

Appendix: Arboriculture

Annex 1: Letter of Validity and 2020 Arboricultural Constraints and Opportunities Report

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Our ref: MS/GM10102 /LT/007

Date: 27th October 2021

Lucy Turner
Trium Environmental Consulting LLP
4 Cavendish Square
London
W1G 0PG

Dear Lucy,

RE: ARBORICULTURAL CONSTRAINTS & OPPORTUNITIES REPORT LETTER OF VALIDITY

We hereby confirm that the Wardell Armstrong Arboricultural Constraints & Opportunities (AC&O) report Ref. GM10102-003 Version 4 Final, which is dated the 14th December 2020 is still valid for the purpose of supporting a planning application for the development of the site adjacent to the surveyed trees detailed in the report, which seeks approval for:

“Redevelopment of the site to include the demolition of existing buildings, retention and refurbishment of the warehouse and the erection of a ground, mezzanine and 18 storey building (with plant at roof level, levels 3 and 8 and 3 basement levels) comprising of café and community space within the warehouse and office floorspace, together with flexible retail and affordable workspace and flexible medical and research and development floorspace within the new building, cycle and disabled car parking, servicing and refuse areas, public garden (including soft and hard landscaping), highway improvements and all other associated works’.

The survey of the trees detailed in the report, which is appended to this letter, was undertaken on the 5th of November 2020 and it is generally considered that arboricultural survey data is valid for a period of two years from the date of the survey in the context of presenting arboricultural constraints and opportunities information to support planning application submissions.

We have checked that the Planning Policy and TPO sections in the AC&O report and these are up to date. We have not resurveyed the trees detailed in the report, for the above reasons. The revised 'Proposed Development' does not have any impact on the results of the report undertaken in December 2020, as the report does not look at the impacts of the development layout on the surveyed trees as these are located outside of the proposed development site.

We trust the information set out above is satisfactory for your requirements but if you have any queries, please contact us.

Yours sincerely
for Wardell Armstrong LLP



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ST THOMAS STREET, LONDON

ARBORICULTURAL CONSTRAINTS & OPPORTUNITIES REPORT

DECEMBER 2020

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ST THOMAS BERMONDSEY LTD

ST THOMAS STREET, LONDON

ARBORICULTURAL CONSTRAINTS & OPPORTUNITIES REPORT

DECEMBER 2020

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DRAWINGS	TITLE	SCALE
GM10102-002 Rev. B	Tree Location and Constraints Plan	1:250@A1

1 INTRODUCTION

1.1 Brief

1.1.1 Wardell Armstrong LLP (WA) was commissioned by Trium Environmental Consulting LLP on behalf of St Thomas Bermondsey Ltd, to undertake an arboricultural constraints and opportunities survey at a site (hereafter referred to as ‘the site’) bounded by St Thomas Street, Fenning Street, Vinegar Yard and Snowfields at approximate National Grid Reference TQ: E: 533094 N: 179934.

1.1.2 The purpose of this report is to provide an objective assessment of the constraints and opportunities posed by trees that are located on land on and immediately adjacent to the Site. The identified tree constraints can be used by architects, master planners and highway engineers to assist in master planning / layout design of the proposed development ensuring that the development is sustainable in the long term by ensuring that important trees are retained and incorporated into the proposed development design, where possible. This approach accords with best practice as set out in British Standard (BS) 5837:2012, which is a planning policy requirement of most Local Planning Authorities (LPAs) in the UK.

1.1.3 The arboricultural survey included a desktop review and a site visit. The survey followed the methodology as set out in BS5837:2012 Trees in Relation to Design, Demolition and Construction – Recommendations (The British Standards Institution, 2012).

1.1.4 The position of trees and hedgerows is based on the Topographical Survey Plan prepared by Kohn Pederson Fox Associates International PA Ref. 2476 dated 5th November 2018.

1.2 Site Context

1.2.1 The site, consisting of buildings and hardstanding, is approximately 0.3 ha in size. It is located directly south of London Bridge train station, on the south side of the River Thames in the London Borough of Southwark (LBS). The site is bounded by St Thomas Street, Fenning Street, Vinegar Yard and Snowfields including Nos. 1-7 Fenning Street and No. 9 Fenning Street. No trees were found within the site, however there were a small number of trees located outside the site, which were surveyed.

1.3 Development Proposal

1.3.1 The proposals are for the redevelopment of the site to include the demolition of existing buildings, retention and refurbishment of the warehouse and the erection of

a ground, mezzanine and 18 storey building (with plant at roof level and 3 basement levels) comprising of café and community space within the warehouse and flexible retail, affordable workspace and flexible office and medical floorspace within the new building, cycle and disabled car parking, servicing, refuse and plant areas, public garden (including soft and hard landscaping), highway improvements and all other associated works.

1.4 Trees & the Planning Process

1.4.1 Under s197 of the Town & Country Planning Act 1990, LPAs have a legal duty to consider the protection of trees and the planting of new trees on development sites when determining planning applications. LPAs must also consider the potential effects, whether detrimental or positive, that proposed developments will have on retained trees, and the effect that these trees will have on the users of the development.

1.4.2 The site is located within the administrative boundary of the London Borough of Southwark, with the relevant policy extract from the Council's adopted 'Core Strategy' reproduced below:

Strategic Policy 11 – Open spaces and wildlife

'We will improve, protect and maintain a network of open spaces and green corridors that will make places attractive and provide sport, leisure and food growing opportunities for a growing population. We will protect and improve habitats for a variety of wildlife.

2. Protecting woodland and trees and improving the overall greenness of places, including through promoting green corridors, gardens and local food growing'.

1.4.3 The new Southwark Plan which is currently at the examination stage also has the following policy:

'P60 Trees

1. Development will be permitted if trees are planted as part of landscaping and public realm schemes, commensurate to the scale and type of development, and the character of the neighbourhood.

