

**ARBORICULTURAL
METHOD STATEMENT
to BS 5837:2012
at
Field Head
Lidget Street
Lindley
Huddersfield
West Yorkshire**

Client:
Malcolm Sizer Planning Ltd.

Client Address:
9 Greenfinch Grove
Netherton
Huddersfield
West Yorkshire

JCA Ref:
12111/SR

JCA Limited

Arboricultural Consultants

Contents

1. Introduction	3
1.1 Purpose of the Method Statement.....	3
1.2 Terms of Reference	3
1.3 Status of the Method Statement.....	3
2. Tree Works Prior, During and Post Construction.....	4
3. The Protective Barrier Prior, During and Post Construction	5
4. Construction Phase	7
4.1 Demolition Works	7
4.2 Ground Level Changes	7
4.3 Construction of Hard Surfaces	7
4.4 Construction of New Buildings/Refurbishment Works	8
4.5 Excavations and Services	8
4.6 Location of the Site Compound.....	9
5. Post Construction Phase	10
5.1 Completion Meeting.....	10
6. Timescale of Works.....	11
7. Relevant Contact Details	12
 Appendix 1: Previous Tree Report	 14
Appendix 2: Protective Barrier.....	15
Appendix 3: Permanent Hard Surfaces	18
Appendix 4: Tree Protection Plan.....	20

1. Introduction

1.1 Purpose of the Method Statement

- 1.1.1 This Method Statement has been prepared to ensure good practice in the protection of trees during the proposed development at **Field Head, Lidget Street in Lindley**.

1.2 Terms of Reference

- 1.2.1 We are instructed by **Malcolm Sizer Planning Ltd** to prepare a Method Statement for the proposed development, based on an arboricultural report by **Ecus Environmental Consultants**, compiled in April 2014.
- 1.2.2 It is proposed to refurbish the existing main building, construct a new extension to the rear of the property and to install new car parking facilities.
- 1.2.3 The development layout has been provided by our client and is the basis for the Tree Protection Plan at **Appendix 4**

1.3 Status of the Method Statement

- 1.3.1 This Method Statement should be included as part of the specification and schedule of works issued to the building contractor, and can form part of the contract.
- 1.3.2 This Method Statement should be available on site for inspection by the local authority, contractors and other relevant persons.

2. Tree Works Prior, During and Post Construction

2.1 Tree Works Prior to Construction

- 2.1.1 Prior to any construction activity, the first operation on site will be the undertaking of the necessary arboricultural works, as described in the initial arboricultural report, included at **Appendix 1** for reference.
- 2.1.2 In addition to the works highlighted during the original tree survey, the following works are required to facilitate the development:
- The removal of **T2, T40, T41, T42, T43, T44, T96** and **T97** to facilitate the proposed development. Furthermore, **T98** (located off-site) will be pruned back to the boundary to enable construction of the proposed building.

2.2 Tree Works During Construction

- 2.2.1 Damage to trees during the construction phase should be prevented by the erection of a temporary protective barrier, to create a Construction Exclusion Zone (CEZ). All persons on site must be aware of limitations that apply within the CEZ (please refer to **Section 3.1.3**).
- 2.2.2 If any trees on site are damaged, it should be immediately reported to JCA to agree on appropriate remedial action. Contact numbers for all parties can be found at **Section 7**.
- 2.2.3 New hard surfacing, in the form of car parking spaces, is proposed within the RPA of **T3**. Due to the minor infringement of the RPA, root pruning is considered acceptable in this case. For this method, the area requiring surfacing will be hand dug to the required depth, or alternatively a mechanical excavator (mini-digger) may be used under supervision by an arboriculturalist. Any roots found will be cleanly pruned back using appropriate hand tools (e.g. hand saws and bypass secateurs). Once any roots which are present within the profile of the car parking spaces have been neatly pruned, installation of the hard standing may commence. This operation will be undertaken during the construction phase.

2.3 Tree Works Post Construction

- 2.3.1 When the construction phase is complete and when the protective barrier has been removed some minor remedial works may be required. This may be for aesthetic purposes, to give clearance for new paths or to provide ground clearance for landscaping schemes.
- 2.3.2 No post construction remedial works are to be carried out on the trees until prior permission has been granted by the Local Planning Authority.

2.4 Recommendations for Tree Works

- 2.4.1 All work must be carried out to BS 3998: 2010 - *Recommendations for tree work* and should be carried out by qualified, experienced and, ideally, Arboricultural Association approved contractors who should be adequately insured.
- 2.4.2 Any defects seen by a contractor or the client that were not apparent to the consultant must be brought to the attention of JCA immediately.
- 2.4.3 No liability can be accepted by JCA in respect of the trees unless the recommendations of this Method Statement are carried out under our supervision.

3. The Protective Barrier Prior, During and Post Construction

3.1 Protective Barrier Prior to Construction

- 3.1.1 The installation of the temporary protective barrier will be the very first job to be undertaken on site following completion of the tree works.
- 3.1.2 No other work, including soil stripping, excavation, or the bringing onto site of materials or machinery, shall commence until the barrier is installed and inspected. In exceptional circumstances, where construction activity is deemed necessary, a representative from JCA may be informed so that they may be present to oversee such operations.
- 3.1.3 The protective barrier must be constructed in accordance with BS 5837: 2012 *Trees in relation to design, demolition and construction - Recommendations* and should be located as shown on the Tree Protection Plan at **Appendix 4**. Where possible, the protective barrier will enclose the entire Root Protection Area (RPA) of the trees to make a Construction Exclusion Zone (CEZ); **this area is to be considered a restricted area; no pedestrians, vehicles, storage of materials, equipment or machinery are allowed within the CEZ unless specified within this Method Statement.**
- 3.1.4 The protective barrier will be constructed in accordance with the default specifications of BS 5837: 2012, which recommends a vertical and horizontal, scaffold framework, well braced to resist impacts. The vertical tubes should be spaced at a maximum interval of 3m and driven securely into the ground, taking care to avoid underground services and structural roots. Finally, weld mesh panels are to be securely fixed on the scaffold framework. Please refer to **Appendix 2** for protective barrier details. Due to the provision of existing hard standing throughout the site, it may not always be possible to utilise driven scaffold poles. In such cases, the poles will be inserted into mounted block trays, as shown in Fig 2 at **Appendix 2**.

- 3.1.5 Once the barrier is installed, waterproof signs with the sentence '*Protected tree zone, no storage or operations within this area*' are to be placed at 3m intervals to ensure that all personnel are aware of the restrictions that apply to the cordoned off area. A prepared sign is available at **Appendix 2**.
- 3.1.6 No work shall commence until the Local Planning Authority or JCA are satisfied that the protective barrier meets all requirements and gives the go ahead for construction to commence.
- 3.1.7 For practical reasons it is not possible to protect the entire RPA of many of the retained trees with the protective fencing. However, the provision of existing hard surfacing, in the form of vehicular access drives and footpaths will provide adequate protection to these trees throughout construction. A small part of the RPA of **T32** is located within open ground and is not afforded protection with the protective fencing. However, due to the presence of the hard standing driveway and a flag stone footpath, it is considered highly unlikely that significant root growth is located within this area. As a precautionary measure, no materials or traffic (both pedestrian and vehicular) are permitted within this area.

3.2 Protective Barrier During Construction

- 3.2.1 No operations shall take place which require the removal of part of the protective barrier without prior agreement with the Local Planning Authority or JCA.
- 3.2.2 The protective barrier must be inspected for faults or damage by the site manager or other responsible named person on a regular basis and a written record kept. Any faults or defects must be repaired or replaced as soon as is reasonably practicable. Details of the site manager and relevant contact details can be found at **Section 7**.

3.3 Removal of the Protective Barrier

- 3.3.1 When the development phase is complete and the main site machinery has been removed, the Local Planning Authority should be invited to inspect the site to give approval for the removal of the protective barrier.
- 3.3.2 When this approval has been given the protective barrier may be dismantled and removed from site.
- 3.3.3 It should be noted the same restrictions apply to all RPAs as the CEZ (please refer to **Section 3.1.3**).

4. Construction Phase

4.1 Demolition Works

- 4.1.1 In order to provide the three car parking spaces adjacent to **T3**, the removal/partial removal of an existing wall will be required, along with the removal of a small area of existing hard standing. In order to achieve this without causing undue harm to **T3**, the wall will be demolished by hand, under supervision by an arboriculturalist. Additional machinery/small plant may be utilised if required, although only with consent by the supervising arboriculturalist. The existing hard standing to be removed will likely require machinery/construction plant. This operation will be supervised by an arboriculturalist throughout.
- 4.1.2 It is understood that the existing hard surfacing, comprising the vehicular access routes within the site is not to be demolished or removed. As such, no further mitigation actions are required in relation to demolition operations.

4.2 Ground Level Changes

- 4.2.1 No ground level changes are permitted within the RPA of any retained trees, with the exception of the new car parking provisions. Suitable mitigation actions have been proposed where this is relevant.

4.3 Construction of Hard Surfaces

- 4.3.1 Hard surfaces, in the form of car parking are required within the RPA of **T3**, **T24**, **T26**, **T27**, **T28** and **T39**. The infringement of the RPA of **T3** is minimal and as such root pruning is required (as discussed in **Section 2.2**). Where the car parking is located within the RPA of the remaining trees, specialist, 'no-dig' techniques will be required.
- 4.3.2 This area of car parking is located within a sunken area, below that of the surrounding ground levels, and as such will require 'building-up' to achieve the proposed design. To prevent compaction damage associated with soil piling, specialist materials will be required to enable the level changes, while reducing any potential damage to tree roots. In principle, no excavation should take place within the RPA and the raising of the levels should be achieved by use of the aforementioned specialist materials. Two potential material types may be used (flexible, matting type and non-flexible, crate type). The construction details of car parking utilising these are specified in **Section 4.3.3** and **Section 4.3.4**.

