Table 1 (appended) and, as detailed in Table A, below, two trees were categorised as moderate quality (i.e. 'B' category), with the remaining three groups and five individual trees categorised as low quality (i.e. 'C' category).

**Table A: BS5837-2012 Retention Categories of the Surveyed Vegetation**

	Ret. Cats.	Tree/Group Numbers	Totals
Those of a high quality that should be afforded appropriate consideration in the context of development	'A'	-	-
Those of a moderate quality that should be afforded appropriate consideration in the context of development	'B'	T1, T3	2 Trees
Those of a low quality that should be afforded appropriate consideration in the context of development	'C'	T2, T4, T5, T6, T7 G1, G2, G3	5 Trees 3 Groups
Those considered unsuitable for retention	'U'	-	-
			<b>= 7 Trees and 3 Group in Total</b>

**Projected Arboricultural Losses Relating to the Proposal.** From the information provided to date it is projected that implementation of the development as proposed development will not require the removal of any trees on site.

**Retained Trees in Relation to the Development Proposals.**

The proposed development is sufficient distance away from most RPAs and canopies of trees on site so the trees will not be impacted negatively (See TIP).

T4 and G3 have encroachment from the proposed garage and wall. That said, the proposed encroachment into

the RPAs of T4 and G3 is situated within an area which has previously been excavated, resulting in a reduction in ground levels of approx. 1000mm. Following an excavation of that depth, it is concluded that the remaining roots at this depth and further are not likely to be of significant size and of minimal volume, and therefore will not be detrimental to the tree's physiological or structural condition if removed.

It is concluded that all trees on site can be retained, in which tree protection can be assured through adherence to the appended site and development specific TPP.

**Summary and Conclusions.** Seven individual trees and three groups were surveyed in respect of a proposal for the construction of the proposed garage. Two trees were categorised as moderate quality with the remaining five individual trees and three groups being categorised as low quality.

It is projected that the implementation of the development as proposed will not require the removal of any trees within the site, with the only element of proposed development which encroaches into the RPAs of one tree and one group being concluded to not affect the retention of impacted tree due to the existing site conditions.

<b>TREE SURVEY SCHEDULE FOR ARBORICULTURAL IMPACT APPRAISAL</b>	
<b>Site:</b>	16 Brookes Lane, Whalley, Lancashire, BB7 9RG
<b>Agent:</b>	Peter Hitchen Architects

<b>Surveyor:</b>	Christopher Forster <small>Arboricultural Technician</small>
<b>Survey Date:</b>	05 May 2026
<b>Job Reference:</b>	BTC3449

No.	Species	Height	Stem Diam.	Branch Spread	Branch & Canopy Clearances	Life Stage	PC	General Observations and Comments	Management Recommendations	ERC	Cat. Grade	RPA (m <sup>2</sup> )	RPA Radius (m)
T1	Sycamore	19	1x650 2x350 (ms)#	N 8 E 8 S 7 W 6	5-S 4.5	M	G	<ul style="list-style-type: none"> <li>Growing on the edge of a watercourse embankment and subsequently not accessed to inspect and measure in detail.</li> <li>Dense ivy on northern stems from ground level to approximately 10m impeded inspection.</li> </ul>	<ul style="list-style-type: none"> <li>Not projected to be impacted by proposed development.</li> </ul>	20+	B1	302	9.8
T2	Lawson Cypress	19	870#	N 5 E 4.5 S 5.5 W 5	2-S 2	EM	G	<ul style="list-style-type: none"> <li>Growing in a 1m high raised bed.</li> <li>Light ivy from ground level to approximately 5 on south side which partly impeded inspection.</li> </ul>	<ul style="list-style-type: none"> <li>Not projected to be impacted by proposed development.</li> </ul>	10+	C1	342	10.44
T3	Silver Maple	9	170	N 4.5 E 4 S 3.5 W 4.5	2-N 2	SM	G	<ul style="list-style-type: none"> <li>Multi-stemmed from ground level.</li> </ul>	<ul style="list-style-type: none"> <li>Retain tree in context of proposed development.</li> <li>Tree protection can be assured through adherence to the attached site and development specific Tree Protection Plan (TPP), which can be assured through the imposition of a suitably worded planning condition attached to a planning approval.</li> </ul>	20+	B1	79	5
T4	Campbell's Magnolia	6.5	1x240 1x220 1x190 (ms)	N 4.5 E 5 S 6 W 3	1-S 2	SM	G	<ul style="list-style-type: none"> <li>Multistem from 0.5m.</li> <li>Excavation on western side 1m from stem, approximately 1m down, with little root damage less than 10mm diameter.</li> </ul>	<ul style="list-style-type: none"> <li>Retain tree in context of proposed development.</li> <li>Tree protection can be assured through adherence to the attached site and development specific Tree Protection Plan (TPP), which can be assured through the imposition of a suitably worded planning condition attached to a planning approval.</li> </ul>	10+	C1	64	4.52

**Headings and Abbreviations:**

<b>No.</b>	Allocated sequential reference number - Tree ('T'), Group ('G'), Woodland ('W') or Hedge ('H') reference number - refer to plan and to numbered tags where applicable
<b>Species:</b>	Common name
<b>Height:</b>	In metres, to half nearest metre – where possible approximately 80% are measured using an electronic clinometer and the remainder estimated against the measured trees. In the case of Groups and Woodlands the measurement listed is that of the highest tree
<b>Stem Diam.:</b>	Stem diameter in millimetres, to nearest 10mm - measured and calculated as per Annex C of BS5837:2012. MS = multi-stemmed, TS = twin-stemmed
<b>Branch Spread:</b>	Crown radius measured (or estimated where considered appropriate) from the four cardinal points (north, east, south and west) to give an accurate visual representation of the crown
<b>Branch &amp; Canopy Clearances:</b>	Existing height above ground level, in metres, of first significant branch and direction of growth (e.g. 2.5-N) and of canopy at lowest point – to inform on crown to height ratio, potential for shading, etc.
<b>Life Stage:</b>	Estimated age class - Y = young, SM = semi-mature, EM = early-mature, M = mature, PM = post-mature
<b>PC:</b>	Physiological Condition - a measure of the tree(s)' overall vitality, i.e. D = Dead, MD = Moribund, P = Poor, M = Moderate, G = Good
<b>General Observations and Comments:</b>	Comments relating to the tree(s)' overall condition and any other pertinent factors including structural defects, current and potential direct structural damage, physiological decline, poor form, etc.
<b>Management Recommendations:</b>	Either Preliminary or In Consideration of the Proposal - In the case of Arboricultural Constraints Surveys the recommended management works only take existing site and tree circumstances and conditions into account and not proposed developments. Arboricultural Impact Assessment and Method Statement related Surveys take the proposed development into consideration with recommendations made accordingly. More than one option may be given if considered appropriate
<b>ERC:</b>	Estimated Remaining Contribution - in years as per BS5837:2012 (i.e. <10, 10+, 20+, 40+)
<b>Cat. Grade:</b>	Category Grading - tree retention value listed as U, A, B or C - in accordance with BS5837:2012 Table 1
<b>RPA m<sup>2</sup>:</b>	Root Protection Area in m <sup>2</sup> - calculated area around the tree that must be appropriately protected throughout the development process in order avoid root damage
<b>RPA Radius (m):</b>	Root Protection Area Radius - in metres measured from the centre of the stem to the line of tree protection
<b># (Estimated Dimensions):</b>	Where trees are located off-site, or are inaccessible for any other reason, and accurate measurements or other information cannot be taken then the information provided is estimated and is duly suffixed with a "#" symbol

