N&J TREE SERVICES LTD
38 Hammond Avenue, Brown Edge. ST6 8QU
Company Reg No. 5319607
www.njtreeservices.co.uk m: 07768 555344 t: 01782 502847

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Arboricultural Report
188 Cheadle Road Cheddleton ST13 7BD

1 INTRODUCTION

1.1 N& J Tree Services have been commissioned by Mr Edward Dawson to conduct an arboricultural survey of a number of trees situated within the grounds of the above address.

1.2 The survey was carried out on 20th September 2016 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 total of 7 individual trees (T1-T7) within the boundary of the development area were surveyed and mapped (refer to appendix 1 tree location plan). All arboricultural information recorded during the survey is presented at appendix 2).

1.5 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.

1.6 This report provides the results of the survey and includes the following:

- A schedule of all trees located within the proposed development site (Appendix 2);
- 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 ;
- An assessment, based on *BS 5837:2012*, of the requirement for protection of trees during the construction phase (Section 6);
- Advice on removal, retention and management of trees (Sections 5 & 7);
- A Tree Constraints Plan detailing tree quality categories, for all trees surveyed (appendix 2); which includes details trees to be retained and removed and temporary tree protection fencing alignment (tree protection plan)

2. THE SITE AND SURROUNDINGS

2.1 The survey area is located within the formal garden area of the above property along the north and east perimeter boundary lines of the site.

2.2 Weather conditions during the survey were broken cloud with a light westerly breeze.

Image 1: Showing development area

3.0 Development Proposals

3.1 The proposed development is the erection of a floorless wooden garage type construction with a porous washed gravel material utilised for the floor / base . Supporting struts / pillars around the frame to be erected on supporting pads.

4. STATUTORY PROTECTION AND GUIDANCE

National Planning Policy Framework (NPPF)

4.1 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.

4.2 ***On this site there are no ancient woodland or veteran trees.***

Tree Preservation Orders & Designations

4.3 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.

The trees on the site are protected by a Tree Preservation Order.

Protected Species – Bats

4.4 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.

4.5 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 definitive features to suggest that roosting bats were present.

4.6 Should 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

4.7 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's nest or any part thereof.

4.8 Due to the suitability of the trees within the vicinity of 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). 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) work must be halted until the nest becomes inactive.

5.0 TREE POPULATION

5.1 Seven individual trees (T1-T7) were recorded that are growing within the development boundary area 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 2.

5.2 The tree population recorded is entirely confined within the site boundary with elements commensurate with its existing use as a formal residential garden area.

Tree Quality Categorisation

5.3 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, overleaf, presents a summary of the categories presented in the British Standard.

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 infection pathogens

6.0 IMPACTS OF THE PROPOSED DEVELOPMENT

6.1 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

	A	B	C	U
Trees that can be retained	**T1, T2, T6, T7**	**T3, T4, T5**		
Total	**4**	**3**		
Trees that require removal to facilitate development				
Trees that require removal due to disease or recognised structural defects.				
Total	**nil**	**nil**	**nil**	**nil**

See Appendix 2, Arboricultural Data Sheets for subcategories

6.2 Seven individual trees surveyed can all be retained within the proposals for the development.

7.0 TREE PROTECTION REQUIREMENTS

Root Protection Areas

7.1 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.

7.2 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.

7.3 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.

7.4 On this site the majority of trees are growing in relatively homogeneous ground conditions.

Protective Fencing and Exclusion Zones

7.5 Temporary protective barrier fencing in this instance will not be feasible at the distances calculated as per the BS standards as the construction works will be within the RPA's of the trees. Fencing should be erected at a distance of 1m from the base of trees, which will predominantly be for the purposes of protecting the tree trunks from impact etc, especially mindful that no dig methodologies are to be adopted, this will 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 and commencement of earthworks.

7.6 The **CEZ** in this instance will form the purpose of protecting the trunks of the trees from impact and or storage of materials.

7.7 Protective fencing alignment is shown on the tree protection plan.

7.8 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 Appendix 3.

7.9 A weatherproof notice stating 'Construction Exclusion Zone – Keep Out' must be fixed to each fencing panel.

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

7.11 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 Contamination

7.12 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.

7.13 Particular care must be taken when working on or close to sloping ground to avoid unintentional run off into the rooting area of retained trees or nearby water bodies.

Underground Utility Issues

7.14 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** or if required suitable methodology involving moling techniques etc incorporated.

7.15 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

7.16 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.

7.17 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.

8.0 MANAGEMENT RECOMMENDATIONS

Tree Work (where required)

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

Mitigation for the removal of trees (where applicable)

NA

Post Construction Tree Care

NA

Foundation Depth Calculations (where applicable)

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

8.3 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.

