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Arboricultural Report

for development purposes following BS 5837: 2012 Trees in relation to design, demolition and construction - Recommendations

at

Chapel Street
Glossop
Derbyshire
SK13 8AR

Produced by

Scott Fitzgerald BSc (Arboriculture), M Arbor A

of

Scott Fitzgerald Tree Consultants Ltd

on behalf of

The Landbank

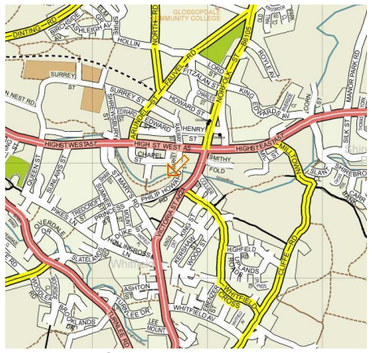
3rd August 2012

Report Summary

The pie charts to the far right present key statistics found within our survey. The bar charts to the right indicate the age distribution, species distribution and the works we have recommended. Other sections within the report summary are self explanatory.

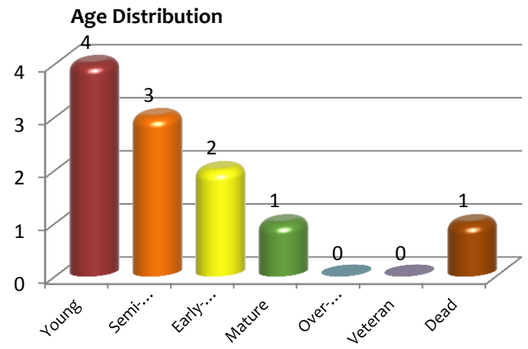
Site Location: Chapel Street, Glossop

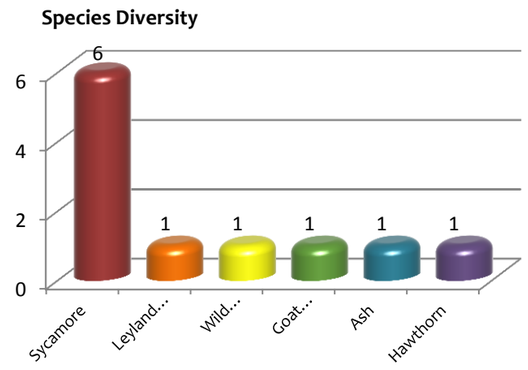
Extent of the survey

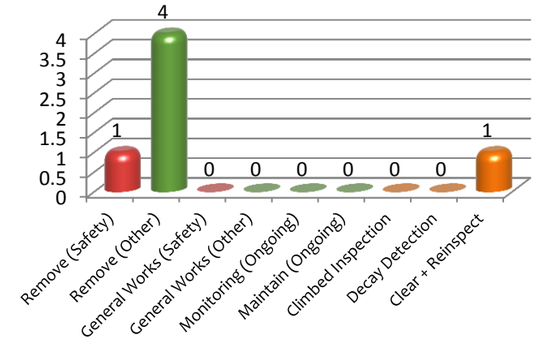

Site location

Summary

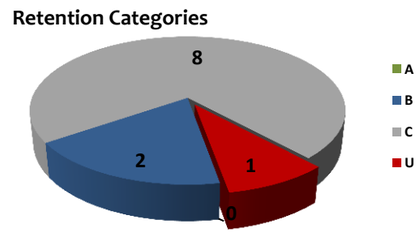
- A survey was conducted to BS5837. The condition of all trees on site was assessed and a Retention Category was allocated. Tree positions and Root Protection Areas are plotted on a Tree Constraints Plan.
- No Arboricultural Impact Assessment has been conducted at this stage.
- We recommend that this report and the constraints plan are used within the design process to help achieve a proposal with minimal impact.
- Where possible category A and B trees should be retained and works within their Root Protection Area should be undertaken in a sympathetic manner. General advice is included within this report as to how this may be achieved.
- The majority of trees are located adjacent to the site boundaries so there is a significant window for development with little impact on trees.
- Upon instruction Scott Fitzgerald Tree Consultants will be happy to provide Impact Assessments to assist the design process and an Arboricultural Method Statement to ensure that the retained trees are not damaged during the construction process.

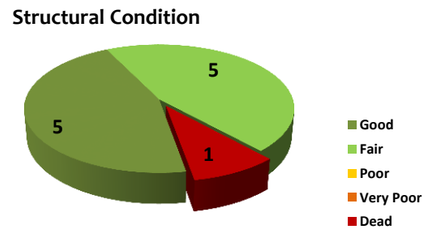


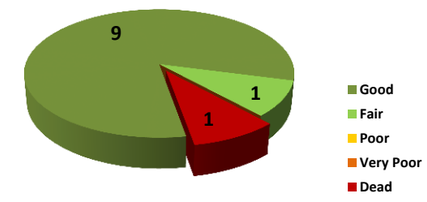


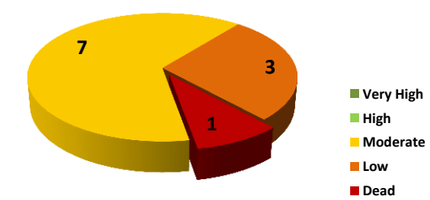


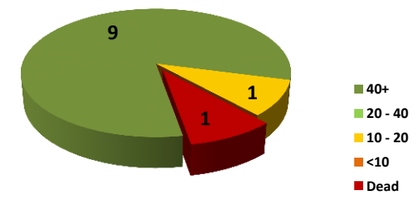
Trees surveyed as individuals: 11
groups: 0
hedges: 0
woodlands: 0











Contact Details.

Local Authority:	High Peak Borough Council	Tel.	0845 129 7777
Tree Officer:	Monica Gillespie	Tel.	0845 129 7777
Arboricultural Consultant:	Scott Fitzgerald	Tel.	0161 637 5242

Tree Protection Status

We are informed that:

- The site is within Norfolk Square Extension conservation area.
- There are no TPOs affecting trees within the site.

See Section 4 for further details.

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1. Introduction

1.1. Instructions and references

1.1.1. We have been instructed by Paul Butler Associates on behalf of the client to carry out an Arboricultural Survey to British Standard 5837:2012 guidelines, at Corner of Chapel & Market Street, Glossop and produce our findings in a report.

