LandscapeCollective

Findings of the Arboricultural Assessment - Arboricultural Impact Assessment

Vernon House

5-8, St Mark's Square, London

On behalf of SAV Group

May 2018

Project Ref: LC/00256

Project Number:	LC/00256
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Date:	May 2018
Document version	M:\Landscape Collective\Projects\201-300\00204\ Vernon House 5-8 Marks sq

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APPENDICES

1.0 INTRODUCTION

1.1 Landscape Collective were instructed by SAV Group to carry out a tree survey in accordance with BS: 5837:2012 on land at Vernon House, 5 – 8 St Mark's Square, London and hereafter referred to as 'the site' (see Appendix 1). The scope of the assessment was to visit the site and to survey relevant trees in accordance with BS5837:2012 *'Trees in relation to design, demolition and construction – recommendations.'*

1.2 Landscape Collective have recently been instructed to ascertain any potential arboricultural impacts to the arboricultural resource in light of the development proposals.

1.3 The following information is contained within this assessment report:

- Arboricultural Impact Assessment;
- Tree Protection Plan; and
- Arboricultural Method Statement draft heads of terms

1.4 **This assessment should be read in conjunction with the relevant tree survey document:**

- **LC 00256 Vernon House Tree Survey** (March 2018)

1.5 The following plans (contained within the tree survey document) are included for reference within appendices within this report:

- Schedule of tree survey data
- Tree Survey Plan showing preliminary tree constraints

1.6 For the purposes of carrying out the assessment, Landscape Collective were provided with the following information:

- Cadmap Services - Topographical Survey – February 2018 – Drawing number CM/18027/T.

The Study Area

1.7 The site of the proposed development is within St Mark's Square, at the junction of Princess Road and Regents Park Road, London. To the north-east of Regents Park. The site (the building) is located at 5 – 8 St Mark's Square, and includes the rear garden to the property.

1.8 The surrounding area has an urban character with mostly medium to large residential properties and gardens. The site can be viewed from houses mainly to the west of the site.

1.9 The road corridors in this part of Central London, tend to have more trees than other areas of London. The density of tree cover increases as one approaches Regent's Park. Regents Park is approximately 150m from the site. Many of the residential properties in the area have medium to large trees in the back gardens.

1.10 The majority of the development site comprises a roughly rectangular area of back garden, with hard paving, some shrub planters, evergreen and deciduous shrubs mainly planted along the garden boundaries. A linear group of trees runs along the western edge of the site.

The Development Proposals

1.11 The proposals include landscape works to the rear garden, with the construction of a communal garden room in the north-eastern corner of the site.

1.12 The landscape works will include hard surfacing, tree and shrub planting as well as erection of trellis along sections of the existing brick boundary walls to the rear garden.

1.13 The above works will seek the retention of all of the existing trees and limit any necessary tree works as far as is practicable for the proposed development.

1.14 The site location and development proposals are shown on the tree retention/loss and draft tree protection plan at Appendix 5.

Site Visit

1.15 Landscape Collective visited the site on 6th March 2018. Individuals present on site: Stuart Hocking CMLI.

1.16 All trees were surveyed (see Appendices 2 and 3) in accordance with BS: 5837:2012 (Appendix 6 – Methodology).

Planning Status

Statutory Tree Protection

1.17 The author of this document is informed by Camden Borough Council (telephone conversation (16th March 2018) that the site is located within the Primrose Hill Conservation Area.

1.18 At the time of writing of the Tree Survey, the author was informed that no trees within or adjacent to the site were covered by a Tree Preservation Order (TPO). Since publishing the tree survey, the author has been informed by Camden Borough Council that T6 and T7 are in fact covered by TPO.

2.0 SUMMARY OF SURVEY FINDINGS

Existing Arboricultural Resource

2.1 The tree survey comprises eight individual trees. Five of the trees are located in the back garden: Four of the back garden trees form a linear belt of trees mainly along the western edge of the site. There is also a small multi-stemmed tree on the opposite, eastern boundary. There are two other trees adjacent and within the south-west corner of the site. One further tree is outside the site, close to the south-west corner, within the streetscape.

2.2 Within the back garden there are also some small ornamental shrubs mainly within planting beds around the boundary walls of the back garden.

Tree Survey Summary

2.3 A summary of the survey is shown below:

2.4 In total eight items were surveyed; eight individual items. One surveyed item (T6) was considered to be high quality (Category A) with an anticipated useful life expectancy of in the region of 40+ years. Five surveyed items were considered to be moderate quality (Category B) with an anticipated useful life expectancy of in the region of 20+ years. Two surveyed items were considered to be low quality (Category C) with an anticipated useful life expectancy in the region of 10-20+ years. No surveyed items were considered unsuitable for retention (Category U).

2.5 The species in the site include lime, sycamore, robinia and fig. Off site to the south-west the species include rowan.

2.6 All the trees are classed as mature trees, except for T8 in the southern corner classed as semi-mature. All the trees have had some pruning of lower limbs and/or limb loss over the years. The trees along the western boundary within the site have been regularly pollarded to form a screen between the site and adjacent houses. Off site to the south-west of the site the pruning would have been undertaken mainly to allow for traffic clearance on adjacent roads and pedestrian thoroughfares.

2.7 Of the eight items surveyed, the quality and useful life expectancy is varied. The useful life expectancy for the trees within the site ranged from 10+ to 20+ years. The trees along the western site boundary were fairly uniform in size, however the northernmost lime had major wounds on the south side resulting from limb breakage in the past.

2.8 Future management may include careful monitoring of the health of retained trees within the site as regular pollarding will often give rise to weak unions. The trees off site to the south-west of the site have a life expectancy of between 20+ and 40+ years.

2.9 The trees within the south-west corner of the site are within the London streetscape and therefore have higher public amenity and landscape value than the trees on the site that are partially visible from very limited locations within the public realm. However the trees within the site are also an important landscape feature, as they are visible from the rear of neighbouring private houses in a built up area.

2.10 The root protection areas (rpa) as shown on drawing LC 00256_01 show that part of the site is covered by the rpa of the trees. However the coverage is likely to be more, as the roots to the trees along the western boundary will have probably extended into the site, rather than under the brick boundary wall. However the regular pollarding of the trees would most likely have restricted their growth.

2.11 The rpa for T6 and T7 are unlikely to extend into the area within the footprint of the building, because of hard landscaping and construction restrictions (voids created by stairwell to basement) around the base of the trees. Similarly T8 is within Princess Road paved area and the rpa is well outside the site building footprint.

