

Arboricultural Impact Assessment
At
321 Hough Lane, Wombwell, Barnsley, S73 0LR
Fairhurst



Address	321 Hough Lane, Wombwell, Barnsley, S73 0LR		
Client	Fairhurst	Client Ref	117436
Our Ref	PA-14085	Consultant	Andrew Cayley BSc (Hons) Arb, M.Arbor.A
Report Date	3 rd October 2017	Quality Checked	George Peters BSc (Hons)

Environmental Services

Arboriculture • Ecology • Landscape Architecture • Environmental Groundworks • Vegetation Management



t 0330 380 1036 f 0330 3801038
planning@innovation-environmental.co.uk
www.innovationpropertyuk.com/environmental

Environmental Services is a trading name of Innovation Property (UK) Ltd
Company Registration No 03730163 Registered in England and Wales
Unit 4, Linnet Court, Cawledge Business Park, Alnwick, NE66 2GD

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Contacts

Name	Company	Position	Telephone Number
Andrew Cayley Andrew.cayley@innovation.group	Environmental Services	Consultant Arboriculturist	0330 380 1036
Alastair Scott-Kiddie alastair.scott.kiddie@fairhurst.co.uk	FAIRHURST	Client	01224 327630

Report Caveats

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Specific - Trees

All tree inspections, unless specified, have been undertaken from ground level and using non-invasive techniques. Comments contained within the report on the condition and risk associated with any tree relate to the condition of the tree at the date and time of survey. Please note that the condition of trees is subject to change. This change may occur, but is not limited to biological and non-biological factors as well as mechanical/ physical changes to conditions in the proximity of the tree. Trees should be inspected at intervals relative to identified site risks and in accordance with relevant HSE and Central Government guidance. Environmental Services can provide further information on this matter if required.

Please note no statutory control checks have been undertaken (unless specified). Where tree surgery works have been identified these works are based on the assumption that planning is approved, no tree works should be undertaken prior to determination of this application without up to date confirmation of the Tree Preservation Order / Conservation Area Status of the vegetation. All works should be undertaken in accordance with the appropriate Duty of Care. This should include, for example, site specific risk assessments and due diligence inspections for the presence of protected species.

Any comment relating to 3rd party trees has been made without full access to the tree(s). Should these trees have any impact on the proposed development we would advise you to instruct us to contact the 3rd party and undertake further inspection work.

1.0 Introduction

- 1.1 Environmental Services have been appointed by Fairhurst to provide advice on the arboricultural issues relating to the proposed development of the above site.
- 1.2 We undertook a Pre-Development Tree Condition Survey (see Appendix 1), on Monday 25th September 2017.
- 1.3 This survey assessed the condition of the tree resource, categorised the trees and provided the Root Protection Area (RPA) information according to the BS5837:2012 "*Trees in relation to design, demolition and construction – Recommendations*".
- 1.4 Following preparation of our Tree Condition Survey we received a copy of the layout drawing showing the development proposal for the site.
- 1.5 Our detailed check with the Local Planning Authority has confirmed that none of the tree identified are subject to statutory protection.
- 1.6 The tree numbers used in this report refer to the tree numbers used in our Tree Condition Survey.

2.0 Executive Summary

- 2.1 The site is currently under industrial use and comprises a range of industrial, workshop and warehouse buildings with ancillary offices and areas of open storage. The site comprises almost entirely of buildings and areas of hard standing.
- 2.2 The site is bound to its immediate north and north-east by allotments and an area of open space beyond which lie residential properties fronting Hough Lane. Open space bounds the site to the south-east, whilst to the south and south-west lie new residential properties mainly comprising detached, semi-detached and terraced properties.
- 2.3 The tree resource on the site is predominately located along the southern / eastern boundaries with a mix of self-set and planted maturing trees. The north and west boundaries are significantly less well stocked.
- 2.4 Most of the trees identified on / near the site are of modest quality and landscape value.
- 2.5 The development proposal involves the demolition of the existing buildings and the redevelopment of the site to provide residential development comprising detached, semi-detached and terraced housing with associated areas of landscaping and open space provision. Anticipated development densities

would be similar to the recent developments to the south and east and be a maximum of two storeys in height.

2.6 *The intention would be to utilise the existing access with indicative layouts showing the site capable of accommodating circa 40-45 units.*

2.7 *The proposal poses limited arboricultural constraints with the bulk of the vegetation being located either outside the primary development area or outside the plot.*

2.8 A summary of the affected trees is detailed in the table below:

Impact	Reason	A	B	C	U
Trees to be removed	To facilitate the development or due to their condition (U cat)			T10, T11	
Trees with RPA encroachment	To facilitate construction		TG2		
Retained Trees to be pruned	To address identified defects/ facilitate construction				

3.0 Scope of Tree Survey

- 3.1 To carry out a tree condition survey on the trees and hedgerows at and immediately adjacent to the site, identifying any hazard trees and making recommendations for those trees to be retained and low amenity value and hazard trees to be replaced.
- 3.2 To undertake the tree survey in accordance with the principles of BS5837: 2012 'Trees in relation to design, demolition and construction – Recommendations'.
- 3.3 To produce a tree constraints plan (TCP), showing the location of surveyed trees, their BS5837: 2012 categorisation and the theoretical Root Protection Areas (RPA).
- 3.4 To carry out an arboricultural impact assessment on the effect of the new development at the site identifying the construction exclusion zones (CEZ) shown on the tree protection plan (TPP). This will also show the locations for tree protective fencing, any temporary ground protection required and identify 'No-Dig' zones for RPAs shown outside of CEZs.
- 3.5 The purpose of this report is to comment on the arboricultural implication of the proposed development and to aid the preservation of trees to be retained at and adjacent to the site during the construction works by setting out the tree protection methods, construction techniques and working practices that are to be adopted on this site.
- 3.6 If the guidelines and principles outlined in this report are not adhered to, as with all development sites there is a risk that the construction activities will result in damage to and potentially the death of the retained trees. Damage to the trees will significantly increase the risk of their health declining and may increase the risk of their complete or partial failure.

