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Arboricultural Impact Assessment

**6 Blind Lane,
Hurworth**

March 2021

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Appendix Detail

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1.0 **Introduction**

1.1 **Survey Scope**

1.1.1 The survey has been conducted to consider the impact on the trees of the proposed extension to the existing garage building.

1.1.2 Trees have been surveyed in accordance with BS5837:2012 Trees in Relation to design, demolition and construction – Recommendations.

1.1.3 The tree positions have been plotted using measurements taken on site therefore are considered approximate. Any other trees and shrubs have been included as groups within the survey. All measurements should be checked on site.

1.2 **Site Details**

1.2.1 A site visit was undertaken in March 2021

1.2.2 The survey area consists of the garden around the existing garage at 6 Blind Lane, Hurworth. The garden is well maintained with mature trees and shrubs throughout.

1.2.3 Access to the site is via the property entrance on to the driveway off Blind Lane.



Figure 1. Site for Proposed Garage Extension

1.3 **Existing Protection of Trees**

1.3.1 Trees can be protected by being located within a Conservation area or by virtue of a Tree Preservation Order. The Local Authority can advise as to whether either of these applies.

1.3.2 For a works to trees in a Conservation Area notice of 6 weeks of intent to carry out works needs to be made to the Local Authority. For trees protected by virtue of a Tree Preservation Order it is necessary to make an application to the Local Authority before any works can be undertaken.

1.3.3 It is an offence to undertake works on trees under protection without making the relevant applications.

2.0 **Summary of Tree Information**

2.1 **Individuals, Groups and Hedges**

2.1.1 There were 9 individual trees surveyed. All of the trees have been given a B category rating (8 B1 and 1 B2). In addition to the individual trees 2 groups were surveyed.

2.2 **Root Protection Areas**

2.2.1 The root protection area is indicated for each tree, group and hedge on each of the plans. The red circles around the trunks indicated the root protection areas as calculated in accordance with the British Standard (BS5837:2012). They are indicative only and do not take into account site specific condition such as topography and underground land forms, built structures and underground services.

2.2.2 On this site there is landscaping and level changes along with the existing garage building that may have affected the root protection areas both in their size and where they have spread to. For this proposed development it applies in particular to trees 3, 4 and 7. The only way to accurately ascertain where roots are would be to undertake ground investigations. Tree 3 is behind the existing garage building and tree 7 sits at a lower level to the proposed extension; all three trees are within a landscaped area with pathways and small walls.

2.2.2 There should be no level changes made or excavation within the root protection area of the retained trees.

2.3 **Trees to be Removed**

2.3.1 There are no individual trees to be removed to facilitate the development however a section of Group 2 (mostly laurel) will need to be removed as indicated on the Tree Protection Plan.

2.4 **Additional Tree Works Required**

2.4.1 There are no additional tree works to be undertaken to facilitate the development.

2.4.2 Any tree works carried out are to be in line with BS 3998 (2010) – Recommendations for Tree Work and the appropriate applications in place where required.

3.0 **Tree Protection Measures During Development**

3.1 **Protective Barriers**

3.1.1 Protective barriers will need to be erected in the position as indicated on the Tree Protection Plan by the thick cyan line in order to ensure minimal impact on retained trees adjacent to the working area. Trees 3, 4, 5, 6, 7, 8 & 9 and retained sections of Group 2 will be protected by the position of the barriers.

3.1.2 There is to be no works or storage of materials (temporary or permanent) behind the barrier position within the root protection areas of any of the trees. The barriers will need to be in place before any excavation/development work takes place on site. All excavation/building must be outside of the root protection area.

3.1.3 BS 5837:2012 suggests that the default specification for protective barriers is as follows: Vertical and horizontal scaffold frame work that can be well braced (poles driven into the ground) to resist impact and have welded mesh panels securely fitted to. However where underground constraint inhibit the use of driven poles other options could be considered, such as a free-standing scaffold support framework with pins to secure their position. It is essential that the barriers cannot be 'pushed/nudged' by machinery or persons during works decreasing the protection area.

3.1.4 On this site the above level of protection could be considered not necessary and an alternative may be suggested and agreed by the local planning authority. Suggestions are welded mesh panels supported on rubber or concrete feet that are joined with anti-tamper couplers.

3.1.5 Fencing should also have signs attached to it to make clear that the area beyond it should not be entered, "Construction Exclusion Zone – No Access". In addition to this all persons entering site should be given an induction briefing on safe working with regards to the trees.

