

Arboricultural report for the erection of front gates

Reference GRS.3.23

Site: Parapet House, Maidstone Road, Lenham, Kent

Client: Mr Beckett

Local Planning Authority: Maidstone Borough Council



DATE OF REPORT 6TH JANUARY 2024

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1. PURPOSE OF REPORT

- 1.1 To follow the core objectives to prepare a concept design including outline proposals for structural design following the guidance set out in BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations (BS).
- 1.2 By following the principles set out in the BS will ensure there is a sustainable relationship between the built form and the tree stock, and therefore allowing the retained trees to continue to grow and contribute to the character of the local landscape.
- 1.3 Feasibility stage - tree survey (**appendix B**). This provides a sequential reference number; species; height; stem diameter branch spread; crown clearance; age of tree, general observations, and estimated remaining contribution to the landscape. Each tree/group of trees will be allocated a grading based on Table 11 – Cascade chart for tree quality assessment forming a tree location plan (TLP-01).
- 1.4 Identification of primary and secondary constraints the existing trees will pose to the development of the site by producing a tree constraints plan (TCP).
- 1.5 Examples of primary constraints include:
- Below ground - extent of the root protection area (RPA)².
 - Tree Preservation Orders/ Conservation Areas
 - Above ground - branch framework and space for the canopy to grow without affecting any structures and may have an impact on the future welfare of the retained trees also referred as post development³.
- 1.6 Also identified are secondary constraints such as areas of existing hard standing within the RPA that can be removed if the soil is not disturbed. This information will help to identify any above and below ground constraints which will provide guidance for the design layout of the proposed development. At this stage, it may be necessary to remove existing trees to accommodate the proposed design layout.
- 1.7 **Tree protection plan (TPP)** identifies any issues which must be addressed during the demolition and construction phase. In addition, any pruning works that are necessary to facilitate plant machinery are also identified.

¹ Refer to Appendix A for more information.

² Root protection area (RPA) is defined as minimum area around a tree required to contain sufficient roots and rooting volume to ensure the successful integration of the tree into the new layout. This is calculated using the formulae set out in section 4.6 of BS5837:2012 Trees in relation to design, demolition and construction – Recommendation.

³ As described in section 5.2 of the B.S Example includes current and ultimate height and spread of the tree, species characteristics, density of foliage, susceptibility to honey dew and branch drop.

2. BASE LINE DATA

- 2.1 The survey was carried out in accordance with section 4.4 – 4.5 of the BS 5837:2012 'Trees in relation to design, demolition, and construction – Recommendation', hereafter to be identified as 'BS' Where it was not possible to gain access to record the relevant data, certain fields such as crown spread and diameter at breast height (dbh) were estimated.
- 2.2 If defects were noted and required further inspection the following inspection aids were used: laser distometer was used to measure the crown spread, binoculars to inspect the upper crown, magnifying glass for inspection of pest and diseases, steel probe to test strength of wood/depth of cavities and a mallet to give an audible indication of the extent of cavities.
- 2.3 Trees within the report were inspected from ground level only and any external faults and features were recorded. The following inspections were not carried out: aerial inspection, detailed excavation of the rooting system or the use of internal decay detection equipment. The use of such equipment would require an additional report.
- 2.4 Detailed ecological considerations are beyond the scope of this report. UK and European wildlife legislation may affect the timing and even prohibit the enhancement of works and operations described in this report. Most of the information regarding wildlife can be found in the Wildlife and Countryside Act 1981 (as amended). It is recommended that consideration is given to the requirement for ecological surveys. Bats in particular are afforded particular protection and a specialist may be required to determine if bats are present or could be affected when carrying out tree works.
- 2.5 Trees are living organisms whose health and condition can change rapidly. Trees should be checked on a regular basis. The conclusions and recommendations of this report are valid for one year. It is recommended that the trees within the site be inspected after adverse weather conditions such as high winds.
- 2.6 Stem diameters are used to calculate Root Protection Areas (RPA) (see appendix C); where ivy or dense undergrowth has been noted in the comments section of the tree survey a precise stem diameter measurement may not have been possible. The stem diameter and RPA given in this instance is therefore provisional until such time that the ivy has been removed and the stem recalculated

