



Overlooking the driveway where the proposed gated entrance is located with the willow tree in the back ground

ARBORICULTURAL IMPACT ASSESSMENT

Date of the Inspection

6th January 2023

Site

4 Corncroft Road
Knowsley
L34 0HR

Description

Construction of gated entrance
Rear extension development

Instructed By

Concise Architectural Design Services

Author

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Contents

Executive Summary

1.0 - Introductions

Instruction

Scope

Site Description

2.0 - Tree Survey

Tree Survey

General Data Capture

Categorisation

Quality Assessment

3.0 - Tree Constraints

Above Ground Constraints

Root Protection Area

Soils

4.0 - Development Proposal

5.0 - Arboricultural Impact Assessment

6.0 - Arboricultural Tree Constraints

7.0 - Tree Protection Requirements

8.0 - Tree Protection Plan

Construction Exclusion Zones

Access Details

Parking

Storage

Construction

Protective Fencing

Hard Surfaces

Responsibilities

9.0 - Arboricultural Method Statement

Method for Construction of Tarmac Driveway within an RPA

Sequence of Operations

10.0 - Conclusion

11.0 - Recommendations

12.0 - Caveats and Limitations

13.0 - References

14.0 - About the author

Drawing 1 - Tree Constraints Plan

Drawing 2 - Tree Protection Plan

Appendix A - Tree Schedule

Appendix B - Glossary

Appendix C - BS 5837:2012 Cascade Chart for Tree Quality Assessment

Appendix D - Tree Fencing

Appendix E - Guidance for Working in Root Protection Areas (RPA's)

Appendix F - Legal

Appendix G - Arboricultural Tree Constraints

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).

The Tree Survey recorded three individual trees, two hedges and one group of trees all within influencing distance of the proposed area for developments.

- One tree was recorded as **category A high quality with 40 years life potential**.
- One tree, a hedge and a group of small trees were categorised as **B medium quality with 20 years life potential**.
- One individual and a group of trees were recorded as **low quality and value with up to 10 years life potential**.
- No trees were recorded as **category U, not realistically retainable**.

The Proposed Demolition and Development

- The proposal is for the creation of a gated entrance.
- The demolition of the existing extension.
- The proposal is for the extension of the rear of the existing property.

The Arboricultural Impact Assessment (AIA)

- The demolition of the existing extension will be extracted close to neighbouring trees.
- The gated entrance incurs on to the front hedge H5 which will need to be removed.
- Footings for the gate are next to G6.
- T1 weeping willows Root Protection Area (RPA) falls close to the proposed extension.
- Turning area falls next to T2's RPA which has already been partly breached.
- There is potential for building materials to be leached into the soil profile of the remaining trees.

Table 1 - Summary of BS5837 Categorisation Colours in relation to the tree to be retained and removed, the explanation of this categorisation can be read in Appendix C - BS 5837:2012 Cascade Chart for Tree Quality Assessment

Tree Category	Trees to be retained	Trees to be removed
A	T1	-
B	T2, G6	H5
C	T3, G4	-
U	-	-

Tree Protection Plan (TPP)

- Prior to any construction commencing tree work will be required as specified in Appendix A, the RPA of each tree should be measured and marked out, these areas will require a no dig methodology.
- The RPA's of the retained trees are a Construction Exclusion Zone (CEZ) unless protected by the aforementioned.
- Specialised Temporary Surface (STS) must be installed beneath the fencing thus protecting the RPAs from contamination or compacting and allowing for an increased work area.
- Protective fencing must be installed before the commencement of the construction.
- Footings of the Brick wall next to G6 must be dug with hand tools, investigated for tree roots then lined with a non-permeable membrane.

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 of the development.
- Removal of the tree protection.

Mitigation

The removal of the hedge will be mitigated with 2 to 1 tree replacement ratio and within the front garden area.

It is important that the caveats and limitations of this report are understood.

1.0 Introductions

Instruction

- 1.1 I have been instructed via email by Tom Horrigan with regards to a planning application in respect of the demolition and redevelopment of an extension and a gated entrance in accordance with BS 5837 Trees in Relation to design, demolition and construction - recommendations 2012.

Scope

- 1.2 The scope of this instruction has been to:
- Undertake a tree survey to determine the range, age and quality of trees within influencing distance of the proposal.
 - Provide advice and guidance to the project design team on all matters relating to trees with the exception of ecological matters or landscape design.
 - Prepare the required reports and plans to accompany a full planning application to the local planning department for the proposed developments.
- 1.3 The tree survey was to be conducted in accordance with the guidance provided in BS5837 (2012) *Trees in relation to design, demolition, and construction - Recommendations* ('BS5837').
- 1.4 All plans and reports following the tree survey were also to follow the recommended processes defined in BS5837 and any other industry advice that provides best practice guidance for managing the relationship between trees and construction processes.

Site description

- 1.5 A residential property midway along Corncroft Road where a long rear garden extends out towards a wooded area. Either side are residential properties and their associated gardens which house vegetation. Generally the vegetation presents good visual amenity value due to its location, it also creates screening and wildlife benefits.



2.0 Tree Survey

Tree Survey

- 2.1 These trees provide excellent visual amenity value and create screening and privacy with the neighbouring residents. The size of the T1 weeping willow (*Salix chrysocoma*) is within proximity to residential properties and is deemed as high risk as it is next to properties which are occupied potentially 24 hours a day.
- 2.2 The trees with the potential to impact on the development are detailed in table 2 below.
- T1 weeping willow (*Salix chrysocoma*) is in a neighbouring garden creating a limited visual assessment. This was noted to have a large cavity at 3m with partial occlusion which could result in an area of decay within the stem.
 - T1 is in a pollarding management regime and will require pruning again within the next few years.

Table 2 - Summary of BS5837 Categorisation colours in relation to the tree numbers

Tree Category	Trees to be retained
A	T1
B	T2, H5, G6
C	T3, G4
U	-

General Data Capture

- 2.3 For reference, all individual trees are geo referenced with a Trimble TDC600 and identified with the letter T and associated number on the Tree Schedule and on a plan showing the extent of tree constraints. The stem diameter of the trees on Site was recorded using a rounded down diameter tape, measured at 1.5m above ground level. Measurements were recorded in millimetres, rounded to the nearest 10mm.
- 2.3.1 The height of the subject trees was estimated to the nearest metre.
- 2.3.2 Maximum crown spread of the subject tree was measured from the edge of the trunk to the tips of the live lateral branches taken at four compass points (N-E-S-W) using a Leica Disto digital laser measure. Crown spread measurements were taken in metres.
- 2.2.3 The trees age was estimated from visual indicators (such as tree size and appearance of bark) which is provided as a provisional guide.
- 2.2.4 Hedges are identified with the letter H and number on the associated schedule and plans. Each hedgerow was surveyed recording the species, the maximum height and the average width of the hedge. Any individual trees present within the hedgerow were recorded as an individual tree.

- 2.2.5 If direct access to a tree was not possible, estimations from appropriate vantage points were taken. Any limitations or estimations are presented within the survey limitations section and noted in the associated schedules.

Categorisation

- 2.3 In compliance with Table 1 of BS5837 the trees surveyed have been categorised according to their arboricultural quality and value (non-fiscal) which is summarised below in Table 2.

Category	Colour	Description
A	Green	Trees of high quality with an estimated remaining life expectancy of at least 40 years
B	Blue	Trees of moderate quality with an estimated remaining life expectancy of at least 20 years
C	Grey	Trees of low quality with an estimated remaining life expectancy of at least 10 years
U	Red	Those trees 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

Table 2 - Summary of BS5837 Tree Categorisation

Quality Assessment

- 2.3.1 A summary of the assessment on the quality of the tree can be seen in table 2.

