



Hill End Road, Mapplewell Arboricultural Impact Assessment

Report Ref: TEP.3763.001
May 2013

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Arboricultural Impact Assessment
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Version 1.0
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Hill End Road, Mapplewell, Arboricultural Impact Assessment

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1.0 INTRODUCTION

- 1.1 TEP has been commissioned by Nicol Thomas to conduct an arboricultural survey of land off Hill End Road in Barnsley, South Yorkshire. This report details the arboricultural impact of developing the site, subsequent mitigation recommendations and protective measures.
- 1.2 The survey was carried out in February 2013 by means of inspection from ground level by a qualified Arboricultural Consultant. Trees were assessed in accordance with *BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations*.
- 1.3 Under the British Standard the assessment of trees is made objectively. The categorisation method identifies the quality and value of the existing tree stock.
- 1.4 A topographical survey was used to record the position of trees and vegetation (ref: SSL:14721:200:1:1 SURVEYS Systems Limited). Where the age distribution and species mix of tree cover was relatively uniform, trees were plotted as groups. For the purposes of this report it is assumed that the detail on the drawing is accurate.
- 1.5 A total of 21 individual trees (T1-T21) and 4 groups of trees (G1-G4) were surveyed and mapped (refer to Drawing 1). All arboricultural information recorded during the survey is presented at Appendix 1.
- 1.6 The nature of the soils on site was not assessed during the survey. The possibility of soil movement due to tree root activity cannot be discounted. Prior to the undertaking of foundation depth calculations the exact location of all trees in relation to structures will be required.
- 1.7 This report provides the results of the survey and includes the following:
 - A schedule of all trees located on, or within influencing distance of the proposed development site (Appendix 1);
 - An assessment based on *BS 5837:2012*, of trees in terms of their potential value within any future development. On the basis of this assessment trees have been categorised into one of four categories: A, B, C or U (Appendices 1 & 2);
 - An assessment, based on *BS 5837:2012*, of the requirement for protection of trees during the construction phase (Section 5);
 - Advice on removal, retention and management of trees based on their current condition and protected status (Sections 4 & 6);
 - A Tree Constraints Plan detailing tree quality categories, canopy spreads and Root Protection Areas (RPA) for all trees surveyed (Drawing 1); and
 - A Tree Removal and Protection Plan detailing the development proposals, trees to be retained and removed, tree protection fencing alignment and areas requiring specialised construction methods (Drawing 2).

2.0 THE SITE AND SURROUNDINGS

- 2.1 The site is situated in Mapplewell off Hill End Road, approximately 2 miles north west of Barnsley Town Centre, South Yorkshire. Surrounding land use is primarily residential with the exception of occasional industrial units to the north and north west. Beyond these areas lies agricultural land and low moorland.
- 2.2 The site interior comprises a tarmac car park associated with the previous land use and industrial units which lie to the north and west of the site. A single private dwelling and its associated garden are situated in the north-eastern corner of the site.
- 2.3 Weather conditions during the survey were dry and bright.
- 2.4 Inspection of trees was restricted in some cases by their position offsite. These trees were surveyed insofar as was possible from accessible areas of the site.

Development Proposals

- 2.5 The proposed development includes the of construction of 25 houses, associated car parking spaces and hard and soft landscaping.
- 2.6 Detail of the proposals is shown on Drawing 2 and is based on the proposed site plan (Ref: M3540 (PL) 03) supplied by Nicol Thomas Architects.

3.0 STATUTORY PROTECTION AND GUIDANCE

National Planning Policy Framework (NPPF)

- 3.1 The NPPF assumes protection of all ancient woodland and veteran trees unless it can be clearly demonstrated that the need of, or benefits of, development outweigh the loss. In this respect ancient woodland is defined as an area which has been wooded continuously since at least 1600 AD and a veteran as a tree of exceptional value for wildlife, in the landscape, or culturally because of its great age, size or condition
- 3.2 On this site there are no ancient woodland or veteran trees.

Tree Preservation Orders & Conservation Area Designations

- 3.3 Local authorities reserve the right to create Tree Preservation Orders (TPO) to protect the amenity value conferred to a location by a tree or group of trees. Where a TPO is in force, lopping, topping, felling, uprooting or wilful damage caused to a tree is prohibited and such actions may be prosecuted and incur an unlimited fine. Works to TPO protected trees must only be undertaken with the written consent of the local authority.
- 3.4 Barnsley Council confirmed that no trees on or immediately adjacent to the site were subject to Tree Preservation Orders or Conservation Area status.

Protected Species – Bats

- 3.5 Mature trees often contain cavities, crevices and hollows which are a potential habitat for roosting bats. Bats are afforded protection under Schedule 5 of the *Wildlife and Countryside Act 1981* (as amended), as well as under Schedule 2 of the *Conservation of Species and Habitats Regulations 2010*, and as such causing damage to a bat roost constitutes an offence.
- 3.6 A preliminary ground level appraisal of the wildlife habitat value of each tree was undertaken as part of the arboricultural survey. No trees were noted as having features suitable to support roosting bats.
- 3.7 Should the presence of a bat roost be suspected whilst undertaking works on any other trees and groups on site, operations must be halted until a licensed bat handler or ecologist can provide advice.

Protected Species - Birds

- 3.8 Trees are a potential habitat for nesting birds, which (as well as their nests and eggs) are protected under the *Wildlife and Countryside Act 1981* (as amended). This makes it an offence to intentionally or recklessly, damage or destroy an active bird nest or any part thereof.
- 3.9 Due to the suitability of the trees within the survey boundary for nesting birds, all tree work should ideally be undertaken outside the bird nesting season (British bird nesting season: March to August inclusive).
- 3.10 If this is not possible then a detailed inspection of each tree should be undertaken by a qualified ecologist immediately prior to the arboricultural works. Should an active nest be found (being built, containing eggs or chicks) then any work likely to affect the nest must be halted and a working boundary of 5m left intact around the nest until the nest becomes inactive.

National House Building Council

- 3.11 This report has been written in accordance with, and to satisfy the requirement of *BS 5837:2012*.
- 3.12 The nature of the soils on site was not assessed during the survey. The possibility of soil movement due to tree root activity cannot be discounted.
- 3.13 Prior to the undertaking of foundation depth calculations the exact location of all trees in relation to structures will be required.
- 3.14 Any discrepancies in tree location will require further discussion with a qualified Arboricultural Consultant.

