



BS 5837:2012 Arboricultural Survey

Oldlands Farm, Newlands Road, Bognor Regis PO22 6NN

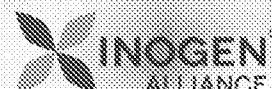
Presented to Lysander Associates

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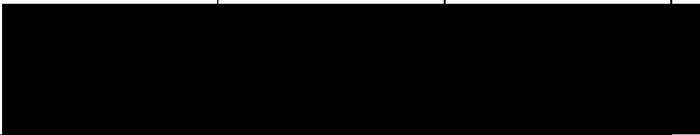
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Report Details

Client	Lysander Associates
Report Title	BS 5837:2012 Arboricultural Survey
Site Address	Oldlands Farm, Newlands Road, Bognor Regis PO22 6NN
Project No.	21-1543.05
Delta-Simons Contact	Charlotte Sanderson-Lewis 

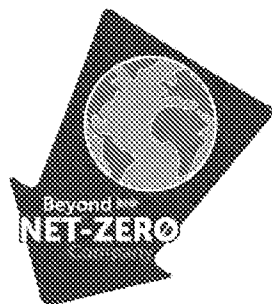
Quality Assurance

Issue No.	Status	Issue Date	Comments	Author	Technical Review	Authorised
3	Final	21 st May 2021	Red line boundary change			
				Simon Putt Arboricultural Consultant	Charlotte Sanderson-Lewis Associate and Ecology Team Leader	Charlotte Sanderson-Lewis Associate and Ecology Team Leader

About us

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Specialising in Environment, Health & Safety and Sustainability, Delta-Simons provide support and advice within the property development, asset management, corporate and industrial markets. Operating from across the UK we employ over 120 environmental professionals, bringing experience from across the private consultancy and public sector markets.



Delta-Simons is proud to be a founder member of the Inogen Environmental Alliance, enabling us to efficiently deliver customer projects worldwide by calling upon over 5000 resources in our global network of consultants, each committed to providing superior EH&S and sustainability consulting expertise to our customers. Inogen Environmental Alliance offers its clients more consultants, with more services in more countries than the traditional multinational consultancy.

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Executive Summary

Purpose	Delta-Simons Environmental Consultants Ltd was instructed by Lysander Associates ('the Client'), to undertake a Tree Survey to BS 5837:2012 standard of an area of land at Oldlands Farm, off Newlands Road, to the north of Bognor Regis in West Sussex ('the Site'). The survey was undertaken on the 18 th March 2021. The survey was undertaken to inform a planning application for the Site.
Current Site Status	The southern parcel of the Site is characterised by predominantly poor semi-improved grassland bisected and / or bounded by lengths of drainage ditches, fencing and hedgerow. In the northern extent of the Site was an area of bare ground, whilst scattered trees were found in the western area of the central field. At the south-western extent of the Site was an area of standing water, whilst scattered scrub ran inside the eastern boundary fence. A large expanse of land set to arable comprised the majority of the parcel of land to the north of the A259. In the western extent of this parcel, a poor semi-improved grassland field margin ran inside the boundary.
Proposed Development	It is understood that the proposed development will comprise the erection of a warehouse (Use Class B8) with ancillary office, associated vehicle parking, van storage, plant, ancillary structures, lighting, landscaping, and infrastructure works, including earthworks to facilitate a flood compensation area.
Results	A total of seven trees and two tree groups were identified and assessed as part of the Tree Survey. The results of the desk search undertaken on Arun District Council's website on the 22nd March 2021, indicates that tree's T001,002,003,004 and 005 within the Site are covered by a TPO (Ref TPO/BE/2/19). T001 to 007 and G006 were assessed as having Bat Roost Potential (BRP).
Recommendations	<u>Recommendation 1 (Adequate Tree Protection)</u> Those trees identified within the proposed development plan for retention will need to be adequately protected during any approved development 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 (RPAs) of individual trees to be retained should be marked out. Marking out should be completed by a competent person with arboricultural expertise. All trees retained on-Site and adjacent to the Site 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 survey. <u>Recommendation 2 (BRP Trees)</u> <u>High and Moderate Potential</u> ⚡ Should any works be required to Trees (T)002 and 003, assessed to have high BRP, and T004 and T005, with moderate BRP, they will require three or two nocturnal survey visits, respectively, 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). <u>Low Potential</u> ⚡ Any proposed felling or management works to T001 or G006 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; and ⚡ 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.
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This Tree 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 Lysander Associates (the 'Client') to undertake an Arboricultural Survey to BS 5837:2012 standard. The survey was undertaken of land off land at Oldlands Farm, on Newlands Road, to the north of Bognor Regis within the county of West Sussex (hereafter referred to as 'the Site'). The survey was undertaken on 18th March 2021, and updated on the 27th April 2021. The Site location and the area surveyed are shown in Figure 1. The survey was undertaken in order to inform a planning application at the Site.

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.

