

Treestyle CONSULTANCY

BS 5837:2012 Development Survey

Date of the Inspection

9th March 2022

Site

38 Whitelaw Road
Chorlton-cum-Hardy
Manchester
M21 9RH

Description

The construction of a single story side extension and a double garage

Instructed By

Butterfield Architecture

Author

Andrew McLoughlin
Treestyle Consultancy Ltd
info@treestyleconsultancy.co.uk

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Executive Summary

Treestyle Consultancy was commissioned to complete a survey to specifications set out in British Standard 5837:2012 *Trees in relation to design, demolition & construction - Recommendations*. This document is an Arboricultural Impact Assessment (AIA) which explains the Arboricultural Method Statement (AMS) and Tree Protection Plan (TPP) with regards to the development of a side extension.

The Tree Survey recorded five individual and a group of trees and two hedges within influencing distance of the proposed development. Only one small birch has been identified within the grounds. All other vegetation are located beyond the boundaries to the north where church trees and hedges are growing. Residential apartments to the west also contain trees. One sycamore was recorded as **category A high quality with 40 years life potential**. Two hedgerows, a leyland cypress and a sycamore have been categorised as **B medium quality with 20 years life potential**, these have the greatest retention value. Two small trees have been categorised as **U not realistically retainable** due to one being dead and the other having above and below ground constraints.

Threats to the tree population have been discussed and plans designed in relation to the green infrastructure. A schedule/process of work with regards to the Root Protection Areas (RPA's) of the trees and hedges require a non invasive solution. This will allow tree roots to continue respiration and gaseous exchange. The logistics of the site have the potential to create soil compaction, contamination and root severance due to the proximity of tree roots. However, due to the topography of the land, with the church and residential area being on a higher profile, there should be minimal roots within the proposed area. Therefore, the testing of the soil profile should be carried out prior to construction commencing. Care with the storage and use of building materials over the RPA of the trees is critical.

The Proposed Demolition and Development

- The development of a single storey side extension.
- The development of a single storey garage.
- Creation of an area for recreation.

The Arboricultural Impact Assessment (AIA)

- The removal of T7, T8 and T9 on the grounds of health and safety, this will also help to reduce the above and below ground constraints.
- The storage and use of building materials near to the permeable RPA's of several mature trees and hedges which have the potential to leach into their soil profile.
- The excavation and development of the proposal have the potential to encroach onto the RPA of mature trees and hedges.
- The potential for soil compaction.

Tree Category	Trees to be retained	Trees to be removed
A	T1	-
B	T2, T3, G4, H5, H6	-
C	-	-
U	-	T7, T8

Tree Protection Plan (TPP)

- The demolition of the existing structures must be brought back away from the boundary trees and hedges.
- A Specialised Temporary Surface (STS) to be laid within the inner permeable surfaces covering and protecting the RPA's of the trees and hedges. The STS should remain (where possible) for the duration creating a work zone and allowing for access to aid the development. Heras fencing can rest upon it creating a Construction Exclusion Zone (CEZ).
- Excavation of hard surfaces within the RPA of retained trees must be carried out with hand tools or light machinery to ascertain if there are any roots that will be influenced by the foundations.
- On finding tree or hedge roots then piling can be used for the garages foundations within RPA's.
- The RPA's of the retained trees are a CEZ unless protected by the aforementioned.
- Specialised containers and/or sandbags can prevent building materials from contaminating the soil profile.

The Arboricultural Method Statement (AMS)

- Will require approval by the Local Planning Authority (LPA).
- Installation of all tree protection measures.
- Pre commencement meeting to confirm all recommended protection is adequate.
- Construction to commence.
- Removal of the tree protection.

It is important that the caveats and limitations of this report are understood, these can be read in Section 11.0 of this document. Photographs of the trees in question are available to prevent unnecessary travel.