4.0 Terms of Reference

4.1 Reference Documents:

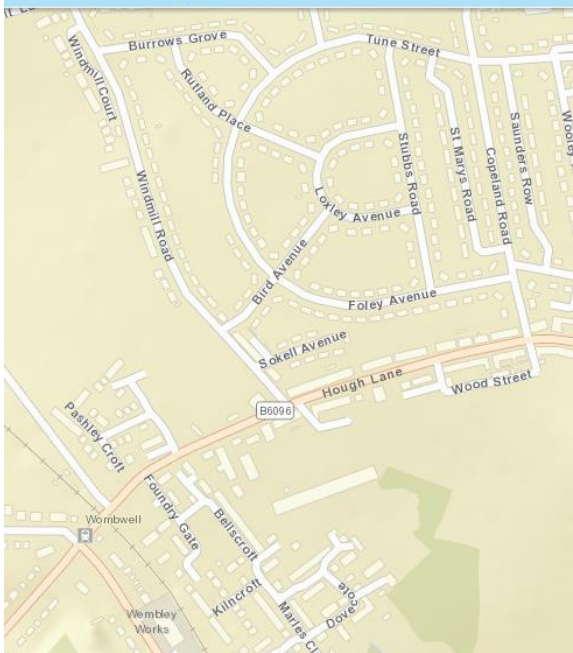
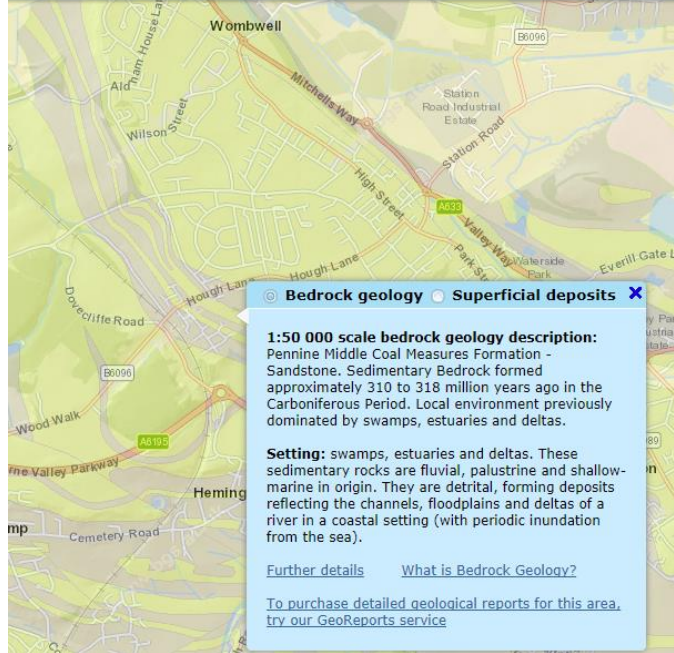
- BS5837:2012 '*Trees in relation to design, demolition and construction – recommendations*'
- BS3998:2010 '*Tree work – recommendations*'
- NJUG 4 – National Joint Utilities Group "*Guidelines for the planning, installation and maintenance of utility apparatus in proximity to trees. Volume 4, issue 2. London: NJUG 2007*"
- BGS Open Source Soil Data <http://www.bgs.ac.uk/nercsoilportal/maps.html>

5.0 Description of Site and Proposed Works

- 5.1 The site is presently an industrial complex with a range of workshops / warehouse buildings, ancillary offices and areas of open storage; the site has been developed over many.
- 5.2 The main industrial unit sits to the rear of the site and comprises three inter-connected units of steel portal framed construction with concrete floor and over clad brick elevations.
- 5.3 The site, which extends to approximately 1.57 hectares (3.88 acres) lies immediately to the south of Hough Lane in Wombwell, with existing vehicular access taken directly off Hough Lane (see below).



- 5.4 The immediate and distant landscape character of the adjoining land is predominantly residential with recent developments occurring to the south and south-west adding to the presence of existing housing to the north and north-east.
- 5.5 As a consequence of the recent re-development of the locale, industrial use is no longer deemed to be compatible with the immediately adjoining residential uses.
- 5.6 The topography of the site slopes predominately downhill from front to rear; the main industrial unit sits on land which is lower than Hough Lane.

Site Location (OS)	Site Location (BGS Soil)
Geology of Britain viewer 	Geology of Britain viewer  Bedrock geology ☒ Superficial deposits ☐ 1:50 000 scale bedrock geology description: Pennine Middle Coal Measures Formation - Sandstone. Sedimentary Bedrock formed approximately 310 to 318 million years ago in the Carboniferous Period. Local environment previously dominated by swamps, estuaries and deltas. Setting: swamps, estuaries and deltas. These sedimentary rocks are fluvial, palustrine and shallow-marine in origin. They are detrital, forming deposits reflecting the channels, floodplains and deltas of a river in a coastal setting (with periodic inundation from the sea). Further details What is Bedrock Geology? To purchase detailed geological reports for this area, try our GeoReports service
Summary <i>Pennine Middle Coal Measures Formation - Sandstone.</i>	

- 5.7 The underlying site soil has been identified as coal / sandstone. This decreases the risk of damage to the trees by way of site compaction as this soil type is less prone to compaction.
- 5.8 All comments regarding soils should be verified with onsite geotechnical investigations and laboratory testing with foundation depth and design undertaken by a structural engineer in accordance with the requirements of NHBC Chapter 4.2.

6.0 The Trees

- 6.1 There were 11 Individual trees, 4 groups, 0 woodland areas and 2 hedges surveyed onsite or immediately adjacent to the site boundary.
- 6.2 By BS5837:2012 categorisation individually there were; 0 A category trees, 9 B category trees, 4 C category trees.
- 6.3 By group and Woodland Area there were 0 A category groups, 4 B category groups, 0 C category groups. In total there were 0 U category individual and group trees which were identified as in poor condition or dead / in decline with less than ten years useful life expectancy.

6.4 The trees can be summarized as follows:

BS 5837 Cat	A	B	C	U
Specific Trees	0	T1 – T9, TG1, TG2, TG3 & TG4	T10, T11, H1 & H2	N/A
Total Number	0	13	4	N/A

6.5 TG2, is the primary tree resource on site as it serves to screen the development from the existing dwellings on Maisin Gardens, Bellscroft and Tunstall Close. Trees along the Eastern boundary (T4 – T9) serve to screen to the site from properties on Hough Lane and also the allotments.

6.6 The hedgerow's identified on the site are not likely to be classified as 'important' within the Hedgerow Regulations 1997.

7.0 Arboricultural Impact Assessment

7.1 The 2 Individual trees to be removed, by BS5837:2012 category, are:

C - T10 and T11

There are no groups or woodland areas proposed to be removed.

7.1 Tree Removals

7.1.1 The following trees should be removed to facilitate the development

BS 5837 Cat	A	B	C
Tree to be removed			<i>T10 & T11</i>

7.1.2 To mitigate any perceived loss of amenity value, the Local Planning Authority is invited to secure a detailed Landscaping Proposal by way of Planning Condition.

7.2 Surfaces

7.2.1 The development requires the installation of new surfaces within the RPA of TG2 (*presumed footpath to south of development*).

7.2.2 To minimise the disruption on the retained trees it is advised to install the pathway on a 'reduced / no-dig' surface. These surfaces sit above ground level after surface vegetation removal and ensure no tree roots are severed during their installation.

