BS 5837:2012 Tree and Hedgerow Survey Report

Clitheroe Road, Whalley, BB7 9RG

Presented to **Trafford Housing Trust**

Issued: August 2018

Delta-Simons Project No. 18-0886.02

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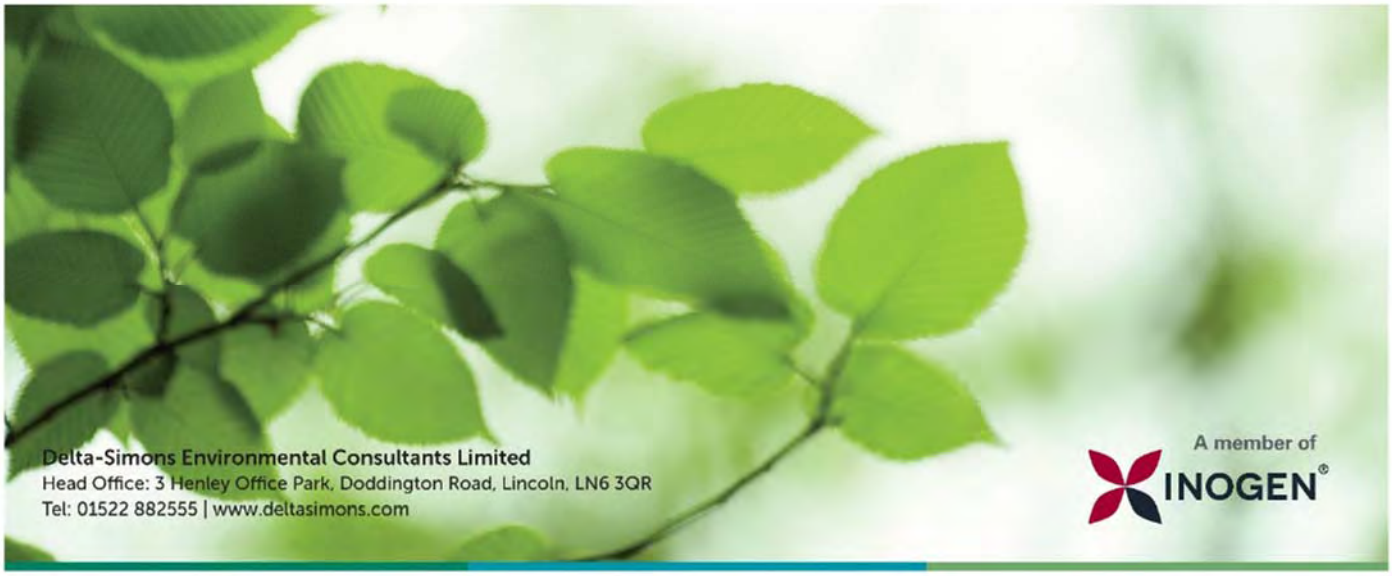

Report Details

Client	Trafford Housing Trust
Report Title	Tree and Hedgerow Survey
Site Address	Clitheroe Road, Whalley, Lancashire, BB7 9RG
Project No.	18-0886.02
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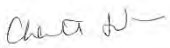
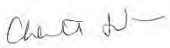
Quality Assurance

Issue No.	Status	Issue Date	Comments	Author	Technical Review	Authorised
1.	Final	17th August 2018				
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About us

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Executive Summary

Purpose	Delta-Simons Environmental Consultants Ltd was instructed by Trafford Housing Trust ('the Client'), to undertake a Tree Survey to BS 5837:2012 standard of an area of land situated east of Clitheroe Road in Whalley, ('the Site'). The survey was undertaken on 19th July 2018. The survey was undertaken to inform a planning application for the Site.
Current Site Status	The Site comprises grassland fields divided by an access road and stream in the south-west, with an active construction storage/ parking area in the west of the Site. Hedgerows, woodland and scattered trees are present around the boundaries and a patch of scrub lies in the west.
Proposed Development	It is understood that the proposed development will comprise up to 188 residential properties, with new access roads and landscaping, and attenuation ponds as part of the drainage strategy for the Site.
Results	A total of 17 trees, eight tree groups, and one woodland group were surveyed. The results of the desk search revealed that the mature and semi-mature trees on-Site, and in a number of cases directly adjacent to the Site, are covered by a combination of The Ribble Valley Borough Council Tree Preservation Order No.1, 1957, and The Ribble Valley Borough Council Tree Preservation Order No. 3, 1962. Part of a tree group at the western extent of the Site falls within the Whalley Conservation Area. A total of four species-poor hedgerows were identified and assessed as part of the Hedgerow Survey.
Recommendations	Recommendation 1 (Adequate Tree Protection) Those trees identified within the proposed development plan for retention will need to be adequately protected during any construction works. Measures to protect trees should follow the best practice principles set out in BS 5837: Trees in Relation to Design, Development and Construction (2012). Prior to any construction or development work proceeding, the Root Protection Area (RPA) of individual trees to be retained should be marked out. Marking out should be completed by a competent person with arboricultural expertise. All trees that could be impacted should be protected by barriers or ground protection around the calculated RPA, and as indicated on the Tree Constraints Plan (TCP) produced in association with this Assessment. <u>Recommendation 2 - Bats (Low Bat Roost Potential (BRP) Trees)</u> ▲ Should any works be required to the trees assessed as having low BRP, or those woodland trees supporting a bat box, these should be completed under a method statement which could include a single dawn survey completed during the active bat season (April-October, inclusive) on the morning prior to the works being undertaken; or ▲ Alternatively, a licenced bat ecologist trained to use specialist tree climbing equipment could undertake a thorough inspection of the potential roost features immediately prior to works commencing. <u>Bats- Moderate BRP Trees</u> ▲ Moderate BRP trees will require two nocturnal bat surveys to establish the presence or likely absence of any roosts, and to inform the requirement for additional surveys or any mitigation, should a roost be present; and ▲ The surveys must be spaced at least two weeks apart and be undertaken during the peak active bat season (May-August, inclusive).

This Tree and Hedgerow Survey Executive Summary is intended as a summary of the assessment of the Site based on information received by Delta-Simons at the time of production. This Executive Summary should be read in conjunction with the full Report.

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1.0 Introduction

1.1 Purpose and Scope of the Survey

Delta-Simons Environmental Consultants Ltd was instructed by Trafford Housing Trust (the 'Client') to undertake a Tree and Hedgerow Survey to BS 5837:2012 standard. The survey was undertaken an area of land situated east of Clitheroe Road in Whalley, Lancashire (hereafter referred to as 'the Site'). The survey was undertaken on 19th July 2018. The Site location and the area surveyed are shown in Figure 1. The survey was undertaken in order to inform a planning application for the development of the Site for residential use.

The aims of the Tree Survey were to:

- Identify the individual tree species present at the Site by means of visual inspection;
- To define the approximate age, condition and canopy spread of all individual mature trees identified and the value of these within the development;
- To identify any trees that present a risk to existing or proposed foundations or other structures that may be constructed on the Site and recommend actions to remove this risk; and
- Recommend tree management or mitigation measures where appropriate.

The aims of the Hedgerow Survey were to:

- Identify the individual hedgerow species present at the Site by means of visual inspection;
- To define the approximate age, condition and size of all hedgerows identified at the Site and their value within the development;
- To identify any hedgerows that present a risk to existing or proposed foundations or other structures that may be constructed on the Site and recommend actions to remove this risk; and
- Recommend hedgerow management or mitigation measures where appropriate.