1.2 Site Description

The Site is centred at Ordnance Survey (OS) grid reference SU 94547 01837, to the north of Bognor Regis in West Sussex. The wider Site covers an area of 18.87 hectares (ha), of which the southern parcel comprises 7.00 ha, and is characterised by predominantly poor semi-improved grassland bisected and / or bounded by lengths of drainage ditches, fencing and hedgerow. In the northern extent of the Site was an area of bare ground, whilst scattered trees were found in the western area of the central field. At the south-western extent of the Site was an area of standing water, whilst scattered scrub ran inside the eastern boundary fence. A large expanse of land set to arable comprised the majority of the parcel of land to the north of the A259. In the western extent of this parcel, a poor semi-improved grassland field margin ran inside the boundary. This parcel covers an area of 11.87 ha.

The Site layout is shown in Figures 2a and 2b.

1.3 Proposed Development

It is understood from the drawing provided by the Client that the proposed development comprises the erection of a warehouse (Use Class B8) with ancillary office, associated vehicle parking, van storage, plant, ancillary structures, lighting, landscaping, and infrastructure works, including earthworks to facilitate a flood compensation area.

2.0 Legislation

2.1 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 weeks 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.

Trees in a conservation area that are already protected by a TPO are subject to the normal procedures and controls for any tree covered by such an Order.

Trees in a conservation area that are not protected by a TPO are protected by the provision in Section 211 of The Town and Country Planning Act (1990). These provisions require people to notify the LPA, using a 'section 211 notice', six weeks before carrying out certain works on such trees, unless an exception applies. The works may go ahead before the end of the six-week period if the LPA gives consent. This notice period gives the Authority an opportunity to consider whether to make an Order on the tree.

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:

- 🌳 The health, vigour and condition of each tree;
- 🌳 The presence of any structural defects in each tree and its life expectancy;
- 🌳 The size and form of each tree and its suitability within the context of the proposed scheme; and
- 🌳 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 as that recommended by the Bat Conservation Trust (BCT), see Collins J. (ed) (2016) in references (Appendix A). Each tree of significant size assessed within this survey has also been assessed for the potential to provide roosts for bats and the table in Appendix B includes reference to this.

3.3 Tree Plans and Tree Schedules

The extent and positions of significant individual trees or groups of trees close to the Site are shown on the Arboricultural Survey Plans (Figures 2a and 2b). The Root Protection Areas (RPA) of the key trees of value identified for, or recommended for retention have been marked within the Constraints Plan (Figures 3a and 3b) 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 the Tree Assessment Report detailing information on each group of trees. This is also provided 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.

$$\text{RPA (m}^2\text{)} = (\text{stem diameter (mm)} \times 12 / 1000)^2 \times 3.142$$

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 Limitations to the Survey

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

4.0 Results

4.1 Data Search

The results of the desk search undertaken on Arun District Council's website ([Cadcorp SiS WebMap 9](#)) on the 22nd March 2021, indicate that trees T001,002,003,004 and 005 within the proposed development Site are covered by a TPO ref TPO/BE/2/19.

4.2 Survey Details

The tree inspection took the form of a walkover inspection completed by Simon Putt on the 18th March 2021, and by Max Burch on the 27th April 2021. Each individual 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 noted and identified within this Report and are shown in the Tree Survey Plan within Figures 2a and 2b, and within the Photograph Section of this Report (Appendix C).

4.3 Mature Trees

A total of seven trees (T) and two tree groups (G) have been identified and assessed as part of the tree survey. Trees outside of the Site boundaries were included where it was felt that they may encroach over time.

4.3.1 Species and their Arrangement in the Landscape

The dominant tree species on Site is common oak *Quercus robur* growing as four individual specimens in the southern parcel, whilst, T005, a willow *Salix* spp. situated at the northern end of this row, has been pollarded to a height of 1.2 m with signs of new growth present. Tree group G006 is a low-value group primarily consisting of goat willow *Salix caprea*, which falls immediately off-Site to the east of the northern parcel of land close to a dry ditch. Trees and groups numbered T013 and G011 are located at a distance beyond the red line boundary of the Site. They are growing within an area that has not been included within previous field management.

4.3.2 Height and Significance in the Landscape

The five oak trees all range in height from 14-15 m and can be viewed from the adjacent A259. While the oak, T2, has the largest canopy spread which reaches 11 m in a northerly direction, these trees are placed within Category 'A' and 'B' (see Table 1). Tree group G006 outside the northern parcel of the Site is a low value linear feature which is not visible within the wider landscape, along with G011, off-Site. Tree 005 is placed within Category 'U'. The individual tree T007 is a low-lying moderate value oak tree growing at the southern end of G006.

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

4.3.3 Age and Condition

The trees present within the Site are primarily mature. None of the trees within the Site boundary show signs of past management. Trees T002, T003 and T007 are in an overall good condition, while T001 and T004 have symptoms of ill health which would put them overall in fair condition. The coppiced T005 is a stump which has been cut at ground level recently and is on an overall poor condition.

Tree group G006, immediately off-Site, is a mature unmanaged group of trees in a fair condition due to its species characteristics.

4.3.4 Environmental Condition

The Site has been under agricultural use with evidence of farm machinery tracking in and around all trees within the boundary lines. There are also ditches present to the south of T1 and to the north-west of Trees 002, 003, 004 and 005 in the southern parcel, and to the north-west of Trees 007 and G006 outside the northern parcel. The ditches in the southern parcel both contained water on the day of inspection and have been considered a barrier to significant root development. The ditch in the northern parcel was dry.