7.3 Services

- 7.3.1 The route of any services needs to be carefully considered so as to avoid unnecessary encroachment into retained trees RPA's. Currently, the precise location of new excavations for services is not known.
- 7.3.2 Where excavations slightly encroach into adjacent tree RPA's their excavation should only be considered when supervised by a consultant arboriculturist and may need to be undertaken using an 'Airspade' / hand tool combination.
- 7.3.3 The Local Planning Authority is invited to secure full detail on the proposed service routes and form of installation by way of appropriate Planning Condition.

7.4 Ground Levels

- 7.4.1 Ground level changes have not been identified within the RPA's of retained trees at the time of writing.
- 7.4.2 However, any alterations to levels close to, or within the RPA's of retained trees should be avoided and this includes hard landscaping features such as new footpaths, retaining walls etc.
- 7.4.3 Arboricultural methods and site supervision can be provided as part of any Site Specific Method Statement report (SSMS) required to discharge any conditions of any future planning approval for the site.

7.5 Site Supervision/ Monitoring

- 7.5.1 Most damage to trees on developments sites is caused inadvertently and to ensure continued protection during development a system of site monitoring is proposed.
- 7.5.2 Basic checks will ensure that protective fencing remains intact.
- 7.5.3 Any unforeseen issues can also be identified and discussed before damage to the tree(s) occurs.
- 7.5.4 The Local Planning Authority is invited to secure a supervision schedule by way of Planning Condition.

8.0 Recommendations

- 8.1 The preliminary treeworks recommended are included in the tree tables contained within this report within the tree works schedule at Appendix 5.
- 8.2 That during the construction build phase, following current consultation with the arboriculturist, adequate provision is made for the protection of existing trees on site and the areas to be planted with new trees and shrubs.
- 8.3 That by liaison with the council tree officer, formal agreement should be sought regarding the tree pruning required and tree protection methods employed to protect retained trees. These will be via the production of a site specific method statement (SSMS) and will include:
- Tree protective fencing as shown on the tree protective plan
 - No ground excavations within tree RPAs, unless approved by the tree officer
 - The specific location of services trenches where possible to avoid excavations within RPAs, or if necessary to be undertaken by hand dig only
 - Specific methods for construction close to or within retained trees RPAs
- 8.4 Pre-commencement site meetings should be arranged to discuss the recommendations in this and subsequent reports and method statements. Copies of all relevant arboricultural reports should be available on site.
- 8.5 The SSMS should be developed further with the contractor through the development process to include comments made by them and the client and design team as well as council officers. A copy of the tree report, including the site specific method statements and tree protection plan is kept on site at all times.
- 8.6 That details of site inspection / supervision visits by the consultant arboriculturist are recorded and sent to the council tree officer with copies retained by the site manager.

9.0 Conclusions

- 9.1 The site is currently in industrial use, the scale of which has become incompatible with the residential nature of the surrounding area.
- 9.2 The site comprises almost entirely of buildings and areas of extensive hard standing.
- 9.3 The tree resource on the site is predominately located along the southern / eastern boundaries with a mix of self-set and planted maturing trees. The north and west boundaries are significantly less well stocked. Most of the trees identified on / near the site are of modest quality and landscape value.
- 9.4 The development proposal involves the demolition of the existing buildings and the redevelopment of the site to provide residential development comprising detached, semi-detached and terraced housing with associated areas of landscaping and open space provision. Anticipated development densities would be similar to the recent developments to the south and east and be a maximum of two storeys in height.
- 9.5 The intention would be to utilise the existing access with indicative layouts showing the site capable of accommodating circa 40-45 units.
- 9.7 The tree resource on / near the site extends predominately around the norther, eastern and southern boundaries with a mixture of mature and maturing native trees; these serve to offer a good screen to the development site and should be retained / protected.
- 9.8 There are just two internal (low amenity value) trees which have been identified for removal, no groups are proposed to be removed.
- 9.9 The site is noted to be 'terraced' due to its sloping nature and the tree stock to the south boundary stand on the lower side / bottom of a 'bund'; similar conditions are noted along the north-east corner of the site where the ground level changes significantly and trees T4 – T9 stand some 2m above ground level.
- 9.10 Any development proximate to TG2 and in particular T4 – T9 should consider the existing site topography and where possible, the ground should not be subject to significant alterations; where the earth bank is retained then RPA fencing along the 'drip-line' should adequately protect the root system for these trees.

-
- 9.11 11 individual trees, 4 groups and two hedges were identified on / near the site; two 'C' category individual trees constrain the current proposed layout for the new residential units.
- 9.12 These two trees should be removed and replaced within the final landscaping scheme.
- 9.13 Tree protection measures, including the use of cellular confinement sub-base systems for the construction of the proposed southern footpath (proximate to TG2), and the installation of tree protective fencing and temporary ground protection will adequately protect the other retained trees RPAs if accompanied by detailed methods and supervision by a consultant arboriculturist.
- 9.14 Sufficient development room will be available after protection measures are instigated as described within this report for the proposed development to proceed.
- 9.15 Excavations within retained tree RPAs for construction operations such as; service trenches; foundations excavations and removal of existing hard surfacing will be avoided where possible.
- 9.16 Significant changes to existing ground levels should also be avoided.
- 9.17 The development of the site will bring an opportunity for diversification of the current species / age matrix of the tree stock on site.
- 9.18 All tree works, translocation and landscape replacement tree planting will require agreement with the council officers.



Dated: 3rd October 2017

ANDREW CAYLEY *Bsc (Hons) Arboriculture, HND, M.Arbor.A*
Senior Arboriculturist - Environmental Services - Innovation Property (UK) Ltd

andrew.cayley@innovation.group

10.0 Appendices

Appendix 1 Key to Survey Sheets

Appendix 2 Tree Survey Sheets

Appendix 3 Tree Constraints Plan

Appendix 4 Tree Protection Plan

Appendix 5 Tree Works Schedule

Appendix 6 Appendix 7 BS5837:2012 Tree Constraints & Protection Methods

Appendix 7 Tree Protection Fencing Specification

Appendix 8 Temporary Ground Protection Specification

Appendix 9 Photographs

Appendix 1 – Key to Tree Survey Sheets

Key

BS 5837 Cat	Description
A	Those of high quality and value: in such a condition as to be able to make a substantial contribution (> 40 years)
B	Those trees of moderate quality and value: those in such a condition as to make a significant contribution (> 20 years)
C	Those trees of low quality and value: currently in adequate condition to remain until new planting could be established (> 10 years)
U	Those in such a condition that any existing value would be lost within 10 years and which should, in the current context, be removed regardless of development