4.0 TREE POPULATION

- 4.1 A total of 21 individual trees (T1-T21) and 4 groups of trees (G1-G4) were recorded within influencing distance of the site. A schedule of all trees and groups in terms of species, condition, age, management recommendations and BS 5837:2012 quality categories is provided at Appendix 1.
- 4.2 Tree T1 and group G1 comprise goat willow, and are considered to be self seeded. They are low value trees in a fair condition displaying typical, shrubby form for their species.
- 4.3 Trees T2 – T20, a single row of Lombardy poplar, form a prominent stand of trees situated adjacent the southern boundary of the site. The majority of trees are in reasonable condition and make a positive contribution to the local landscape. A small number of trees contain minor deadwood within their crowns. Tree T17 is the largest girth poplar present, and is situated toward the western section of the stand; it has a tight union with partially included bark.
- 4.4 Group G2 also lies adjacent to the southern boundary toward the eastern corner of the site and contains 8 Lombardy poplar. This is a prominent feature in the landscape due to their close spacing and top height of up to 12m, along with providing a connecting linear feature with trees T2 – T20.
- 4.5 Tree group G3 is a large group of trees along the western boundary surrounding an industrial building. The group contains a variety of species, both native and non-native with occasional specimens being located in the rear gardens of Carron Drive to the west. The group provides screening from the site by a combination of planted specimens and self seeded vegetation which forms a dense screen.
- 4.6 Group G4 is a boundary feature which provides screening to the site. It is surrounding a private dwelling in the north-eastern corner. The inspection of these trees was limited due to their offsite location and the presence of a retaining wall.
- 4.7 Tree T21 is a vigorous middle aged weeping willow growing adjacent to Group G4 and the northern boundary, ownership of this tree was unclear. It has a reasonably balanced crown overhanging the site with no significant defects observed.
- 4.8 Tree and group locations, their quality categories and canopy spreads are shown on Drawing 1.

Tree Quality Categorisation

- 4.9 Under *BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations* trees and groups are objectively assigned a quality category designed to quantify their value within any future development. Table 1 presents a summary of the categories presented in the British Standard. The full table has been reproduced at Appendix 2.

Table 1: Summary of BS 5837:2012 tree quality categorisation criteria

Category A	Trees of high value including those that are particularly good examples of their species and/or those that have visual importance or significant conservation or other value
Category B	Trees of moderate value including those that do not qualify as Category A due to impaired condition and/or those that collectively have higher value than they would as individuals; also trees with material conservation or other value
Category C	Trees of low value including those with very limited merit or impaired condition; trees offering transient or temporary landscape benefits
Category U	Trees with irremediable defects and anticipated early loss due to collapse; dead trees or those in immediate decline and those with infectious pathogens that threaten other trees

5.0 IMPACTS OF THE PROPOSED DEVELOPMENT

- 5.1 Table 2 lists the number and quality of trees that will require removal in order to facilitate the development proposals and those that can be retained. This is the result of an assessment based on the proposed site plan (Ref: M3540 provided by nicol Thomas).

Table 2: Arboricultural implications of the proposed development

	Tree Quality Category			
	A	B	C	U
Trees and groups that can be retained	-	T6, T7, T8, T9, T10, T11, T12, T13, T14, T15, T16, T17, T18, T19, T20, T21, G2, G4	-	-
Trees and groups that require removal to facilitate development	-	T2, T3, T4, T5	T1, G1, G3	-

See Appendix 1, Arboricultural Data Sheets for subcategories.

- 5.2 5 individual trees and 2 groups (totalling approx. 29 trees) must be removed to facilitate the proposed development. These trees are low to moderate in value and can be replaced with suitable and appropriate mitigation planting.

- 5.3 Trees T2, T3, T4 and T5 are the only moderate value trees that requires removal as they will suffer considerable root loss as a result of this development proposal. These trees are part of a larger belt of poplars and would not detract from the overall value of the feature.
- 5.4 Site access is proposed to the south of the current existing entrance off Hill End Road.
- 5.5 Garden creation beneath the canopy of T21 is considered acceptable due to the presence of a retaining wall.
- 5.6 Construction activity within the RPA's of T6 – T20 will require fencing to protect the retained trees. This will reduce the useable area for works and storage of materials on site during development.
- 5.7 Where planning permission is granted, the retention schedule shown in Table 2 and Drawing 2 would normally form a part of that permission. Any change to this schedule would therefore be likely to require an application to vary the consent.

6.0 TREE PROTECTION REQUIREMENTS

Root Protection Areas

- 6.1 As per *BS 5837:2012*, the **Root Protection Area (RPA)** is calculated using each tree's diameter at 1.5 metres (refer to Appendix 1) and represents the minimum area around each tree that must be left undisturbed to ensure their survival.
- 6.2 Tree roots typically spread two times the width of the crown, although this figure may be significantly increased for certain species and where specific ground conditions are present. The majority of tree roots are found in the top 600 mm of soil and most of the fine roots that absorb water and nutrients are found in the top 100 mm.
- 6.3 The morphology of roots is influenced by past and present site conditions (the presence of roads, structures and underground services), soil type, topography and drainage. This means that a tree's roots may not be uniform in their extent and the **RPA** may not be a circular area centred on the tree stem.
- 6.4 The barriers to root growth on this site are likely to be Hill End Road and the compacted area of hard surfacing within the interior of the site. Roots are unlikely to be absent in all these areas but where unfavourable conditions exist, growth will certainly be impeded. The retaining wall adjacent to T21 is likely to be a complete barrier to root growth into the site.
- 6.5 The **RPA's** of some of the trees on site have been adjusted or offset to most accurately represent the likely spread of roots for each individual tree (refer to Drawing 1).

Protective Fencing and Exclusion Zones

- 6.6 Temporary protective barrier fencing will be required to demarcate a **Construction Exclusion Zone (CEZ)** around retained trees. This must be put in place prior to the commencement of any development works, including bringing machinery or materials onto site, the erection of site huts or the demolition of the building adjacent to the southern boundary.

- 6.7 The **CEZ** acts to protect both tree roots and branches and has been extended to incorporate canopy spread where appropriate.
- 6.8 Protective fencing alignment is shown on Drawing 2 and assumes that all trees identified for removal have been felled prior to installation.
- 6.9 The fencing must be fixed into the ground to withstand accidental impact from machinery and to ensure that a sufficient protective area is maintained. Details of recommended protective fencing are shown on Drawing 3.
- 6.10 A weatherproof notice stating 'Construction Exclusion Zone – Keep Out' must be fixed to each fencing panel. An example notice is shown on Drawing 3.
- 6.11 Any alteration to the fencing alignment to allow for approved activities will be made in agreement with the council's Arboricultural Officer.
- 6.12 The protective fencing must not be removed until the primary construction phase has been completed and all vehicles have been removed from site, to the satisfaction of the council's Arboricultural Officer.
- 6.13 Where the installation of services within the RPA of existing trees is unavoidable, appropriate sensitive work methods will be required to ensure the safe long-term survival of those trees. This process will require additional consultation with a qualified Arboricultural Consultant and is likely to be more expensive than conventional trench installation.