4.4 Tree Schedule

Table 1 – BS 5837:2012 Tree Schedule

Ref	Species	Measurements	Physiological Cond	Structural Cond	General Observations	Retention Category	RPA
T001	Pedunculate Oak (<i>Quercus robur</i>)	Height (m): 14 Stem Diam (mm): 1150 Spread (m): 3N, 7E, 8S, 5W Crown Clearance (m): 4 Lowest Branch (m): 3(N) Life Stage: Mature Rem. Contrib.: 20+ Years	Fair	Fair	Thinning canopy to South. Water filled ditch to South.	B1,2,3	Radius: 13.3m Area: 558 sq m.
T002	Pedunculate Oak (<i>Quercus robur</i>)	Height (m): 15 Stem Diam (mm): 1600 Spread (m): 11N, 10E, 8S, 8W Crown Clearance (m): 3 Lowest Branch (m): 4(S) Life Stage: Mature Rem. Contrib.: 40+ Years	Good	Fair	Structures feature on southern side of northern primary branch at 3m above ground level - not significant.	A1,2,3	Radius: 15.5m Area: 767 sq m.
T003	Pedunculate Oak (<i>Quercus robur</i>)	Height (m): 14 Spread (m): 6N, 8E, 8S, 6W Crown Clearance (m): 2 Lowest Branch (m): 3(E) Life Stage: Mature Rem. Contrib.: 40+ Years	Good	Fair		A1,2,3	Radius: 6.8m Area: 137 sq m.
T004	Pedunculate Oak (<i>Quercus robur</i>)	Height (m): 14 Spread (m): 3N, 8E, 4S, 6W Crown Clearance (m): 2 Lowest Branch (m): 3(N) Life Stage: Mature Rem. Contrib.: 20+ Years	Fair	Fair	Die back to upper canopy - major deadwood visible	B1,2,3	Radius: 7.2m Area: 163 sq m.
T005	Weeping Willow (<i>Salix Babingtonia</i>)	Height (m): 3 Stem Diam (mm): 800 Spread (m): 1N, 1E, 1S, 1W Crown Clearance (m): 1 Lowest Branch (m): 1(N) Life Stage: Mature Rem. Contrib.: 10 Years	Fair	Fair	Coppice stump - severed at ground level so should die back in the short term.	U	None - due to retention category of U.
G006	Goat willow (<i>Salix caprea</i>), Ash (<i>Fraxinus excelsior</i>), Elder (<i>Sambucus nigra</i>)	Height (m): 8 Stem Diam (mm): 150 Spread (m): 3N, 3E, 3S, 3W Crown Clearance (m): 0.5 Lowest Branch (m): 0.5(N) Life Stage: Mature Rem. Contrib.: 10+ Years	Fair	Fair	Row of unmanaged trees	C2	Radius: 15m Area: 706.95 sq m.

Ref	Species	Measurements	Physiological Cond	Structural Cond	General Observations	Retention Category	RPA
T007	Pedunculate Oak (<i>Quercus robur</i>)	Height (m): 10 Stem Diam (mm): 550 Spread (m): 7N, 5E, 4S, 5W Crown Clearance (m): 2 Lowest Branch (m): 2(N) Life Stage: Mature Rem. Contrib.: 30+ Years	Good	Fair	Ivy clad main stem - potential open grown specimen tree	B1	Radius: 6.6m Area: 136.87 sq.m.
G011	Hawthorn (<i>Crataegus monogyna</i>), Elder (<i>Sambucus nigra</i>), Oak (<i>Quercus robur</i>)	Height (m): 7 Stem Diam (mm): 250 Spread (m): 2N, 2E, 2S, 2W Crown Clearance (m): 0m Lowest Branch (m): 0(N) Life Stage: Mature Rem. Contrib.: 10+ Years	Good	Fair	Scrub layer consisting of bramble & sporadic small tree species. Single Oak located centrally within group.	C2	Radius: 3 Area: 28 sq.m.
T013	Ash (<i>Fraxinus excelsior</i>)	Height (m): 10 Stem Diam (mm): 200 Spread (m): 3N, 3E, 3S, 3W Crown Clearance (m): 5m Lowest Branch (m): 0(N) Life Stage: Early mature Rem. Contrib.: 10+ Years	Good	Fair	Multi stemmed tree	C1	Radius: 10.2 Area: 327 sq.m.

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)	V - Veteran 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.	
RPA = Root Protection Area (equivalent to a circle with a radius 12 x the stem diameter for single stem trees and 10 x the basal diameter for trees with more than one stem arising below 1.5m above ground level).				

5.0 Tree Management

5.1 Arboricultural Assessment

On-Site, there are a number of individual trees that could be impacted by any proposed development. It may be possible to retain and incorporate the trees currently present within this southern parcel of the Site into the landscaping scheme of the proposals as mature features.

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 Figures 3a and 3b). 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.