1.1.2. A scaled plan has been provided with all tree positions already plotted.

1.1.3. A summary of Scott Fitzgerald's qualifications and experience is included in Appendix 5.

1.2. Scope and limitations of the report

1.2.1. The report is designed to accompany a planning application for development proposals at the site address on the title page following guidance set out in BS 5837:2012 Trees in relation to design, demolition and construction - Recommendations. The report has been compiled objectively and does not take into account future proposals for the site.

1.2.2. The report is based upon a visual inspection. The consultant shall not be responsible for events that happen after the date of the report due to factors that were not apparent at the time, and the acceptance of this report constitutes an agreement with the guidelines and the terms listed in this report.

1.2.3. Any defects seen by a contractor or the employer that were not apparent to the consultant must be brought to the consultant's attention immediately.

1.2.4. The consultant accepts no liability in respect of the trees unless the recommendations of this report are carried out under his supervision.

1.2.5. Assessing the potential influence of trees upon load bearing soils, beneath existing and proposed structures resulting from water abstraction by trees or rehydration of shrinkable soils was not included in the contract brief and is therefore not considered in the report. The consultant cannot be held responsible for damage arising from such action.

1.2.6. Potentially hazardous trees are highlighted and appropriate recommendations are made. However, this report should not be seen as a substitute for a full tree risk assessment or management plan which are specifically designed to minimise risk and liability associated with responsibility for trees.

1.2.7. Scott Fitzgerald carried out the survey and assessment of trees on 1st August 2012. Weather conditions during the site visit were fine with good visibility.

2. Site overview

2.1. Location

2.1.1. The site is situated in Glossop town centre. The co-ordinates are 53°26'32.04"N, 1°57'5.12"W, the OS reference is SK 0332493941 and the altitude is 152m above sea level.

2.1.2. The survey was limited to the area shown in Figure 1.

Figure 1 Extent of the survey.

2.2. Site description

2.2.1. The site consists of a derelict plot that is situated on several different levels and has various surfaces including hard standing, building rubble and long grass Part of the site to the north is currently used as a private car park. Vehicular access exists from Chapel Street to the north.

3. Tree data schedule

3.1.1. The Tree Data Schedule in Appendix 1 contains information gathered during the survey conducted on 1st August 2012.

3.1.2. The reader should refer to Appendix 2 in order to correctly interpret the tree data.

3.1.3. All images within the Tree Data Schedule are diagrammatical only. Their purpose is to indicate, at a glance, the relative dimensions of each tree. The images are computer generated based on measurements recorded for stem diameter, crown spread, crown height and overall height.

4. Tree condition and recommendations

4.1.1. The recommendations found in the Tree Data Schedule in Appendix 1 are based on assessments from a health and safety perspective and are made regardless of the development proposals. Section 4 discusses in further detail our findings during the site visit in relation to the health and safety of the trees, and future users of the site.

4.2. Summary of findings

4.2.1. T7 is dead and will require removal in order to prevent possible damage due to tree or limb failure. This should be prioritised as indicated on the Tree Data Schedule.

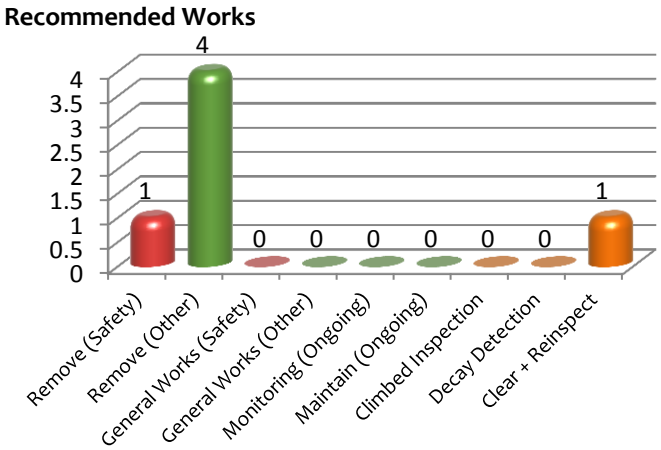
4.2.2. Trees recommended for removal due to their poor condition but not considered to be immediately hazardous or likely to cause injury or damage are T1, T2, T3 and T4. They are growing through boundary fences, around metal rails or abutting brick-built structures that make their long-term retention unfeasible. The removal of these trees is generally less of a priority.

4.2.3. T9 could not be fully inspected due to the presence of dense ivy. It is recommended that the ivy is removed so that it can be re-inspected.

4.2.4. All other trees are deemed to be in an acceptable condition and no further works have been recommended.

4.3. Work priority and future management

4.3.1. The Tree Data Schedule in Appendix 1 details what works are required to individual trees in order to ensure that they are in an acceptable condition. The chart below summarises these works:



Key:

Bars coloured red indicate hazardous trees.

Bars coloured orange indicate trees which may be hazardous and require further investigation.

Bars coloured green indicate trees which are not hazardous and the work is therefore of a lower priority.

4.3.2. The following table suggests a schedule for prioritizing works required to individual specimens, as outlined in the Tree Data Schedule in Section 3, in order to ensure that the associated risks are abated:

Priority	Definition	Tree Number
Urgent	As soon as possible	None
Very High	Within 1 Month	None
High	Within 3 Months	T7, T9
Moderate	Within 1 year	None
Low	Within 3 years	T1, T2, T3, T4

4.3.3. Upon completion of any recommended works, the trees will be in an acceptable condition from a health and safety perspective. However, they should be regularly inspected according to the following suggested schedule:

Inspection Frequency (years)	Tree Number
0.5	None
1	T8, T9
1.5	None
3	T5, T6, T10, T11

4.4. Tree protection status

4.4.1. We have been informed by the planning department at High Peak Borough Council that the site is within Norfolk Square Extension conservation area and there are no TPOs affecting trees within the site.

4.5. Tree protection – general advice

4.5.1. It is recommended that the local authority is consulted before any tree works are undertaken, as new TPOs may have been created since the time of enquiry, and heavy fines exist for unauthorised works to protected trees.

4.5.2. A TPO can be overridden by planning consent, where tree removal is necessary to enable the development to proceed.

4.5.3. All works to protected trees require consent from the local authority, including pruning. However, this does not include the removal of dead wood, which is exempt. Although dead, dying and dangerous trees are exempt from a TPO, it is advisable to give the local authority five days' notice of intention of their removal.

4.5.4. In a conservation area, all trees are effectively protected. Where tree work is required in a conservation area, the local authority must be given six weeks'

notice of intent, which allows them to either make a TPO or give consent for the intended work. The proposed tree work can proceed after six weeks, if the local authority has not responded.