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<b>Survey Date:</b>	05 May 2026
<b>Job Reference:</b>	BTC3449

No.	Species	Height	Stem Diam.	Branch Spread	Branch & Canopy Clearances	Life Stage	PC	General Observations and Comments	Management Recommendations	ERC	Cat. Grade	RPA (m <sup>2</sup> )	RPA Radius (m)
T5	Silver Birch	4	120	N 2.5 E 3 S 1 W 0.5	N/A 0	Y	G	▪ Suppressed by neighbouring rhododendron.	▪ Retain tree in context of proposed development. ▪ Tree protection can be assured through adherence to the attached site and development specific Tree Protection Plan (TPP), which can be assured through the imposition of a suitably worded planning condition attached to a planning approval.	10+	C1	7	1.44
T6	Rowan	4	3x60 (ms)	N 0 E 0 S 1.5 W 0	N/A 0	Y	M	▪ Stem previously cut down to less than 0.5m with new shoots growing south over fence into neighbouring land. ▪ Suppressed by rhododendron to north now removed. ▪ Previously not surveyed due to dense vegetation now removed.	▪ Retain tree in context of proposed development. ▪ Tree protection can be assured through adherence to the attached site and development specific Tree Protection Plan (TPP), which can be assured through the imposition of a suitably worded planning condition attached to a planning approval.	10+	C1	5	1.25
T7	Goat Willow	10	1x340 2x200 (ms)	N 2 E 4 S 5 W 5	3-W 2	SM	G	▪ Multistem from 0.5m.	▪ Not projected to be impacted by proposed development.	10+	C1	89	5.31
G1	Lawson Cypress	≤ 9	≤ 210	N ≤ 2 E ≤ 2 S ≤ 2 W ≤ 2	N/A ≥ 0	Y	G	▪ Outgrown hedge evidently planted as screening. ▪ Young shrubs within the understory	▪ Retain group in context of proposed development. ▪ Tree protection can be assured through adherence to the attached site and development specific Tree Protection Plan (TPP), which can be assured through the imposition of a suitably worded planning condition attached to a planning approval.	10+	C1	≤ 20	≤ 2.52
G2	Cherry Laurel, Lawson Cypress, Mixed broadleaf	≤ 7	≤ 110	N ≤ 2 E ≤ 2 S ≤ 2 W ≤ 2	N/A ≥ 0	Y	G	▪ Outgrown group evidently planted as screening.	▪ Retain tree in context of proposed development. ▪ Tree protection can be assured through adherence to the attached site and development specific Tree Protection Plan (TPP), which can be assured through the imposition of a suitably worded planning condition attached to a planning approval.	10+	C1	≤ 5	≤ 1.32

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No.	Species	Height	Stem Diam.	Branch Spread	Branch & Canopy Clearances	Life Stage	PC	General Observations and Comments	Management Recommendations	ERC	Cat. Grade	RPA (m²)	RPA Radius (m)
G3	Rhododendron	≈ 4.5	N/A	≈ 3 wide	N/A ≥ 0	SM	G	▪ Outgrown hedgerow.	<ul style="list-style-type: none"> <li>▪ Retain group in context of proposed development.</li> <li>▪ Tree protection can be assured through adherence to the attached site and development specific Tree Protection Plan (TPP), which can be assured through the imposition of a suitably worded planning condition attached to a planning approval.</li> </ul>	10+	C1	N/A	≈ 1.5

**BS5837:2012 Table 1 – Cascade Chart for Tree Quality Assessment**

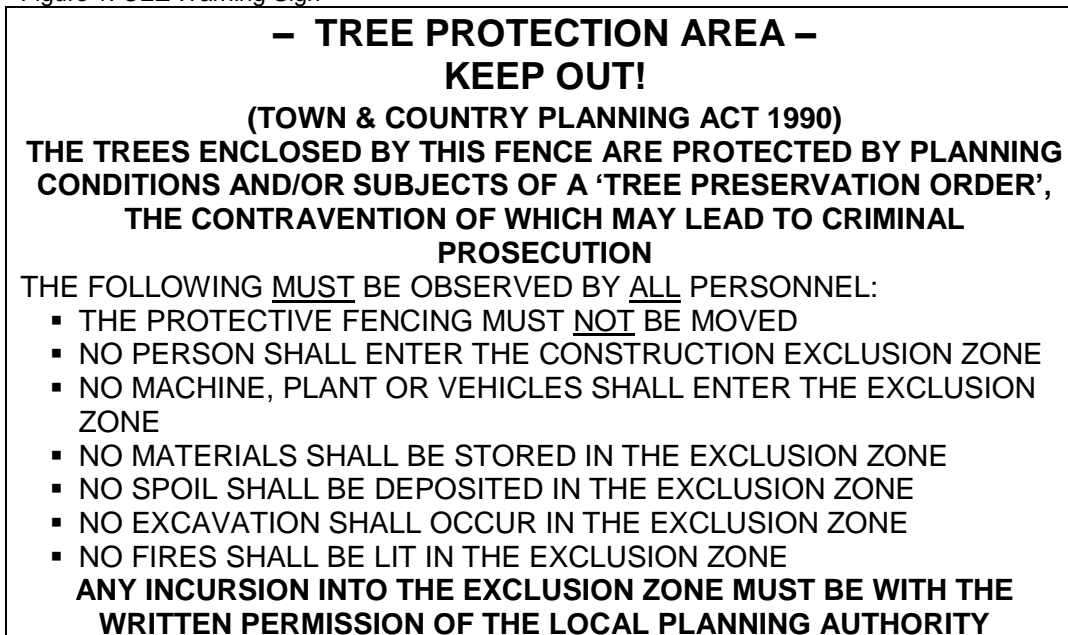
Category and definition	Criteria (including subcategories where appropriate)			Identification on plan
<b>Trees unsuitable for retention</b> (see Note)				
<p><b>Category U</b></p> <p>Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years</p>	<ul style="list-style-type: none"> <li>▪ 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 (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning)</li> <li>▪ Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline</li> <li>▪ 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</li> </ul> <p><i>Note: Category U trees can have existing or potential conservation value which it might be desirable to preserve; see BS5837:2012 paragraph 4.5.7.</i></p>			Red
<b>1. Mainly arboricultural qualities</b>		<b>2. Mainly landscape qualities</b>	<b>3. Mainly cultural values, including conservation</b>	
<b>Trees to be considered for retention</b>				
<p><b>Category A</b></p> <p><b>Trees of high quality</b> 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 those that are essential components of groups or 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)	Green
<p><b>Category B</b></p> <p>Those of moderate quality and value: those in such a condition as to make a significant contribution. A minimum of 20 years is suggested.</p>	Trees that might be included in the high category, but are downgraded because of impaired condition. Examples include the presence of remediable defects including unsympathetic past management and minor storm damage	Trees present in numbers, usually as groups or woodlands, so they form distinct landscape features which attract a higher collective rating than they might as individuals. But which are not, individually, essential components of formal or semi-formal arboricultural features. For example, trees of moderate quality within an avenue that includes better, A category specimens. Or trees which are internal to the site, therefore individually having little visual impact on the wider locality	Trees with clearly identifiable conservation or other cultural benefits	Blue
<p><b>Category C</b></p> <p>Those trees 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 150 mm</p>	Trees not qualifying in higher categories	Trees present in groups or woodlands, 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
	<p>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</p>			

