

Arboricultural Method Statement

BE-1106.2

2 Hill Park, Mirfield WF14 8JB



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Grid reference	SE 19587 18816
Report composed by	David Watts MICFor MArborA MCIEEM
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CONTENTS

1. INTRODUCTION	3
2. SURVEY METHODS AND RESULTS	4
2.1. SURVEY DETAILS	4
2.2. RESULTS	5
2.3. ASSESSMENT OF PREVIOUS WORK WITHIN TREE ROOT PROTECTION AREAS.....	5
3. METHOD STATEMENT	6
3.1. TIMING OF WORKS.....	6
3.2. SITE INDUCTION	6
3.3. TREE PROTECTION FENCING.....	6
3.4. GENERAL PRECAUTIONARY MEASURES	7
3.5. FERTILISATION OF TREE ROOTS	7
3.6. FURTHER INSPECTION	8
3.7. ARBORICULTURIST CONTACT DETAILS.....	8
4. REFERENCES	9
APPENDICES.....	10

1. Introduction

Bagshaw Ecology Ltd have been instructed by Orange Design Studio to produce an Arboricultural Method Statement in relation to development at 2 Hill Park, Mirfield WF14 8JB, hereafter referred to as 'the site'.

The site is located at grid reference SE 19587 18816 and is accessed off the west of Hill Park. The site is bordered by Hopton Lane to the north and by residential dwellings to the south, east and west. The site comprises a detached bungalow and its associated garden.

The development proposals involve the construction of an extension on the northwest gable of the building. At the time of the survey the development proposals had already commenced.

2. Survey Methods and Results

2.1. Survey Details

The site survey was carried out on 23rd September 2019. The weather at the time of the survey was clear and dry and visibility was good.

The survey was carried out by Jack Delaney, an Arboricultural Consultant who holds an FdSc Arboriculture, and who is a member of the Arboricultural Association at Professional level.

All trees on site were inspected from ground level, using the Visual Tree Assessment (VTA) method (Mattheck *et al.*, 2015). Any notable defects of trees were recorded, although the site survey did not constitute a full tree safety assessment.

Tree heights and crown clearances were measured to the nearest 0.5 m with a clinometer. Crown spreads of trees were measured on their, north, east, south and west aspects to the nearest 0.5 m. The diameter at breast height (DBH) of trees was measured to the nearest 1 cm. This was used to calculate the root protection area (RPA) of trees using methods prescribed in BS5837: 2012:

- For single stem trees, the RPA was calculated as a circle with a radius 12 times the DBH.
- For trees with 2-5 stems, the RPA was calculated using the formula:

$$RPA = \sqrt{(\text{Stem 1 DBH})^2 + (\text{Stem 2 DBH})^2 + \dots (\text{Stem 5 DBH})^2}$$
- For trees with 6 or more stems, the RPA was calculated using the formula:

$$RPA = \sqrt{(\mu \text{ DBH})^2 \times \text{number of stems}}$$

In accordance with BS5837: 2012, trees were classified as either A, B, C or U, using the criteria shown in Table 1. Trees were subcategorised with the suffix 1, 2 and/or 3, to denote amenity, landscape or cultural qualities. As specified in BS5837: 2012, the additional subcategorisation does not affect the retention value of a tree (e.g. a Category A2 tree is not necessarily of greater or less value than a Category A1 tree).

Table 1: BS5837 Cascade Chart (adapted from British Standards, 2012)

Category	Definition	Retention	Colour code
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.	Highly desirable	Light green
Category B	Trees of moderate quality with an estimated remaining life expectancy of at least 20 years; trees lacking the special quality to merit category A designation.	Desirable	Dark blue
Category C	Trees of low quality with an estimated remaining contribution of at least 10 years, or 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.	Feasible, but should be removed if posing a constraint to development	Grey
Category U	Trees that have serious, irremediable, structural and/or physiological defects, including those that will become unviable after removal of other category U trees.	Unfeasible	Dark red

2.2. Results

The site survey identified four trees on the site. These included one Category A tree of high quality, two Category B trees of moderate quality and one Category U tree, which is unsuitable for retention regardless of the proposals. Tree categorisation can be viewed in **Appendix 1: Tree Survey Schedule**. Photographs of trees can be viewed in **Appendix 2: Images of Trees**.

