

Stage 1 Arboricultural report for Land between 35 & 37
Monterey Close Bexley DA5 2BX

Reference: GRS.170.23

Local Planning Authority: London Borough of Bexley

Client : Mr Ian Stevenson



Arboricultural
ASSOCIATION

Professional Member

DATE OF REPORT 18th MARCH 2024

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1. PURPOSE OF REPORT

- 1.1. This report is part of the design process only and comprises the following information.
- 1.2. 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**).
- 1.3. Identification of primary and secondary constraints the existing trees will pose to the development of the site by producing a tree constraints plan (**TCP**).
- 1.4. 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.
 - Shading arcs assessing areas of the site which will be affected by shading.

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

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.

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. FINDINGS OF THE TREE SURVEY

- 3.1. In total sixteen individual trees and two groups were surveyed in accordance with section 4.4 of the BS, the findings of the survey are shown on the table below.

<u>Tree no.</u>	<u>Category</u>
	U
	A
T1, T3, T5, T8, T15	B
T2, T4, T6, T9, T10, T12, T13, T14, T16 G7, G11	C

Table 1 - Results of the tree survey

4. DESIGN PROCESS

- 4.1. To ensure there is a sustainable relationship between the built form and nearby trees the PA will assess the following factors: light issues, tree species, existing crown architecture and growth habits. Where it is necessary to implement remedial tree pruning a specification shall be provided that complies with best arboricultural practice set out in BS3998:2010 Tree works – Recommendations.
- 4.2. Where possible the underground services will be located outside the RPAs of the retained trees, however, should they be located within the RPA of any trees, the most appropriate methodology in accordance with NJUG Guidance Notes 2007 and guidance set out in sections 7.7 of the BS will be followed.
- 4.3. The project arboriculturist (PA) shall be part of the design team to ensure the key arboricultural features will be incorporated into the final layout. Lower value trees, or hedgerows with ecological, amenity or other value will be retained as an integral part of the design process except where their long-term survival would be compromised by their age or physical condition or there are overriding benefits of their removal.

5. CONCLUSION

5.1. Once the final layout has been agreed the following information will need to be submitted as part of the planning application.

- Arboricultural impact assessment (AIA) is based on the finalised layout, findings from the tree survey, the TCP and AIP and evaluates any direct or indirect effects the existing trees may have on the proposed design and assesses what impact the proposed removal of the trees would have on the local landscape.
- The 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. Arboricultural Method Statement (AMS) identifies the relevant tree protection measures that must be implemented and maintained during the development to ensure all the trees shown to be retained are incorporated into the final layout.