3. CONSTRUCTION EXCLUSION ZONES

- No storage of equipment or materials.
- No access to people, plant or vehicles.
- The actions to be carried out within or directly adjacent to the CEZ's shall only be carried out in accordance with this method statement. Where specified these works shall only be carried out under the direct supervision of the arboricultural consultant.
- Provision shall be made to avoid the spillage of chemicals that are toxic to roots into the RPA. It is now standard practice to have emergency spillage kits made available. Liquid chemicals such as oil, bitumen, diesel, and cement shall not be stored, mixed or discharged onto the ground within 10 m of the trees.
- No notice boards, or above ground services, shall be attached to any of the trees. No fires shall be lit within the RPAs of the trees or near enough to the extent of the canopy that branches might be damaged.
- Planning of site operations shall take sufficient account of wide loads, tall loads and plant with booms, jibs and counterweights (including drilling rigs), in order that they can operate without coming into contact with retained trees. Such contact can result in serious damage to the trees and might make their safe retention impossible. Consequently, any transit or traverse of plant in proximity to trees shall be conducted under the supervision of a banksman, to ensure that adequate clearance from trees is maintained at all times.
- Unwanted vegetation shall be removed by hand or by using chemicals that do not damage the roots of the trees that are to be retained

4. GLOSSARY OF TERMS

Arboricultural method statement ('AMS')	Methodology for the implementation of any aspect of development that is within the root protection area (RPA), or has the potential to result in loss of or damage to a tree to be retained.
Arboricultural consultant	Appointed person to oversee all tree related matters and who has, through relevant education, training and experience, gained expertise in the field of trees in relation to construction.
Tree protection plan ('TPP')	Scale drawing, informed by descriptive text where necessary, based upon the finalized proposals, showing trees for retention and illustrating the tree and landscape protection measures
Root Protection Area ('RPA')	The minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree's viability, and where the protection of the roots and soil structure is treated as a priority.
Construction Exclusion Zone ('CEZ')	Area based on the RPA from which access is prohibited for the duration of a project
Protective fencing	Temporary fencing that excludes potentially harmful demolition or construction activity adjacent to trees to be retained.
Ground protection	Ground protection within RPAs capable of supporting traffic entering or using the site without being distorted or causing compaction of underlying soil or damage to surface roots.
Arboricultural monitoring & supervision	Throughout the demolition and construction process the arboricultural consultant shall undertake regular site monitoring visits and supervise specific works adjacent to trees. All supervisory and monitoring visits will be formally confirmed in writing and circulated to all relevant parties.

Table 1 Glossary of terms

5. GENERAL ADVICE

<i>Extent and form of the root system</i>	<i>Within a short distance of the stem, the roots are highly branched, so as to form a network of small-diameter woody roots, which can extend radially for a distance much greater than the height of the tree, except where impeded by unfavourable conditions. All parts of this system bear a mass of fine, non-woody absorptive roots, typically concentrated within the uppermost 600 mm of the soil.</i>
<i>Damage to roots</i>	<i>All parts of the root system, but especially the fine roots, are vulnerable to damage. Once roots are damaged, water and nutrient uptake is restricted until new ones have grown. Mature trees recover slowly, if at all, from damage to their woody roots.</i>
<i>Soil compaction</i>	<i>Soil that has been compacted will not provide suitable conditions for the survival and growth of vegetation, whether existing or new, and is a common cause of post-construction tree loss on development sites. Compacted soil will adversely affect drainage, gas exchange, nutrient uptake and organic content, and will seriously impede or restrict root growth.</i>

Table 2 General advice

6. REFERENCES

AL Shigo (1991) 'Modern Arboriculture', Shigo and Trees Associates

BS 3998:2010 'Recommendations for Tree Work', British Standards Institution, London.

BS5837: 2012 'Trees in relation to design, demolition and construction – Recommendation', British Standards Institution, London.

D. Lonsdale (1999) 'Principles of Tree Assessment and Management' HMSO

Mattheck and Broeler (1994) 'The Body Language of Trees' HMSO

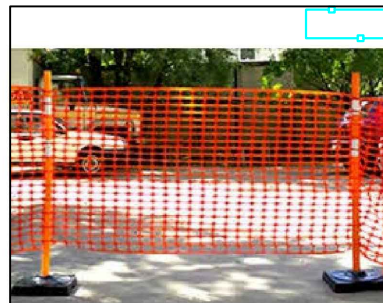
Strouts and Winter (1994) 'Diagnosis of Ill Health in Trees' HMSO

