SELWYNTREES

ARBORICULTURAL CONSULTANTS

Arboricultural Impact Assessment

Survey for trees at site:	Land at 1 Highfield Road, Bubwith, Selby Y08 6LY
Prepared for:	Richard Roberts Ltd
Arboricultural Survey Reference	TreeSurvey **0286 Rev. C**
Date(s)	22nd September 2023
Surveyor (s)	R D Selwyn BSc (Hons) Arboriculture and Urban Forestry, MArborA / R Selwyn BA(Hons)

Selwyn Trees
30 Tickhill Road
Doncaster
South Yorkshire
DN4 8QE
01302 816850
Email: info@selwyntrees.co.uk

Arboricultural ASSOCIATION Professional Member

CERTIFIED ARBORIST ISA

S Selwyn UI-1272A

QTRA Registered User

Contents

1.0 Introduction 3

2.0 Summary of Findings 3

3.0 Site Description 4

4.0 Trees 6

5.0 Arboricultural Impacts Plan 8

6.0 Tree Protection Plan 9

7.0 Arboricultural Impact Assessment 10

8.0 Tree Planting 15

9.0 Shading from trees 16

10.0 Ground Level Changes and Services 17

11.0 Construction Site Access 17

12.0 Construction Site Layout 17

13.0 Construction Site Materials 18

14.0 Tree Protective Fencing 18

15.0 Onsite Consultation and Supervision 22

Appendix 1: British Standard BS 5837:2012 Table 1 Cascade chart for Tree Quality Assessment 24

Appendix 2: Initial Tree Works Schedule 25

Appendix 3: Statutory Protection 25

Appendix 4: Terms of Reference 25

Appendix 5: General Information on Planting 26

Appendix 6: Author's Qualifications and experience 32

Appendix 7: Background to Tree Protection 32

1.0 INTRODUCTION

1.1 Hugh Roberts of Richard Roberts Limited, engaged Selwyn Trees to carry out an Arboricultural Survey and an Arboricultural Impact Assessment for a site at 1 Highfield Road, Bubwith, Selby Y08 6LY.

1.2 The purpose of the report was to advise on any Arboricultural issues which relate to a proposed development. An initial Arboricultural Survey site visit was carried out on the 21st April 2022.

1.3 The survey was carried out in accordance with BS5837: 2012- 'Trees in relation to Design, Demolition and Construction - Recommendations'.

1.4 We were provided with the following documents:

- 4169-1
- 2128.010 FEASIBILITY STUDY
- Image005
- 0796_JWK Development_Highfield Road, Bubwith_site plans ALL SCALES

2.0 SUMMARY OF FINDINGS

2.1 5 x trees and parts of 3 hedges will be required to be removed for this proposal (referenced as 0796_JWK Development_Highfield Road, Bubwith_site plans ALL SCALES). Three of the trees and the hedges were assigned retention Category B. The remaining trees were assigned retention category C.

2.2 In my opinion the removal of trees T964 and a large section of hedge G1, may affect the Arboricultural and amenity value of the local area, as these are visible from Highfield Road and positively contribute to the urban forest. It is recommended that a scheme of tree planting/soft landscaping is compiled for the remaining front garden of 1 Highfield Road, to maintain and promote the amenity value of the area.

2.3 The removal of tree T973, oak, would be regrettable from an Arboricultural perspective; however, 11 small to medium trees are currently proposed to be planted under this scheme on the site to mitigate the tree removals which may help promote the Arboricultural and amenity value of the local area.

2.4 The RPA of T974 would realistically be disturbed by excavation for traditional strip footing foundations for Plot 9. However, this likely to be minor.

2.5 Facilitation access pruning would likely be required for tree T974, and future pruning may be required to maintain clearance from this tree and the proposed dwelling on plot 9.

2.6 New tree planting is proposed to mitigate those trees lost as part of this proposal. The space for new tree planting is generally quite limited, therefore the species chosen need to suit the space available

and to take into account restricted growing space. Example tree species have been included within this AIA for proposed new trees.

2.7 As some new trees are proposed close to roads, driveways and car parking areas, root barriers or other engineering system would be required. This is to prevent tree roots lifting, distorting, cracking and damaging the new hard surfaces such as driveways and roads, which they will, unless engineering solutions are installed to prevent this from occurring. Maintenance and a watering schedule for new trees would be essential for the first 5 years after planting to maximise the chance of successful establishment.

2.8 This report should be read in accordance with the following documents and maps:

Documents

- 'Introduction to Arboricultural Survey and BS5837 Survey Table'

Maps:

- 'Tree Constraints Plan'
- 'Tree Shade Map'
- 'Tree Protection Plan'

3.0 SITE DESCRIPTION

3.1 The site surveyed is described as land at the rear of the residential property 1 Highfield Road, Bubwith. Residential properties border the site to the east and west. The north and northeast sides of the site are bordered by agricultural fields. There is a dwelling present to the south of the site. The main access road into the site is via the south from Highfield Road. The main access way to the site area is from Highfield Road, via the west of the current dwelling of 1 Highfield Road.

Figure 1: the aerial view of site 1 Highfield Road, Bubwith from Google maps ©. This site is outlined in red

3.2 Hedges and trees are present on the site. Hedges line the main access way into the site from Highfield Road from the south. Trees are present close the access road, and some trees are present in

neighbouring sites and overhang into site. Many of the trees are close of the west boundary of the site. Some hedges are present towards the middle and south of the site. A number of dilapidated structures and foundations of old structures are present on the site.

3.3 According to the Cranfield Soil and Agrifood Institute (2022) the soil type in the area is freely draining slightly acid sandy soils.

TPO and Conservation Area Status

3.4 According to the interactive map on the East Riding of Yorkshire Council website the site is not within a Conservation Area:

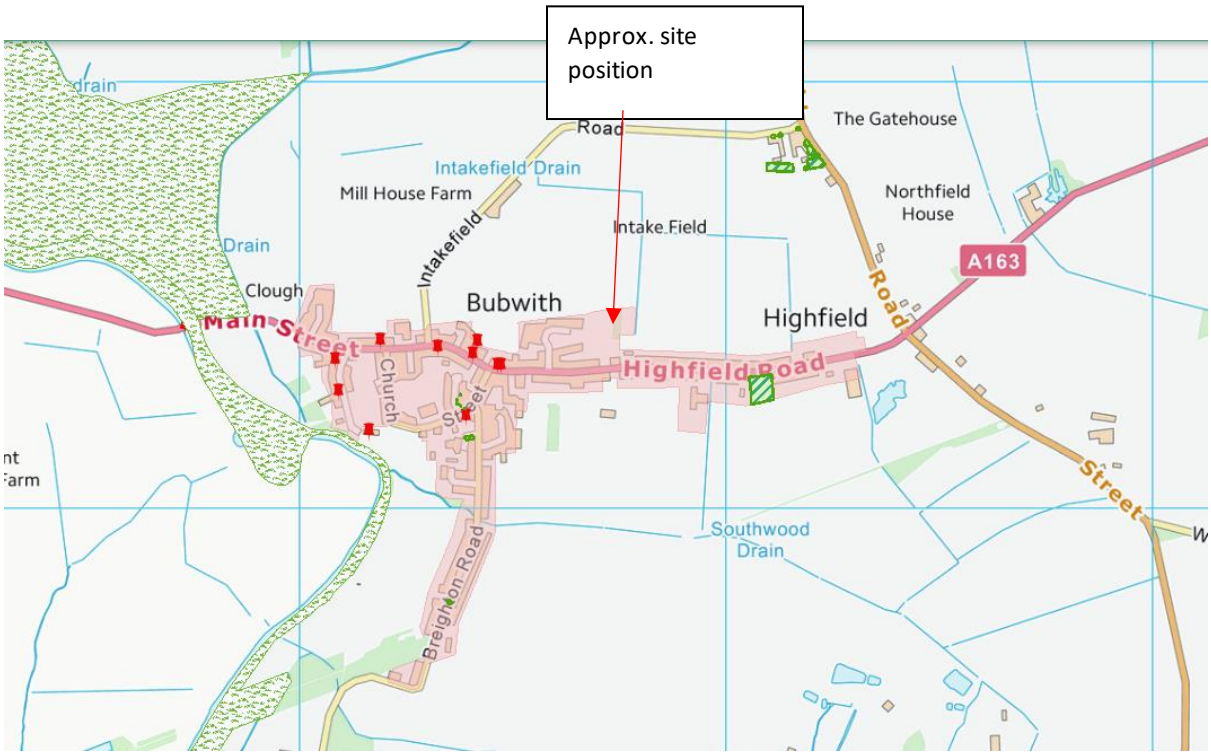


Figure 2: the above is taken from the East Riding of Yorkshire Council website, with the red areas showing the development limits. No conservation area is illustrated https://www.eastriding.gov.uk/planning-permission-and-building-control/applications-for-planning-and-building-control/planning-constraints-map/planning-constraints-map-tool/