The Site location and the area surveyed are shown in Figure 1.

1.2 Site Description

The Site is centred at Ordnance Survey (OS) grid reference SD 73777 36423, in the north-east of Whalley in Lancashire. The Site covers an area of approximately 10.4 hectares (ha) and comprises three grassland fields with a dividing access track and stream in the south-west. An active construction area is present in the south-west of the larger field and a small concrete storage area is located in the north-east. Hedgerows form a number of the boundaries, and scattered trees are present amongst these and around the field. Areas of woodland also border the eastern boundary. The area surveyed comprised the Site and areas within Spring Wood accessible from public footpaths. A stream flowed through the Site which contained patchy standing water for much of its length, whilst a smaller tributary flowed into it from the north.

The Site is surrounded by grassland fields and sports pitches to the north and Spring Wood to the east. Further grassland and woodland lie to the south-east, and residential properties within Whalley border the Site to the south and west. These include a recently built residential development on Springwood Drive with an area of adjacent grassland.

The Site layout is shown in Figure 2.

1.3 Proposed Development

It is understood from the drawing provided that the Site is to be developed for residential properties with new access from Springwood Drive in the north-west connecting into a recent development and onto the A671 in the north-east. Attenuation ponds and landscaping divides the development, with open space in the north-east and forming a buffer along the eastern boundary (see Figure 3).

2.0 Legislation and Policy

Trees

Local planning authorities look upon trees as being highly beneficial to the locality. To ensure that any important specimens, or significant groups of trees are retained, they may place Tree Preservation Orders (TPOs) on them. In other situations, villages or whole districts may be classified as conservation areas. In these instances, certain trees in the designated area will be protected. When trees are protected, legal procedures must be followed before any work is carried out.

When trees are protected by Preservation Orders, no work should be carried out on them without prior written consent from the Local Planning Authority (LPA). Once an application is made, the Authority personnel must inspect the trees, and make a decision within a statutory eight-week period as to whether work can go ahead. If no decision is made within the eight week period, the appellant can appeal to the Office of the Deputy Prime Minister for non-determination. If the Local Authority (LA) refuses the application the appellant still has the right to appeal.

If a tree protected by a Preservation Order is either killed or wilfully destroyed, the owners of the tree, and the contractor who did the work, can both be prosecuted. The fines for killing or wilfully destroying a tree can be high, i.e. the current maximum is £20,000 per tree, and there is an automatic requirement to re-plant. The current maximum for minor unlawful infringements, such as pruning, is £2,500.

Trees which are dead, dying, or dangerous are exempt from the legislation, although if such trees are removed, the onus on proving they fell into one of these categories lies with the tree owner. Whenever possible it is strongly recommended that the LA be given at least five days' notice before any work on such trees is carried out.

Hedgerows

The Hedgerows Regulations 1997 applies to any hedgerow which has a continuous length of, or exceeding, 20 m, or is less than 20 m but adjoins another hedgerow at each end. A hedgerow can be categorised as 'important' if it is 30 years old or older and satisfies at least one of the criteria listed in Part II of Schedule 1 of the Regulations. The removal of a hedgerow which is protected under these criteria is prohibited without appropriate measures being taken and it is an offence to intentionally or recklessly remove, or cause or permit another person to remove, a hedgerow in contravention of Regulation 5(1) or (9).

3.0 Methodology

The methodology set out below is a detailed summary of the suggested approach to tree assessment as described in British Standard 5837:2012. This Report has applied the methodology to all significant individual trees or groups of trees present at or near to the Site. Trees below 15 cm trunk diameter were generally excluded from the survey. All floral names follow the nomenclature of Stace (2010).

3.1 Trees

Trees have been broadly assessed based on guidance set out within the British Standard BS 5837:2012 Trees in Relation to Design, Development and Construction. This standard provides recommendations and guidance on the principles to be applied to achieve successful integration of development with trees, shrubs and hedgerows. Where development is to occur, the standard provides guidance on the approach needed to decide which trees are appropriate for retention, and the means for protecting these trees during the development (including demolition and construction works) and the means of incorporating trees into the developed landscape.

Trees on or adjacent to the Site have been divided into one of four categories (based on the cascade chart for tree quality assessment). These are classed as A, B, C or U (Section 4 of BS 5837) within Table 1. This gives an indication as to the tree's importance in relation to the Site, the local landscape and, also, the value and quality of the existing trees on-Site. This assists informal decisions concerning which trees should be removed or retained should development occur. For a tree to qualify under any given category it should fall within the scope of that category's definition (see below).

Categories A, B and C cover trees that should be a material consideration in the development process, each with three further sub-categories (i, ii, iii) which are intended to reflect arboricultural, landscape and cultural (nature conservation) values. Category U trees may have no significant landscape value but it is not presumed that there is any overriding need to remove these unless stated otherwise in the description and recommendations. They are for this reason not considered as being significant within the planning process. In assigning trees to the A, B or C categories, the presence of any serious disease or tree–related hazard is taken into account. If the disease is considered fatal and/or irremediable, or likely to require sanitation for the protection of other trees it may be categorised as U with a recommendation for work or even removal, even if they are otherwise of considerable value.

Category (A): Trees whose retention is most desirable and are of high quality and value. These trees are considered to be in such a condition as to be able to make a lasting contribution (a minimum of 40 years) and may comprise:

- Trees which are particularly good examples of their species, especially rare or unusual, or essential components of groups or of formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue);
- Trees, or groups of trees, which provide a definite screening or softening effect to the locality in relation to views into or out of the Site, or those of particular visual importance (e.g. avenues or other arboricultural features assessed as groups); and
- Trees or groups of significant conservation, historical, commemorative or other value (e.g. Veteran or wood-pasture trees).

Category (B): Trees whose retention is considered desirable and are of moderate quality and value. These trees are considered to be in such a condition as to make a significant contribution (a minimum of 20 years) and may comprise:

- Trees that might be included in the high category but because of their numbers or slightly impaired condition (e.g. presence of remediable defects including unsympathetic past management and minor storm damage), are downgraded in favour of the best individuals;
- Trees present in numbers such that they form distinct landscape features and attract a higher collective rating than they would as individuals. Individually these trees are not essential components of formal or semi-formal arboricultural features, or trees situated mainly internally to the Site and have little visual impact beyond the Site; and

- Trees with clearly identifiable conservation or other cultural benefits.

Category (C): Trees that could be retained but are considered to be of low quality and value. These trees are in an adequate condition to remain until new planting could be established (a minimum of ten years) or are young trees with a stem diameter below 150 mm and may comprise:

- Trees not qualifying in higher categories;
- Trees present in groups or woodlands, but without this conferring on them significantly greater landscape value and or trees offering low or only temporary screening benefit; and
- Trees with very limited conservation or other cultural benefits.

Category (U): Trees that are considered to have no significant landscape value but it is not presumed that there is any overriding need to remove these unless stated otherwise in the description and recommendations. They are for this reason not considered as being significant within the planning process. These trees will be in such a condition that any existing value would be lost within 10 years and which should in the current context be ignored or removed for reasons of sound arboricultural management. Trees within this category are:

- 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;
- Trees that are dead or are showing signs of significant, immediate or irreversible overall decline; and
- 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.