National Joint Utilities Group. Volume 4, GUIDELINES FOR THE PLANNING, INSTALLATION AND MAINTENANCE OF UTILITY APPARATUS IN PROXIMITY TO TREES", Issue 2: 16th November 2007

Excavations with RPA

All excavations to be undertaken within root protection areas (RPAs) shall be carried out carefully by hand, under direct supervision of the arboricultural consultant. Exposed roots that are to be retained shall immediately be wrapped or covered by hessian to prevent desiccation and to protect them from rapid temperature changes. Any wrapping shall be removed prior to backfilling, which will take place as soon as possible. Prior to backfilling, retained roots shall be surrounded with topsoil or un-compacted sharp sand (builders' sand will not be used because its high salt content is toxic to tree roots), or other loose inert granular fill, before soil or other suitable material is replaced. This material shall be free of contaminants and other foreign objects potentially injurious to tree roots. Roots occurring in clumps or of 25mm diameter and over, shall only be severed by the arboricultural consultant after careful consideration. All roots to be cut shall be pruned back, making a clean cut with a suitable sharp tool (e.g. bypass secateurs or handsaw). Roots less than 25mm in diameter cut shall be pruned back, making a clean cut with a suitable sharp tool (e.g. bypass secateurs or handsaw). Impermeable membrane to be placed into the holes to prevent leaching of concrete into the soil.

The mixing of cement based materials shall take place outside the Construction Exclusion Zones. In small confined areas provision will be made to prevent run-off from entering the RPA see diagram for a suitable example. All mixers and barrows shall be cleaned so the run-off does not enter the RPA. If there is sufficient space for mixing of cement to occur away from nearby trees then no precautions are necessary. All other chemicals hazardous to tree health, including petrol and diesel, shall be stored in suitable containers as specified by current COSHH Regulations, and kept away from Root Protection Areas.



Trunk of a category U tree ●
Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years

Trunk of a category A tree ●
Trees of high quality with an estimated remaining life expectancy of at least 40 years

Trunk of a category B tree ●
Trees of moderate quality with an estimated remaining life expectancy of at least 20 years

Trunk of a category C tree ●
Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150mm

Legend:

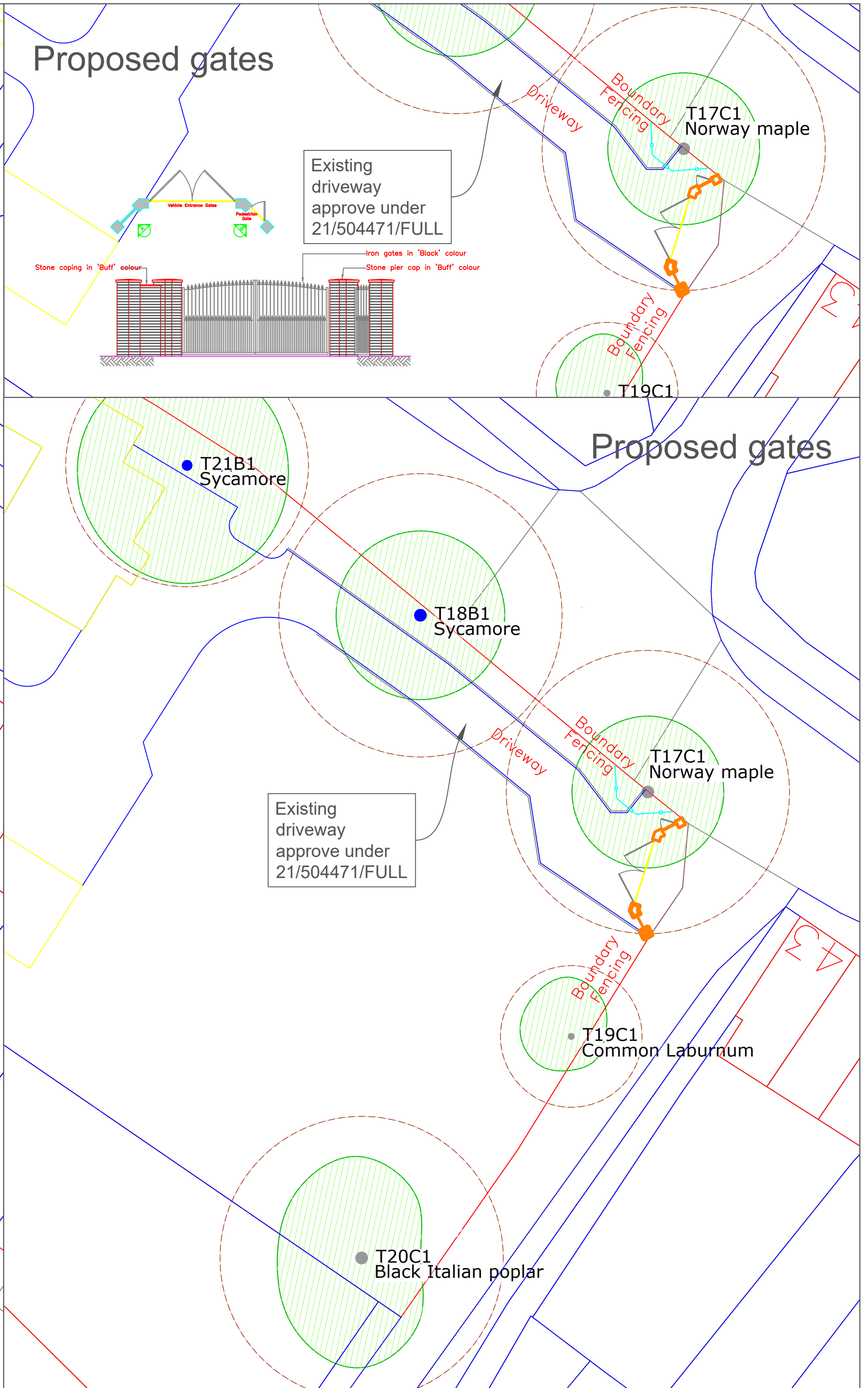
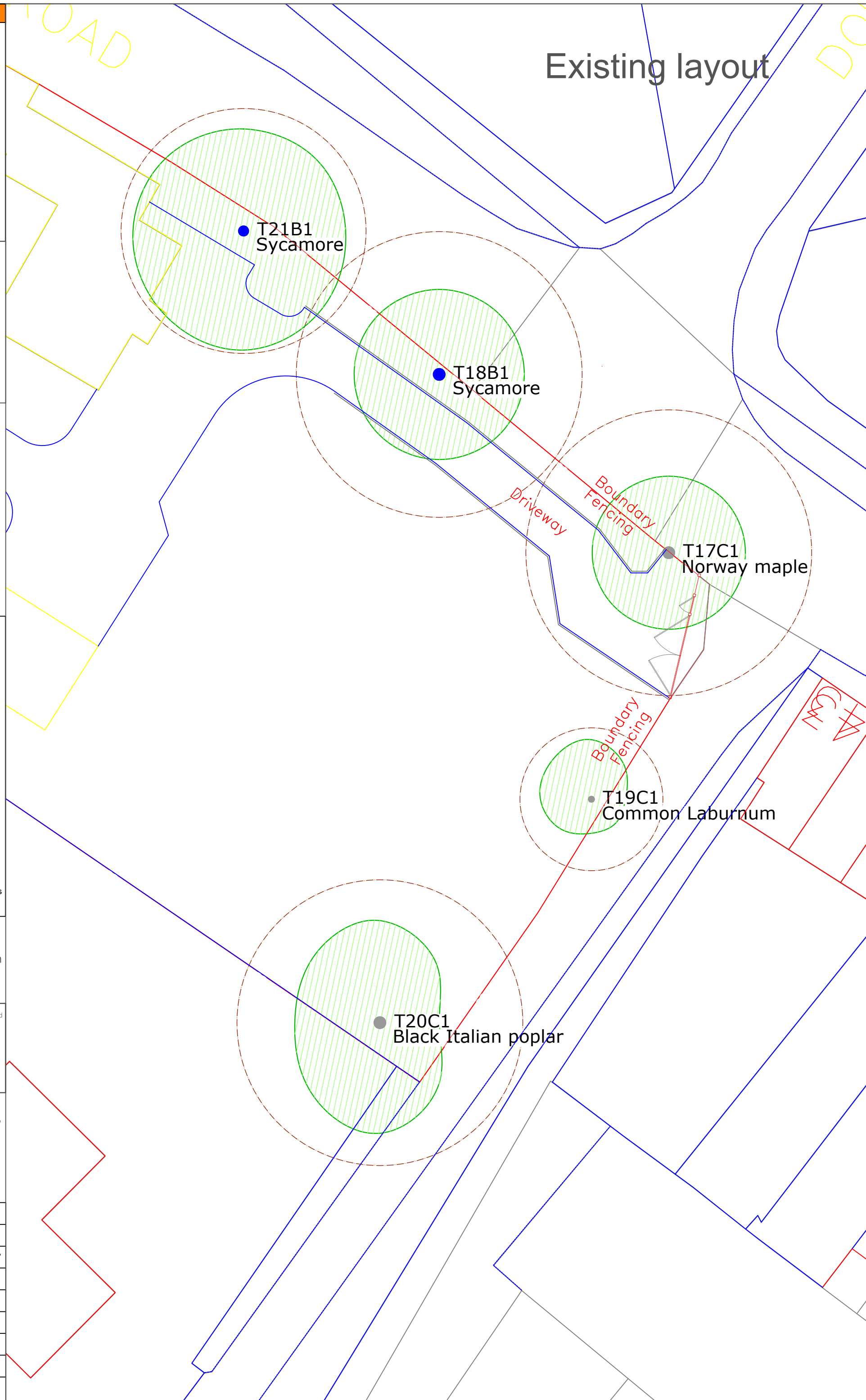
Canopy edge — RPA
1 — Tree no.
Ash — Tree species