- 4.3.3 A flexible, 3 dimensional cellular confinement system may be utilised. First, a thin geotextile membrane will be placed on the soil and pegged/pinned into position. A three dimensional, cellular confinement system will be installed over the geotextile membrane and filled with no-fines, washed angular stone, no less than 4mm in diameter and to a minimum depth of 100mm. This may then be compacted using a plate compactor (wacker-plate) and utilised as ground protection for the retained trees. In order to retain the surfacing in place, edging supports may be required. Such supporting systems will minimize disturbance to the underlying soil and will not utilise continual trenching within the RPA. Acceptable methods include peg and board edging, gabions or sleepers which may be pinned in place if required. The final surface treatment must be porous to enable the percolation of water through the surfacing to the tree roots beneath. This method is considered to be appropriate in terms of minimising damage to retained trees. However, a structural engineer should be consulted to ensure that the mechanical needs of the chosen design are adequately met.
- 4.3.4 Alternatively, a non-flexible, block type confinement system may be used, such as the Arboraft system by Infra Green solutions. This comprises a crate like structure, specifically designed to spread compaction loading. When using this type of system, each unit can be staked to the required depth within the construction profile. First a geotextile membrane will be laid over the soil. The blocks will be laid on top of this membrane and filled with top soil. Another thin geotextile membrane will be laid over this and then the chosen surfacing may be installed. Edging supports will conform to the above aforementioned specifications detailed in **Section 4.3.3**.
- 4.3.5 Examples of construction details utilising both systems have been included at **Appendix 3**. The chosen design should be discussed with the provider of the product to ensure the correct specification is being used and applied.

4.4 Construction of New Buildings/Refurbishment Works

- 4.4.1 The proposed new build and refurbishment works will not adversely affect any trees to be retained, and as such no further mitigation actions are deemed necessary.

4.5 Excavations and Services

- 4.5.1 Drainage and utilities are to be directed away from trees and outside the RPAs. Existing connections pertaining to the previous use of the site should be utilised wherever possible.

4.6 Location of the Site Compound

- 4.6.1 It is vital that the site compound that typically includes the site office, mess facilities, toilets, storage of materials and parking, is located away from trees. Care must also be taken to prevent contamination with chemical spillages, including petrol, diesel and oils. Cement mixers and toxic materials should not be permitted close to trees.

5. Post Construction Phase

5.1 Completion Meeting

- 5.1.1 Upon completion of the works as specified in **Section 4**, a JCA consultant will invite the Local Planning Authority representative to meet with them on site to agree on any remedial works required.
- 5.1.2 Any necessary remedial works will be confirmed in writing and must be carried out in accordance with BS 3998: 2010 - *Recommendations for tree work*.
- 5.1.3 Due to the large potential penalties for illegally carrying out work to protected trees, JCA recommend that a further check is carried out prior to any works being undertaken post development.

6. Timescale of Works

6.1.1 The timescale for arboricultural requirements are summarised below:

Timescale	Action	✓	Initial
Stage 1	All requirements listed in the planning consent are approved by the Local Authority planning office.		
Stage 2	Undertake the tree works (as detailed in previous Arboricultural report (Appendix 1), along with additional work for development contained within this report.		
Stage 3	Install the protective barrier around the trees (as detailed at Appendix 2 and as shown on the Tree Protection Plan at Appendix 4).		
Stage 4	Have the Local Planning Authority inspect the barrier and ground protection measures prior to any on site construction. Once inspected, the protective barrier and ground protection must not to be moved or breached.		
Stage 5	Undertake the demolition of existing features/removal of existing hard surfaces (as detailed in Section 4).		
Stage 6	Construction Phase: Undertake construction/refurbishment works. Utilise root pruning for T3 , as discussed in Section 2.2 , under supervision by an arboriculturalist. Install permanent hard surfaces whilst undertaking suitable measures to avoid root damage and soil compaction (as detailed in Section 4 and at Appendix 3).		
Stage 7	Following the completion of the construction phase and when all site traffic and machinery has left, the protective barrier can be removed.		

7. Relevant Contact Details

Contact Name	Organisation/Detail	Contact Number
Scott Reid	JCA Limited	01422 376335
Joe Robertson	Kirklees Council (Tree Officer)	01484 414909
Malcolm Sizer	Malcolm Sizer Planning Ltd.	01484 667 222
(Site Manager)	TBC	TBC

Appendices

Appendix 1: Previous Tree Report

Oakmead
Lidget Street, Huddersfield
– BS 5837 Tree Survey



Report prepared by:
Ecus Ltd.
Brook Holt
3 Blackburn Road
Sheffield
S61 2DW
0114 266 9292

April 2014

Ecus Ltd

Report to: **Aedas Building Consultancy
Norwich Union House
High Street
Huddersfield
HD1 2LF**

Report Title: **Oakmead, Lidget Street, Huddersfield
Tree Survey Report**

Revision: **V02**
Issue Date: **April 2014**
Report Ref: **4845**

Originated By:

**Verena Meyer
Consultant Landscape Architect**

Date: April 2014

Reviewed By:

**Verena Meyer
Consultant Landscape Architect**

Date: April 2014

Approved By:

**Claire Browne
Principal Landscape Architect**

Date: April 2014

Prepared by:
Ecus Ltd.
Brook Holt
3 Blackburn Road
Sheffield
S61 2DW
0114 2669292

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Contents

1. INTRODUCTION	4
2. METHODOLOGY	5
2.1 TREE SURVEY	5
2.2 ROOT PROTECTION AREA (RPA)	6
3. SURVEY RESULTS	7
3.1 GENERAL SITE DESCRIPTION	7
3.2 RESULTS OF TREE SURVEY	7
3.3 TREE DESIGNATIONS	7
4. ARBORICULTURAL IMPACT ASSESSMENT AND METHOD STATEMENT ...	8
4.1 ARBORICULTURAL IMPACT ASSESSMENT	8
4.2 RECOMMENDATIONS	8
4.3 ARBORICULTURAL METHOD STATEMENT (AMS)	9
Protective Barrier	9
Excavation	10
Access facilitation pruning	10
5. TREE MANAGEMENT	11
6. APPENDIX 1 – TABLES AND FIGURES	14
APPENDIX 1: BS5837 TREE SCHEDULE	15
7. APPENDIX 2 - SITE PHOTOGRAPHS	24

Table 1 – Tree Survey Schedule

Figure 1 – Location Plan (within report text)

Figure 2 – Tree Survey and Tree Constraints Plan (L4845/01)

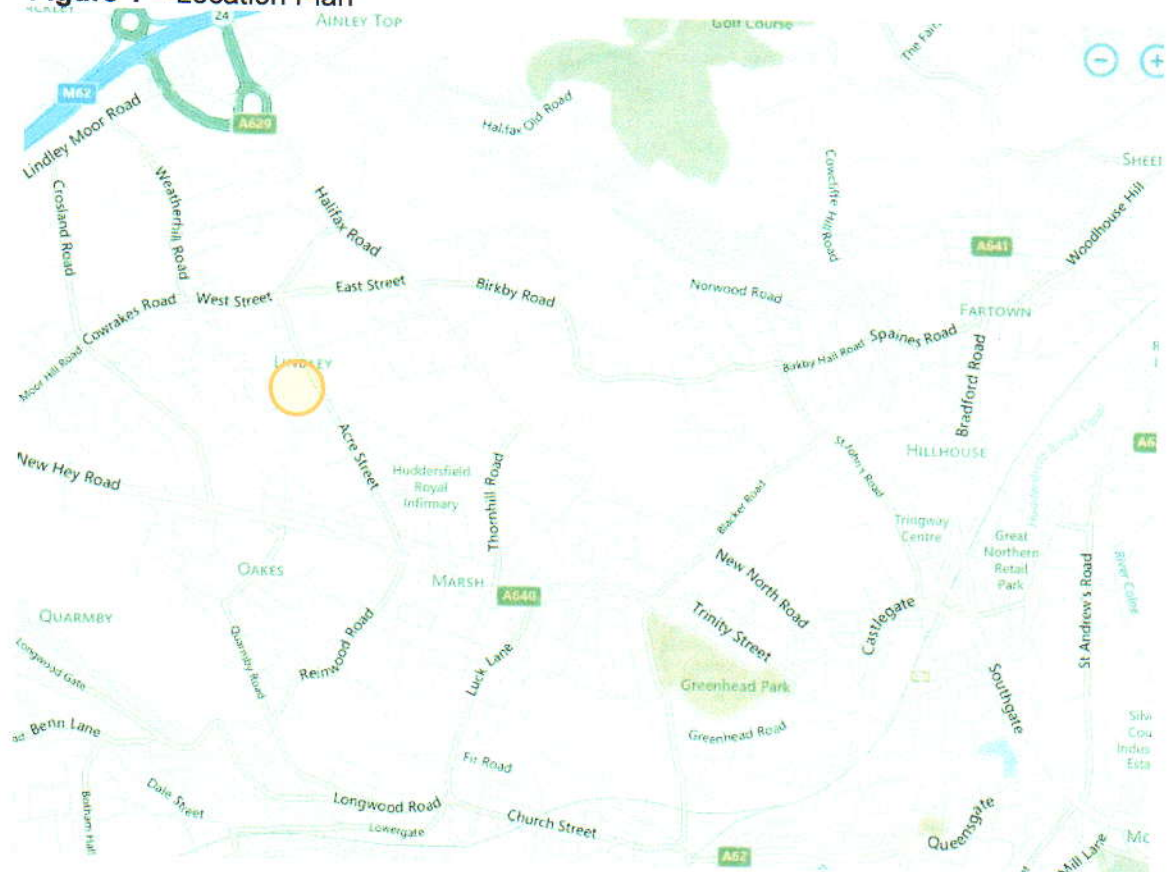
Figure 3 – Tree Protection Plan (L4845/03)

Figure 4 – Default specification for protective barrier (within report text)

1. Introduction

- 1.1.1 Ecus Limited were commissioned by Aedas Building Consultancy to undertake a tree survey of the Oakmead site off Lidget Street in Huddersfield, West Yorkshire. The site location is shown on Figure 1 below.
- 1.1.2 The survey and report sets out the findings of the survey and recommendations have been made for preliminary tree work that may be required.