Species have been recorded by common and scientific name. Height has been estimated in metres and stem diameter measured in centimetres unless impractical, taken at a height of 1.5 m from the base of the tree.

In the assessment particular consideration has been given to:

a) The health, vigour and condition of each tree;

b) The presence of any structural defects in each tree and its life expectancy;

c) The size and form of each tree and its suitability within the context of the proposed scheme; and

d) The location of each tree relative to existing Site features, e.g. its value as a screen or as a skyline feature.

Age class is assessed according to the age class categories referred to in BS 5837.

Y: Young trees age less than 1/3 life expectancy;

SM: Middle age trees 1/3 – 2/3 life expectancy;

M: Mature trees over 2/3 life expectancy; and

OM: Over mature – declining or moribund trees of low vigour.

The overall condition of any individual tree, or group of trees, has been referred to using one of the definitions listed below. A more detailed description of condition has been noted in the Tree Schedule:

G **Good:** A sound tree or trees needing little, if any, attention;

F **Fair:** A tree or trees with minor but rectifiable defects or in the early stages of stress, from which it may recover;

P **Poor:** A tree or trees with major structural and physiological defects or stressed such that it would be very expensive and inappropriate to retain; and

D **Dead:** A tree or trees no longer alive. However, this could also apply to those trees that are dying and will be unlikely to recover, or are becoming, or have become dangerous.

Major defects or diseases and relevant observations have also been recorded. Dead wood has been defined as the following:

Twigs and small branch material	-	Up to 5 cm in diameter.
Minor dead wood	-	5 cm to 10 cm in diameter.
Major dead wood	-	10 cm in diameter and above.

The survey was completed from ground level only. Aerial inspections were not undertaken. Evaluations of tree conditions given within this assessment apply to the date of survey and cannot be assumed to remain unchanged, and it may be necessary to review these within 24 months, in accordance with good arboricultural practice.

3.2 Potential for Protected Species

Potential bat roost locations are described within this Report using the methodology recommended by the Bat Conservation Trust (BCT), see Collins (ed, 2016) in references (Appendix A). Each tree of significant size assessed within this survey has also been assessed for its potential to provide roosting opportunities for bats (see Appendix B).

3.3 Tree Plans and Tree Schedules

The extent and positions of significant individual trees or groups of trees on or adjacent to the Site are shown on the Arboricultural Survey Plan (Figure 2). The Root Protection Areas (RPA) of the key trees of value identified for, or recommended for, retention have been marked within the Constraints Plan (Figure 4) using the RPAs provided in the Tree Schedule within Table 1.

A summary that includes the trees identified on or near to the Site is included in this Report detailing information on each group of trees, which is summarised in Table 1. Within the summary table maximum RPAs (m²) for estimated tree diameters have been included where appropriate, as well as a calculated corresponding radius of the circle for that RPA. The RPAs are formulated as described below and assist when designing layouts in relation to trees.

3.4 Root Protection Area

Below ground constraints to development are represented by the root plate around a tree, which needs protecting in order for the tree to be incorporated into a proposed scheme without adverse harm to the tree or structural integrity of any proposed foundation structures.

This area is illustrated by the RPA and is calculated according to the formula set out in BS 5837: (2012). This area is equivalent to a circle with a radius 12 x the stem diameter for single stem trees or the basal diameter for trees with more than one stem arising less than 1.5 m above ground level.

RPA (m²) = (stem diameter (mm) x 12 / 1000) ² x 3.142

This figure should be capped to 707 m², that is, equivalent to a circle with a radius of 15 m, or a square with approximately 26 m sides

Taken from Table 2: Calculating the RPA, BS 5837 (2005).

3.5 Hedgerows

An assessment of any hedgerows present at the Site, which may be adversely affected by the proposed development, was undertaken using the standard hedgerow surveying methodology outlined in the Hedgerow Regulations 1997. The purpose of the assessment was to ascertain whether the hedgerows are classified as 'nationally important' and, therefore, protected under the Hedgerow Regulations 1997. The assessment involves a scoring system which relies on particular features, number of woody and floral species present within the hedgerow habitat, and the age of the hedgerow.

The following hedgerow features were recorded:

- A bank or wall supporting the hedgerow for at least half its length;
- Gaps in the hedgerow not exceeding 10% of its length;
- An average of at least one standard tree per 50 m of hedgerow;
- The number of woodland plant species (as defined);
- A ditch along at least half the hedgerow;
- Connections (as defined by the Regulations) scoring four points or more; and
- A parallel hedge within 15 m of the hedgerow.

An assessment of a 30 m section was undertaken per 100 m of hedgerow length, which involved recording the number of woody species present. Where two or more sections of each hedgerow were surveyed, the average number of the species was calculated.

3.6 Limitations to the Survey

There were no limitations regarding access at the time of the survey.

4.0 Results

4.1 Desk Study

The results of the desk search revealed that the mature and semi-mature trees on-Site, and in a number of cases directly adjacent to the Site, are covered by The Ribble Valley Borough Council Tree Preservation Order No.1, 1957, and The Ribble Valley Borough Council Preservation Order No. 3, 1962. Part of TG1 at the western extent of the Site falls within the Whalley Conservation Area.

4.2 Survey Details

The tree inspection took the form of a walkover inspection completed by Peter Morrell on 19th July 2018. Each individual mature, or semi-mature tree of significance that could be impacted upon by any proposed development was identified and visually inspected and classified. The trees identified during the survey at the Site have been individually noted and identified within this Report and are shown in the Tree Survey Plan within Figure 2, and within the Photograph Section of this Report (Appendix III).

4.3 Trees

A total of 17 trees (T), eight tree groups (TG) and one woodland group (WG) have been identified and assessed as part of the tree survey. All trees surveyed with the exception of TG1, T4, TG5, in part, TG6, T7, T8, T9, TG10, TG11, TG12, on part, T18, T19, T20 and WG1, were within the Site boundary.

4.3.1 Species and their Arrangement in the Landscape

There are a limited range of tree species on, and immediately adjacent to, the Site, with no dominant species. Ash *Fraxinus excelsior*, Leyland cypress *X Cupressus leylandii*, sycamore *Acer pseudoplatanus*, English elm *Ulmus procera,* cherry *Prunus* sp., goat willow *Salix caprea*, silver birch *Betula pendula,* alder *Alnus glutinosa,* pedunculate oak *Quercus robur*, holly *Ilex aquifolium,* and rowan *Sorbus aucuparia,* are present in multiple numbers. Nordmann fir *Abies nordmanniana,* and Norway spruce *Picea abies,* are present as single specimens.

The distribution of the trees and tree groups across the Site is limited to being randomly dispersed either side of the stream and track running east to west across the southern area of the Site and within the south-eastern extent of the Site.

4.3.2 Height and Significance in the Landscape

The tree groups and individual trees either side of the stream and public footpath, reaching a height of up to 20 m, are highly visible when viewed from the public footpath and from the north and south. These trees contribute significantly to the rural scene. For this reason they trees are placed within Category B, where their condition merits (see Table 1). These trees are covered by a Tree Preservation Order (TPO No.1 1957).

T15, standing at a height of 20 m, is by its position, set forward within the south-eastern extent of the Site, highly visible when viewed from the north and east despite losing half its mass. It contributes significantly to the rural scene. For this reason, the tree is also placed within Category B. This tree is covered by a Tree Preservation Order (TPO No.1 1957).