2. Development must retain and protect significant existing trees including:

1. Trees designated with Tree Protection Orders (TPOs); and

2. Trees that have a high amenity value; and

3. Trees within Conservation Areas or the setting or curtilage of listed buildings; and

4. Veteran, ancient and notable trees; and

3. Development must retain and enhance the borough's trees and canopy cover; and

4. Where trees are removed to facilitate development, they should be replaced by new trees which result in no net loss of amenity, taking into account canopy cover as measured by stem girth; either

1. Within the development whereby valuation may be calculated using the Capital Asset Value for Amenity Trees (CAVAT) methodology or other assessment; or

2. If this is not possible, outside the development. In this case a financial contribution must be provided to improve borough tree planting located according to 'right tree right place' principles. The financial contribution will include ongoing maintenance costs where trees are planted in the public realm.

5. Tree planting should be adaptable to climate change while supporting native species. The selection and position of trees should improve air quality and they should have a long life and high biodiversity and amenity value.

6. Retained trees must be protected during the construction process in line with British Standard BS5837 'Trees in relation to Design, Demolition and Construction'.

7. In exceptional circumstances removal of trees protected by TPO or conservation area status will be permitted where sufficient evidence has been provided to justify their loss. Replacement planting will be expected where removal is agreed. The replacement of TPO trees must take into account the loss of canopy cover as measured by stem girth and biodiversity value.'

1.4.4 National Planning Policy in England is detailed in the National Planning Policy Framework (NPPF). The last revised version of the NPPF (February 2019) includes the following two paragraphs on trees and development, with the latter giving specific protection to Ancient Woodland, Veteran and Ancient trees:

'NPPF Para. 170: *Planning policies and decisions should contribute to and enhance the natural and local environment by:*

b) recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland’.

‘NPPF Para 175: When determining planning applications, local planning authorities should apply the following principles:

c) development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists’.

1.4.5 Table B.1 (See Figure 1) taken from British Standard 5837:2012 gives guidance on the level of information required by LPAs in order to make an informed decision on the impact of development on trees. Where trees are present on proposed development Sites, highlighting arboricultural constraints at an early stage in the design process is crucial to ensuring the successful retention and subsequent integration of good quality trees into the design layout.

1.4.6 When the tree constraints have been considered and a detailed site layout designed, specific impacts on the trees proposed to be retained (and on those adjacent to the site) are considered via an Arboricultural Impact Assessment (AIA) and Tree Protection Plan (TPP). When the development design is finalised, taking into account the arboricultural impacts, it is usual for the LPA to condition the protection of the trees on site during the construction phase. This can be achieved via the production of an Arboricultural Method Statement (AMS) and TPP. These will detail how trees will be protected and include a methodology for any works within tree RPAs in order to ensure that tree protection conditions can be discharged. These steps accord with the recommendations in BS 5837:2012 as detailed in Table B.1 as shown in Figure 1.

1.4.7 This Arboricultural Constraints & Opportunities Report and accompanying Tree Location & Constraints Plan fulfils the requirement to present the existing arboricultural constraints for the site to enable the LPA to assess the impacts as part of the planning application for the site.

Table B.1 Delivery of tree-related information into the planning system

Stage of process	Minimum detail	Additional information
Pre-application	Tree survey	Tree retention/removal plan (draft)
Planning application	Tree survey (in the absence of pre-application discussions) Tree retention/removal plan (finalized) Retained trees and RPAs shown on proposed layout Strategic hard and soft landscape design, including species and location of new tree planting Arboricultural impact assessment	Existing and proposed finished levels Tree protection plan Arboricultural method statement – heads of terms Details for all special engineering within the RPA and other relevant construction details
Reserved matters/ planning conditions	Alignment of utility apparatus (including drainage), where outside the RPA or where installed using a trenchless method Dimensioned tree protection plan Arboricultural method statement – detailed Schedule of works to retained trees, e.g. access facilitation pruning Detailed hard and soft landscape design	Arboricultural site monitoring schedule Tree and landscape management plan Post-construction remedial works Landscape maintenance schedule

Figure 1: BS 5837:2012 Table B.1.

1.5 Statutory Legal Protection

1.5.1 The two main sources of protection afforded to trees are i) Conservation Area (CA) control and ii) Tree Preservation Orders (TPO).

1.5.2 Trees within Conservation Areas are protected under the Town & Country Planning Act 1990 (as amended), which affords blanket¹ protection to trees with a stem diameter of 75 mm and above when measured at 1.5 m from ground level.

1.5.3 Trees may also be protected by a TPO under the Town & Country Planning Act 1990 (as amended) and The Town and Country Planning (Tree Preservation) (England) Regulations 2012.

1.5.4 It is a criminal offence to carry out any unauthorised works to trees that are either protected by a TPO or located within a CA, including:

- Cutting down, uprooting or wilfully destroying a tree, or wilfully damaging, topping or lopping a tree in such a manner as to be likely to destroy it;
- Any works that contravene the provisions of a TPO; and/or

¹ Protection is similar to that afforded to trees protected by TPO.

- Any works in contravention to the regulations.
- 1.5.5 Penalties for non-compliance of a TPO and/or CA can be unlimited, if tried in a County Court, and up to £20,000 if tried in a Magistrates Court. Note, if the Local Planning Authority decides to also prosecute under the Proceeds of Crime Act 2002 in addition to prosecuting under the Town and Country Planning Act 1990, the fine can be unlimited in a Magistrates court.
- 1.5.6 It should be noted that the felling of trees prior to receiving full planning permission may also require a felling licence under the Forestry Act 1967. This requires that any persons wishing to fell 5 m³ of trees within any of the following three-month periods (January to March, April to June, July to September and October to December) applies for a felling licence from the Forestry Commission. There are a number of exemptions to this requirement, with some of the more relevant exemptions including:
- Pruning trees;
 - Felling fruit trees or trees growing in a garden, orchard, churchyard or designated public open space;
 - Felling trees that, when measured at a height of 1.3 m from the ground, have a diameter of 8 cm or less;
 - Felling trees immediately required for the purpose of carrying out development authorised by full planning permission;
 - Felling necessary for the prevention of danger or the prevention or abatement of a nuisance² (e.g. threat/danger to a third party); and
 - Felling necessary to prevent the spread of a quarantine pest or disease.
- 1.5.7 Other legislation that affords a lesser or indirect level of protection to trees includes the following:
- The Wildlife & Countryside Act 1981 (as amended);
 - Conservation of Habitats and Species (amendment) Regulations 2017; and
 - Hedgerow Regulations (1997).
- 1.5.8 All of the above provide for the identification and safeguarding of flora and fauna that may be found in association with trees and woodlands.