Ground Contamination

- 6.14 Storage areas for liquids such as fuels, oil or paint should not be located within 10m of any trees on or within proximity to the site due to the risk of soil contamination caused by accidental spillage.
- 6.15 Particular care must be taken when working on or close to sloping ground to avoid unintentional runoff into the rooting area of retained trees.

Underground Utility Issues

- 6.16 No utility drawings were provided and no assessment has been made of the juxtaposition of tree roots and the likely location of new services. It has been presumed for the purposes of this report that all utilities will be installed outside of the **RPA's** will be defined by the fencing shown on Drawing 2.
- 6.17 Where the installation of services within the **RPA's** of retained trees is unavoidable, appropriate work methods will be required to ensure the safe long-term survival of those trees. This process will require additional consultation with a qualified Arboricultural Consultant and is likely to be more expensive than conventional trench installation.

Ground Level Changes

- 6.18 A rise or reduction in soil level can have major implications on the longevity and health of the trees. Minor changes (up to 100mm) can be tolerated in some cases but is heavily dependent on tree species, condition and growing environment.

- 6.19 Existing ground levels within the **RPA's** should be respected as far as is reasonably practicable. The advice of a qualified Arboricultural Consultant should be sought if level changes are required.

Drainage & Storm Water Run-off Issues

- 6.20 Drainage and storm water run-off requires due consideration and construction requirements (e.g. permeable surfacing) to prevent excessive and/or polluted run-off into the rooting area of trees to be retained.

7.0 MANAGEMENT RECOMMENDATIONS

Tree Work

- 7.1 In addition to the tree removals required to facilitate the development proposals, the tree surgery operations presented in Table 3 are also recommended.

Table 3: Recommended Tree Surgery Works

Feature Reference	Tree Work Description
T21	Reduce crown overhang (south & west), and crown raise to 4m

Works to third party trees should be discussed in advance with the tree owner.

- 7.2 All tree surgery work should be carried out by a qualified contractor in accordance with *BS 3998:2010 Tree work – Recommendations*.

Arboricultural Method Statement

- 7.3 An **Arboricultural Method Statement (AMS)** will be required where demolition, ground protection and construction activities are proposed within the Root Protection Areas (RPA) of retained third party trees. Under the current proposals this applies to trees and groups; T6 - T20 along with G2 and G4.
- 7.4 The purpose of an **AMS** is to demonstrate that the proposed operations can be undertaken with minimal risk of adverse impact on trees to be retained. It will set the parameters within which construction will need to be undertaken and will guide the actions of site operatives.
- 7.5 Construction methods presented in an **AMS** are likely to be the result of collaboration between an Arboricultural Consultant and other project specialists. This process may result in the use of un-conventional building techniques and those allowing more control over soil and root disturbance.

Mitigation for the removal of trees

- 7.6 5 trees and 2 groups require removal to facilitate the development proposals. Mitigation for their loss and associated habitat will be required in the form of replacement tree planting.

- 7.7 The National Planning Policy Framework (NPPF) is a material consideration in the planning process and promotes a presumption in favour of sustainable development. In terms of the natural environment, development should minimise impacts on biodiversity and provide a net gain in biodiversity where possible.
- 7.8 In respect of trees, a sustainable development will be one whereby the total number, value or function provided by trees is maintained or increased or where the long-term prospects of the existing tree stock can be substantially improved. Net gains in biodiversity may be demonstrated where the number of tree species, variety of tree ages or range of niche habitats can be increased. Native, old, large or dead trees are likely to have a relatively significant impact on a scheme's environmental credentials, as will the connectivity of trees, hedges and woodland.
- 7.9 The proposals indicate that sufficient space for new tree planting will be available within the gardens of several of the proposed properties and possibly adjacent car parking areas. Tree species of a small to medium mature size would be suitable including ornamental species such as; (*Sorbus*, *Malus* & *Cornus spp*), silver birch (*Betula pendula*), field maple cultivars (*Acer campestre*), Yew (*Taxus baccata*) and wild service trees (*Sorbus torminalis*).
- 7.10 It is the recommendation of this report that mitigation in the form of tree planting has the potential to offset tree losses (estimated at 20-40 years post-construction). This is wholly dependent on appropriate species selection, tree quality and high establishment rates.
- 7.11 The extent of mitigation planting will ultimately be determined in agreement with Barnsley Councils Arboricultural Officer.
- 7.12 Aftercare is vital to the survival of newly planted trees. Provision should be made for a minimum of two years maintenance of newly planted trees and include watering, formative pruning and the checking of tree ties and stakes.

Post Construction Tree Care

- 7.13 Hazard recommendations are based on observations at the time of survey. Trees are dynamic living organisms whose structure is constantly changing. Even those in good condition can suffer from damage or stress. Following site development, regular (annual or biennial) inspections of all retained trees should be undertaken by a qualified Arboricultural Consultant.

8.0 SUMMARY

- 8.1 Based on an objective assessment made in accordance with *BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations*, there are 22 Category B and 3 Category C trees and groups on or within influencing distance of the site.
- 8.2 The majority of tree cover is offsite and comprise a linear row of Lombardy poplar planted along the sites southern boundary.
- 8.3 5 individual trees and 2 groups (totalling 29 stems) will require removal to facilitate the development proposals. The majority of these are low value trees, refer to Table 2.
- 8.4 At the time of the survey no trees within or immediately adjacent to the site were subject to Tree Preservation Orders or within a Conservation Area.
- 8.5 No trees on site were found to have features of a size and condition desirable to bats or owls.
- 8.6 Protective barrier fencing will be required to demarcate a Construction Exclusion Zone (**CEZ**) around retained trees prior to the commencement of development. Fencing alignment is shown on Drawing 2 and details of the recommended Heras fencing are shown on Drawing 3. This will restrict movements on the site which should be considered early in the construction process.
- 8.7 An **AMS** detailing the demolition of the building located adjacent to the southern boundary, ground protection and special construction techniques will be required to allow machinery access over the Root Protection Area of trees T6 - T20 along with G2 and G4, prior to the installation of the final surface treatment. The specification of the protection will be dictated by the size of machinery to be used and must be agreed with the council's Arboricultural Officer prior to commencement.
- 8.8 Mitigation for the loss of trees will ultimately be determined in agreement with Barnsley Council. There will be no net loss of trees in relation to the prosed development.