0 1 2 3 4 5 10m
1:200 Scale

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Please ensure all dimensions on site and any if there are any discrepancies please notify us.
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Client	Mr Paul Beckett
Title	Tree Protection Plan - TPP-01
Site	Parapet House, Maidstone Road, Lenham, Kent
Date	5th January 2023
Drawn	GRS
Job ref	GRS.3.24
Scale	1:200
Paper size	A2
Drawing reference	



**Appendix A –Tree survey information - undertaken in accordance with section 4,
BS5837:2012 ‘Trees in relation to design, demolition and construction – Recommendations**

Tree no:	Sequential reference number of trees or groups of trees commencing at "1". Prefixed with a letter indicating type: T: Tree. G: Group. H: Hedge. W: Woodland. A: Area
Tree Preservation Order/ (TPO) conservation area (CA)	Served on individual, groups, woodland or as an area when the local planning authorities (LPA) consider it necessary to protect the visual amenity of the local area. Consent from the LPA must be sought prior to undertaking any works, failure to do so may lead to unlimited fines. Conservation area is an area designated under 69 of the Planning (Listed Buildings and Conservation Areas) Act 1990. Works to trees located within a CA require six weeks notification (S211 notice) to be submitted to the LPA. If the works are considered excessive and will have an impact on the visual amenity of the CA a TPO can be served.
Name	Species listed by common name/ latin name
Height	Estimated height of tree shown in metres.
Trunk Dbh:	Diameter at breast height measured at approximately 1.5 m above ground level given in millimetres and to the nearest 100 mm. Where there are more than 1 stem the average diameter is provided.
Radial crown spread (M)	Given as a radial measurement in metres from the centre of the stem to the furthest point of the canopy at the four main compass points N, E, S, W
Crown clearance (M)	First branch above ground level
Height to first branch	Height and orientation of first significant branch.
Age Class	<p>Y: Young: Age less than 1/4 life expectancy SM: Semi Mature: 1/4 to 1/2 life expectancy EM: Early Mature: 1/2 to 3/4 life expectancy M: Mature: Over 3/4 life expectancy OV: Over-mature: Mature, and in a state of decline V: Veteran: tree that, by recognized criteria, shows features of biological, cultural or aesthetic value that are characteristic of, but not exclusive to, individuals surviving beyond the typical age range for the species concerned.</p>
Physiology At the time of inspection the general health of the tree based upon its general appearance, vigour and the presence or absence of symptoms associated with poor health and physiological stress	<ul style="list-style-type: none"> • Good: Typical for species and age • Fair: Signs of physiological stress or dysfunction; but not significant enough that the tree may not recover. • Poor: Signs of physiological stress or dysfunction; significant enough that the tree might not recover. • Dead: Dead specimen.