1.0 Introductions

- 1.1 Under instruction from Butterfield Architecture an arboricultural report has been prepared to accompany a planning application for the extension of the existing building and the development of a double single story garage. This report details the arboricultural impact on the site, subsequent mitigation recommendations and protective measures. The latter part of the report explains how the construction of the proposed developments will take place with regards to the protection of the trees to be retained.
- 1.2 The assessment was carried out on the 9th March 2022 by Andrew McLoughlin of Treestyle Consultancy Ltd. This assessment was carried out from the ground in accordance with BS 5837:2012 *Trees in relation to design, demolition and construction – Recommendations*. The categorisation method identifies the quality and value of the existing green infrastructure.
- 1.3 Geo-referenced drawings of the site and the proposed development were supplied by Treestyle Consultancy Ltd who then applied the tree data. An appropriate TPP and AIA have been drafted and revised which now dictates the AMS.
- 1.4 It should be noted that neither soil samples or soil maps have been used to make decisions on this report. If there are any discrepancies with trees locations or queries relating to their location or species within the group, then Treestyle Consultancy should be contacted prior to planning submission.
- 1.5 Five individual trees, a group and a hedge are within influencing distance of the proposal directly or indirectly with regards to the area for development, these are discussed in this report. These can be viewed in [Appendix A – Tree Schedule](#) and [Drawings 1: Tree Constraints Plan. Drawing 2 - Tree Protection Plan](#).
- 1.6 This report provides the results of the survey and includes the following;
 - A schedule of all trees located on or within influencing distance of the proposed development site ([Appendix A – Tree Schedule](#)).
 - An assessment based on BS 5837:2012 of trees in terms of their potential value within any future development. On the basis of this assessment trees have been categorised into one of four categories: High, medium, low or not worthy of retention (A, B, C or U). See Appendix D - BS 5837:2012 Cascade Chart for Tree Quality Assessment.
 - Advice on removal, retention and management of these trees can be read in Sections 5 & 7 of this report.
 - A Tree Constraints Plan detailing tree quality categories, canopy spread (N, E, S & W), Root Protection Areas (RPA's), life span, Diameter at Breast Height (DBH), RPA m2, tree height and condition for all of the trees surveyed.
 - A Tree Removal and Protection Plan detailing the development proposals alongside trees to be retained and removed and any temporary protection measures.

2.0 Site and Surroundings

The Site

- 2.1 This is a semi-detached property with an existing side garden and driveway.

Surrounding land

- 2.2 To the west are existing residential apartments where trees and tree groups provide good essential screening and privacy. To the north is the church which is predominately a car park where hedge creates essential screening as well as a mature sycamore tree.

Topography

- 2.3 The topography of the proposed land is relevant with the area for the proposal being on a slightly lower profile than that of the neighbouring land.

3.0 Statutory Protection and Guidance

National Planning Policy Framework (NPPF)

- 3.1 The NPPF assumes protection of all ancient woodland and veteran trees unless it can be clearly demonstrated that the need for, or benefits of, development outweigh the loss. In this respect ancient woodland is defined as an area which has been wooded continuously since at least 1600 AD and a veteran as a tree of exceptional value for wildlife, in the landscape, or culturally because of its great age, size or condition.

Tree Preservation Orders & Conservation Area Designations

- 3.2 Local authorities reserve the right to create Tree Preservation Orders (TPO) to protect the amenity value conferred to a location by a tree or group of trees. Where a TPO is in place the lopping, topping, felling, uprooting or wilful damage is prohibited. Failure to comply may lead to prosecution or large fines. Work on a TPO'd tree requires permission from the local authority.
- 3.3 Section 211 of The Town and Country Planning Act 1990 (TCPA) relates to the preservation of trees in Conservation Areas. Under Section 211 anyone proposing to remove, uproot or destroy any tree within a Conservation Area is required to give the local planning authority six weeks' prior notice (a "section 211 notice"). During this period the Council may consider serving a Tree Preservation Order to prevent the proposed work from being undertaken.

Bats as a Protected Species

- 3.4 It is not uncommon for a mature tree with cavities or hollows to be a habitat for roosting bats. Bats are protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended), as well as under Schedule 2 of the Conservation of Species and Habitats Regulations 2010 and it is therefore an offence to cause damage to a bat roost.

Birds as a Protected Species

- 3.5 Nesting birds frequently use trees for nesting. They are protected under the Wildlife and Countryside act 1981 (as amended). This makes it an offence to intentionally or recklessly damage or destroy an active birds nest.

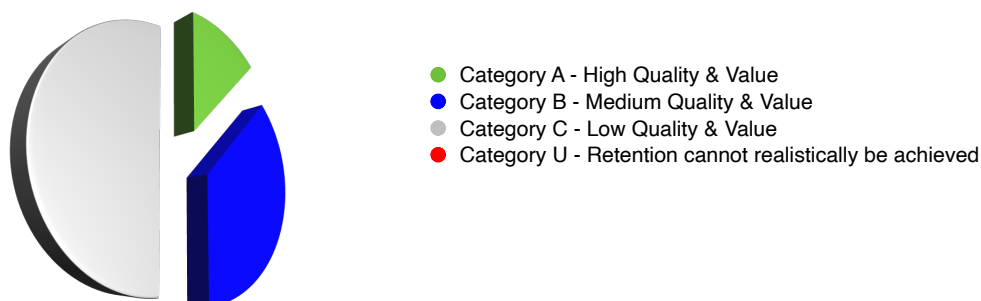
- 3.6 It is recommended that all tree work is carried out outside the bird nesting season which is March to August. If this is not possible then a detailed inspection of each tree should be undertaken by a suitably qualified ecologist prior to any tree work. Should an active nest be found then any work likely to affect the nest must be halted until the nest becomes inactive.