3.0 ARBORICULTURAL IMPACT ASSESSMENT (AIA)

3.1 With reference to BS5 837:2012 *'Trees in relation to design, demolition and construction'*, this AIA evaluates the direct and indirect effects of the proposed design on the site's arboricultural resource.

3.2 The AIA considers the effects of any tree loss required to implement the proposals as well as any potentially damaging activities proposed in the vicinity of retained trees. BS5837:2012 suggests that such activities might include:

- Removal of existing structures and hard surfacing;
- Installation of new hard surfacing;
- Installation of services;
- Location and dimensions of all proposed excavations and changes in ground level (including those that might arise from the implementation of recommended mitigation measures); and
- The 'buildability' of the scheme in terms of access, adequate working space, provision for storage of materials including topsoil.

3.3 With reference to BS5837:2012, the AIA includes the following information:

- tree retention/removal and protection plans (Appendix 4)

3.4 An arboricultural impacts assessment schedule is included at Appendix 5. This provides a tree-by-tree assessment of the potential impacts of the proposals. It also evaluates the degree of impact and sets out mitigation measures as may be necessary. This overall assessment is expanded on below:

Evaluation of effects of proposed tree losses

3.5 The tables and comments below summarise the tree retention from development of across the site.

3.6 Impact of proposed development on surveyed items.

3.7 Note: 8 items were surveyed, of which all will be retained to facilitate the proposals.

	Total	Number loss	Number retained	Number partially retained
Category A	1	0	1	
Category B	5	0	5	
Category C	2	0	2	
Total	**8**	**0**	**8**	

Tree Protection

3.8 To prevent impacts to retained survey items during development it is strongly recommended that all construction works are excluded from root protection areas (rpa). However, in this instance, the proposed development will include some construction and hard surfacing within rpa.

3.9 The existing tree canopy height for retained trees T1 – T4 is between 2 and 2.5m. To allow construction of the proposed communal garden room, the T1 canopy height must be raised to 3.5m, and the canopy reduced as shown on drawing LC00256 03 (Appendix 5). The canopy height of T2 – T4 must be raised to 3m to avoid damage from construction activity.

3.10 It is considered that T1 – T4 are likely to have been regularly pruned/pollarded in the past. Therefore raising the canopy slightly is not anticipated to cause excessive stress to the trees beyond the present management regime.

3.11 The canopy height of T5 should be raised to 2m and the 3 stems securely fixed to the boundary wall, with an appropriate arboriculturally recommended fixing, so as to avoid conflict with the construction process and damage to the stems.

3.12 The tree's roots along the western boundary of the rear garden are likely to have spread further east than the tree survey shows. This is due to the western

boundary brick wall that is likely to have restricted growth in a westerly direction. It should also be noted that the previous management of these trees (probably crown reduction or pollarding) is likely to have inhibited root growth. Similarly the root spread from T5 is likely to have spread further west than the tree survey shows. However this is a small tree and the roots may have spread further north and south along the planting bed.

3.13 Therefore it is recommended that tree protection fencing be used, until construction activities are required within rpa. At which time, the tree protection fencing is to be moved to the secondary location shown in appendix 4.

3.14 With the tree protection fencing in the secondary position, existing hard surfacing will be retained and only removed after construction of the communal garden room is complete. The existing hard surfacing will remain in place to facilitate access for construction. Groundworks will begin at the northern end of the rear garden and work back towards the southern end. Removal of hard surfacing, creation of levels and proposed hard surfacing works will work systematically back from north to south, using the existing paving as ground protection until such time as the immediate area will have replacement hard surfacing.

3.15 During the construction of the communal garden room, if existing hard surfacing is required to be removed before work begins, suitable grade ground guards, will be fixed onto the ground to manufacturers recommendations within root protection areas. These are shown on the protection plan (construction) LC00256 04, and are aligned to protect T1 and T2 during communal garden room construction activities.

3.16 The main areas of root protection and protection barriers are indicated on the tree retention/loss and tree protection plans at appendix 5 & 6.

Demolition of existing structures and hard surfacing

Anticipated Impacts

3.17 Demolition in the rear garden will include the removal of existing hard surfacing.

3.18 It is anticipated that there is potential for medium level of impacts to the rooting medium (severance and compression) and to the canopies of existing trees. It is recommended to install protective barriers to protect the stems and rpas of each tree during construction works (See Appendix 5). Repaving must be no deeper than the existing sub base depth.

Mitigation/Avoidance

3.19 To minimise the potential for harm to occur to the trees, the works should be completed by hand, and using the existing sub grade depth. The existing paving should be left in situ to provide ground protection to the rooting zone, with the paving in the northern end of the garden replaced first, working backwards towards the south using the existing flags as a working platform.

Site Construction Access

Anticipated Impacts

3.20 It is anticipated the main site construction access will be via the rear of the property at the southern end of the garden. No medium/large construction vehicles will gain access to the rear garden.

Mitigation/avoidance

3.21 All trees must be adequately fenced to protect against direct damage to the tree stems and ensure that no damage to these specimens occurs during construction. The trees are located adjacent to hard paved areas, with the paving acting as existing ground protection for any rooting areas beneath the tree.

3.22 Only the use of a mini digger may be possible in the site. The canopies of T1 will be raised to 3.5m and T2 – T4 to 3m. T5 canopy will be raised to 2m and the stems to be attached securely to the adjacent brick boundary wall following good arboricultural practice.

Delivery and Storage of materials

Anticipated Impacts

3.23 The proposed locations for site deliveries and materials storage during the development have not been identified at this stage. However the nature of the site is such that there are several areas in which materials could be stored without such works having any impact upon retained trees.

Construction of hard standing areas

Anticipated Impacts

3.24 Anticipated impacts could potentially be root severance and direct damage to the stem and rooting area.

Mitigation/Avoidance

3.25 To minimise the potential for harm to occur to T1 – T5 the works must be completed by hand, and using the existing sub grade depth. The existing paving flags should be left in situ to provide ground protection to the rooting zone, with the flags nearest the northern end of the garden being replaced first, working backwards towards the south, using the existing flags as a working platform.

Service Requirements

Anticipated Impacts

3.26 Limited services information is available at time of writing. Given the nature of the proposals, if any new service corridors are required as part of or to facilitate the proposals, the services will be located outside of any RPA's.

Excavations and site gradients

Anticipated Impacts

3.27 Proposed paving removal and installation will be done by hand and use the existing depth and sub base.

3.28 Site excavations are however required for the proposed development. Anticipated impacts could potentially be root severance and direct damage to the stem and rooting area. The works will include the excavation for the posts for the proposed communal garden room, and also proposed areas of hard landscaping in areas of existing soft landscape.