<p>Structure Structural condition of the tree based on the structure of its roots, trunk and major stems and branches in relation to the presence of any physiological, pathological or mechanical defects.</p>	<ul style="list-style-type: none"> • Good: No significant structural defects. • Fair: Significant structural defects; but these are either remediable or do not put the tree at immediate or early risk of collapse. • Poor: Significant and irreparable structural defects, such that there may be a risk of early or premature collapse. • Hazardous: Significant and irreparable structural defects, such that there is a risk of imminent collapse.
<p>Landscape value</p>	<ul style="list-style-type: none"> • High: Individuals specimens considered to be of visual importance • Moderate: trees growing in a group no individual tree/s of significance: • Low; located within woodland, or provide little landscape value
<p>Estimated Years</p>	<p>Estimated life expectancy based on current condition.</p> <ul style="list-style-type: none"> • 0 Dead trees. • <10 Less than ten years. • 10+ more than ten years. • 20+ more than twenty years. • 40+ more than forty years
<p>Comments:</p>	<p>General comments relating to identified structural defects or hazards, vitality, pathogens or observational notes.</p>
<p>Recommendation of work</p>	<p>Arboricultural – Remedial tree works that involves pruning to a specification in accordance with the arboricultural best practice BS3998: 2010 Tree work – Recommendations. Examples include crown reduction, crown thinning, reducing specific branches and crown lifting.</p> <p>Safety works- nature of the works is to ensure the trees are kept in a safe manner.</p> <p>Facilitative – one off pruning works associated with development works whereby branches are removed to allow the movement of plant machinery within the grounds of the site without harming the trees visual appearance.</p>
<p>Category</p>	<p>A-Trees of high quality; B- Trees of moderate quality; C- Trees of low quality; U – Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years</p> <p>1- Mainly arboricultural qualities 2- Mainly landscape qualities 3 – Mainly cultural values , including conservation values</p>
<p>Root Protection Area: (RPA)</p>	<ul style="list-style-type: none"> • The RPA represents the minimum area of soil that the tree requires supporting a healthy and effective root system. The amount shown is based on the calculations set out in section 4.6 of the BS see attached appendices for the method of calculation.
<p>Root Protection Area m2</p>	<ul style="list-style-type: none"> • Root Protection Area (RPA) as radius (m) from the centre of the trunk

No.	Species	Height	Trunk Dia.	Radial Crown Spread	Crown Clearance	Height to 1st Branch	Life Stage	Physiology	Structure	Landscape Value	Est. Years	Comments	Recommendation	Category	RPA Radius	RPA m ²
T1	Balsam poplar	16m	740mm	N6m E3m S6m W6m	N8m E7m S7m W7m	7m S	SM	Good	Good	Moderate	10+	Part of a line of mature boundary trees.		C (1)	8.9m	247.7m ²
T2	Sycamore	13m	430mm	N1.5m E2m S3m W1.5m	N12m E5m S4m W5m	9m S	SM	Fair	Good	Low	<10	Unbalanced crown as suppressed.		C (12)	5.2m	83.6m ²
T3	Sycamore	15m	430mm	N5m E3m S4.5m W3m	N3m E4.5m S5.5m W6m	4m N	SM	Good	Good	Moderate	10+	Mature boundary tree; twin stemmed from base; trunk leans slightly to S.		C (12)	5.2m	83.6m ²
T4	Sycamore	14m	680mm	N4m E3.5m S6m W5m	N4.5m E3m S4m W3m	3m W	EM	Good	Fair	Low	10+	Fungal fruiting bodies on soil near to trunk; large pruning wound on the south side.		C (1)	8.2m	209.2m ²
T5	Field maple	12m	600mm est	N9m E4m S5m W4m	N5m E2m S2m W4m	2m E	SM	Good	Fair	Moderate	10+	Boundary tree.		C (12)	7.2m	162.9m ²
T6	Sycamore	12m	400mm est	N2m E2m S2m W1m	N4m E3m S3m W3m	2.5m S	SM	Good	Good	Low	10+	Small suppressed tree.		C (12)	4.8m	72.4m ²
T7	Holly	6m	150mm	N2.5m E2m S2m W2.5m	N1m E1.5m S1.5m W1m	1m N	Y	Good	Good	Low	10+	Of low level screening value only.		C (12)	1.8m	10.2m ²
T8	Holly	5m	130mmS 100mmN	N3m E4m S4m W2m	N4m E2.5m S2m W3m	2m S	Y	Good	Good	Low	10+	Of low level screening value only.		C (12)	2.0m	12.2m ²
T9	Beech	18m	760mm	N6m E4.5m S8m W8m	N4m E4m S6m W5m	4m S	EM	Good	Good	High	40+	Dominant canopy.		B (12)	9.1m	261.3m ²