Figure 1 – Location Plan



2. Methodology

2.1 Tree Survey

- 2.1.1 Ecus carried out the tree survey in March 2014 when the trees were not in leaf. The tree survey was a ground based visual inspection carried out by an arboriculturist. The trees were not tagged as part of the survey.
- 2.1.2 The inspection of the trees, the site and the immediate surrounding area was carried out by Verena Meyer, CMLI TechArborA.
- 2.1.2 The following characteristics were recorded:
- Species
 - Stem diameter at 1.5m above ground level (mm).
 - Estimated height (m)
 - Approximate crown diameter (m) as North, South, East and West measurements.
 - An estimate of the number of years that the tree is likely to remain suitable for retention.
 - <10 = less than 10 years
 - 10+ = 10-20 years
 - 20+ = 20-40 years
 - 40+ = more than 40 years
 - Age class
 - YNG = Young and recently established trees
 - SM = Semi-mature trees age less than 1/3 life expectancy
 - EM = Middle age trees 1/3 – 2/3 life expectancy
 - M = Mature trees over 2/3 life expectancy
 - OM = Over mature – declining or moribund trees of low vigour
 - Condition category in accordance with *BS5837: Trees in relation to the design, demolition and construction recommendations (2012)*. The categories listed are defined as per BS5837:2012 and briefly are:
 - U = Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years
 - A = Those of high quality and value - best trees with a long expected safe life
 - B = Those of moderate quality and value
 - C = Those of low quality and value and trees less than 15cm diameter
 - Value subcategories in accordance with *BS 5837:2012*. The subcategories listed are defined as per BS5837:2012 and briefly are:
 - 1 = Mainly arboricultural values
 - 2 = Mainly landscape values
 - 3 = Mainly cultural values, including conservation

- General notes about physiological and structural condition and any management recommendations.
- 2.1.3 A full topographic survey of the site was provided; this was used as the basis for producing the tree survey plan.
- 2.1.4 The survey included identification of any existing designations affecting trees on site such as Tree Preservation Orders and Conservation Area status by checking the online search tool available at www.kirklees.gov.uk.

2.2 Root Protection Area (RPA)

- 2.2.1 Below ground constraints to development are represented by the root plate around a tree which needs protecting in order for the tree to be incorporated into a proposed scheme, without adverse harm to the tree or structural integrity of any proposed foundation structures. This area is illustrated by the Root Protection Area (RPA) and is calculated according to the formulae set out in BS5837:2012 clause 4.6.1.
- 2.2.2 Any deviation in the RPA from the original circular plot should take account of physical site conditions that influence the disposition of tree roots, e.g. streams, building foundations and retaining walls.

3. Survey Results

3.1 General Site Description

- 3.1.1 The site is the grounds of former Kirklees Council offices. It comprises currently unoccupied office buildings, an occupied residential building, two Grade II Listed Buildings (Fieldhead and Coachhouse west of Fieldhead), a tarmac drive and car parking. Large areas of lawn, lined by mature trees, are located in the centre and the west of the site.
- 3.1.2 There are three distinct areas of mature trees within the site. A row of mature trees along Lidget Street forms a significant feature along the main road. Set back from the road is a second cluster of mature deciduous trees associated with both the Listed Buildings and the adjacent St. Stephen's Church and cemetery. The third group is a dense row of mature trees in the garden west and north of the office building where it runs along a stone boundary wall partly retaining the land above a well used alleyway.
- 3.1.3 The site is reasonably level but retained both over a section of the alleyway in the west and over the road in the east. Views into the site from these locations are limited due to the dense tree stock along the site boundaries. The southern boundary is more open and allows views into the centre of the site. Views from the north are blocked by buildings both on and off site.

3.2 Results of Tree Survey

- 3.2.1 Table 1 describes the results of the tree survey and includes preliminary management recommendations. The table should be read in conjunction with Figure 2 Tree Survey and Tree Constraints Plan. This drawing illustrates the location of the trees surveyed, the extent of their canopies as well as the root protection areas (RPA) of each tree.
- 3.2.2 Three tree groups and 95 individual trees have been recorded during the site visit. Four trees are located off site (T1, T16, T21 and T31) A full survey to BS 5837 (2012) was carried out for those trees, including the recording of the stem diameter to determine the Root Protection Area (RPA) of the trees.
- 3.2.3 The majority of trees are deciduous native or naturalised species and include beech (*Fagus sylvatica*), sycamore (*Acer pseudoplatanus*) and lime (*Tilia cordata*). Evergreen species include holly (*Ilex aquifolium* var.). Other species present on site in small numbers are horse chestnut (*Aesculus hippocastanum*), hornbeam (*Carpinus betulus*), ornamental cherry (*Prunus* sp.) and Norway maple (*Acer platanoides*).
- 3.2.4 The majority of the mature trees play a significant role within the local landscape, in particular the trees along the Lidget Street boundary (T1 to T16) and the trees north of the cemetery (T18 to T41) having a substantial impact on the landscape quality of the east of the site and add to the character of the adjacent church and cemetery. The dense line of mature beech and sycamore along the west and north boundary (T49 to T96) forms a strong landscape feature for both the garden area and the alleyway. Therefore most of the mature trees have been classified as category B trees, with T23, T32, T90 and T95 standing out as higher quality category A trees.
- 3.2.5 Category C trees include the mature cherries which have a limited remaining life expectancy, and young or unremarkable trees not qualifying in higher categories.

3.3 Tree Designations

- 3.3.1 The online tool at www.kirklees.gov.uk confirms that there are no Tree Preservation Orders on any of the trees surveyed. The site is not within a Conservation Area.

4. Arboricultural Impact Assessment and Method Statement

4.1 Arboricultural Impact Assessment

- 4.1.1 The client proposes the demolition of a number of the main office building, as shown in Figure 3 Tree Protection Plan. This includes the removal of associated shallow depth foundations only i.e. concrete slabs and strip footings. The levels will then be adjusted by placing topsoil to suit existing adjacent site levels.
- 4.1.2 An Arboricultural Impact Assessment of the proposed demolition has been undertaken to assess the likely impact of the works on existing trees and tree groups. This assessment is based on the demolition plan provided by the Client in April 2014.
- 4.1.3 The demolition plan indicates that whilst there is no direct requirement for tree removal, T48 (ornamental cherry) may be located too close to the building proposed for demolition and it may be practicable to remove it.
- 4.1.4 The demolition works may have an impact on both above and below ground parts of retained trees, i.e. exposure and damage of tree roots during excavation, damage to branches, bark and stems. It is further likely that the movement of plant and machinery will lead to compaction of the soil within the Root Protection Area of retained trees.

4.2 Recommendations

- 4.2.1 Where it is practicable to remove low quality trees, no protection measures will be required for those trees.
- 4.2.2 Trees to be retained in the vicinity of the demolition site should be protected by fencing in accordance with BS 5837:2012.
- 4.2.3 Where access is justified within the RPA, temporary ground protection should be installed to minimise soil disturbance and compaction.
- 4.2.4 Where conflicts may arise between the demolition works and tree canopies, access facilitation may be carried out in accordance with the methodology described in 4.3.

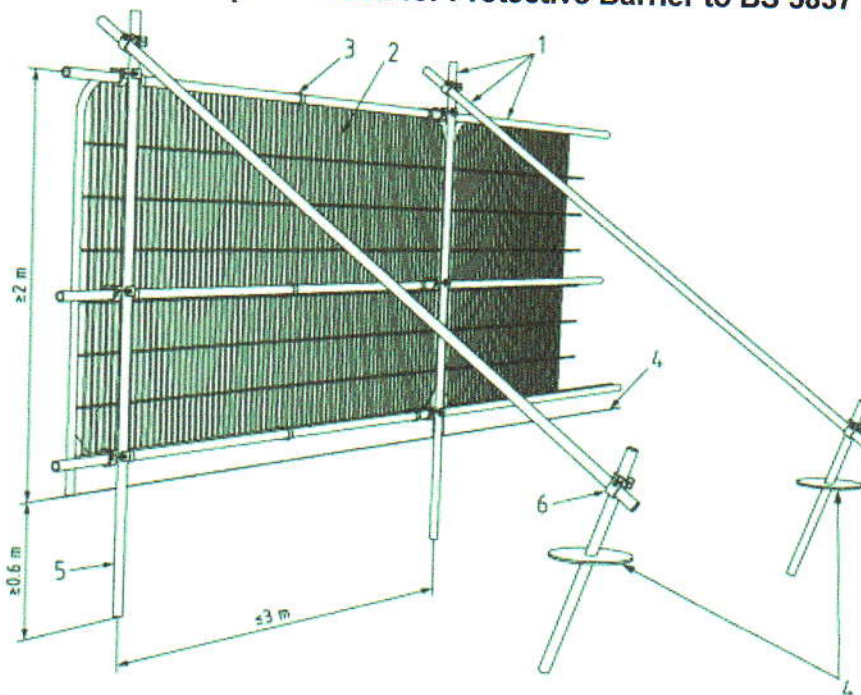
4.3 Arboricultural Method Statement (AMS)

- 4.3.1 The Arboricultural Method Statement should be read in conjunction with Figure 3 Tree Protection Plan.

Protective Barrier

- 4.3.2 The demolition plan prepared for the site indicates that most of the trees within the site are being retained and that they need to be protected by fencing during the development works to BS 5837 (2012) to create a sacrosanct Construction Exclusion Zone (CEZ).
- 4.3.3 The protective barrier should be installed in accordance with the default specification for protective barrier as shown in Figure 4 below.
- 4.3.4 Protective fencing should be erected before any work commences on site, which includes demolition work of any existing structures. Protective fencing should be removed only on completion of all construction work.
- 4.3.5 The alignment of the protective barrier should aim to maximise the RPA within unmade ground to be protected from compaction during demolition operations and storage of material and building rubble. The detailed alignment is shown in Figure 3 Tree Protection Plan.
- 4.3.6 Trees for removal do not need protection. The individual trees to be removed should be identified and marked by an arboricultural consultant.

Figure 4: Default Specification for Protective Barrier to BS 5837 (2012)



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

Excavation

- 4.3.7 Roots smaller than 25mm diameter may be pruned back, making a clean cut with a suitable sharp tool except where they occur in clumps. Root occurring in clumps or of 25mm diameter and over should be severed only following consultation with an arboriculturist, as such roots might be essential to the tree's health and stability.

Access facilitation pruning

- 4.3.8 In areas close to the demolition sites accidental damage to low hanging branches that can not be protected by the protective barrier should be removed to create a 5m clear height over the site.
- 4.3.9 Whilst the canopies of T50, T54 and T55 overhang the protective barrier, they have already been lifted sufficiently in the past, so that additional works should not be required. However, should more pruning be required, this should be carried out carefully and in accordance with BS 3998 (2010) Tree Works- Recommendations.