Although T4 has been downgraded to Category U, this tree does not necessitate removal due to development, and any further proposed works to this tree are not discussed within this document.

Due to the existing building to the east of T1, the RPA of this tree has been offset by 20% (2.08 m).

2.3. Assessment of Previous Work Within Tree Root Protection Areas

At the time of the survey, foundation construction within the RPAs of T1, T2 and T3 had already commenced:

- T1 has an RPA of 342 m². Approximately 39 m², 11% of the total RPA has been affected.
- T2 has an RPA of 209 m². Approximately 5 m², 2% of the total RPA has been affected.
- T3 has an RPA of 203 m². Approximately 0.3 m², <1% of the total RPA has been affected.

The excavation within the RPAs of T2 and T3 is considered to be sufficiently minimal that it is highly unlikely that these trees would have been negatively impacted by development works.

11% of the RPA of T1 has been affected by the excavation. The excavation has been carried out to a depth of approximately 50 cm. As the majority of tree roots are typically located within the top 1 m of soil, it is likely that roots have been damaged due to the excavation. At the time of writing it is not, however clear what the impacts of this are. The root protection area is an arbitrary circle, and while roots would usually be present within this area, root spread is typically asymmetrical, and therefore it is not possible to determine this with certainty. Furthermore, removal of tree roots typically results in dieback of the crown which takes 2-3 years to manifest (Roberts *et al.*, 2006). Therefore, at present it is not possible to state the extent of any damage to the tree.

Further monitoring of T1 will be required over the next three years to determine if there has been any damage due to potential root loss. Potential damage to the tree could also be mitigated by further fertilisation of the root system.

3. Method Statement

3.1. Timing of Works

The phasing of works should be carried out in accordance with Table 1, below.

Table 2. Timing of works

Stage	Works
1	Site induction
2	Install temporary tree protection fencing
3	Inspection by arboriculturist
4	Carry out construction works
5	Remove tree protection fencing once works complete
6	Final inspection by arboricultural consultant

3.2. Site induction

Prior to any further works commencing, all contractors should attend a site induction. All contractors should be briefed on arboricultural concerns arising from the development proposals, including tree root protection areas (RPAs). This method statement should be made available to all contractors working on the site.

3.3. Tree Protection fencing

Prior to any further works on the site, it will be necessary to ensure that all trees are adequately protected. This will require the installation of temporary of tree protection fencing on the site. The location of tree protection fencing can be viewed in **Appendix 3: Tree Protection Plan**.

Tree protection fencing should consist of a vertical scaffold framework, well braced to resist impacts. The vertical poles should be spaced at a maximum interval of 3 m and driven securely into the ground. Onto this framework, welded mesh panels should be fixed (see Figure 1, below).

Laminated waterproof A3 signs should be fixed securely to fencing panels on each enclosure at 9m intervals. The signs should clearly read: 'Protected Tree Zone, no storage or operations within fenced off areas'.

Once the construction works have been completed, the tree protection fencing may be removed. This should be done with care to ensure that no damage to trees is caused.