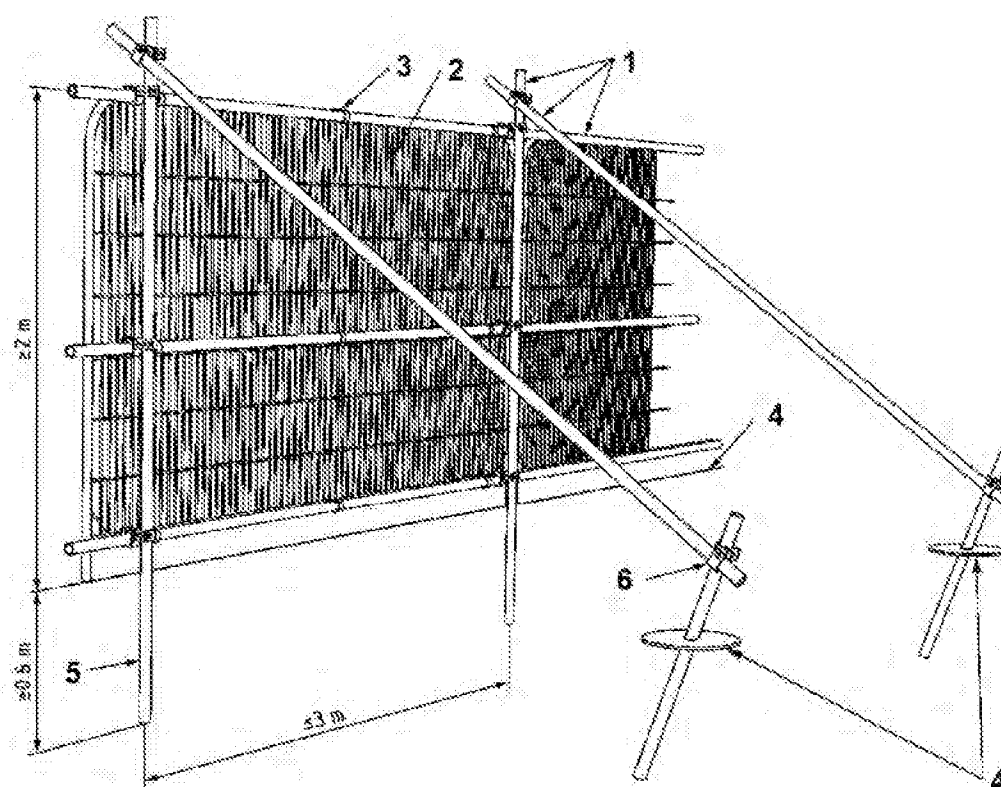
5.2 Recommendations

Recommendation 1 (Adequate Tree Protection)

Those trees identified within any development plan for retention will need to be adequately protected during any approved development works. As a general rule at this Site, 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 arboriculturist 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 Gauge 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 arboriculturist;
- ⚠ 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.

High and Moderate Potential

- ⚠ Should any works be required to Trees (T)002 and 003, assessed to have high BRP, and T004 and T005, with moderate BRP, they will require three or two nocturnal survey visits, respectively, 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).

Low Potential

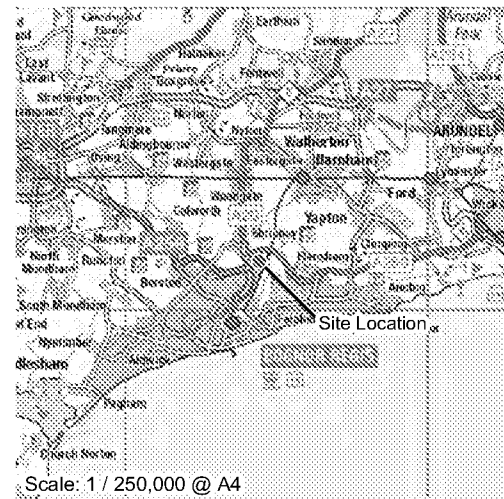
- ⚠ Any proposed felling or management works to T001 or G006 should be completed under a method statement which could include a single dawn survey completed during the active bat season (April-October, inclusive) on the morning prior to the works being undertaken; or alternatively; and
- ⚠ A licenced bat ecologist trained to use specialist tree climbing equipment could undertake a thorough inspection of the potential roost features immediately prior to works commencing.