5. Tree Management

- 5.1.1 The following section provides some general guidance as to how retained trees could best be protected during demolition. More detailed guidelines for tree protection during demolition are given in BS5837: Trees in relation to the design, demolition and construction recommendations (2012).
- 5.1.2 Any demolition plans should seek to safeguard category A and B trees and trees growing offsite as well as their root protection areas (RPA). In addition refer to specific management recommendations in Appendix 1 for any other trees to be retained.
- 5.1.3 Any trees being retained during a proposed demolition will need to be adequately protected during any approved demolition works. As a general rule at this site, measures to protect trees should follow the best practice principles set out in BS5837: Trees in Relation to design, demolition and construction – recommendations (2012).
- 5.1.4 Any tree roots severed during site clearance works should be wrapped or covered with hessian sheets as an immediate protection measure against rapid temperature changes. This should be removed prior to backfilling which should be carried out as soon as possible.
- 5.1.5 Table 1 lists any preliminary management recommendations for each tree which include monitoring or maintenance works necessary to maintain the tree's health and structural integrity and ensure the safety of people using the site and the public, irrespective of any development proposals.
- 5.1.6 Prior to any demolition work proceeding, the RPA's of individual trees to be retained should be marked out using the distances provided in the table within Appendix 1. Marking out should be completed by a person with arboricultural or horticultural expertise as individual trees will have root zones that may be affected by local conditions and allowances will need to be made to accommodate this. The best practice principles have been broadly summarised below:
- All trees retained adjacent to the site should be protected by barriers or ground protection around the calculated Root Protection Area (RPA) and as indicated on any Tree Protection Plan (TPP) that may be produced in association with the assessment.
 - Any fencing required should be erected prior to commencement of construction and before demolition including erection of any temporary structures. Once set up fences should not be removed or altered without prior consultation with the arboricultural advisor.
 - Arrangements should be made for an arboriculturist to supervise works and tree protection where trees are particularly vulnerable or sited close to access points.
 - Pre-demolition works may be undertaken prior to the installation of fencing with the agreement of the local planning authority.
 - All tree works should follow best practice procedures as set out in BS 3998 (2010). All trees should be maintained in good condition on site and be inspected annually (where overall condition requires) or every 2 years and after any major storm events, with safety a priority.
 - Fencing should be clearly visible and suitable for the location, type and

proximity of construction activity.

- It may be appropriate on some sites to use temporary site offices as components of the protection barriers.
- Where it has been agreed and shown on a Tree Protection Plan, access may take place within the RPA if suitable ground protection measures are in place (e.g. existing surfaced car park areas). In other areas this may comprise single scaffold boards over a compressible layer laid onto geo-textile materials for pedestrian movements. Vehicular movements over the RPA will require the calculation of expected loading and may require the use of proprietary protection systems.
- Once areas around trees have been protected by fencing, any works on the remaining site area may be commenced providing activities do not impinge on protected areas. Notices should be placed on fencing to indicate that operations are not permitted within the fenced area.
- Wide or tall loads etc. should not come into contact with retained trees. Banksman should supervise transit of vehicles, jibs, booms etc. where this is in close proximity to retained trees.
- Oil, bitumen, cement or other material that is potentially injurious to trees should not be stacked or discharged within 10m of a tree bole. No concrete mixing should be done within 10m of a tree. Allowance should be made for the slope of ground to prevent materials running towards the tree.
- No fires will be lit where flames are anticipated to extend to within 5m of tree foliage, branches or trunk, taking into consideration wind direction and size of fire.
- Notice boards, telephone cables or other services should not be attached to any part of a retained tree.
- Where it is deemed necessary to operate a wide or tall load, plant bearing booms, jibs and counterweights or other such equipment, as part of demolition works, and such equipment would have potential to cause injurious contact with crown material i.e. low branches and limbs, of retained trees within the RPA fencing, it is best advised that appropriate, but limited tree surgery, be carried out beforehand to remove any obvious problem branches. This is classed as 'Facilitation Pruning' within BS 5837 (2012). Any such pruning should be undertaken in accordance with a specification prepared by an arboriculturist.
- It is advised that a Pre-Commencement Site Meeting is held with contractors who are responsible for operating machinery, as described above. To firstly highlight the potential for damage occurring to tree crowns and to ensure that extra care is applied when manoeuvring machinery during such operations within close proximity to retained trees to avoid any contact.
- In the event of having caused any such branch or limb damage to retained trees it is strongly recommended that suitable tree surgery be carried out, in accordance with BS 3998 (2010) Recommendations for Tree Work, to correct the damage, upon completion of development.

- All of the above precautionary measures should be applied to minimise the effect of any damage to long-term tree health and safety.

It is recommended that any trees that require removal or significant canopy works, should be checked in advance of works by an ecologist to ensure there is no possibility of any disturbance to nesting birds or roosting bats.

Oakmead, Lidget Street, Huddersfield
- BS 5837 Tree Survey



6. Appendix 1 – Tables and Figures

Table 1 - Tree Survey Schedule

Appendix 1: BS5837 Tree Schedule						
Key:	Measurements	Age - Class	Overall Condition	BS 5837 2005 : Cascade Chart for Quality Assessment/Retention Category	Symbols:	
	MS - Multi-stemmed	YNG - Young Mature	G - Good	A - High	< = less than	
	Ht - Height in metres	SM - Semi-mature	F - Fair	B - Moderate	~ = approximately	
	Stem - Stem Diameter at 1.5m in mm	EM - Early mature	P - Poor	C - Low	> = greater than	
	Crown - Crown spread in metres	M - Mature	D - Dead	U - Unsuitable for retention		
	TD - Trunk division (height in metres)	OM - Over mature		Sub-categories:		
		Est Yrs - estimate of years remaining (40+ years; 20+ years; 10+ years, <10 years)		1 = mainly arboricultural values		
				2 = mainly landscape values		
				3 = mainly cultural values.		

RPA = Root protection area (equivalent to a circle with a radius 12 x the stem diameter of single stem trees or 12 x the notional stem diameter of multi stemmed trees as per BS 5837:2012 clause 4.6). This will be capped to 707m² for trees with a stem diameter larger than 1.25m.

Tree No	Species	Ht (m)	Stem Diam cm@ 1.5m (mm)	Canopy Spread (m) N-E-S-W	Height of Crown Clearance	Age Class	Est yrs	Overall Condition	Structural condition	Management Recommendations	BS 5837 Category	RPA Radius (m)	RPA (m²)
T1	Acer pseudoplatanus	10	495	4.5-6-4-4.25	2.5	M	40+	Good	Offsite tree, TD at 1.5m, on land retained 0.5m above site.	-	B2	5.94	110.85
T2	Aesculus hippocastanum	12	520	5-1.25-3.25-7.5	2.5	M	40+	Good	Slight lean to north, very close to boundary wall, some historic pruning, one branch rubbing stem of T3. Early symptoms of Bleeding Canker of Horse Chestnut (rust coloured spots and bark cracks), ivy covered stem.	Remove rubbing branches. Remove ivy for second inspection.	B2	6.24	122.33
T3	Acer pseudoplatanus	14	480	7-2.5-5.5-4	4.5	M	40+	Good	Tight against stone gate post.	-	B2	5.76	104.23

Tree No	Species	Ht (m)	Stem Diam cm@ 1.5m (mm)	Canopy Spread (m) N- E- S- W	Height of Crown Clearance	Age Class	Est yrs	Overall Condition	Structural condition	Management Recommendations	BS 5837 Category	RPA Radius (m)	RPA (m ²)
T4	Carpinus betulus	14	290	5.5-6.25-5-2.5	3	M	20+	Fair	Severe lean to south, second stem removed close to base with decay, branch removed at 1.7m with cavity.	-	C2	3.48	38.05
G5	Ilex sp.	8-10	200	?	2.5-3	M	40+	Good	Up to 14 trees forming hedge along Lidget Street, on top of 0.8m retaining wall, some MS.	-	B2	2.40	18.10
T6	Prunus sp.	1.8	130	1.75-1.25-2-2	0	M	20+	Good	Weeping form.	-	C2	1.56	7.65
T7	Acer pseudoplatanus	16	370	5-5.25-5-5	3.5	M	40+	Good	Slight lean to east, on top of 0.6m retaining wall.	-	B2	4.44	61.93
T8	Ilex sp.	6	190	3-3-3-3	1	M	40+	Good	Variegated, on top of 0.6m retaining wall.	-	B2	2.28	16.33
T9	Ilex sp.	12	250	3-3-3-3	1	M	40+	Good	On top of 0.6m retaining wall.	-	B2	3.00	28.27
T10	Fagus sylvatica	12	190	3.25-5-5-4	4	EM	40+	Good	Supporting posts for sale sign fastened to base of tree.	Remove posts.	C2	2.28	16.33
T11	Fagus sylvatica	11	350	3-4-5-7.5	3	M	40+	Good	Slight lean to west.	-	B2	4.20	55.42
T12	Tilia cordata	8	170	3.5-3.25-7-4.5	2	EM	40+	Good	TD at 2m.	-	C2	2.04	13.07
T13	Fagus sylvatica	10	190	6-4-3-3.75	3	EM	40+	Good	Slight lean to north.	-	C2	2.28	16.33
T14	Acer pseudoplatanus	20	420	5-6-5-5	>5	M	40+	Good	Lean to east.	-	B2	5.04	79.80