5. Arboricultural Impact Assessment

5.1.1. At the time of writing the report, we are unaware of specific development proposals for the site. It is recommended that an Arboricultural Impact Assessment is undertaken once plans are available, in order for us to advise on the impact of the development and any mitigation that may be required.

5.2. Tree constraints

5.2.1. The majority of surveyed trees are relatively poor specimens and could be removed regardless of proposals. Although they have the potential to cause damage to existing structures, they are not immediately hazardous from a health and safety perspective. The better quality trees are to the west of site, one of which is situated on third party land.

5.2.2. There are relatively few trees on site and the specimens that are worthy of retention are located to the site boundaries. The site therefore has significant development potential from an arboricultural perspective.

5.3. Tree protection during construction

5.3.1. BS 5837 recommends that an Arboricultural Method Statement is adhered to which ensures that all retained trees are adequately protected during the construction phase. This should be highly site specific and take into account such things as hard surface design, implementation of services and foundations, storage of materials, scaffolding, use of heavy plant such as cranes or excavators, fencing specification, and necessary tree works. Adherence to such a Method Statement will help to minimise the impact of the development.

5.4. Impact of general construction activity

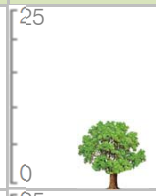
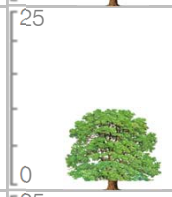
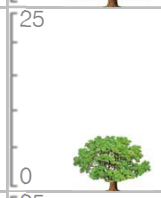
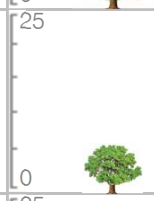
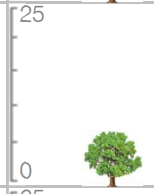
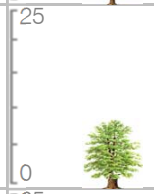
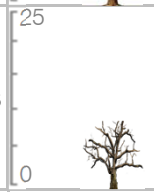
5.4.1. Existing trees can be easily damaged directly due to root severance and indirectly due to soil compaction which can cause anaerobic conditions in the rooting zone. Spillage of toxic materials can also cause root death. Protection for trees selected for retention is essential to ensure their sustainable position within the proposed scheme.

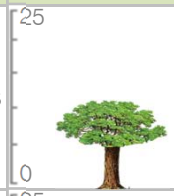
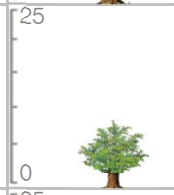
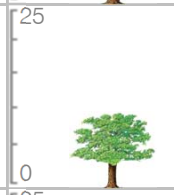
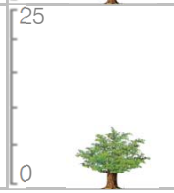
5.4.2. An Arboricultural Method Statement will be required to advise on the protection of trees during the construction process. In addition, a Tree Protection Plan may be required to highlight areas of site where trees require protection and where care is needed in Root Protection Areas (RPAs) not protected by fencing.

5.4.3. A generic Method Statement highlighting tree protection measures during demolition and construction activities is included in Appendix 4.

Appendix 1 – Tree Data Schedule

- The following pages contain information gathered during the site survey.
- The reader should refer to Appendix 1 in order to correctly interpret the tree data.
- All images within the Tree Data Schedule are diagrammatical only. Their purpose is to indicate, at a glance, the relative dimensions of each tree. The images are computer generated based on measurements recorded for stem diameter, crown spread, crown height and overall height.

Reference G = Group H = Hedge	Age & Species	Height (m)	Crown Ht (m)	Diameter (mm)	Crown Spread (m) N W E S	Scaled Tree Diagram (m)		Notes	Recommendations: Priority / Inspect Freq (yrs)	Vigour: Physiological Condition / Structural Condition	Amenity Value: Life Expectancy (yrs) / Retention Category
T1	Young **Sycamore** Acer pseudoplatanus	7.5	2	210	N 2.5, W 3, E 3, S 2.5		Position Form History **Defects**	Adjacent east boundary, south of site. Single stemmed and vertical with a balanced crown. No evidence of significant pruning. **Main stem has grown around chain link fence.**	Remove to avoid damage to stone built wall. Low / N/A	High Good Fair	Moderate 40+ C
T2	Semi-Mature **Sycamore** Acer pseudoplatanus	9.5	0	300	N 3, W 2.5, E 5, S 5		Position Form History **Defects** Other	Adjacent east boundary, north of site. Multi-stemmed at ground level with an unbalanced crown. Two main stems have previously been removed. **No significant defects.** Poor specimen.	Remove. Low / N/A	High Good Fair	Moderate 40+ C
T3	Young **Sycamore** Acer pseudoplatanus	6	0	210	N 3, W 3, E 3, S 3		Position Form History **Defects**	Adjacent east boundary. Multi-stemmed at ground level with a full crown. No evidence of significant pruning. **Growing through brick wall.**	Remove. Low / N/A	High Good Fair	Moderate 40+ C
T4	Young **Sycamore** Acer pseudoplatanus	5	0	130	N 2, W 2, E 2, S 2		Position Form History **Defects** Other	Centre of site. Twin-stemmed at ground level with a balanced crown. One main stem previously topped. **Bark wound to main stem where it rubs against metal rail.** Poor specimen.	Remove. Low / N/A	High Good Fair	Low 40+ C
T5	Young **Sycamore** Acer pseudoplatanus	5.5	0	100	N 1, W 2.5, E 3, S 1.5		Position Form History **Defects**	Centre of site. Multi-stemmed at ground level with a slightly unbalanced crown. One main stem previously topped. **No significant defects.**	No action required. n/a / 3	High Good Good	Low 40+ C
T6	Semi-Mature **Leyland Cypress** x Cupressocyparis leylandii	8	0	300	N 2, W 2, E 2, S 2		Position Form History **Defects**	Adjacent south boundary. Single stemmed and vertical with a narrow, upright habit. No evidence of significant pruning observed. **No significant defects observed.**	No action required. n/a / 3	High Good Good	Low 40+ C
T7	Dead **Wild Cherry** Prunus avium	7.5	2	210	N 2, W 2, E 2.5, S 3		Position Form	Adjacent west boundary, south of site. Dead specimen.	Remove. High / N/A	Dead Dead Dead	Dead Dead U