3.0 Tree Constraints

Above Ground Tree Constraints

- 3.4 The above ground constraints posed by canopy spread are plotted on the TCP as a polygon around the tree, with the extent of the canopy spread in the corresponding BS5837 retention category colour.

Root Protection Areas

- 3.5.1 The Root Protection Areas (RPA) of the trees were calculated in accordance with Section 4.6.1 in BS5837. This is calculated from the measurement of the stem diameter as recorded in the tree schedule attached to this report and is plotted on the TCP. No trees have had their RPA adjusted.
- 3.5.2 The RPA forms the initial Construction Exclusion Zone (CEZ) to protect the trees within and adjoining the site and is plotted on the plan by an orange line with the text RPA inscribed.
- 3.5.3 The RPA is initially plotted with the tree in the centre. Where site conditions may influence the shape and size of the RPA (e.g. the presence of roads, buildings or other structures), the shape and size of the RPA can be amended in accordance with Section 4.6.3 in BS5837.
- 3.5.4 The default position should be that no development will take place within the RPA of retained trees. However, where there is an overriding need for construction and associated activity within the RPA of trees, measures should be put in place to protect retained trees from harm while those activities are being carried out.

Soils

- 3.6 BS5837 recommends that a soil assessment be completed by a competent person to inform decisions relating to the RPA, tree protection, new planting design and foundation design. I am not able to provide this assessment as I have no formal qualifications in this area, and professional advice should be taken to provide any detailed reports.
- 3.6.1 However, generic soil data is freely available from online sources such as the Geology of Britain which can provide a broad indication of the underlying geology of a site. The results of a search for this site describes the geology as having a a loam to clayey loam texture. This is unlikely to produce a shrinkable soil.
- 3.6.2 The soil type will have an impact on any recommendations for replacement or enhancement planting that may form a part of any landscape strategy for a planning application.

4.0 Development Proposal

- 4.1 The proposal is for:
- The demolition of the existing extension.
 - The redevelopment of the extension.
 - The development of a gated entrance.

5.0 Arboricultural Impact Assessment (AMS)

- 5.1 Presence of a Conservation Area Designation prevents any tree work being carried out on tree. Therefore, any tree work must be notified to the Local Planning Authority (LPA).
- 5.2 Effects of the trees with regards to the development.
- 5.2.1 The location of the proposed gated entrance may incur onto G6 which requires tree root investigation.
- 5.2.2 The redevelopment of the extension area falls near to the RPA of a high quality tree where there is potential for soil compaction and contamination.
- 5.2.3 An area for the storage of building materials is required, however, there is ample room in both the front and rear gardens.
- 5.2.4 Trees lining the boundaries of the proposed redevelopment have the potential for the leaching of building materials being washed into the soil profile. Additionally the development could result in soil compaction.
- 5.3 Potential incompatibilities between the layout and the trees proposed for retention.
- 5.3.1 No installations of services are to take place within an RPA.
- 5.4 Infrastructure requirements – highway visibility, lighting, CCTV, services etc
- 5.4.1 No services or other infrastructure requirements will have any impact on the retained trees.
- 5.5 Mitigating tree loss/new planting
- 5.5.1 Due to the removal of the front hedge there is a requirement for tree replacement, this would further improve age and species diversity. This will see a 2 to 1 tree replacement ratio within the front garden.
- 5.6 Proximity of trees to the proposal
- 5.6.1 The impact of trees with the development and vice versa and allowing for future growth have all been considered with the development of the proposed extension. Tree size, quality and longevity, future growth, light/shading, leaf and fruit nuisance etc have the potential to be an issue. This applies to trees proximity to the development of the extension where the proposed development falls close to their RPA's.

- 5.6.2 G6 various dwarf conifer (*Abies*, *Juniperus*, *Chamaecyparis*, *Cupressus*) will be directly impacted upon due to their below ground constraints with the gated entrances footings.
- 5.6.3 The proposed gated entrance incurs onto the RPA's of H5 cherry laurel (*Prunus laurocerasus*) and is therefore un-retainable.
- 5.6.4 The redevelopment of the extension is not within the RPA of any vegetation, therefore no direct impact. However, the RPA of a high category tree T1 weeping willow (*Salix chrysocoma*) falls near potential storage of building materials.
- 5.6.5 Overall the processes and construction are likely to have a detrimental effect upon the health of the retained trees with regards to the garage development and the turning area. As long as the recommendations made in this report are adhered to at all times by the contractors e.g. the positioning of a fence and specialised temporary surfaces between the retained trees construction activities which should be in place prior to the commencement of works and remains intact and in position throughout the duration of the construction activities then minimal damage should occur to the trees.

6.0 Arboricultural Tree Constraints

- 6.1 There are above and below ground constraints with H5 cherry laurel (*Prunus laurocerasus*) and G6 whose RPA's and canopies are to be impacted upon by the development of the gated entrance.
- 6.2 The development of the extension falls close to T1 weeping willow (*Salix chrysocoma*). It is important that this RPA is not breached.
- 6.3 The below ground constraints are with G6 dwarf conifer where the footings of the gated entrance reside next to its RPA.
- 6.4 There is limited room availability for the storage of building materials as most of the rear garden comprises of trees and hedges.

BS5837 Categorisation			
	A high quality 40 years plus life potential	B moderate quality up to 20 years life potential	C low quality Up to 10 years life potential
Remove	-	H5	-
Prune	-	-	-
Protect	T1	T2, G6	T3, G4
Post development considerations	Regular assessments	Tree replacement	-

7.0 Tree Protection Requirements

7.1 The following is required:

- The creation of a Construction Exclusion Zone (CEZ) with fencing.
- The creation of a safe storage area for building materials.
- Exposed RPA's are to be protected with soil previously removed.
- Specialised Temporary Surfaces <https://safefence.co.uk/safe-fence-safe-matting.html>

8.0 Tree Protection Plan (TPP)

8.1 Tree Protection Plan (TPP) to identify:

- Trees to be retained as seen in Drawing 2 - Tree Protection Plan.
- Protective measures to highlight the Construction Exclusion Zones (CEZ).
- Measurements such as RPA's marked out.
- Identify fence positioning seen in Drawing 2 - Tree Protection Plan.
- Specialised Temporary Surfaces installed.
- Working within an RPA.
- Contractor storage areas for the proposed are within the existing garden areas.

8.2 Construction Exclusion Zone (CEZ)

8.2.1 Works undertaken within a CEZ must have arboricultural supervision and be carried out with hand tools only. The CEZ is to be afforded protection at all times normally by fencing, unless permitted access is required and is part of the TPP. A protective fence shall be erected prior to the commencement of any site works e.g. before any materials or machinery are brought on site, development or the removal of the existing surfaces commences. The fence shall have signs attached to it stating that this is a CEZ and that NO WORKS are Permitted within the fence. The protected fence may only be removed following completion of all construction works.

8.2.2 The fence is required to be sited in accordance with the TPP enclosed with this method statement as Appendix D - Tree Fencing. However, the situation may not suit the requirements in BS 5837 2012 and therefore an alternative which must be fit for the purpose of excluding any construction activity.

8.3 Access Details

8.3.1 All access for construction material will be through the existing driveway and side entrance.

8.3.2 Contractors car parking

8.3.4 Off site with the potential along the road next to the entrance.

8.3.5 Site huts and toilets

8.3.6 Off site.

8.3.7 Storage Space

8.3.8 There is room on site with hard surfaces at the front and side patio area to store building materials, there is a permeable grassed garden to the rear. Therefore designated areas on permeable surfaces such as grass will help with the storage of building materials and general site management. However, these will require protection against soil contamination and compaction.