Tree No	Species	Ht (m)	Stem Diam cm@ 1.5m (mm)	Canopy Spread (m) N-E-S-W	Height of Crown Clearance	Age Class	Est yrs	Overall Condition	Structural condition	Management Recommendations	BS 5837 Category	RPA Radius (m)	RPA (m ²)
T15	Acer pseudoplatanus	20	510	7-7.5-6-6	5	M	40+	Good	Two birds nests 7m and 18m, snapped branch at 4m.	-	B2	6.12	117.67
T16	Acer pseudoplatanus	20	500	3-7-5-3	>5	M	40+	Good	Off site, slight lean to east.	-	B2	6.00	113.10
T17	Fagus sylvatica	14	190	4-4-4-4	3	SM	40+	Good	-	-	C2	2.28	16.33
T18	Acer pseudoplatanus	20	400	5-6-4.75-5	5	EM	40+	Good	Dead wood in canopy.	-	B2	4.80	72.38
T19	Fagus sylvatica	18	290	4-3.5-5.75-5.5	4	M	40+	Good	-	-	B2	3.48	38.05
T20	Crataegus sp.	8	170	3-3-3-3	1.6	M	20+	Fair	-	-	C2	2.04	13.07
T21	Acer pseudoplatanus	20	460	3.5-3-5-3.5	>5	M	40+	Good	Lean to south.	-	B2	5.52	95.73
T22	Acer pseudoplatanus	22	460	5-3-4-4.25	>5	M	20+	Fair	Ivy covered stem and canopy up to 14m	-	C2	5.52	95.73
T23	Acer pseudoplatanus	22	720	6-7.75-8-9.75	6	M	40+	Good	String around lower branches.	-	A2	8.64	234.52
T24	Acer pseudoplatanus	14	270	2-2.5-2.5-4	4	EM	40+	Good	-	-	B2	3.24	32.98
T25	Tilia cordata	18	290	4-4-4-4	1.5	EM	40+	Good	Slight lean to east.	-	B2	3.48	38.05
T26	Tilia cordata	18	530	5-5.5-5-5.5	2	M	40+	Good	Slight lean to east, second stem removed at ground level.	-	B2	6.36	127.08

Tree No	Species	Ht (m)	Stem Diam cm@ 1.5m (mm)	Canopy Spread (m) N-E-S-W	Height of Crown Clearance	Age Class	Est yrs	Overall Condition	Structural condition	Management Recommendations	BS 5837 Category	RPA Radius (m)	RPA (m ²)
T27	Ilex sp.	7	227	2.75-2.75-2.75-2.75	1	M	40+	Good	Twin stemmed at 1.2m, main stem with TD at 1.3m.	-	C2	2.72	23.31
T28	Acer pseudoplatanus	16	310	3.75-3.75-3.75-3.75	3	M	40+	Good	Rotting stumps at base.	-	B2	3.72	43.47
T29	Fagus sylvatica	18	320	5.5-5.25-3.25-3	1	M	40+	Good	Slight lean.	-	B2	3.84	46.32
T30	Ilex sp.	8	473	3-3-2.5-3	2	M	40+	Good	MS, rags in canopy, rotting stump at base.	-	B2	5.68	101.21
T31	Acer pseudoplatanus	20	420	4-3.5-5-4	>5	M	40+	Good	Ivy on lower stem.	-	B2	5.04	79.80
T32	Acer pseudoplatanus	22	940	7-7-7-7	5	M	40+	Good	lean to east.	-	A2	11.28	399.73
T33	Ilex sp.	10	355	3.75-3.75-3.75-3.75	1	M	40+	Good	Twin stemmed, nest at 6m, crossing stems.	-	C2	4.26	57.01
T34	Acer pseudoplatanus	20	390	5.5-5.5-5.5-5.5	3	M	40+	Good	-	-	B2	4.68	68.81
T35	Prunus sp.	6	200		3	M	20+	Fair	-	-	C2	2.40	18.10
T36	Acer platanoides	10	200	3.5-3.5-4-3.5	4	EM	40+	Good	Slight lean.	-	C2	2.40	18.10
T37	Acer platanoides	12	200	3-3-3-2.75	4	EM	40+	Good	Slight lean.	-	C2	2.40	18.10
T38	Ilex sp.	5	208	3-3-3-3	0	M	40+	Good	MS.	-	C2	2.50	19.57
T39	Ilex aquifolium	4	173	2-2-2-2	0	EM	40+	Good	MS.	-	C2	2.08	13.54

Tree No	Species	Ht (m)	Stem Diam cm@ 1.5m (mm)	Canopy Spread (m) N-E-S-W	Height of Crown Clearance	Age Class	Est yrs	Overall Condition	Structural condition	Management Recommendations	BS 5837 Category	RPA Radius (m)	RPA (m ²)
T40	Acer pseudoplatanus	18	350	4.75-4.75-4.75-4.75	5	M	40+	Good	Poorly sealed pruning stubs at 3m east.	-	B2	4.20	55.42
T41	Acer pseudoplatanus	2.4	566	7-7-7-7	5	M	40+	Fair	Twin stemmed, ivy covered stem and lower canopy.	-	B2	6.79	144.93
T42	Tilia sp.	7	160	1.75-1.75-1.75-1.75	1	EM	40+	Good	Stem damaged at base.	-	C1	1.92	11.58
T43	Acer pseudoplatanus	14	330	5-5-5-5	2.5	M	40+	Good	Slight lean to west.	-	B2	3.96	49.27
T44	Sorbus sp.	6	160	2-2-2-2	2	SM	40+	Good	-	-	C1	1.92	11.58
G45	Sorbus sp.	6	130	2-2-2-2	2	SM	40+	Good	Two trees	-	C1	1.56	7.65
T46	Sorbus sp.	6	130	2-2-2-2	2	SM	<10	Fair	Bark stripped from base to 1.9m.	-	U	1.56	7.65
T47	Prunus sp.	10	350	3-3-3-3	3	M	20+	Fair	TD at 2m.	-	C1	4.20	55.42
T48	Prunus sp.	5	180	5-5-5-5	2	M	10+	Fair	Bird box at 2.5m.	-	C1	2.16	14.66
T49	Fagus sylvatica	22	450	4-9.5-5.5-7	3	M	40+	Good	-	-	B2	5.40	91.61
T50	Fagus sylvatica	22	450	6-4-4-3.5	3	M	40+	Good	-	-	B2	5.40	91.61
T51	Fagus sylvatica	22	400	1.75-1.5-3.75-4.5	>5	M	40+	Good	-	-	B2	4.80	72.38

Tree No	Species	Ht (m)	Stem Diam cm@ 1.5m (mm)	Canopy Spread (m) N- E- S- W	Height of Crown Clearance	Age Class	Est yrs	Overall Condition	Structural condition	Management Recommendations	BS 5837 Category	RPA Radius (m)	RPA (m ²)
T52	Acer pseudoplatanus	12	400	4-4.25-3-4	2	M	40+	Good	Lower crown formed by shoots from historic pruning cuts.	-	B2	4.80	72.38
T53	Acer pseudoplatanus	12	360	2.5-2.5-3.25-3.5	2	M	40+	Good	Lower crown formed by shoots from historic pruning cuts.	-	B2	4.32	58.63
T54	Fagus sylvatica	20	600	4-11-3.5-6	3	M	40+	Good	-	-	B2	7.20	162.86
T55	Acer pseudoplatanus	18	740	3-5.5-3-4	3.5	M	40+	Good	Some historic pruning cuts, TD at 1.9m.	-	B2	8.88	247.73
T56	Acer pseudoplatanus	12	450	1-2-4-4	3	M	40+	Good	TD at 1.9m, slight lean to east.	-	B2	5.40	91.61
T57	Fagus sylvatica	20	500	4-6-5-5.5	8	M	40+	Good	Slight lean to east.	-	B2	6.00	113.10
T58	Acer pseudoplatanus	14	440	2.5-2-4-7	2	M	40+	Good	Lower crown formed by shoots from historic pruning cuts.	-	B2	5.28	87.58
T59	Acer pseudoplatanus	22	500	5-6.25-3-5.25	10	M	40+	Good	-	-	B2	6.00	113.10
T60	Acer pseudoplatanus	22	460	2.5-2.5-5-5.5	3	M	40+	Good	Slight lean to west, unbalanced crown.	-	B2	5.52	95.73
T61	Acer pseudoplatanus	22	630	5.5-7-3-4.5	4	M	40+	Good	Slight lean to east, one main branch snapped at 12m.	-	B2	7.56	179.55
T62	Acer pseudoplatanus	20	670	5-6-5-7.5	6	M	40+	Good	Small cavity at base.	-	B2	8.04	203.08
T63	Acer pseudoplatanus	12	330	3-4-3-3.5	3	EM	40+	Good	-	-	B2	3.96	49.27

Tree No	Species	Ht (m)	Stem Diam cm@ 1.5m (mm)	Canopy Spread (m) N-E-S-W	Height of Crown Clearance	Age Class	Est yrs	Overall Condition	Structural condition	Management Recommendations	BS 5837 Category	RPA Radius (m)	RPA (m ²)
T64	Acer pseudoplatanus	22	520	1-2-4.25-3.5	10	M	40+	Good	-	-	B2	6.24	122.33
T65	Fagus sylvatica	18	330	2-5.5-3-1	4	M	40+	Good	-	-	B2	3.96	49.27
T66	Acer pseudoplatanus	24	550	6-9-4.5-6	>10	M	40+	Good	-	-	B2	6.60	136.85
T67	Fagus sylvatica	22	380	4-5.5-2.5-3.5	5	M	20+	Good	Small stem cavity and visible internal rot, old stem damage at base.	-	B2	4.56	65.33
T68	Acer pseudoplatanus	20	510	6-9.75-6-5.5	4	M	40+	Good	-	-	B2	6.12	117.67
T69	Acer pseudoplatanus	24	420	4-6-3-5.25	2	M	40+	Good	-	-	B2	5.04	79.80
T70	Acer pseudoplatanus	24	680	2-14-3-1.5	4	M	40+	Good	Lean to east, rope and hosepipe tied around major branch, stem cavity at base, potential internal weakness.	Remove rope and hosepipe.	B2	8.16	209.18
T71	Acer pseudoplatanus	22	350	2-1.5-1.5-2.5	>10	M	40+	Good	Large dead wood (stubs) on stem.	Remove stubs.	B2	4.20	55.42
T72	Acer pseudoplatanus	24	500	4-13-4-2.75	4	M	20+	Good	Old stem damage at 1.5m, with suspected decay at entry point.	-	B2	6.00	113.10
T73	Fagus sylvatica	26	420	3-3.25-2.75-3	2	M	40+	Good	Abundant basal growth.	Remove basal growth.	B2	5.04	79.80
T74	Acer pseudoplatanus	22	700	7-12-3.25-6	3	M	40+	Good	U-shaped TD at 1.7m.	-	B2	8.40	221.67