6.0 Limitations of the Tree Survey

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

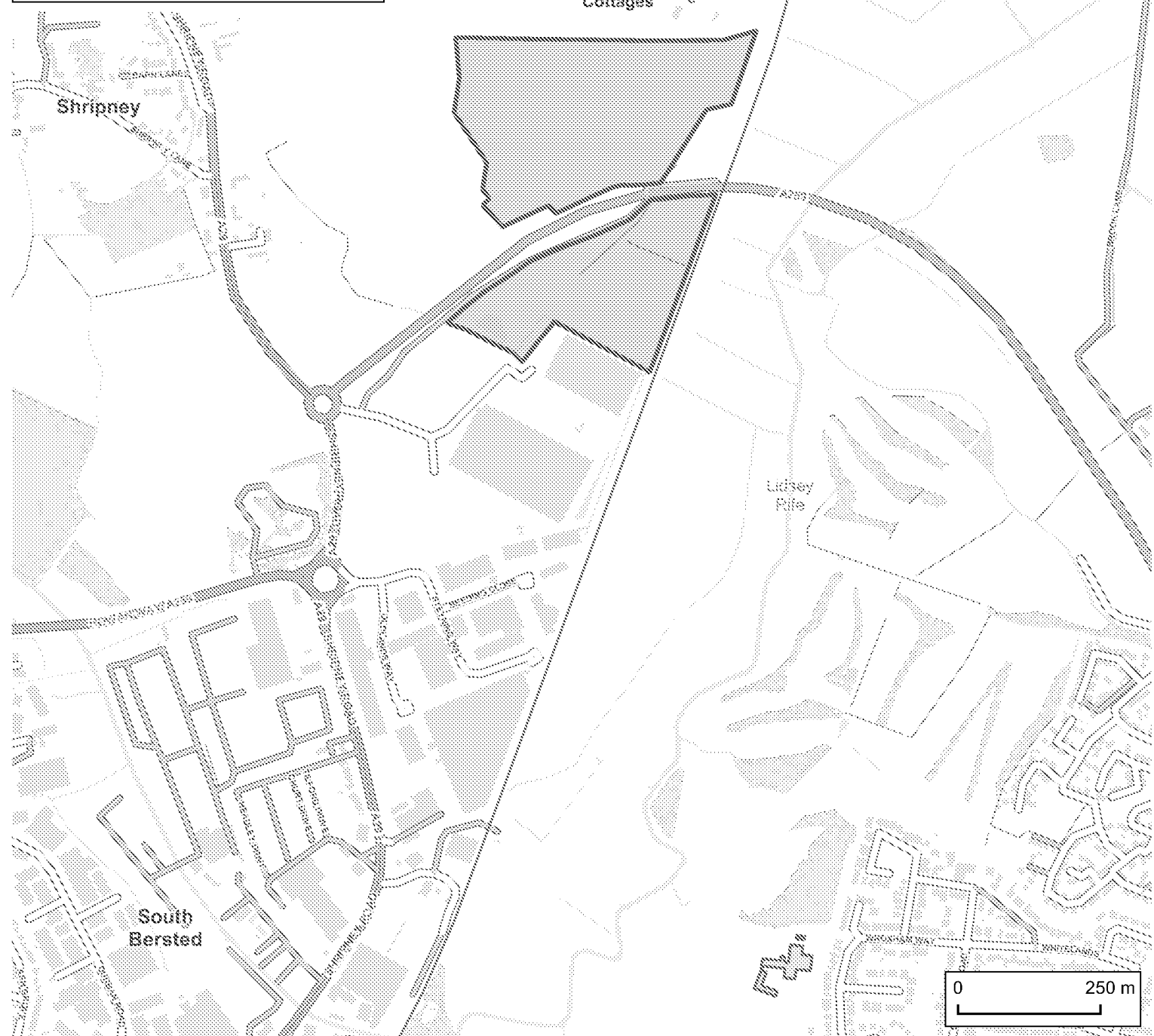
This Report was prepared by Delta-Simons for the sole and exclusive use of the Client and for the specific purpose for which Delta-Simons was instructed as defined in Section 1.1 of this Report. Nothing contained in this Report shall be construed to give any rights or benefits to anyone other than the 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



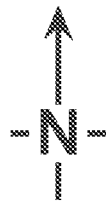
LEGEND

 Site Boundary



Service Layer Credits: Contains OS data @ Crown Copyright and Database Right 2019

