PLANNING DESIGN ENVIRONMENT



Carr Road, Buxton
Arboricultural Impact Assessment

Report Ref: TEP.3701.001
December 2012

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1.0 INTRODUCTION

1.1 TEP has been commissioned by Copperleaf to conduct an arboricultural survey of land adjacent Carr Road, Buxton. This report details the arboricultural impacts of developing the site, subsequent mitigation recommendations and protective measures.

1.2 The survey was carried out in November 2012 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 (Reference: S12-468). For the purposes of this report it is assumed that the detail on the drawing is accurate.

1.5 4 individual trees (T1-T4) were surveyed and mapped (refer to Drawing 1). All arboricultural information recorded during the survey is presented at Appendix 1.

1.6 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 (Sections 4 & 6);
- A Tree Constraints Plan detailing tree quality categories, canopy spreads and Root Protection Areas (RPA) for all trees (Drawing 1); and
- A Tree Protection Plan detailing the development proposals, which trees are to be retained, tree protection fencing alignment and areas requiring special construction methods (Drawing 2).

2.0 THE SITE AND SURROUNDINGS

2.1 The site is off Leek Road (A53) in Buxton. It comprises a strip of land that runs to the south of Carr Road from its junction with Leek Road along an approximately east-west axis.

2.2 The survey area comprises rough land opposite a larger area of recent residential development (Heritage View). The ground is undulating and steep in places, having apparently been used as a car park, and compound and storage area during the adjacent development and subsequently re-graded in places.

2.3 Site access is open and the land is currently unused, with the exception of informal public access for recreation.



View across the site to agricultural land beyond (looking south)

2.4 Weather conditions during the survey were overcast.

Development Proposals

2.5 The proposed development includes 14 residential units with associated gardens, parking, decking areas and public green space.

2.6 Existing ground levels across the site and existing retaining structures will generally be unchanged with the exception of the extension of a retaining crib wall around tree T1. This extension will run approximately south to the southern boundary and thereby create a raised level to the east. The purpose of this is to create a level garden space for adjacent houses.

2.7 Detail of the proposals is shown on Drawing 2 and is based on the proposed site plan supplied by OMI 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 for, 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. Two of the site's trees are mature and notably large. As such, these trees have an increased potential to provide veteran benefits in the future if they are managed beyond maturity. This capacity should be factored into decision making in tree protection and future management.



Mature trees with habitat value

Tree Preservation Orders & Conservation Area Designations

3.3 Local authorities may 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 Derbyshire County Council's online mapping system indicated that all trees on the site are subject to Tree Preservation Orders (Reference: 1970: 54/G14).

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 If the presence of a bat roost be suspected whilst undertaking works on any 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 birds 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), any work likely to affect the nest must be halted until the nest becomes inactive.

Invasive species

3.11 Himalayan balsam (*Impatiens glandulifera*) was noted on the site during the survey. This plant is listed on Schedule 9 of the *Wildlife and Countryside Act 1981* (as amended), which makes it an offence to cause the spread of certain species in the wild.

3.12 Management and/or eradication of this species may be a requirement of any planning consent and would be beneficial to local ecology. Refer to ecology report TEP.3702.002 for further detail.

National House Building Council

3.13 This report has been written in accordance with, and to satisfy the requirement of *BS 5837:2012*.

3.14 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.

3.15 Prior to the undertaking of foundation depth calculations the exact location of all trees in relation to structures will be required.

3.16 Any discrepancies regarding tree location will require further discussion with a qualified Arboricultural Consultant.

4.0 TREE POPULATION

4.1 4 individual trees (T1-T4) were recorded within 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 is a twin-stemmed sycamore that is surrounded by a retaining wall around its northern side. The wall is curved and runs around 6-7m from the stem. The tree is in good health, although blocks of wood have been affixed with nails and screws to aid climbing in places.



Tree T1 looking north

4.3 The location and setting of T1 within the retaining enclave increases its value as an amenity tree. As with all trees on the site, it is prominently visible from the new development opposite and from the main road.