Mitigation/Avoidance

3.29 During excavation work within RPAs, the project arboriculturist must be present. No roots larger than 25mm diameter are to be severed to facilitate the work. If root severance is required it must be undertaken using a sharp pruning saw to BS3998 (2010) specification.

Site gradients

Anticipated Impacts

3.30 There will be some levelling works associated with the proposed construction. Mainly concerned with the removal of existing steps.

Mitigation/Avoidance

3.31 No roots larger than 25mm diameter are to be severed to facilitate the work. If root severance is required it must be undertaken using a sharp pruning saw to BS3998 (2010) specification.

Overbearing effects

Anticipated Impacts

3.32 Trees T1 – T4 are likely to cast seasonal shade. The existing management of the on-site trees will be retained and include regular maintenance to crown reduce the trees and keep them away from the buildings.

'Buildability'

3.33 Provided that tree protection measures are put in place prior to the commencement of works on the site, it is considered that there is adequate space to enable the

proposals to be constructed with minimal damage occurring to retained surveyed items.

Briefing for site operatives

3.34 An important element of the protection measures that form part of this report are that site operatives be properly briefed in advance of site works commencing. The operatives will be briefed on the importance and function of the ground guards, the timing of their installation and removal and their locations in accordance with the tree protection plan.

3.35 The operatives will be also be briefed in terms of the order in which to remove and replace the existing paving and replace with proposed surfacing.

Tree Protection Plan (TPP)

3.36 The Tree Protection Plan is attached at Appendix 5.

3.37 In accordance with BS5837:2012 the TPP is superimposed onto the proposed site layout plan. Any hard surfacing and structures within the RPAs of trees to be retained are shown on the TPP. In addition, where relevant, the TPP shows the following information, accompanied by descriptive text as required:

- Precise locations of protective barriers (forming Construction Exclusion Zones in relation to RPAs of retained trees); and
- Other protection measures e.g. ground protection and high visibility mesh.

3.38 The preparation of the TPP has considered the following factors where information is available and/or relevant:-

- Site construction access;
- intensity and nature of construction activity;
- phasing of construction works;
- availability of special construction techniques;
- spatial requirements for:
  a) temporary and permanent apparatus and service runs;
  b) foundation excavations and construction works;
  c) plant scaffolding and access during works;
  d) site huts, toilets (including drainage) and other temporary structures;
  e) storage (either temporary or long-term) of materials, spoil, fuel and mixing of concrete.
- All changes in ground levels including location of retaining walls, steps and adequate allowance for foundations of such walls and backfilling.

3.39 The tree protection measures shown on the Tree Protection Plan demonstrate the feasibility of the proposed development in relation to the retained trees.

4.0 OUTLINE ARBORICULTURAL METHOD STATEMENT (AMS)

4.1 BS5837:2012 (Figure 1) recommends that detailed/technical design of tree protection and arboricultural methodologies should be resolved and finalised following on from the approval of the feasibility of a scheme by the relevant regulatory body.

4.2 Annex B and Table B.1 of BS5837:2012, an informative, advises that arboricultural method statement heads of terms are a sufficient level of information to deliver tree-related information into the planning system. The table also advises that a detailed arboricultural method statement might reasonably be required as a 'reserved matter' or planning condition.

4.3 In relation to the above site, it is anticipated that arboricultural working methods are likely to be quite straightforward. A draft, 'heads of terms' is set out below:

4.4 Pre-commencement site meeting (s) – site briefing;

4.5 Installation of tree protection measures;

4.6 Main construction phase - schedule of monitoring and supervision, as necessary; and

4.7 Removal of tree protection measures

5.0 SUMMARY AND CONCLUSIONS

5.1 In total eight items were surveyed. Of the eight items surveyed, all will be retained.

5.2 All the surveyed items to be retained will be protected during the proposed demolition and construction works.

5.3 Overall, provided that the temporary protection measures and briefing for site operatives are put in place prior to construction on site it is reasonable to conclude that the proposals are feasible from an arboricultural perspective.