Figures 2a-b – Tree Survey



LEGEND

Site Boundary

Tx/TGx

Category A: High value
retention most desirable

Tx/TGx

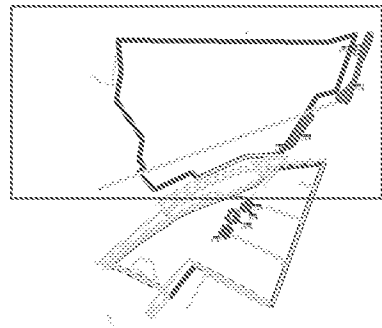
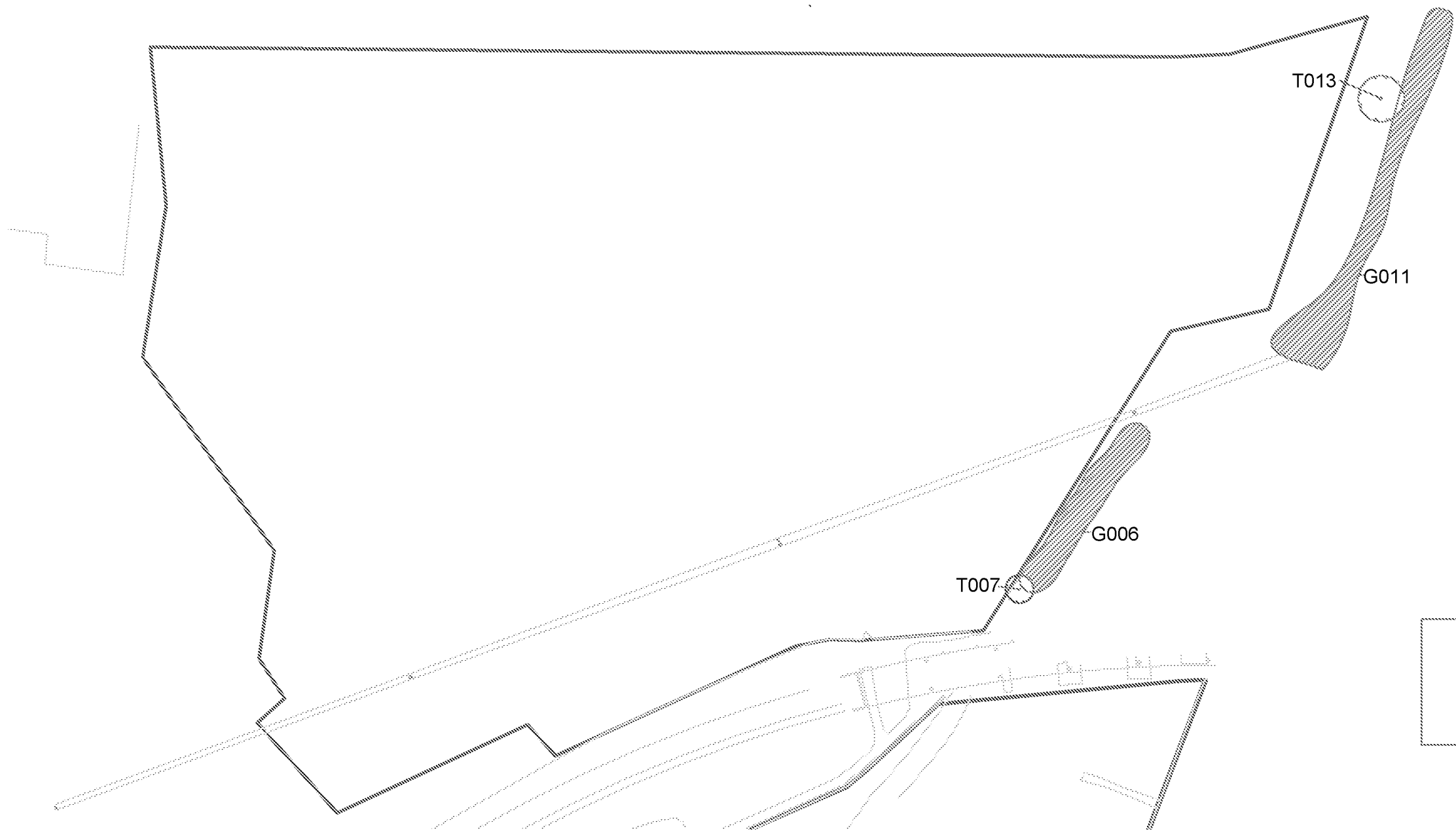
Category B: Moderate value
retention desirable

Tx/TGx

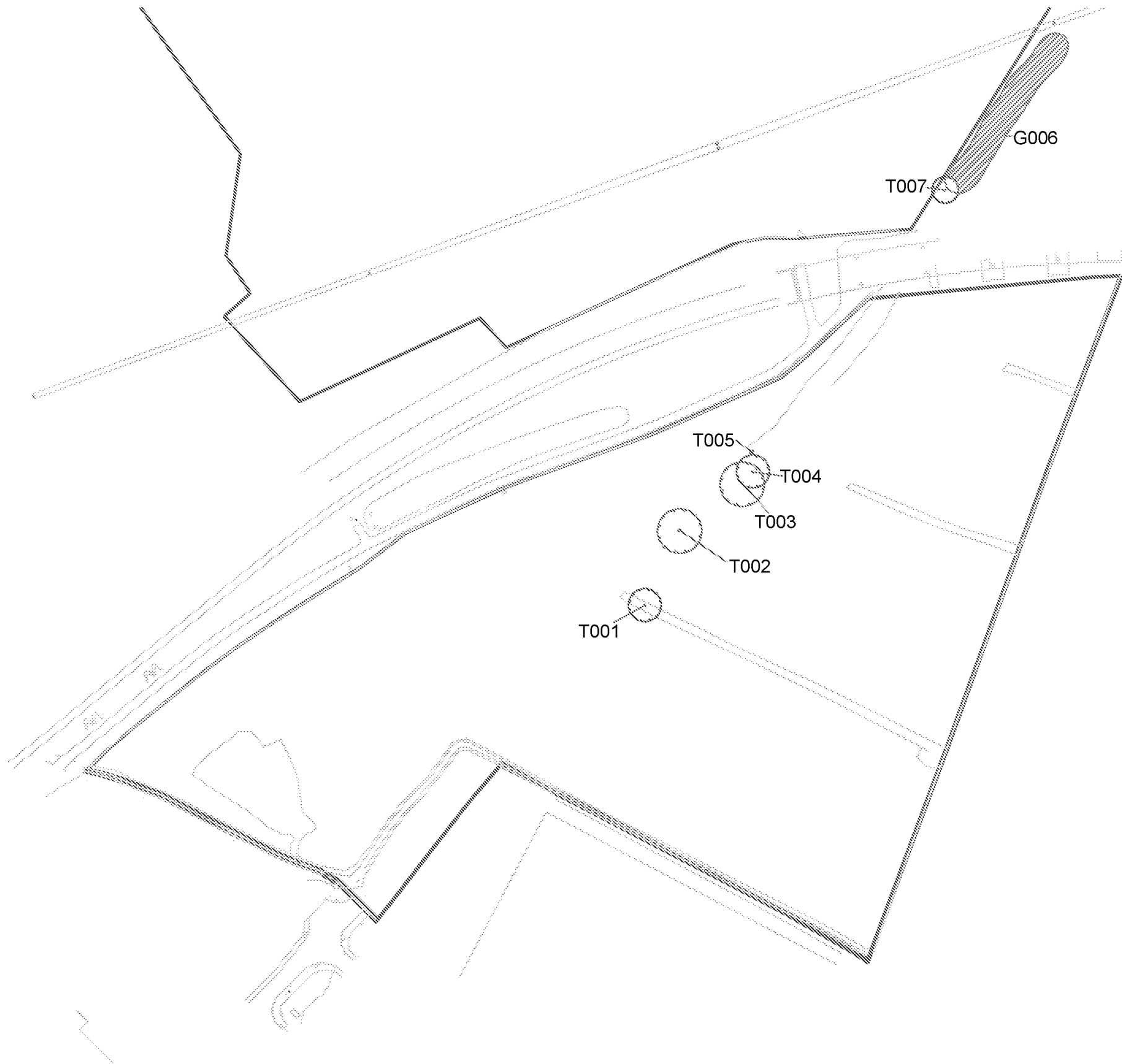
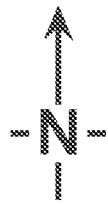
Category C: Lower value
could be retained