National House Building Council

- 3.7 This report has been written in accordance with BS 5837:2012. Further guidance can be sort at the NHBC website <https://nhbc-standards.co.uk/4-foundations/4-2-building-near-trees/>
- 3.8 The soils on site were not recorded or assessed for the purpose of this survey. There could be however a possibility of movement due to trees being present on site.
- 3.9 Geo-referenced mapping was provided and Treestyle Consultancy Ltd have applied the relevant data to this and utilised the information provided. However, trees outside of the boundary which will be affected by the proposed development were not included on the topographical map and therefore, their locations have been approximately plotted.

4.0 Tree Population

- 4.1 Five individual trees, a group and two hedges were recorded. A high percentage of the green infrastructure falls into category **B medium quality with 20 years life potential**. One church tree warrants **category A high quality having 40 years life potential**. The remaining trees are mostly sycamore and are category **C low quality with 10 years life potential**. One category **U retention which cannot be realistically achieved**. A cascade chart explaining the process used to reach these categorisations can be found in **Appendix D – Tree Categorisation Chart**.
- 4.2 A summary of the trees in each of the four categories is given below in **Table 1**.



Tree Category	Trees Numbers
A	T1
B	T2, T3, G4, H5, H6
C	-
U	T7, T8

5.0 Arboricultural Impact Assessment (AIA)

- 5.1 The logistics of the development pose a threat to the neighbouring green infrastructure, specifically with a hedge located along the northern boundary. The development can be divided into two compartments in terms of its potential impact.

The north eastern corner has the potential to have below ground constraint as the proposal is to install foundations along this boundary area. The neighbouring hedge would normally have roots within the proposed area for development, however, due to the rooting morphology of Leyland Cypress and the topography of the proposed area being considerably lower than that of the church, it is expected that there are no roots within.

The development of the north western corner has much lower potential direct impact as this proposal is for an area of recreation. The RPA of a high category tree still will require protection from soil contamination and compaction.

- The demolition and development has the potential to cause soil compaction and contamination.
- The proposed area for recreation incurs onto the RPA of T1 sycamore.
- Test holes prior to construction are to be carried out along the northern inner boundary confirming that there are no roots and there is no incursion with the garage.
- The identification of tree roots from H5 will then dictate the requirement for piling foundations to be installed.
- The removal of the existing hardstanding surfaces should be carried out with hand tools only.

- 5.2 Table 2 shows the effects of the proposal on the trees of the BS 5837 quality categorisation.

Tree Category	Trees to be retained	Trees to be removed
A	T1	-
B	T2, T3, G4, H5, H6	-
C	-	-
U	-	T7, T8

6.0 General Tree Protection Requirements

- 6.1 The following information sets out the primary consideration for determining the requirement for tree protective measures and with the assessment impact of the construction.

Soil Compaction

- 6.2 It is imperative the surface of the soil be protected from compaction from plant machinery and/or machinery. This can create a capping effect on the surface which can stop the tree root from oxygenating and preventing any precipitation.

Root Protection Areas

- 6.3 The BS5837:2012 RPA is calculated using the trees Diameter at Breast Height (DBH) at 1.5 m and represents the minimum area around each tree that must be left undisturbed to ensure its longevity.

Tree roots can be found twice the width of the crown and beyond depending on the tree species and its environment. Most tree roots are found in the top 600mm of soil and most fine roots that absorb water and nutrients are located at the top horizon of soil profile. These near surface tree roots allow the tree to breath and oxygenate. The tree roots can extend well beyond the recommended distances within BS5837:2012 and they may not follow the typical circular area centred from the trees stem. See the attached document [Appendix E - Guidance for Working in Root Protection Areas \(RPA's\)](#).

Ground Contamination

- 6.4 Storage areas for liquids such as fuels, oil or paint should not be located within 10m of any tree due to the risk of soil contamination caused by accidental spillage. Particular care must be taken when working on or close to sloping ground to avoid unintentional runoff into the RPA of trees to be retained.