APPENDIX 1 – SITE LOCATION PLAN

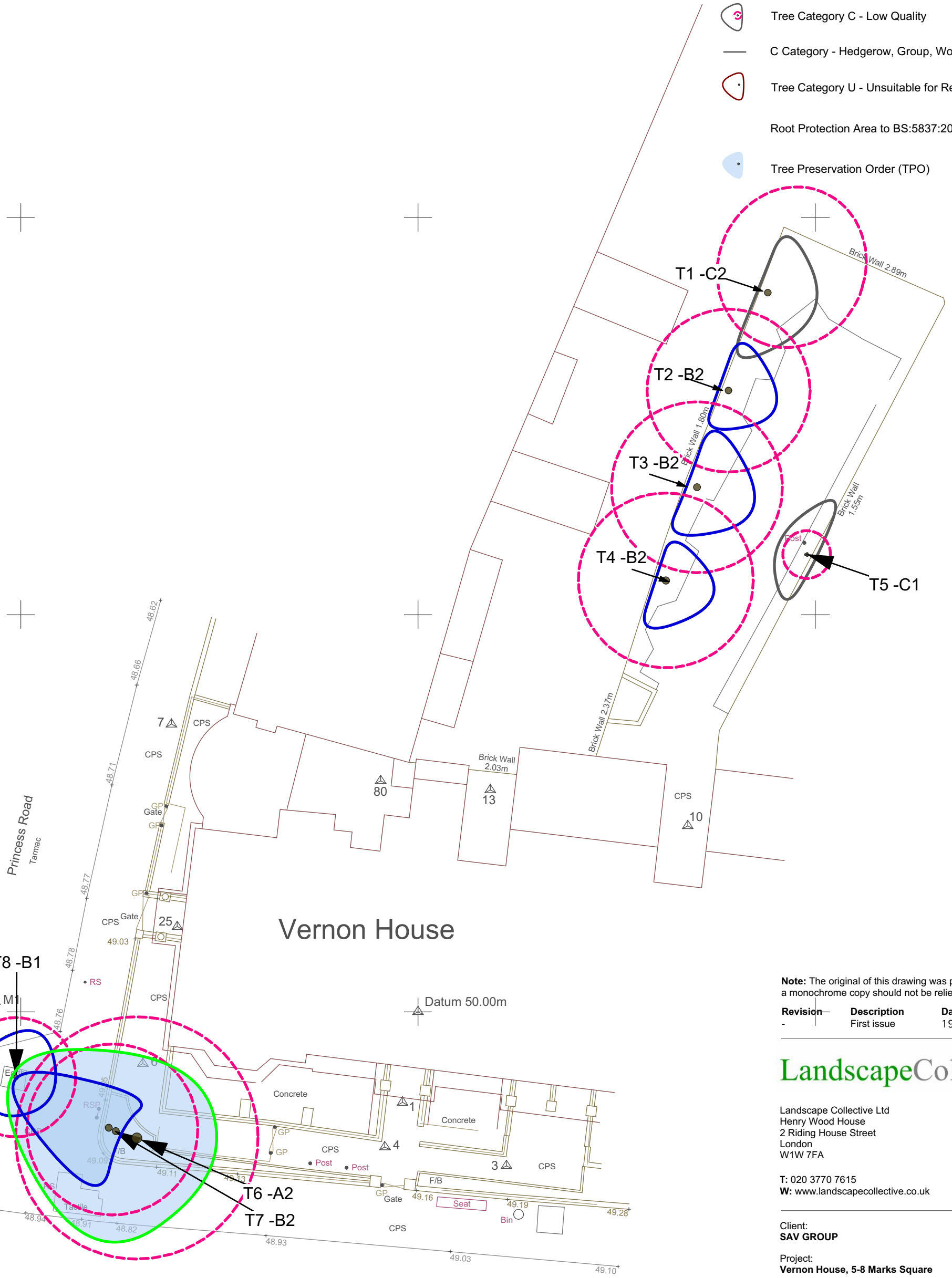
APPENDIX 2 – TREE SURVEY SCHEDULE

Ref no.	Species	Ht. (m)	Stem				Crown Spread (m)								Life stage	ULE	Physiological Condition	Structural Condition and Notes	Management Recommendations
			Stem Count	Stem dia. (mm)	RPA radius	RPA area	Category Grading	N	E	S	W	Ht. 1st Br. (m)	Est.	1st Br. Direction	Ht. Can. (m)				
T1	Lime	8.5	1	340	4.1	52	C2	3.0	2.5	3.5	1.0	2.0	-	North	2.0	M	10+	Poor	Has had regular pollarding in the past, the western side is kept especially ruined back. Adjacent to brick wall (<30cm from the brick boundary wall). Regrow the at the base. Regrow the at the base. Major wounds at approx. 3m on the south side of two main limbs, with exposed heartwood.	Retain if possible
T2	Lime	8.0	1	340	4.1	52	B2	2.5	2.5	2.0	0.5	2.5	-	North	2.5	M	20+	Fair	Has had regular pollarding in the past, the western side is kept especially ruined back. Adjacent to brick wall (<30cm from the brick boundary wall). Regrow the at the base.	Retain if possible
T3	Lime	10.5	1	360	4.3	59	B2	3.0	3.0	2.5	0.5	2.0	-	South	2.0	M	20+	Fair	Has had regular pollarding in the past, the western side is kept especially ruined back. Adjacent to brick wall (<30cm from the brick boundary wall). Regrow the at the base.	Retain if possible
T4	Sycamore	9.5	1	370	4.4	62	B2	2.0	2.5	2.5	0.5	2.5	-	South	2.5	M	20+	Good	Has had regular pollarding in the past, the western side is kept especially ruined back. Adjacent to brick wall (<30cm from the brick boundary wall). Regrow the at the base.	Retain if possible
T5	Ficus	4.0	3	100	1.2	5	C1	3.0	0.5	2.5	1.5	1.5	-	-	1.5	M	10+	Good	Ok shape to the crown. Pruned in the past. 3 x stems (all from base) tied to boundary fence for support.	Retain if possible
T6	Robinia	15.0	1	510	6.1	118	A2	3.0	4.0	5.5	6.5	6.0	-	East	6.0	M	40+	Good	Good crown shape. Has been pruned in the past, especially on the road side probably for vehicle clearance. The canopy is approx. 1m From the building (north side canopy). Leaning slightly to the south-east. Growing in a small planting bed with T7 and one stump, with low brick surround.	Retain.
T7	Robinia	13.0	2	355	4.3	57	B2	2.0	0.5	3.0	5.5	3.0	-	North	3.0	M	20+	Good	Forked at 1m. Suppressed by T6 to the east. Not a good crown shape, but with T6 makes good architectural landscape quality. In small planter with T6. Probable compression fork at 1m.	Retain
T8	Rowan	6.0	1	250	3.0	28	B1	2.5	2.0	2.0	2.0	2.5	-	East	2.5	SM	20+	Good	Small street tree within pavement area. Evidence of some pruning. Slightly suppressed by T6	Off-site. Retain

APPENDIX 3 – TREE SURVEY PLAN

KEY - BS 5837 : 2012 Categories

- Tree Category A - High Quality
- A Category - Hedgerow, Group, Woodland
- Tree Category B - Moderate Quality
- B Category - Hedgerow, Group, Woodland
- Tree Category C - Low Quality
- C Category - Hedgerow, Group, Woodland
- Tree Category U - Unsuitable for Retention
- Root Protection Area to BS:5837:2012
- Tree Preservation Order (TPO)



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Revision	Description	Date
-	First issue	19/3/18

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Client:
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Project:
Vernon House, 5-8 Marks Square