² NB - This only applies when a real and/or immediate danger is present.

1.6 Protected Species

- 1.6.1 Although this is not an assessment of the impacts of development upon ecology, it should be noted that trees can contain features (i.e. cavities, cracks, splits and loose bark) that may support such fauna species as bats and birds.
- 1.6.2 Bats and their roosts are protected under Schedule 5 of the Wildlife & Countryside Act 1981 (as amended), the Conservation of Habitats & Species Regulations 2017 (as amended) and are also listed under Section 41 of the Natural Environment & Rural Communities (NERC) Act 2006.
- 1.6.3 Trees provide potential nesting habitat for birds and all UK birds and their active nests are protected under the Wildlife & Countryside Act 1981 (as amended). Bird species that are listed on Schedule 1 of The Act are also protected against disturbance of their active nest(s).
- 1.6.4 The UK government has advised that following the exit of the UK from the EU, the EU Withdrawal Act 2018 will ensure that all existing EU environmental law will continue to operate in UK law³. The UK government and devolved administrations will “amend current legislation to correct references to EU legislation [...] and ensure we meet international agreement obligations”.

³ DEFRA (2018) Upholding Environmental Standards if there's no Brexit Deal [online]. Accessed 12.04.2019. Available at: <https://www.gov.uk/government/publications/upholding-environmental-standards-if-theres-no-brexit-deal/upholding-environmental-standards-if-theres-no-brexit-deal>

2 THE SURVEY

2.1 Desk Survey – Legal Constraints

- 2.1.1 WA checked the LBS online mapping on the 4th of November 2020 in order to ascertain whether any trees within and/or adjacent to the site are protected by TPO and/or CA status. There are no TPOs within or immediately adjacent to the site.
- 2.1.2 Bermondsey Street CA is located to the south of the site. This CA protects the surveyed trees T1, T2 and T6.
- 2.1.3 No work may be undertaken to these trees unless full planning permission is gained (which details the works), or by submitting a Notification of Proposed Tree Works. The decision notice for this type of application is six weeks. WA can provide this service so please contact us with any questions you may have.

2.2 Field Survey

- 2.2.1 The arboricultural survey was undertaken by Elisa Dore on 5th November 2020 using the methodology set out in BS5837:2012 Trees in Relation to Design, Demolition and Construction – Recommendations (see Appendices 2 and 3).
- 2.2.2 Weather conditions during the survey were sunny, thus conducive to surveying.
- 2.2.3 The trees were surveyed in accordance with the methodology in Appendix 2.
- 2.2.4 The trees were then classified in accordance with the BS5837:2012 tree quality assessment categories 'A', 'B', 'C' and 'U' (see category criteria and grading within Appendix 3). 'A' and 'B' category trees are considered as 'high' and 'moderate' quality, respectively, and are considered as a constraint to development. As such, these trees should be retained and afforded appropriate protection during development. 'C' category trees are considered to be of 'lower' quality due to their condition or 'lower' amenity value and are, therefore not usually considered a constraint to development. 'U' category trees are those in such a 'poor' condition that they cannot usually be retained within the current site context for longer than ten years. It should be noted that in some cases, category 'U' trees may have valuable habitat/ecological value despite being in poor condition. In such cases, where it is safe to do so, these trees may be recommended for retention and/or pruning works. Where relevant, we will bring such trees to your attention. Where trees are located outside of the red and blue line site boundaries, irrespective of their BS 5837 categorisation, these should be considered as a constraint during the Site layout design process and protected during construction, as such trees are not within the control of the site owner.

- 2.2.5 Root Protection Areas (RPAs) are calculated for individual trees utilising the methodology set out in BS 5837:2012, which is calculated by multiplying the stem diameter (measured at 1.5 m from ground level) by twelve for single-stemmed trees and a variant on this for multi-stemmed trees. For surveys in England (and outside England where it is a Local Planning Policy requirement), individual veteran trees are given a standard BS 5837 RPA and also a secondary veteran tree RPA, to accord with government's standing advice 'Ancient woodland, ancient trees and veteran trees: protecting them from development'⁴ and local planning policy, which is based on a calculation of fifteen times the stem diameter or five metres beyond the crown spread, whichever is greater.
- 2.2.6 For tree groups, woodlands and hedgerows, the calculated RPAs are based on a set distance from the canopy edge of the tree groups, woodlands and hedgerows. This calculation is based on the largest stem diameter of the trees on the edge of the tree groups and woodlands and the crown spread measurement for these edge trees. A variant of the tree group and woodland RPA calculation is used to calculate hedgerow RPAs, with the calculation based on the largest stem diameter of the hedgerow woody plants and the hedgerow width.
- 2.2.7 Further details for each tree, and the groups of trees surveyed are set out in the Tree Survey Schedule (see Appendix 1) and on the Tree Location & Constraints Plan Ref. No. GM10102-002 Rev. B.

⁴ <https://www.gov.uk/guidance/ancient-woodland-and-veteran-trees-protection-surveys-licences>

3 SURVEY RESULTS AND EVALUATION

3.1 Tree Population

3.1.1 All surveyed trees were located outside the site red line boundary. Six individual trees (T1, T2, T3, T4, T5, T6) and one tree group (G1) were surveyed and assessed.