9.0 SUMMARY

9.1 A total of 7 individual trees were recorded during the survey within the development area site boundary.

9.2 Based on an objective assessment made in accordance with *BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations* the trees were all valued as either category A or B features.

9.3 The tree population is confined to the formal garden area.

9.4 ***No trees will need to be removed to facilitate the development proposals.***

9.5 Trees adjacent to the site were identified as being subject to a Tree Preservation Order.

9.6 From my ground level inspection, no trees were noted to have any significant features or visible evidence that might suggest they are an active roosting site for bats.

9.7 In this instance protective barrier fencing will not be feasible as the works are to be undertaken in and around the tree population recorded. Any excavation works within the RPA will need to be hand dig only and where roots >25mm diam. are identified, advice from the tree officer will need to be sort. Where roots identified for pruning are less than 25mm diameter, theses should be cut cleanly using secateurs.

SURVEY METHOD

The survey of trees was conducted from ground level only. The nature of the soils on site was 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.

SURVEY METHOD

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.

Arboricultural Method Statement
182 Cheadle Road, Cheddleton

The purpose of this statement is to aid the preservation of trees shown to be retained at and adjacent to the site shown on the relevant plan. Trees can easily be retained and effectively protected during the proposed development of the site, by clearly setting out the tree protection methods, construction techniques and working practices. This particular document provides specific information relating to the foundation design principles where trees are in conflict with construction works.

The following information points are explained and qualified in more detail in this report and this summary is intended for quick reference only. Any actions consequent to this summary should be discussed with the Tree Officer at Leek and Moorlands District Council before being undertaken in order to prevent potential breach of tree protection legislation, whether by planning condition, area planning designation or specific tree preservation order (which may apply to individual trees, groups, hedges of any size).

Prior and during any required construction operations within the RPA a combination of barriers and ground protection should be adopted.

Construction Phase

i) The protection measures recommended indicate that the loads imposed by landscaping should not be imposed upon the existing ground preventing compaction and that the roots and top soil should be provided with continual ventilation, especially where the tree root spread and proposed building outline will overlap.

ii) The relatively close proximity of trees T1 to T7 and restrictions against loading the ground prevent the use of a traditional ground bearing floor slab and strip foundations. It is proposed to use pile type foundations to provide support to the wall struts of the proposed building(s), which shall not be affected by the potential ground movement imposed by the tree during dry and wet weather/ground conditions.

iii) Prior to forming the pillar type foundations, hand dug trial holes shall be dug at proposed locations for each supporting pad, to ensure that tree roots are not severed. Top soil shall be carefully scraped back to remove any grass or other surface vegetation. If roots >25mm are encountered at the trial hole, consideration will need to be given to slightly relocating the support pad hole adjacent where no such sized roots are encountered.

Methodology

iv) References may include: British Standard 5837:2012 'Trees in Relation to Construction and National Joint Utilities Group 'Guidelines for the planning, installation and maintenance of utility services in proximity to trees' 1995.

Sequenced Methods of Construction

Pre Contract Meeting

v) An onsite meeting was held with the developer, appointed arboricultural supervisor and Local Planning Authority (LPA) representative (Steve Massey Tree Officer). The prime purpose of this meeting was to discuss foundation design (detailed above), and key points to be included within the BS5837 report.

General Principles for Tree Protection

vi) The arboricultural method statement and a tree protection plan will be discussed with all personnel associated with the construction process and will be made familiar with the principles within.

vii) If 360-degree excavators are to be used during construction, at no time is the excavating arm to encroach over the position of the protection barriers.

viii) No fires are to be lit on site at any stage during the construction process.

ix) A designated storage area is to be created away from retained trees. All materials for construction purposes are to be stored in this compound. Care must be taken to avoid the leakage or leaching of noxious materials into the soil. Limited space for dry materials can be provided on site on the existing parking area.

x) No materials should be stored or left stacked in positions around the site other than within the storage compound area.

xi) No mechanical cultivators are to be used within RPA's at any time; hand cultivation to a depth of 100mm will be acceptable.

xii) All excavations within the Root Protection Zone of those trees to be retained are to be excavated by hand in accordance with clause 11.3.5 of BS 5837:2005.

xiii) Any excavations which have to be undertaken within the root protection area should be carried out carefully by hand, avoiding damage to the protective bark covering larger roots.

xiv) Roots, whilst exposed, should be wrapped in dry, clean hessian sacking to prevent desiccation and to protect from rapid temperature changes.

xv) Roots smaller than 25mm diameter may be pruned back, preferably to a side branch, using a proprietary cutting tool such as bypass secateurs or handsaws.

xvi) Roots larger than 25mm should only be severed following consultation with an arboriculturalist, as they may be essential to the trees health and stability.

xvii) Prior to backfilling, any hessian wrapping should be removed and retained roots should be surrounded with sharp sand, or other loose granular fill before soil or other material is replaced.