APPENDIX 1

ARBORICULTURAL SURVEY DATA SHEETS

APPENDIX 1: Arboricultural Survey Data Sheets



Surveyor NTS
Date 22.02.13
Town Mapplewell
Site Hill End Road
Dwg Ref D3763.002
0

Ref	Species	Height	Stem Dia.	No. of stems/ individuals	Crown Spread North	Crown Spread South	Crown Spread East	Crown Spread West	Height of Lowest Branch	Direction of Lowest Branch	Maturity	Condition	Comments on form, condition, health and significant defects	BS5837 Tree Quality Assess.	Radius of RPA guide circle	BS5837 RPA Area	Management Recommendations	Estimated Remaining Contribution	TPO
		(m)	(mm)	arising below 1.5m	(m)	(m)	(m)	(m)	(m)	(m)	Young, Middle Age, Mature	Good, Fair, Poor, Veteran		A,B,C,R (1,2,3)	(m)	(m2)		Long, Medium, Short	(*)
Trees																			
T1	Goat willow	4.0	220.0	1.0	1.5	1.5	1.5	1.5	1.0	W	Young	Fair	Multistemmed from ground level. Self seeded with typical form for species.	C,2	2.6	21.9		Long	
T2	Lombardy poplar	10.0	250.0	1.0	0.5	0.5	1.0	0.5	4.0	N	Middle Age	Good	Typical form for species, forms part of larger linear feature. No significant defects.	B,2	3.0	28.3		Long	
T3	Lombardy poplar	10.0	240.0	3.0	0.5	0.5	1.0	0.5	4.0	N	Middle Age	Good	Typical form for species, forms part of larger linear feature. No significant defects.	B,1	2.9	26.1		Long	
T4	Lombardy poplar	10.0	200.0	1.0	0.5	0.5	0.5	0.5	3.0	N	Middle Age	Good	Typical form for species, forms part of larger linear feature. No significant defects.	B,1	2.4	18.1		Long	
T5	Lombardy poplar	10.0	200.0	1.0	0.5	0.5	0.5	0.5	4.0	N	Middle Age	Good	Typical form for species, forms part of larger linear feature. No significant defects.	B,2	2.4	18.1		Long	
T6	Lombardy poplar	12.0	250.0	1.0	1.0	1.0	1.0	1.0	2.0	N	Middle Age	Good	Typical form for species, forms part of larger linear feature. No significant defects.	B,2	3.0	28.3		Long	
T7	Lombardy poplar	10.0	200.0	1.0	0.5	0.5	0.5	0.5	4.0	N	Middle Age	Good	Typical form for species, forms part of larger linear feature. No significant defects.	B,2	2.4	18.1		Long	
T8	Lombardy poplar	12.0	270.0	1.0	0.5	0.5	0.5	0.5	2.0	N	Middle Age	Good	Typical form for species, forms part of larger linear feature. No significant defects.	B,2	3.2	33.0		Long	
T9	Lombardy poplar	10.0	220.0	1.0	0.5	1.0	0.5	0.5	3.0	N	Middle Age	Good	Typical form for species, forms part of larger linear feature. No significant defects.	B,2	2.6	21.9		Long	
T10	Lombardy poplar	12.0	250.0	1.0	0.5	0.5	0.5	0.5	3.0	N	Middle Age	Good	Typical form for species, forms part of larger linear feature. No significant defects.	B,2	3.0	28.3		Long	
T11	Lombardy poplar	14.0	300.0	3.0	1.0	1.0	1.0	1.0	3.0	N	Middle Age	Good	Typical form for species, forms part of larger linear feature. No significant defects.	B,2	3.6	40.7		Long	
T12	Lombardy poplar	13.0	300.0	1.0	1.0	0.5	0.5	0.5	3.0	N	Middle Age	Good	Typical form for species, forms part of larger linear feature. No significant defects.	B,2	3.6	40.7		Long	
T13	Lombardy poplar	15.0	280.0	2.0	0.5	0.5	0.5	0.5	3.0	N	Middle Age	Good	Typical form for species, forms part of larger linear feature. No significant defects.	B,2	3.4	35.5		Long	
T14	Lombardy poplar	15.0	250.0	1.0	0.5	0.5	0.5	0.5	3.0	N	Middle Age	Good	Typical form for species, forms part of larger linear feature. No significant defects.	B,2	3.0	28.3		Long	
T15	Lombardy poplar	15.0	300.0	1.0	0.5	1.0	0.5	0.5	3.0	N	Middle Age	Good	Typical form for species, forms part of larger linear feature. No significant defects.	B,2	3.6	40.7		Long	

APPENDIX 1: Arboricultural Survey Data Sheets

Ref	Species	Height	Stem Dia.	No. of stems/ individuals	Crown Spread North	Crown Spread South	Crown Spread East	Crown Spread West	Height of Lowest Branch	Direction of Lowest Branch	Maturity	Condition	Comments on form, condition, health and significant defects	BS5837 Tree Quality Assess.	Radius of RPA guide circle	BS5837 RPA Area	Management Recommendations	Estimated Remaining Contribution	TPO
		(m)	(mm)	arising below 1.5m	(m)	(m)	(m)	(m)	(m)	(m)	Young, Middle Age, Mature	Good, Fair, Poor, Veteran		A,B,C,R (1,2,3)	(m)	(m2)		Long, Medium, Short	(*)
T16	Lombardy poplar	16.0	250.0	1.0	0.5	0.5	0.5	0.5	3.0	N	Mature	Good	Typical form for species, forms part of larger linear feature. No significant defects.	B,2	3.0	28.3		Long	
T17	Lombardy poplar	16.0	375.0	1.0	2.0	1.0	0.5	0.5	3.0	N	Mature	Fair	Typical form. Tight union with partially included bark observed	B,2	4.5	63.6	Re-inspect annually	Long	
T18	Lombardy poplar	16.0	275.0	1.0	1.0	1.0	0.5	0.5	3.0	N	Mature	Good	Typical form for species, forms part of larger linear feature. No significant defects.	B,2	3.3	34.2		Long	
T19	Lombardy poplar	16.0	280.0	1.0	0.5	0.5	0.5	0.5	3.0	N	Mature	Good	Typical form for species, forms part of larger linear feature. No significant defects.	B,2	3.4	35.5		Long	
T20	Lombardy poplar	16.0	350.0	1.0	1.5	1.5	1.0	1.0	3.0	N	Mature	Good	Typical form for species, forms part of larger linear feature. No significant defects.	B,2	4.2	55.4		Long	
T21	Weeping willow	10.0	350.0	1.0	4.0	4.0	4.0	4.0	3.0	S	Mature	Good	Limited inspection due to location offsite. Balanced crown with no visible defects, branches overhang the site. Good vigour.	B,2	4.2	55.4	Prune overhanging branches back to boundary, up to 4m; to BS 3998	Long	
Groups																			
G1	Goat willow	4.0	210.0	4.0	1.5	1.5	1.5	1.5	1.0	W	Young	Fair	Self seeded. Typical form for species.	C,2	Refer to Drawing	n/a		Long	
G2	Lombardy poplar	12.0	300.0	8.0							Middle Age	Good	Linear boundary group. Typical form and condition for species. No observable defects.	B,2	Refer to Drawing	n/a		Long	
G3	Lombardy poplar; weeping willow; goat willow; Leyland cypress; Laurel;	12.0	450.0	20.0							Middle Age	Varied	Limited inspection due to dense vegetation. Varied condition; some specimens suppressed, self seeded species present.	C,2	Refer to Drawing	n/a		Long	
G4	Leyland cypress	8.0	Av 350#	8+							Middle Age	Good	Third party trees. Limited inspection due to location. Good form and balanced crowns, providing valuable screening from site.	B,2	Refer to Drawing	n/a		Long	