Description:
Tree Survey

Status:
For Planning

Scale:	Drawn I Checked	Date:
1:200 @A3	**SH SW**	**19/03/2018**

Job Number:	Drawing Number:	Revision:
LC 00256	**01**	**-**

APPENDIX 4 – ARBORICULTURAL IMPACT SCHEDULE

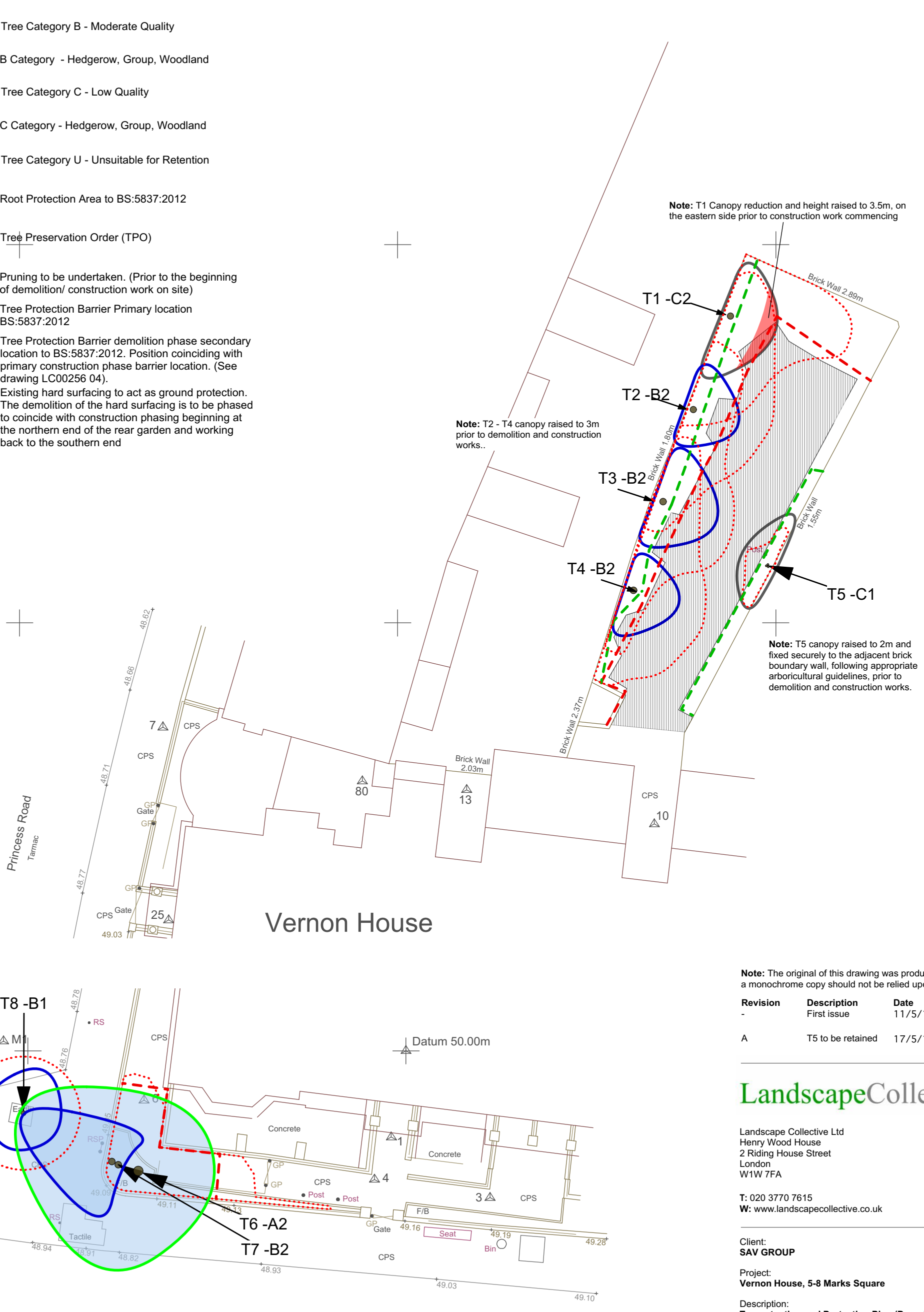
No.	Species	Quality	Arboricultural effects (direct and indirect) of proposed design - description	Unadjusted degree of arboricultural impact on the tree	Unadjusted significance of arboricultural impact	Recommended mitigation	Adjusted degree of arboricultural impact on tree/ site's arboricultural resource	Adjusted significance of arboricultural impact	Tree removal required
T1	Lime	C2	Soil compaction from construction vehicles. Direct root damage from proposed surfacing installation and communal garden room construction leading to root death. Possible direct contact to lower and eastern side canopy from construction machinery, and also during garden communal garden room construction.	Medium	Minor	Crown lift eastern side to 3.5m. Installation of temporary tree protection fencing barrier to BS.5837:2012. Installation of ground protection on the eastern side of T1 and T2 during communal garden room construction. Existing hard surfacing used as ground protection during construction. A no dig solution after removal of the hard surfacing. The new surfacing laid onto the sub-base with minimal disturbance to any tree roots as per BS.5837:2012 recommendations.	Low	Insignificant	No
T2	Lime	B2	Direct root damage from proposed surfacing removal and proposed installation leading to root death. Possible direct contact to lower and eastern side canopy from construction machinery.	Low	Minor	Crown lift eastern side to 2.5m. Installation of temporary tree protection fencing barrier to BS.5837:2012. Existing hard surfacing used as ground protection during construction. Construction phases to work from north back to south. A no dig solution after removal of the hard surfacing. The new surfacing laid onto the sub-base with minimal disturbance to any tree roots as per BS.5837:2012 recommendations.	Low	Minor	No
T3	Lime	B2	Direct root damage from proposed surfacing installation causing decline in tree health. Possible direct contact to lower and eastern side canopy from construction machinery.	Low	Minor	Crown lift eastern side to 2.5m. Installation of temporary tree protection fencing barrier to BS.5837:2012. Existing hard surfacing used as ground protection during construction. Construction phases to work from north back to south. A no dig solution after removal of the hard surfacing. The new surfacing laid onto the sub-base with minimal disturbance to any tree roots as per BS.5837:2012 recommendations.	Low	Minor	No
T4	Sycamore	B2	Direct root damage from proposed surfacing installation leading to root death.. Possible direct contact to lower and eastern side canopy from construction machinery.	Low	Minor	Crown lift eastern side to 2.5m. Installation of temporary tree protection fencing barrier to BS.5837:2012. Existing hard surfacing used as ground protection during construction. Construction phases to work from north back to south. A no dig solution after removal of the hard surfacing. The new surfacing laid onto the sub-base with minimal disturbance to any tree roots as per BS.5837:2012 recommendations.	Low	Minor	No
T5	Ficus	C1	Direct Root damage from proposed surfacing installation	Low	Minor	Crown lift western side to 2.0m and the three stems securely attached to the boundary wall by an approved arboricultural	Slight	Insignificant	No

			leading to root death.. Direct contact to canopy from construction machinery and other construction activities.			method. Installation of temporary tree protection fencing barrier to BS.5837:2012. Existing hard surfacing used as ground protection during construction. Construction phases to work from north back to south. A no dig solution after removal of the hard surfacing. The new surfacing laid onto the sub-base with minimal disturbance to any tree roots as per BS.5837:2012 recommendations.			
T6	Robinia	A2	Damage to canopy and stem during construction phase.	Slight	Minor	Installation of temporary tree protection fencing barrier to BS.5837:2012.	None	None	No
T7	Robinia	B2	Damage to canopy and stem during construction phase.	Slight	Insignificant	Installation of temporary tree protection fencing barrier to BS.5837:2012.	None	None	No
T8	Rowan	B1	No predicted impacts.	None	None	None	None	None	None