Underground Utilities

- 6.5 Where the installation of services within the RPA of retained trees is unavoidable, appropriate methods will be required to ensure the safe long term longevity of the trees. This process will require additional consultation with Treestyle Consultancy.

Ground Level Changes

- 6.6 Any changes to the landscape and its levels can have major implication on the longevity and health of a tree. It is essential the trees are allowed to have a breathable surface allowing for the continuous gaseous exchange of the trees root system.

Drainage & Storm Water Run-off Issues

- 6.7 Drainage and storm water run-off requires due consideration to prevent excessive and/or polluted run-off into the rooting area of trees to be retained.

7.0 Tree Protection Plan

- 7.1 The greatest threat to the tree population is the logistics of the site with soil compaction, contamination and root severance. The Root Protection Areas (RPA's) of all the trees and hedges around the boundaries are Construction Exclusion Zones (CEZ). These also have the potential to have roots within the proposal, however, this is expected to be minimal and a soil testing should confirm this. If roots from H5 are identified then this will dictate the requirement for pilling along the inner boundary. Tree roots are to be expected from the neighbouring sycamore T1, this area is a CEZ. In order to be able to facilitate a work area then a Specialised Temporary Surface (STS) must be installed for the duration of the demolition and construction. Only once finished can the protection be removed and landscaped. All protection measures need to be in place prior to construction commencing. This includes the protection of all trees whose RPA's are CEZ and no dig areas. It should be noted that one neighbouring tree is dead and its removal is recommended.

- The RPA's of all the trees are to be measured up and marked out prior to the commencement of the construction, areas behind the proposed extension at the rear are CEZ's.
- A Specialised Temporary Surface (STS) should be installed over the permeable surface, specifically on T1's RPA's, this can also create a work area within the RPA's.
- Hand tools or light machinery are to be used to remove the existing surfaces to avoid damaging roots from T1 sycamore.
- The excavation of the inner boundary wall to ascertain the presence of roots from H5 is also to be carried out with hand tools. This must be documented and/or have arboricultural supervision.
- Where cement is to be installed within or near to the RPA of a retained trees then a none permeable membrane is required to prevent soil contamination. This is applicable to the protection of T1.
- Where there is potential for spillage onto a RPA then a STS is required.

7.2 Protection examples

- Specialised Temporary Surfaces <https://safefence.co.uk/safe-fence-safe-matting.html>

8.0 Tree Constraints

- 8.1 There are above and below ground constraints all around the proposed area to be developed. The area of most concern is the southern boundary where trees require the most sensitive of protection, it should be anticipated that this entire driveway house tree roots.
- T1 sycamore has a minimum RPA of 4.19m from the stem
 - T2 Leyland Cypress has a minimum RPA of 4.8m from the stem
 - T3 sycamore has a minimum RPA of 4.8m from the stem
 - G4 Laurel has a minimum RPA of 2.4m from the stem, however, the wall will restrict the roots
 - H5 Leyland Cypress requires protection 0.5m from the canopy, however, the wall will restrict these roots
- 8.2 The current site has very little room to house construction materials as the rear garden area is not permitted for use for storage. Storage presents a threat to the tree population through the leaching of building material such as cement. Normally a minimum of 10m distance from vegetation is required which isn't possible, therefore storage of this product must comply to the storage of hazardous waste. Permeable surfaces are not permitted to store building materials, therefore this needs to be managed off site.
- 8.3 No underground services can pass through the RPA of any of the trees that are to be retained.

9.0 Arboricultural Method Statement

- 9.1 The AMS has been written as guidance on how the construction has to be carried out with regards to the protection of the green infrastructure. It is imperative that this is carried out correctly.

An Overview of Sequence of Operations

- 9.2 In overview, it is necessary to undertake the following sequence of operations in relation to arboricultural input for development operations.

1. Method Statement approved by the Local Planning Authority (LPA).
2. Undertake tree works as recommended in [Appendix A - Tree Schedule](#).
3. Installation of the tree protection measures such as a specialised temporary surface.
4. Pre Commencement meeting confirming the fencing to specification.
5. Demolition and construction work commences.
6. Removal of tree protection.

Specific Sequence of Operations

- 9.3 The following timeline table informs the key principles for development operations proceeding in relation to arboricultural requirements conditioned as part of this method statement. The action and timescales within this table must be adhered to in order to discharge the arboricultural method statement planning condition for this site. The precise time and order of some of the development operations may need to be changed due to site specific operational requirements, yet any operations that may affect the trees on the site must be done so under arboricultural supervision by a suitably qualified and experience arboricultural consultant.