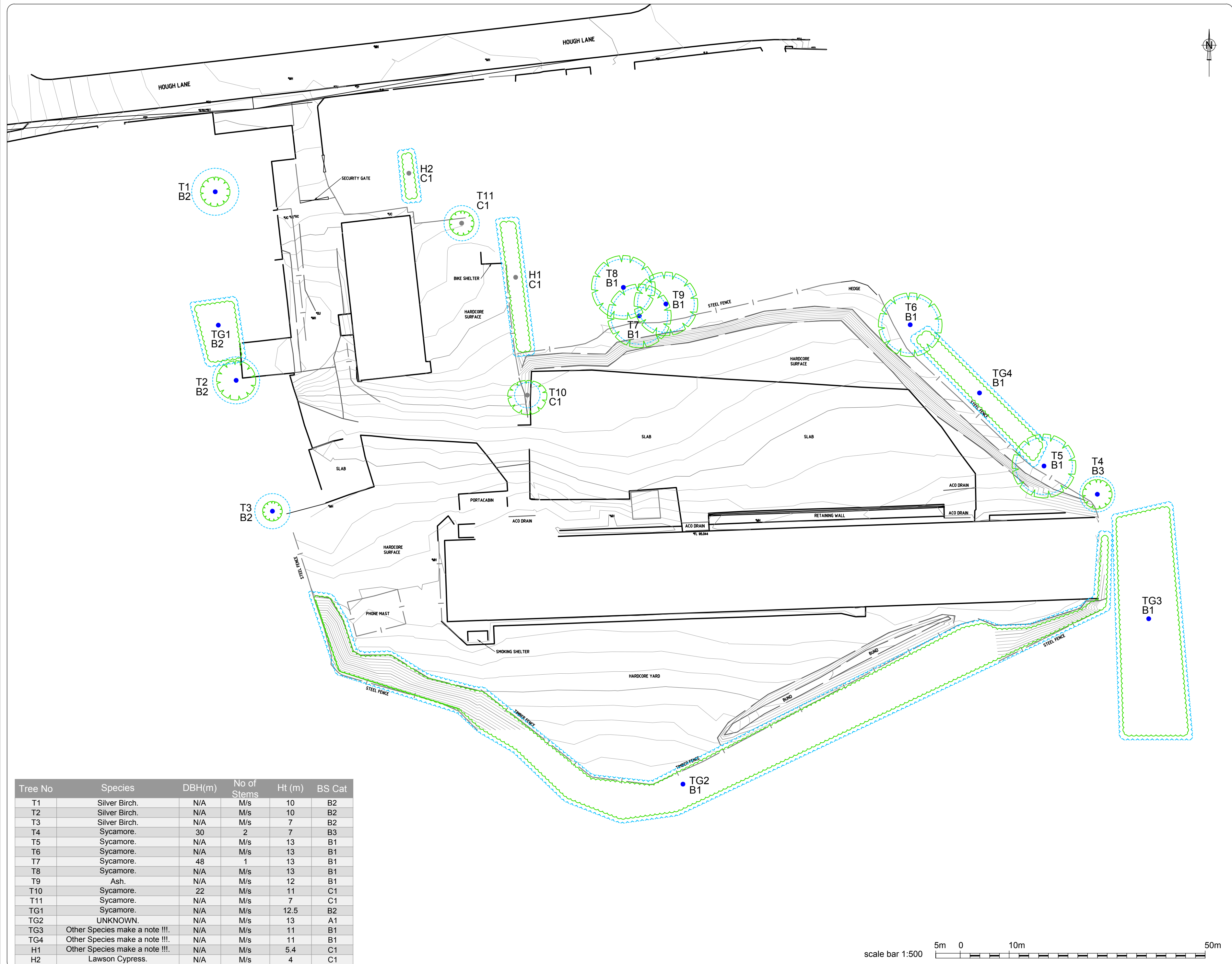
Note: Sub categories are denoted in the tree survey data (A1, B1, C2 etc.). You are referred to the BS for further detail if required.

Tree No.	T (tree), G (group), H (hedge), W (woodland) + Ref No.
Species	Common Name
Ht (m)	Measured height in metres
DBH (m)	Diameter at 1.5m above ground level
Branch Spread	In m to cardinal points
Cr Ht Clearance (m)	Overall height of lowest branches from the ground level on side of proposed development
Life Stage	Young, Semi-Mature, Early-Mature, Mature, Over-Mature
General Observations	Observations on the condition of the tree(s)
Tree Work Specification	Proposed tree works in accordance with BS3998
BS Cat	See above
Life Exp	Estimated remaining contribution in years.
RPA Radius(m)	Radius of the trees Root Protection Area measured from the trunk to the edge of the RPA circle in metres
RPA (m2)	Overall Root Protection Area in m2
*	Indicates where tree data may have been estimated as tree was offsite / restricted access / dense vegetation hindering full inspection

Appendix 2 – Tree Survey Sheets

Tree No.	Species	DBH	No of Stems	Ht (m)	N	E	S	W	BS Cat	Age Class	Life Expect	Cr Ht (m)	Observation	Recommendations	RPA (m2)
H1	Mixed species hedge, (Privet, Holly & Elder)	0	M/s	5.4	2	2	2	2	C1	Early-Mature	>40	1.2	No significant recent crown management. Average form, shape and condition.	No Works.	0
H2	Lawson Cypress.	0	M/s	4	1.5	1.5	1.5	1.5	C1	Early-Mature	20_39	2	3rd party offsite tree, unable to fully inspect (located behind office building). Mixed hedge - managed.	No Works.	0
T1	Silver Birch.	0	M/s	10	3	3	3	3	B2	Early-Mature	20_39	5.5	3rd party offsite tree, unable to fully inspect. Average form, shape and condition.	No Works.	0
T2	Silver Birch.	0	M/s	10	4	4	4	4	B2	Early-Mature	20_39	5.5	3rd party offsite tree, unable to fully inspect. Average form, shape and condition.	No Works.	0
T3	Silver Birch.	0	M/s	7	2	2	2	2	B2	Early-Mature	>40	5.5	3rd party offsite tree, unable to fully inspect. Average form, shape and condition.	No Works.	0
T4	Sycamore.	30	2	7	3	3	3	3	B3	Early-Mature	>40	3	Early mature specimen with considerable scope for future growth. 3rd party offsite tree, unable to fully inspect Average form, shape and condition.	No Works.	3.6
T5	Sycamore.	0	M/s	13	6.5	6.5	6.5	6.5	B1	Mature	>40	2	Large mature example of a multiple stemmed coppice stool - with basal included unions. Average form, shape and condition. 3rd party offsite tree, unable to fully inspect.	No Works.	0
T6	Sycamore.	0	M/s	13	6.5	6.5	6.5	6.5	B1	Mature	>40	2	Large mature example of a multiple stemmed coppice stool - with basal included unions. Average form, shape and condition. 3rd party offsite tree, unable to fully inspect.	No Works.	0
T7	Sycamore.	48	1	13	6.5	6.5	6.5	6.5	B1	Mature	>40	2	Average form, shape and condition. 3rd party offsite tree, unable to fully inspect.	No Works.	5.8
T8	Sycamore.	0	M/s	13	6.5	6.5	6.5	6.5	B1	Mature	>40	2	Average form, shape and condition. 3rd party offsite tree, unable to fully inspect.	No Works.	0
T9	Ash.	0	M/s	12	6.5	6.5	6.5	6.5	B1	Mature	>40	2	Average form, shape and condition. 3rd party offsite tree, unable to fully inspect.	No Works.	0
T10	Sycamore.	22	M/s	11	3	4	4	4	C1	Early-Mature	>40	1	Average form, shape and condition. Multiple stemmed tree-with basal included unions.	Fell to ground level.	N/a
T11	Sycamore.	0	M/s	7	2.5	2.5	2.5	2.5	C1	Early-Mature	>40	2	Poor form, shape and condition; regenerating stump, stems in contact with metal fencing.	Fell to ground level.	N/a
TG1	Sycamore.	0	M/s	12.5	7	5	7	7	B2	Early-Mature	>40	3.7	Average form, shape and condition.	No Works.	0
TG2	Mixed Species Group	0	M/s	13	0	0	0	0	A1	Early-Mature	>40	0	Average form, shape and condition. Dense maturing tree group comprising of Acer, Ash, Birch, Goat Willow, Hawthorn, Oak, Poplar, Pine. Serves to screen Southern boundary.	No Works.	0
TG3	Mixed Species Group	0	M/s	11	5	5	5	5	B1	Mature	>40	5	Average form, shape and condition.	No Works.	0
TG4	Mixed Species Group	0	M/s	11	5	5	5	5	B1	Mature	>40	5	Average form, shape and condition.	No Works.	0