8.3.9 Additional Precautions

8.4.0 No storage of materials, lighting of fires will take place within any Construction Exclusion Zone. No mixing or storage of materials will take place up a slope where they may leak into a Construction Exclusion Zone.

8.4.1 No fires will be lit within 20 metres of any tree stem and will take into account fire size and wind direction so that no flames come within 5m of any foliage.

8.4.2 No notice boards, cables or other services will be attached to any tree.

8.4.3 Materials which may contaminate the soil will not be discharged within 10m of any tree stem. When undertaking the mixing of materials it is essential that any slope of the ground does not allow contaminants to run towards a tree root area.

8.5 Demolition

8.5.1 The demolition of the existing extension will be brought back through the side entrance away from T1's RPA. The use of a skip could be placed on the existing front driveway to contain the materials.

8.6 Construction

8.6.1 Good management of building materials should be performed with the construction to prevent spillages into the soil profile, therefore a Specialised Temporary Surface (STS) should be applied where development falls near to RPA's of retained trees to create increased work space and preventing soil compaction and contamination. Protective fencing must rest upon the STS to create a CEZ.

8.7 Protective Fencing

8.7.1 Fencing must be applied all around the proposed development to create a CEZ.

8.8 **Hard Surfaces**

- 8.8.1 The removal of the hard surfaces to the rear must not have any direct or indirect damage to the green infrastructure and must be carried out without entering the CEZ.
- 8.8.2 The construction of the gated entrance is near to RPA's of neighbouring trees G6 which will require good management practice. The excavation of the RPA of G6 dwarf conifers must be carried out with hand tools only to ascertain that no roots greater than 25mm are to be damaged. The excavated hole is to be lined with a non-permeable membrane to prevent soil contamination from cement. Refer to Appendix E - Guidance for Working in Root Protection Areas (RPA's).
- 8.8.3 There are no new surfaces to be installed.

8.9 **Responsibilities**

- 8.9.1 It will be the responsibility of the main contractor to ensure that the planning conditions attached to planning consent are adhered to at all times and that a monitoring regime in regards to tree protection is adopted on site. The main contractor will be responsible for contacting the Local Planning Authority at any time issues are raised related to the trees on site. If at any time pruning works are required permission must be sought from the Local Planning Authority first and then carried out in accordance with BS 3998 Recommendations for Tree Works 2010.
- 8.9.2 The main contractor will ensure the build sequence is appropriate to ensure that no damage occurs to the trees during the construction processes. Protective fences will remain in position until completion of ALL construction works on the site. The fencing and signs must be maintained in position at all times and checked on a regular basis by an on site person designated that responsibility.
- 8.9.3 The main contractor will be responsible for ensuring sub-contractors do not carry out any process or operation that is likely to adversely impact upon any tree on site.

9.0 Arboricultural Method Statement (AMS)

9.1 Method for the construction of the Garage and Hardstanding Surfaces near to an RPA (No-dig methodology)

9.1.1 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. The proposed extension fall near to the RPA of T1 weeping willow (*Salix chrysocoma*) which is marked on the TPP. Refer to Appendix E - Guidance for Working in Root Protection Areas (RPA's).

9.2 An Overview of the Sequence of Operations

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 LPA.
2. Undertake tree works as recommended in [Appendix A - Tree Schedule](#).
3. Installation of the tree protection measures including the protective fencing and any Specialised Temporary Surface.
4. Pre Commencement meeting confirming the fencing to specification.
5. Demolition and construction carried out.
6. Removal of tree protection.

9.3 Sequence of Operations:

1. The removal and pruning of trees as specified in Appendix A - Tree Schedule.
2. Tree protective measures installed, Specialised Temporary Surface and fencing.
3. The demolition of the extension
4. The construction of the new extension.
5. The development of the new gated entrance.

9.4 Ground Preparation:

- All site management must be in place with tree protection, storage of building materials and good working knowledge of the sequence of operations.

9.5 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.

9.6 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 experienced arboricultural consultant.

Table 5 highlights the sequence of the operations with regards to the arboricultural method statement.

Sequence of Operations		
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 any demolition and to any storage of plant, materials and machinery	If necessary, liaise with contractor installing the protective fencing and where appropriate Specialised Temporary Surfaces 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 Demolition and Construction	Demolition of the existing extension, the construction of the new extension, the development of the gated entrance	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

10.0 Conclusion

- 10.1 The construction activity may affect future trees if appropriate protective measures are not taken. However, if adequate precautions to protect the retained trees are specified and implemented through the Arboricultural Method Statement included in this report, the development proposal will have no long-term detrimental impact on tree health or the contribution of trees to the character of the wider setting. For these reasons, I conclude that the proposed development would not cause an unacceptable or adverse impact on the long-term vitality of the retained trees, and therefore the character and appearance of the area. Furthermore, it fully aligns with the broad guidance set out in the National Planning Policy Framework.

11.0 Recommendations

- 11.1 It is recommended that the measures detailed in this report are implemented in full to provide retained trees with the highest level of protection during the process of construction.
- 11.2 The tree surgery works proposed as part of this survey are recommended to mitigate any identified problems that may be caused by trees in close proximity to the proposed development. To this end, should these recommendations be overruled, this survey stands as the opinion of Treestyle Consultancy Ltd, and therefore any damage or injury caused by trees recommended by this practice for felling or tree surgery works, to which the proposed schedule of works has been altered or the tree has been requested to be retained by the Local Planning Authority, cannot be the responsibility of this practice.

Signed



Date 16th January 2023

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12.0 Caveats and Limitations

- 12.1 While all reasonable efforts have been made to identify the condition and quality of the trees on site, the statements made in this report and schedules do not take into account the effects of extreme weather events, vandalism or accidents, or changes to the site that may affect trees that have taken place since the date of the survey.
- 12.2 I can confirm that the survey has been undertaken in accordance with industry best practice recommendations and guidance, but no warranty is provided in relation to changes to the site that occur after the date of the survey that may have an impact on the tree stock present at the time of the survey.
- 12.3 Unless stated differently in captions, all photographs used in this report have been taken by the author at the time of the site visit.
- 12.4 The comments and observations made within this report will cease to be valid either within two years of the date of the survey (unless specifically stated elsewhere within the report), or when site conditions change or any works to trees take place that have not been specified within this report, whichever is sooner.
- 12.5 The survey has been undertaken with the benefit of a mapping supplied by The Ordnance Survey. The location of all trees and groups detailed in this report have been taken from the topographical survey and no warranty is given as to the accuracy of this data.
- 12.6 This survey has been limited to identifying arboricultural features within the site. It does not include any ecological assessment or landscape appraisal of trees, groups, woodlands or hedges beyond the scope of BS5837.
- 12.7 Although I am occasionally involved in landscape, ecological and planning issues, I have no formal qualifications in these areas and any comments made in this report to such matters are limited to the general context in view of my familiarity through my day-to-day work, and professional advice should be obtained on these matters where required.

13.0 References

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British Standards BS 5837, Trees in relation to design, demolition and construction – Recommendation 2012

British Standards 42020 Biodiversity - Code of Practice for Planning and Development 2013

British Standards 8545 Trees: from nursery to independence in the landscape - Recommendations 2014

International Society of Arboriculture Best Management Practice Tree Risk Assessment 2013

NTSG - Common Sense Risk Management of Trees

Principles of Tree Hazard Analysis and Management - D Lonsdale No 7

14.0 About the Author

- 14.1 Treestyle Consultancy's principle assessor is Andrew McLoughlin, the Managing Director of Treestyle Consultancy Ltd since 2001. I have a MA ArborA in Arboriculture. Qualified Arboriculturalist since 1998. I am also a qualified teacher and a LANTRA instructor and assessor. ISA Tree Risk Assessment Qualification, Quantified Tree Risk Assessor. Ancient and Veteran Tree Expert. Up to date Curriculum Vitae (which include records of up to date Continued Professional Development - CPD) can be provided upon request.