T16, a mature specimen tree standing at a height of 22 m, is by its position, set forward within the south-eastern extent of the Site, highly visible when viewed from the north and east and contributes significantly to the rural scene. For this reason, the tree is placed within Category A. This tree is covered by a Tree Preservation Order (TPO No.1 1957).

T17, while not of a great height, reaching a height of 17 m, nor as prominent as the previously mentioned two individual trees, being somewhat screened by adjacent tree groups to the south and east, is a fine specimen and contributes to the rural scene. For this reason, the tree is placed within Category A. This tree is covered by a Tree Preservation Order (TPO No.1 1957).

If retained, these trees will require protection measures to ensure no impact occurs as a result of any development.

4.3.3 Age and Condition

The majority of trees present within the Site are mature or semi-mature with the occasional young specimen. None of the trees within the Site boundary show signs of past management. The majority of the on-Site trees appear to be in fair to good condition, though a number are in quite poor condition:

- TG2, is a semi-mature group in fair condition and includes the species sycamore, goat willow, ash and cherry, with a mutually shared canopy. A number of trees along the stream bank have exposed roots, while a number of trees support ivy.
- T3, a young ash, has a rounded canopy and is in fair condition.
- T4, a mature oak, with a rounded canopy is in fair condition. Bifurcated at 4 m.
- TG12, a group containing semi-mature and mature alder, rowan, elm, and hawthorn, is sited along the stream and track with spreading crowns. This group contains specimens with single and multiple stems. The main stems were ivy-covered which impeded further investigation.
- T13 is a semi-mature ash. Although this tree is not a significantly valuable individual specimen, due to the loss of a major limb, it has been assessed as being part of a group of trees which provide a definite screening or softening effect to the locality in relation to views in or out of the Site.
- TG14, a group containing semi-mature ash, cheery and alder in fair condition, is sited along the stream with spreading crowns. This group contains specimens with bifurcation at ground level, included unions and ivy-covered stems.
- T15 is a mature oak that had previously been a specimen tree but had lost half its mass due to the main stem splitting and the southern half being lost. Remaining tree has hollow trunk with historic evidence of fire within. Although this tree is no longer a significantly valuable individual specimen it still contributes in relation to views in or out of the Site.
- T16, a mature ash has a slightly unbalanced crown in good condition.
- T17 is a mature oak with a rounded canopy in good condition.
- T21 is a semi-mature oak on the bank of the stream that has collapsed to the north. Main stem has lifted bark, though is generally in a fair condition.
- T22, a young goat willow on the bank of the stream supports a supressed crown in a fair condition.
- T23, a young rowan, is bifurcated at its base on the bank of the stream, and is in good condition with a balanced crown.
- T24 is a semi-mature oak, supporting a balanced canopy. Has vertical crack from base to 1.5 m on the northern aspect, otherwise in a fair condition.
- T25, a mature ash, with a rounded canopy, and is in good condition.
- T26, a multi-stemmed alder in good condition with a rounded canopy, stands on the bank of the stream.

4.3.4 Environmental Condition

Given the Site's former agricultural use and the mature and semi-mature age of the majority of the trees, it is surmised that no damage to the root system of boundary and on-Site trees has been sustained through any recent on-Site working practices. The trees on-Site and immediately adjacent to the Site are in a relatively exposed position to the prevailing winds.

Groundwater conditions are not assessed to be a significant factor in present or future growth or health of trees since the generally gently sloping Site appears to be well drained and this situation will probably improve further following completion of any development.

4.3.5 Bat Roost Potential

A number of individual trees, T18, T20, T21, T24, and T25, and trees within TG12, TG14, and WG1, were found to have low BRP due to the presence of decay pockets, knot holes and ivy that can conceal or provide roosting opportunities. Furthermore, bat boxes were recorded on a number of trees within WG1. T15 supports cracks and rot holes and was assessed as having moderate BRP. Therefore, should any of the trees require pruning works, further survey should be undertaken by a licenced bat ecologist to ensure that the trees are not being

used by roosting bats before any works proceed. Any works to the trees should only be completed during the active bat season (April- October, inclusive).

4.4 Tree Schedule

Table 1 – BS 5837:2012 Tree Schedule

	Tree Species		Measurements				Crown (m)					Tree Condition							Management
Tree Number	Common Name	Latin Name	Maturity	Height (m)	Stems	Stem Diameter (mm)	Average Height	N	S	E	W	Roots	Stem	Crown	Comments	Structural	Life Expectancy (yrs)	Category	RPA (m)	Works
TG1	English elm Leyland cypress Cherry Goat willow Sycamore	*Ulmus procera* *x Cupressocyparis leylandii* *Prunus sp.* *Salix caprea* *Acer pseudoplatanus*	SM	AV 20	1	225	3	4	4	4	4	Unable to assess due to access	Single and multiple stems	Mutually sharefd canopy		F	>40	B	2.70	
TG2	Sycamore Goat willow Ash cherry	*Acer pseudoplatanus* *Salix caprea* *Fraxinus excelsior* *Prunus sp.*	SM	AV 20	1	Av 400	0	6	6	6	6	Exposed on bank	Single and multiple stems. Ivy clad.	Mutually shared canopy		F	>40	B	4.80	Selective thinning recommended
T3	Ash	*Fraxinus excelsior*	Y	8	1	200	0.5	3	3	3	3	No obvious signs of damage	Bifurcated at 4m with occluded wood. Vertical	Spreading		F	>40	B	2.40	
T4	Pedunculate oak	*Quercus robur*	M	20	1	1050	2	9	9	9	9	No obvious signs of damage	Single stem. Vertical	Spreading		F	>40	B	12.60	
TG 5	Ash Sycamore English elm Goat willow	*Fraxinus excelsior* *Acer pseudoplatanus* *Ulmus procera* *Salix caprea*	SM	AV 10	1	Av 200	1	3	3	3	3	No obvious signs of damage	Single and multiple stems	Mutually shared canopy Minor deadwood		F	>40	C	2.40	Selective thinning recommended
TG 6	Leyland cypress	*x Cupressocyparis leylandii*	SM	AV 15	1	Av 300	0	4	4	4	4	Unable to assess due to access	Single stem. Vertical	Reads as one		G	<20	C	3.60	
T 7	English elm	*Ulmus procera*	SM	14	1	Est 350	2	5	5	5	5	Unable to assess due to access	Single stem. Vertical	Suppressed to south. Scattered deadwood		G	<20	C	4.20	