Appendix 3 – Tree Constraints Plan



Tree No	Species	DBH(m)	No of Stems	Ht (m)	BS Cat
T1	Silver Birch.	N/A	M/s	10	B2
T2	Silver Birch.	N/A	M/s	10	B2
T3	Silver Birch.	N/A	M/s	7	B2
T4	Sycamore.	30	2	7	B3
T5	Sycamore.	N/A	M/s	13	B1
T6	Sycamore.	N/A	M/s	13	B1
T7	Sycamore.	48	1	13	B1
T8	Sycamore.	N/A	M/s	13	B1
T9	Ash.	N/A	M/s	12	B1
T10	Sycamore.	22	M/s	11	C1
T11	Sycamore.	N/A	M/s	7	C1
TG1	Sycamore.	N/A	M/s	12.5	B2
TG2	UNKNOWN.	N/A	M/s	13	A1
TG3	Other Species make a note !!!.	N/A	M/s	11	B1
TG4	Other Species make a note !!!.	N/A	M/s	11	B1
H1	Other Species make a note !!!.	N/A	M/s	5.4	C1
H2	Lawson Cypress.	N/A	M/s	4	C1



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Tree Survey Drawing Key

Root Protection Area m2

Tree Canopy Extent

Stem Location / Coloured disc denotes BS: 5837 Category

Tree Number

See Innovation Environmental Tree Survey for Individual Tree Details

KEY

Please refer to Innovation Environmental arboricultural report for details

Category A - high quality and value

Category B - moderate quality and value

Category C - low quality and value

Category U - removal

RPA - root protection area as defined by Table 2 BS 5837:2012

Category U - removal

innovation group

environmental services

Environmental Services
Unit 4, Linnet Court,
Cawledge Business Park
Alnwick NE66 2GD

T: +44 (0) 330 380 1036
F: +44 (0) 330 380 1038
E: office@innovation-environmental.co.uk
W: www.innovation-environmental.co.uk

REV	AMENDMENTS	DRAWN	DATE	AUTHD
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PROJECT

321 Hough Lane
Wombwell
Barnsley S73 0LR

CLIENT

Fairhurst

TITLE

Tree Constraint Plan (TCP)

Job
PA-14085

Scale
1:500 @ A2

DRG NO
14085

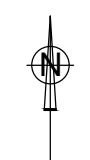
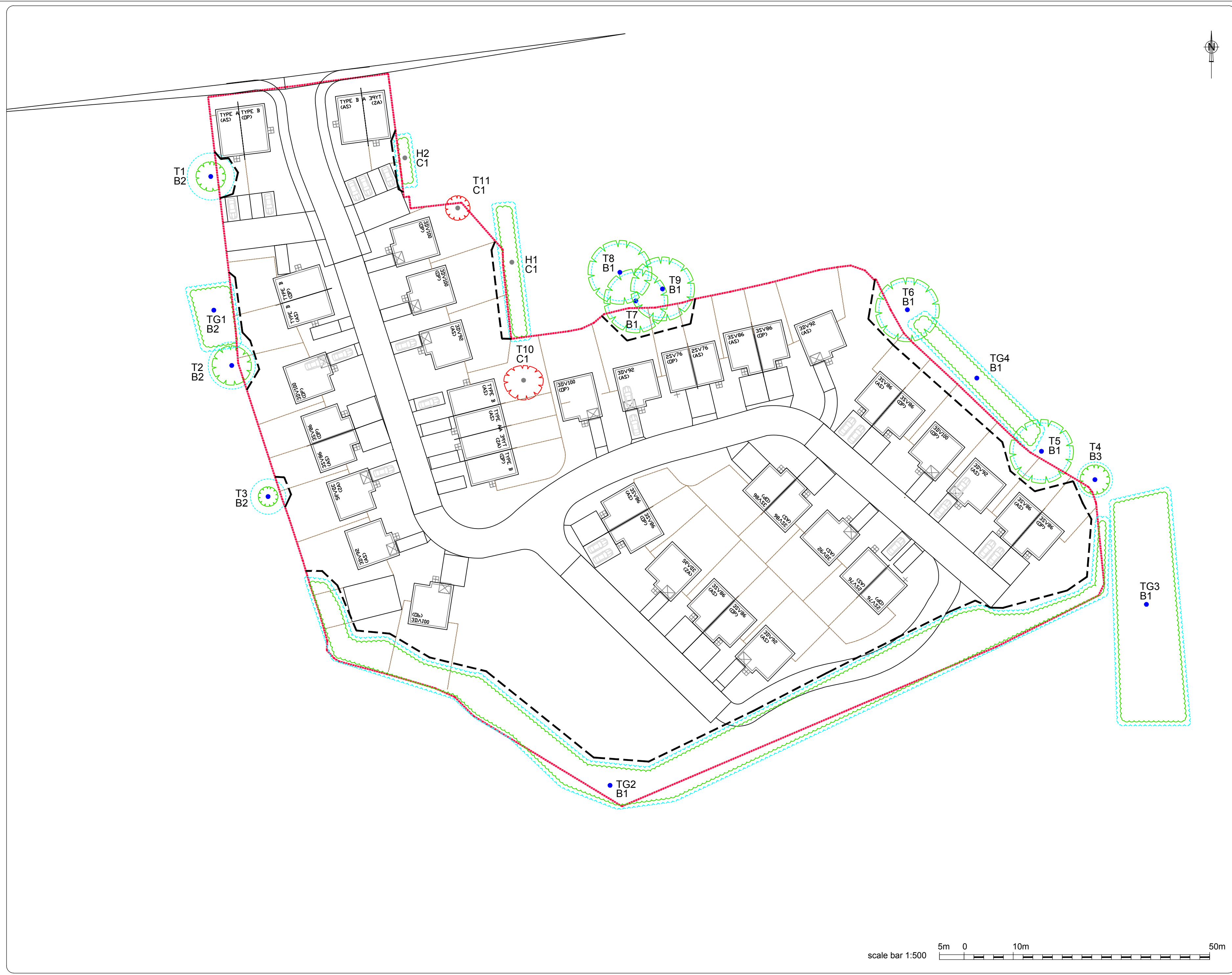
Revision
-