3.1.2 No veteran trees were found on or immediately adjacent to the site.

3.1.3 Tree group G1, consisting of three wild cherries G1(1), G1(2) and G1(3), is located in the rear garden of the public house adjacent to the site. The crowns of these three trees merge to form a continuous canopy, thus the three trees were assessed as a group but also assessed as individuals to enable their individual RPAs to be calculated.

3.1.4 No RPAs were amended to take into account restrictions to a circular root growth habit. Numerous restrictions to root growth were evident for the majority of the surveyed trees, thus determining the actual spread of the roots would be impossible to undertake, without recourse to ground penetrating radar.

3.1.5 One category 'A' quality, two category 'B' quality, two category 'C' quality and one category 'U' quality individual trees were found on and immediately adjacent to the site.

3.1.6 The category 'U' quality tree is T3 a Tree of Heaven, which is also classified as an invasive species in London. The tree has declined since the previous survey two years ago and has areas of sunken bark on the east and south sides of the stem, extending from ground level to the main union at 2 m above ground level. There are unidentified fungal fruiting bodies on the eastern side of the stem base and Ganoderma spp. brackets at the base of the stem on the south eastern side. There were no leaves on the crown at the time of inspection and no leaf litter from the tree was observed on the ground in the surrounding area. There was sparse bud proliferation in the crown which would indicate decline. Due to the location of this tree adjacent to the public highway and its poor condition, it is recommended that this tree is removed within 6 months of the date of inspection (5th November 2020).

3.1.7 The one tree group surveyed was classified as category 'C' quality.

3.1.8 British Standard 5837:2012 states that category 'A' trees are the highest quality, 'B' trees are of moderate quality and 'C' trees are considered to be of low quality. Category 'U' trees are in such a poor structural and/ or physiological condition that they have a predicted life expectancy of less than ten years. Therefore, category 'A' and 'B' trees are considered a constraint to development, whilst 'C' category trees are

usually not usually considered a constraint to development, whilst 'U' quality trees should not be considered a constraint to development unless the trees are either ancient or veteran or provide habitat for protected species such as bats. However, it should be noted that where the trees are outside of the control of the client, they are all considered as a constraint to development.

3.1.9 A detailed description of all trees and groups of trees surveyed and recommended works can be found in the Tree Survey Schedule in Appendix 1. Table 1 and Table 2 below summarise the BS 5837 quality grading of the trees found on site, with these figures represented in graph format in Figures 2 and 3.

Table 1: Individual Trees Quality Assessment Summary				
Tree quality	A	B	C	U
Individual Trees Identification	T1	T5, T6	T2, T4	T3
Totals	1	2	2	1

Table 2: Tree Groups Quality Assessment Summary				
Tree quality	A	B	C	U
Tree Groups Identification	None	None	G1(1), G1(2), G1(3)	None
Totals	0	0	3	0

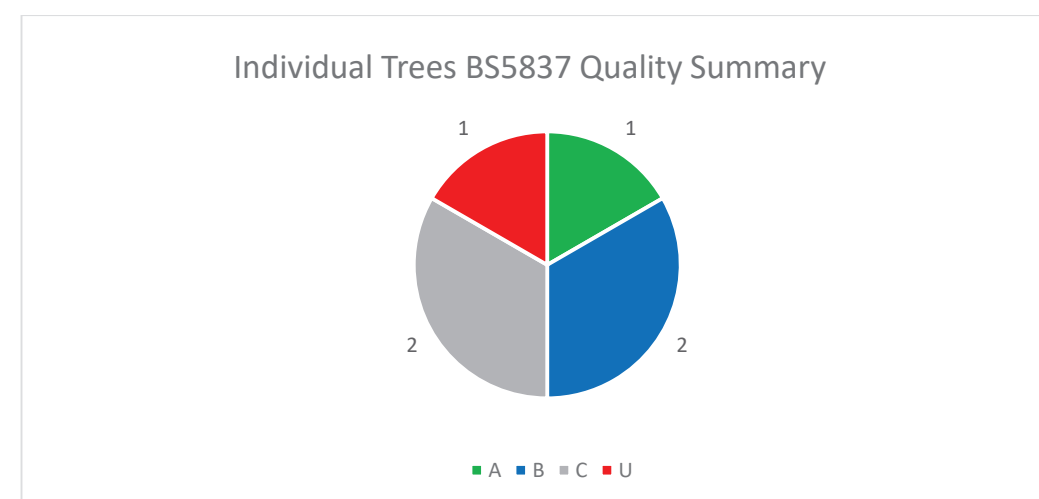


Figure 2: Individual Trees Quality Summary

3.1.10 An assessment of the age class of the individual tree population on and adjacent to the site, reveals that the population is predominantly made up of mature trees, with these accounting for 50% of the population. The remaining individual tree population is made of semi-mature trees, accounting for 33% of the population and early mature

trees accounting for 17% of the population. No young, late-mature or veteran individual trees were found during the survey. A summary of the age class assessment for individual trees is shown in the graph below in Figure 3.



Figure 3: Individual trees age class assessment summary.

4 SUMMARY AND RECOMMENDATIONS

- 4.1.1 The BS 5837:2012 tree survey was undertaken by a WA Arboriculturist on 5th November 2020, the results of which have informed this report and associated Tree Location & Constraints Plan Ref. GM10102-003 Rev. B.
- 4.1.2 There are no TPO constraints on the site; however, trees T1, T2 and T6 are within the Bermondsey Street Conservation Area and therefore no work may be undertaken to these trees unless either full planning permission is gained (which details the works), or by submitting a Notification of Proposed Tree Works.
- 4.1.3 There are no veteran or ancient trees on or immediately adjacent to the site.
- 4.1.4 The next stage in the process is to utilise this arboricultural constraints information to inform detailed site layout planning for the site.
- 4.1.5 If the proposed development is approved by the GLA, retained trees will need to be protected when the proposed development is constructed, with tree protection fencing as per the recommendations set out in BS 5837:2012. An example of the type of tree protection fencing recommended by the Standard is provided within Appendix 6 and an example of the type of signage required is provided within Appendix 7.
- 4.1.6 Where there are impacts within retained tree and hedgerow RPAs, mitigation measures will be required. An AMS can provide full mitigation details and specifications, which if required can be conditioned by the LPA.