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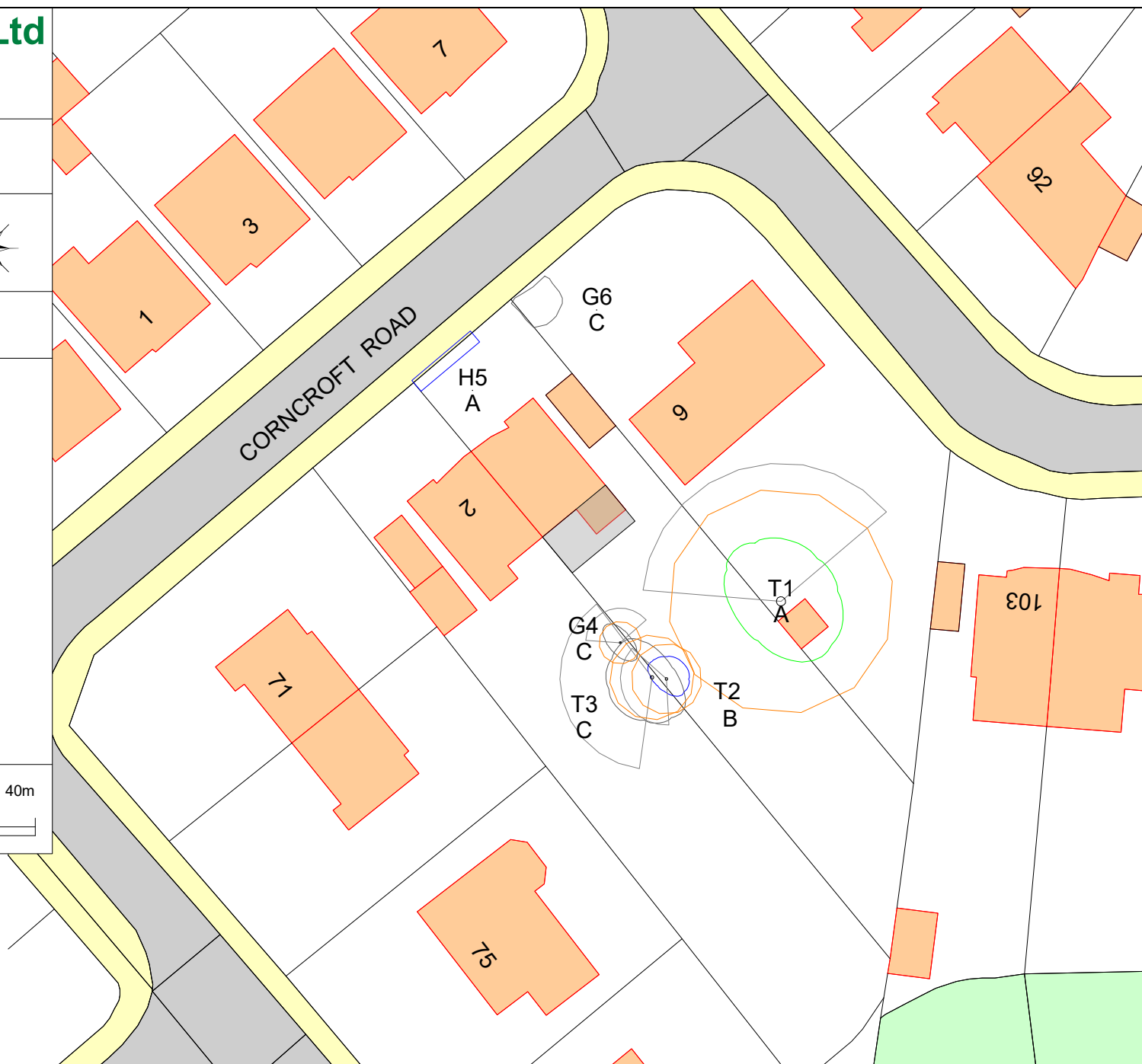
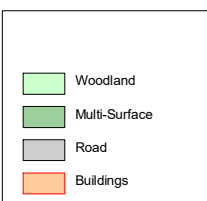
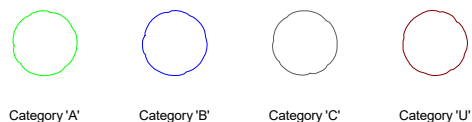
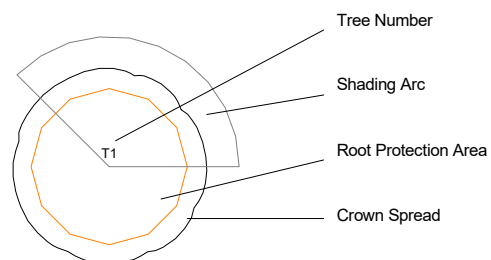
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Tree Constraints Plan

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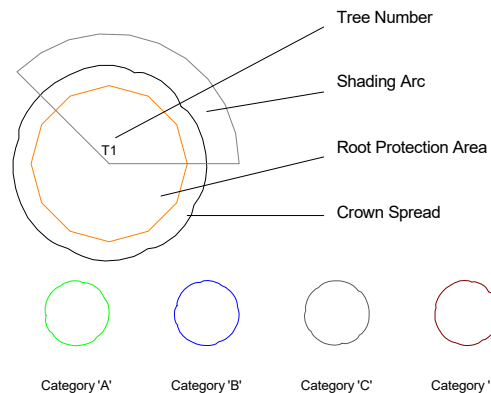
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Tree Protection Plan

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The Proposed Demolition and Development

The proposal is for the creation of a gated entrance.
The demolition of the existing extension.
The proposal is for the extension of the rear of the existing property.

One tree was recorded as category A high quality with 40 years life potential.
One tree, a hedge and a group of small trees were categorised as B medium quality with 20 years life potential.
One individual and a group of trees were recorded as low quality and value with up to 10 years life potential.
No trees were recorded as category U, not realistically retainable.

Mitigation

The removal of the hedge will be mitigated with 2 to 1 tree replacement ratio and within the front garden area.

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 of the development.
Removal of the tree protection.

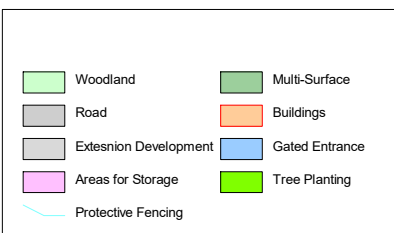
The Arboricultural Impact Assessment (AIA)

The demolition of the existing extension will be extracted close to neighbouring trees.
The gated entrance incurs on to the front hedge H5 which will need to be removed.
Footings for the gate are next to G6.
T1 weeping willows Root Protection Area (RPA) falls close to the proposed extension.
There is potential for building materials to be leached into the soil profile of the remaining trees.

Tree Protection Plan (TPP)

Prior to any construction commencing tree work will be required as specified in Appendix A, the RPA of each tree should be measured and marked out, these areas will require a no dig methodology.
The RPA's of the retained trees are a Construction Exclusion Zone (CEZ) unless protected by the aforementioned.
Specialised Temporary Surface (STS) shall be installed beneath the fencing thus protecting the RPAs from contamination or compacting and allowing for an increased work area.
Protective fencing must be installed before the commencement of the construction.
Footings of the Brick wall next to G6 must be dug with hand tools, investigated for tree roots then lined with a non-permeable membrane.