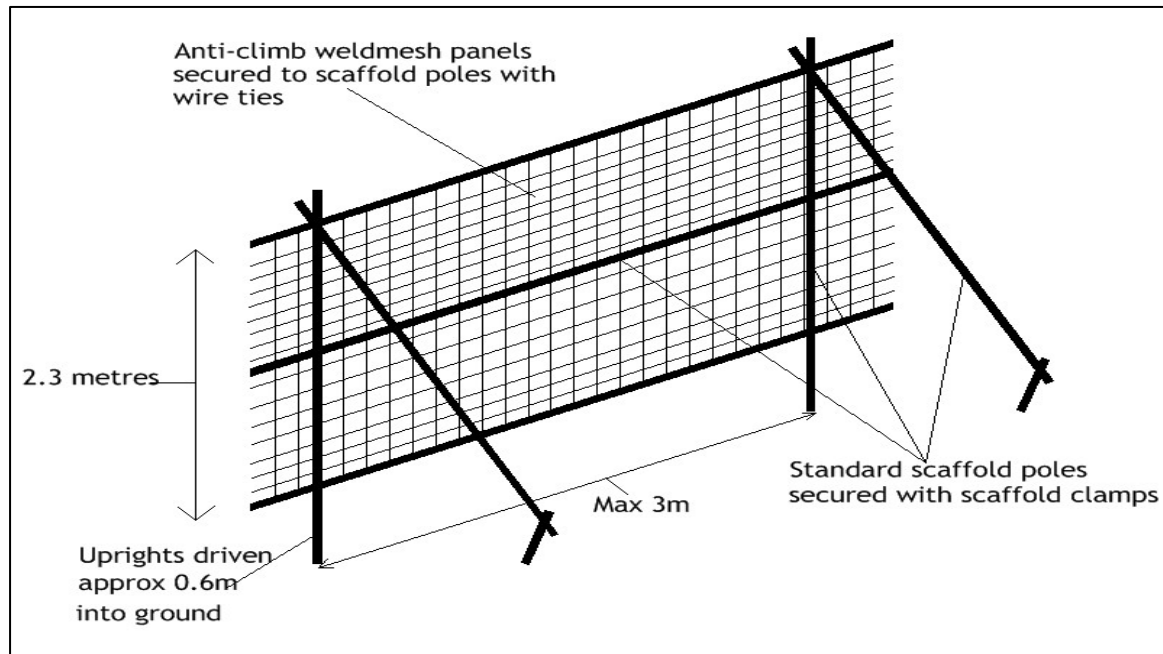


Figure 1. Tree protection fencing

3.4. General Precautionary Measures

Prior to further works commencing, a designated site storage area should be identified, which should be outside of the RPAs of trees.

No materials hazardous to tree health, such as oil, bitumen or cement should be stored within RPAs of trees. Where possible this area should be extended to 10 m away from RPAs.

Where there is a risk of polluted water runoff into RPAs, heavy duty plastic sheeting and sandbags must be used to contain any spillages and prevent contamination.

No fires should be lit within the site.

If any breach in the tree protection measures occurs it is the site manager's responsibility to report this to an arboricultural consultant so the appropriate measures may be taken.

3.5. Fertilisation of Tree Roots

It is recommended that samples of soil within the RPA of T1 are taken and analysed for fertility (NPK plus macronutrients and pH). The RPA of T1 should then receive treatment from a fertiliser to alleviate any imbalance of fertility or pH, if identified.

The RPA of T1 should also receive treatment from a mycorrhizal fungal application, which should ideally include *Trichoderma harzianum*, a fungus which has been demonstrated to improve resistance to pathogens, and to enhance growth rates of trees (Kleifeld and Chet, 1992).

Fertilisation and mycorrhizal application should be administered by a consultant arboriculturist, and should consist of injections, applied by an injection probe, in a grid pattern at approximately 1 m intervals throughout the RPA. This should preferably be administered between April and May 2020; otherwise any time of year is acceptable.

3.6. Further Inspection

It is recommended that inspections by an arboricultural consultant are undertaken:

- Once the tree protection fencing has been installed to determine if it is satisfactory.
- Upon completion of the development works.

After each inspection a letter should be submitted by the arboricultural consultant to the local authority tree officer to state whether the method statement has been followed correctly and if trees have been adversely affected by construction works.

3.7. Arboriculturist contact details

If at any point during construction works, works are required within RPAs, if there is a breach within the tree protection fencing, and/or if the proposals change from those detailed within the Tree Protection Plan, the project arboriculturist should be consulted immediately. The project arboriculturist's details are below:

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4. References

British Standards (2012). *BS5837: 2012 - Trees in Relation to Design, Demolition and Construction: Recommendations*. British Standards Institute, London

Kleifeld, O. and Chet, I. (1992). *Trichoderma harzianum* – interaction with plants and effect on growth response. *Plant and Soil* **2**: 267-272

Mattheck, C., Bethge, K., and Weber, K. (2015). *The Body Language of Trees*. The Karlsruhe Research Institute, Karlsruhe

Roberts, J., Jackson, N. and Smith, M. (2006). *Tree Roots in the Built Environment*. The Arboricultural Association, Stonehouse

Appendices

Appendix 1: Survey Schedule

A plan of the tree locations can be viewed in **Appendix 3: Tree Constraints Plan**.