Tx/TGx

Category U: For removal



Site Plan Provided by Client



LEGEND

Site Boundary

Tx/TGx

Category A: High value
retention most desirable

Tx/TGx

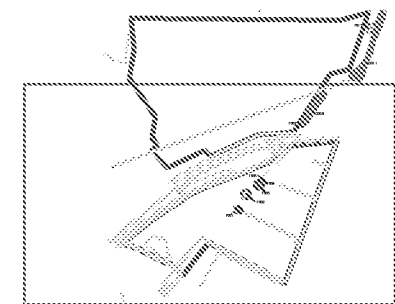
Category B: Moderate value
retention desirable

Tx/TGx

Category C: Lower value
could be retained

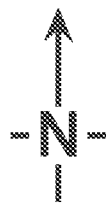
Tx/TGx

Category U: For removal

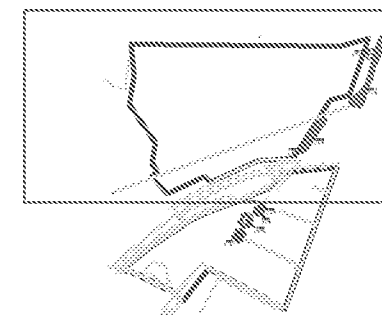


Site Plan Provided by Client

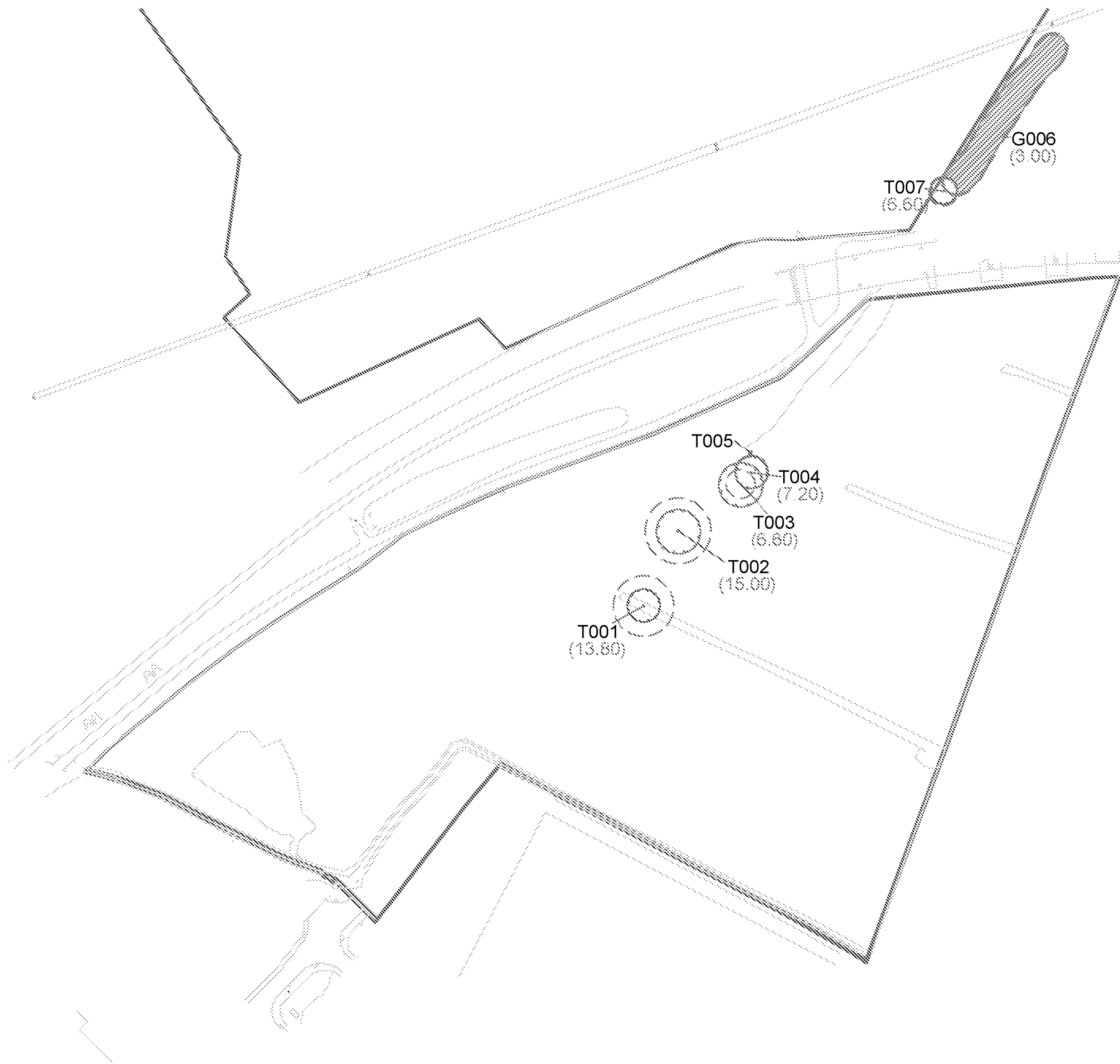
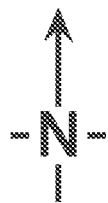
Figures 3a-b – Tree Constraints Plan