Date
29/09/17

Type
MT-TCP.14085.v1

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Appendix 4 – Tree Protection Plan



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Tree Survey Drawing Key

- Root Protection Area m2
- Tree Canopy Extent
- Stem Location / Coloured disc denotes BS: 5837 Category
- Tree Number

See Innovation Environmental Tree Survey for Individual Tree Details

KEY

- Tree to be retained
- Tree to be Pruned
- Tree to be removed
- Tree protective fencing

Environmental Services
Unit 4, Linnet Court,
Cawledge Business Park
Alnwick NE66 2GD

T: +44 (0) 330 380 1036
F: +44 (0) 330 380 1038
E: office@innovation-environmental.co.uk
W: www.innovation-environmental.co.uk

REV	AMENDMENTS	DRAWN	DATE	AUTHD
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PROJECT
**321 Hough Lane
Wombwell
Barnsley S73 0LR**

CLIENT
Fairhurst

TITLE Tree Protection Plan (TPP)			
Job PA-14085	Scale 1:500 @ A2	DRG NO 14085	Revision -
Date 29/09/17	Type MT.TPP.14085.v1		

Innovation Group



Appendix 5 – Tree Works Schedule

NOTE: All tree works to be undertaken in accordance with BS 3998:2010 '*Treework - Recommendations*'. All pruning cuts to be made at suitable growing points, in line with the principles of natural target pruning.

To Be Removed

Tree No.	Species	Proposed Tree Works	Observations	BS Cat
T10	Sycamore.	Fell to ground level.	Average form, shape and condition. Multiple stemmed tree-with basal included unions.	C1
T11	Sycamore.	Fell to ground level.	Poor form, shape and condition; regenerating stump, stems in contact with metal fencing.	C1

(In accordance to the current proposed design layout provided).

Appendix 6 – BS5837: 2012 Tree Constraints & Protection Methods

Phase 1 *Pre-Construction Meeting*

Prior to commencement of the works an onsite meeting will be held with all relevant parties including the site agent and appointed Environmental Services arboricultural consultant of works. The purpose of this meeting is to record site features including tree condition, agree tree works (See Tree Works Schedule, location of site storage and welfare facilities and the location of tree protection measures.

Phase 2 *Tree Protection Measures*

Subject to planning the Tree Protection Measures outlined in this report will be revisited in detail based on the working drawings, construction programme and method statement to be prepared.

Tree protection fencing should be installed prior to any demolition or ground-works commencing, remain in place throughout construction and be removed only after completion.

The provision of tree protection and light tree surgery will reduce the risk of direct damage to the retained trees. The demolition and construction process should not be commenced until the tree surgery works has been completed and the protective areas have been fenced off.

Tree protection will be installed as per the Tree Protection Plan which will be agreed with the Local Authority Tree Officer and with reference to the British Standard 5837 2012 'Trees in relation to design, demolition and construction – Recommendations'. Prior to commencing any demolition or construction works, the fencing will be inspected by the appointed Environmental Services Arboricultural consultant.

Within the fenced zone, no materials or chemicals should be stored at any time, no fires should be lit, no pedestrian or vehicle traffic, and level changes within these areas should be kept to an absolute minimum. Every effort should be taken to protect a maximum possible area of the root system.

Within the Root Protection Area no level changes or excavation within the RPA should be undertaken without the consent of the LPA Tree Officer.

Clear notices are to be fixed to the outside of the fencing with words such as 'TREE PROTECTION AREA – NO ACCESS OR WORKING WITHIN THIS AREA'. See Appendix 7.

The site agent, all contractors and other relevant personnel are to be informed of the role of the Tree Protection Fencing and their importance. A copy of the Tree Protection Plan will be displayed on site at all times during construction.

Phase 3 Demolition and Enabling Works

Prior to any works commencing on site the Tree Protection Fencing will be erected. During demolition programme and enabling works the existing front access will be in use. Any plant or vehicles engaged in the demolition works will operate outside the fenced off No-Dig / Root Protection Areas.

Phase 4 Locations of Site Offices Compound and Storage Area

The site office, welfare facilities, storage yard and contractors parking area need to be located within an area of the site that is outside the Root Protection Area (RPA). The compound will remain at least 1 metre outside the RPA with access from the main access road.

All fuel storage and loose cement / sand to be batched and stored in the compound area.

Phase 5 Groundworks, Level Changes, Foundations and Services

All spoil, including excavated soil and demolition material will be removed from site or stored in a location remote from any tree protection barriers.

With regard to the drawings provided the construction of foundations for the new build is located beyond the Root Protection Area (RPA) of retained trees, therefore with regard to the health of the retained trees no specialised foundation design is required. If the subsoil is found to be plastic, the foundations will be specified to take into account the potential influence of the vegetation on the moisture content and volume of the subsoil.

We recommend that all drainage and underground service routes are located beyond the RPA of all the retained trees. If the service runs are to be located within the RPA, we recommend that this matter is dealt with by method statement secured by planning condition. If services are located within the RPA special implementation techniques such as moleing, airspade, or hand digging may be required by the LPA. In the majority of cases, however, careful excavation with a low tonnage mechanical excavator supervised by the Environmental Services consultant arboriculturist can adequately undertake services excavations. When tree roots are encountered, hand digging and root protection can then be undertaken as and when they are observed.