## - TEMPORARY PROTECTIVE FENCING & GROUND PROTECTION SPECIFICATION -

**Construction Exclusion Zones (CEZs)**, shall be enclosed by **Temporary Protective Fencing** and/or, where necessary, **Temporary Ground Protection Measures**. The fencing/ground protection Type(s), locations, and extents shall be agreed, in writing, with the Local Planning Authority (LPA). In turn, the **Temporary Protective Fencing** and/or **Temporary Ground Protection Measures** shall:

1. be constructed as in accordance with the Type 1, Type 2 or Type 3 'Temporary Protective Fencing Construction' sections and, where applicable the 'Temporary Ground Protection Measures' section, as detailed herein and agreed, in advance with the LPA;
2. be retained in place throughout the development process until completion of the project, and only removed following receipt of written permission from the LPA;
3. be sited in the area(s) defined by the Root Protection Areas on the associated Tree Impact Plan, or as the CEZs on the Tree Protection Plan;
4. be erected prior to any construction, demolition or excavation works and remain in place for the duration of the project;
5. preclude any delivery of site accommodation and/or materials and/or plant machinery;
6. preclude all construction related activity, with the sole exception of specified arboricultural works and any other works to be carried out under supervision that have been agreed by all parties;
7. preclude the storage of all development related materials and substances including fuels, oils, additives, cement and/or any other deleterious substance; and
8. be affixed with a 600mm x 300mm warning sign reading "TREE PROTECTION AREA KEEP OUT" (see Figure 1, below), at every 10.0 metre length of protective fencing.
9. Important: Any incursion into CEZs must be by prior arrangement, following consultation with the LPA.