Tree No	Species	Ht (m)	Stem Diam cm@ 1.5m (mm)	Canopy Spread (m) N-E-S-W	Height of Crown Clearance	Age Class	Est yrs	Overall Condition	Structural condition	Management Recommendations	BS 5837 Category	RPA Radius (m)	RPA (m ²)
T75	Fagus sylvatica	24	580	4-7.25-5.75-4	3	M	40+	Good	Rope girdling main stem at 2.5m.	Remove rope.	B2	6.96	152.18
T76	Fagus sylvatica	24	650	9.5-5.5-5-12	2	M	40+	Good	-	-	B2	7.80	191.13
T77	Acer pseudoplatanus	20	320	6-5-5.75-6.25	5	M	40+	Good	-	-	B2	3.84	46.32
T78	Acer pseudoplatanus	16	310	5-5.25-5-4.5	5	M	40+	Good	-	-	B2	3.72	43.47
T79	Acer pseudoplatanus	24	260	5.5-5-5.75-5.5	4	M	40+	Good	-	-	B2	3.12	30.58
T80	Acer pseudoplatanus	24	650	3.5-12-6-6.5	2	M	40+	Good	Large historic stem damage at 1.5m, nest at 20m.	-	B2	7.80	191.13
T81	Acer pseudoplatanus	22	300	3.5-3.5-3-3	5	M	40+	Good	-	-	B2	3.60	40.72
T82	Acer pseudoplatanus	22	340	6.5-4-1.5-2.75	2.5	M	40+	Good	Historic stem wounds, one with rusty nail.	-	B2	4.08	52.30
T83	Fagus sylvatica	24	470	5-3.5-3.5-4.5	2.5	M	40+	Good	-	-	B2	5.64	99.93
T84	Fagus sylvatica	24	600	4-5-5.5-7	10	M	40+	Good	-	-	B2	7.20	162.86
T85	Acer pseudoplatanus	20	450	3.75-2.5-1.75-4.5	2	M	40+	Good	-	-	B2	5.40	91.61
T86	Acer pseudoplatanus	18	360	4.5-4.5-4.5-4.5	3	M	40+	Good	-	-	B2	4.32	58.63
T87	Fagus sylvatica	24	550	5-1.25-3.5-3	4	M	40+	Good	Ivy on lower stem.	-	B2	6.60	136.85

Tree No	Species	Ht (m)	Stem Diam cm@ 1.5m (mm)	Canopy Spread (m) N-E-S-W	Height of Crown Clearance	Age Class	Est yrs	Overall Condition	Structural condition	Management Recommendations	BS 5837 Category	RPA Radius (m)	RPA (m²)
T88	Fagus sylvatica	24	450	5.25-5.5-3.5	4	M	40+	Good	-	-	B2	5.40	91.61
T89	Acer pseudoplatanus	16	300	7-0.5-0.5-3.5	3	EM	40+	Good	-	-	B2	3.60	40.72
T90	Fagus sylvatica	22	740	8.5-7-11-4.5	3	M	40+	Good	Rope emerging from stem at 1m.	-	A2	8.88	247.73
T91	Acer pseudoplatanus	22	470	5.5-6.25-5.5-4	8	M	40+	Good	-	-	B2	5.64	99.93
T92	Fagus sylvatica	18	390	3.75-4-4.25-5	2.5	M	40+	Good	-	-	B2	4.68	68.81
T93	Acer pseudoplatanus	20	410	4-2-4.25-4.25	2.5	M	40+	Good	Some ivy on stem.	-	B2	4.92	76.05
T94	Fagus sylvatica	25	680	7.75-6-12-4	4	M	40+	Good	-	-	A2	8.16	209.18
T95	Fagus sylvatica	8	280	3.5-4.5-5-4.5	2	M	40+	Fair	Suppressed by T94.	-	C2	3.36	35.47
T96	Acer pseudoplatanus	22	580	5.5-5.5-5-4	3	EM	40+	Good	Birds nest at 20m.	-	B2	6.96	152.18
T97	Picea abies	9	200	2-2-2-2	1	M	40+	Good	-	-	C2	2.40	18.10
G98	Acer pseudoplatanus	12	250	2.75-3.5-3-3.75	3.5	EM	40+	Good	Two sycamores, off site on top of 0.8m boundary retaining wall.	-	B2	3.00	28.27

7. Appendix 2 - Site Photographs



T3 and T2 overhanging drive in north east



Ropes girdling branch of T70



Tree belt along Lidget Street



Tree lined west boundary along alleyway



Mature trees along north west boundary



Drive adjacent to St Stephen's church

KEY - Tree Survey and Tree Constraints Plan

- Tree surveyed by Ecus - location of tree centre from topographic survey
- Tree surveyed by Ecus - tree location approximated by Ecus
- Shrubs and hedges
- Approximate location of building foundations
- Tree categories (BS 5837:2012)
 - Category A Trees
 - Category B Trees
 - Category C Trees
 - Category U Trees
- Root Protection Area (RPA) of category A, B and C trees



Brook Holt
Blackburn Road
Sheffield S81 2DW
Tel: (0114) 2685232
www.ecus.co.uk

Job
OAKMEAD, LIDGET STREET,
HUDDERSFIELD

Title
Figure 2- Tree Survey and
Tree Constraints Plan- Sheet 1 of 2

Drawn by	Date	Scale	Dwg. no.
VM/ SF	Mar 2014	1:500 @ A2	L4845/01

A	04/04/14	WESP	ECUS	PRELIMINARY
Rev	Date	Initials	Checked	Revision

KEY - Tree Protection Plan
 (to be read in conjunction with Ecus Ltd. Tree Survey report ref. 4845 Oakmead, Lidget Street, Huddersfield)

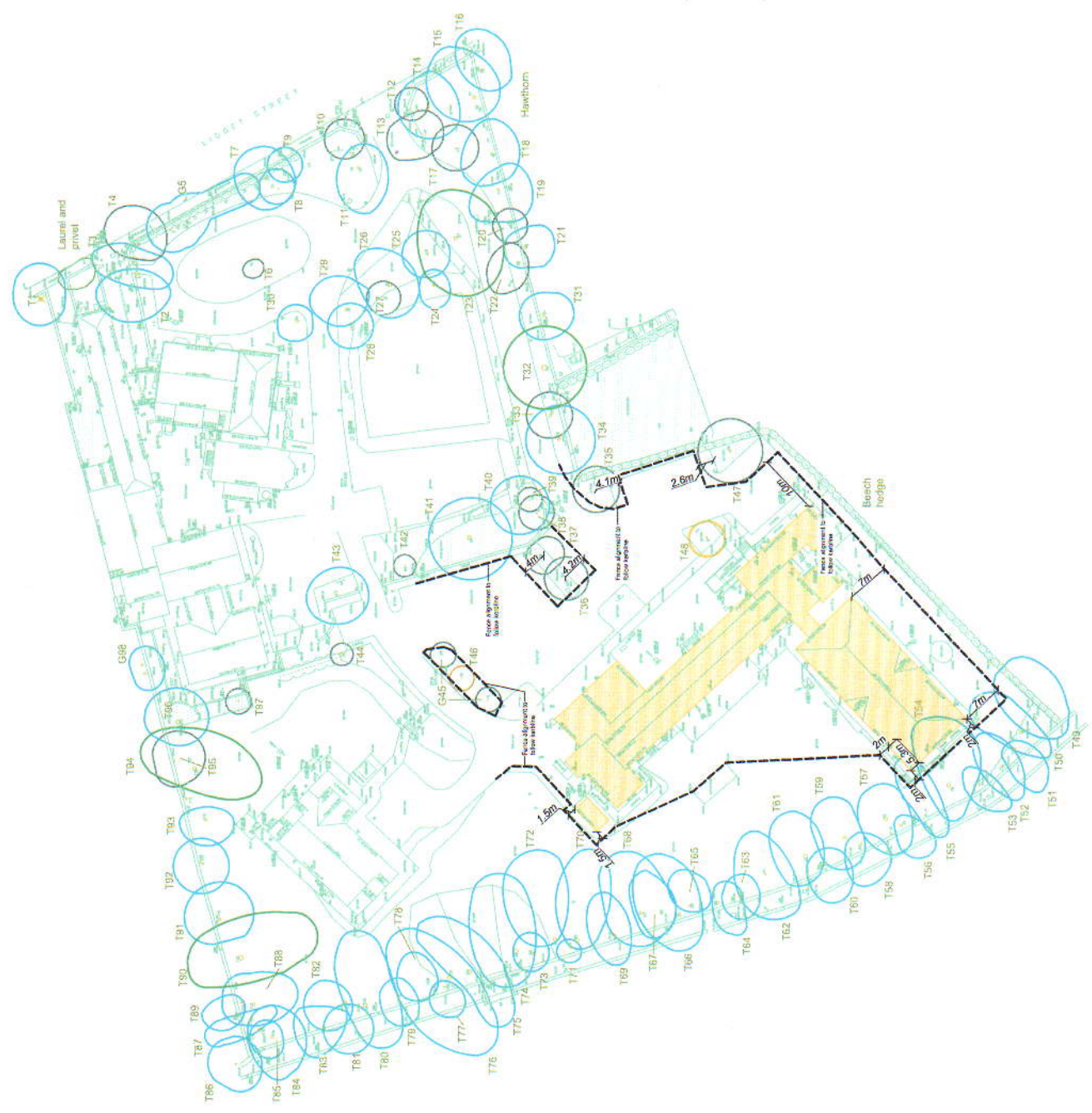
- Tree surveyed by Ecus - location of tree centre from topographic survey
- Tree surveyed by Ecus - tree location approximated by Ecus
- Building to be demolished

Tree categories (BS 5837:2012)

- Category A Trees
- Category B Trees
- Category C Trees
- Category U Trees
- Existing tree to remove

Root Protection Area (RPA) of trees to be retained

Tree Protection Barrier
 As default specification in accordance with BS5837:2012



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 ENVIRONMENTAL CONSULTANTS

Book Holt
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 Tel: (0114) 285292
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Job
**OAKMEAD, LIDGET STREET,
 HUDDERSFIELD**

Title
**Figure 3-
 Tree Protection Plan**

Drawn by VM	Date April 2014	Scale 1:500 @ A2	Dwg. no. L4845/03
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Rev	Date	Initials	Checked	Revision
A	30.04.14	VM	ECUS	PRELIMINARY

Appendix 2: Protective Barrier

A2.1 The protective barrier will be appropriate to the degree and proximity of likely construction works. The default specification of BS 5837: 2012 recommends a vertical and horizontal, scaffold framework, well braced to resist impacts, with vertical tubes at no more than 3m intervals. These should be driven into the ground. Weld mesh panels should be affixed to this framework with scaffold clamps - See Figure 1 and Figure 2.