Sequence of Work

- 9.4 Order of works to be carried out to allow for the protection of retained trees.
1. Measuring and marking out of RPA's.
 2. A specialised temporary surface should be installed on RPA's around the proposed area for development.
 3. Hand tools or light machines only to excavate beneath the proposed extension where it has the potential to incur onto the RPA.

Sequence of Operations Overview		
Stages	Action	Arboricultural Input
1 Approval	This AMS is submitted to and approved in writing by the LPA	If necessary, liaise with contractor and LPA to discuss methodologies detailed
2 Tree Works	If required, the tree removals should be carried out as the first operation on site and in accordance with Appendix A - Tree Schedule	Review the tree work requirements with the tree contractor. If necessary liaise with the contractor on site during tree work
3 Tree Protection	Installing the tree protective measures will take place prior to construction and any test holes dug and construction materials being allowed on site	If necessary, liaise with contractor installing the specialised temporary surface, test holes dug and documented, protective fencing installed to the standard specified in Appendix E - Fencing
4 Site Meeting	Following installation of tree protective measures, the LPA shall be invited to inspect the fencing and discuss any other site operations that have implication for the trees	Meeting with the representative of the LPA and the site manager. Alternatively, contractor can confirm the fencing and tree works are as specified by taking photographs of the tree protection measures
5 Construction	Alter the structure of the garage and undertake the construction of the two new properties	If necessary liaise with the local authority and the site foreman to ensure any issues are adequately resolved
6 Site Finishing	Removal of the tree protection measures must only be undertaken when all site traffic and machinery has left the site	If acceptable to the LPA the contractor can take photos of the site to give to the LPA to gain approval for the removal of protective fencing
7 Tree Planting	It is recommended that tree planting is carried out and can be part of a planting scheme for the proposed development	Replanting can mitigate tree removals and further enhance the amenity value of the area and the proposed development

10.0 Recommendations

- 10.1 The retention of the street trees is of most importance due to their visual amenity value and their screening of the church and neighbouring residential apartments. Their aesthetics contribute to the landscape in what could otherwise be considered as a concrete sterile environment. Their protection is especially important due to their high quality additionally with the size of T1 sycamore, failure would undoubtedly cause significant damage. Therefore, all necessary measures must be adhered to with regards to the protection of these trees, even when outside of their RPA's.
- 10.2 The greatest threat to the green infrastructure being from building materials such as cement being washed through the soil profile from storm water. It is therefore recommended that all stages of the pre commencement and post construction be documented in the form of photography.
- 10.4 When tree work is required, all tree work must adhere to BS3998 2010 Tree Work - Recommendations. This must be carried out by qualified, experienced and insured Arborists.

11.0 Caveats and Limitations

- 11.1 This survey was carried out from ground level. No aerial inspection was undertaken and, as such, this report can only identify defects clearly visible from the ground. A VTA (Visual Tree Assessment) is a level two arboricultural tree survey. This normally involves a full 360 degree visual of the buttress, stem and crown of the tree. While every attempt has been made to provide a realistic and accurate assessment of the trees' condition at the time of inspection, it may have not been appropriate, or possible, to view all parts or all sides of every tree to fulfil the assessment criteria of a risk assessment.
- 11.2 No tree is entirely safe given the possibility that exceptionally strong winds could damage or uproot even a mechanically 'perfect' specimen. It is therefore usually accepted that hazards are only recognisable from distinct defects or from other failure-prone characteristics of the tree or the site.
- 11.3 Underground services were not confirmed around any of the trees surveyed. The potential influences of trees upon building or other structures resulting from the effects of trees upon shrinkable load-bearing soils or the effect of incremental root growth are specifically excluded from this report.
- 11.4 The report reflects the tree stock as found on the day surveyed. Change of ground levels, soil conditions, surrounding tree cover or land use, or any ground works within the root zone of any tree may invalidate the content of this report. No root zone excavation was undertaken.
- 11.5 Change of circumstance as a result of unusual weather conditions may invalidate the content of this report. It is recommended that trees should be reassessed after strong gale, 39 – 46 mph wind Beaufort scale 8.
- 11.6 The content of this report is valid for 12 months from the cover date. Any works recommended for beyond this time period are based on expectations rather than in response to currently identified defects. Trees should have their condition re-inspected by a qualified arboricultural consultant within three years of this report being written.