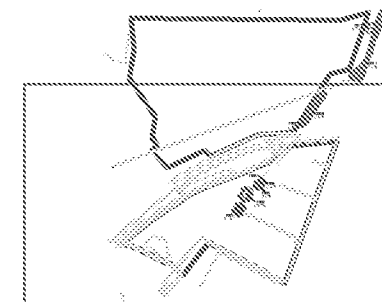
LEGEND	
	Site Boundary
Tx/TGx	Category A: High value retention most desirable
Tx/TGx	Category B: Moderate value retention desirable
Tx/TGx	Category C: Lower value could be retained
Tx/TGx	Category U: For removal
	RPA: Root Protection Area



Site Plan Provided by Client



LEGEND	
	Site Boundary
	Category A: High value retention most desirable
	Category B: Moderate value retention desirable
	Category C: Lower value could be retained
	Category U: For removal
	RPA: Root Protection Area



Site Plan Provided by Client

Appendix A – References

References

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.

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

Appendix B – Site Photographs

Site Photographs



Photograph 1 – Oak T001 growing adjacent to a ditch on-Site in the southern parcel



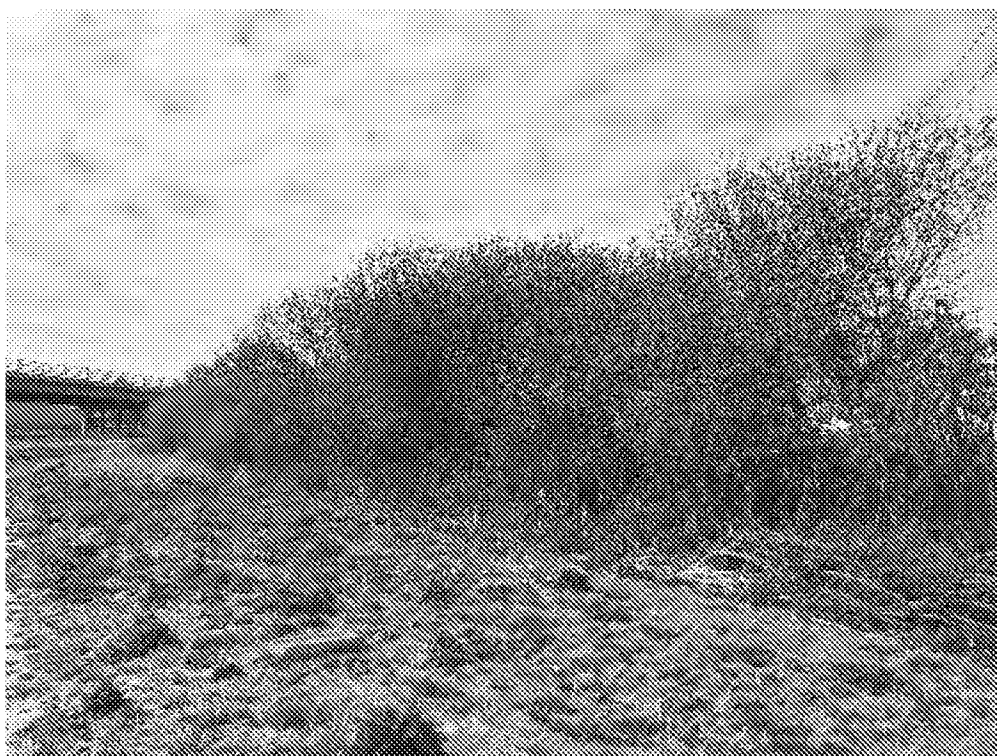
Photograph 2 – Oak T002 on-Site in the southern parcel



Photograph 3 – The four oak trees in the southern parcel with trees T003 and T004 identified with a red arrow



Photograph 4 – Remains of a willow stump (T005) which has been pollarded at 50 mm above ground level in the southern parcel.



Photograph 5 – Tree Group G006 in the northern parcel.



Photograph 6 – Current condition of T007 in the northern parcel.