3.5 We do not know if there are TPOs (Tree Preservation Orders) present on site.

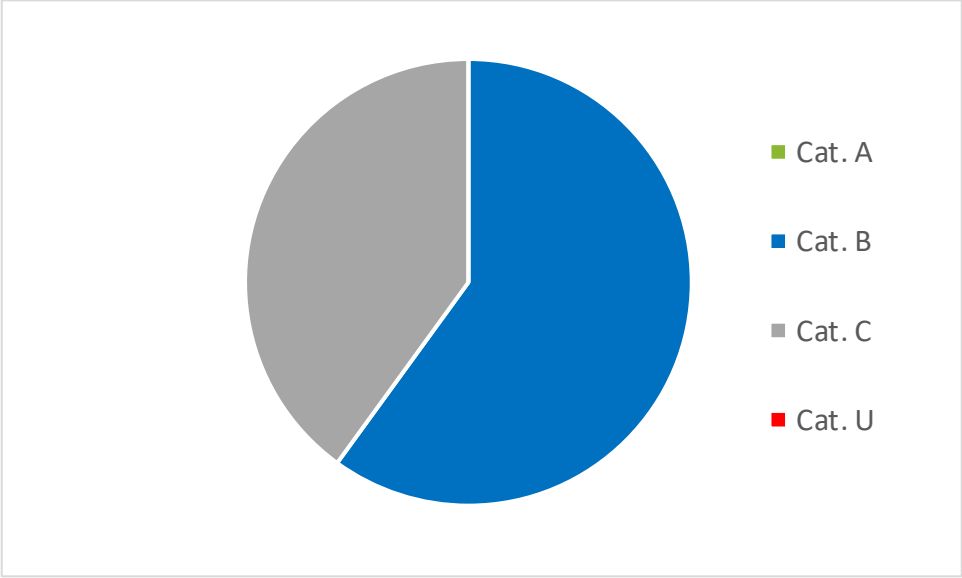
4.0 TREES

4.1 **Appendix 1** shows the British Standard BS 5837:2012 Cascade chart for Tree Quality Assessment

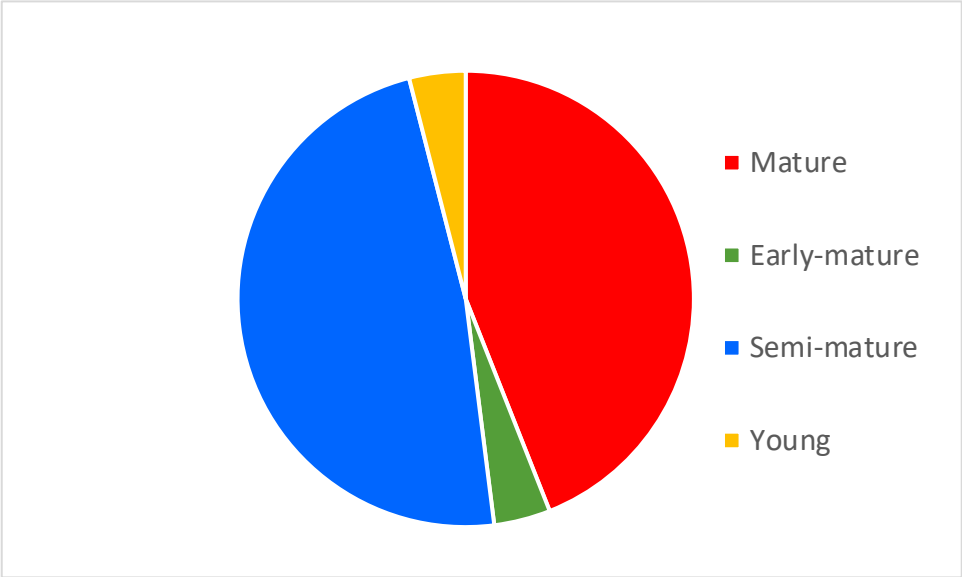
4.2 Table 1 below: Summary of trees surveyed by BS5837 category.

BS 5837 retention Category	A	B	C	U
Specific Trees and Groups		T964, T965, T967, T971, T973, T988, T989, T990 G1, G2, G3, G4, G5, G6, G7	T966, T968, T969, T970, T972, T974, T975, T986, T987, G8	
Total Number of individuals and groups	0	15	10	0

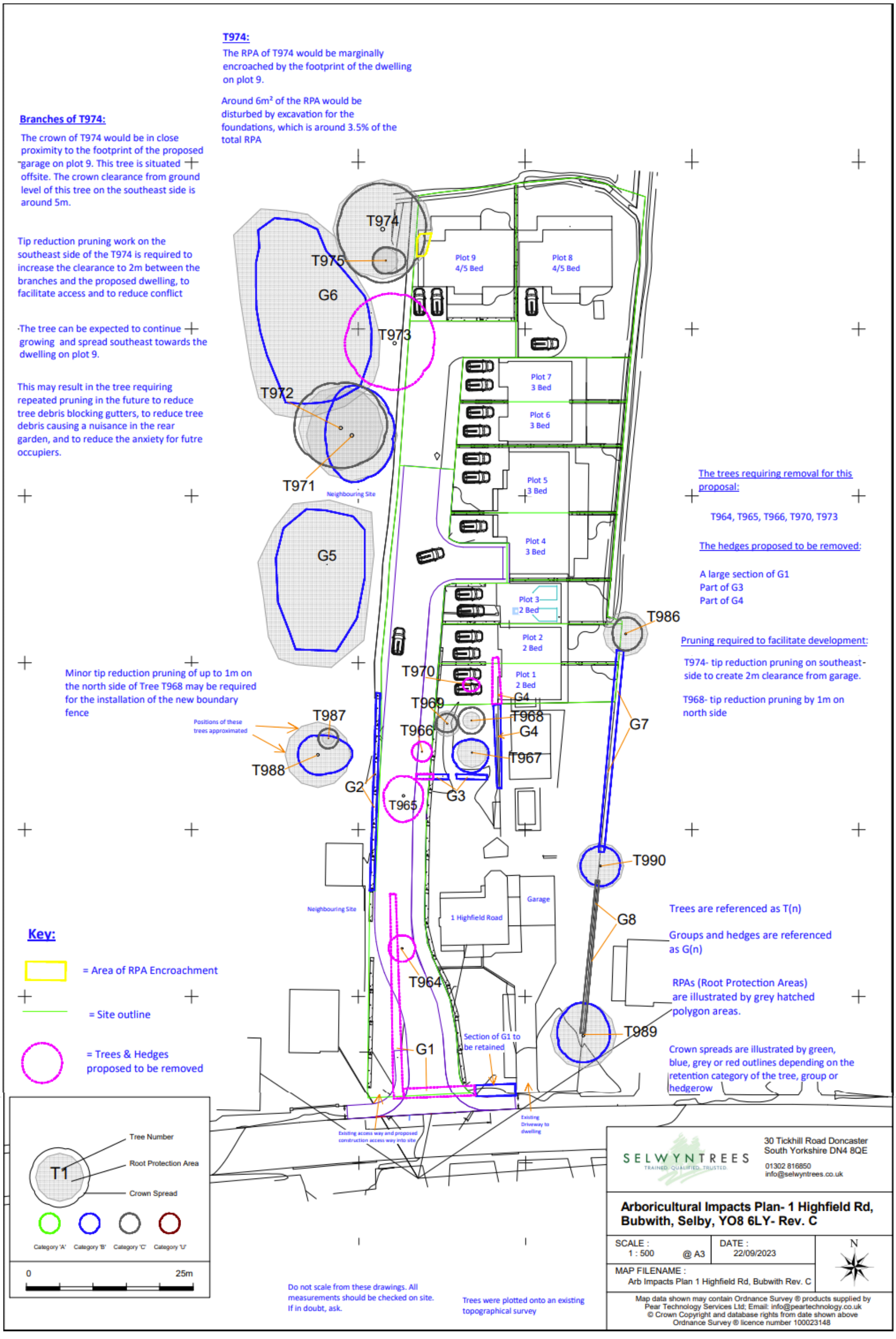
4.3 Visual representation of the BS5837 categories (Trees and groups):



4.4 Visual representation of trees by age class distribution (Trees and groups):



5.0 ARBORICULTURAL IMPACTS PLAN



6.0 TREE PROTECTION PLAN

T974:

The RPA of T974 would be marginally encroached by the footprint of the dwelling on plot 9.