5 REFERENCES

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<https://www.gov.uk/guidance/ancient-woodland-and-veteran-trees-protection-surveys-licences#veteran-trees>

Appendix 1 Tree Survey Schedule

Item type: T (tree), G (group), H (hedge), W (woodland)	Tree/ Group Ref. No.	Botanical Name	Height(m)	Crown Clearance (m) & compass direction	Crown Spread (m)				Stem Diameter @ 1.5m (mm)	Number of stems	Age Class: Y (Young), SM (Semi-Mature), EM (Early-Mature), M (Mature), LM (Late-mature), V (Veteran)	Condition		Estimated Remaining Contribution: (<10, 10+, 20+, 40+)	B55837 Categorisation Grading	Sub Category	Comments	Preliminary management recommendations/ further works	BS 5837 Root Protection Area (m ²)	BS 5837 Root Protection Radius (m)	Veteran Tree Root Protection Radius (m)
					North	East	South	West				Physiological Condition: G (Good), F (Fair), P (Poor), D (Dead)	Structural Condition: G (Good), F (Fair), P (Poor)								
T	3	Tree of Heaven	12	2	6.5	5.5	5	5.5	550	1	M	F	P	<10	U	1	Located off site in fenced off compound. Stem trifurcates at 2 m above ground level. Areas of sunken bark on east and south sides of stem from union to ground level, with fungal fruiting bodies on the eastern side also. Ganoderma brackets at base of stem on south eastern side of stem. Crown is defoliated and there is no evidence of this year's leaf litter in the surrounding area, although the epicormic growth still has leaves on. Crown appears sparse with little bud proliferation. Significant decline since the previous survey in 2018.	Contact owners, to undertake full risky/safety inspection of the tree within 6 months.	137	6.6	N/A
T	4	Himalayan Birch	9	2.5	3	4	3	4	160	1	SM	G	G	20+	C	1	Vehicle damage to crown on road side of crown. Minor pavement deflection from roots.	None, as outside of site.	12	1.9	N/A

Location: Vinegar Yard, London (Job. No. GM10102)
 Estimated Stem Diameters & Other Measurements highlighted in this colour

Surveyor: Elisa Dore
 Weather: Sunny
 Survey Date: 5th November 2020



Item type: T (tree), G (group), H (hedge), W (woodland)	Tree/ Group Ref. No.	Botanical Name	Height(m)	Crown Clearance (m) & compass direction	Crown Spread (m)				Stem Diameter @ 1.5m (mm)	Number of stems	Age Class: Y (Young), SM (Semi-Mature), EM (Early-Mature), M (Mature), LM (Late-mature), V (Veteran)	Condition		Estimated Remaining Contribution: (<10, 10+, 20+, 40+)	B55837 Categorisation Grading	Sub Category	Comments	Preliminary management recommendations/ further works	BS 5837 Root Protection Area (m ²)	BS 5837 Root Protection Radius (m)	Veteran Tree Root Protection Radius (m)
					North	East	South	West				Physiological Condition: G (Good), F (Fair), P (Poor), D (Dead)	Structural Condition: G (Good), F (Fair), P (Poor)								
T	1	Wild Cherry	22	2E	4	10	9	9	730	1	M	G	G	20+	A	1.3	Significant old, large tree. Significant pavement damage from roots. Has been pruned away from pub building.	None, as outside of site.	241	8.8	N/A
T	2	Apple	7	3	4	3	2	3	230	1	M	F	F	10+	C	1	Unable to fully inspect due to location within pub rear yard. Minor deadwood, up to 80 mm in diameter. Previous branch rip out wound on south side of crown, with minor associated decay.	None required.	24	2.8	N/A

Appendix 2 Survey Methodology

Item type: T (tree), G (group), H (hedge), W (woodland)	Tree/ Group Ref. No.	Botanical Name	Height(m)	Crown Clearance (m) & compass direction	Crown Spread (m)				Stem Diameter @ 1.5m (mm)	Number of stems	Age Class: Y (Young), SM (Semi-Mature), EM (Early-Mature), M (Mature), LM (Late-mature), V (Veteran)	Condition		Estimated Remaining Contribution: (<10, 10+, 20+, 40+)	BSS837 Categorisation Grading	Sub Category	Comments	Preliminary management recommendations/ further works	BS 5837 Root Protection Area (m ²)	BS 5837 Root Protection Radius (m)	Veteran Tree Root Protection Radius (m)
					North	East	South	West				Physiological Condition: G (Good), F (Fair), P (Poor), D (Dead)	Structural Condition: G (Good), F (Fair), P (Poor)								
T	5	Silver Birch	14	3	3	3	3	3	245	1	EM	G	G	20+	B	1	Occluding wounds on east side of stem at 1.5 m and 2 m above ground level from previous crown raising works.	None, as outside of site.	27	2.9	N/A
T	6	Strawberry Tree	5	2	2	3	3	2.5	180	1	SM	G	G	40+	B	1	No significant defects observed.	None, as outside of site.	15	2.2	N/A
G	1(1)	Wild Cherry	14	2					440	1	M	F	F	10+	C	1	Located in pub garden. Deadwood in crown.	None, as outside of site.	88	5.3	N/A
G	1(2)	Wild Cherry	9	2					190	1	SM	F	F	20+	C	1	Located in pub garden. Deadwood in crown.	None, as outside of site.	16	2.3	N/A
G	1(3)	Wild Cherry	12	0.5					200	3	EM	F	P	20+	C	1	Multi stem, poor form tree.	None, as outside of site.	63	4.5	N/A

Appendix 2: Survey Methodology

The following process has been followed and the features of each tree, group of trees or woodland have been recorded in the Arboricultural Data Sheets:

- Each individual surveyed tree (T), tree group (G), woodland (W) and hedgerow (H) was given a sequential reference number.
- Where a number of surveyed trees formed a cohesive feature, such as groups, woodland compartments or whole woodlands, they were recorded, assessed and plotted as groups (G) or as woodland (W). Whilst not every tree within groups are surveyed, a representative sample of the largest edge trees were measured in order to be able to plot the group or woodlands crown spreads and RPAs. Where detailed plans show development proposed within a group or woodland, all trees within influencing distance of the development proposals are usually recorded, plotted and assessed.
- The surveyed trees and hedgerows were then identified by their common and/or Latin name.
- Tree height measured in metres from the stem base using a Truepulse 200L laser. Where the ground has a significant slope, the higher ground is selected. This informs crown/stem ratio and shading.
- Crown height is measured in metres above ground level using a Truepulse 200L laser and is an indication of the average height at which the main crown begins.
- Stem diameter is measured in millimetres at 1.5m above the adjacent ground level (upslope on sloping ground) with a standard diameter measuring tape to enable RPAs to be calculated.
- Crown spread is measured in metres using a Truepulse 200L laser and taken at the four cardinal points to derive an accurate representation of the crown to be plotted on the TPP.
- Age class of the tree is described as:
 - Young – Newly planted trees and self-seeded trees;
 - Semi-mature – Large nursery stock that can be newly planted or self-seeded trees still in the early stages of establishment;
 - Early mature – Trees in the first third of their life cycle which is characterised by their quickness of growth and subsequently significant increase in size;

- Mature – Trees in the second third of their life cycle, characterised by reaching their ultimate size and slowing of annual incremental growth;
- Late mature – Trees in the final third of their life cycle, often characterised by showing signs of decline; and
- Veteran – Trees that show ancient tree characteristics irrespective of their age, such as crown retrenchment and decaying wood habitat.
- Physiological condition is assessed and classed as G (good), F (fair), P (poor) or D (dead). This is an indication of the health of the tree and takes into account vitality, presence of disease and dieback.
- Structural condition is assessed and classed as G (good), F (fair) or P (poor). This is an indication of the structural integrity of the tree and takes into account significant wounds, decay and quality of branch junctions.
- Life expectancy is classed as: less than 10 years (<10), at least 10 years (10+), at least twenty years (20+) or at least 40 years (40+). This is an indication of the number of years before the removal of the tree is likely to be required.
- The trees were then classified in accordance with the BS5837:2012 tree quality assessment categories 'A', 'B', 'C' and 'U' (see category criteria and grading within Appendix 3).
- Comments include a brief description of the tree with comments on the form, vitality, health and any significant defects that may be present.
- Recommendations for work are based on the existing land use.

Appendix 3: Tree Categorisation Method

Table 1 Cascade chart for tree quality assessment

Category and definition	Criteria (including subcategories where appropriate)	Identification on plan		
Trees unsuitable for retention (see Note)				
Category 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	<ul style="list-style-type: none"> 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 (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning) Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline 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 <p><i>NOTE - Category U trees can have existing or potential conservation value which it might be desirable to preserve; see 4.5.7.</i></p>	See Table 2		
<p>Trees to be considered for retention</p>				
	<p>1 Mainly arboricultural qualities</p>	<p>2 Mainly landscape qualities</p>		
		<p>3 Mainly cultural values, including conservation</p>		
Category A Trees of high quality with an estimated remaining life expectancy of at least 40 years	Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups or formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)	See Table 2
Category B Trees of moderate quality with an estimated remaining life expectancy of at least 20 years	Trees that might be included in category A, but are downgraded because of impaired condition (e.g. presence of significant though remediable defects, including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation	Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality	Trees with material conservation or other cultural value	See Table 2
Category C Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories	Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value; and/or trees offering low or only temporary/transient landscape benefits	Trees with no material conservation or other cultural value	See Table 2

Appendix 3 Tree Categorisation Method

A single tree, group or woodland can come under one or more sub-headings. This does not confer on it a higher value than a tree with a single value, for the purposes of this report.

Appendix 4 General Tree Constraints

Appendix 4: General Tree Constraints

- Trees impose a constraint to development in a variety of ways. These principally include their rooting areas, referred to as Root Protection Areas (RPAs), their current and future crown spread, and their species characteristics (e.g. branch and fruit drop, production of 'honey dew', density of foliage etc). Where located on shrinkable clay soils, trees can also contribute to subsidence damage to buildings.
- Consideration should be given during the design stage to any incompatibilities between the design and tree retention. These include (but are not limited to) the effects on the amenity value provided by existing trees, working space required during construction, infrastructure/utility requirements, highway visibility requirements and foundation design to prevent the effects of subsidence.
- The RPA is calculated using the tree's diameter at 1.5m and represents the minimum area which should be left undisturbed around each retained tree to enable its survival following development.
- Tree root morphology is influenced by many factors including, but not limited to; past land use, the presence of roads, structures and underground services, drainage and soils. Any of these factors may result in non-uniform root growth and therefore result in an RPA represented as a polygon RPA that reflects suitable protection of the root system.
- The majority of tree roots are generally found within the top 600mm of soil, depending on soil types and profiles. Any disturbance or sudden changes to the rooting environment can result in damage being caused to roots and alterations to the roots physiological ability to absorb water, nutrients and undertake gaseous exchange.
- Where alterations have been made within the trees' rooting environment, the damage can often be observed within the crown of the trees, reduced vitality and increased deadwood production. Trees are likely to decline progressively, or in some circumstances may become a hazard where stability and structural integrity has been compromised by Site operations.
- The RPA must be protected by the installation of tree protection fencing prior to the commencement of development work on Site. The fencing provides a physical barrier that is secured, to prohibit activities considered detrimental to the retention of healthy trees (e.g. excavations, soil stripping, discharge of substances harmful to trees, storage of materials, fires). In addition to this, it may be necessary to install specialist temporary

ground protection which enables access within the RPA, without causing long-term detriment to the health of the tree/s.