APPENDIX 5 – TREE RETENTION/LOSS AND DRAFT TREE PROTECTION PLAN

KEY - BS 5837 : 2012 Categories

- Tree Category A - High Quality
- A Category - Hedgerow, Group, Woodland
- Tree Category B - Moderate Quality
- B Category - Hedgerow, Group, Woodland
- Tree Category C - Low Quality
- C Category - Hedgerow, Group, Woodland
- Tree Category U - Unsuitable for Retention
- Root Protection Area to BS:5837:2012
- Tree Preservation Order (TPO)
- Pruning to be undertaken. (Prior to the beginning of demolition/ construction work on site)
- Tree Protection Barrier Primary location BS:5837:2012
- Tree Protection Barrier demolition phase secondary location to BS:5837:2012. Position coinciding with primary construction phase barrier location. (See drawing LC00256 04).
- Existing hard surfacing to act as ground protection. The demolition of the hard surfacing is to be phased to coincide with construction phasing beginning at the northern end of the rear garden and working back to the southern end



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Revision	Description	Date
-	First issue	11/5/18
A	T5 to be retained	17/5/18

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Project:
Vernon House, 5-8 Marks Square

Description:
Tree retention and Protection Plan (Demolition)

Status:
For Planning

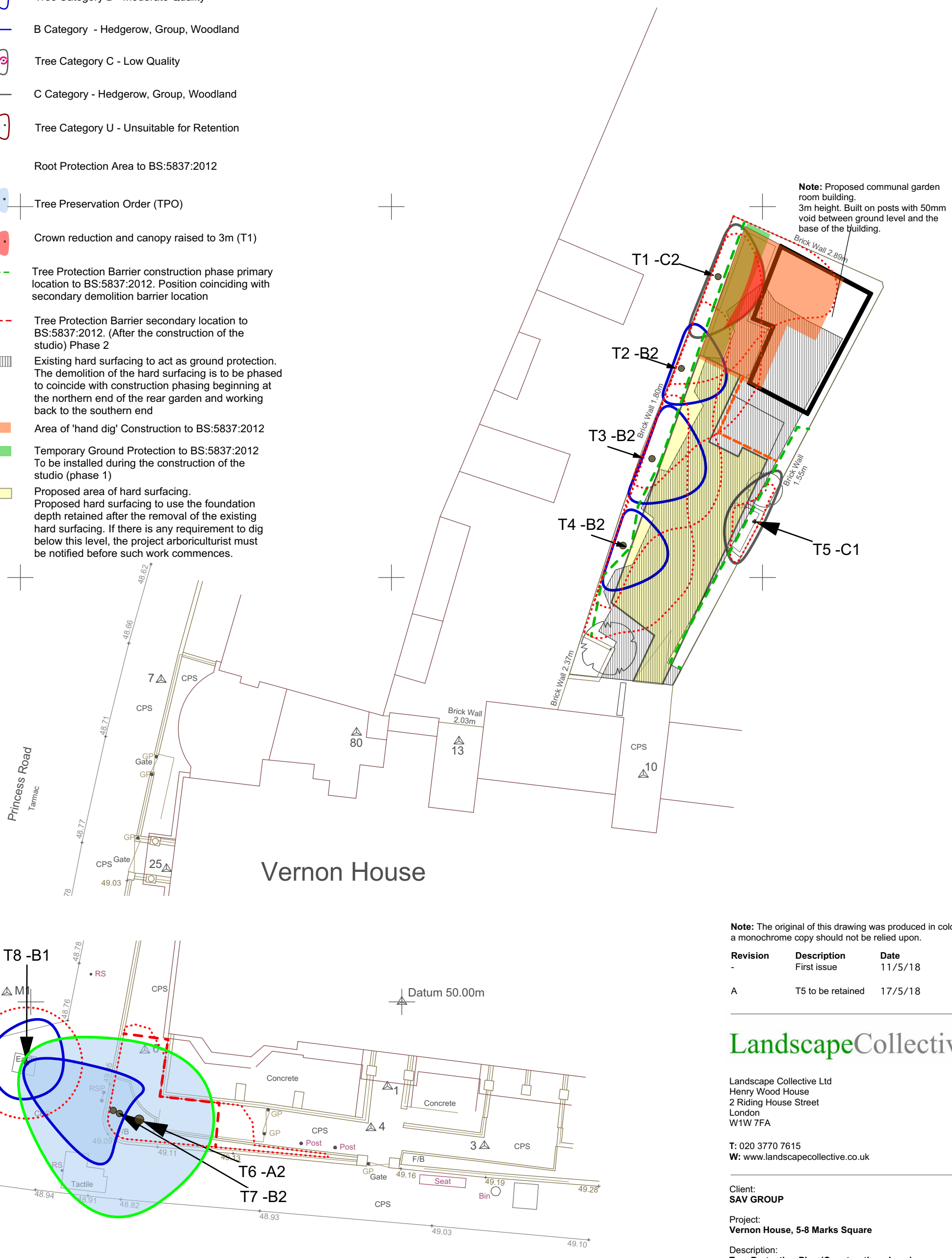
Scale:	Drawn I Checked	Date:
1:200 @A3	**SH SW**	**17/05/2018**

Job Number:	Drawing Number:	Revision:
LC 00256	**03**	**A**

APPENDIX 6 – DRAFT TREE PROTECTION PLAN (CONSTRUCTION)

KEY - BS 5837 : 2012 Categories

- Tree Category A - High Quality
- A Category - Hedgerow, Group, Woodland
- Tree Category B - Moderate Quality
- B Category - Hedgerow, Group, Woodland
- Tree Category C - Low Quality
- C Category - Hedgerow, Group, Woodland
- Tree Category U - Unsuitable for Retention
- Root Protection Area to BS:5837:2012
- Tree Preservation Order (TPO)
- Crown reduction and canopy raised to 3m (T1)
- Tree Protection Barrier construction phase primary location to BS:5837:2012. Position coinciding with secondary demolition barrier location
- Tree Protection Barrier secondary location to BS:5837:2012. (After the construction of the studio) Phase 2
- Existing hard surfacing to act as ground protection. The demolition of the hard surfacing is to be phased to coincide with construction phasing beginning at the northern end of the rear garden and working back to the southern end
- Area of 'hand dig' Construction to BS:5837:2012
- Temporary Ground Protection to BS:5837:2012 To be installed during the construction of the studio (phase 1)
- Proposed area of hard surfacing. Proposed hard surfacing to use the foundation depth retained after the removal of the existing hard surfacing. If there is any requirement to dig below this level, the project arboriculturist must be notified before such work commences.