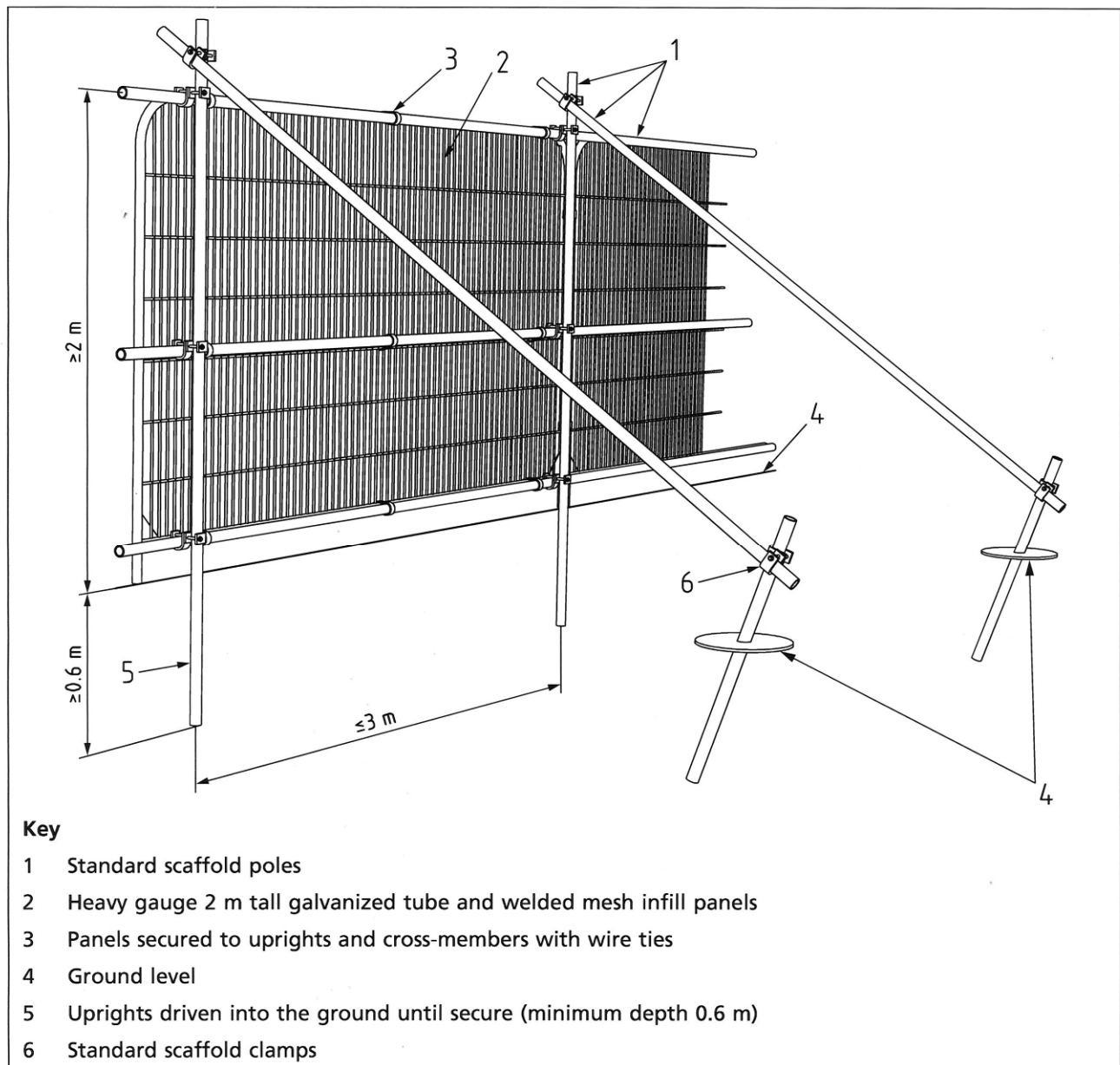


Figure 1: 'Protective Barrier to BS 5837: 2012'.

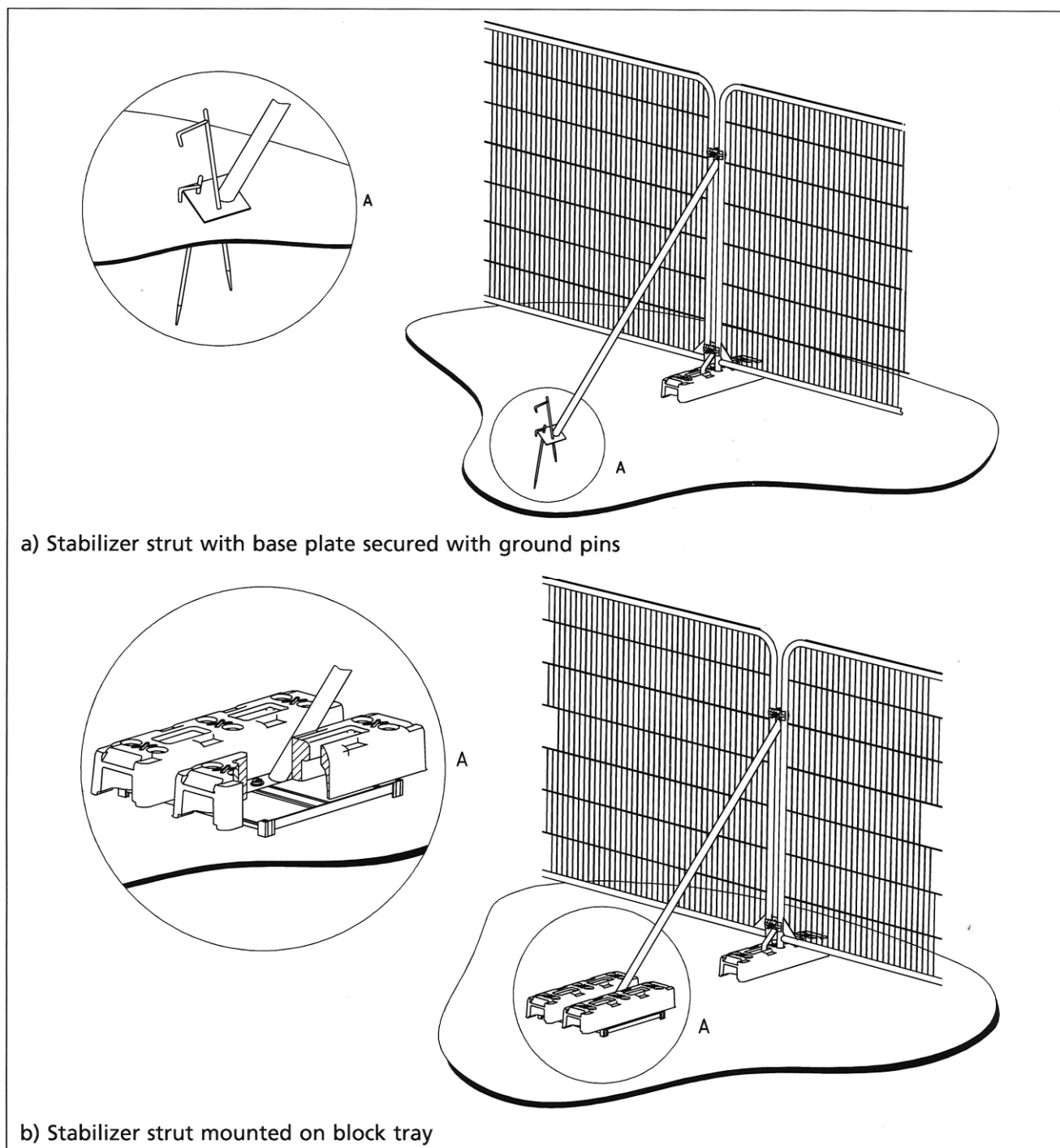


Figure 2: 'Examples of above-ground stabilisation systems'.

A2.2 In certain circumstances, site buildings, such as a Portakabin, may be used in place of a protective barrier where space is at a premium. JCA must be consulted before such action is taken.

