TERRA FIRMA

Trees & Woodland Services

Terra Firma Trees & Woodlands

[redacted]

Arboricultural Impact Assessment

& BS 5837 Tree Survey.

Moorside
Moorside Lane
Wiswell

May 2022

Terra Firma Trees & Woodlands Services

[redacted]

1.0 Brief from the client

This report was requested by Peter Harrison Architects on behalf of the property Owner.

The brief is to carry out an assessment of trees on and adjacent to Moorside, Moorside Lane, Wiswell in order to produce a BS5837 tree report incorporating Arboricultural Impact Assessment, Tree protection and Arboricultural Method Statement.

The British Standard Institute publication *BS 5837: 2012 Trees in Relation to Design, Demolition and Construction – Recommendations* is referred to within this report. This is a nationally recognised standard typically used by Local Planning Authorities to assess Planning Applications.

2.0 Description of site

Moorside is a large detached property set within its own gardens.

There are several mature and semi mature trees and shrubs within the garden and surrounding area.

The proposal is to build a new double garage with workshop above and an extension to the western elevation, as shown on the Architects plans.

3.0 Tree Survey

A site visit was carried out on the 16th May 2022. The weather was calm and dry.

Data was collected in accordance with the requirements of *BS 5837: 2012*.

All observations were made from ground level. Height measurements were taken using a Clinometer, stem diameters were taken with a tape.

A survey schedule has been appended to this report.

4.0 Arboricultural Impact Assessment

4.1 Background

BS5837: 2012 requires the retention of better-quality trees (category A, B and C trees). Although Category C trees would not normally be retained if they impose a significant constraint on the proposed development.

BS 5837: 2012 also provides a methodology for determining the above and below ground constraints presented by trees on and adjacent to development sites.

An assessment has been made of the likely impact to the trees on and adjacent to the site by the proposed development.

The impacts assessed may include tree removals, proximity issues, soil level changes and protection during any demolition, site clearance and construction.

4.2 Assessment

The proposed development would require building works within the Root Protection Area (RPA) of T13, and the removal of T1, T5 and G4.

4.2.1
The RPA of T13 is 122.5m2 and the proposed development would incur by 1.85m2 which equates to circa 1.5% of the RPA.

It is considered that carrying out building works within these tolerances is in accordance with the British Standard: - "*New permanent hard surfacing should not exceed 20% of any unsurfaced ground within the RPA.*" (7.4.2.3).

To avoid unnecessary damage to tree roots it is recommended that any excavations within the RPA of T13 be dug by hand. (As set out in 5.4 below).

4.2.2
It is also considered that the building operatives will need room to carry out the construction work outside of the footprint of the building which will impede further into the trees RPAs.

Therefore, temporary ground protection should be installed prior to any works starting on site to give a 1.5m working area, (as shown on the Tree Constraints & Protection Plan).

In addition, protective fencing should be installed (as set out in 5.6 below and shown on the Tree Constraints and Protection Plan).

4.2.3
T1 & T5 have been categorised as Category C2, "Unremarkable trees of limited merit".

Given the extent of the tree cover on the site and that neither of the small trees are readily seen from outside of the property, it is considered that their removal would not be detrimental to the amenity of the surrounding area.

G4, a group of mature Rhododendrons, which do not fall within the scope of the British Standard due to the small size of the stems at circa 3cm.

However, due to the same reasons as given above, it is also considered that their removal would not be detrimental to the amenity of the surrounding area.

4.2.4
The RPAs of all of the other trees on site are at a sufficient distance from the proposed development that it would not have any detrimental impact on their health or longevity as long as they are adequately protected throughout the development process.

All trees should be protected prior to any building or site clearance works with protective barriers as shown on the Tree Constraints & Protection Plan and set out in 5.6 below.

5.0 Arboricultural Method Statement

The Arboricultural Method Statement is written to ensure the protection of the trees on site prior, during and post development.

5.1 Root Protection Areas

The heights, diameters and crown spread of the trees were recorded and have been used to calculate the Root Protection Areas of the retained trees, as shown on the included plan and the table below.

The Root Protection Areas have been designed to ensure sufficient rooting area of the trees is retained so that the health and longevity of the trees is not compromised by the development.

Tree Number	RPA – radius (m)	RPA – Area (m2)
T1	0.48	0.72
T2	N/A	N/A
T3	2.28	16.5
G4	N/A	N/A
T5	1.30	5.5
T6	7.68	185
T7	5.04	80
T8	7.02	155
T9	7.08	157.5
T10	1.44	6.5
T11	1.32	5.5
T12	4.56	65.5
T13	6.24	122.5
T14	6.72	142
T15	5.40	91.5
T16	2.40	18
T17	2.04	13
T18	1.92	11.5
T19	0.84	2.5
T20	2.76	24
T21	2.64	22
T22	3.84	46.5
T23	3.24	33

5.2 Tree Protection

Successful implementation of tree protection measures and long-term tree retention depends on co-ordination between the client and key personnel involved in the development.