Trees T2 and T3 (left of image) viewed from north

4.4 Trees T2 and T3 form a coherent pair and a single overlapping canopy. The trees are relatively isolated within a landscape of mature trees, a circumstance which belies their impressive stature. They are mature and wide spreading, with a commanding location. Both trees are in good condition and have associations with lichens, mosses and ferns.

4.5 Tree T4 is an ash at the foot of a steep bank. It has a full domed canopy and a secondary stem from the base with wounding and some decay at the point of attachment. The main part of the tree is free from defects and it is visible from surrounding vantages to the south.



Tree T4 viewed from the top of the bank, looking south

4.6 Tree and group locations, their quality categories and canopy spreads are shown on Drawing 1.

Tree Quality Categorisation

4.7 Under *BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations* trees and groups are objectively assigned a quality category 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 infections or 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 and discussions with the client regarding their application strategy.

Table 2: Arboricultural implications of the proposed development

	Tree Quality Category			
	A	**B**	**C**	**U**
Trees that can be retained	T1; T2; T3; T4	-	-	-
Trees that must be removed	-	-	-	-

See Appendix 1, Arboricultural Data Sheets for subcategories

5.2 No trees must be removed to facilitate the development proposals.

5.3 Fencing to protect the retained trees will be necessary. This will reduce the useable area for works and storage of materials during development.

5.4 In order to retain the trees in acceptable condition, the proposed development must be controlled to avoid accidental damage, particularly to roots and the soil.

5.5 Construction activities are proposed within the RPA of trees T2 and T3. These comprise the construction of a retaining wall as an extension of the existing crib wall around T1. This wall will extend to the southern boundary. All roots that extend to the east of the proposed new wall would either be cut or buried, such that any residual function must be disregarded.

5.6 Works affecting T2 would remove around 2% of the total RPA by area. This loss can be offset by increased stand-off in other areas.

5.7 Works affecting T3 would remove around 13% of the total RPA by area. This larger loss can be accommodated because of a stem lean to the east and thereby increased relative significance of roots to the west. An increased stand-off in other areas will be protected and special construction methods will be used to minimise root loss.

5.8 Where planning permission is granted, the retention schedule shown in Table 2 would normally form a part of that permission. This will include an implicit requirement to prevent harm to protected parts of each retained tree, as defined by this report. Any change to this schedule would therefore be likely to require an application to vary the consent.

5.9 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.

5.10 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.

5.11 It is the recommendation of this report that mitigation in the form of tree planning has the potential to result in a net gain/loss of long-term tree cover (estimated at 40 years post-construction). This is wholly dependent on appropriate species selection, tree quality and high establishment rates (see Section 7.9).

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 On this site the trees are growing in apparently homogeneous material. However, the presence of steep slopes in proximity to trees and the evidence of previous construction-related activity on the site may have affected the architecture of healthy roots for all trees. The only observed substantial barrier to growth is the retaining structure around T1.

6.5 In general, roots tend to extend further towards the uphill side of any tree that is growing on a slope. The location of T4 at the foot of a slope but on relatively level ground is such that the incline is considered likely to have the opposite effect. This bias is compounded by the obvious lack of disturbance on adjacent land to the south, which would favour healthy root function.

6.6 The **RPA** has 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

6.7 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 re-grading of ground profiles.

6.8 The **CEZ** acts to protect both tree roots and branches and has been extended to incorporate canopy spread where appropriate.

6.9 Protective fencing alignment is shown on Drawing 2.

6.10 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.

6.11 A weatherproof notice stating 'Construction Exclusion Zone – Keep Out' must be fixed to each fencing panel. An example notice is shown on Drawing 3.

6.12 Any alteration to the fencing alignment to allow for approved activities will be made in agreement with the council's Arboricultural Officer.

6.13 The protective fencing must not be removed until the physical construction phase has been completed and all vehicles have been removed from site, to the satisfaction of the council's Arboricultural Officer.

Ground Protection

6.14 The application of ground protection may be required to allow access over the rooting area of trees, prior to the installation of the final surface treatment.