APPENDIX 2

SURVEY METHOD

APPENDIX 2: SURVEY METHOD

The survey of trees is conducted from ground level only. The nature of the soils on site is not assessed.

Trees are dynamic living organisms with a constantly changing structure; even trees in good condition can suffer from damage or stress. The information recorded is presented as being correct at the time of survey.

The following features of each tree, group of trees or wood may have been recorded in the Arboricultural Survey Data Sheets at Appendix 1.

Species	The common name is given. The Latin name may also be given if further clarification is required.	
Height	Top height of tree recorded in metres.	
Stem Diameter	For single-stemmed trees the measurement is taken at 1.5 metres above ground level and recorded in millimetres. For multi-stemmed trees an average all stems measured at 1.5m above ground level is used. For tree groups a range from minimum to maximum diameters is provided based on measurements taken using one of the aforementioned methods.	
No. of Stems	A count of stems arising below a height of 1.5 metres.	
Crown Spread	The N, S, E and W branch spreads are recorded in metres to provide a representative crown shape.	
Height of Lowest Branch	Crown clearance above ground level recorded in metres.	
Direction of Lowest Branch	The direction of growth of the first significant branch from the point of attachment.	
Maturity	Young	Trees that can reasonably be relocated or replaced like for like, without undue cost;
	Middle Age	Trees in the established growth stage of their life with the potential to continue increasing in size;
	Mature	Trees that have reached their ultimate size, given their location and surroundings;
Condition	Good, Fair, Poor. An overall assessment of a tree's physiological and structural state in which factors that may increase its susceptibility to the effects of development are taken into account. Veteran. Trees that are in such a condition as to significantly increase their biological, cultural or aesthetic value. This is characteristic of, but not exclusive to, individuals surviving beyond the typical age range for the species concerned.	
Comments	A brief evaluation and description of the tree with comments on form, vitality, health and any significant defects or symptoms of ill-health.	

BS 5837 Tree Quality Assessment

The tree quality assessment is based on Table 1 of BS 5837:2012 (See below). Four categories (A, B, C and U) are used to denote tree quality (A= High, B = Moderate, C = Low, U= Unsuitable for retention). Subcategories (1-3) denote the specific function value of the trees and the reasoning behind the allocation of a specific category (the subcategories may be used in combination but do not accumulate collective weight).

Root Protection Area (RPA)

The RPA is allocated to ensure that a sufficient area is left undisturbed during development. It is provided as an area (m²) and as the radius of a circle (m) typically plotted from the centre of the stem.

The RPA is calculated using a mathematical equation included in BS 5837:2012 (Section 4.6 and Table D.1) and is based on a tree's stem diameter. In some cases the RPA may need to be adapted to best reflect the likely area and position of roots required to ensure survival; this may be based on criteria such as the tree's condition, species, crown spread and any barriers to growth. Any alteration must be justifiable but is made at the Arboricultural Consultants discretion.

Recommendations

Recommendations for arboricultural works, etc. are based on the **current** land use, and take into account the tree or group attributes without bias to the proposed development.

Estimated Remaining Contribution

An estimation of the life expectancy as healthy functioning tree. This will be influenced by species and the condition of the tree at the time of survey.

Long	> 40 years
Medium	20 – 40 years
Short	less than 20 years

APPENDIX 2: SURVEY METHOD

Table 1 Cascade chart for tree quality assessment

Category and definition	Criteria (including subcategories where appropriate)			Identification on plan
Trees unsuitable for retention (see Note)				
Category 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	- Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning) - Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline - Trees infected with pathogens of significance to the health and/or safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality <i>NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve; see 4.5.7.</i>			See Table 2
	1 Mainly arboricultural qualities	2 Mainly landscape qualities	3 Mainly cultural values, including conservation	
Trees to be considered for retention				
Category A Trees of high quality with an estimated remaining life expectancy of at least 40 years	Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups or formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)	See Table 2
Category B Trees of moderate quality with an estimated remaining life expectancy of at least 20 years	Trees that might be included in category A, but are downgraded because of impaired condition (e.g. presence of significant though remediable defects, including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation	Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality	Trees with material conservation or other cultural value	See Table 2
Category C Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories	Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value; and/or trees offering low or only temporary/transient landscape benefits	Trees with no material conservation or other cultural value	See Table 2