The client and or the agent shall ensure that:

- The site manager and all other personnel are provided with this document.
- All the requirements of the Tree Protection scheme are adhered to.
- All personnel working on the site are made aware of the Tree Protection Plan and Arboricultural Method Statements covering any activities that they will undertake.
- The tree protection measures are left in place until the construction phase of the development is completed.

5.3 Tree Pruning

Care needs to be taken when planning operations near to trees that are to be retained, that site machinery (especially those with a hydraulic arm) does not make contact with the trees crown or branches.

Tree pruning may be required to facilitate operations, but should be kept to an absolute minimum and in accordance with the guidelines set out below.

If any tree works are to be carried out, they will be done so by a competent and qualified individual and in accordance with *BS 3998: 2010 Recommendations for Tree Work.*

5.4 Excavations within RPAs

Ground protection should be installed prior to the start of any works on site, in accordance with the Tree Constraints and Protection Plan.

The ground protection should be scaffold boards placed on top of a driven scaffold frame so to form a suspended walkway above the current ground level.

Any excavations within a trees RPA should be carried out by hand using clean tools.

If any tree roots are encountered during the excavations, they should be pruned with clean, straight cuts, using sharp, clean tools.

Any tree roots exposed within the RPA must be left as intact as careful digging with hand tools will allow. Roots can become desiccated quickly and must therefore be covered with a dry cloth, to prevent freezing overnight, or a wet cloth on warm days.

5.5 Timing and order of operations

The development must be carried out in the following order unless otherwise agreed in writing with the Local Planning Authority. Each step must be completed before moving onto the next.

- Tree pruning/ removal if required and agreed with the Local Authority.
- Erection of protective barriers and raised working platforms.
- Construction of development.
- Removal of protective barriers and raised working platforms.

5.6 Protective Barriers

The protective barriers shall be installed and removed in accordance with the timing of operations above and laid out in accordance with the Tree Protection Plan.

The default specification is a vertical and horizontal scaffold framework, braced to resist impacts as per figure 2 below. The vertical tubes are spaced at a maximum interval of 3m and these are driven securely into the ground. Welded mesh panels are securely attached to the frame. During installation it is important to consider the position of the below ground services and structural roots, which must not be damaged.

Once erected the area inside of the barriers should remain untouched throughout the development process. No barriers should be moved or altered without the prior consent of the Local Authority.

5.7 Prohibited Activities

The following must not be carried out under any circumstances:

- Cutting down, uprooting, damaging or otherwise destroying any retained tree.
- Lighting a fire within 10m of the canopy of any retained tree.
- Equipment, signage, fencing, materials, components, vehicles or structures shall not be attached to or supported by a retained tree.
- No plant or equipment or vehicle with a hydraulic arm such as a mini digger shall be operated within striking distance of the stem and branches or the Root Protection Area of any retained tree.

5.8 Prohibited activities within the protective barriers

- Any mechanical excavations.
- No excavations or lowering of levels by other means without Arboricultural site supervision.
- Mixing cement, chemical toilets or other use or storage of anything that would be harmful to trees.

Fig 1 Exert from BS 5837: 2012 in the Tree Survey Schedule.

Table 1 Cascade chart for tree quality assessment

Category and definition	Criteria (including subcategories where appropriate)			Identification on plan
Trees unsuitable for retention (see Note)				
Category U 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	• 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) • 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 *NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve; see **4.5.7**.*			See Table 2
	1 Mainly arboricultural qualities	**2 Mainly landscape qualities**	**3 Mainly cultural values, including conservation**	
Trees to be considered for retention				
Category A **Trees of high quality** with an estimated remaining life expectancy of at least 40 years	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)	See Table 2
Category B **Trees of moderate quality** with an estimated remaining life expectancy of at least 20 years	Trees that might be included in category A, 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	See Table 2
Category C **Trees of low quality** with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm	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	See Table 2