0 40m



BS5837:2012 Tree Survey

Treestyle Consultancy Ltd

Client: Concise Architectural Design Services
 Project: 4 Corncroft Road, Knowsley
 Survey Date: 11/01/2023 - 16/01/2023
 Surveyor: Andrew McLoughlin



Jepps Lane
 Barton
 Preston
 Lancashire
 PR3 5AQ
 Mobile: 07872064313

Tree and Tag No Species	Hght (m)	Stems		Crown		Age	RP A (m²) R (m)	Phys Condition	Structural Condition	Preliminary Recommendations			Cat ERC	
		No	Ø (mm)	Spread (m)	Clear (m)					Survey Comment				
G4											Estimated Measurements			
A Group	3	1	150	N	2	M	A: 10.2	Fair	C: Fair				C.2	
- -				E	1		R: 1.8		S: Fair	Neighbouring hedge			<10 yrs	
				S	2				B: Fair					
				W	1									
G6											Estimated Measurements			
A Group	1.5	0		N	2	M	A: 0	Good	C: Good				B.2	
- -				E	2		R: 0		S: Good	Neighbouring small trees creating good screening			10 to 20 yrs	
				S	2				B: Good					
				W	2									
H5														
A Hedgerow	1	0		N	1	M	A: 0	Good	C: Good	Fell :: Fell and remove stump(s)			B.2	
- <i>Spp.</i>				E	0.5		R: 0		S: Good				10 to 20 yrs	
				S	4				B: Good	Small hedge creating good screening. To be removed to accommodate gated entrance				
				W	0.5									
T1											Estimated Measurements			
Weeping Willow	12	1	800	N	6	2	M	A: 289.6	Fair	C: Good	Pollard :: Re-pollard			A.1
<i>Salix chrysocoma</i>				E	5	2		R: 9.6		S: Fair	Protection :: Erect protection barriers			>40 yrs
				S	6	2			B: Good					
				W	4	2				Great feature tree in neighbor garden with a pollard history				
Age Classifications:	N	Newly planted	EM	Early Mature			Condition:	C	Crown	Stems:	Ø	Diameter		
	Y	Young	M	Mature				S	Stem		(Eq)	Equivalent stem diameter using BS5837:2012 definition		
	SM	Semi-mature	OM	Over Mature				B	Basal area	ERC:		Estimated Remaining Contributio		

Appendix B - Glossary

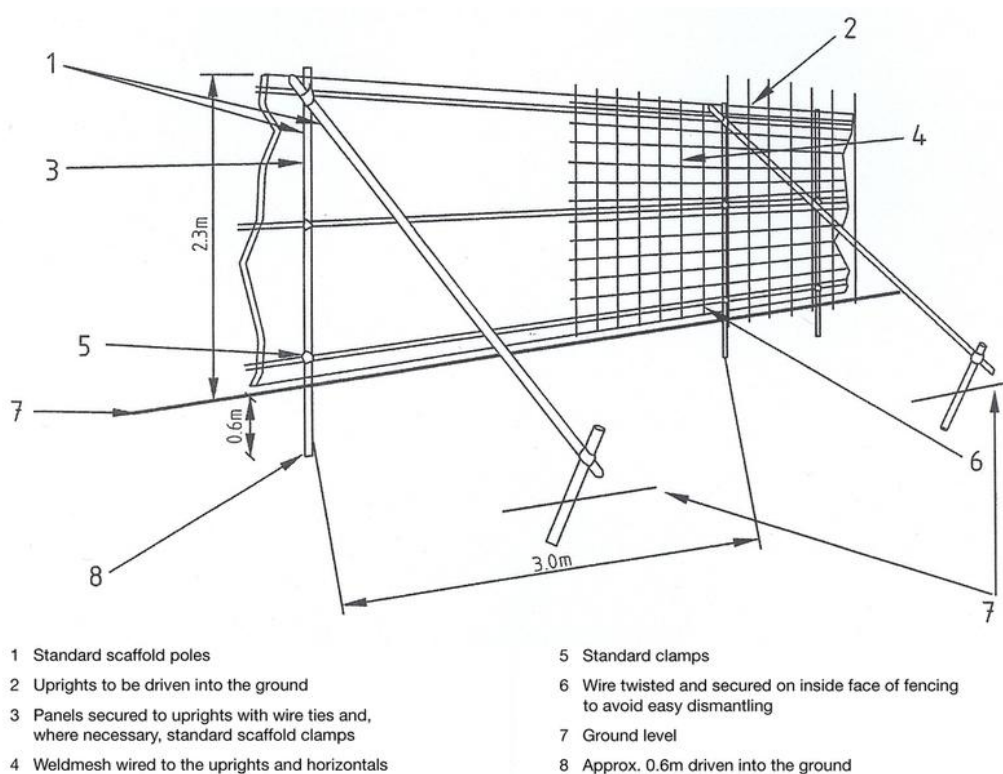
Abbreviation	Term	Explanation
DBH	Diameter at Breast Height	The diameter of the tree trunk in question, 'breast height' is taken to be 1.3 metres above ground level. Multi-stem trees have their stems measured separately and indicated as so in the tree schedule. Trees with abnormal growths, branch unions or other obstructions at 1.3 m will have their measurements taken immediately below said obstructions.
RPA	Root Protection Area	The area in metres squared of the potential underground rooting constraints
AMS	Arboricultural Method Statement	This dictates the procedure for works to be carried out around the protected trees
RPA	Root Protection Area	Circular area surrounding tree with a radius based on the DBH of the tree, as calculated in BS 5837:2012. RPA Radius = 12 x DBH
AIA	Arboricultural Impact Assessment	What will the impact be on the trees with the proposed development
VTa	Visual Tree Assessment	A system of tree inspection devised by Claus Mattheck using visual signs to read the body language of trees & aid with the diagnosis of potential defects.
TPP	Tree Protection Plan	This describes the process on how the work is to be carried out around the trees
BS5837 2012	British Standards	British Standard 5837:2012 <i>Trees in relation to design, demolition & construction - Recommendations.</i>
	Codominant stem	Two stems on a tree which can suggest a weakened union
	V union with bark inclusion	Usually with a codominant stem, as above but with up to an additional 42% weak union
Y	Young	Tree which has not yet established a significant rooting structure in the ground & has not developed a significant branching structure - its form is largely 'whip' like in nature & it could normally be easily transplanted or replaced.
EM	Early Mature	Tree which has established a significant rooting structure & has developed a noticeable internal scaffold structure, it differs from a mature version of its species only in size but not in relative proportions of its structure. Trees in this age class will still be developing significantly in height & spread.
M	Mature	Tree which has established a significant root-plate & which is over 50% of the way through its usual life expectancy. Trees in this age class will still be developing significantly in spread but less significantly in height.
OM	Over Mature	Tree which has fully established & will no longer be able to continue increasing in size due to its age, it may be showing signs of decline such as localised dieback but does not need to do so by definition. However it should be expected that signs of structural deterioration will soon become apparent.
V	Veteran	Tree which is showing veteran tree characteristics such as very significant crown retrenchment, extensive internal cavitation & possess significant cultural, ecological &/or historical value. Size is a common indicator of these characteristics but is not an essential requirement, for example, ancient coppices may possess veteran tree characteristics but may have a stunted form. Age is a stronger indicator but again not essential as veteran characteristics can be encouraged in younger trees.
-	Minor Deadwood	Deadwood under 50 mm in diameter
-	Major Deadwood	Deadwood which is equal to or greater than 50 mm in diameter
-	Retrenchment	Retrenchment: progressive reduction in the size of the crown of an old tree, by means of the dieback or breakage of twigs and small branches, accompanied by the enhanced development of the lower or inner parts of the crown.