British Standards Institute 2012, p.9

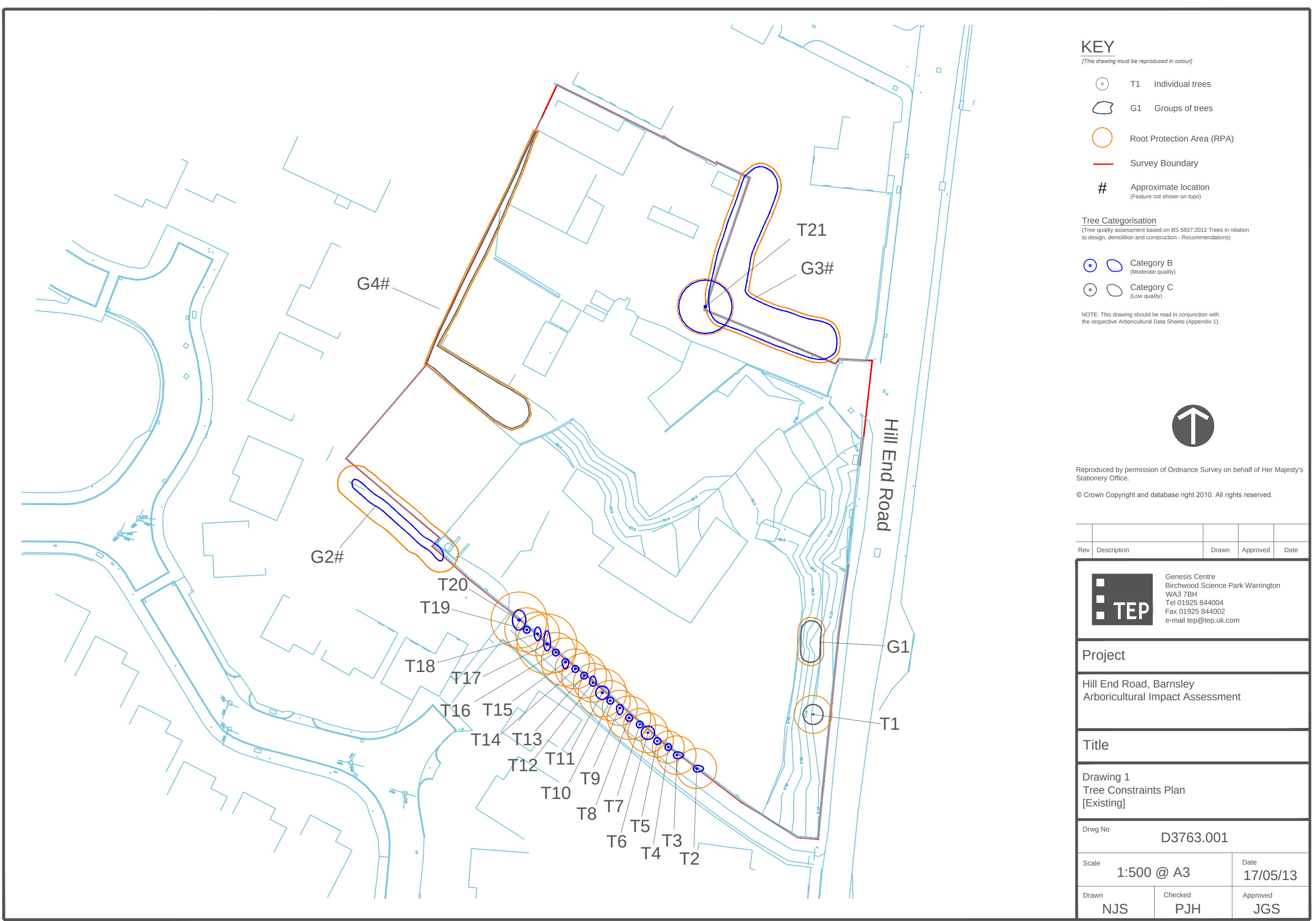
NOTES:

All young trees are assessed as quality category 'C' but this does not preclude their retention within a development.

For hedges the height, canopy spread and number of stems is recorded but they are not assigned a quality category.

DRAWING 1

TREE CONSTRAINTS PLAN



KEY
[This drawing must be reproduced in colour]

- T1 Individual trees
- G1 Groups of trees
- Root Protection Area (RPA)
- Survey Boundary
- # Approximate location
(Feature not shown on topo)

Tree Categorisation
(Tree quality assessment based on BS 5837:2012 Trees in relation to design, demolition and construction - Recommendations)

- Category B (Moderate quality)
- Category C (Low quality)

NOTE: This drawing should be read in conjunction with the respective Arboricultural Data Sheets (Appendix 1).

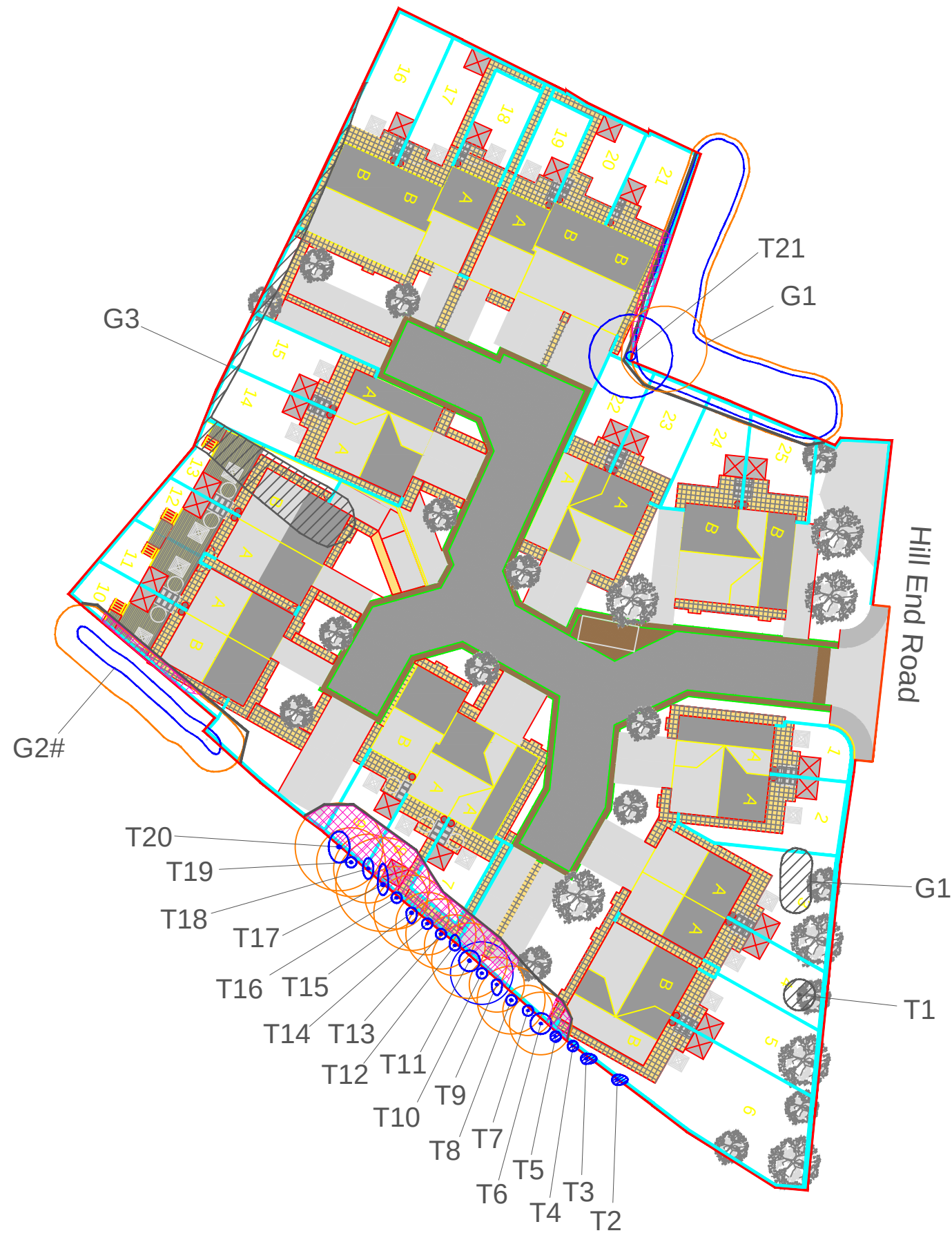


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Rev	Description	Drawn	Approved	Date
TEP Genesis Centre Birchwood Science Park Warrington WA3 7BH Tel 01925 844004 Fax 01925 844002 e-mail tep@tep.uk.com				
Project				
Hill End Road, Barnsley Arboricultural Impact Assessment				
Title				
Drawing 1 Tree Constraints Plan [Existing]				
Drwg No		D3763.001		
Scale		1:500 @ A3		Date 17/05/13
Drawn	Checked	Approved		
NJS	PJH	JGS		