T 8	Nordmann fir	*Abies nordmanniana*	Y	10	1	Est 200	1	3	3	3	3	Unable to assess due to access	Single stem. Vertical	Suppressed. Minor deadwood		F	>40	C	2.40	
T 9	Norway spruce	*Picea abies*	Y	14	1	Est 450	2	6	6	6	6	Unable to assess due to access	Single stem. Vertical	Suppressed. Minor deadwood. Rip outs to west		F	>40	C	5.40	
TG10	Silver birch Holly Sycamore	*Betula pendula Ilex aquifolium Acer pseudoplatanus*	SM	9	1	Est 250	0	3	3	3	3	Unable to assess due to access	Single stems. Vertical	Suppressed. Deadwood		F	>40	B	3.00	
TG11	Goat willow Silver birch	*Salix caprea Betula pendula*	SM	AV 18	1	Av 550	0	6	6	6	6	Unable to assess due to access	Single stem. Vertical	Dieback to east		F	>40	B	6.60	
TG12	Alder Rowan	*Alnus glutinosa Sorbus aucuparia*	SM/M	AV 16	1	Av 850	0	8	8	8	8	Exposed on bank	Single stems. Vertical.	Spreading	Number of trees ivy clad Low BRP	F	20-40	B	10.20	Selective thinning recommended
T13	Ash	*Fraxinus excelsior*	M	20	1	800	0	8	8	4	8	No obvious signs of damage	Single stem. Vertical.	Major limb loss on eastern aspect. Unbalanced.	Stem ivy clad	F	20-40	C	9.60	
TG14	Ash Cherry Alder	*Fraxinus excelsior Prunus sp. Alnus glutinosa*	M	AV 20	1	Av 750	1	7	7	7	7	No obvious signs of damage	Single and multiple stems	Spreading	Number of trees ivy clad Low BRP	F	20-40	B	9.00	Selective thinning recommended
T15	Pedunculate oak	*Quercus robur*	M	20	1	2700	3	12	12	4	12	No obvious signs of damage	Stem split in half to base.	Unbalanced with scattered deadwood	Remaining half of stem hollow with evidence of fire damage. Cracks and rot holes present. Moderate BRP.	P	20-40	B	15.00	Undertake
T16	Ash	*Fraxinus excelsior*	M	22	1	1200	0.5	12	8	12	12	No obvious signs of damage. Anchor roots visible extending from buttress	Single stem. Vertical	Slightly unbalanced. Scattered deadwood		G	20-40	A	14.40	
T17	Pedunculate oak	*Quercus robur*	EM	17	1	875	1	10	10	10	10	No obvious signs of damage	Single stem. Vertical	Rounded and balanced Scattered deadwood.	Good specimen tree, though significance in the landscape lessened by	G	20-40	A	10.50	

														its close proximity to surrounding woodland					
T18	Ash	*Fraxinus excelsior*	M	22	1	Est 1000	2	9	13	11	11	Unable to assess due to access	Single stem. Vertical	Spreading. Scattered deadwood	Decay on main stem to east. Knot hole present at 7 m. Low BRP	F	20-40	B	12.00	
T19	Sycamore	*Acer pseudoplatanus*	SM	17	3	Av 350	0	3	6	6	6	Unable to assess due to access	Single stem. Vertical	Unbalanced. Suppressed by T18		P	>40	B	7.80	
T20	Ash	*Fraxinus excelsior*	M	20	1	Est 800	1	7	10	8	9	Unable to assess due to access	Single stem. Vertical	Spreading. Minor deadwood	Minor deadwood. Knot hole at 5 m to east. Low BRP	F	>40	B	9.60	
T21	Pedunculate oak	Quercus robur	M	20	2	850	1	15	4	6	11	No obvious signs of damage	Leaning to south	Affected by extreme lean	Lifted bark Low BRP	F	20-40	C	10.20	
T22	Goat willow	*Salix caprea*	SM	16	1	450	2	6	4	6	6	No obvious signs of damage	Single stem. Vertical	Unbalanced. Suppressed by T25		F	>40	C	5.40	
T23	Rowan	*Sorbus aucuparia*	SM	9	2	150	1	3	3	3	3	No obvious signs of damage	Bifurcated at base	Balanced		G	>40	C	2.40	
T24	Pedunculate oak	*Quercus robur*	M	17	1	700	1	11	1	6	11	No obvious signs of damage	Bifurcated at 4m	Unbalanced	Cracks in stem. Low BRP	F	20-40	B	8.40	
T25	Ash	*Fraxinus excelsior*	M	20	1	1000	11	10	10	10	10	No obvious signs of damage	Single stem. Vertical. Vertical crack from base to 1.5m	Balanced	Vertical crack in stem from base to 1.5 m. Low BRP	G	20-40	C	12.00	
T26	Alder	*Alnus glutinosa*	Y	7	5	100	0	3	3	3	3	No obvious signs of damage	Single and multiple stems	Balanced		G	20-40	C	2.70	
WG1	Sycamore Pedunculate oak English elm Rowan	*Sorbus aucuparia*	SM	AV 20	1	Av 600	0	6	6	6	6	No obvious signs of damage	Single and multiple stems	Reads as one	Number of trees support bat boxes and features including rot holes Low BRP	F	>40	A	7.20	

Table 2 – Key to Tree Schedule

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

4.5 Hedgerows

A total of four hedgerows have been identified and assessed as part of the hedgerow survey. Whilst all the hedgerows were assessed against the Hedgerow Regulations (1997) criteria, none of the hedgerows supported the number of features required to meet the criteria for an Important Hedgerow.

4.5.1 Hedgerow H1

Hedgerow H1 (Photograph 24), was intact and species-rich, and defined a section of the western boundary of the Site. The hedgerow showed signs of recent management and had a height of 5 m and a maximum width of 4 m. Blackthorn *Prunus spinosa*, elder *Sambucus nigra*, hawthorn *Crataegus monogyna*, hazel *Corylus avellana* and cherry *Prunus* sp. were present, planted in a double staggered row with no dominant specie.

4.5.2 Hedgerow H2

Hedgerow H2 (Photograph 25), comprised a defunct species-poor hawthorn hedgerow with occasional elder present. It defined a section of the western boundary and separated adjacent residential gardens from the Site. The hedgerow showed recent signs of management and had an average height of 5 m and a maximum width of 4 m.

4.5.3 Hedgerow H3

Hedgerow H3 (Photograph 26), was intact and species-poor, with trees and outgrowths, and defined a section the eastern boundary of the Site. The hedgerow showed recent signs of management and comprised sycamore, hawthorn, hazel, elder and elm, with an understorey of bramble *Rubus fruticosus agg.* And the Schedule 9 (Wildlife and Countryside Act, 1981, as amended) invasive weed Himalayan balsam *Impatiens glandulifera.* It was unmanaged standing approximately 5 m high and 4 m wide.

4.5.4 Hedgerow H4

Hedgerow H4 (Photograph 27), located at the northern extent of the Site, defined the majority of the northern boundary of the Site. The hedgerow was species-poor and intact. The main body of the hedgerow was of a height of 8 m and maximum width of 4 m. It was unmanaged, containing hawthorn, ash, elm, and dog rose *Rosa canina*, with common nettle *Urtica dioica* and lords and ladies *Arum maculatum* beneath.

5.0 Tree Management

5.1 Arboricultural Assessment

Along the boundaries of the Site and either side of the stream and track that bisects the southern area of the Site east- west, are a number of tree groups and individual trees that could be impacted by any proposed development. It may be possible to retain and incorporate certain trees and tree groups currently present within the Site into the landscaping scheme of the proposals.

It appears no management has taken place to the trees present on-Site. The trees within tree groups along the stream and track would benefit from selective thinning, removing any trees with a risk of failure within the next 10 years, and this would improve the health and vitality of any remining trees on-Site To ensure that the root areas and canopy extremities of the individual trees and the tree groups that may be retained are not damaged, a Constraints Plan has been prepared to show the locations where protective fencing should be erected for any trees selected for retention (see Figure 3). Any tree surgery required is best carried out towards the conclusion of the development so that, if necessary, any known root damage can be corrected by the appropriate crown thinning to restore root /shoot balance.

Trees T15, T18, T20, T21, T24, T25 and a number of trees within TG12, TG14, and WG1, were found to support potential features suitable for roosting bats, whilst a number of trees within WG 1 supported bat boxes.