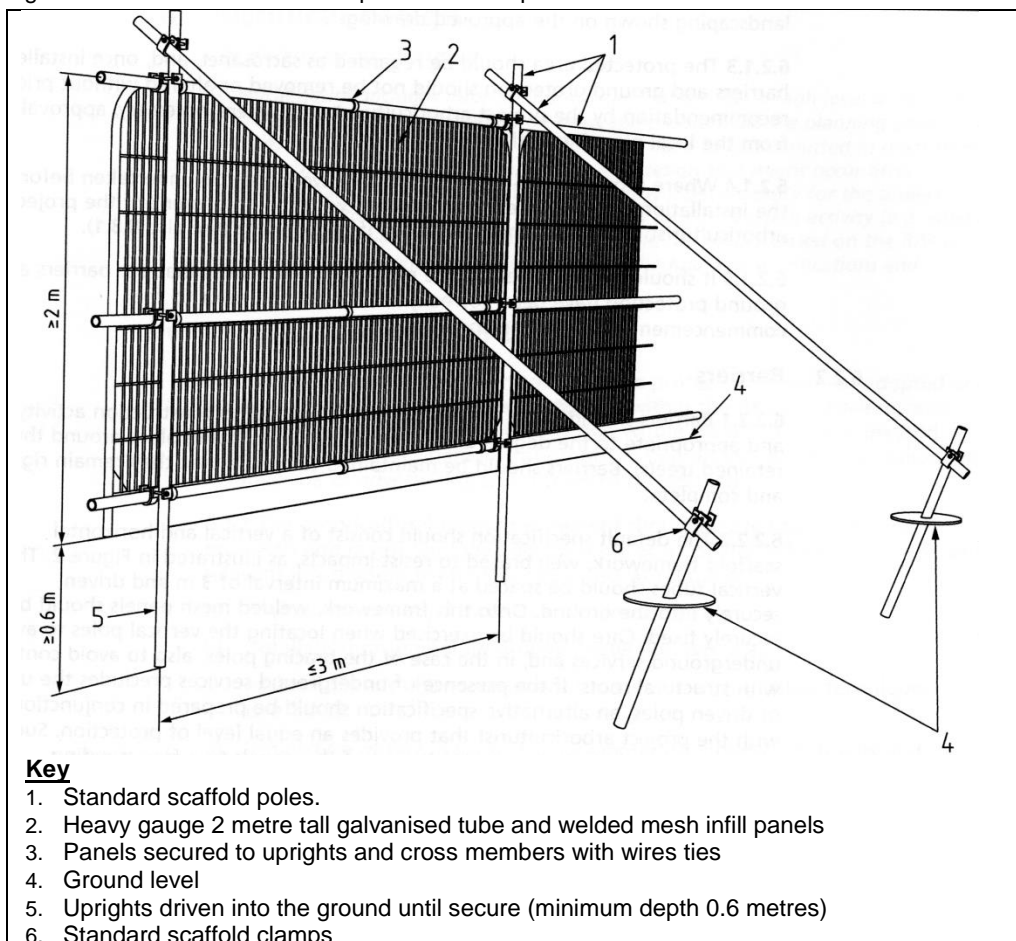
Figure 1: CEZ Warning Sign



**Type 1 (i.e. 'Default') Temporary Protective Fencing Construction** (see Figure 2, below)

1. Temporary protective fencing panels shall be weldmesh "Heras" panels of at least 2.0 metres in height.
2. The panels shall butt together and be securely fixed to a scaffold framework, as per points 3 to 5 of Figure 2, overleaf.
3. The scaffold framework shall comprise of upright poles of at least 3.0 metres in length driven no less than 0.6 metres into the ground at maximum 3.0 metre centres with horizontal and diagonal poles fixed to the uprights, as per points 4 to 5.
4. The two horizontal rail poles shall be attached to the uprights at heights of 0.6 and 1.8 metres with 3 no. clamps to each joint.
5. The diagonal scaffold pole struts be clamped to the top rail of the scaffold framework at a 45° angle and extend back into the CEZ and clamped to a 0.7 metre length of scaffold tube that shall be driven no less than 0.5m into the ground.
6. No fixing shall be made to any tree and all possible precautions shall be taken to prevent damage to tree roots when locating posts.
7. A 600mm x 300mm warning sign reading "TREE PROTECTION AREA KEEP OUT" (see Figure 1) shall be fixed to every 10.0 metre length of protective fencing.
8. On completion of erection, and prior to any demolition or construction works, site preparation, excavation or delivery of plant and materials, the Consulting Arboriculturist or the LPA Tree Officer, as agreed, shall inspect the Temporary Protective Fencing.

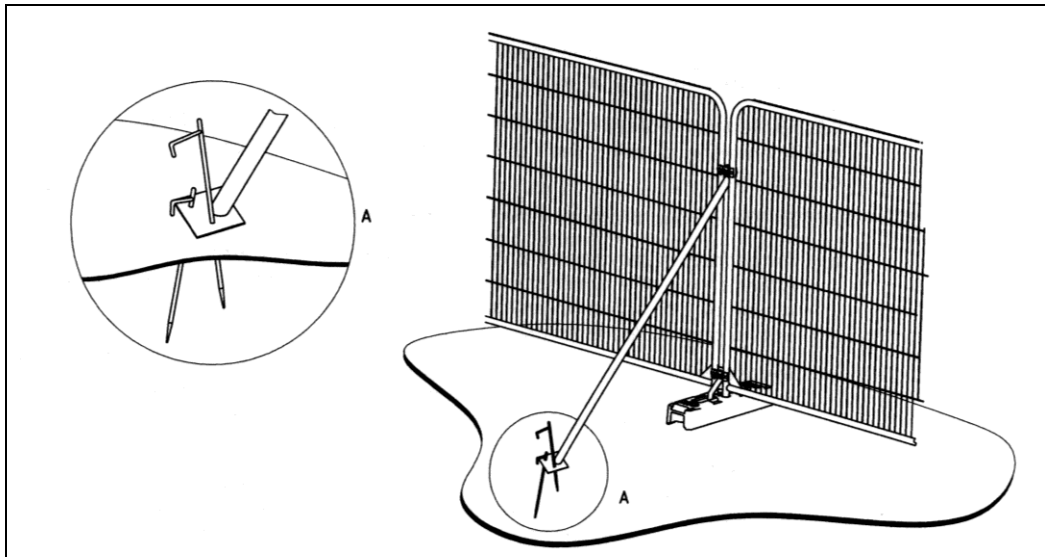
Figure 2: BS5837:2012 Default specification for protective barrier



### **Type 2 Temporary Protective Fencing Construction** (see Figure 3(a), below)

1. Temporary protective fencing panels shall be weldmesh "Heras" panels of at least 2.0 metres in height.
2. The panels shall stand on rubber or concrete feet.
3. The panels shall butt together, and be joined together using a minimum of two anti-tamper couplers, installed so that they can only be removed from inside the fence.
4. The distance between the fence couplers shall be at least 1.0 metre, and shall be uniform throughout the fence.
5. The panels shall be supported on the inner side by stabiliser struts, which shall be clamped to the scaffold framework at a 45° angle and extend back into the CEZ and shall be attached to a base plate, which shall be secured to the ground with pins (Figure 3a).
6. No fixing shall be made to any tree and all possible precautions shall be taken to prevent damage to tree roots when locating posts.
7. A 600mm x 300mm warning sign reading "TREE PROTECTION AREA KEEP OUT" (see Figure 1) shall be fixed to every 10.0 metre length of protective fencing.
8. On completion of erection, and prior to any demolition or construction works, site preparation, excavation or delivery of plant and materials, the Consulting Arboriculturist or the LPA Tree Officer, as agreed, shall inspect the Temporary Protective Fencing.

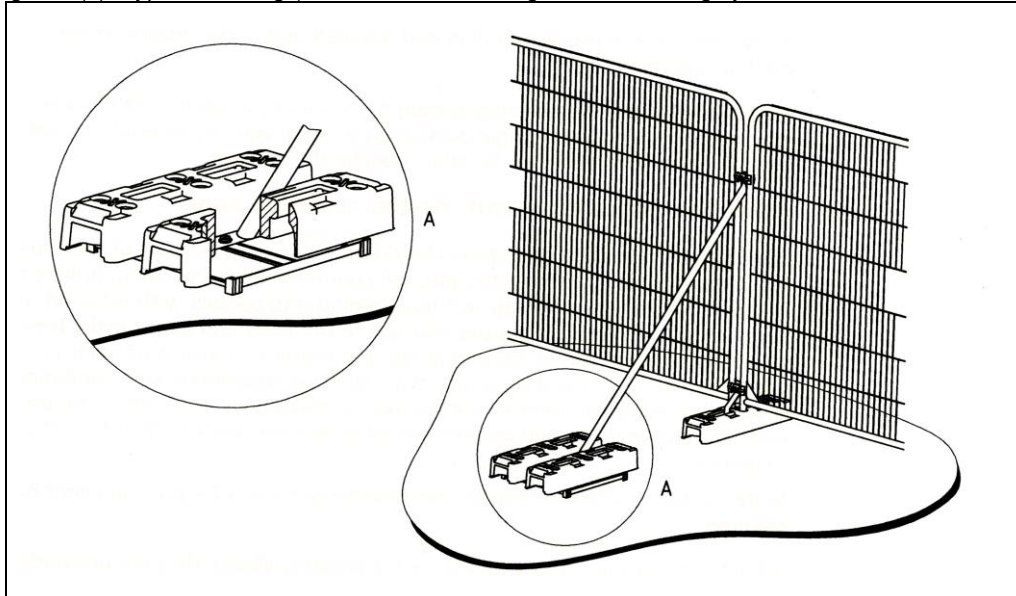
Figure 3(a): Type 2 Fencing (BS5837:2012 above-ground strut stabilising system with ground pins)