Reference G = Group H = Hedge	Age & Species	Height (m)	Crown Ht (m)	Diameter (mm)	Crown Spread (m) N W E S	Scaled Tree Diagram (m)	Notes		Recommendations		Vigour / Physiological Condition / Structural Condition	Amenity Value / Life Expectancy (yrs) / Retention Category
									Priority	Inspect Freq (yrs)		
T8	Early-Mature **Sycamore** Acer pseudoplatanus	11	6	500	N 6.5, W 3.5, E 4.5, S 4.5		Position Form History **Defects**	Situated on third party land, adjacent north boundary. Single stemmed and vertical with a well-formed crown. No evidence of significant pruning. **No significant defects.**	No action required.	n/a / 1	High / Good / Good	Moderate / 40+ / B
T9	Early-Mature **Goat Willow** Salix caprea	8	2.5	370	N 1, W 3, E 5, S 4		Position Form History **Defects** Other	Adjacent south boundary, west of site. Twin-stemmed at 0.5m with an unbalanced crown. Occasional pruning wounds due to crown lifting. **Minor deadwood throughout crown.** Ivy prevented a detailed inspection.	Remove ivy and re-inspect.	High / 1	Moderate / Fair / Fair	Moderate / 10-20 / C
T10	Semi-Mature **Ash** Fraxinus excelsior	9	3	220	N 3.5, W 4, E 1, S 4		Position Form History **Defects** Other	Adjacent south boundary, west of site. Twin-stemmed at 0.5m with an unbalanced crown. Occasional pruning wounds due to crown lifting. **Minor deadwood throughout crown.** Acceptable condition at present.	No action required.	n/a / 3	High / Good / Good	Moderate / 40+ / C
T11	Mature **Hawthorn** Crataegus monogyna	7	2	320	N 3, W 4, E 4, S 3		Position Form History **Defects**	Adjacent north boundary, west of site. Multi-stemmed at ground level with a full crown. Occasional pruning wounds due to crown lifting. **No significant defects.**	No action required.	n/a / 3	High / Good / Good	Moderate / 40+ / B

Appendix 2 - Tree Survey Schedule Explanatory Notes

This section explains the terms used in the **Tree Data Schedule** in Appendix 1.

A2.1 General

A2.1.1 **Numbering System:** Each item of vegetation has its own unique number prefixed by a letter such that:

- **T1**=Tree 1
- **G2**=Group 2
- **H3**=Hedge 3
- **W4**=Woodland 4

A2.1.2 **Age Categories:**

- **Young** Usually less than 10 years old.
- **Semi-Mature** Significant future growth to be expected, both in height and crown spread (typically below 30% of life expectancy).
- **Early-Mature** Full height almost attained. Significant growth may be expected in terms of crown spread (typically 30-60% of life expectancy).
- **Mature** Full height attained. Crown spread will increase but growth increments will be slight (typically 60% or more of life expectancy).
- **Veteran** A level of maturity whereby significant management may be required in order to keep the tree in a safe condition.
- **Over Mature** As for veteran except management is not considered worthwhile.

A2.1.3 **Species:** Common names and Latin names are given.

A2.1.4 **Height:** Measured from ground level to the top of the crown.

A2.1.5 **Stem Diameter:** Taken at 1.5m above ground level where possible. On trees with two to five stems, the combined stem diameter is calculated as follows:

$\sqrt{(\text{stem diameter 1})^2 + (\text{stem diameter 2})^2 \ldots + (\text{stem diameter 5})^2}$

For trees with more than five stems, the combined stem diameter is calculated as follows:

$\sqrt{(\text{mean stem diameter})^2 \times \text{number of stems}}$

A2.1.6 **Crown Height:** Measured from ground level to the height at which the main crown begins. Where the crown is unbalanced it is measured on the side deemed to be most relevant. This is usually the side facing the area of anticipated development.

A2.1.7 **Tree Diagram:** This scaled drawing is computer generated based on measurements taken for stem diameter, crown height and spread, and overall height. It is designed to help the reader rapidly assess the data. It is not an accurate representation of the form of the tree.

A2.1.8 **Crown Spread:** Measured N, E, S & W, taken from the centre of the stem and usually rounded up to the nearest half metre.

A2.1.9 **Observations:** If a tree's position is considered to be relevant it will be commented upon (e.g. overhanging a children's play area). Tree form and pruning history are also recorded along with an account of any significant defects. Defects and descriptive terms are dealt with in more detail at the end of this section.

A2.1.10 **Recommendations:** Usually based on any defects observed and intended to ensure that the tree is in an acceptable condition.

A2.1.11 Priority Scale: Depending upon the threat posed by the tree, and the likelihood of failure, recommendations should be carried out according to the following priority scale:

- **Urgent** To be carried out as soon as possible.
- **Very High** To be carried out within 1 month.
- **High** To be carried out within 3 months.
- **Moderate** To be carried out within 1 year.
- **Low** To be carried out within 3 years.

A2.1.12 Inspection Frequency:

- An interval of 6 months, 1 year, 1.5 years or 3 years is allocated before the next inspection is due. Wherever practical, consideration should be given to seasonal changes so that deciduous trees are not always surveyed in winter when they have no leaves, or in summer when leaves may obscure branches within the upper crown.

A2.1.13 Vigour: An indication of growth rate and the tree's ability to cope with stresses:

- **High** Having above average vigour.
- **Moderate** Having average vigour.
- **Low** Having below average vigour.
- **Very Low** Tree is struggling to survive and may be dying.

A2.1.14 Physiological Condition:

- **Good** Healthy and with no symptoms of significant disease.
- **Fair** Disease present or vigour is impaired.
- **Poor** Significant disease present or vigour is extremely low.
- **Very Poor** Tree is dying.

A2.1.15 Structural Condition:

- **Good** Having no significant structural defects.
- **Fair** Some defects observed though no high priority works are required.
- **Poor** Significant defects found. Tree requires monitoring or remedial works.
- **Very Poor** Major defects which will usually require significant remedial works or tree removal.

A2.1.16 Amenity Value:

- **Very High** Exceptional specimen, observable by a large number of people.
- **High** Attractive specimen, observable by a significant number of people.
- **Moderate** One of the above factors is not applicable.
- **Low** Unattractive specimen or largely hidden from view.

A2.1.17 Life Expectancy: The estimated number of years before the tree may require removal. Classified as (<10), (10 – 20), (20 – 40), or (40+).

A2.1.18 Retention Category: These are explained in detail in Table 1 on the following page.

A2.2 Evaluation of Defects

A2.2.1 Cavities, wounds, deadwood etc are all evaluated as follows:

- **Major** Such that structural integrity is, or will become, compromised and the tree is, or will inevitably become, hazardous.
- **Significant** A defect that may over time become a major defect, though not necessarily so. This will depend on the vigour of the tree and its ability to deal with decay etc.
- **Minor** A defect that is not likely to compromise the tree's structural integrity.