Note: The original of this drawing was produced in colour - a monochrome copy should not be relied upon.

Revision	Description	Date
-	First issue	11/5/18
A	T5 to be retained	17/5/18

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Client:
SAV GROUP

Project:
Vernon House, 5-8 Marks Square

Description:
Tree Protection Plan (Construction phase)

Status:
For Planning

Scale:	Drawn I Checked	Date:
1:200 @A3	**SH SW**	**17/05/2018**

Job Number:	Drawing Number:	Revision:
LC 00256	**04**	**A**

APPENDIX 7 – METHODOLOGY

Tree Survey Methodology

Tree Survey

1.1 The tree survey was carried out with reference to the methodology set out in BS5837:2012 *'Trees in relation to design, demolition and construction – Recommendations'.* Trees were not tagged.

1.2 Trees were surveyed individually or as groups where it was considered that they had grown together to form cohesive arboricultural features either aerodynamically (trees that provide companion shelter), visually (e.g. avenues or screens) or culturally (including for biodiversity). However, where it was considered that there was an arboricultural need to differentiate between attributes trees within groups/woodlands were also surveyed as individuals

1.3 Tree survey findings are recorded in the tree survey schedule.

1.4 Within the tree survey schedule, each surveyed tree (T) on or adjacent to the site is given a reference number which refers to its position on the tree survey plan.

1.5 Also shown on the tree survey plan are quality grading and preliminary tree constraints: root protection areas.

1.6 *Tree species*: listed by common name.

1.7 *TPO Ref:* This column is only completed in cases where Landscape Collective have been instructed to undertake a TPO search and correlation with survey item reference numbers.

1.8 *Heights:* measured in metres. They are recorded to the nearest half metre for dimensions up to 10m and to the nearest whole metre for dimensions over 10m.

1.9 *Trunk diameters:* measured in millimetres and are rounded to the nearest 10mm. Single stemmed tree diameters are measured at 1.5m above ground level or, where a fork or swelling makes this impractical, at

the narrowest point beneath. Diameters of multi-stemmed trees are calculated as *'combined stem diameters'* according to specific guidance set out within BS5837:2012 (p.10, para 4.6.1 a and b).

1.10 *Crown spreads:* taken at the four cardinal points to derive an accurate representation of the tree crown. They are recorded up to the nearest half metre for dimensions up to 10m and to up the nearest whole metre for dimensions over 10m. For trees assessed as groups or woodland, an estimated mean radial crown spread in metres is taken for trees at the 80 percentile size.

1.11 *Crown clearance:* expressed both as existing height above ground level of first significant branch along with its direction of growth (e.g. 2.5m-N), and also in terms of the overall canopy. Measurements are recorded to the nearest half metre for dimensions up to 10m and to the nearest whole metre for dimensions over 10m.

1.12 *Estimates:* where any other measurement has had to be estimated, due to inaccessibility for example, this is indicated by a "#" suffix to the measurement as shown in the tree survey schedule.

1.13 Life stage:

- Y – young (stake dependent);
- SM - Semi-Mature (still capable of being transplanted without preparation, up to 30cm girth and not yet sexually mature);
- EM – Early Mature (not yet having reached 75% of expected mature size);
- M – Mature (anything else up to normal life expectancy for the species);
- OM – Over Mature (anything beyond mature and in natural decline); and

- V – Veteran (any tree displaying characteristics described by Natural England).

1.14 *Management Recommendations:* recorded in relation to a tree's structural and/or physiological condition (e.g. the presence of any decay and physical defect) and /or any preliminary management recommendations that may be appropriate. This is NOT intended to comprise a specification for tree work; further advice should be sought prior to implementation. Trees assessed as being in apparently immediately hazardous condition will be notified to the client separately as soon as practical.

1.15 *Physiological condition:*

- Good (Generally in healthy condition. No indications of impaired physiological function and in optimum condition for age and species);
- Fair (Condition satisfactory though below mean species performance, with indicators of reduced vitality. Some intervention may be required);
- Poor (Tree in decline/retrenching, with significantly impaired physiological function for age and species); and
- Dead (self-explanatory).

1.16 The above are informed by the following;

- Leaf size and colouration – unless otherwise state, leaf size and colouration is typical of the age and species; and
- Canopy density – unless otherwise stated, the canopy density of trees is typical of the age and species.

1.17 *Structural Condition & Notes:*

- Good (without any observable significant biomechanical structural weaknesses);
- Fair (with minor biomechanical structural flaws. Some remedial action may be required); and

- Poor (with significant biomechanical weaknesses requiring intervention particularly where risk management is required).

1.18 Notes on the apparent structural integrity of the tree are based upon visual tree assessment, including notes on form, taper, forking habit, storm damage, wood decaying fungi, pests and disease etc. plus other pertinent observations.

1.19 *Anticipated useful life expectancy (ULE)*: the length of time a tree is estimated to be able to make a safe useful contribution to local amenity is expressed in years as: <10, 10+, 20+, 40+.

1.20 *Category Grading:* individual trees, hedgerows, groups of trees, and woodlands are assessed in terms of quality and benefit within the context of proposed development and graded into one of four categories (U, A, B, and C) which are differentiated on the tree survey plan by the colours indicated below:

Category U (Red)

1.21 Unsuitable for retention. Trees in such a poor condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years.

Retention Implications to a site

1.22 Not a material consideration in the planning process but may have other benefits i.e. ecological benefits/importance.

Category A (Green)

1.23 Trees of high quality with an estimated remaining life expectancy of 40 years.

Retention Implications to a site

1.24 Tree should be retained and amendments to a proposed scheme should be identified in preference to tree removal.

Category B (Blue)

1.25 Trees of moderate quality with an estimated remaining life expectancy of at least 20 years.

Retention Implications to a site

1.26 Where possible amendments to a proposed scheme should be considered in preference to tree removal.

Category C (Grey)

1.27 Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150mm.

Retention Implications to a site

1.28 The retention of trees may be advantageous in the short term, but they should not be seen as a constraint to development.

1.29 A, B and C trees have also been given a sub-category of 1, 2 or 3 which reflects their arboricultural, landscape or cultural and conservation values respectively. Each subcategory has an equal weight, for example an A1 tree has the same retention priority as an A3 tree.

1.30 Trees have been assigned 'U' or category grading A-C in accordance with the cascade chart given in BS: 5837:2012.

1.31 In addition to the category, the tree survey schedule also describes each tree's root protection area (RPA) in terms of radius (metres) and overall area (sq metres).