Key		
Species	Common and scientific name	Age
Height	Measured to nearest 0.5m	Y – Young sapling/newly planted tree
CC	Height of crown clearance, measured to nearest 0.5m	SM – Semi-mature; tree 1/3 of mature size
Stems	Number of stems bifurcating below 1.5 metres	EM – Early mature; tree 2/3 of mature size
DBH	Diameter at breast height (1.5m), in centimetres	M – Mature; tree 3/3 of mature size
Crown spread	Measured to nearest 0.5m	OM – Over mature; tree that has exceeded its natural life span
Category	See BS5837 cascade chart (Table 1)	V – Veteran tree

Tree No.	Species	Height	CC	Stems	DBH	Crown Spread				Age	Comments	SULE	Category
						N	E	S	W				
T1	Beech <i>Fagus sylvatica</i>	21	6.5	1	87	6	10	8	7	Mature	Situated approximately 5.5m from newly installed foundations. Multiple pruning wounds on east aspect, all of which display good occlusion. Recently crown lifted on east aspect, with several secondary branches removed and/or reduced.	>40	A1
T2	Beech <i>Fagus sylvatica</i>	11	2.5	1	47	3.5	5	4	3	Early-mature	Secondary branch recently removed from east aspect of main stem at 5m. No major visible defects, though lacks qualities for higher categorisation.	>40	B1

Tree No.	Species	Height	CC	Stems	DBH	Crown Spread				Age	Comments	SULE	Category
						N	E	S	W				
T3	Beech <i>Fagus sylvatica</i>	18	6	1	68	6.5	9.5	7	6	Mature	Asymmetrical crown spread, with slight lean to main stem. Multiple pruning wounds on main stem from previous crown raising works- all of which display good occlusion. Lacks qualities for Category A classification.	>40	B1
T4	Beech <i>Fagus sylvatica</i>	18	3	1	67	7.5	7	6.5	6	Mature	Situated in raised area adjacent to Hopton Lane. Extensive tip dieback throughout crown. Significant dead/dying secondary branch, approximately 30cm diameter, which extends north over Hopton Lane.	<10	U