6.15 An Arboricultural Method Statement (refer to sub-section 7.3-7.6) will be required to detail a suitable specification which will be dictated by construction requirements. The final design must be agreed with the council's Arboricultural Officer prior to installation.

6.16 Ground protection should be as directed in the Arboricultural Method Statement and would normally be removed at the same time as Protective Fencing.

Ground Contamination

6.17 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.

6.18 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

6.19 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 **Construction Exclusion Zone** shown on Drawing 2.

6.20 Where the installation of services within the **Construction Exclusion Zone** 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

6.21 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.

6.22 Existing ground levels within the **Construction Exclusion Zone** should be respected as far as is reasonably practicable. The advice of a qualified Arboricultural Consultant should be sought if level changes are required.

6.23 The level increase that is proposed to the east of the new retaining wall will effectively prohibit the function of roots in that area. Levels at the foot of the retaining wall must be unchanged to ensure that the maximum area of functioning roots is maintained.

Drainage & Storm Water Run-off Issues

6.24 Drainage and storm water run-off requires consideration at the design stage and special construction requirements (e.g. permeable surfacing) may be necessary to prevent excessive and/or polluted run-off into the rooting area of trees to be retained.

6.25 New surfaces within the CEZ should be pervious or permeable to allow water and air ingress into the soil.

7.0 MANAGEMENT RECOMMENDATIONS

Tree Work

7.1 The operations presented in Table 3 are also recommended.

Table 3: Recommended Tree Management Works

Feature Reference	Tree Work Description
T1	Treat Himalayan balsam (refer to ecology report TEP.3701.002)
T1 & T4	Remove nails and screws from low limbs for safety

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 construction activities are proposed within the Root Protection Areas (RPA) of retained trees.

7.4 The purpose of an **AMS** is to demonstrate how the proposed operations can be undertaken whilst adverse impact on trees is appropriately controlled. It will set the parameters within which construction will 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.

7.6 The scope of the AMS should include:

7.6.1 Tree protection and site logistics;
7.6.2 Creation of decking areas and wooden steps (by T1);
7.6.3 Boundary treatments;
7.6.4 Landscaping;
7.6.5 New footpath creation;
7.6.6 Removal of existing structures;
7.6.7 Construction of new retaining wall, and
7.6.8 Level changes.

Pre-start Site Meeting

7.7 To reinforce the required tree protection measures and avoid the requirement for ongoing arboricultural supervision a pre-start meeting should be arranged between the site contractor, a qualified Arboricultural Consultant and the council's Arboricultural Officer.

7.8 During the meeting the alignment of protective fencing will be marked out and any technical or logistical issues discussed.

New tree planting

7.9 No trees require removal to facilitate the development proposals. However, tree planting is recommended to increase species diversity, the sustainability and long-term prospects of the tree stock and to create an attractive environment.

7.10 Native and wildlife friendly species are recommended. Recommended small trees for gardens include spindle (*Euonymus europaeus*), crab apple (*Malus sylvestris*), rock whitebeam (*Sorbus rupicola*), purple willow (*Salix purpurea*) and common hazel (*Corylus avellana*). Recommended trees for specimen planting include small-leaved lime (*Tilia cordata*), common alder (*Alnus glutinosa*), field maple (*Acer campestre*) and sessile oak (*Quercus petra*ea).

7.11 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.

7.12 The extent of new planting will ultimately be determined in agreement with Derbyshire County Council.

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 4 Category A trees on the site.

8.2 No trees require removal to facilitate the development proposals.

8.3 At the time of the survey all trees within the site were subject to a Tree Preservation Order. None are within a Conservation Area.

8.4 No tree was found to have features of a size and condition desirable to bats and/or owls.

8.5 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.

8.6 A pre-start meeting between the site contractor, a qualified Arboricultural Consultant and the council's Arboricultural Officer will allow any technical or logistical issues to be discussed.

8.7 In order to retain all trees, proposed activities within the CEZ must be undertaken in a controlled manner. An Arboricultural Method Statement should be produced to inform this part of the development and may be required as a pre-commencement condition.