Around 6m² of the RPA would be disturbed by excavation for the foundations, which is around 3.5% of the total RPA

New trees:

As new trees are proposed close to roads, driveways and car parking areas, root barriers or other engineering system would be required. This is to prevent tree roots lifting, distorting, cracking and damaging the new hard surfaces such as driveways and roads, which they will, unless engineering solutions are installed to prevent this from occurring.

Example above of a Root Barrier from GreenBlue Urban 2022 ©. Other manufactures are available.

Branches of T974:

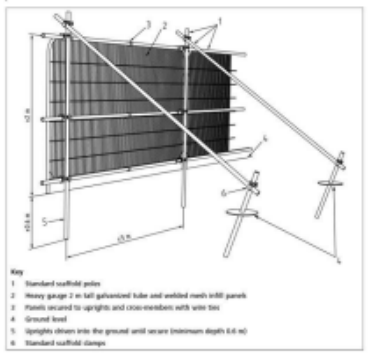
The crown of T974 would be in close proximity to the footprint of the proposed garage on plot 9. This tree is situated offsite. The crown clearance from ground level of this tree on the southeast side is around 5m.

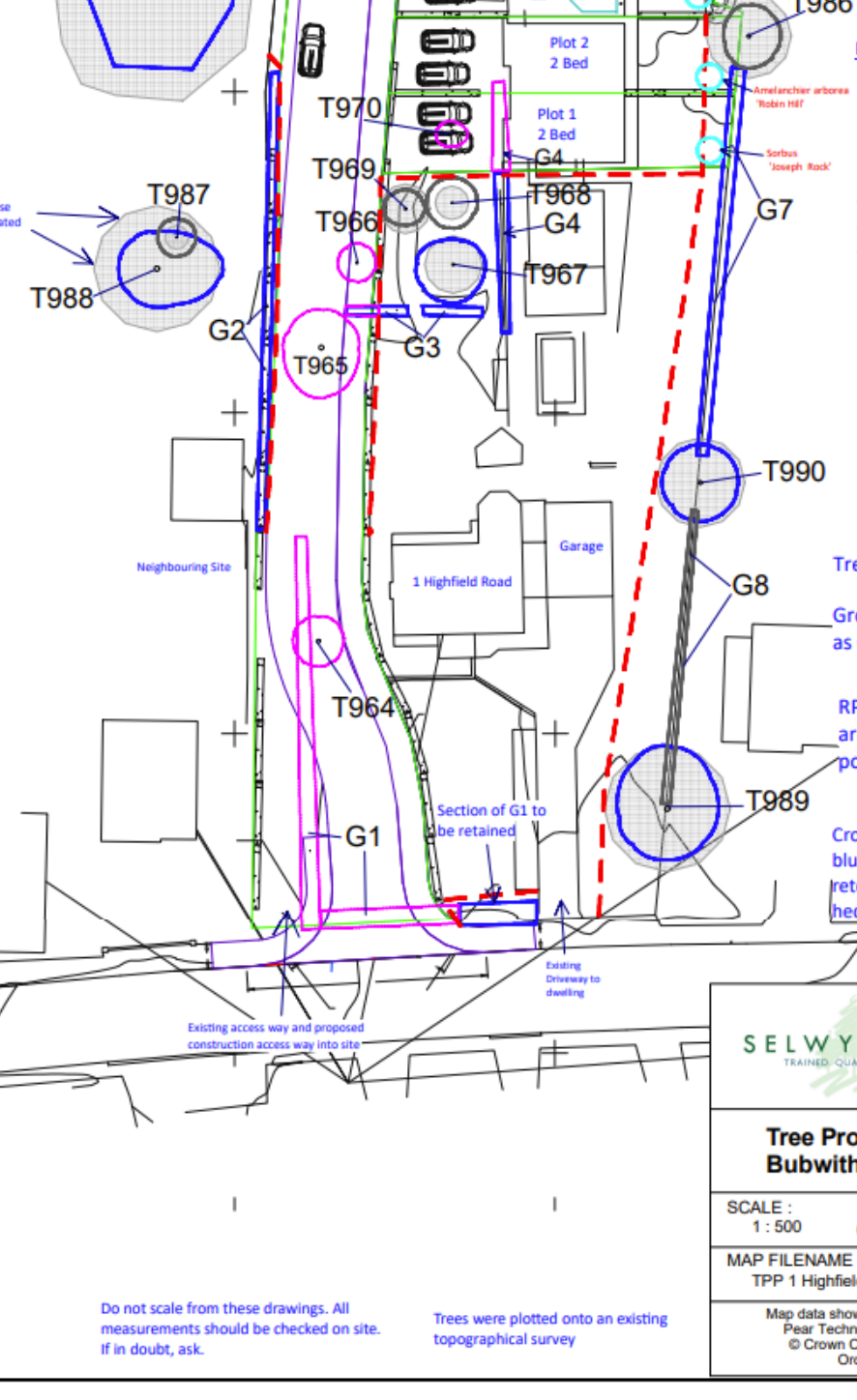
Tip reduction pruning work on the southeast side of the T974 is required to increase the clearance to 2m between the branches and the proposed dwelling, to facilitate access and to reduce conflict

The tree can be expected to continue growing and spread southeast towards the dwelling on plot 9.

This may result in the tree requiring repeated pruning in the future to reduce tree debris blocking gutters, to reduce tree debris causing a nuisance in the rear garden, and to reduce the anxiety for futre occupiers.

Tree protective fencing to be used, as per BS5837: 2012:





The trees requiring removal for this proposal:

T964, T965, T966, T970, T973

The hedges proposed to be removed:

A large section of G1
Part of G3
Part of G4

Pruning required to facilitate development:

T974- tip reduction pruning on southeast-side to create 2m clearance from garage.

Minor tip reduction pruning of up to 1m on the north side of Tree T968 may be required for the installation of the new boundary fence

Key:

= Area of RPA Encroachment

= Site outline

= Trees & Hedges proposed to be removed

= Indicative positions of New tree to be planted

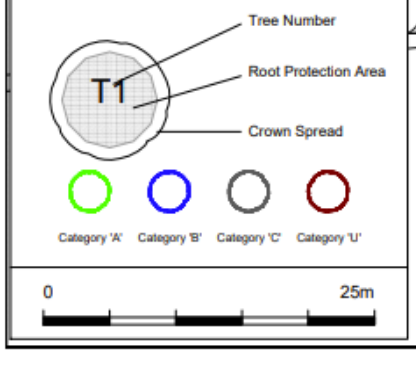
= Root Barrier

Trees are referenced as T(n)

Groups and hedges are referenced as G(n)

RPAs (Root Protection Areas) are illustrated by grey hatched polygon areas.

Crown spreads are illustrated by green, blue, grey or red outlines depending on the retention category of the tree, group or hedgerow



Do not scale from these drawings. All measurements should be checked on site. If in doubt, ask.

Trees were plotted onto an existing topographical survey

SELWYN TREES
TRAINED. QUALIFIED. TRUSTED.
30 Tickhill Road Doncaster
South Yorkshire DN4 8QE
01302 816850
info@selwyntrees.co.uk

Tree Protection Plan- 1 Highfield Rd, Bubwith, Selby, YO8 6LY- Rev. C

SCALE : 1 : 500 @ A3
DATE : 22/09/2023
N
MAP FILENAME : TPP 1 Highfield Rd, Bubwith Rev. C

7.0 ARBORICULTURAL IMPACT ASSESSMENT

7.1 Trees have been plotted on Tree Constraints Plan attached. Please see the attached document '*Introduction to Arboricultural Survey BS5837*' for pictures of the site and the **'BS5837 Survey Table'** for measurements and comments on trees surveyed.

7.2 The RPAs (Root Protection Areas) are illustrated with grey hatched polygon areas on the attached Tree Constraints Plan and Tree Protection Plan. The crown spreads are illustrated by either green, blue, grey or red lines, depending on the retention category of the tree.