Appendix 2: Images of Trees



Plate 1: T1 (in foreground), T2 and T3



Plate 2: T1

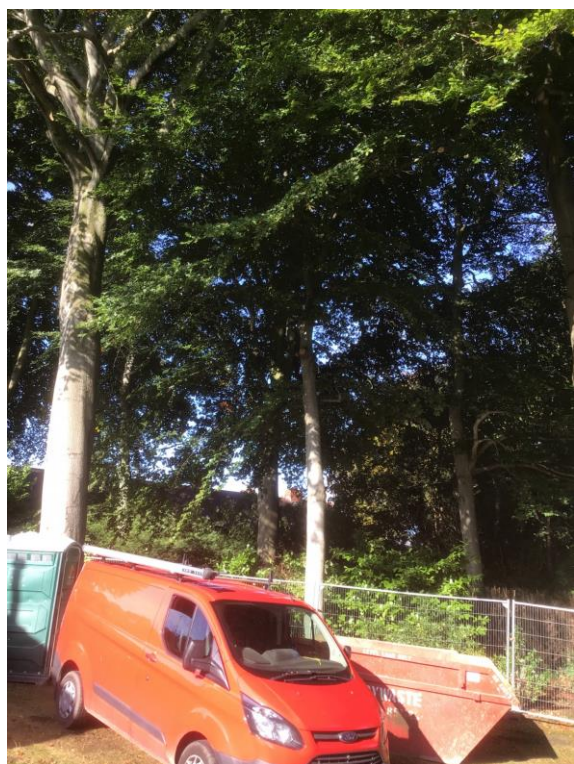


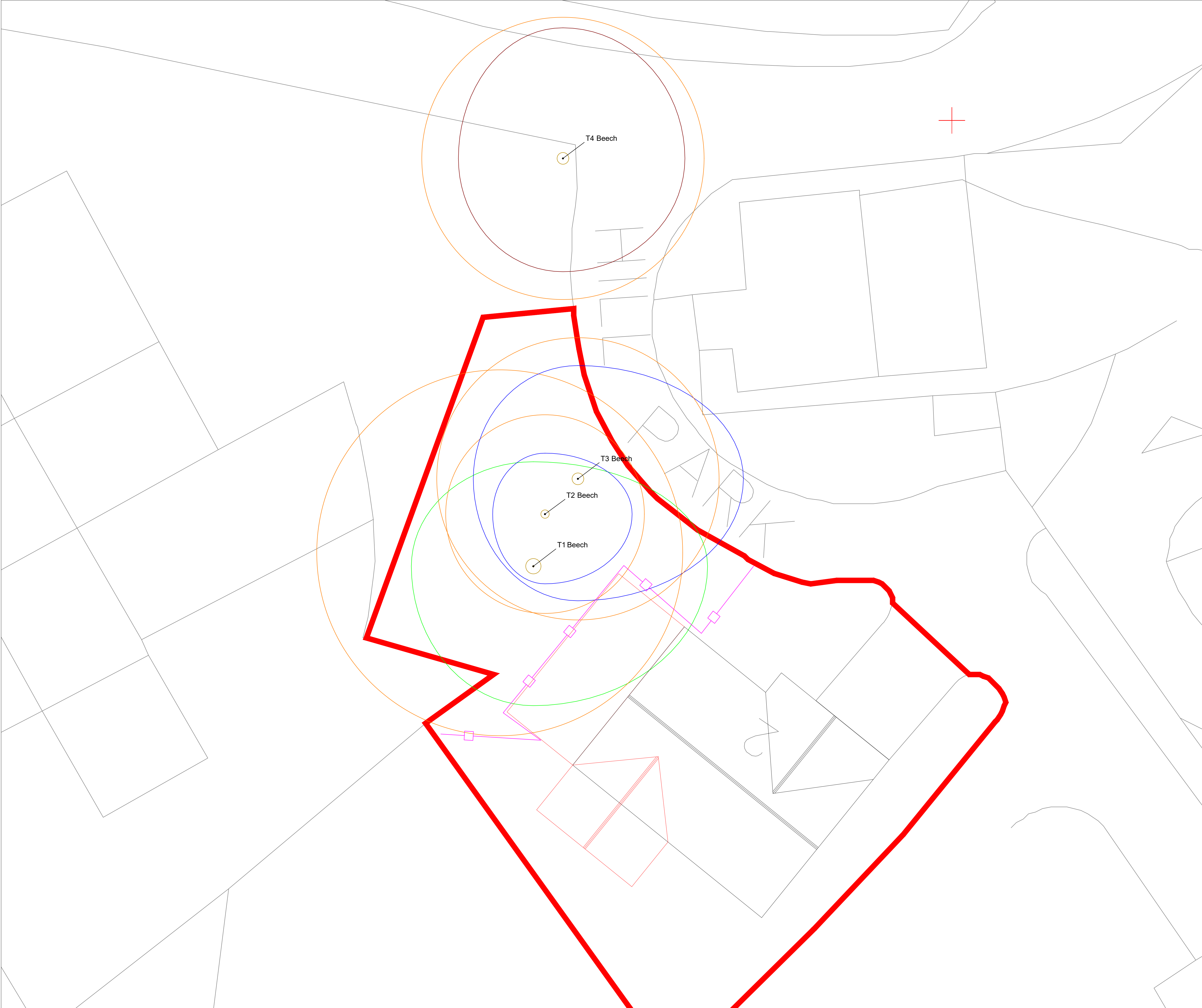
Plate 3: T2



Plate 4: T3



Plate 5: T4



Appendix 3: Tree Protection Plan

Key:

Category A trees of High-quality

Root protection area (RPA) →

Tree stem →

Tree Canopy →

Category B trees of moderate-quality

Root protection area (RPA) →

Tree stem →

Tree Canopy →

Category U trees with life expectancies of <10 years

Root protection area (RPA) →

Tree stem →

Tree Canopy →

Proposed extension/footprint

Tree protection fencing - to remain in place throughout development works



Project:	2 Park Hill
Drawing number:	TCP114102
Drawn by:	David Watts
Date:	10th December 2019
Scale:	1:100 @ A1

To be reproduced in colour only.