It is considered that the Site would benefit from native deciduous tree planting within the central section of the Site to provide additional amenity value.

It may be possible that sections of the boundary hedgerows at the Site can be retained and gapped up with further native woody species following the development, and incorporated into the landscaping of the Site, although management works may be required. The hedgerows at the Site were recorded to be a species-poor, with dominant hawthorn and blackthorn.

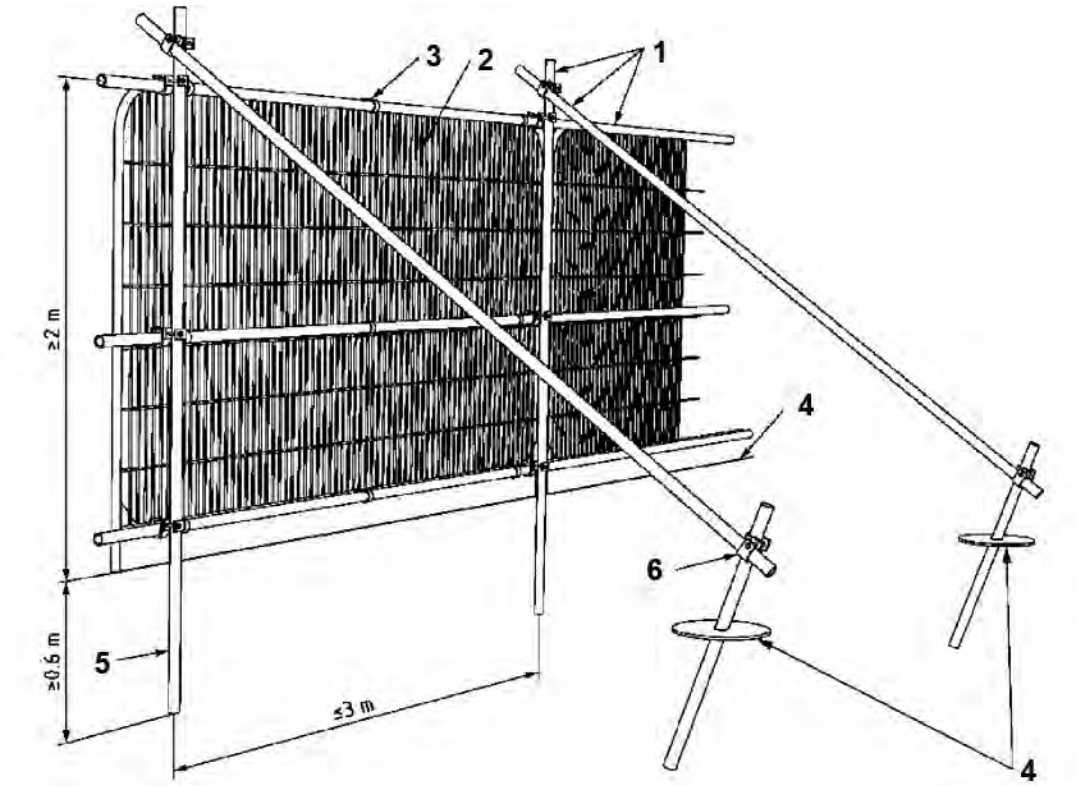
5.2 Recommendations

Recommendation 1 (Adequate Tree Protection)

Those trees identified within any development plan in proximity to the construction works will need to be adequately protected during any approved works. As a general rule, measures to protect trees should follow the best practice principles set out in BS5837: Trees in Relation to Design, Development and Construction (2012). Prior to any construction or development work proceeding, the RPAs of individual trees to be retained should be marked out using the distances provided in the Table 1. Marking out should be completed by a person with arboricultural or horticultural expertise as individual trees will have root zones that may be affected by local conditions and allowances would need to be made to accommodate this.

The best practice principles have been broadly summarised below:

- All trees retained adjacent to the Site should be protected by barriers or ground protection around the calculated RPA and as indicated on any Tree Constraints Plan (TCP) that may be produced in association with the assessment;
- Any fencing required should be erected prior to commencement of construction and before demolition including erection of any temporary structures. Once set up fences should not be removed or altered without prior consultation with the arboricultural advisor;
- Arrangements should be made for an arboriculturalist to supervise works and tree protection where trees are particularly vulnerable or sited close to access points;
- Pre-development works may be undertaken prior to the installation of fencing with the agreement of the local planning authority;



1. Standard scaffold poles
2. Heavy Guage 2m tall galvanised tube and weld mesh infill panels
3. Panels secured to uprights and cross members with wire ties
4. Ground Level
5. Uprights driven into ground until secure (up to 0.6m)
6. Standard scaffold clamps

- All tree works should follow best practice procedures as set out in BS 3998 (2010). All trees should be maintained in good condition on-Site and be inspected annually (where overall condition requires) or every two years and after any major storm events, with safety a priority;
- Fencing should be clearly visible and suitable for the location, type and proximity of construction activity;
- It may be appropriate on some sites to use temporary site offices as components of the protection barriers;
- Where it has been agreed and shown on a Tree Protection Plan, construction access may take place within the RPA if suitable ground protection measures are in place (e.g. existing surfaced car park areas). In other areas this may comprise single scaffold boards over a compressible layer laid onto geo-textile materials for pedestrian movements. Vehicular movements over the RPA will require the calculation of expected loading and may require the use of proprietary protection systems;
- Once areas around trees have been protected by fencing, any works on the remaining Site area may be commenced providing activities do not impinge on protected areas. Notices should be placed on fencing to indicate that operations are not permitted within the fenced area;
- Wide or tall loads etc should not come into contact with retained trees. Banksman should supervise transit of vehicles, jibs, booms etc where this is in close proximity to retained trees;
- Oil, bitumen, cement or other material that is potentially injurious to trees should not be stacked or discharged within 10 m of a tree bole. No concrete mixing should be done within 10 m of a tree. Allowance should be made for the slope of ground to prevent materials running towards the tree;

- No fires should be lit where flames are anticipated to extend to within 5 m of tree foliage, branches or trunk, taking into consideration wind direction and size of fire;
- Notice boards, telephone cables or other services should not be attached to any part of a retained tree;
- Where it is deemed necessary to operate a wide or tall load, plant bearing booms, jibs and counterweights or other such equipment, as part of construction works, and such equipment would have potential to cause injurious contact with crown material i.e. low branches and limbs, of retained trees within the RPA fencing, it is best advised that appropriate, but limited, tree surgery be carried out beforehand to remove any obvious problem branches. This is classed as 'Facilitation Pruning' within BS 5837 (2012). Any such pruning should be undertaken in accordance with a specification prepared by an arboriculturalist;
- It is advised that a Pre-Commencement Site Meeting is held with contractors who are responsible for operating machinery, as described above, to firstly highlight the potential for damage occurring to tree crowns and to ensure that extra care is applied when manoeuvring machinery during such operations within close proximity to retained trees to avoid any contact;
- In the event of having caused any such branch or limb damage to retained trees it is strongly recommended that suitable tree surgery be carried out, in accordance with BS 3998 (2010) Recommendations for Tree Work, to correct the damage, upon completion of development; and
- All of the above precautionary measures should be applied to minimise the effect of any damage to long-term tree health and safety.