7.3 The proposal is for 9 new units for residential dwellings on the site, with associated gardens, car parking spaces and access roads and driveways. The proposal referenced in the impact assessment is the document '0796_JWK Development_Highfield Road, Bubwith_site plans ALL SCALES'

Direct conflicts and Impacts

7.4 Trees that would be directly affected by the proposal and require removal, either because of direct conflict with the proposal, or due to it being unrealistic to retain them in context with the proposal (with their BS5837 retention categories shown) are shown below:

Category A	Category B	Category C	Category U
	T964, T965, T973, Large section of G1 Part of G3 Part of G4	T966, T970	

7.5 The trees and hedges proposed to be removed are illustrated on the attached Tree Protection Plan.

Photo 1: T964 and hedge G1, proposed to be removed

Photo 2: T964 and section of hedge G1 to be removed.

Photo 3: Trees T965, T966, T967, T968, T969, T970, looking south

Photo 4: Looking west towards T973, Oak. Significant scarring present on branches of this tree

7.6 Trees T966 and T970 are apple and Prunus trees, and were all assigned BS5837 retention category C. They are considered to have low Arboricultural value therefore it is my opinion that their removal will not significantly alter the amenity or Arboricultural value of the local area.

7.7 Trees T964, T965, T973, G1, G3 and G4 were all assigned BS5837 retention category B, and were considered to have moderate Arboricultural and landscape value.

7.8 In my opinion the removal of tree T964 and a large section of the hedge G1 may result in some loss of green amenity value at the front of the site as viewed from Highfield Road. However, new planting can be carried out in the front garden of 1 Highfield Road to improve the amenity value.

7.9 Parts of the hedges G3 and G4 are proposed to be removed. These were assigned BS5837 retention category B. However, they are relatively contained (both are less than 2m tall), therefore their removal is unlikely to significantly affect the amenity or Arboricultural value of the local area.

7.10 Tree T973 is an oak tree and was assigned retention category B. Significant scarring was observed on the underside on the majority of branches on the east side of the crown, with moderate deadwood and minor dieback observed. Epicormic growths were also observed throughout the crown, indicating the tree is experiencing stress. The RPA of the tree would be encroached by the proposed access road and the driveway on plot 9. Also, the closeness of this tree to the proposed dwelling on plot 9 would likely result in conflict between the tree and the future occupiers of the plot. Specifically, the anxiety of the tree failing, plus the overhanging branches over the driveway and access road, would likely drive a pressure to remove the tree.

7.11 Therefore T973 is proposed to be removed. This is regrettable; however, tree planting comprising or small and medium sized trees is proposed on the site to mitigate the tree removals, which may help promote the Arboricultural and amenity value of the local area.

Facilitation Access Pruning and Future Pruning required

7.12 A common conflict between trees and infrastructure is the pressure to prune/remove issue, whereby residents, occupiers and users of dwellings, gardens and driveways become increasingly anxious about trees growing close to structures, roads and gardens. This anxiety is due to a fear the trees will fail, causing damage or injury to any targets. This can drive a “pressure to prune” conflict whereby trees are repeatedly pruned or removed to eliminate the conflict. In doing so, this detrimentally affects the amenity value of trees in a local area and can cause significant injury, death and loss of trees. Therefore, ensuring sufficient space is designed between existing trees and new plots, and taking into account the future mature sizes of trees, is an essential part of planning for new developments.

7.13 The crown of T974 would be in close proximity to the footprint of the proposed dwelling on plot 9. This tree is situated offsite. The crown clearance from ground level of this tree on the southeast side is around 5m.

7.13 Tip reduction pruning work on the southeast side of the T974 is required to increase the clearance to 2m between the branches and the dwelling on plot 4 and to reduce conflict.

7.14 However, the tree will continue to grow and spread southeast towards the garage/dwelling on plot 9. This may cause conflicts with the future occupiers and they may desire the tree to be repeatedly pruned to reduce tree debris blocking gutters, to reduce tree debris causing a nuisance in the rear garden, and to reduce the anxiety they may have of the tree reaching towards the dwelling.

7.15 Minor tip reduction pruning of up to 1m on the north side of Tree T968 would be required for the installation of the new boundary fence for the dwelling at 1 Highfield Road, and to prevent mechanical injury being caused to the tree during construction activities.

Root Protection Areas (RPAs) of existing trees

7.16 The proposed dwelling on plot 9 would marginally encroach into RPA of T974, an offsite Ash. The RPA of this tree was calculated as a circle with a radius of 7.3m, and a total RPA area of 167.5m². This tree is mature and was observed to be in fair physiological condition.

7.17 Realistically, it must be expected that some disturbance to the RPA of T974 will occur during the excavation for the traditional strip footing foundations on plot 9. It may be that around 6m² of the RPA would be disturbed by excavation for the foundations, which is around 3.5% of the total RPA. As this is a relatively minor encroachment, the tree T974 would probably not be significantly affected, although some minor root loss of feeder roots may occur.

7.18 Protective fencing will have to be positioned to allow access for construction workers to construct the build within the RPA, but should restrict access to the rest of the RPA. The position of the protective fencing has been illustrated on the Tree Protection Plan.

7.19 The RPA (Root Protection Area) of the Hedge G2 can realistically be expected to receive some disturbance during the laying of the pavement and proposed access road. This hedge is currently not significantly tall (up to 2m) and its RPA has been estimated as a radius of around 0.8m for each stem. However, this hedge provides valuable screening between the site and the neighbouring residential property. Therefore, protective fencing will be used to fence off this RPA to minimise the disturbance to the roots so that the hedge can remain viable during and after development.

8.0 TREE PLANTING

8.1 Tree planting is proposed to mitigate the trees and hedges that would be lost under this proposal. The positions of the proposed trees, with proposed species are shown on the attached Tree Protection Plan.

8.2 Tree planting is important to safeguard the long-term amenity and arboricultural value of the local area. In total, 5 trees, and sections of 3 hedges, would be required to be removed for this proposal.

8.3 10 trees are currently proposed to be planted. New trees will be heavy standard size. Heavy standard size trees equate to trees with trunks that are 12-14cm in girth and are around over 3-3.5m in height

The principal tree species chosen for new trees are:

- *Amelanchier arborea* 'Robin Hill'
- *Betula pendula* 'Fastigiata Joes'
- Magnolia. × loebneri 'Leonard Messel'
- *Sorbus* 'Joseph Rock'
- *Carpinus betulus* 'fastigiata'

8.4 It is recommended that further tree planting and soft landscaping is proposed for within the newly structured front garden of 1 Highfield Road, to mitigate the section of hedging lost and to promote the green amenity value as viewed from Highfield Road.

8.5 As new trees are proposed close to roads, driveways and car parking areas, root barriers or other engineering system would be required. This is to prevent tree roots lifting, distorting, cracking and damaging the new hard surfaces such as driveways and roads, which they will, unless engineering solutions are installed to prevent this from occurring.

8.6 Irrigation systems will also be required for all new planted trees.

8.7 The root barriers will be positions along the ehdges of all new hardurafcing where new tres are platninged, to prevent roots from extenidng under the new hard surface.

Example of a Root barrier:

ReRoot Ribbed Barrier from GreenBlue Urban 2022 ©. Other manufactures are available.

8.8 Different depths of root barrier are available. A depth of 600mm is recommended for this project. It is supplied in roll form and cut in 10m increments. Recycled HDPE is resistant to puncture, biodegradation, and photodegradation. Joining tape allows root-proof joints.

8.9 A landscaping scheme has not been compiled as part of this Impact Assessment. If detailed information on planting pits, staking, irrigation and root barrier specifications are required, these can be compiled on request.

8.10 Appendix 5 gives further information on the general methods of planting and aftercare for ensuring successful establishment.

9.0 SHADING FROM TREES

9.1 The shade created by trees can help inform planning designs.

9.2 The Tree Shade map indicates the rear garden of plot 9 would experience some shading from T974. The Shade map indicates the dwellings and gardens of the other plots would not receive significant shading from existing trees.

9.3 The species for new trees to be planted should been chosen with their ultimate sizes and forms in mind, to minimise the conflicts with shading as the trees mature.