DRAWING 2

TREE REMOVAL AND PROTECTION PLAN



KEY

[This drawing must be reproduced in colour]

-  T1 Individual trees
-  G1 Groups of trees
-  Root Protection Area (RPA)
-  Survey Boundary
-  Approximate location
(Feature not shown on topo)
-  Tree Protection Fencing
(Must be installed prior to works commencement)
-  Special Mitigation Construction
(Requires Arboricultural Method Statement)

Trees to be retained

(Tree quality assessment based on BS 5837:2012 Trees in relation to design, demolition and construction - Recommendations)

-   Category B
(Moderate quality)
-   Category C
(Low quality)

Trees to be removed

(Tree quality assessment based on BS 5837:2012 Trees in relation to design, demolition and construction - Recommendations)

-   Category B
(Moderate quality)
-   Category C
(Low quality)

NOTE: This drawing should be read in conjunction with the respective Arboricultural Data Sheets (Appendix 1).



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Rev	Description	Drawn	Approved	Date



Genesis Centre
Birchwood Science Park Warrington
WA3 7BH
Tel 01925 844004
Fax 01925 844002
e-mail tep@tep.uk.com

Project

Hill End Road, Barnsley
Arboricultural Impact Assessment

Title

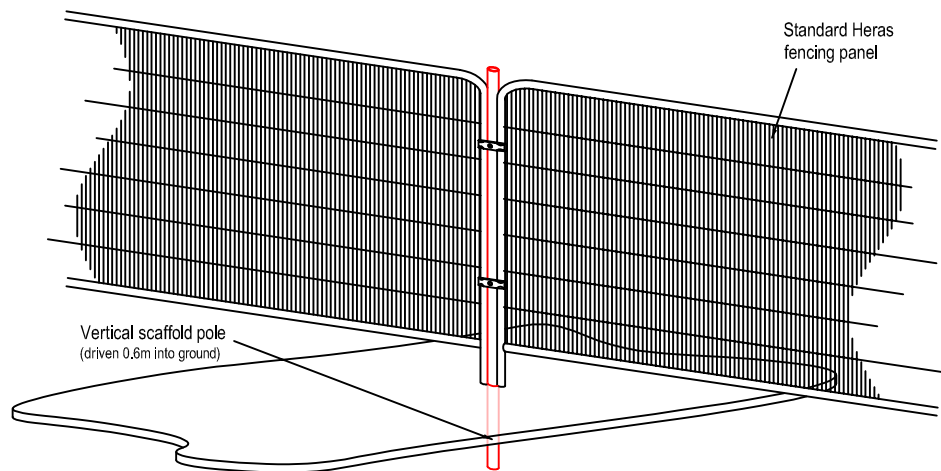
Drawing 2
Tree Removal and Protection Plan
(Proposed)

Drwg No D3763.002

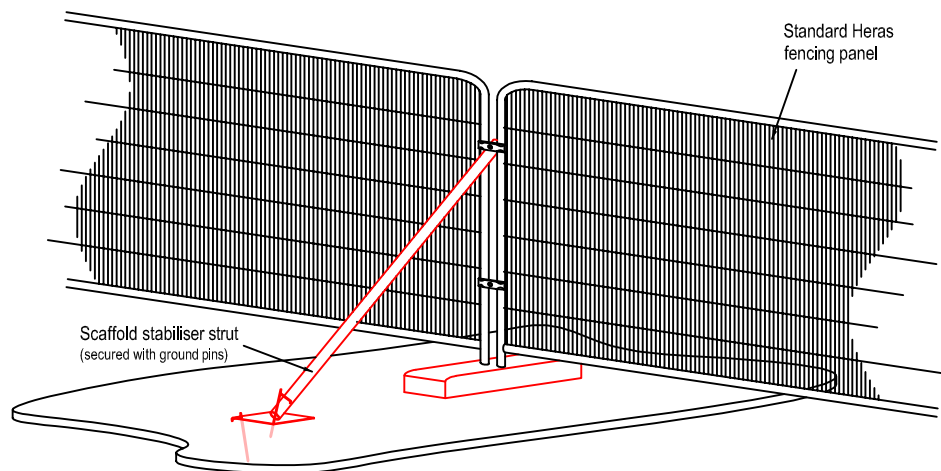
Scale	1:500 @ A3	Date	17/05/13
Drawn	NJS	Checked	PJH
		Approved	JGS