Recommendation 2 (Bats)

Low BRP Trees – A number of trees within TG12, TG14, and WG1, and T18, T20, T21, T24 and T25

- Any proposed felling or management works to the trees assessed as having low BRP should be completed under a method statement which could include a single dawn survey completed during the active bat season (April-October, inclusive) on the morning prior to the works being undertaken; or
- Alternatively, a licenced bat ecologist trained to use specialist tree climbing equipment could undertake a thorough inspection of the potential roost features immediately prior to works commencing.

Moderate BRP Tree – T15

- Moderate BRP trees will require two nocturnal bat surveys to establish the presence or likely absence of any roosts, and to inform the requirement for additional surveys or any mitigation, should a roost be present; and

The surveys must be spaced at least two weeks apart and be undertaken during the peak active bat season (May-August, inclusive).

6.0 Disclaimer

The recommendations contained in this Report represent Delta-Simons' professional opinions, based upon the information referred to in Sections 1.0 and 3.0 of this Report, exercising the duty of care required of an experienced Environmental Consultant.

This Report was prepared by Delta-Simons for the sole and exclusive use of the Client and for the specific purpose for which Delta-Simons was instructed as defined in Section 1.1 of this Report. Nothing contained in this Report shall be construed to give any rights or benefits to anyone other than the Client and Delta-Simons, and all duties and responsibilities undertaken are for the sole and exclusive benefit of the Client and not for the benefit of any other party. In particular, Delta-Simons does not intend, without its written consent, for this Report to be disseminated to anyone other than the Client or to be used or relied upon by anyone other than the Client. Use of the Report by any other person is unauthorised and such use is at the sole risk of the user. Anyone using or relying upon this Report, other than the Client, agrees by virtue of its use to indemnify and hold harmless Delta-Simons from and against all claims, losses and damages (of whatsoever nature and howsoever or whensoever arising), arising out of or resulting from the performance of the work by the Consultant.

Figure 1 – Site Location Map

Scale: 1 / 500,000 @ A4

LEGEND

Site Boundary

Scale: 1 / 10,000 @ A4

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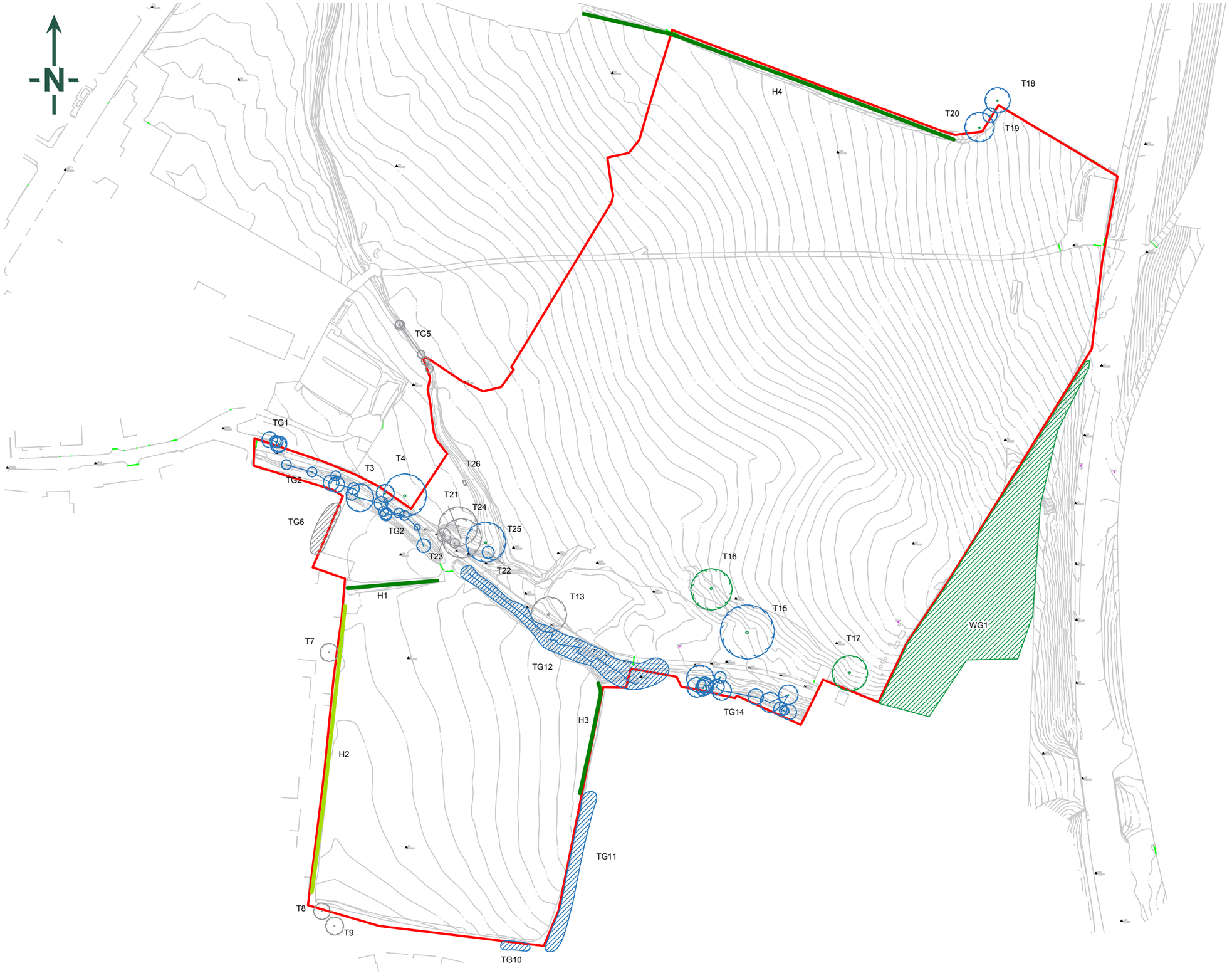
TITLE:
Site Location Map
Clitheroe Road
Whalley

DRAWN BY: JR	SCALE: To Scale@A4
CHECKED BY: PM	REVISION: 1
DATE: 15 August 2018	

PROJECT NO: 18-0886.01

FIGURE NO: 1

Figure 2 – Tree Survey



Site Plan Provided by Client

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Environment - Health & Safety - Sustainability

TITLE:
Tree Survey
Clitheroe Road
Whalley

DRAWN BY:	SCALE:	PROJECT NO:
JR	Not to Scale	18-0886.01
CHECKED BY:	REVISION:	FIGURE NO:
PM	1	2
DATE:		
16 August 2018		

Figure 3 – Proposed Development Plan

0 25 50 75m

COM REGULATIONS 2015 All current drawings and specifications for the project must be read in conjunction with the Designer's Hazard and Environment Assessment Record. All intellectual property rights reserved