10.0 GROUND LEVEL CHANGES AND SERVICES

10.1 Level changes **must not** occur within any RPAs of retained trees.

10.2 Underground services and drainage service routes (if proposed) shall be located beyond the RPA of all trees retained. Any excavation for services within the Root Protection Areas will be undertaken following the guidelines published by NJUG Guidelines for the planning, Installation and Maintenance of Utility Apparatus in proximity to trees.

10.3 If the service runs are located within the RPA due to engineering difficulties post permission, the route will be designed to be as far away from any of the trees and if at all possible trenchless techniques considered.

10.4 An Arboricultural Officer or Consultant must supervise if a trench has to be excavated within the area designated as the RPA. It must be remembered that hand digging is time consuming and efficiency is often compromised due to the space and size needed to install the piping, ducting or actual service run within the trench. Air excavation needs to be considered when locating services within the RPA as this minimises damage caused to root systems.

10.5 **We have not been provided details of the utility and service runs for this proposal at the time of writing.**

11.0 CONSTRUCTION SITE ACCESS

11.1 The main construction access way into the site and to the development area will be via the south from Highfield Road.

11.2 Construction worker parking would be on the site, as there is limited space on the road side outside of the site for parking. A designated area for construction worker parking will be assigned. This must not be withing any RPAs of trees to be retained.

11.3 Construction worker parking shall be discussed at the pre-commencement site meeting.

12.0 CONSTRUCTION SITE LAYOUT

12.1 There will be a dedicated construction compound on the site that will not be located within the RPA of any of the trees on or surrounding the site.

13.0 CONSTRUCTION SITE MATERIALS

13.1 Washing out mixers around the edge of any RPAs will not occur. Mixing will take place in a designated area, away from trees. Mixing will be carried out on a temporary surface e.g. tarpaulin, to catch any spillage of mixing materials, to prevent leaching and contamination of the soil, or outside of the site. Spoil will not be thrown away on site and will not be thrown away in the vicinity of any trees or their rooting areas

13.2 No materials or construction debris shall be stored within the protective fencing around the RPAs of any retained trees on site.

13.3 Materials will be stored in areas as far away from RPAs as reasonably practical, or in designated area where load bearing ground protection has been laid.

13.4 Storage of materials shall be discussed at the pre-commencement site meeting.

14.0 TREE PROTECTIVE FENCING

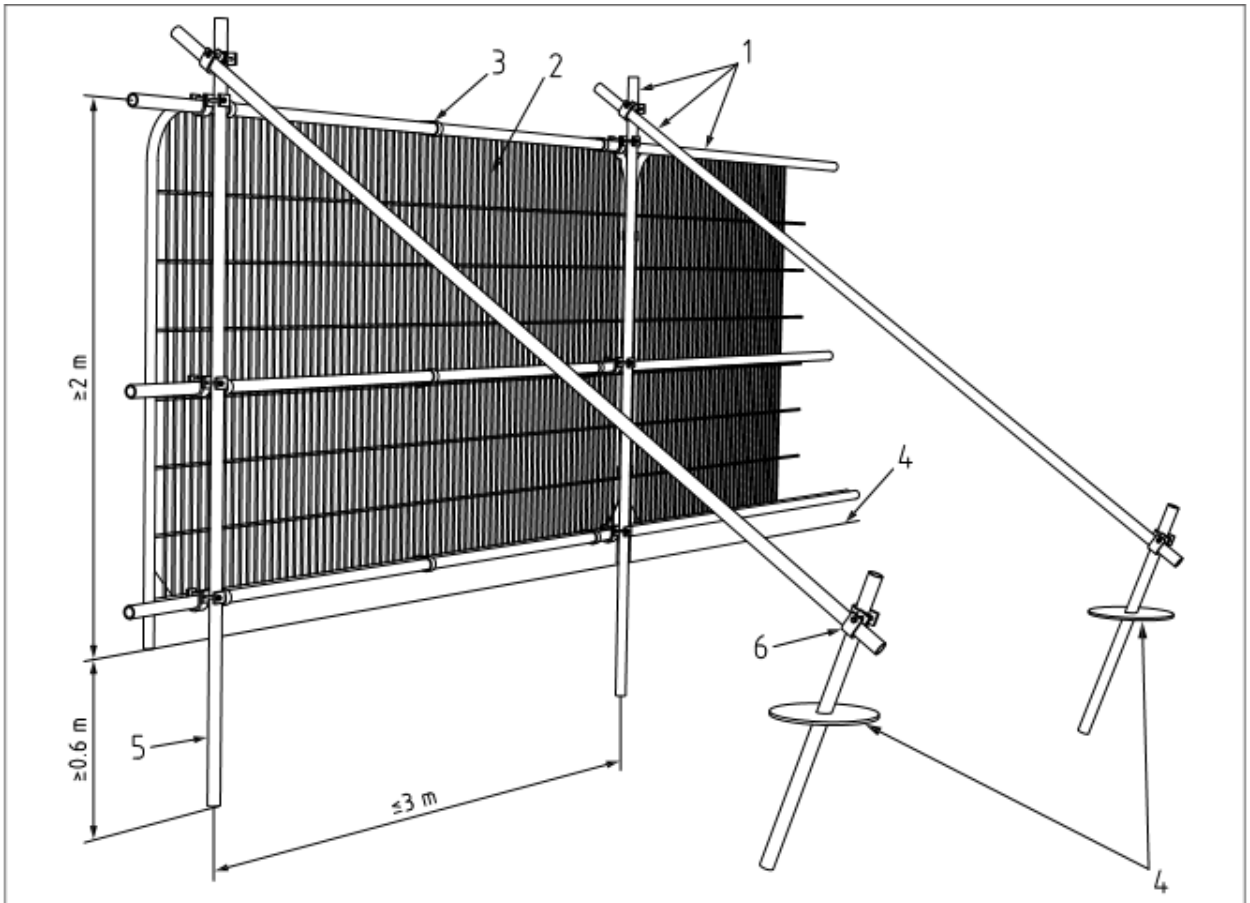
14.1 Tree protective fencing around the RPAs of retained trees will be in place before any demolition or construction work is carried out to prevent vehicular access damage. Tree protective fencing shall only be removed once all construction and development work has been completed. See figures 1 and 2.

14.2 Where temporary and permanent ground protection is to be used, these may be installed before the protective fencing.

14.3 It is important that the RPAs of retained trees are protected from compaction by vehicle or construction access, and from the storage of any materials on the site. Once the protective fences have been installed no piling of soil or materials, no soil stripping and no access within the fencing must occur until construction has finished and the fencing has been removed.

14.5 Protective fencing **MUST** be installed **BEFORE** any development commences and will not be removed until all development has been completed and all materials, machinery and vehicles have been removed from site.

14.6 Examples of tree protective fencing to be used, are shown below, from BS5837: 2012- Trees in relation to Design, Demolition and Construction- Recommendation':



Key

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

Figure 4: Examples of protective fencing and above ground stabilizing systems from BS 5837:2012 –Trees in relation to Design, Demolition and Construction