### **Type 3 Temporary Protective Fencing Construction** (see Figure 3(b), overleaf)

1. Temporary protective fencing panels shall be weldmesh "Heras" panels of at least 2.0 metres in height.
2. The panels shall stand on rubber or concrete feet.
3. The panels shall butt together, and be joined together using a minimum of two anti-tamper couplers, installed so that they can only be removed from inside the fence.
4. The distance between the fence couplers shall be at least 1.0 metre, and shall be uniform throughout the fence.
5. The panels shall be supported on the inner side by stabiliser struts, which shall be clamped to the scaffold framework at a 45° angle and extend back into the CEZ and shall be attached to a block tray base (Figure 3b).
6. No fixing shall be made to any tree and all possible precautions shall be taken to prevent damage to tree roots when locating posts.
7. A 600mm x 300mm warning sign reading "TREE PROTECTION AREA KEEP OUT" (see Figure 1) shall be fixed to every 10.0 metre length of protective fencing.
8. On completion of erection, and prior to any demolition or construction works, site preparation, excavation or delivery of plant and materials, the Consulting Arboriculturist or the LPA Tree Officer, as agreed, shall inspect the Temporary Protective Fencing.

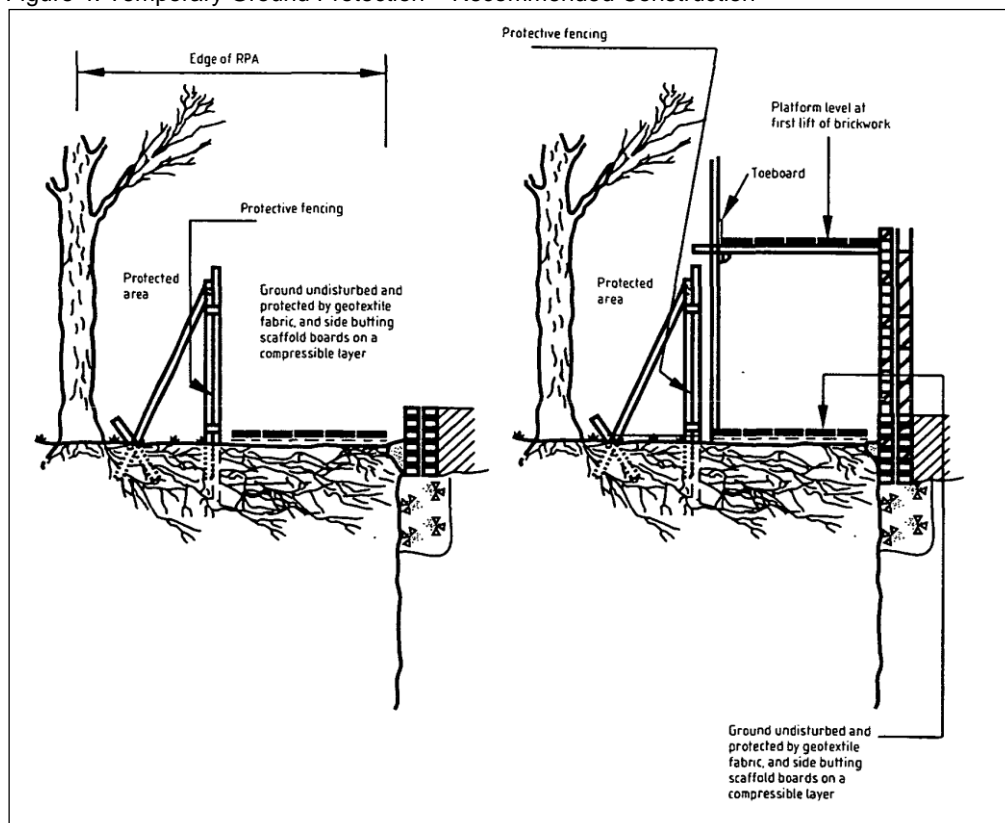
Figure 3(b): Type 3 Fencing (BS5837:2012 above-ground stabilising system with strut on block tray)



### Temporary Ground Protection

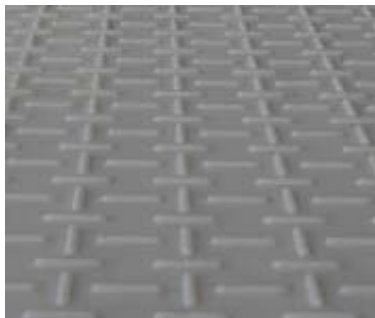
1. Any necessary Temporary Ground Protection areas shall conform to Figure 4, below, unless otherwise agreed with the LPA.
2. The Ground Protection Area shall be left undisturbed and covered by a semi-permeable geotextile membrane which shall, in turn, be covered by a compressible layer consisting of a material such as woodchip.
3. Side-butting scaffold boards shall then be fitted to cover the Ground Protection Area.
4. On completion of installation, and prior to any demolition or construction works, site preparation, excavation or delivery of plant and materials, the Consulting Arboriculturist or the LPA Tree Officer, as agreed, shall inspect the Temporary Ground Protection.
5. The Temporary Ground Protection shall remain in place until completion of the project and only removed following receipt of written permission from the LPA.

Figure 4: Temporary Ground Protection – Recommended Construction



# Heavy Duty Temporary Access Mat

## General Description



### Key Information

- High pressure compression moulded in one piece
- Quality batch control / mat identification
- 23 x 1200 x 2410mm
- Weight: c. 37kg (manhandable)
- Materials: choice of (a) Mix of HD / LDPE regenerated (b) HD / LDPE virgin / natural or green / UV protection
- Two traction surfaces – vehicular and pedestrian
- Connection holes / cut out hand holds

### Vehicular Traction Surface

- Rugged raised surface profile for excellent traction for light to heavy (80 tonnes) vehicles, plant and machinery
- Sand blasted finish for micro-traction
- Low trip hazard
- Chevron pattern for high visibility strips

### Pedestrian/Tire Traction Surface

- Uniform raised surface profile pattern for pedestrian use
- Good traction for vehicular use
- Sand blasted finish for micro-traction
- Low trip hazard (hand cut outs blanked off on pedestrian surface)

### Connection

- 2-way and 4-way bolt in connectors
- 'Quick fit' metal connectors for fast turnaround
- Flexible webbing / anchor plate connectors
- U-pins for stability on sideways ground
- High visibility colour options