3.1.6 There should be no storage of materials within the exclusion zones or within the root protection areas of any other trees.

3.2 **Ground Protection Measures**

3.2.1 It will be necessary to create a working space within the root protection area of some of the trees therefore ground protection methods will be required in the area indicated by the blue hatching on the Tree Protection Plan. Trees that require ground protection measures to create a working space in their root protection area are; 3, 4, 5, 6 and 7.

3.2.2 The level of ground protection required will depend upon the weight of the load that will be travelling over it. BS 5837: 2012 provides the following recommendations:

- Where the movement will be pedestrian only there are two options. One it to use a single thickness of scaffold boards supported on a scaffold frame therefore creating a raised walkway. The second option is to place a single thickness of scaffold boards on a compression resistant layer (e.g. 100mm woodchips), laid on a geotextile membrane.
- Where movement will be a pedestrian operated plant up to a gross weight of 2 tonnes proprietary inter-linked ground protection boards could be placed on top of a compression resistant layer (e.g. 150mm woodchips), laid on a geotextile membrane.

- Where a wheeled or tracked machine/construction traffic greater than a gross weight of 2 tonnes an alternative system of an engineered specification will be required to accommodate the likely load.

4.0 **Construction Methods**

4.1 **General Information – Root Protection areas**

4.1.1 As mentioned in the section on Root Protection Areas (2.2) The red circles on the plans around the trunks indicated the root protection areas as calculated in accordance with the British Standard (BS5837:2012). They do not take into account site specific conditions. On this site there is landscaping and level changes along with the existing garage building that may have affected the root protection areas both in their size and where they have spread to.

4.1.2 The following sections have been written on the assumption that the roots do extend into the proposed extension of the garage. The methodology prescribed is based on 'no-dig' solutions that work with existing site levels meaning only the top covering ground layer can be removed with no digging down.

4.2 **Alternative Building Construction**

4.2.1 The root protection areas of trees 3, 4 and 7 extend into the footprint of the proposed garage extension. Therefore it will be necessary to construct the building in a more tree friendly way so that no unnecessary damage is caused to the trees. There must be no excavation works within the root protection areas of trees.

4.2.2 It will not be possible for traditional strip footing foundations to be used as they would be likely to sever roots; an alternative is for the building to be constructed on pile or raft foundations. With the pile foundations the piles can be positioned at a distance from the trunk meaning that the larger tension roots will have declined in diameter significantly so no large structural roots should be encountered.

4.3 **Fences and Walls**

4.3.1 Where any walls and fences are to be constructed as part of the new landscaping of the area around the garage and cross the root protection areas of trees it will be necessary for this to be done in a tree friendly way.

4.3.2 Walls will not be able to have traditional strip foundation and will require a pile and beam system instead and fences will need to be constructed so that all fence post are positioned to avoid major roots and post holes dug with care by hand.

4.3.3 Any existing landscape features that need to be removed within the root protection areas of trees must be done with care using hand tools.

4.4 **Tree Friendly Construction of Surfacing/Pathways in Root Protection Areas**

4.4.1 Any surfacing or pathways around the garage extension that are within the root protection areas of the trees will need to be constructed in a no dig tree friendly way. Therefore surface installation will need to be conducted in accordance with the guidance provided in BS5837:2012 Trees in relation to design, demolition and construction – Recommendations and as per the guidance provided by the supplier of the engineered solution.

4.4.2 Factors taken into consideration are as follows;

- The tolerance of the tree species.

- The design should not require excavation other than the removal of a turf layer or other surface vegetation using hand tools.
- Surfacing that is to be used by construction traffic should be suitable for purpose.
- Localised compaction should be avoided.
- The new permanent hard surface should not exceed 20% of the existing unsurfaced ground within the root protection area.
- Where there is the risk of water logging appropriate drainage must be included.
- Oxygen and water must be able to diffuse into the soil beneath the engineered surface.
- An appropriate sub-base must be used for a finished hard surface and can include three-dimensional cellular confinement systems or piles, pads and elevated beams to support bridging over roots (the use of two-dimensional load suspension systems is not recommended when the surface will be used by vehicles).
- The surface should be able to withstand deformation by tree roots and set away from the stem/buttress by a minimum of 500mm.

4.5 Installation of Services

4.5.1 Where new services are required and pipe work is to be laid underground it will be necessary where possible to install them outside of the root protection areas of the trees. If it is not possible to avoid the root protection areas (indicated by the red circles on the tree protection plan) a trenchless method of installation must be used.