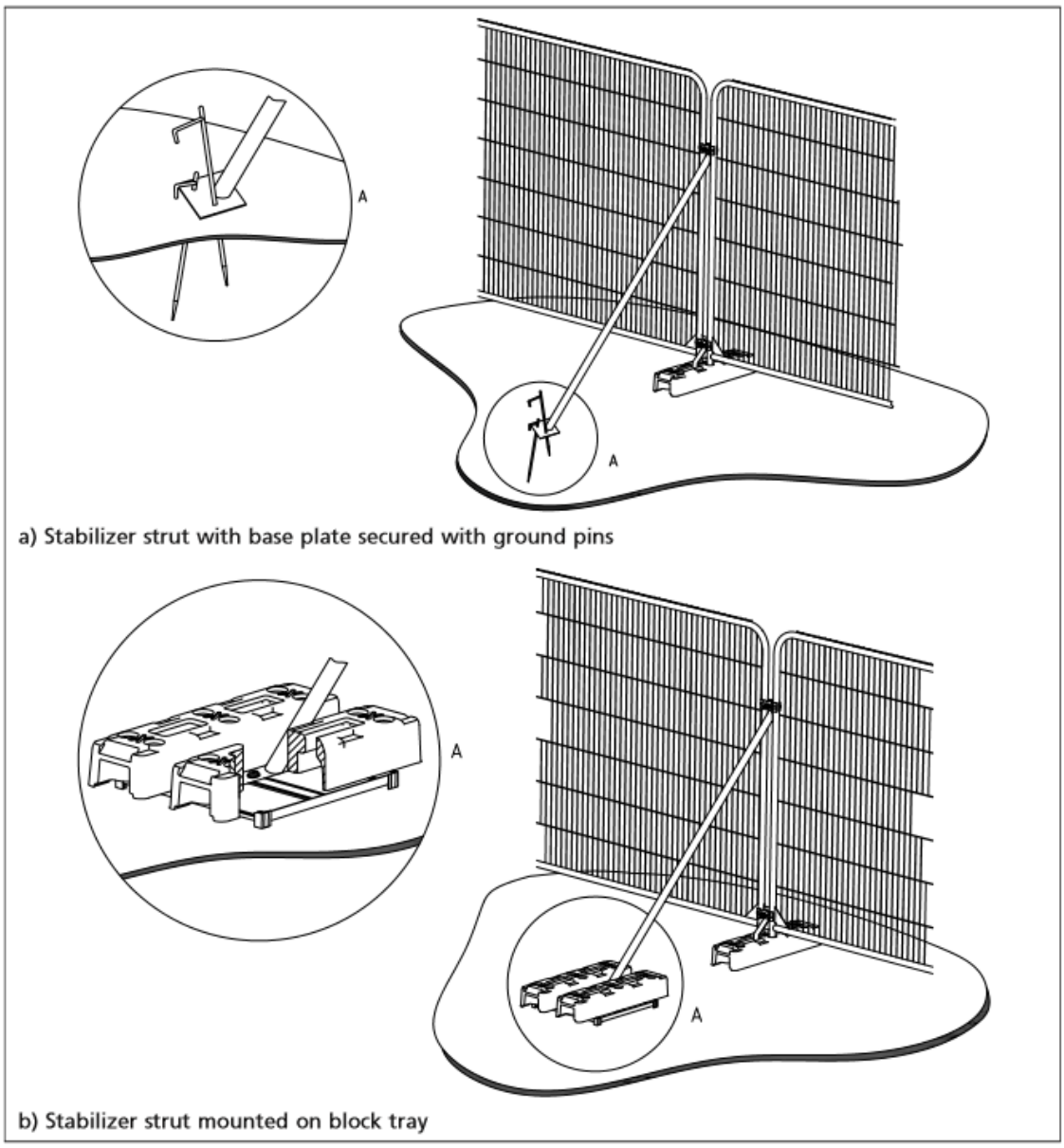


Figure 5: Examples of protective fencing and above ground stabilizing systems from BS 5837:2012 –Trees in relation to Design, Demolition and Construction

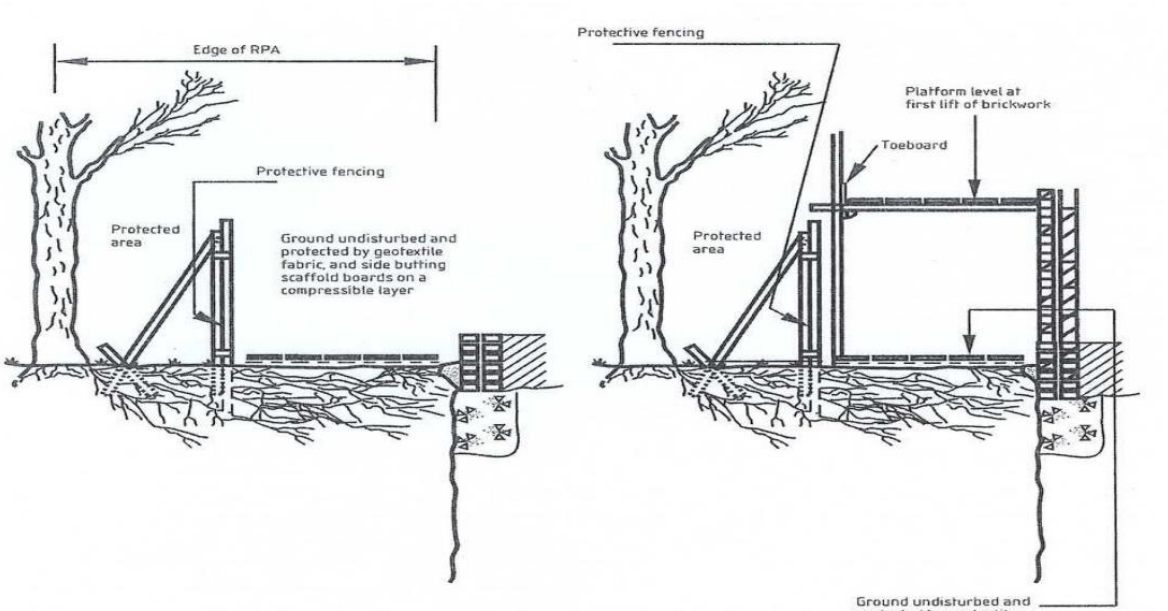


Figure 3. – Scaffolding within the RPA

14.7 Fixed to the outside of the fencing will be words such as 'TREE PROTECTION AREA – NO ACCESS OR WORKING WITHIN THIS AREA'. These notices will be fixed to the fencing using suitable fixings such as tie wires and should be A3 in size and laminated:

Figure 4: Example of Tree Protection site notice

15.0 ONSITE CONSULTATION AND SUPERVISION

15.1 An onsite meeting will be held with all relevant parties; including the developer, appointed Arboricultural supervisor and Local Planning Authority (LPA) representative. The purpose of this meeting is to agree location of permanent and temporary access, location of site storage, and the location of tree preservation barriers:

Activity	Arboricultural supervision required, and by whom?	Trees affected	Date action undertaken
Pre-commencement site meeting. Meeting with all parties to agree tree protection measures (will be undertaken before any development work commences)	All parties	All relevant trees	
Confirm the logistics of construction worker access into the site, position of Heras-style fencing and the unloading of materials.	All parties	All relevant trees	
Confirm where materials will be stored on site and where contractors will park vehicles.	All parties	All relevant trees	
Confirm where mixing will take place on site	All parties	All relevant trees	
Undertaking of suggested tree work (will be undertaken before any development work commences)	Yes by Arboriculturist and site supervisor	All relevant trees	

Erection of protective fencing. Agreed tree protective measures will be installed and checked (will be undertaken before any development work commences)	Yes by Arboriculturist and a site supervisor	All relevant trees	
The rest of the development commences protective fencing has been checked	Yes by Arboriculturist and site supervisor	All trees	
Dismantling of protective measures- protective fencing.	Yes by site supervisor and Arboriculturist	All trees	

Table 1: The table shows an auditable system detailing specific site events requiring input/supervision as per BS 5837:2012 section 6.3.

Note: existing planning regulations include the provision for local planning authorities to enforce planning requirements. The project Arboriculturist appointed by any developer can only help monitor site activity. Any enforcement is the responsibility of the local authority.

Report compiled by:

Rachel Selwyn

Signed…… Date 22/09/2022

Report checked by:

Richard Selwyn

Signed…… Date 22/09/2022

APPENDIX 1: BRITISH STANDARD BS 5837:2012 TABLE 1 CASCADE CHART FOR TREE QUALITY ASSESSMENT

Trees for Removal			
Category and definition	**Criteria**		
Category U Those in such a condition that 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 or other U category trees (e.g where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning) • Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline. • Trees infected with pathogens of significance to the health and /or safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality. *NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve*		
Trees to be considered for retention			
Category and definition	**Criteria- sub categories**		
	1 Mainly Arboricultural Values	**2 Mainly landscape values**	**3 Mainly Cultural values**
Category A Trees of high quality with an estimated remaining life expectancy of at least 40 years	Trees that are particularly good examples of their species, especially if rare or unusual, or those that area essential components of groups, or of formal or semi-formal Arboricultural features (e.g. the dominant and/ or principle trees within an avenue)	Trees, groups or woodlands of particular visual importance and /or landscape features	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (eg. Veteran trees or woodland pasture)
Category B Trees of moderate quality with an estimated remaining life contribution of at least 20 years	Trees that might be included in the high category but are downgraded because off impaired condition (e.g. presence of remedial defects including unsympathetic management and storm damage), such that they are unlikely to be beyond 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 benefits
Category C Those of low quality and value with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150mm	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 screening benefit	Trees with no material conservation or other cultural benefits

APPENDIX 2: INITIAL TREE WORKS SCHEDULE

Initial tree work required for this proposal:

Tree Ref.	Initial Work required for the proposal
T964, T965, T973, Large section of G1 Part of G3 Part of G4 T966, T970	Remove trees
T974	Carry out tip reduction pruning on southeast side to create 2m clearance from proposed garage.
T968	Tip reduction pruning by 1m on north side

APPENDIX 3: STATUTORY PROTECTION

1.1 Wildlife and Countryside Act 1981 (with amendments) and European Protective Species

1.1.1 The Wildlife and Countryside Act protects wildlife and their habitats and includes the protection of birds, bats and other protected species. It is an offence to knowingly or recklessly disturb them therefore it is important to recognise their presence. Any tree works should be timed to not disturb such protected species and be considerate of their presence. More information can be found at https://www.gov.uk/topic/planning-development/protected-sites-species

APPENDIX 4: TERMS OF REFERENCE

1.1 BS5837:2012 'Trees in relation to design, demolition and construction – recommendations'

1.2 BS3998:2010 'Tree work – recommendations'

1.3 NJUG 4 – National Joint Utilities Group "Guidelines for the planning, installation and maintenance of utility apparatus in proximity to trees. Volume 4, issue 2. London: NJUG 2007" To include Operatives Hand-out Guidance

1.4 BGS Open Source Soil Data http://www.bgs.ac.uk/nercsoilportal/maps.html

1.5 Cranfield University LandIS Land Information System
http://www.landis.org.uk/services/soilscapes.cfm

1.6 Cranfield Soil and Agrifood Institute http://www.landis.org.uk/soilscapes/

APPENDIX 5: GENERAL INFORMATION ON PLANTING

1.1 Information on tree planting has been provided below.

1.2 New planting helps safeguard the long-term amenity value of the area. Such a policy will provide for a more effective long-term safeguarding of the local urban forest and the Arboricultural amenity value of the area.

1.3 New tree planting will need to take ultimate size of the trees and shading into account. New planting will take into account ultimate size and position to minimise future shading conflicts, and direct pruning conflicts.

How to plant a tree

1.4 The following information on how to plant a tree successfully is taken from the International Society of Arboriculture (2019) and the BS 8545:2014 Trees: from nursery to independence in the landscape.

1. Locate all underground utilities prior to digging.
2. Identify the trunk flare. The trunk flare is where the trunk expands at the base of the tree. This point should be partially visible after the tree has been planted.
3. Dig a tree pit. Holes should be no deeper than the existing rootball or container depth and have a diameter at least 75mm greater than that of the root system. During excavation of the tree pit, the soil dug should be placed to one side separating topsoil and subsoil as far as is practical.
4. Remove the containers or cut away the wire basket. Inspect container tree root balls for circling roots. Straighten, cut, or remove them. The tree's root system should be wetted prior to planting
5. Place the tree at the proper height. Take care to dig the hole to the proper depth – and no more. If the tree is planted too deep, new roots will have difficulty developing because of a lack of oxygen. The tree should be planted at the correct depth taking into account the position of the root flare and the finished level. Allowance should be made for settling of the soil after planting.
6. Straighten the tree in the hole. Before backfilling, have someone view the tree from several directions to confirm it is straight.

7. Fill the hole gently, but firmly. Pack soil around the base of the root ball to stabilize it. Fill the remainder of the hole, firmly packing the soil to eliminate air pockets that may dry out roots. Further reduce air pockets by watering periodically while backfilling. Avoid adding fertilizer at the time of planting. Backfill should be added gradually in layers of 150mm to 230mm depth ensuring the tree is held up right. At each stage the fill should be firmed in to eliminate all air pockets under and around the root system, but with care being taken not to excessively compact the soil.

8. Use a support system (stake), if necessary. Studies have shown that trees establish more quickly and develop stronger trunk and root systems if they are not staked at the time of planting. Therefore, staking should be carried out if it is deemed necessary.

9. Mulch the base of the tree. Mulch is organic matter spread around the base of a tree to hold moisture, moderate soil temperature extremes, and reduce grass and weed competition.

10. Immediately after planting, the tree should be saturated to field capacity.

11. Provide follow-up care. Keep the soil moist, but not water-logged. Water trees at least once a week, barring rain, and more frequently during hot, windy weather. Formative pruning.

New positions for tree planting

1.5 Trees will be positioned to allow them to reach their mature size without being impeded or risk causing conflict in feature (e.g. "*the right tree in the right place").* The crown habitat of the species and ultimate size is therefore very important for tree species selection for new planting.

1.6 Figure 4 illustrates how best to plant a tree to help it establish in a new location. The figure below has been sourced from Nichol's Garden Group Ltd. (2019)

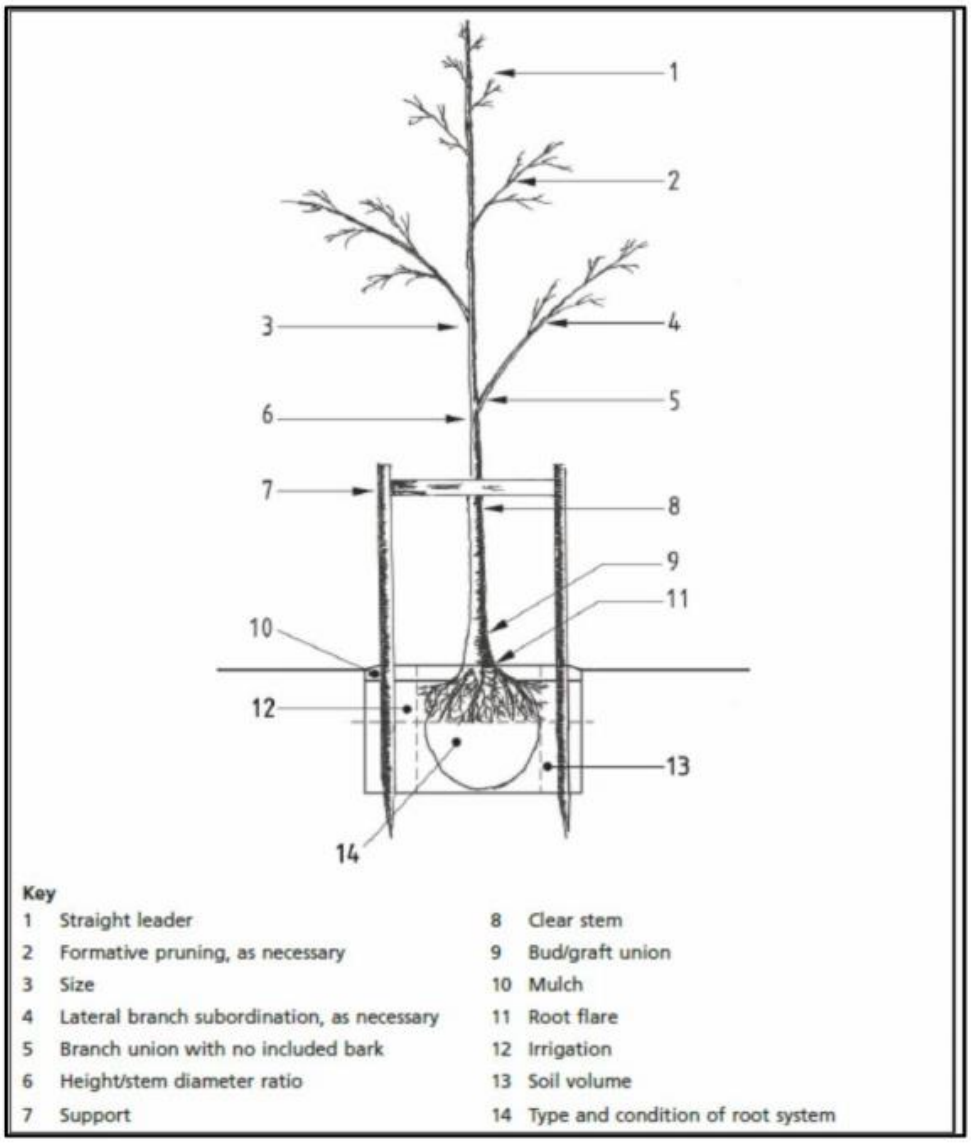


Figure 1.2 Factors involved with tree planting © BS 8545:2014

Fig. 6: Diagram credit to BS8545: 2014

Where and When to Plant

1.7 Ideally trees will be planted in the dormant season, when weather conditions are cool which allow plants to establish roots in the new location before spring rains and sun warmth stimulate growth.