- No traditional construction works should take place within the RPA of retained trees. However, in some circumstances and where there is an overriding requirement for construction and the retention of trees, it may be appropriate to employ techniques and use materials that allow trees to be retained, whilst enabling the construction. For hard surfacing, such as drives, roads and footways, utilising no-dig construction techniques and using three-dimensional geogrids and permeable wearing course materials may be appropriate. For built structures within RPAs, the use of pile and above ground level beam foundations and/or cantilevered engineering solutions can enable structures to be constructed within RPAs. The project arboriculturist should be consulted on the appropriateness of building within retained tree RPAs, as this is not appropriate for all trees and soil types.
- Where aerial parts of the tree crowns extend beyond the edge of the RPA, consideration should be given to protection of these parts, allowing for protection during development processes including working space. It may be appropriate to consider pruning of aerial parts to allow construction clearances and future nuisance abatement, this however must be considered by the project arboriculturist and the LPA. Where development proposals identify a need for working within the RPA/crown spread of retained trees and it can be demonstrated that retained trees remain viable, then it is important that the project arboriculturist is contacted to advise and prepare an AMS and identify appropriate stages of supervision.

Appendix 5 Report Limitations

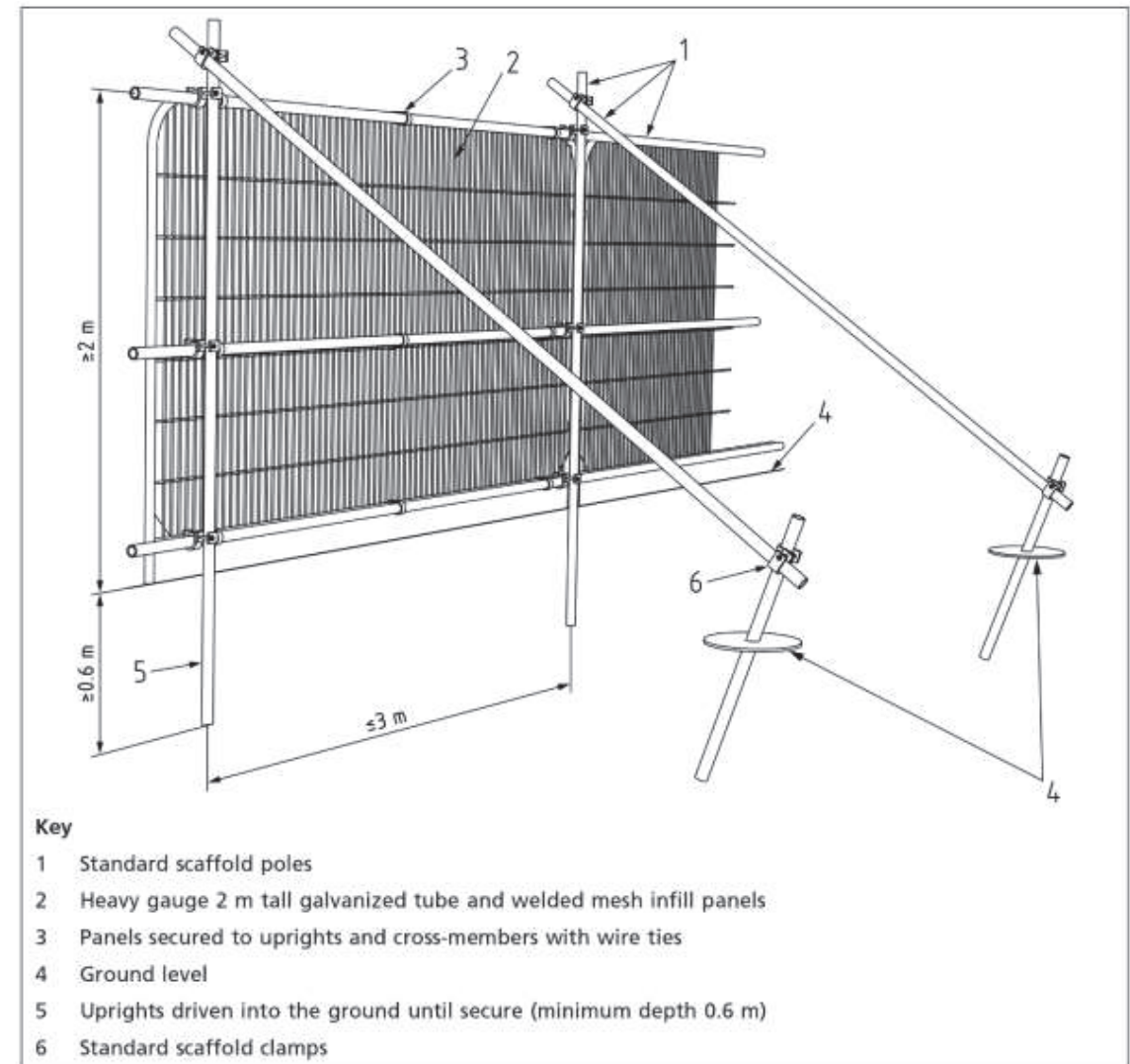
Appendix 5: Report Limitations

- Trees are influenced by a variety of environmental variables, which can affect the health of trees causing biomechanical and physiological changes. All comments made on tree health reflects their physical condition at the time of the survey. Due to the changeable nature of trees and other site/environmental conditions, which may influence trees, the preliminary management recommendations/ further works for the surveyed trees undertaken, which can be found in Appendix 1 of this report, are only valid for a period of 12 months from the date of the Site survey (14th July 2020). These recommendations relate specifically to the general maintenance of tree health and safety and do not affect the implications of this Arboricultural Impact Assessment and therefore, the results of the survey remain valid beyond 14th July 2021.
- This Tree Constraints report and the associated Tree Location and Constraints Plan is based on a topographical survey plan supplied by the client. Where tree stem locations are not shown on the topographical survey, these are plotted using GPS plotting and/ or the utilisation of site features to manually plot the tree stem locations and canopy spreads for tree groups. Aerial photography is also utilised to plot tree group canopy spreads, where utilisation of GPS is not feasible. These methods provide a good representation of the surveyed trees; however, please note that the GPS used is not sub-metre accurate. WA cannot be held responsible for inaccurate tree locations, where trees are not shown on the topographical survey plan supplied to us by the client.
- Although comments and recommendations on the safety of particular trees may have been made, this survey is not a Tree Risk Management Survey and thus should not be treated as such. All trees were surveyed from ground level only and in a solely visual nature. However, where trees have been identified as presenting an imminent safety risk due to structural defects, this has been brought to the attention of the client and treated as a separate matter. Should trees require further detailed assessment (decay detection, aerial inspections) and do not present an imminent safety risk, the information will be detailed within the survey schedules.
- Any management recommendations have been made in accordance with BS3998: 2010 Tree Works – Recommendations; and/or industry best practice. Works have been recommended in accordance with any statutory obligations on the landowners or occupiers.

- This survey did not include an ecological survey of vegetation or habitat areas. Any ecological issues incidentally observed during the survey are reported on in the tree schedule.
- For the purpose of this report no samples were obtained from Site for analysis or any other reason.
- The survey did not include soil sampling to determine whether the soil is shrinkable. Such analysis should be carried out by a specialist to ensure building foundations are adequate in accordance with current National House Building Council Guidelines (NHBC).

**Appendix 6
Tree Protection Fencing**

Appendix 6: Tree Protection Fencing



Appendix 7: Tree Protection Signage



**Appendix 7
Tree Protection Signage**

Appendix 8
Glossary of Common Terms Used in Arboriculture

Appendix 8: Glossary of Common Terms Used in Arboriculture

Abscission. The shedding of a leaf or other short-lived part of a woody plant.