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

**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	Common Oak	19m	780mm	N8.5m E7.5m S9m W10m	N8m E3.5m S5m W4m	4m NE	SM	Good	Good	Moderate	40+	Broad dominant crown; minor and medium deadwood throughout the crown. Small cavity at ground level orientated to the north, no evidence internal decay. Bifurcates at 2.5 m. Historic limb failure on the west side. Large pruning wound on the south side early wound wood forming.		B (1)	9.4m	275.2m ²
T2	Common Yew	6m	500mm	N4m E3m S3m W3m	N0m E2m S2m W2m	1.5m N	SM	Good	Good	Low	10+	Small suppressed tree.		C (1)	6.0m	113.1m ²
T3	Common Oak	20m	600mm	N8m E8m S6m W8m	N3.5m E4m S4m W5m	5m W	SM	Good	Good	Moderate	40+	Medium deadwood, low branches on the east have been removed leaving it unbalanced.		B (1)	7.2m	162.9m ²
T4	Ash	21m	500mm	N8m E8m S7.5m W4m	N14m E12m S4m W18m	10m W	SM	Good	Good	Low	10+	Twin-stemmed from 5m; unbalanced crown orientated to the west.		C (1)	6.0m	113.1m ²
T5	Beech	21m	750mm est	N7m E7m S7.5m W6.5m	N2m E2.5m S4m W3.5m	2.5m N	EM	Good	Good	Moderate	40+	Part of a line of trees along the southern boundary. Low branches on the south side have been cut back leaving stubs, rest of the tree has not been touched.		B (1)	9.0m	254.5m ²
T6	Common Oak	22m	840mm	N9m E6m S8m W7m	N2m E8m S12m W12m	2.5m NW	EM	Fair	Fair	Moderate	10+	Part of the group of trees along the southern boundary. Remnants of ganoderma bracket at the base on the north side. Ground compacted due to the access drive. South side low branches up to 6m cut back leaving stubs. Major dead wood throughout the crown.		C (1)	10.1m	319.2m ²
T8	Common Oak	15m	670mm	N5m E5m S8m W8m	N18m E16m S6m W14m	4m SE	SM	Good	Good	Moderate	20+	Unbalanced crown as suppressed; low branches on the north and south side have been removed; soil compaction within RPA.		B (1)	8.0m	203.1m ²
T9	Ash	25m	900mm ivy	N11m E8.5m S7m W10m	N16m E6m S18m W16m	4.5m N	EM	Good	Fair	Moderate	10+	Divides at 6 m into three stems; on the east side zip wire between T10. Cavity on the south side possibly bees. Medium and major deadwood present; soil compaction within RPA.		C (1)	10.8m	366.4m ²
T10	Common Oak	24m	780mm	N9m E10m S7m W12m	N5m E6m S5m W7m	7m S	EM	Good	Good	Moderate	20+	Zip wire attached at 6m; historic flush cuts on the south east and north. Low branches have been cut back leaving stubs.		C (1)	9.4m	275.2m 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
T12	Common Oak	23m	660mm	N4.5m E6m S9m W6m	N7m E6m S7m W9m	7m W	SM	Poor	Poor	Low	<10	Off-site; raised levels within RPA, dieck throughout the crown, bark peeled back to show decayed wood.		C (1)	7.9m	197.1m ²
T13	Common Oak	18m	500mm ivy	N6m E8m S7m W9m	N5m E5m S5m W8m	5m N	SM	Good	Fair	Moderate	20+	Off site tree. No access. Remote inspection only.		C (1)	6.0m	113.1m ²
T14	Strawberry tree	7m	2 stems @ 150mmE 180mm	N4m E4.5m S2.5m W3m	N1.5m E2m S1.5m W1.5m	0.5m E	SM	Good	Good	Low	10+	Twin stemmed from base.		C (1)	3.3m	35.0m ²
T15	Common Oak	25m	700mm est	N9m E9m S6m W9m	N4m E5m S4m W4.5m	3m N	EM	Good	Fair	High	40+	Boundary tree; unable to inspect due to the fence line; broad dominant crown.		B (1)	8.4m	221.7m ²
T16	Tree of Heaven	15m	400mm est	N6m E7m S4m W4m	N5m E4m S7m W7m	4m N	SM	Good	Good	Low	10+	Off site tree. No access. Remote inspection only.		C (1)	4.8m	72.4m ²
G7	Common Yew	7m	Avg 7 stems @ 200mm est	N2m E2m S2m W2m	1.5m	0.5m N	SM	Good	Good	Low	10+	Of low level screening value only.		C (2)	2.4m	18.1m ²
G11	Silver birch (x13) and Sycamore	12m	Min 250mm ivy Max 560mm ivy	N4.5m E4m S4m W4m	N4m E3m S3.5m W3m	1.5m S	SM	Good	Fair	Low	20+	Line of trees not marked on the topo, low quality but prove screening.		C (2)	6.7m	141.9m 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:

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

Notes:
G11, T13, T15, T16 - Positions approximate PA

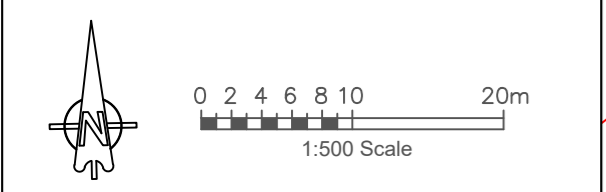
Trunk of a category U tree ●
Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years

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 — (hatched circle)
1 — Tree no.
Ash — Tree species



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Client	Mr Ian Stevenson
Title	Tree Location Plan - TLP-01
Site	Land behind 35 and 37 Monterey Close DA5 2BX
Date	9th February 2024
Drawn	GRS
Job ref	GRS.170.23
Scale	1:500
Paper size	A2
Drawing reference	Existing Site Plan



PRIMARY CONSTRAINTS:
 BELOW GROUND = THE ROOTS = ROOT PROTECTION AREAS
 The RPA is a layout design tool indicating 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.

Where the existing driveway is to be replaced within the RPAs of trees to be retained.

Incursion into T3 RPA - Proposed above soil surfacing shall accordance with guidance set out in section A.1.5 of BS 5837: 2012 *Trees in relation to design, demolition and construction - Recommendations and Guidance Note 12: The Use of Cellular Confinement Systems Near Trees*.
 The illustration above shows the general principles, which will be discussed in full within the accompanying AMS.