Proposal

1.32 This column identifies;

- RET – Trees that will be retained – a defensible view of tree retention/removal balance

- PRET – refers to 'partial retention' of hedgerows (H), tree groups (G), and woodlands (W)
- REM – Trees that will be removed - trees that can defensibly be removed to facilitate development
- U – Trees identified to be unsuitable for retention due to their existing condition

Limitations

1.33 This report has been undertaken in compliance with BS: 5837:2012 and is not intended to be a tree safety survey. This report is prepared for planning application purposes only and does not evaluate the degree of risk posed by trees. Any notes offered regarding structural integrity of trees are to be considered incidental. Our recommendations given for immediate intervention should be put in the hand of the owner/site manager as soon as reasonably practicable.

1.34 Trees are dynamic living organisms as well as self-supporting dynamic structures, capable of achieving considerable size and structural complexity. Their physiological and structural condition can change rapidly in response to a wide range of biotic/abiotic factors. They are exposed to and can become damaged by the elements and by human activity, and have co-evolved with decay causing organisms that can degrade and sometimes destroy their structural integrity. The laws and forces of nature dictate a natural failure rate even among trees that appear healthy and structurally sound. They therefore have the potential to fail structurally, without prior manifestation of any reasonably observable symptoms. By their very nature, therefore, it is not possible to categorically state that any tree is 'safe' or hazard free. Tree surveys and/ or tree inspections are inherently a snap shot in time of the structural and physiological conditions of the trees concerned.

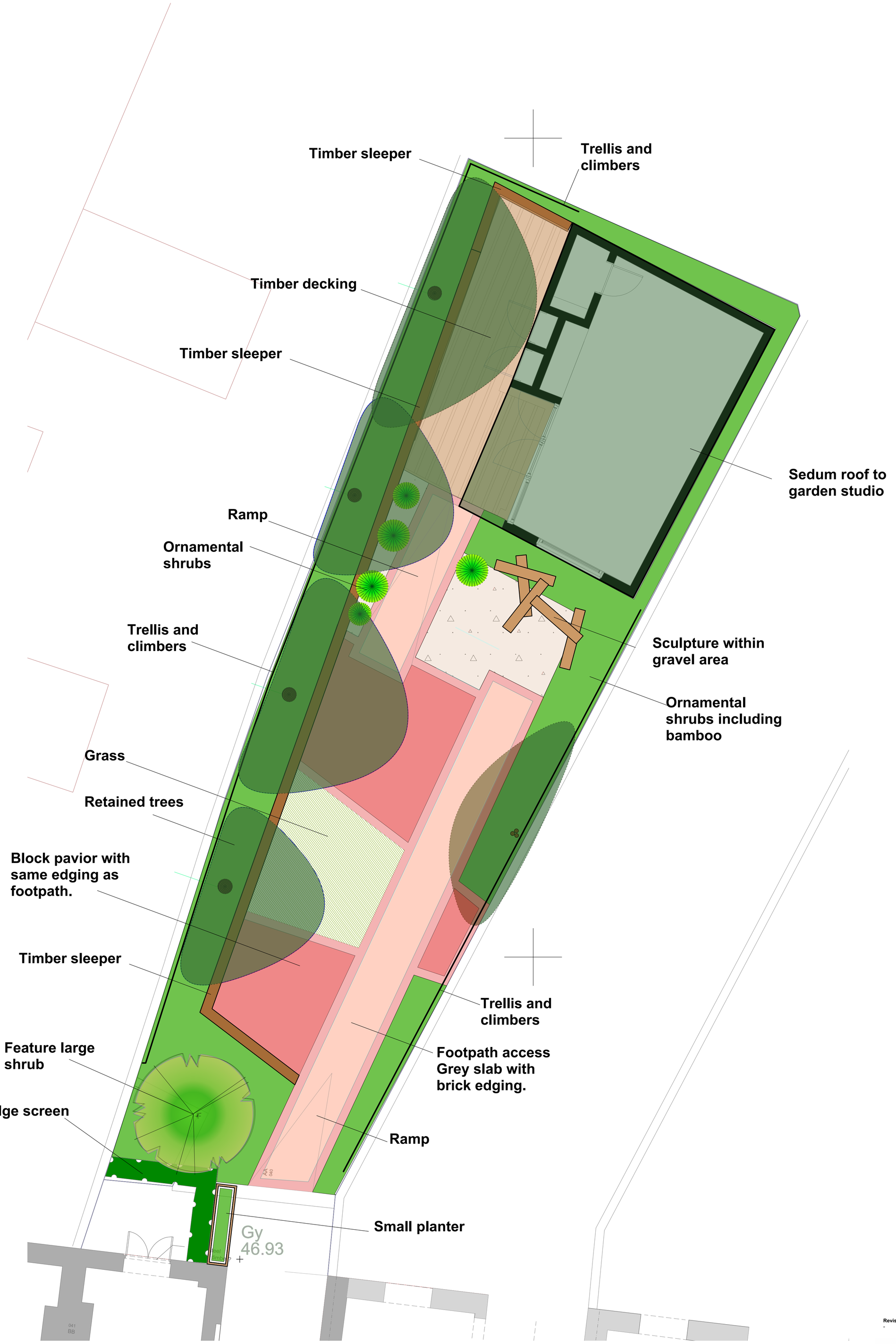
1.35 It is beyond the scope of this report to comment in relation to structural damage – direct or indirect, existing or potential – that might be associated with vegetation growth, or vegetation-related soil subsidence or heave.

1.36 Unless otherwise stated, all such surveys/inspections are undertaken from ground level and no internal inspections or tests have been undertaken.

1.37 Any management recommendations set out within this report are of an advisory and preliminary nature only and relate to trees within the context of current site use.

1.38 The findings and recommendations of this report should be considered time-limited for planning purposes to a maximum of 24 months from the date of this report (absent revisions of BS5837, which render pre - existing data obsolete).

APPENDIX 8 – SITE LAYOUT



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Revision	Description	Date
-	First issue	

LandscapeCollective

Landscape Collective Ltd
Henry Wood House
2 Riding House Street
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Client:
Firethorn Property Holdings Limited

Project:
Vernon House, 5-8 Marks Square

Description:
Soft and hard landscape plan

Status:
Planning

Scale:	Drawn I Checked	Date:
1:50 @A1	**SH SW**	**17/05/2018**

Job Number:	Drawing Number:	Revision:
LC/00256	**02**	**-**