Tree retention categorisation

The categorisation of trees is applied to guide the site owner as to the quality and value of their existing tree stock. All trees greater than 75mm in diameter at 1.5m above ground level are surveyed and allocated a ***retention category*** which takes into account amenity value, condition and safe useful life expectancy. The categories are allocated independently of development proposals. BS 5837:2012 recommends using a cascade chart for categorisation purposes. **Table 1** below provides an explanation of retention categories used.

Trees to be removed		Colour on Plan
Category U includes trees of very low quality that offer little or no amenity value.	Trees that are in such a condition that they should be removed as a matter of good arboricultural practice regardless of given proposals.	RED
Trees to be considered for retention		**Colour on Plan**
Category A includes trees of a high quality, usually highly visible to the wider public.	Trees that are excellent examples of their species, usually mature, with a safe useful life expectancy of at least 40 years. Category A trees are likely to enhance a development and should be retained wherever possible	GREEN
Category B includes trees of moderate quality and amenity value.	Trees that are good examples of their species but may have defects or form that downgrade them from category A. Category B trees are usually mature or younger trees with the potential to reach A category in the future. Although the retention of these trees is desirable, some losses may be acceptable.	BLUE
Category C includes trees of low quality and amenity value.	Trees that are either young with a stem diameter less than 150mm or are unlikely to make a contribution for more than 10 years. The removal of these trees should be seen as acceptable in order to allow development to proceed. It may be possible to transplant younger specimens.	GREY
NOTE: Trees that are viewed as borderline and do not fit neatly into either of the categories are given a plus or minus rating (+/-) in the tree data schedule. Therefore C+ would denote a tree being borderline C/B although C is deemed to be the most appropriate category. Similarly B- would denote a tree being borderline B/C with B seen as the most appropriate category.		

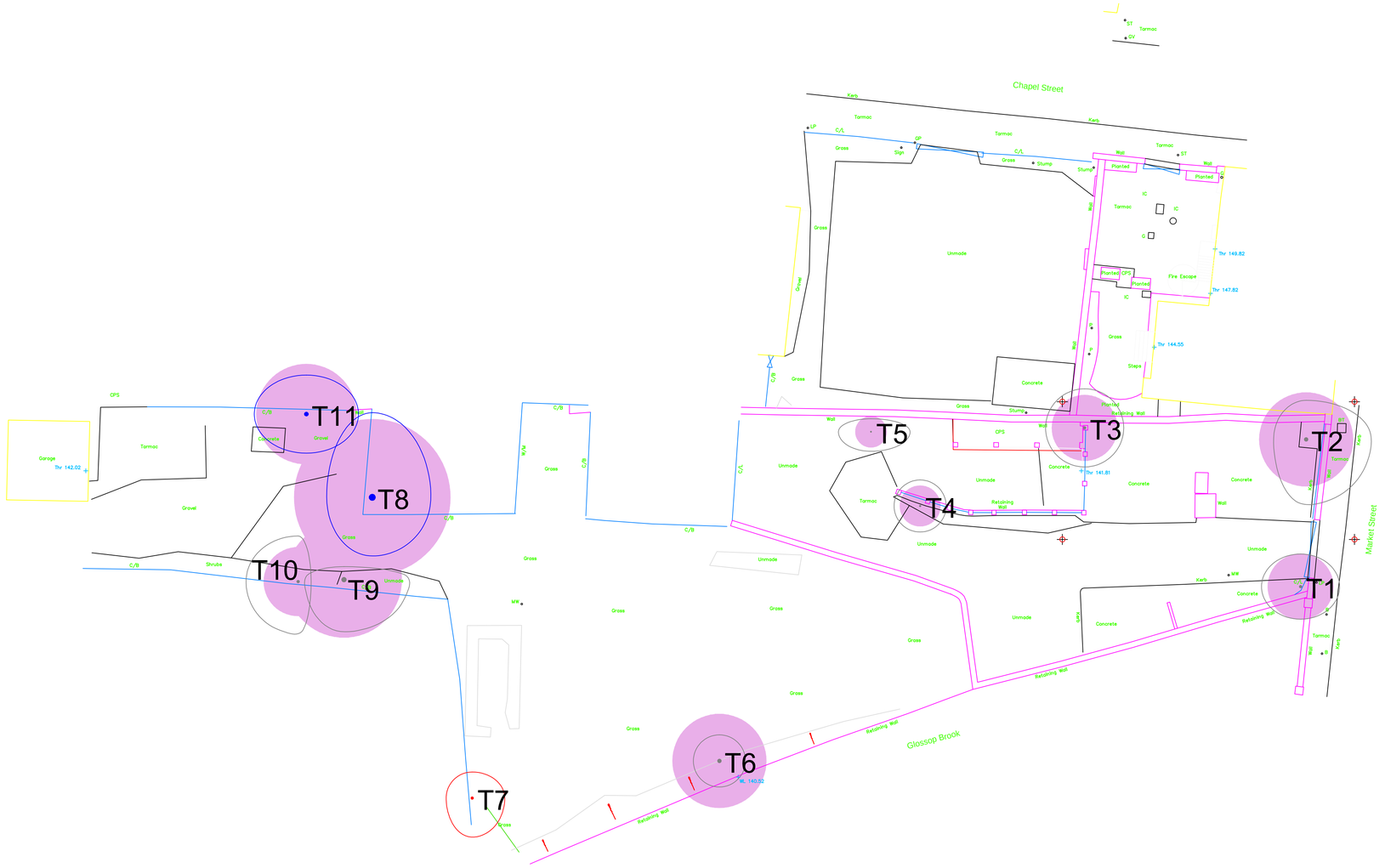
Table 1

Appendix 3 - Site Plans

The site plans referred to in the report follow this page which can include some or all of the following:

- Tree Constraints Plan
- Tree Removal Plan
- Tree Protection Plan
- Proposals

Although included plans are usually to scale, they are only intended to indicate positions of surveyed trees and dimensions should not be taken from these drawings.



Key	
T1	Tree number 1
G2	Group number 2
H3	Hedge number 3
1	Photo location
	Panoramic photo location
	Retention category A tree
	Retention category B tree
	Retention category C tree
	Retention category U tree
	Root Protection Area (RPA)

BS 5837 RETENTION CATEGORIES

Category A:
Trees of high quality and amenity. Usually, mature trees with a significant life expectancy which would enhance any development. Retention of these trees is strongly encouraged.