[www.ltlutilitysupply.com](http://www.ltlutilitysupply.com)

# Heavy Duty Temporary Access Mat

## Mechanical Testing of HD/LDPE Regenerated Material

Factor	Value
Tensile Strength (MPa)	23 - 26
Flexural Strength (MPa)	25 - 28
Flexular Modulus (MPa)	1936 – 1967
Charpy Notched Impact Strength (kJ/m <sup>2</sup> )	5 - 6
Poisson's Ratio (theoretical)	0.35 – 0.38
Compression testing – maximum value reached before test terminated (tonnes)*	250

\*Refers to the material strength on a firm substrate as tested by the National Physical Laboratory. The weight load distribution performance is subject to ground conditions. Lineman's Testing Laboratories, its agents or employees are not liable for any damage to existing ground or property through the use of this mat. The information provided is for guidance only. In all cases, qualified engineering / geotechnical advise should be sought regarding bearing capacity of the ground where the mat is to be used.

## Generic Properties of HDPE and LDPE

Properties:		Resistance to Chemicals	
<ul style="list-style-type: none"> <li>low density</li> <li>high toughness (LDPE provides flexibility)</li> <li>high elongation</li> <li>very good electrical and dielectric properties</li> <li>very low water absorption</li> <li>low steam permeability</li> <li>high chemical resistance</li> <li>good protection against stress cracking</li> </ul>		<ul style="list-style-type: none"> <li>Dilute Acid ****</li> <li>Dilute Alkalis ****</li> <li>Oils and Greases ** variable</li> <li>Aliphatic Hydrocarbons *</li> <li>Aromatic Hydrocarbons *</li> <li>Halogenated Hydrocarbons *</li> <li>Alcohols ****</li> </ul>	
		Key: * poor ** moderate *** good **** very good	
Factor	HDPE Value	LDPE Value	Unit
Thermal expansion	110 - 130	150 - 200	e-6/K
Thermal conductivity	0.46 - 0.52	0.3 – 0.33	W/m.K
Specific heat	1800 - 2700	1800 - 3400	J/kg.K
Melting temperature	108 - 134	125 - 136	°C
Glass temperature	-110 - -110	-110 - -110	°C
Service temperature	-30 - 85	-30 - 70	°C
Density	940 - 965	910 - 928	kg/m <sup>3</sup>
Resistivity	5e+17 - 1e+21	5e+17 – 1e+21	Ohm.mm <sup>2</sup> /m
Breakdown potential	17.7 - 19.7	17.7 – 39.4	kV/mm
Dielectric loss factor	0.0005 - 0.0008	0.0002 – 0.001	
Friction coefficient	0.25 - 0.3	0.3 – 0.5	
Refraction index	1.52 - 1.53	1.51 – 1.53	
Shrinkage	2 - 4	1.5 - 3	%
Water absorption	0.01 – 0.01	0.005 0 0.015	%

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AB, SK, MB, Northern Territories: 800-530-8640  
British Columbia: 866-347-6911



**KEY**

- T = Individual Tree
- G = Group of Trees

Please refer to associated Tree Survey Schedule and appendices for specific details in respect of items below:

**Tree Categorisations:**

Those to be Considered for Retention:

Category 'A' Tree/Group  
Those of a High Quality with an Estimated Remaining Life Expectancy of at Least 40 Years

Category 'B' Tree/Group  
Those of a Moderate Quality with an Estimated Remaining Life Expectancy of at Least 20 Years

Category 'C' Tree/Group  
Those of Low Quality with an Estimated Remaining Life Expectancy of at Least 10 Years, or Young Trees

Those Considered Unsuitable for Retention:

Category 'U' Tree/Group  
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

Note: The locations and extents of trees T1 - T5 and groups G1 and G2 were not included on the site survey plan provided, and were subsequently plotted by the arboriculturist at the time of the survey using GPS and, where possible, measurement from existing site features or, where not possible, estimation. As such, the locations and extents of this group cannot therefore be considered to be entirely accurate

**Root Protection Areas (RPAs):**

RPAs  
Area(s) of Ground Around Trees that Should be Protected Throughout Development Works with Protective Fencing to form a Construction Exclusion Zone - see Temporary Protective Fencing Specification