8.8 New planting to augment the existing tree stock will cause a net increase in tree cover. As such, where the existing trees are retained in acceptable condition, the development will add arboricultural value to the site.

APPENDIX 1

ARBORICULTURAL SURVEY DATA SHEETS

APPENDIX 1: Arboricultural Survey Data Sheets

Surveyor TP
Date 14th November 2012
Town Buxton
Site Carr Road
Dwg Ref D3701.001

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	Sycamore	13.0	750.0	1.0	7.0	7.0	7.5	7.0	1.0	N	Middle Age	Good	Prominent tree surrounded north-west and north-east by a retaining wall at approximately 6m from the stem; evidence of tree climbing (wooden blocks etc.); low stub with nails and screws; minor basal wound; trifurcate form from 1.5m with slightly tight union; Himalayan balsam around tree; domed canopy with good overall form	A,1,3	9.0	254.5	Remove Himalayan balsam	Long	*
T2	Sycamore	22.0	1200.0	1.0	10.0	9.0	11.0	4.5	2.0	E	Mature	Good	Large tree forming a pair with T3; high landscape value; muscular stem with 10 degree lean to east, now corrected; heavy moss cover and ferns on stem on uphill side; asymmetrical crown form due to pairing; prominent and impressive, valuable tree with good habitat value; ground gently sloping upwards from tree to east then rising sharply; good buttresses; full canopy	A,1,2,3	14.4	651.4		Long	*
T3	Sycamore	21.0	1120.0	1.0	9.5	12.0	9.0	11.0	2.0	W	Mature	Good	Slightly smaller tree in a pair with T2; trifurcate at 6m; slight asymmetry due to pairing but less pronounced than with T2; adjacent to defunct stone wall; fluted stem with heavy lichen and moss covering in places; very valuable wildlife and amenity tree in a prominent location	A,1,2,3	13.4	567.5		Long	*
T4	Ash	17.0	711.2	2.0	10.0	8.5	10.0	7.5	2.0	NW	Middle Age	Good	Basally bifurcate tree in hollow depression; evidence of tree houses, ropes, tyres and other play; broad form with branches hanging to ground level; primary stem in good condition but smaller stem with minor branch canker, twig dieback and basal wounding/decay; poor union increasing risk of failure of small stem but majority of tree in good condition	A,2,3	8.5	228.8	Remove screws in stem for hazard abatement	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 than 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 (m^2) 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 trees 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

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 *NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve; see 4.5.7.*			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 not assigned a quality category.

DRAWING 1

TREE CONSTRAINTS PLAN



KEY

[This drawing must be reproduced in colour]

T1 Individual trees

Root Protection Area (RPA)

Survey Boundary

* Statutory Protection
(TPO, Conservation Area, Important Hedgerow etc.)

Tree Categorisation

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

- Category A (High quality)
- Category B (Moderate quality)
- Category C (Low quality)
- Category U (Unsuitable for retention)

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

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

Carr Road, Buxton

Title

Tree Constraints Plan
[EXISTING]

Drwg No		
D3701.001		
Scale: 1:750 @ A3		Date: 22/11/12
Drawn: TDP	Checked: NJS	Approved: JGS

DRAWING 2

TREE PROTECTION PLAN



KEY

[This drawing must be reproduced in colour]

- T1 Individual trees
- Survey Boundary
- Statutory Protection (TPO, Conservation Area, Important Hedgerow etc.)
- Tree Protection Fencing (Must be installed prior to works commencement)
- Special Mitigation Construction (Requires Arboricultural Method Statement)
- Temporary Ground Protection (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 A (High quality)