DRAWING 3

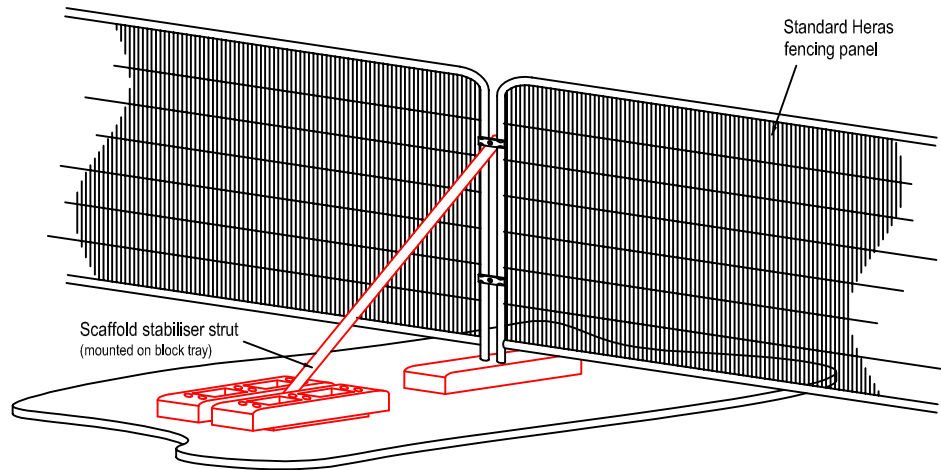
TEMPORARY TREE PROTECTION FENCING



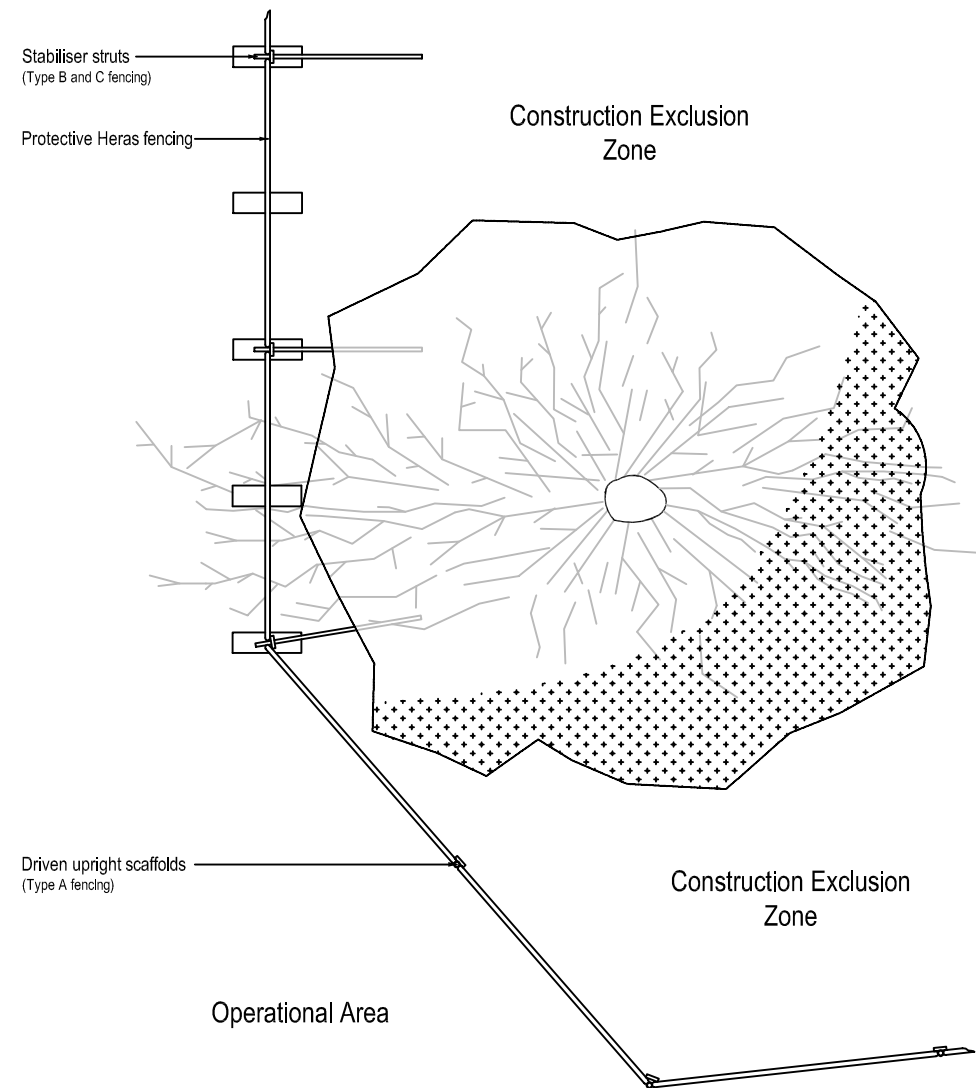
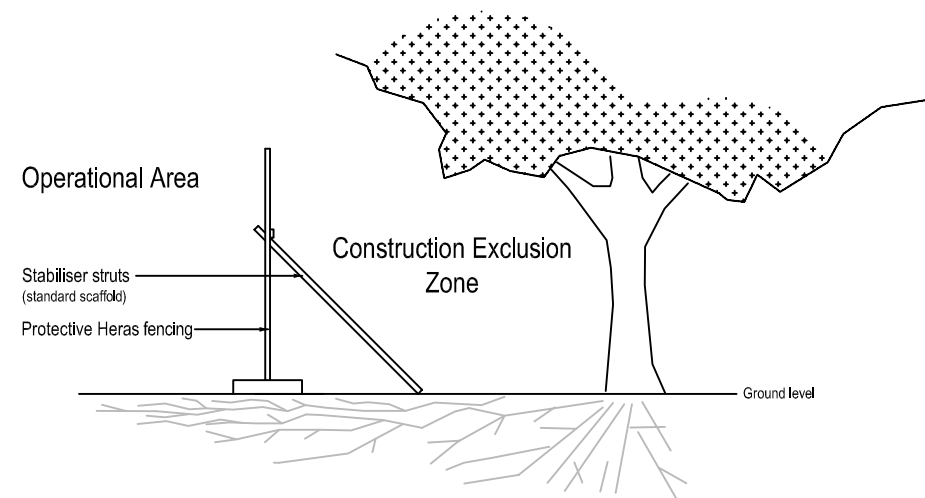
Type A Tree Protection Fencing: for use as standard
(see Tree Protection Plan for layout)



Type B Tree Protection Fencing: for use as directed
(e.g. where Type A would cause unacceptable damage to roots or underground services)



Type C Tree Protection Fencing: for use as directed
(e.g. on hard surfaces)



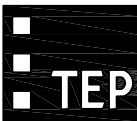
PROTECTIVE FENCING. THIS FENCING MUST BE MAINTAINED IN ACCORDANCE WITH THE APPROVED PLANS AND DRAWINGS FOR THIS DEVELOPMENT.



**TREE PROTECTION AREA
KEEP OUT !**
(TOWN & COUNTRY PLANNING ACT 1990)
TREES ENCLOSED BY THIS FENCE ARE PROTECTED BY PLANNING CONDITIONS AND/OR ARE THE SUBJECTS OF A TREE PRESERVATION ORDER.
CONTRAVENTION OF A TREE PRESERVATION ORDER MAY LEAD TO CRIMINAL PROSECUTION
ANY INCURSION INTO THE PROTECTED AREA MUST BE WITH THE WRITTEN PERMISSION OF THE LOCAL PLANNING AUTHORITY

Tree Protection Notice to be attached to fencing 1.5m from the ground, facing out of the Construction Exclusion Zone and located at regular intervals along the fence line.

The notice must be at least A4 in size

Rev	Description	Drawn	Approved	Date
 Genesis Centre Birchwood Science Park Warrington WA3 7BH Tel 01925 844004 Fax 01925 844002 e-mail tep@tep.uk.com				
Project				
TEP Standard Detail				
Title				
Temporary Tree Protection Fencing (Detail for tree protection around Construction Exclusion Zones)				
Drwg No D.TREE_FENCING.001				
Scale NTS @ A3			Date 30/04/12	
Drawn TDP		Checked ROS		Approved JGS