Rev	Date	Description
/	16/02/18	First Issue
A	19/06/18	Second Issue

Dwn	Chd
JK	GL
KF	JM

Drawn	KF
Checked	JM
Date	JUN 2018
Scale @ A1	1:1000

CLITHEROE ROAD, WHALLEY

Proposed Site Layout

AA7403 1002
REV A

INFORMATION

PRP

Site Plan Provided by Client

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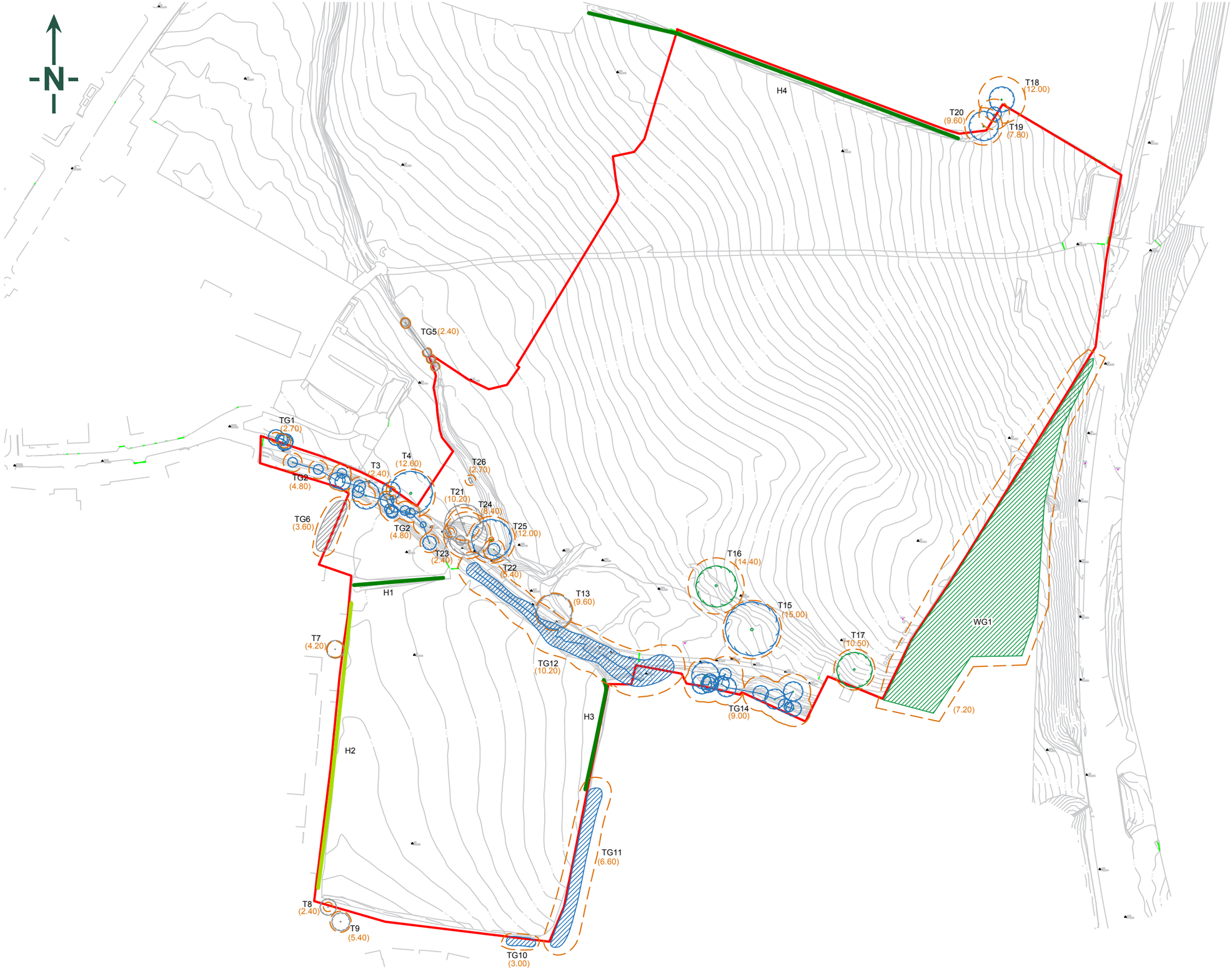
TITLE:
Proposed Development Plan
Clitheroe Road
Whalley

DRAWN BY: JR	SCALE: Not to Scale
CHECKED BY: PM	REVISION: 1
DATE: 15 August 2018	

PROJECT NO: 18-0886.01

FIGURE NO: 3

Figure 4 -Tree Constraints Plan



Site Plan Provided by Client

deltasimons
Environment - Health & Safety - Sustainability

TITLE:
Tree Constraints Plan
Clitheroe Road
Whalley

DRAWN BY: JR	SCALE: Not to Scale	PROJECT NO: 18-0886.01
CHECKED BY: PM	REVISION: 1	FIGURE NO: 4
DATE: 17 August 2018		

Appendix A – References

References

Collins, J. (ed.) (2016) Bat surveys for Professional Ecologists: Good practice guidelines (3rd edition). The Bat Conservation Trust, London.

Stace, C. (2010). *New Flora of the British Isles 3rd edition*. University Press, Cambridge.

BSI Publication BS 5837:2012 Trees in Relation to Design, Demolition and Construction – Recommendations.

BSI Publication BS 5837:2005 Trees in Relation to Construction - Recommendations.

The Hedgerow Regulations 1997, HMSO

Appendix B – Guidance on Assessing the Potential Suitability of Development Sites to Support Bats

Guidance on Assessing the Potential Suitability of Development Sites to Support Bats

(adapted from Collins, J. (ed)).

Suitability	Description	
	Roosting	**Commuting and Foraging**
Negligible	An inspected structure or tree which is considered to have no features of importance for roosting bats. No further constraints apply to the method or timing of proposed works.	Negligible habitat features on-Site to support commuting or foraging bats
Low	A structure with at least one or more features suitable to support opportunistic individual bats. However, inadequate space, shelter, protection and conditions, and the low suitability of surrounding habitats means that it is unlikely to be used as a maternity or hibernation roost site. A tree of adequate age and stature to support potential roosting features, however, either no features, or only features of limited potential recorded from the ground.	Habitat with potential to support low numbers of commuting bats due to its quality and connectivity. For example, a gappy hedgerow or unvegetated stream that is isolated from the surrounding landscape. Alternatively, suitable but isolated habitats suitable to support low numbers of foraging bats such as a lone tree or a patch of scrub.
Moderate	A structure or tree with one or more potential roost sites that are of adequate size, shelter and protection, with suitable conditions and surrounding habitat to support a bat roost not of high conservation status (with respect to roost type not individual species conservation status).	Linear habitat continuity connecting to the wider landscape offering potential to support commuting bats, such as rows of trees and scrub or linked back gardens. Habitat such as trees, scrub, grassland or a waterbody with connectivity to the wider landscape offering foraging opportunities for bats.
High	A structure or tree with one or more potential roost sites that are suitable for use by large numbers of bats on a regular basis and for long periods of time due to their size, shelter, protection, conditions and the surrounding habitat.	Continuous high-quality habitat with strong connectivity to the wider landscape that is likely to be used by commuting bats on a regular basis, such as flowing waterbodies, hedgerows, rows of trees and woodland edges. High quality habitat with strong connectivity to the wider landscape that is likely to be regularly used by foraging bats, such as broadleaved woodland, tree-lined watercourses and grazed parkland. Site is close to, and connected to, known roost sites

Appendix C – Photographs

Photograph 1 – Tree Group (TG)1

Photograph 2 – TG2

Photograph 3 – Tree (T)3

Photograph 4 – T4

Photograph 5 – TG5

Photograph 6 – TG6

Photograph 7 – T7

Photograph 8 – T8 & T9

Photograph 9 – TG10

Photograph 10 – TG11

Photograph 11 – TG12

Photograph 12 – T13

Photograph 13 – TG14

Photograph 14 – T15

Photograph 15 – T16

Photograph 16 – T17

Photograph 17 – Woodland Group (WG)1

Photograph 18 – T18 & T19