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

Rev	Description	Drawn	Approved	Date

TEP

Genesis Centre
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Project

Carr Road, Buxton

Title

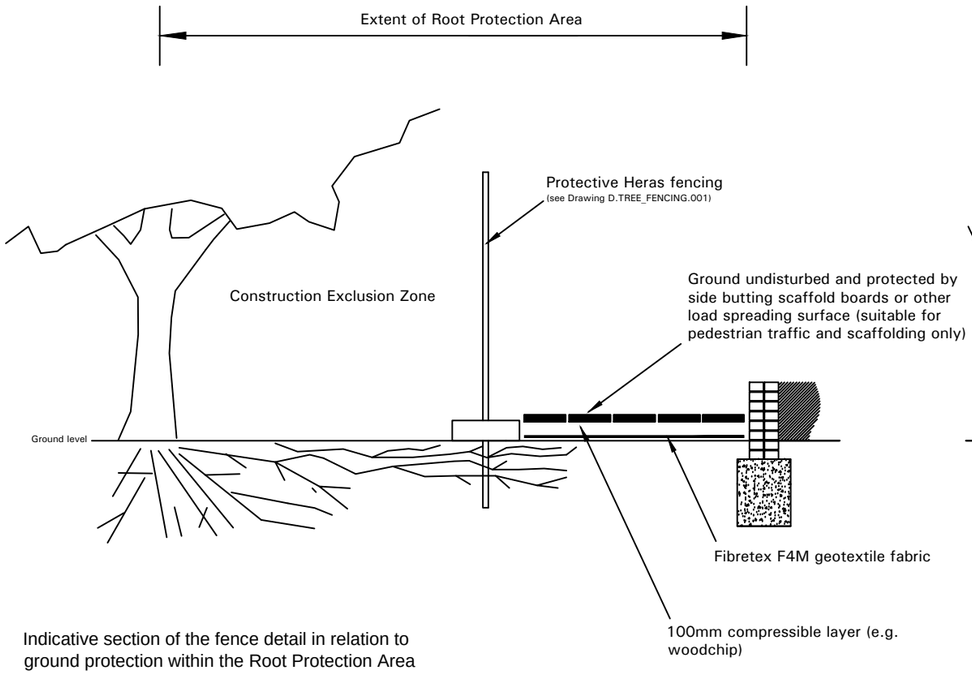
Tree Protection Plan
[PROPOSED]

Drwg No D3701.002

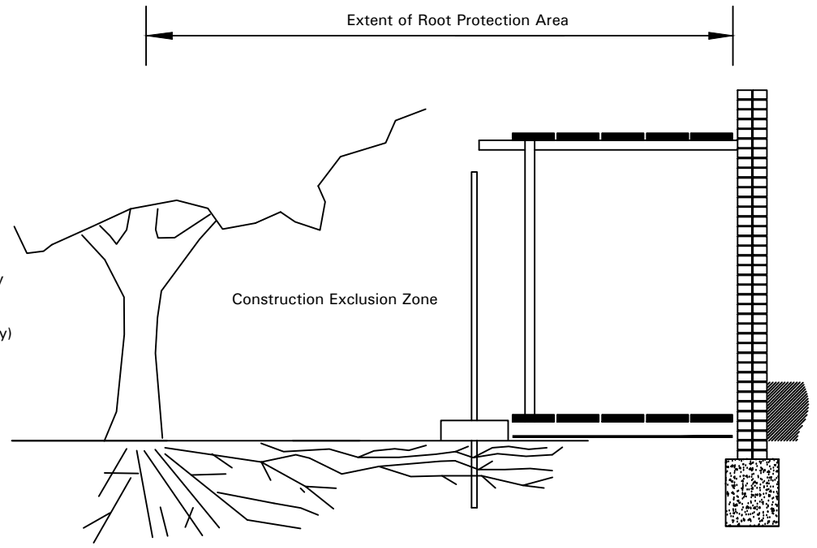
Scale	Date	
1:750 @ A3	22/11/12	
Drawn: TDP	Checked: RO'S	Approved: RO'S

DRAWING 3

TEMPORARY TREE PROTECTION FENCING



Indicative section of the fence detail in relation to ground protection within the Root Protection Area



Rev	Description	Drawn	Approved	Date

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Project

TEP Standard Detail

Title

Scaffolding and ground protection measures in or close to the Root Protection Area (RPA)

Drwg No		
D.SCAFFOLD.001		
Scale: NTS @ A3		Date: 01/05/12
Drawn: TDP	Checked: JGS	Approved: PAM