1.8 Trees will be suited to the soil type in the area and take into account the nature of the site; i.e exposed, sheltered, full sun, shade, general weather and presence of nearby structures. The ultimate size of the tree should be taken into account when choosing species. Minimising future conflict with roads, buildings and driveways when a tree reaches maturity, is a very important factor is sustainable tree planting

1.9 Trees will ideally be positioned at least 1.5-2m from pavements and roads, to minimise future conflict, and ideally at least 1m from boundaries.

Tree Stock

1.10 Trees should be from a reputable nursery, and should be in good condition on arrival. Stock size should be specified.

1.11 All new trees will require watering regularly during the first 5 years. For small hedging type stock, the trees can be smaller. Generally, younger plants and trees can establish better than older trees due to them experiencing less transplanting stress.

Watering

1.12 Watering is very important in the first years of a tree's life to help it establish. It is important that trees are watered regularly for the first years, especially during the summer months. Formative or corrective pruning can also be part of long-term tree maintenance.

1.13 Any tree that fails to establish within 5 years after planting will be replaced.

1.14 An irrigation system shall be used for all newly planted trees. This will consist of a large capacity irrigation system with a fixed grid inlet, for tree planting in softscape (see below example from Green Blue Urban, 2021). The grid lid prevents debris and rodent ingress.

Photo 1: Example of a large capacity irrigation system from Green Blue Urban. Copyright to Green Blue Urban (2021)

Photo 2: Example of a tree with an irrigation system installed. The grid lid is present at ground level. Copyright to Green Blue Urban (2021)

1.15 The irrigation system allows both rainwater and direct watering to have a higher chance of reaching the root system and therefore providing the roots with the water they require. Watering and irrigation of new trees is essential for increasing the likelihood of tree surviving after planting.

Maintenance and management of grass and weeds around trees

1.16 Without weed and grass management, trees will struggle to compete and become overcrowded ultimately affecting their long-term future. Grass should be kept away from the base of trees, at least 40-50cm, to prevent lawn mower and strimmer damage. Strimming should not be carried out around trees as it can cause serious damage.

Mulch

1.17 The soils database indicates the soil present at the site has low fertility and is of poor quality. Applying mulch will add organic matter the soil and provide nutrition for the tree roots. It is recommended that mulch is thorough incorporated into the backfill of the soil and into the surrounding area, to encourage healthy root growth into the surrounding soil.

1.18 Mulch will also be applied around the base of trees to help prevent grass and weeds growing around the tree. It will be kept at least 10cm away from the bark at the base of the tree. Mulch will help suppress grass and weeds to some extent. However, removing weeds by hand would also be an

important part of general upkeep and maintenance of newly planted trees, to prevent resorting to chemical weed killers as a control.

1.19 Reapplying mulch, manually removing weeds and manually ensuring grass is kept approx. 40-50cm away from the bases of trees are imperative parts of a successful landscaping scheme. Grass and weeds grow the most during the growing season, from approximately March-October. Regular maintenance in these months is therefore crucial for successful establishment.

Staking

1.20 Double stake:- This is the standard method of staking container-grown and rootballed trees. Two or three stakes can be inserted opposite each other, or equally spaced around the tree outside the root ball, and secured to the trunk by long ties or a timber crossbar and tie. This method is also useful on windy sites (RHS, 2020). The stakes should be as low as practically possible to allow some movement in the main stem and allow stem taper to develop, to allow the tree to build adaptive strength in the main stem.

1.21 Special tree ties are available made of durable, long-lasting plastic, with buckles for fastening and adjustment. These ties can be loosened as the tree girth expands. Use spacers to prevent the stem and stake rubbing against each other. Make a figure of eight to hold the tree to the stake, with the spacer in between the tree and the stake, and secure the tie to the stake with a nail. (RHS, 2020). Biodegradable ties such as degradable hessian, can also be used. These ties will require loosening when required to prevent them damaging the young stems.

1.22 Problems with staking:- Most problems with staking come from the stakes being too high and the ties becoming too tight or from damage after storms. Check the ties regularly for rubbing and adjust if necessary. Constriction of the stem by ties happens very quickly, so fast-growing trees need frequent checking. After bad weather, check for abrasion and snapped stakes or ties (RHS, 2020).

Strimmer damage

1.23 Strimmer damage can cause major damage to the stems of young tree. Some trees never recover from such damage. Therefore, it is recommended that grass guards are installed around trees to prevent strimmer damage. Mulch around the base of the tree, but not piled up against the stem, can also help suppress weeds and grass, limiting strimmer damage.

APPENDIX 6: AUTHOR'S QUALIFICATIONS AND EXPERIENCE

Miss Rachel Selwyn BSc (Hons) Arboriculture and Urban Forestry, MArborA, QTRA registered.

Rachel is a consultant at Selwyn Trees and has 7 years of experience working in the role. She has a BSc (Hons) degree in Arboriculture & Urban Forestry from the University of Central Lancashire. She is a professional member of the Arboricultural Association and is a registered user of the Quantified Tree Risk Assessment methodology. Her work ranges from detailed tree assessment using specialist technology to producing a range of tree reports for development projects and providing tree protection solutions to BS5837 standards.

Mr Sam Selwyn Dip Arb L4 (ABC), ISA Certified Arborist, TecharborA

Sam has over ten years of experience working as a climbing arborist and is certified by the International Society of Arboriculture. He has the Level 4 Diploma in Arboriculture, is a technical member of the Arboricultural Association and has the Lantra professional tree inspection (PTI) qualification. Sam prepares reports for development sites and undertakes aerial inspection of trees. He also assists with undertaking condition surveys and detailed tree assessments using specialist technology.

APPENDIX 7:BACKGROUND TO TREE PROTECTION

1.1 Any development work on the site may detrimentally affect trees to be retained if those trees do not receive protection. The risk of damage to trees both above and below ground needs to be controlled by a strong physical barrier. The ground beneath the trees might be used by traffic or for storage of materials or be excavated, all of these will potentially be detrimental to the root systems.

1.2 The majority of tree roots generally occur in the top 90cm of soil, as at lower depths there is less access to water and oxygen. Contrary to popular belief mature trees do not have large tap roots that obtain water from great depths. Tree roots need to take up water, oxygen and minerals in order to survive. Therefore, any compromise to a tree's rooting area may affect its stability, ability to function and survival.

1.3 Construction activity can significantly affect the rooting area by compacting soil around trees and thus reducing the pore spaces. Pores are very important in soil for holding water and oxygen. Compaction inhibits root growth and penetration as well as decreasing the oxygen in the soil which is essential for the growth and function of the roots.

1.4 Damage caused to rooting environments can disrupt the balance between the roots and crown established by a tree over many years, and this could be potentially detrimental to the tree health or may compromise the structural integrity or the stability of the tree. Trees can decline in health and even die from root severance and damage.

1.5 Possibilities of damage to trees during and following construction processes include direct and indirect damage. Direct damage involves the mechanical physical damage to trees or their roots or roots systems via machinery, soil excavation or hazards such as fire. Indirect damage involves injury that occurs to a tree by activities that take place near the tree, such as compaction, level changes, soil damage or chemical contamination near the root plate.

1.6 For trees to be retained, light tree surgery work such as crown lifting and/or other tree protection methods along with implemented construction methods can reduce the risk of damage.

1.7 For protecting trees that are to be retained BS 5837:2012 –'Trees in relation to Design, Demolition and Construction' gives guidance on how to manage trees close to proposed works. BS 5837:2012 gives guidance on calculating the Root Protection Area (RPA) around a tree which estimates the area of soil needed to ensure the survival of retained trees.

1.8 The RPA gives guidance on the rooting area needed in order for a tree to survive. Once the RPA around trees to be retained has been set, no entry into the RPA by machinery should be allowed, nor should the RPAs be used for any type of storage or access pathway. Encroaching into a tree's RPA should only be undertaken if agreed by the Local Planning Authority (LPA). By adopting such measures, lasting damage to existing trees can be avoided and the amenity values can be preserved. For groups an average RPA for 1 tree or 1 clump of trees is taken and used to illustrate a likely representative RPA for the whole group on the associated maps.

1.9 In certain circumstances RPAs may be subject to a 20% offset but on one side only. The offset must be accounted for on the remaining sides, and can only be agreed after taking into site specific and tree specific factors.

1.10 By considering the RPAs and existing site features (including natural and man-made topography) and by adopting construction and tree protection techniques that minimise root disturbance, successful construction projects can be achieved.