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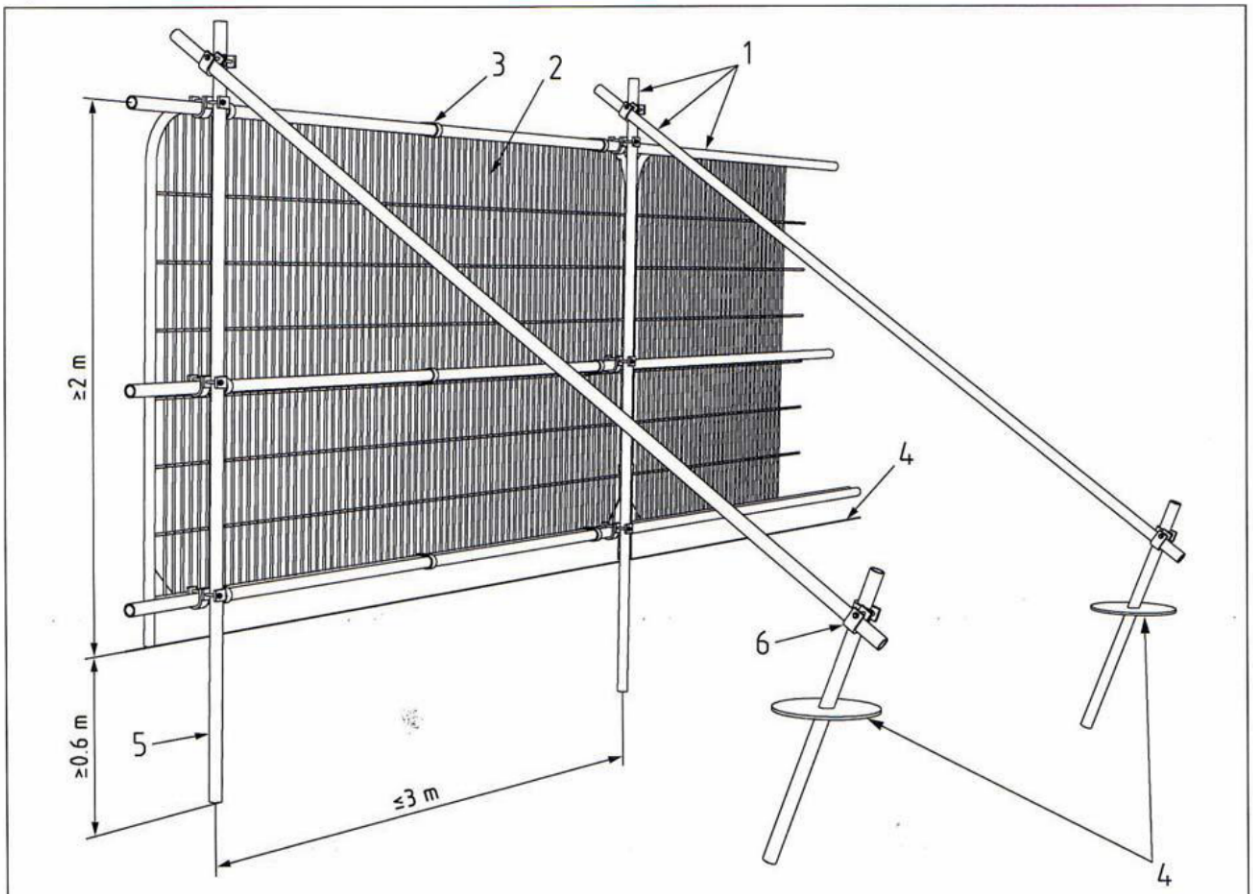
Fig 2 - Protective Barrier specification



Key

1 Standard scaffold poles
2 Heavy gauge 2 m tall galvanized tube and welded mesh infill panels
3 Panels secured to uprights and cross-members with wire ties
4 Ground level
5 Uprights driven into the ground until secure (minimum depth 0.6 m)
6 Standard scaffold clamps

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Appendix 1 – Tree Survey Schedule

Tree No	Species	Height (m)	DBH (cm)	Crown height (m)	Branch spread N	E	S	W	Age class	General observations	ERC	Cat
T1	Leyland cypress	4.5	4	1	1.5	1.5	1	1.5	Young	Fair to poor health and condition. Low amenity value.	10+	C2
T2	Stump	-	-	-	-	-	-	-	-	-	-	-
T3	Golden conifer *(Thuja Orientalis)*	7	15, 12	0.5	1.5	1.5	1.5	1.5	Semi mature	Good health and condition. Limited amenity value.	10+	C2
G4	Rhododendron x 4	3	N/A	0	2.5	2.5	2.5	2.5	Mature	Group of 4 mature Rhododendron's, with multiple stems. All stems <3. Not within scope of BS5837.	-	-
T5	Golden conifer *(Thuja Orientalis)*.	7	9, 6	0.5	0.5	1	2	2	Semi mature	Fair health and condition. Limited amenity value.	10+	C2
T6	Sycamore	19	64	7	6	4.5	6	4.5	Mature	One of a pair of Sycamore growing on roadside, close to property. Thought to be G23 of TPO covering the area. Good health and condition.	20+	B2
T7	Sycamore	19.5	42	7	2	5	5	4	Mature		20+	B2