Appendix C: BS 5837:2012 Cascade Chart for Tree Quality Assessment

Table 1 Cascade chart for tree quality assessment				ID on plan
Category and definition	Criteria (including subcategories where appropriate)			
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 U category trees i.e. where, for whatever reasons, 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 or significance to health and/or safety of other trees nearby (e.g. Dutch elm disease, or very low quality trees suppressing adjacent trees of better quality) <i>NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve; see 4.5.7.</i>			RED
	1 Mainly arboricultural values	2 Mainly landscape values	3 Mainly cultural values, inc. conservation	
Trees to be considered for retention				
Category A Those of a 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 of 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
Category B Those 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	BLUE
Category C Those 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 landscape value, and/ or trees offering low or only temporary/ transient landscape benefits	Trees with no material conservation or other cultural value	GREY

CONSTRUCTION EXCLUSION ZONE NO ACCESS

1. *Journal of the American Medical Association*, 1997; 277: 1001-1005.



Appendix D - General Tree Protection Considerations (Cont.)

Should scaffolding be required to be erected within the RPA of any retained trees (so that building works may be carried out outside the extent of the RPA), this should be carried out to the following specifications:

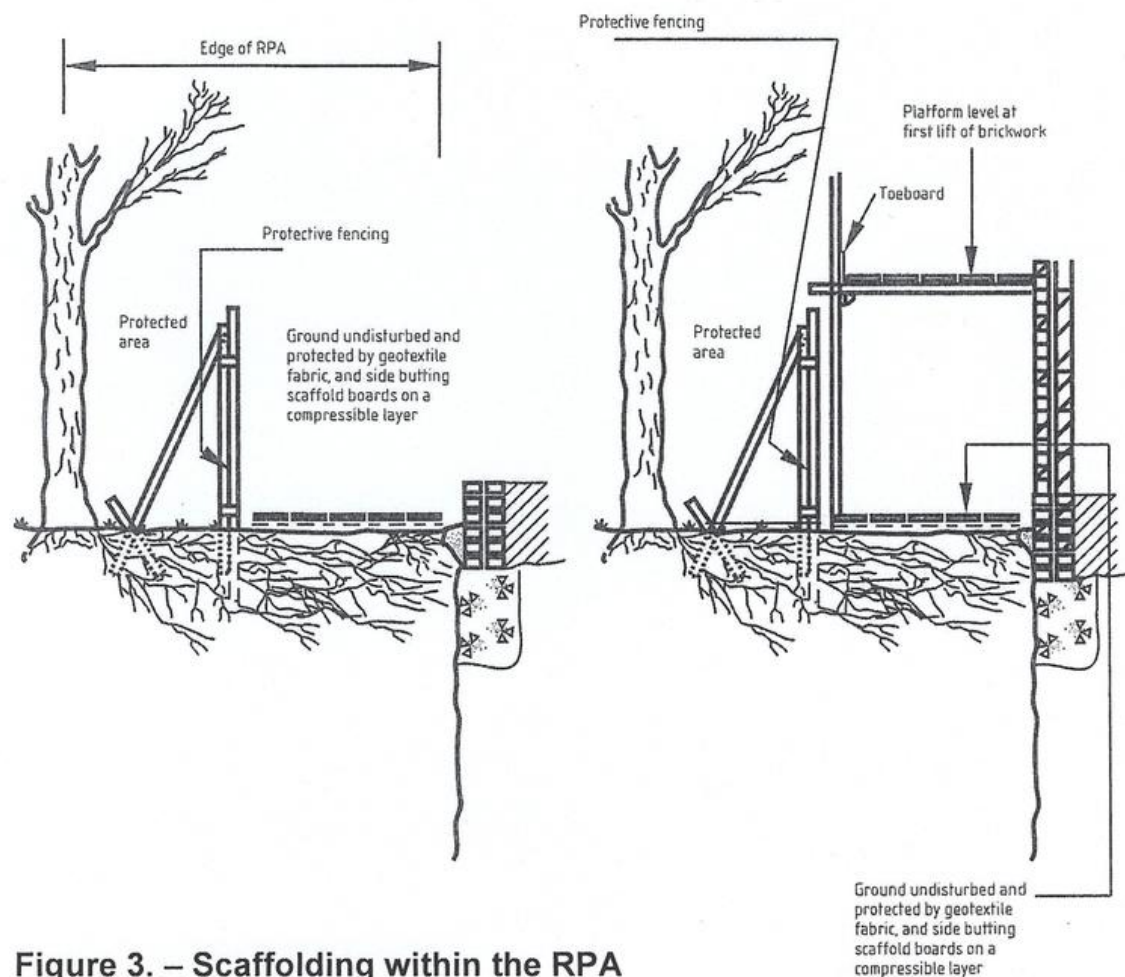


Figure 3. – Scaffolding within the RPA

CONSTRUCTION EXCLUSION ZONE

KEEP OUT

RESTRICTED ACCESS
NO VEHICLES
NO STORAGE OF MATERIALS

REPORT ANY TREE DAMAGE TO
TREESTYLE CONSULTANCY
ON

07872 064 313

Treestyle CONSULTANCY

Appendix E - Guidance for Working in Root Protection Areas (RPAs)

1.0 Introduction

The following sets out the guidance for working in RPAs that should be followed to ensure successful tree retention. It is based on the guidelines and recommendations set out in British Standard 5837 2012 Trees in relation to design, demolition, and construction - Recommendations (hereinafter BS5837) and the National Joint Utilities Group: Guidelines for the planning, installation, and maintenance of utility services in proximity to trees. Volume 4, issue 2. London: NJUG, 2007 (hereinafter NJUG 4).

2.0 General Guidance for Working in RPA's

2.1 What is the purpose of this guidance?

The purpose of this guidance is to set out the general principles that must be followed when working in RPAs as follows.

- a) pre site commencement: to demonstrate that tree protection issues have been properly considered and sets out how they must be implemented, and
- b) post site commencement: to inform all site personnel of their obligations towards protected trees and how to meet them.

2.2 What are RPAs?

RPAs are the areas of root protection were.:

- a) roots must not be severed, cut, or broken i.e. no excavation, no soil stripping
- b) ground levels must not be changed i.e., no soil stripping, no soil level raising
- c) soil must not be compacted - no movement of vehicles. All RPA's close to the construction area are illustrated on the tree protection plan within this report. Any and all works within RPAs must be carried out with great care if trees are to be successfully retained.

2.3 When must this guidance be followed are:

This guidance must be followed by all personnel entering into or working within an RPA.

The main scenarios where this guidance must be followed are.

- a) demolition,
- b) construction of new hard surfacing,
- c) construction of new structures,
- d) subterranean construction,
- e) underground and above-ground utility apparatus, and
- f) landscaping activities.

Broad definitions of surfacing, services, structures, and landscaping are set out in the following sections.

2.4 Arboricultural supervision:

- All work within RPAs must be carried out with care if trees are to be successfully retained. An arboriculturist must be consulted if there is any risk of misunderstanding or misinterpretation. Ongoing work must be inspected regularly, and, on completion, the work must be signed off by the Arboricultural consultant.

3.0 Demolition within RPA's

3.1 Basic principles:

- Demolition within the RPA should accord to the principle that the tree and soil structure take priority, and the most reliable way to ensure this is to preserve the RPA completely undisturbed.
- The ability of a tree to tolerate some disturbance and alteration of its growing conditions depends on specific circumstances, including prevailing site conditions, and in general, the older the tree, the less successfully it will adapt to new conditions.