TREE PROTECTION ZONE

NO STORAGE OR OPERATIONS WITHIN THIS AREA

KEEP OUT

RESTRICTED ACCESS

NO VEHICLES

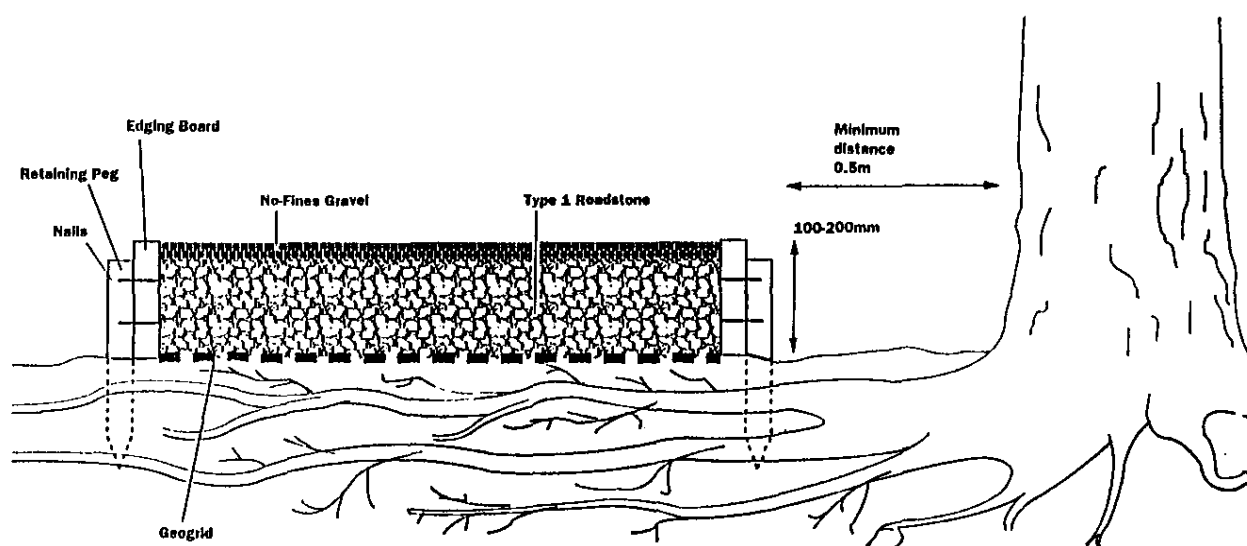
NO STORAGE OF MATERIALS

REPORT TREE DAMAGE TO JCA LTD ON

01422 376 335

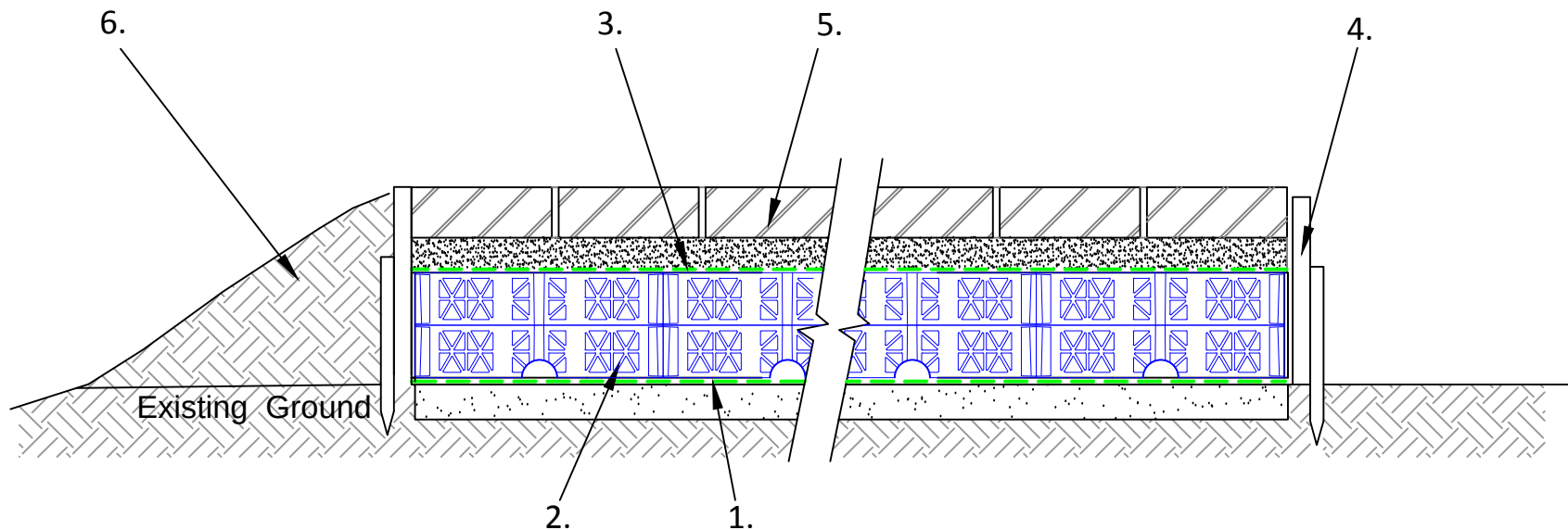
Appendix 3: Permanent Hard Surfaces

A3.1 To be read in accordance with the methodology detailed in **Section 4.3**. Below are two examples of 'no-dig' hard surfacing; the first utilising matting-type, cellular confinement and the second utilising crate-type cellular confinement. The exact specification should be checked with the supplier of the chosen products.



KEY

1. Permatex 300 geotextile
2. 150mm deep ArborRaft tree root protection system on 30-50mm blinding layer
3. Permatex 200 separation geotextile
4. Treated Timber Edging (Or other Edging Detail Acceptable)
5. Block Paving with sand bed to Engineers Specification
6. Soil graded to edging (if required)



Appendix 4: Tree Protection Plan



**Appendix 4:
Tree Protection Plan**

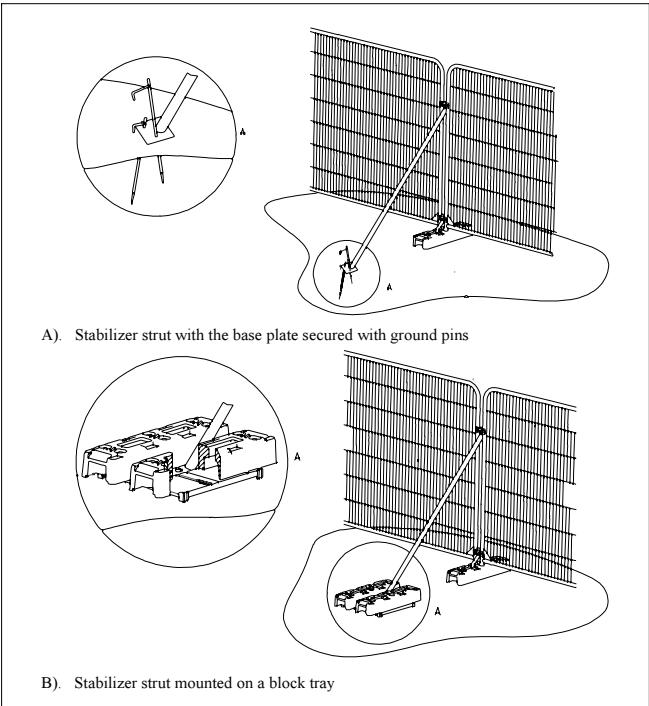
ADDRESS: Field Head, Lidget Street,
Lindley, Huddersfield, West Yorkshire.
JCA REF: 12111/SR.

SCALE: 1:500 PAPER SIZE : A2

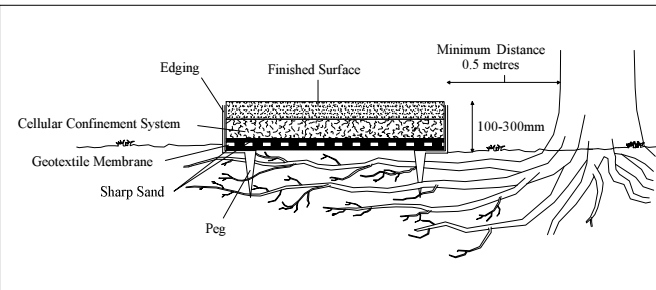
SURVEYED BY: Ecus Environmental Consultants DRAWN BY: SR APPROVED BY: TT

	TREE TO BE RETAINED
	TREE TO BE REMOVED
	STEM OF TREE TO BE RETAINED
	STEM OF TREE TO BE REMOVED
	ROOT PROTECTION AREA (RPA)
	AREA OF RPA NOT PROTECTED BY FENCING OR EXISTING HARD STANDING. NO MATERIALS SHOULD BE STORED HERE. GROUND COMPACTION MUST BE AVOIDED. SPECIAL SURFACES / CONSTRUCTION TECHNIQUES MUST BE UTILISED WHEN WORKING/CONSTRUCTING WITHIN THESE AREAS.
	PROTECTIVE FENCE LINE (CEZ)
	PROPOSED NEW DEVELOPMENT

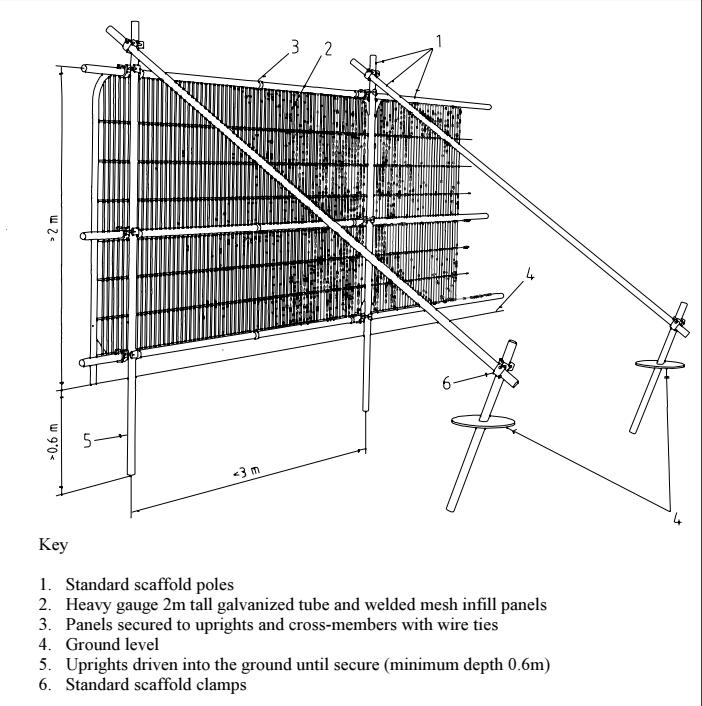
Examples of above-ground stabilizing systems



An example of a 'no dig' road construction

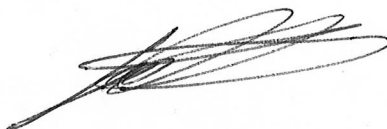


Default specification for a protective barrier



I hope that this report provides all the necessary information, but should any further advice be needed please do not hesitate to contact the author.

Signed



.....
Scott Reid ND (*Arboriculture and Forestry*).

18th March 2015

For and on behalf of **JCA Ltd**

Registered Office:

**Unit 80
Bowers Mill
Branch Road
Barkisland
Halifax
HX4 0AD**

**Tel. 01422 376335
Fax. 01422 376232
Email: jon@jcaac.com**

www.jcaac.com

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Registered Office:

Unit 80 Bowers Mill Branch Road Barkisland Halifax HX4 0AD
Tel: 01422 376335 Fax: 01422 376232 Mobile: 07778 391986
Email: jon@jcaac.com Website: www.jcaac.com
Company Reg No. 05005041 VAT No. 686 4674 78

Directors:

Jonathan Cocking
F. R. E. S., Tech. Cert. (Arbor A), P. Dip. Arb.
(R. F. S.), F. Arbor. A., CBiol, MIBiol

Catherine Cocking
RGN RM

Photo front cover: Sluice at Bowers Mill

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