4.5.2 Trenchless methods such as thrust boring are the preferred alternatives to digging a trench. ***Advice from the contractor to carry out the work should be taken and the method chosen approved within the planning application.***

4.5.3 When working in the root protection areas of trees it will be necessary to use ground protection to create a working area. The methodology for this is in section 3.2 of this report.

5.0 **Future Site Management**

5.1 **On Completion of Development**

5.1.1 Following completion of the development and all materials including tree protection have been removed from the site a 'walk over' survey of the site should be undertaken. This survey will be to ascertain whether there has been damage to any trees and so remedial works can be undertaken where necessary although it is unlikely provided that the tree protection measures are adhered to.

5.2 **Additional Planting**

5.2.1 If planting is to be included in the landscaping of the site the following should be considered.

5.2.2 Careful consideration should be given to species selection and all new planting positions to ensure the trees can grow fully into maturity without requiring major or regular pruning works. The species choice will depend on what is to be achieved by the planting. Using heavy standards would provide immediate impact although the use of smaller standards is perfectly acceptable and less costly.

5.2.3 Usually the planting season for trees runs from mid-November to mid-March, when deciduous trees remain dormant. Any planting beyond March can be carried out although a comprehensive and regular irrigation programme will be required.

5.2.4 Staking and guards will be required initially when the tree is planted to provide support and protection. Larger guards can be fitted as the tree matures should it be required.

5.2.5 Watering will be essential following the planting of the tree in particular during the summer months (May to September). If conditions are wet additional watering may not be necessary.

5.2.6 Some pruning may also be required. At the time of planting any damaged branches must be cut back to a main junction or stem. At the end of the first season of growth, any branches showing signs of dieback must be cut back to live wood. Pruning must take place during the dormant period (mid November to mid March). Pruning works should be carried out to BS 3998 (2010), and if necessary a suitably qualified arborist consulted.

5.2.7 The above is not a full description of planting and care but gives an outline of timings and requirements.

6.0 **Conclusion**

6.1 Provided that protective measures as described in this report are adhered to and any tree works undertaken are done in accordance with BS3998 (2010) – Recommendations for Tree Work, the tree cover on this site should remain in order.

Appendix 1

Tree & Group Details

Tree	Species	Height (m)	Crown Spread (m)				Trunk Diameter (mm)	Root Protection Area Radius (m)	No. of Stems	Crown Clearance (m)	Height & Direction of First Significant Branch (m)	Age	Physiological Condition	Structural Condition	Life Expectancy (Years)	BS5837 Category	Comments	Recommendations
			N	E	S	W												
Individual Trees																		
1	Beech	17.5	4.0	5.0	5.0	5.5	600	7.2	1	4.0	7.0 NE	Mature	Fair	Fair	20+	B1	Fencing built around trunk. Previous pruning wounds occluding.	The tree will not be affected by the proposed garage extension.
2	Sycamore	18.0	3.0	4.5	4.5	4.5	510	6.1	1	8.0	8.0 W	Mature	Fair	Fair	20+	B1	Deadwood retained in crown. Previous pruning wounds occluding.	The tree will not be affected by the proposed garage extension.
3	Lime	17.0	3.5	4.5	4.5	5.5	660	7.9	1	2.5	7.0 W	Mature	Fair	Fair	20+	B1	Low branches over existing garage roof. Young epicormic/sucker growth at base. Wound from lost limb with decay present at 3.5m on north western flank.	The root protection area (RPA) of the tree extends into the proposed development area. Alternative foundation design is required where the RPA extends into the proposed building, indicated by the magenta hatching on the Tree Protection Plan. Ground protection measures are required to create a working space in the area indicated by the blue hatching on the tree protection plan. Protective barriers positioned as per the cyan line will also provide protection for the tree. When surfacing or footways are laid within the RPA of the tree it will be necessary to use a tree friendly no dig method as described in the