Phase 6 *Dismantling Protection Barriers*

Dismantling the protection barriers around retained trees may be required to allow completion of final surface treatments and landscaping. Supervision of this exercise and control of the landscaping thereafter will be administered by the appointed Environmental Services arboricultural consultant. The removal of the Tree Protection Fencing is not an opportunity for machinery to access the previously fenced off area.

No further excavation will be carried out during this process and soils levels will not be raised above that existing by greater than 100mm and not within 2m of the trunk. Any removal of existing structures within the Root Protection Area including gardens type walls or paths will be carried out by hand.

Appendix 7 – Tree and Ground Protection Specification

BS 5837:2012

BRITISH STANDARD

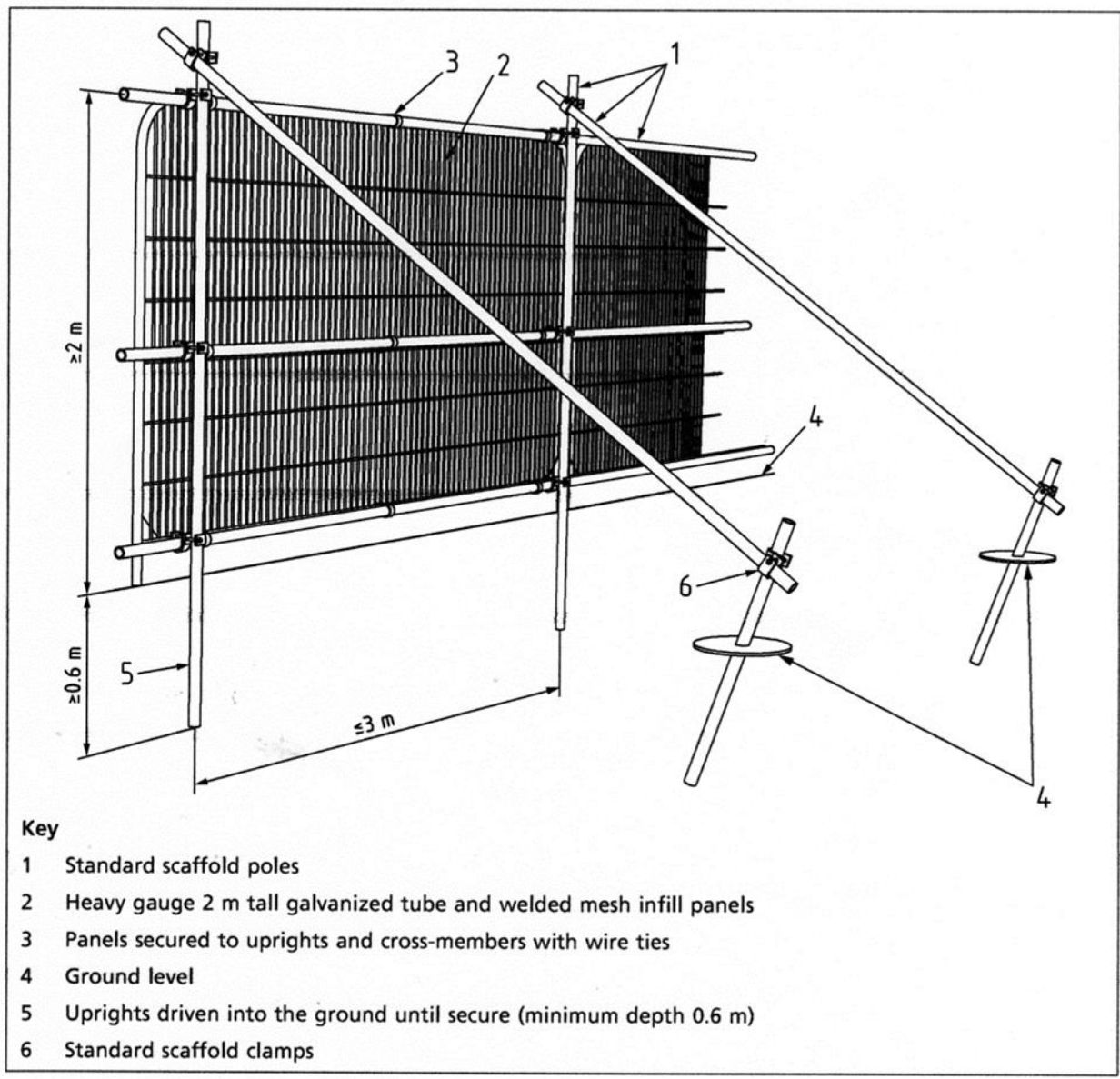
on retained hard surfacing or it is otherwise unfeasible to use ground pins, e.g. due to the presence of underground services, the stabilizer struts should be mounted on a block tray (Figure 3b).

NOTE 1 Examples of configurations for steel mesh perimeter fencing systems are given in BS 1722-18.

NOTE 2 It might be feasible on some sites to use temporary site office buildings as components of the tree protection barriers, provided these can be installed and removed without damaging the retained trees or their rooting environment.

6.2.2.4 All-weather notices should be attached to the barrier with words such as: "CONSTRUCTION EXCLUSION ZONE – NO ACCESS".