3.2 Avoiding physical damage to the roots during demolition:

- To avoid damage to tree roots, existing ground levels should be retained within the RPA. Intrusion into soil (other than for piling) within the RPA is generally not acceptable, and topsoil within it should be retained in situ. However, limited manual excavation within the RPA might be acceptable, subject to justification.
- Such excavation should be undertaken carefully, using hand-held tools and preferably by compressed air soil displacement.
- Roots, whilst exposed, should immediately be wrapped, or covered to prevent desiccation and to protect them from rapid temperature changes. Any wrapping should be removed prior to backfilling, which should take place as soon as possible.
- Roots smaller than 25 mm diameter may be pruned back, making a clean cut with a suitable sharp tool (e.g., bypass secateurs or handsaw), except where they occur in clumps. Roots occurring in clumps or of 25 mm diameter and over should be severed only following consultation with an arboriculturist as such roots might be essential to the tree's health and stability.
- Prior to backfilling, retained roots should be surrounded with topsoil or un-compacted sharp sand, or other loose inert granular fill, before soil or other suitable material is replaced. This material should be free of contaminants and other foreign objects potentially injurious to tree roots

4.0 Construction of New Hard Surfacing within RPA's

4.1 Basic principles:

- The design should not require excavation, including changes of soil levels other than the removal of turf or other surface vegetation.
- The new hard surface must avoid localised compaction by evenly distributing the loading over the track width and wheelbase of any vehicles expected to use the access.
- New permanent hard surfacing should not exceed 20% of any existing unsurfaced ground within the RPA.
- If the new surface is likely to be subject to de-icing salt application, an impermeable barrier should be incorporated to prevent contamination of the rooting area and run-off should be directed away from the RPA.
- Where a permeable surface is to be used by vehicular traffic, a geotextile should be used at the base of construction to help prevent pollution contamination of the rooting area below.
- Where there is a risk of water-logging suitable land drainage must be incorporated.
- The new hard surface should be resistant to or tolerant of deformation by tree roots and should be set back from the stem of the tree and its above ground root buttressing by a minimum of 500 mm to allow for growth and movement.
- Mature and over-mature trees are more prone to suffer because of these changes than young and middle-aged trees. Adverse impact on trees can be reduced by minimising the extent of these changes within RPAs.
- The actual specification of the surfacing is an engineering issue that needs to be considered in the context of the bearing capacity of the soil, the intended loading, and the frequency of loading.
- Product and specification are beyond the scope of this guidance and must be provided separately by the appropriate specialist.

4.2 Sub-base and finishing layers:

- Appropriate sub-base options for new hard surfacing include three-dimensional cellular confinement systems. Alternatively, piles, pads or elevated beams can be used to support surfaces to bridge over the RPA or following exploratory investigations to determine location, to provide support within the RPA while allowing the retention of roots greater than 25 mm in diameter.
- Suitable surface finishes include washed gravel, permeable tarmac or block pavers set on a sand base.
- In some situations, limited width floating concrete rafts constructed directly on to the soil surface may be acceptable, but the design must not include any strip supports.

4.3 Edge retention:

- The excavation needed for the placement of kerbs, edgings, and their associated foundations and haunching's can damage tree roots. Within the RPA, this should be avoided either by the use of alternative methods of edge support or by not using supports at all.

4.4 Installing new hard surfacing on top of existing surfacing:

- In some instances, existing surfacing can be retained and used as a base for new surfacing. Normally, this will not result in significant excavation that could expose roots so special precautions are not necessary.
- If large roots already protrude above the proposed sub-base level, then the precautions and procedures set out above must be observed.

5.0 Construction of New Structures within RPA's

5.1 Basic principles:

- Construction within the RPA should accord to the principle that the tree and soil structure take priority, and the most reliable way to ensure this is to preserve the RPA completely undisturbed.
- The ability of a tree to tolerate some disturbance and alteration of its growing conditions depends on specific circumstances, including prevailing site conditions, and in general, the older the tree, the less successfully it will adapt to new conditions.
- Where alternative design solutions are not available such that construction is proposed within the RPA, the potential impact of the proposals on the tree should be assessed and a tree protection plan and Arboricultural method statement produced.
- Details of design proposals should be developed in conjunction with the project arboriculturist and, where required, input from a suitably qualified engineer.
- In order to demonstrate that the proposals are technically feasible such details should be included within planning applications. The exception to this is the installation of underground utility apparatus, where it can be demonstrated that this is achievable by the use of trench-less technology and where entry and retrieval pits can be formed outside the RPA.
- Where utility operations do not require planning permission, including those performed by statutory undertakers, they should still be undertaken in accordance with these principles.

5.2 Avoiding physical damage to the roots during construction:

- To avoid damage to tree roots, existing ground levels should be retained within the RPA. Intrusion into soil (other than for piling) within the RPA is generally not acceptable, and topsoil within it should be retained in situ. However, limited manual excavation within the RPA might be acceptable, subject to justification. Such excavation should be undertaken carefully, using hand-held tools and preferably by compressed air soil displacement.
- Roots, whilst exposed, should immediately be wrapped, or covered to prevent desiccation and to protect them from rapid temperature changes. Any wrapping should be removed prior to backfilling, which should take place as soon as possible.
- Roots smaller than 25 mm diameter may be pruned back, making a clean cut with a suitable sharp tool (e.g., bypass secateurs or handsaw), except where they occur in clumps. Roots occurring in clumps or of 25 mm diameter and over should be severed only following consultation with an arboriculturist as such roots might be essential to the tree's health and stability.
- Prior to backfilling, retained roots should be surrounded with topsoil or un-compacted sharp sand, or other loose inert granular fill, before soil or other suitable material is replaced. This material should be free of contaminants and other foreign objects potentially injurious to tree roots.

6.0 Subterranean construction within RPAs

6.1 Basic principles:

- Where it is proposed to form subterranean structures, e.g., basement extensions, within the RPA, it is essential to avoid excavating down through routable soil if trees are to be retained. In some cases, it might be technically possible to form the excavation by undermining the soil beneath the RPA.

7.1 Basic principles:

- Mechanical trenching for the installation of underground apparatus and drainage severs any roots present and can change the local soil hydrology in a way that adversely affects the health of the tree. For this reason, particular care should be taken in the routing and methods of installation of all underground apparatus.
- Wherever possible, apparatus should be routed outside RPAs. Where this is not possible, it is preferable to keep apparatus together in common ducts. Inspection chambers should be sited outside the RPA. Where underground apparatus is to pass within the RPA, detailed plans showing the proposed routing should be drawn up in conjunction with the project arboriculturist. In such cases, trench-less insertion methods should be used with entry and retrieval pits being sited outside the RPA. Provided that roots can be retained and protected excavation using handheld tools might be acceptable for shallow service runs.

8.0 Landscaping within RPA 's

8.1 Basic principles:

- The general treatment of areas around newly planted and existing trees should allow for adequate infiltration of water and free gas exchange, reduction of water evaporation and the retention of an open soil structure to encourage root growth.

8.2 Soil compaction and remediation measures:

- Soil that has been compacted will not provide suitable conditions for the survival and growth of vegetation, whether existing or new, and is a common cause of post-construction tree loss on development sites.
- Compacted soil will adversely affect drainage, gas exchange, nutrient uptake, and organic content, and will seriously impede or restrict root growth. The risk of soil compaction is greatest in soils with significant clay content and in wet conditions.
- Soil compaction should be avoided around existing vegetation, including trees, and in areas where new planting or seeding is proposed.
- Where soil compaction has occurred in the vicinity of existing trees, Arboricultural advice should be taken before carrying out any remedial or other works within RPAs to mitigate risk of further damage to roots.
- Remedial works may include sub-soil aeration using compressed air, and the addition of other materials, preferably of a bulky, organic nature (but excluding peat), to improve structure. Heavy mechanical cultivation such as ploughing or rotavation should not occur within the RPA.
- Any cultivation operations should be undertaken carefully by hand in order to minimise damage to the tree, particularly the roots. Decompaction measures include forking, spiking, soil auguring and tilled radial trenching. Care should be taken during such operations to minimise the risk of further damage to tree roots.