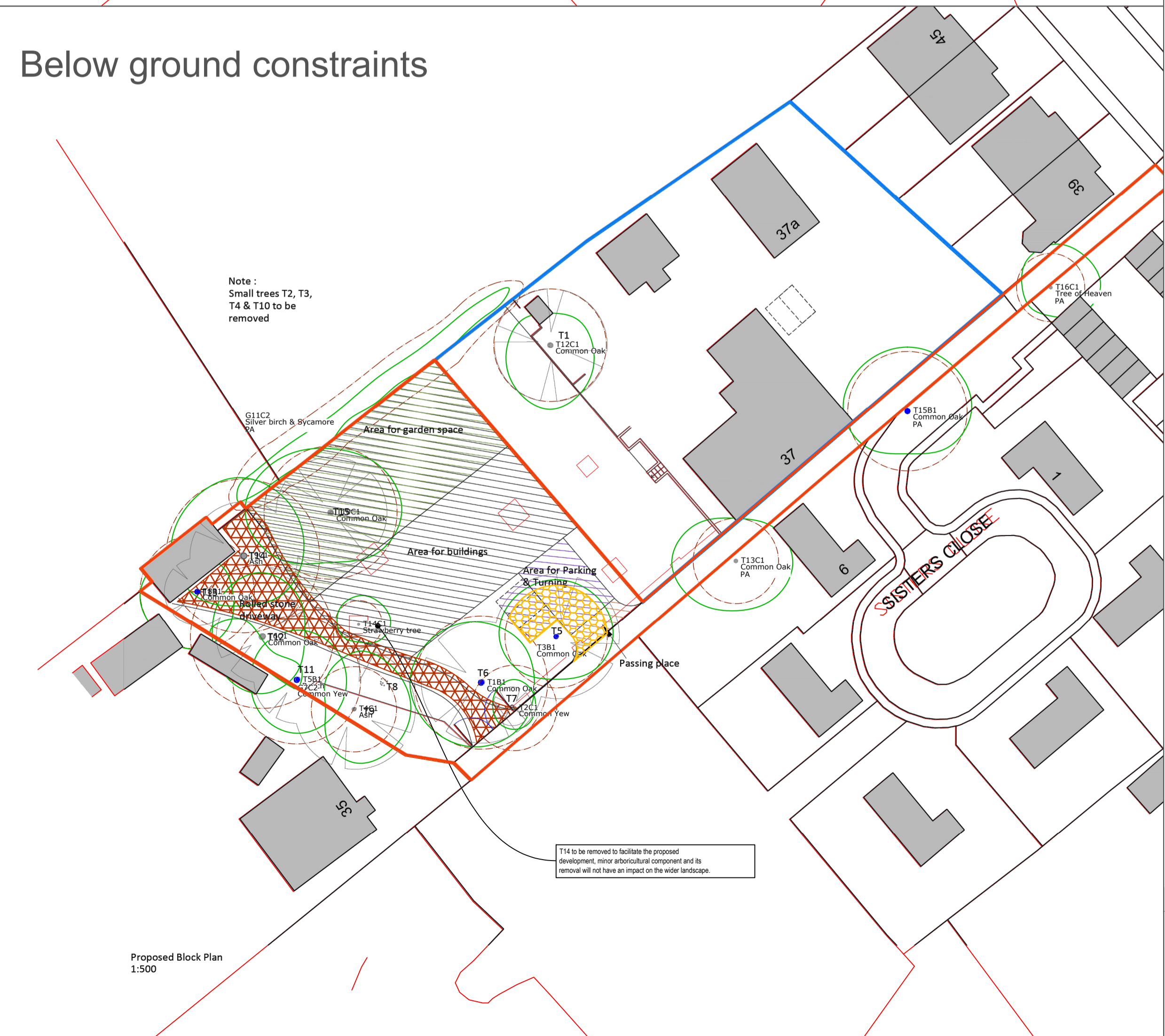
ABOVE GROUND = THE BRANCHES = SPACE FOR TREE CANOPY
 Canopy off-set line - **No dwellings should be constructed on the tree side of the bold green line** - this is to allow for adequate space for construction (e.g. installation of scaffolding) and for predicted future growth of branches without necessitating excessive pruning for installation or repeated requests for pruning or tree removal by incoming occupiers, low level structures such as sheds or garden features may be acceptable.

ABOVE GROUND = SHADING = SHADING ARCS
 Shading arcs: Indicate the passage of shading created by the tree(s) through the greater part of the day, shown by dashed lines between the north-west and east of the tree at a distance equivalent to the current height.
 Windows of habitable rooms (e.g. living rooms & dining rooms) should not directly face trees if on the tree side of the shading arcs - unless the rooms have dual or triple aspect and have at least one other window that does not directly face any trees that are causing shading.

Above ground constraints



Below ground constraints



Notes: Rev A - Change in redline



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

1 — Tree no.
 Ash — Tree species

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Client	Mr Ian Stevenson
Title	Tree Constraints Plan - TCP-01 Rev A
Site	Land behind 35 and 37 Monterey Close DA5 2BX
Date	9th February 2024
Drawn	GRS
Job ref	GRS.170.23
Scale	1:500
Paper size	A2
Drawing reference	Proposed site layout

T14 to be removed to facilitate the proposed development, minor arboricultural component and its removal will not have an impact on the wider landscape.