Category B:
Trees of moderate quality and amenity. Usually mature trees, or younger trees with exceptional form. Retention of these trees is desirable though the removal of occasional specimens may be acceptable.

Category C:
Trees of low quality and amenity. The removal of these trees should be seen as acceptable in order tp facilitate development.

Category U:
Trees whose structural condition is such that they should be removed regardless of development proposals.

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Client
The Landbank

Project
Chaple Street, Glossop

Description
Tree Constraints Plan

Scale	Drawn by	Date
1:200 A1	S F	03/12/12
Job number	**Drawing number**	**Revision**
10280	10280.T1	N/A

Appendix 4 – Recommendations for Tree Protection during Demolition and Construction

1. General

1.1 All operations that could affect trees on and adjacent to the site must be considered as part of the project management of the development. It is therefore imperative that an arboricultural consultant is appointed as part of the design and management team to advise on pre-development issues and supervise on-site operations.

1.2 The arboricultural consultant may also have an advisory role in the preparation of site including tree surgery works and the protection of trees during demolition processes.

1.3 This document accompanies the Arboricultural Impact Assessment (AIA) and should be read in conjunction with the Tree Constraints Plan. It is essential to adhere to the recommendations within this document during on-site operations to ensure the successful retention of trees during the development. Compliance with the Arboricultural Method Statement (AMS) will be a requirement of all relevant contracts associated with the development proposals.

2. The objective of this document

2.1 This document aims to provide general guidelines to onsite personnel that must be followed when working close to trees on construction sites. It is typically included as additional, generic guidance as an appendix to a site specific AMS. All site personnel should have access to this document and be made aware of any sections that may be relevant to their specific area of work.

2.2 The developer will inform the Local Planning Authority (LPA) within twenty four hours if the arboricultural consultant is replaced.

3. RPAs explained

3.1 The RPA is an area of ground around the base of a retained tree, which is calculated in relation to the stem diameter, where disturbance should be kept to a minimum and avoided if at all possible.

3.2 The majority of tree roots grow within the upper 100mm of the soil profile where most nutrients are available as the result of the decomposition of organic matter close to the surface. Rooting conditions become less favourable at depth as the soil density increases, creating anaerobic conditions.

3.3 It is essential that roots are protected from construction works including physical damage from excavation and changes in soil structure from compaction and changes in ground levels.

4. Defining the RPA

4.1 The RPA is defined on the Tree Protection Plan by black circles surrounding retained trees. Where necessary, temporary protective fencing will be placed in these positions, beyond which is a construction exclusion zone. This zone precludes all construction activity, with the sole exception of specified arboricultural works that have been agreed by all parties and under the supervision of an arboriculturist.

4.2 Temporary protective fencing will need to be installed prior to any demolition or construction works and delivery of site accommodation and materials.

4.3 There will be no storage or tipping of any materials, including fuels, oils, adhesives, cement or any other deleterious substance within 0.5m of the construction exclusion zone.

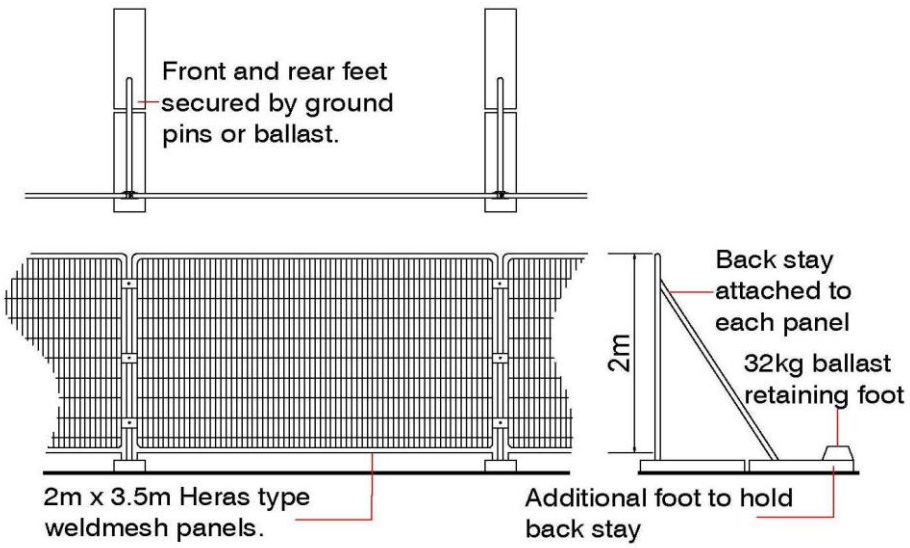
4.4 No fires will be lit within 20 metres of the stem of any tree that is to be retained.

4.5 Any incursion into the construction exclusion zone must be by prior arrangement, following consultation with the LPA.

5. Temporary protective fencing

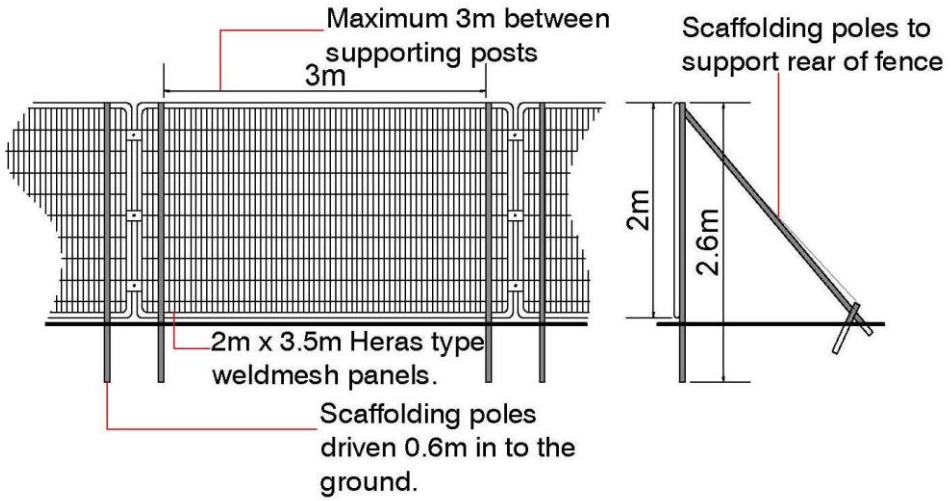
5.1 RPAs will be protected by 'Heras' steadfast type fencing with back stay supports where construction activity is expected to be minimal. (Fig 1. below)