8.3 Use of herbicides:

- The use of herbicides in the vicinity of existing trees should be appropriate for the type of vegetation to be killed, and all instructions, warnings and other relevant information from manufacturers should be strictly observed and followed. Care should be taken to avoid any damaging effects upon existing plants and trees to be retained, species to be introduced, and existing sensitive habitats, particularly those associated with aquatic or drainage features.

8.4 Tree work within RPAs:

- Care should be taken to ensure during tree removal or remedial work that damage to the retained trees and/or disturbance to the RPA is avoided. Precautions should include dismantling techniques to reduce the risk of accidental damage, and ground protection measures where excessive pedestrian movements or use of plant and machinery might lead to compaction. If temporary access is required for plant or vehicles within the RPA, this should be provided by means of temporary ground protection.

Appendix F - Legal

National Planning Policy Framework 2021

National Planning Policy is currently defined by the National Planning Policy Framework (NPPF). This provides the most current and up to date planning guidance.

At the heart of the NPPF is a presumption in favour of sustainable development, and specifically states that for decision making, the LPA should be approving development proposals that accord with the development plan without delay.

Section 12 of the NPPF recognises the importance of integrating trees into urban environments as part of achieving well-designed places. While the primary focus is on new tree planting, the importance of retaining existing trees and incorporation into proposals is a driving factor, stating that:

“Trees make an important contribution to the character and quality of urban environments, and can also help mitigate and adapt to climate change. Planning policies should ensure that new streets are tree-lined, that opportunities are taken to incorporate trees elsewhere in developments (such as parks and community orchards), that appropriate measures are in place to secure the long-term maintenance of newly-planted trees, and that existing trees are retained wherever possible. Applicants and local planning authorities should work with highways officers and tree officers to ensure that the right trees are planted in the right places, and solutions are found that are compatible with highways standards and the needs of different users.” (Paragraph 131)

In addition, Section 15 of the NPPF recognises the importance of conserving and enhancing the natural environment, and specifically acknowledges the role of trees and woodland in the provision of natural capital and ecosystem services.

- a) “Planning policies and decisions should contribute to and enhance the natural and local environment by:
- b) recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland;” (Paragraph 174)

It further acknowledges the importance of ancient woodlands and veteran trees for habitats and biodiversity and requires that planning consent should be refused where development schemes require the removal of such features unless there are wholly exceptional reasons, stating that:

“development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists.” (Paragraph 180, c)

Statutory Considerations

The site is located within the boundary of the Local Planning Authority (LPA). The LPA has a statutory obligation to ensure that provision is made for the protection of trees, through section 197 of the Town and Country Planning Act (1990). The principal form of protection comes through trees being subject to a Tree Preservation Order or being located in a conservation area. A search has been undertaken on the CDC website to determine the presence or otherwise of TPO or Conservation Areas.

Non-statutory considerations

An online search has also been undertaken to determine any non-statutory designations at the site that may be a consideration in relation to trees. This has revealed that the site has no Ancient Semi-Natural Woodland or Woodland Priority Habitat areas within the redline boundary.

Tree Preservation Orders & Conservation Area Designations

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.

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

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

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 bird nest.

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.

Appendix. G - Arboricultural Tree Constraints

Conflict Between Site Layout and Trees

Below Ground Constraints

Below ground tree roots and the soil environment in which they grow needs to be protected if the tree is to be retained. Trees grow in association with fungi and other soil organisms which are of key importance to tree health. Roots are essential for anchorage, the uptake of water and nutrients and the storage of energy (carbohydrates) for the future growth and function of the tree.

Roots can be damaged by physical severance or wounding (e.g., following excavation of the soil) which can lead to the development of decay and a decline in vitality and/or instability. Raising soil level effectively buries tree roots at a depth where suitable conditions for growth are less available. Toxic materials discharged into the soil (such as cement-based aggregates, fuel, and chemicals) can lead to root death and dysfunction. Soils can be compacted to levels inhospitable to tree growth with even a single pass of machinery, regular pedestrian traffic or the storage of plant and materials. Relieving compaction can be problematic and may require costly remedial works. Changes in drainage/water levels can also have significant long-term impacts for tree health.

The effects of these incursions may take many years to manifest, with a resulting decline in amenity value and potentially the death or failure of the tree. It should be noted that older trees are particularly sensitive to damage and changes in conditions.

The Root Protection Area (RPA) is a notional area considered to be the minimum zone that must be protected to avoid any adverse impacts on retained trees. This area is deemed to be particularly important for tree stability, growth, function, and health. However, roots may extend far greater distances, with the distribution of the root system relating directly to the availability of suitable conditions for growth (namely oxygen, water, and nutrients). It is generally accepted that tree roots are predominantly located in the upper 1000mm of soil; however, roots may develop at deeper levels where conditions allow.

The RPA of the existing tree stock is an important material consideration when considering site constraints and planning development activities. The RPA of significant trees on site is shown on the Tree Constraints Plans.

The default position must be that all development, including any associated services, will occur outside the RPA's of retained trees. Where this is unavoidable it may be appropriate to use special measures to install structures, services or surfacing within RPA's which allow the protection of roots and soil structure which are essential for tree growth and keep any incursion to a minimum.

Drainage and other service

Drainage runs, soakaways, and the installation of other services, can cause disruption to RPAs and result in important trees being damaged. It is preferable to keep all such services out of RPAs because the more encroachment there is, the less likely the LPA is to find proposals acceptable. We advise that these matters are considered at an early stage to avoid a justifiable reason for refusal further into the design process. Our experience is that demonstrating services will not encroach into RPAs often saves delays in processing planning applications and can sometimes be the difference between a consent and a refusal. If services do enter RPAs the use of hand digging as detailed in the National Joint Utilities Group publication 'Guidelines for the Planning, Installation and

Maintenance of Utility Services in Proximity to Trees' (NJUG 10, Volume 4, 2007) will be undertaken to minimise the impact on the tree roots.

New Structures and/or Surfacing with RPA's

If it is proposed to place any new structures and/or hard surfacing within RPAs, it is likely that the LPA will require detailed cross-sections as reassurance that what is proposed can be implemented without excavating into existing soil levels. These must be at a scale that allows the relationship between existing and proposed to be easily seen, i.e., it must clearly demonstrate that there will be no excessive disturbance of RPAs. There must be a separate cross-section for each significant tree that may be affected. Our experience is that providing this level of information at an early stage often saves delays in processing planning applications and can sometimes be the difference between a consent and a refusal.

The current site has ample room to house construction materials and be used for storage. This is the greatest threat to the remaining trees and hedge through the leaching of building material such as cement, normally a minimum of 10m distance from vegetation, however, due to the site sloping towards the trees then extra precautions are required.

Above Ground Constraints

Tree stems and branches can restrict available space on site. Damage or wounding (including excessive pruning) can significantly reduce the amenity contribution of the tree and may lead to the development of dysfunction and decay with significant long-term implications for tree health. The future impact of existing trees should be carefully considered, including individual species characteristics (such as potential future size, fruit fall, shade etc.) and how the tree will interact with any proposed development and future land use. Annual tree growth can lead to direct damage if stems/branches (or roots) come into physical contact with structures and this must also be taken into consideration.