Tree	Species	Height (m)	Crown Spread (m)				Trunk Diameter (mm)	Root Protection Area Radius (m)	No. of Stems	Crown Clearance (m)	Height & Direction of First Significant Branch (m)	Age	Physiological Condition	Structural Condition	Life Expectancy (Years)	BS5837 Category	Comments	Recommendations
			N	E	S	W												
																		main body of this report.
4	Sycamore	17.0	3.5	4.0	5.5	5.0	700	8.4	1	5.0	4.5 SE	Mature	Fair	Fair	20+	B1	<p>Previous pruning wounds are occluding.</p> <p>1x dominant and 1x subdominant stem from 5.0m. Close union.</p>	<p>The root protection area (RPA) of the tree extends into the proposed development area.</p> <p>Alternative foundation design is required where the RPA extends into the proposed building, indicated by the magenta hatching on the Tree Protection Plan.</p> <p>Ground protection measures are required to create a working space in the area indicated by the blue hatching on the tree protection plan. Protective barriers positioned as per the cyan line will also provide protection for the tree.</p> <p>When surfacing or footways are laid within the RPA of the tree it will be necessary to use a tree friendly no dig method as described in the main body of this report.</p>
5	Yew	9.0	3.5	3.5	1.5	2.0	330	4.0	1	0	1.0 S	Mature	Fair	Fair	20+	B2	<p>Dense lower branches inhibit inspection.</p> <p>Asymmetric crown shape.</p>	<p>Ground protection measures are required to create a working space in the area indicated by the blue hatching on the tree protection</p>

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			N	E	S	W												
																		plan. Protective barriers positioned as per the cyan line will also provide protection for the tree.
6	Yew	9.0	4.5	4.0	3.0	2.5	320	3.8	1	0	0.1 NE	Mature	Fair	Fair	20+	B1	Located on short steep slope. Dense lower branches. Asymmetric crown shape.	Ground protection measures are required to create a working space in the area indicated by the blue hatching on the tree protection plan. Protective barriers positioned as per the cyan line will also provide protection for the tree.
7	Sycamore	16.0	4.5	8.0	7.0	3.5	780	9.4	1	8.0	9.0 E	Mature	Fair	Fair	20+	B1	Ivy clad to trunk inhibits inspection. Located at lower level to development area. Asymmetric crown shape.	The tree is located at a lower level than the proposed development area therefore the roots may not extend as far as indicated into the development area. However without ground investigations it is not possible to ascertain where the roots spread to therefore the assumption is that the root protection area (RPA) of the tree extends into the proposed development area. Alternative foundation design is required where the RPA extends into the proposed

Tree	Species	Height (m)	Crown Spread (m)				Trunk Diameter (mm)	Root Protection Area Radius (m)	No. of Stems	Crown Clearance (m)	Height & Direction of First Significant Branch (m)	Age	Physiological Condition	Structural Condition	Life Expectancy (Years)	BS5837 Category	Comments	Recommendations
			N	E	S	W												
																		building, indicated by the magenta hatching on the Tree Protection Plan. Ground protection measures are required to create a working space in the area indicated by the blue hatching on the tree protection plan. Protective barriers positioned as per the cyan line will also provide protection for the tree. When surfacing or footways are laid within the RPA of the tree it will be necessary to use a tree friendly no dig method as described in the main body of this report.
8	Sycamore	14.0	2.5	3.0	2.5	3.0	250	3.0	1	3.0	3.5 NW	Semi Mature	Fair	Fair	20+	B1	Located on short steep slope.	The tree will be adequately protected by the position of the barrier as indicated on the Tree Protection Plan.
9	Ash	18.0	7.0	6.0	9.0	9.5	670	8.0	1	4.0	6.0 S	Mature	Fair	Fair	20+	B1	Occluded wounds. Deadwood retained in crown.	The tree will be adequately protected by the position of the barrier as indicated on the Tree Protection Plan.
Groups																		
1	Yew, shrubs	6.0	-	-	-	-	<400	<4.8	1	0	-	Mature	Fair	Fair	20+	B1	Provides screening from Blind Lane and neighbouring properties. Some individuals are	The group will not be affected by the proposed garage extension.