Fig 1. Temporary Protective Fencing with back stay supports



5.2 In areas of site where construction activity is expected in close proximity to RPAs, it will be necessary to employ the more robust 'in-ground' system following BS 5837 guidelines. (Fig 2. below)

Fig 2. Temporary Protective Fencing

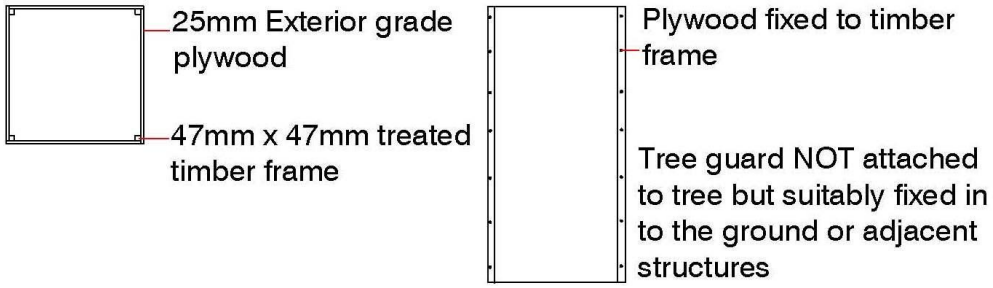


5.3 The 'in-ground' system involves driving vertical scaffold poles approximately 0.6m into the ground onto which are affixed horizontal scaffold poles and bracing struts. 2m high anti-climb weldmesh panels are then wired to the scaffold framework. The vertical scaffold poles should be at a maximum of 3m apart.

5.4 No fixing shall be made to any tree and all possible precautions shall be taken to prevent damage to the tree roots when locating uprights.

5.5 Where space is limited, it is sometimes necessary to construct a temporary tree guard to physically protect the main stem of the tree (Fig 3. below). This should be made by joining together 4 X 25mm Exterior Grade pieces of plywood to 47mm X 47mm treated timber posts to create a box shaped frame which is attached to the ground or adjacent structures. No fixings are to be made to the tree and suitable ground protection should be employed within the RPA of the tree (see Section 12).

Fig 3. Temporary Protective Fencing



5.6 A 600mm x 300mm warning sign reading "TREE PROTECTION AREA KEEP OUT" shall be fixed to every 10m of protective fencing. (Fig 4. below)

Fig 4. Tree Protection Sign

6. Excavation in the RPA

6.1 Any necessary excavation must be carried out using hand tools to avoid direct damage to the protective bark of tree roots. It may be possible in some instances to use specialised equipment such as high air pressure machinery to excavate the soil with minimal disturbance to roots.

6.2 Exposed roots will be wrapped in dry, clean Hessian sacking to prevent desiccation and to protect from rapid temperature changes. In warmer weather, the sacking should be kept moist by regular watering. Sacking should be removed before backfilling.

6.3 Roots less than 25mm diameter may be pruned back, preferably to a growing point. A sharp cutting tool such as bypass secateurs or a handsaw should be used to leave the smallest wound possible. Roots greater than 25mm in diameter should be retained wherever possible.

6.4 Root pruning should be carried out under the supervision of the arboricultural consultant or the Local Authority Tree Officer to ensure that only roots necessary to facilitate the development will be removed and the long-term well-being of retained trees is maintained.

6.5 Backfilling of any excavation should be carried out by hand to avoid direct root damage by excessive compaction and should include, where possible, the replacement of inert granular material mixed with sharp sand (not builder's sand) around retained roots.

7. Demolition and removal of surfaces in the RPA

7.1 During demolition, the following restrictions will apply:

- Where direct damage by falling masonry is likely, the tree should be protected by exterior grade plywood sheets constructed around the main stem.
- The main body of any mechanical excavator will operate outside the RPA.
- Masonry will be pulled away from trees where possible.
- When breaking masonry, a fine water spray will be used to minimise dust particles.
- Excessive dust particles on trees will be removed each day by spraying with water.

7.2 Hard surfaces should be kept in place for as long as possible during construction works in order to prevent soil compaction in the RPA.

7.3 During surface removal, the following restrictions will apply:

- Only hand operated tools will be used to lift existing surfaces and sub-base. No mechanical excavators are to be used.
- No excavation below the existing sub-base will occur.
- Exposed roots are to be treated as in section 6 above.
- All surface removal within the RPA will be supervised by the arboricultural consultant or the Local Authority Tree Officer.

8. Changes in ground level

8.1 Changes in ground level can be harmful to trees where stripping or filling of soil is carried out in the RPA. It is therefore important that no significant changes in level occur within the RPA of retained trees.

9. Soft landscaping

9.1 No machinery used for landscaping such as rotovators are to operate within the RPAs of retained trees.

9.2 All planting must be carried out carefully, by hand to avoid damage to existing roots. Mulch should be used around the base of trees, where possible, to maintain ground level and to avoid mower and strimmer damage to buttresses and surface roots.

10. Surface design

10.1 It is essential to maintain adequate supplies of water and oxygen for trees through the soil. New impermeable surfacing should not cover more than 20% of the RPA.

10.2 Design and construction specification should take account of further growth.

10.3 Paving slabs and block pavers are available with built in infiltration spaces between the slabs or blocks. They should be laid dry-jointed on a sharp sand foundation to allow air and moisture to penetrate to the rooting area.

10.4 It may be necessary to lay paving and other surfaces on a flexible base to allow movement and to facilitate relaying if distortion becomes excessive due to the activity of tree roots.

10.5 Edgings and associated foundations and haunchings can damage tree roots. This should be avoided within the RPA by either the use of alternative methods of edge support or by not using supports at all.

10.6 Where wheeled traffic is expected in the RPA, it will be necessary to construct the new surface using a cellular confinement system with a permeable surface as detailed in Appendix 5.