										As above. Tree has an old and established lean, due to being dominated by T6 the larger neighbouring tree. Fair to good health and condition.		
T8	Ash	18	36, 34 33	7	6	6	6	6	Mature	Fair to poor health and condition, dead wood throughout crown.	10+	C2
T9	Horse chestnut	16	59	0	5	5	5	5	Mature	Fair to good health and condition, some evidence of Bleeding Canker.	10+	B2
T10	Acer	5	12	2	3.5	3	3	3	Semi mature	Good health and condition.	10+	C1
T11	Holly	5	11	2	2	2	2	2	Semi mature	Good health and condition.	10+	C1
T12	Norway maple (Purple variety).	11	38	2.5	4	4.5	4	4.5	Mature	Good health and condition.	20+	B1
T13	Larch	18	52	3.5	5	5	5	2	Mature	1 of a group of 3 Larch trees. Good health and condition.	20+	B1
T14	Larch	18	56	3.5	5	2	5	7	Mature	As above.	20+	B1
T15	Larch	18	45	3.5	8	2	5	7	Mature	As above.	20+	B1
T16	Leyland cypress	8	20	2.5	2	2	2	2	Semi mature	1 of a line of 4 Leyland cypress trees, possible redundant old outgrown hedge. Poor specimens. Fair health and condition.	10+	C2

T17	Leyland cypress	8	14	2.5	2	2	2	2	Semi mature	As above.	10+	C2
T18	Leyland cypress	8	16	2.5	2	2	2	2	Semi mature	As above.	10+	C2
T19	Leyland cypress	8	7	2.5	2	2	2	2	Semi mature	As above.	10+	C2
T20	Dawn redwood	12	23	1.5	2.5	2.5	2.5	2.5	Mature	Heavily pruned tree, once multi stemmed but just one stem now.	10+	C2
T21	Holly	12	15, 17	1.5	2	2	2	2	Mature	Fair to good health and condition.	10+	C2
T22	Dawn redwood	12.5	16, 23, 17	2	2	2	2	2	Mature	Fair to good health and condition.	10+	C2
T23	Dawn redwood	12.5	17, 21	2	2	2	2	2	Mature	Fair to good health and condition.	10+	C2

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Appendix 2 - Terms and definitions

Arboricultural Method Statement
Guidelines for specified working operations near trees to avoid any harmful impact as defined within BS5837: 2012.

Ground Protection
In this context the term refers to a method for preventing the ground from being disturbed, usually within the Root Protection Area of retained trees.

Root Protection Area (RPA)
A minimum recommended area for tree protection in BS 5837: 2012 Trees in Relation to Construction. In these areas works should be avoided where possible. Where works in these areas cannot be avoided, it should be carried out in accordance with a Tree Protection Plan and/ or an Arboricultural Method Statement.

Tree Protection Plan
As defined within BS 5837: 2012. This shows the layout of protective measures for retained trees, typically including tree protective fencing and / or ground protection.

Tree Constraints Plan
As defined with BS5837: 2012. This plan shows the above and below ground constraints that may impact on a proposal, such as branch spread and Root Protection Area.

DBH
Diameter at Breast Height is the measurement of the stem diameter, in cm at 1.5m above ground level. This is the industry standard at which to measure stem diameter.

Crown Height
Height of first significant branch above ground level.

Branch Spread
The branch spread is given to 4 cardinal points, rounded up to the nearest half metre.

Age Class
An estimation of the trees age is taken and put into one of the following classifications.

- Young
- Semi mature
- Mature
- Over mature
- Veteran

ERC
Means "Estimated Remaining Contribution" recorded in a range of years. It is the amount of time that the tree can be realistically retained for.

Cat
Means "category grading" a full explanation of the categories is given in the exert of BS 5837: 2012 and can be found at Fig 2.

Qualifications & Experience of Phill Hibbs

1. Qualifications

1996 - BTEC Higher National Diploma Arboriculture – (Credit).

2006 - MSc Resource Management (Arboriculture & Forest Management) – (Merit).

2. Experience

I have been working and studying within the field of Arboriculture and woodland management since 1996.

Over the past 24 years I have held several positions within Local Authorities, National Park Authorities, The Forestry Commission and the third sector.

I have particular expertise in the following areas: -

- Offering advice and guidance on woodland management, ancient woodland restoration and native woodland creation.
- Writing specifications to implement the above advice and overseeing the works on the ground.
- Applying for and securing appropriate grant aid and accessing other funding streams.
- Obtaining felling licences, permissions to carry out works within Sites of Special Scientific Interest (SSSI), Special Area of Conservation (SAC) etc.
- Writing UK Forest Standard (UKFS) compliant Woodland Management Plans.
- Offering advice on tree safety, fungal pathogens and other plant health related issues.
- Advising and applications for works to protected trees.
- Advising on the protection and retention of trees on development sites.

3. Continuing Professional Development

I regularly attend courses, conferences, seminars and workshops run by land management, forestry and arboricultural organisations, colleges and universities.

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