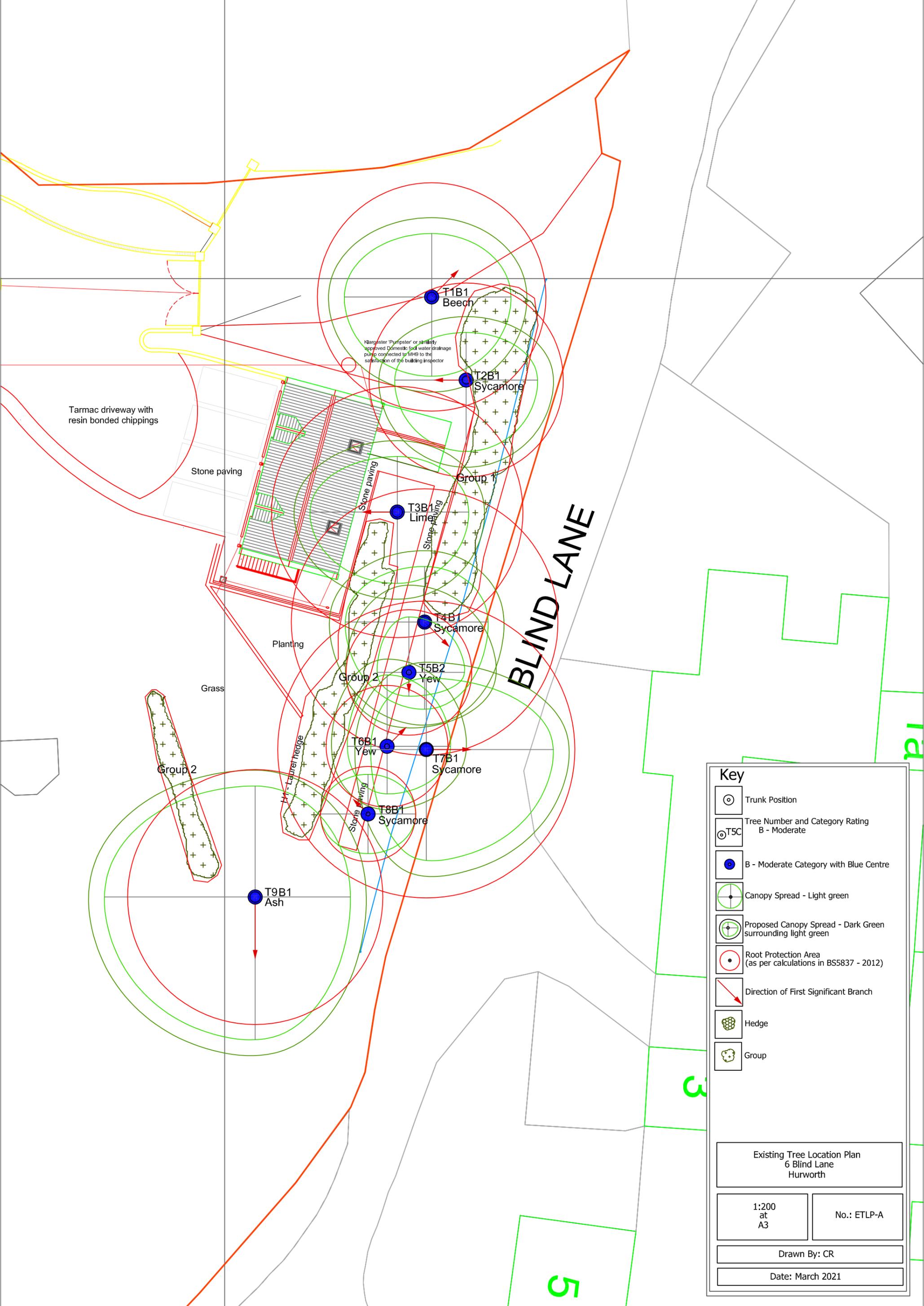
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			N	E	S	W												
																	multiple stemmed.	
2	Cherry Laurel, Cherry, Mahonia	4.0	-	-	-	-	<120	<1.4	1	0	-	Young to Mature	Fair	Fair	20+	B1	Provides further screening and is part of the garden landscaping.	A section of the group will need to be removed to facilitate the proposed garage extension. The remaining group sections will be adequately protected by the position of the barrier as indicated on the Tree Protection Plan.

Appendix 2

Plans

Existing Tree Location Plan

Tree Protection Plan



Klargester Pumpster or similar approved Domestic food water drainage pump connected to MH9 to the satisfaction of the building inspector

Tarmac driveway with resin bonded chippings

Stone paving

Stone paving

Stone paving

Stone paving

Planting

Grass

Laurel hedge

BLIND LANE

Key

-  Trunk Position
-  Tree Number and Category Rating
B - Moderate
-  B - Moderate Category with Blue Centre
-  Canopy Spread - Light green
-  Proposed Canopy Spread - Dark Green surrounding light green
-  Root Protection Area (as per calculations in BS5837 - 2012)
-  Direction of First Significant Branch
-  Hedge
-  Group