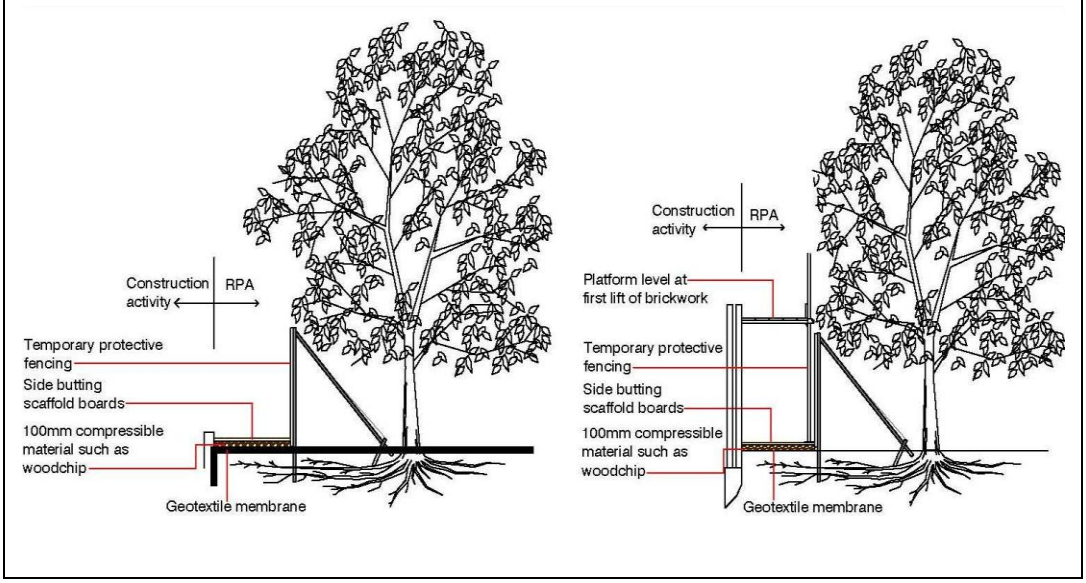
11. Ground protection for wheeled or tracked vehicles

11.1 Occasionally, it may be necessary to drive plant machinery in the RPA. To avoid compaction of the soil during construction, a minimum of 100mm compressible material, followed by temporary interconnected road plates or similar that is capable of sustaining the expected loads should be installed. This system will ensure that the weight is evenly distributed over the affected area.

12. Ground protection for pedestrians or light vehicles

12.1 The primary method of ground protection is the installation of a compressible layer (e.g. woodchip) over a geotextile fabric with side butting scaffold boards. (Fig 3. below)

Fig 3. Ground Protection in RPA



12.2 Ground protection measures whilst working the RPA must be capable of supporting the expected loads and avoid compaction of the soil.

12.3 The boarding will be left in place until the construction works are finished.

12.4 Scaffolding may first be erected with the uprights on spreader boards and the ground protection installed around the uprights.

13. New structures in the RPA

13.1 No concrete strip foundations are to be installed within the RPA of any retained tree. Traditional strip foundations can cause an unacceptable amount of damage during the excavation process where roots are easily torn by mechanical excavators.

13.2 Small, light structures such as sheds and bin stores can be laid directly onto the soil surface without the need for significant excavation. A small amount of excavation may be permissible to provide a level surface, however, no roots over 25mm in diameter should be severed without the advice of an arboriculturist or Local Authority Tree Officer.

13.3 Traditional footings should not be used within the RPA for the construction of non-load bearing walls. It may be possible however, to construct walls in proximity to trees by bridging existing roots with lintels.

13.4 Where foundations are to be laid in the RPA of retained trees, root damage can be minimized by using small diameter piles located to avoid major tree roots. The proposed area for pile installation should be dug by hand to a depth of approximately 750mm in order to ascertain the position of roots present. Beams, slabs and suspended floors should be laid at or above ground level and cantilevered, as necessary, to avoid tree roots.

13.5 Where piling is to be installed in proximity to trees, the smallest practical pile diameter should be used as this reduces the possibility of striking major tree roots, and reduces the size of the rig required to sink the piles. The latter is particularly important where piling within the branch spread is proposed, as mini-rigs reduce the need for access facilitation pruning. Sheathed piles protect the soil and adjacent roots from the potential toxic effects of concrete.

13.6 Backfilling of any excavation should be carried out by hand to avoid direct root damage by excessive compaction and should include, where possible, the replacement of inert granular material mixed with sharp sand (not builder's sand) around retained roots.

13.7 Any pruning should be carried out under the supervision of the arboricultural consultant or the Local Authority Tree Officer to ensure that only branches necessary to facilitate the development will be removed and the long-term well-being of retained trees is maintained.

14. Utilities

14.1 The installation of underground utilities within the RPA should not be considered unless it is absolutely necessary. Trenching can cause an unacceptable amount of damage to tree roots.

14.2 The National Joint Utilities Group publication, NJUG10 recommends the following precautions when working in the RPA:

- No excavation should be carried out using machinery.
- When digging by hand, carefully work around roots, retaining as many as possible.
- Do not sever roots over 25mm in diameter without the consent of the arboricultural consultant or Local Authority Tree Officer.
- Any root pruning will be carried out using a sharp tool (eg secateurs or handsaw). Make a clean cut and leave as small a wound as possible.
- Backfill the trench with an inert granular material and topsoil mix. Compact the backfill with care around the retained roots. On non-highway sites backfill only the excavated soil.
- Do not repeatedly move or use heavy mechanical plant except on hard standing.
- Do not store spoil or building material, including chemical and fuels.
- Protect roots with dry sacking if they are to be left exposed overnight when there is a risk of frost. Sacking must be removed before backfilling.

15. Monitoring

15.1 The arboricultural consultant will be responsible for monitoring of all arboricultural works and issuing a certificate of practical completion. In addition, the arboricultural consultant will inspect the protective fencing and monitor any works within exclusion zones.

15.2 A record of site visits will be maintained for inspection on site and copies forwarded to the developer/agent and to the local planning authority.

Appendix 5 - Professional Résumé: Scott Fitzgerald

Qualifications:

Scott gained a BSc in Arboriculture from the University of Central Lancashire in 2010, after being awarded a Foundation Degree in Arboriculture with merit at the same institution in 2005.

He is continuing his education further by studying for a Master's Degree in Arboriculture and Urban Forestry at the University of Central Lancashire which commences in September 2011.

Scott is a professional member of the Arboricultural Association. Scott maintains his professional development by attending several seminars and conferences throughout the year.

Experience:

Scott has worked in the arboriculture industry since 1993 when he trained as a groundsman and gained NPTC certificates for use of a chainsaw on the ground. In 1994 he gained his NPTC certificate for the use of a chainsaw from a rope and harness. For the next 12 years, he worked as head climbing arborist for a tree surgery company as team leader and was responsible for the day to day management of tree work operations, sales and building client relations.

In 2005, Scott began trading as an independent consultant arboriculturist. He now works solely as an arboricultural consultant, providing expert advice and reports on all matters concerning trees including hazard assessment, TPOs, planning advice and reports for mortgage purposes.