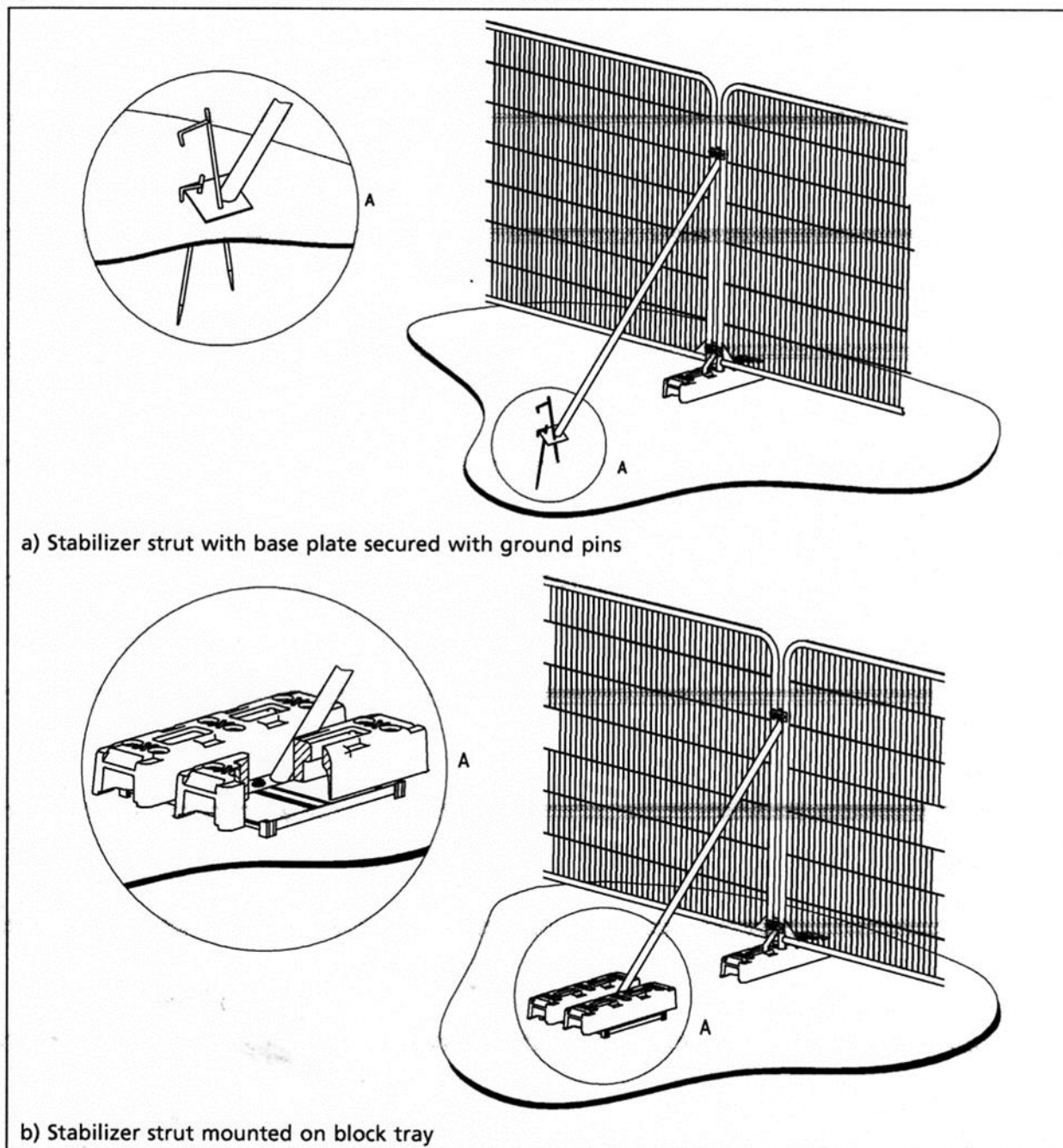
Figure 2 Default specification for protective barrier



BRITISH STANDARD

BS 5837:2012

Figure 3 Examples of above-ground stabilizing systems



6.2.3 Ground protection during demolition and construction

6.2.3.1 Where construction working space or temporary construction access is justified within the RPA, this should be facilitated by a set-back in the alignment of the tree protection barrier. In such areas, suitable existing hard surfacing that is not proposed for re-use as part of the finished design should be retained to act as temporary ground protection during construction, rather than being removed during demolition. The suitability of such surfacing for this purpose should be evaluated by the project arboriculturist and an engineer as appropriate.

Suggested protective fencing warning sign format



TREE PROTECTION AREA
KEEP OUT

(TOWN & COUNTRY PLANNING ACT 1990)

**THE VEGETATION PROTECTED BY THIS FENCE IS
PROTECTED BY PLANNING CONDITIONS AND/OR IS THE
SUBJECT OF A TREE PRESERVATION ORDER.**

IF YOU REQUIRE ACCESS INTO THIS AREA PLEASE CONTACT

planning@innovation-environmental.co.uk

T: +44 (0)330 380 1036

Appendix 8 – Temporary Ground Protection Specification

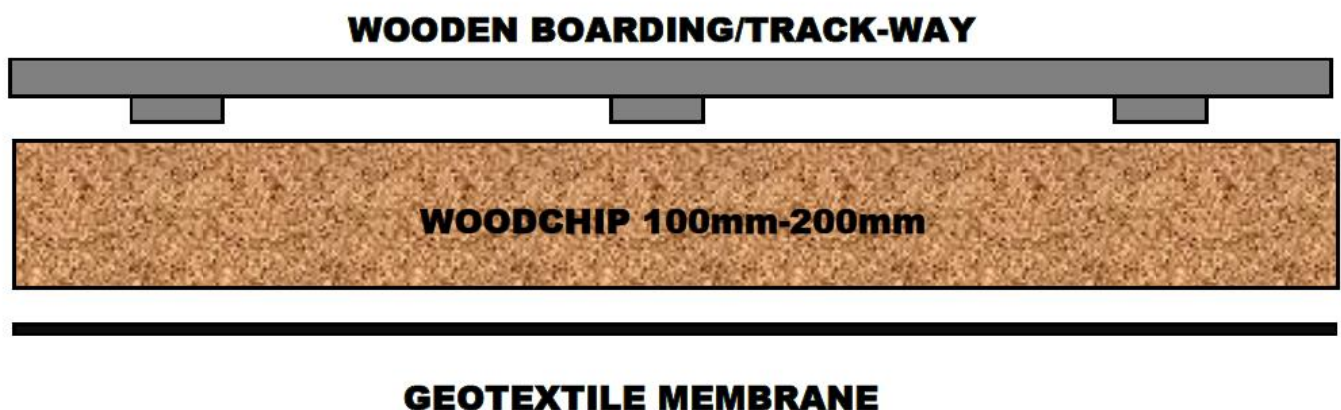
BS5837 recognizes that incursions in to the construction inclusion zones will be required at times during some developments.

The objective is to minimize soil compaction

Example 1 - *for pedestrian movements only, a single thickness of scaffold boards places either on top of a driven scaffold frame, so as to form a suspended walkway, or on top of a compression-resistant layer (e.g.) 100mm depth of woodchip), laid on to a geotextile membrane.*

Example 2 - *For pedestrian-operated plant up to a gross weight of 2 t, proprietary inter-linked ground protection boards placed on top of a compression-resistant layer (e.g. 150mm depth of woodchip), laid onto a geotextile membrane;*

Example 3 - *For wheeled or tracked construction traffic exceeding 2 t gross weight, an alternative system (e.g. proprietary systems or pre-cast reinforced concrete slabs) to an engineering specification designed conjunction with arboricultural advice, to accommodate the likely loading to which it will be subjected.*



Appendix 9 – Photographs



H1 - Mixed Species Boundary Hedge with adjacent property



Off site third-party owned Birch (T1)



Sycamores (TG1)



Birch (T2)



Off site third-party owned Birch (T2) and Sycamores (TG1)



Off site third-party owned Cypress Hedge (H2)



Southern boundary planting (TG2)



Southern boundary plantings (TG2)



TG2



Off site third-party owned Birch (T3)



Off site third-party owned Sycamore (T4)



Off site third-party owned vegetation (TG4)



T5 (Sycamore)



T6 (Sycamore)



Self-set Sycamore (T10)



Location of T11 (Sycamore)



T11 Sycamore



North-East boundary note showing steep incline to surrounding ground level



Boundary vegetation (East); note change in level