**Project:**  
16 BROOKES LANE  
WHALLEY  
LANCASHIRE  
BB7 9RG

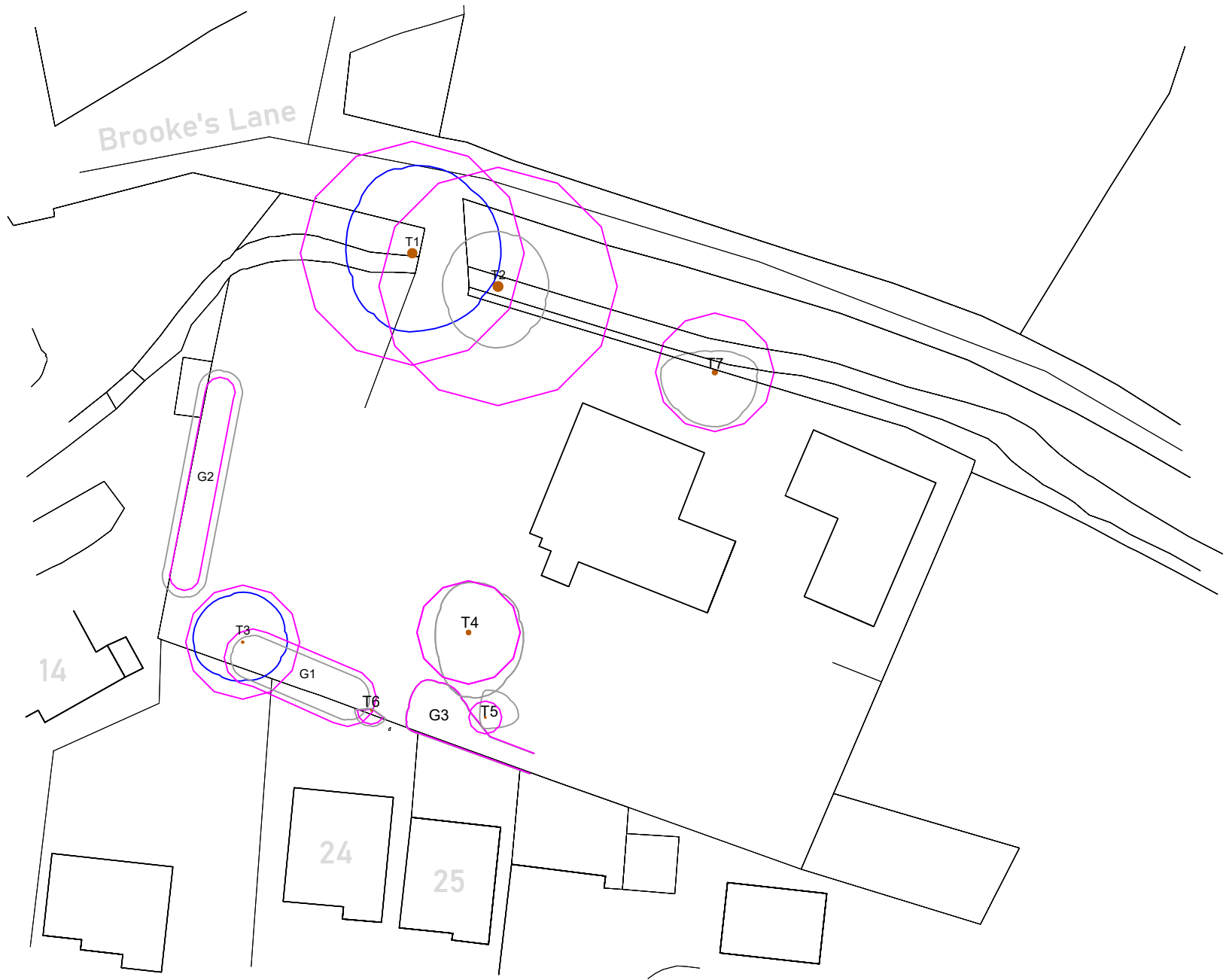
**Agent:**  
PETER HITCHEN ARCHITECTS

**Title:**  
**TREE CONSTRAINTS PLAN**  
in Relation to Proposed Construction of Detached Garage

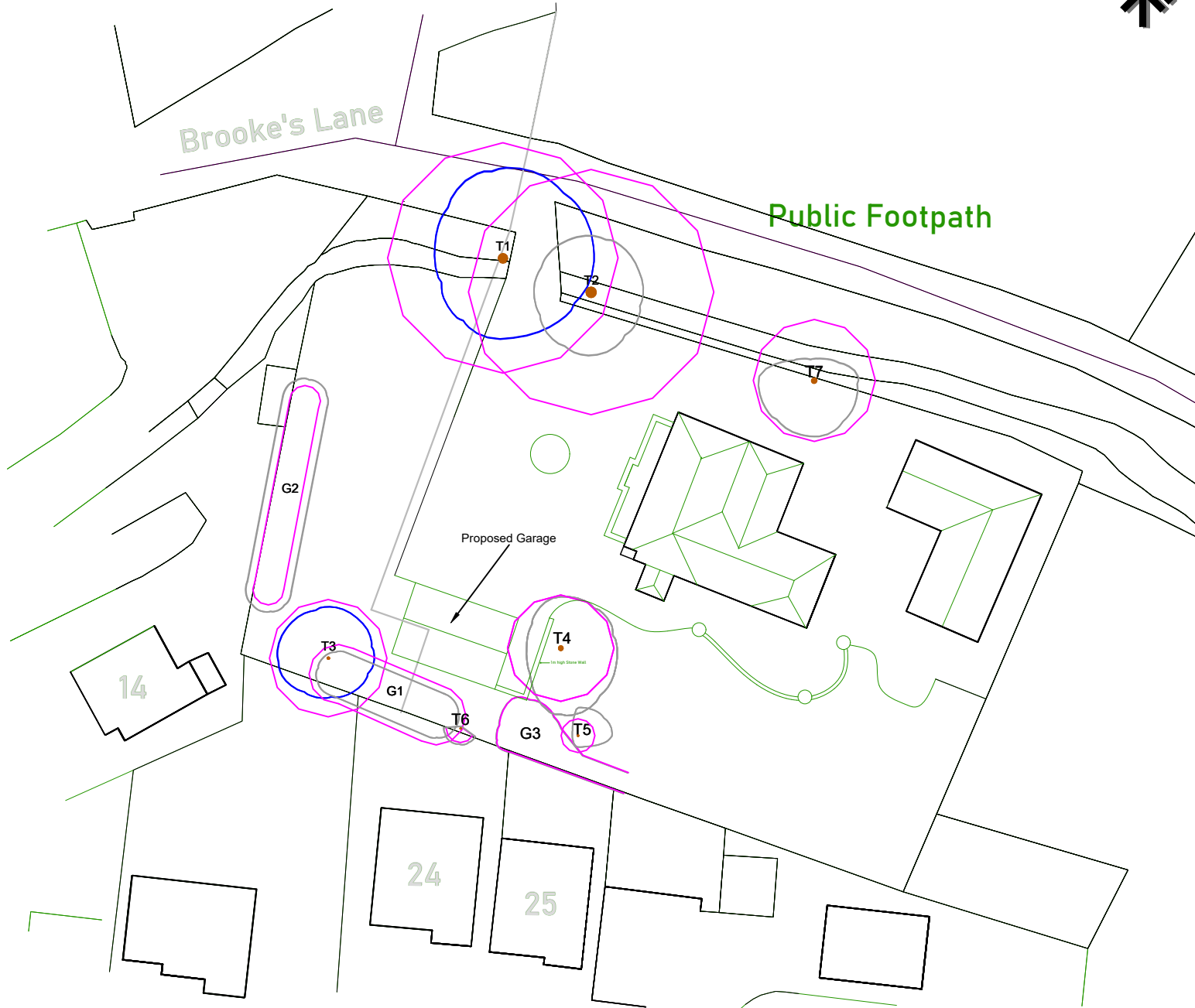
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Date: May 2026  
Drawn by: MM & OM  
Checked by: CF



Ref: BTC3449-TCP Rev:



**Important:** The original version of this plan was produced in colour, which is essential to the plan's interpretation and usability. As such, a monochrome copy should not be relied upon



**KEY**

T = Individual Tree  
 G = Group of Trees

Please refer to associated Tree Survey Schedule and appendices for specific details in respect of items below:

**Tree Categorisations:**

Those to be Considered for Retention:

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 Those of a High Quality with an Estimated Remaining Life Expectancy of at Least 40 Years
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 Those of a Moderate Quality with an Estimated Remaining Life Expectancy of at Least 20 Years
- Category 'C' Tree/Group  
 Those of Low Quality with an Estimated Remaining Life Expectancy of at Least 10 Years, or Young Trees

Those Considered Unsuitable for Retention:

- Category 'U' Tree/Group  
 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

Note: The locations and extents of trees T1 - T5 and groups G1 and G2 were not included on the site survey plan provided, and were subsequently plotted by the arboriculturist at the time of the survey using GPS and, where possible, measurement from existing site features or, where not possible, estimation. As such, the locations and extents of this group cannot therefore be considered to be entirely accurate

**Root Protection Areas (RPAs):**

RPAs  
 Area(s) of Ground Around Trees that Should be Protected Throughout Development Works with Protective Fencing to form a Construction Exclusion Zone - see Temporary Protective Fencing Specification

**Project:**  
 16 BROOKES LANE  
 WHALLEY  
 LANCASHIRE  
 BB7 9RG

**Agent:**  
 PETER HITCHEN ARCHITECTS

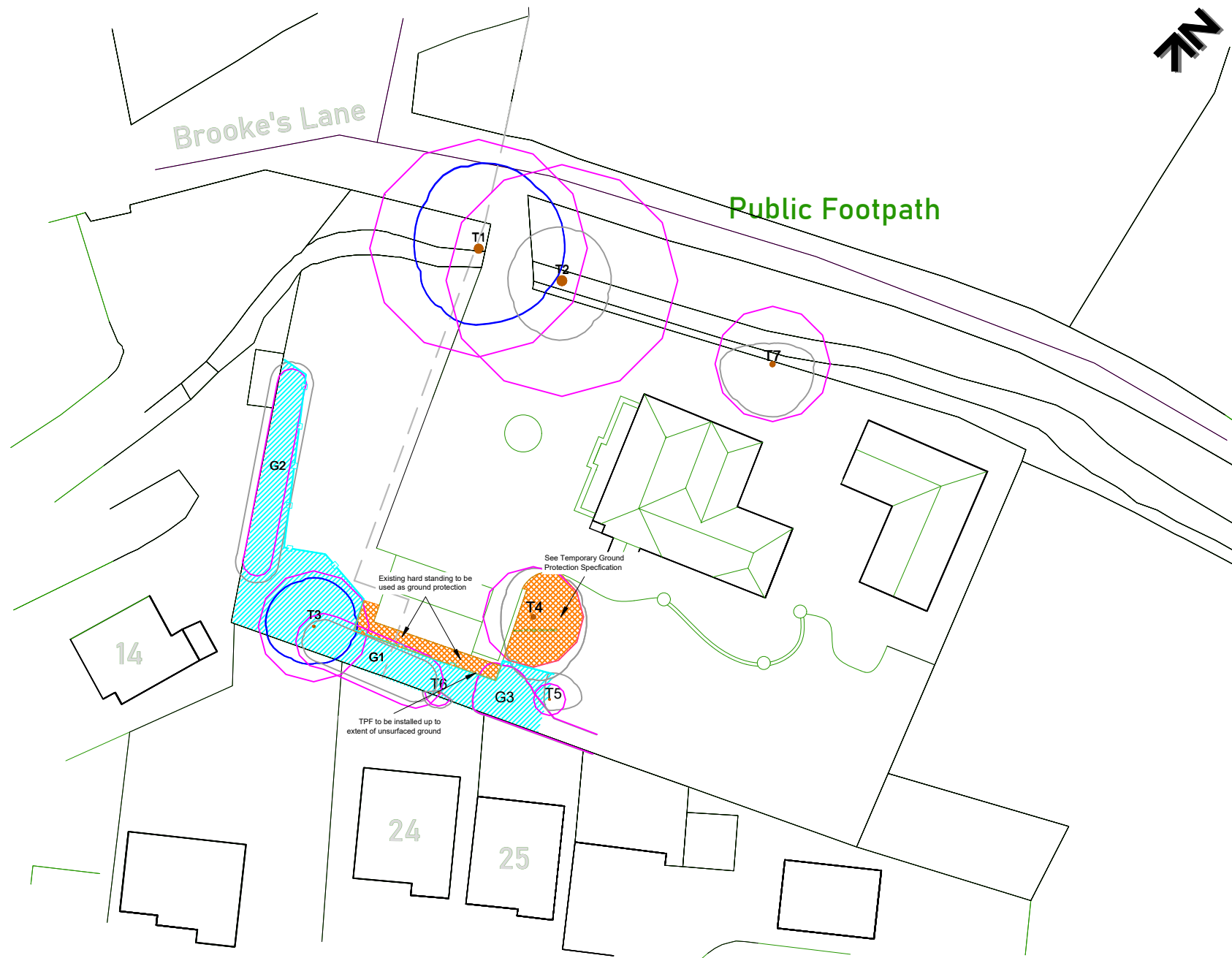
**Title:**  
**TREE IMPACT PLAN**  
 in Relation to Proposed Construction of Detached Garage

Scale: 1:500@A4  
 Date: June 2026  
 Drawn by: DB  
 Checked by: JL



Ref: BTC3449-TIP Rev:

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**KEY**  
 T = Individual Tree  
 G = Group of Trees

Please refer to associated Tree Survey Schedule and appendices for specific details in respect of items below:

- Tree Categorisations:**
- Those to be Considered for Retention:
- Category 'A' Tree/Group  
Those of a High Quality with an Estimated Remaining Life Expectancy of at Least 40 Years
  - Category 'B' Tree/Group  
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  - Category 'C' Tree/Group  
Those of Low Quality with an Estimated Remaining Life Expectancy of at Least 10 Years, or Young Trees
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- Category 'U' Tree/Group  
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

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- Root Protection Areas (RPAs):**
- RPAs  
Area(s) of Ground Around Trees that Should be Protected Throughout Development Works with Protective Fencing to form a Construction Exclusion Zone - see Temporary Protective Fencing Specification

- Tree Protection Measures:**
- Construction Exclusion Zones (CEZs)  
Area(s) of Ground Around Retained Trees to be Enclosed with 'Type 2' or '3' Temporary Fencing Throughout Development Works Subject to Ground Conditions. Note: Bold Line Represents Positioning of Fencing - see Temporary Protective Fencing Specification
  - Temporary Ground Protection  
Areas of Ground Around Retained Trees that are to be Protected Throughout Development Works - See appended Specification

**Project:**  
 16 BROOKES LANE  
 WHALLEY  
 LANCASHIRE  
 BB7 9RG

**Agent:**  
 PETER HITCHEN ARCHITECTS

**Title:**  
**TREE PROTECTION PLAN**  
 in Relation to Proposed Construction of Detached Garage

Scale: 1:500@A4  
 Date: June 2026  
 Drawn by: DB  
 Checked by: JL



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