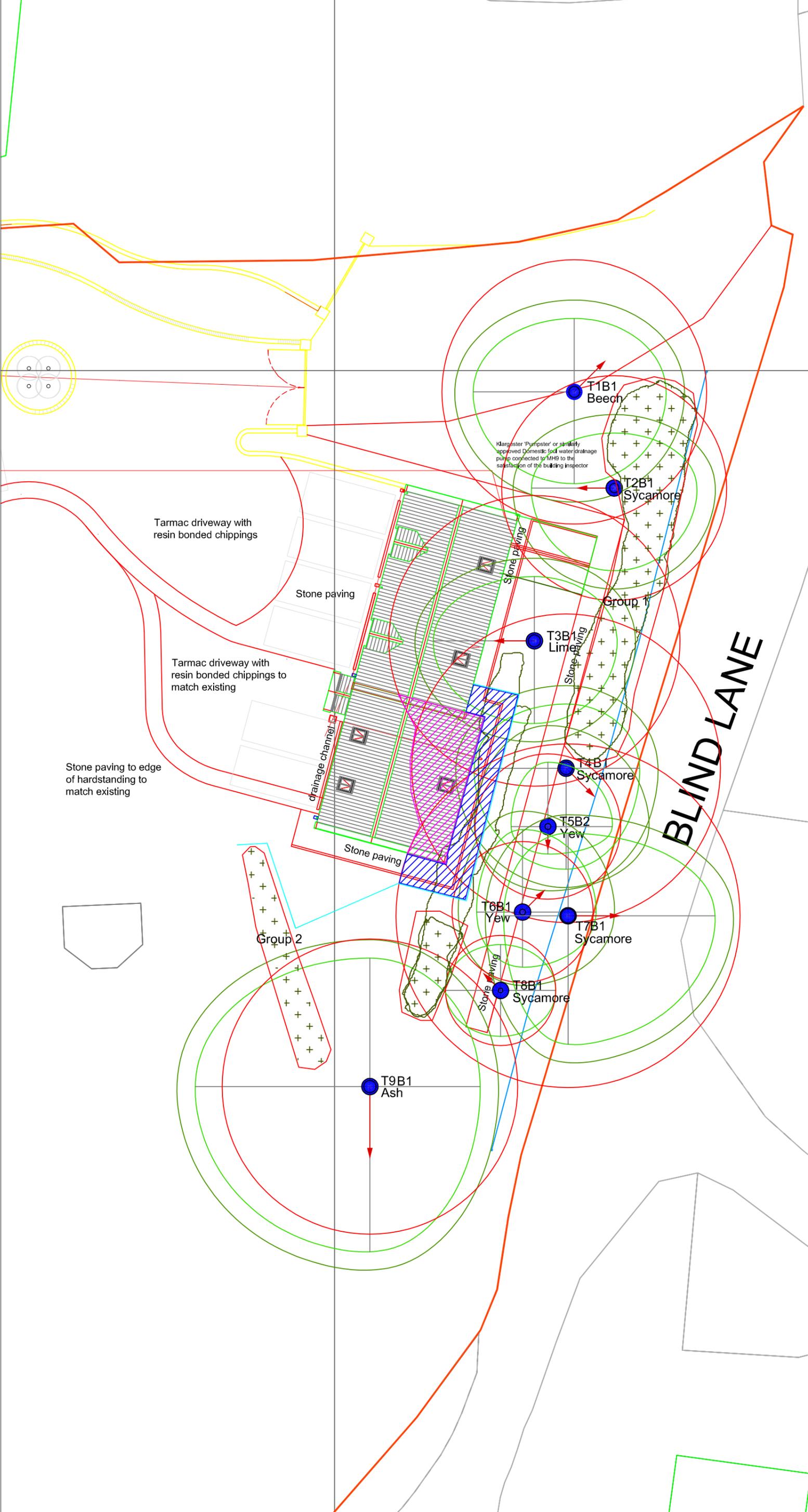
Existing Tree Location Plan
6 Blind Lane
Hurworth

1:200 at A3	No.: ETLP-A
Drawn By: CR	
Date: March 2021	

5

3

PI



Key

- Trunk Position
- Tree Number and Category Rating
B - Moderate
- B - Moderate Category with Blue Centre
- Canopy Spread - Light green
- Proposed Canopy Spread - Dark Green surrounding light green
- Root Protection Area (as per calculations in BS5837 - 2012)
- Direction of First Significant Branch
- Hedge Group
- Protective Barrier
- No Dig Construction Required (Magenta Hatching)
- Ground Protection Required (Blue Hatching)

Tree Protection Plan 6 Blind Lane Hurworth	
1:200 at A3	No.: TPP-A
Drawn By: CR	
Date: March 2021	