No.	Species	Height	Trunk Dia.	Radial Crown Spread	Crown Clearance	Height to 1st Branch	Life Stage	Physiology	Structure	Landscape Value	Est. Years	Comments	Recommendation	Category	RPA Radius	RPA m ²
T10	Holly	6m	200mm	N2m E2m S2.5m W2m	N0.5m E0.5m S1.5m W1m	2m N	SM	Good	Good	Moderate	20+	Of low level screening value only.		C (12)	2.4m	18.1m ²
T12	Western red cedar	10m	830mm	N4m E2.5m S1.5m W2m	N3m E4m S4m W3m	3m N	SM	Fair	Fair	Low	<10	Part of a line of heavily reduced trees.		C (2)	10.0m	311.7m ²
T13	Western red cedar	8m	650mm	N0m E2m S4m W3m	N9m E1m S2m W3.5m	0.5m E	SM	Good	Good	Low	10+	Part of a line of heavily reduced trees.		C (12)	7.8m	191.1m ²
T14	Sycamore	16m	600mm ivy	N7m E7m S7m W7m	N5m E5m S5m W5m	4m N	SM	Good	Fair	Moderate	20+	External views restricted by boundary trees.		B (1)	7.2m	162.9m ²
T15	Sycamore	12m	300mm est	N4m E3.5m S3.5m W3.5m	N2m E2m S2m W2m	2m S	Y	Good	Good	Low	10+	External views restricted by boundary trees.		C (12)	3.6m	40.7m ²
T16	Norway maple	7m	300mm	N3m E3m S3m W3m	N3m E2m S2m W2m	1.5m S	SM	Good	Good	Moderate	20+	Of mainly low level boundary screening value.		C (12)	3.6m	40.7m ²
T17	Sycamore	18m	700mm ivy est	N4.5m E4.5m S4.5m W4.5m	N2m E2m S2m W2m	2m N	SM	Good	Fair	Moderate	20+	Off-site street tree; heavily ivy covered.		C (1)	8.4m	221.7m ²
T18	Sycamore	18m	700mm ivy	N5m E5m S5m W5m	N4m E3.5m S4m W3.5m	3m SE	SM	Good	Good	Moderate	20+	Boundary tree; fence line runs through trunk.		B (1)	8.4m	221.7m ²
T19	Common Laburnum	17m	350mm est	N3.5m E2m S2m W3m	N3m E6m S7m W5m	2.5m N	SM	Good	Good	Low	20+	Boundary tree.		C (1)	4.2m	55.4m ²

No.	Species	Height	Trunk Dia.	Radial Crown Spread	Crown Clearance	Height to 1st Branch	Life Stage	Physiology	Structure	Landscape Value	Est. Years	Comments	Recommendation	Category	RPA Radius	RPA m ²
T20	Black Italian poplar	21m	700mm est	N6m E3.5m S6.5m W5m	N12m E10m S10m W12m	10m SW	EM	Fair	Fair	Moderate	10+	High crown; dieback at branch ends.		C (1)	8.4m	221.7m ²
T21	Sycamore	21m	600mm ivy est	N6m E6m S7m W6.5m	N6m E6m S6m W6m	4m E	SM	Good	Good	Moderate	40+	Readily visible from adjacent public areas; branch orientated to the north has been partially removed leaving a stub.		B (1)	7.2m	162.9m ²
G11	Himalayan tree-cotoneaster	4m	Min 110mm Max 200mm	N3m E2m S2m W2m	N0.5m E0.5m S0.5m W0.5m	0m N	SM	Good	Good	Low	10+	Of low amenity value.		C (2)	2.4m	18.1m ²

APPENDIX C - Calculation of the Root Protection Area (RPA)

The RPA for single stem trees is an area equivalent to a circle with a radius 12 times the stem diameter.

For trees with more than one stem the following calculation methods should be used. Guidance is provided within the BS (Annex C) which provides details on how to measure the stem diameters. The calculated RPA for each tree should be capped to 707m²

- a) Trees with two to five stems, the combined stem diameter should be calculated as follows:

$$\sqrt{(\text{stem diameter}1)^2 + (\text{stem diameter}2)^2 \dots + (\text{stem diameter } 5)^2}$$

- b) Trees with more than five stems (not shown in Annex C), the combined stem diameter should be calculated as follows:

$$\sqrt{(\text{mean stem diameter})^2 \times \text{number of stems}}$$