Abiotic. Pertaining to non-living agent's e.g. environmental factors.
Absorptive Roots. Non-woody short-lived roots, generally having a diameter less than one millimetre, the primary function of which is the uptake of water and nutrients.
Access Facilitation Pruning. One off pruning operation to provide access for development operation. Pruning that will not be detrimental to trees health or amenity.
Arboricultural Method Statement (AMS). A methodology for the implementation of development where encroachment within the RPA has the potential to cause damage or loss of retained trees.
Arboriculturist. Someone who through relevant training and experience has gained knowledge in the expertise of trees.
Adaptive Growth. The process by where wood formation rates increasing in the cambial zone, as well as wood quality, responds to gravity and other forces acting on the cambium.
Adaptive Roots. The adaptation of existing roots; or a production of new roots in response to damage or decay.
Adventitious Buds, Roots, Shoots. Which grow in other than primary apical control.
Anchorage. The process in which a tree uses its roots system to support itself within the soil structure.
Ancient: A tree that has passed beyond maturity and is old, or aged, in comparison with other trees of the same species.
Arisings. Parts of the tree that has been removed for disposal, branches, leaves, roots etc.
Canker. Area of dead cambium killed by overlying pathogenic tissues.
Cavity. A hole in the woody structure of the tree; often caused through decay.
Cleaning Out. The removal of dead, diseased crossing branches, damaged branches and alien structures.
Competent Person. Person with training and experience in accordance with the proposed matter being addressed, having an understanding of a particular matter being approached.
Condition. An indication of the physiological vitality of a tree, but not the stability of a tree.
Construction. A Site based operation that has the potential to affect retained trees.
Construction Exclusion Zone. An area based on the RPA from which construction activity is prohibited.
Coppicing. Removal of all aerial parts of the tree leaving a stump for regeneration of new shoot.
Crown/Canopy. The parts of the tree that supports the leaves.
Crown Lifting. The removal of limbs and small branches to a specified height above ground level.
Crown Thinning. The removal of a proportion of secondary branch growth throughout the crown to produce an even density well balanced crown structure.
Crown Reduction/Reshaping. Removal in the height to a specified description to maintain a flowing crown structure.
Deadwood. Non-functional branches which no longer support natural growing conditions of the tree but may be beneficial for the support of habitats and species, possibly including rare saproxylic invertebrates. Thus, may also be referred to as 'Decaying Wood Habitat' or 'Dysfunctional wood'. Size ranges for deadwood referred to in this report and/or Appendix 1: - Small (<75 mm diameter), Medium (76 – 150 mm), Large (151-

300) mm and Very large >301 mm. For some species such as oak etc, the risk of deadwood falling from the tree can be lesser than for other species, due to the variety of wood strengths of different tree species.
Defect. Any area of the tree that no longer has an optimal mechanical uniformity of stress. Defects may or may not affect the long-term retention of the tree(s), depending upon severity, the likelihood of the defect(s) failing and the location of the tree(s) (Target).
Dieback. Death of woody parts of the tree starting at distal ends of the tree.
Disease. Damage occurring to living organisms as a result of pathenogenic micro-organisms.
Distal. Furthest distance away from the main body of the tree.
Dysfunction. In woody tissues, the loss of physiological function, especially water conduction, in sapwood.
Epicormic Growth. Growth from dormant or adventitious buds, not developing from the first shoot.
Girdling Roots. A circling root which constricts the stem or roots, with the potential to cause death and the restriction of flow within the phloem.
Heartwood. Dysfunctional xylem which no longer has conductive properties, but which has become an integral structural part of the tree.
Heave. The swelling of shrinkable clay soils, often when vegetation has been removed allowing soil rehydration to develop, with the potential for listing structures (e.g. walls).
Included Bark/Acute Forks. Face to face contact of bark usually at fork unions, or branch unions.
Lopping/Topping. A term used to describe the removal of large sized branches
Monolith. Removing some or most of the trees crown and sometimes the upper stem, in order to retain as much of the tree as standing deadwood habitat for ecological reasons.
Pathogen. A micro-organism that causes disease within another organism.
Phytotoxic. Toxic to plants.
Pollarding. The removal of the tree canopy to produce knuckles where new growth develops and is removed cyclically usually performed on young trees.
Pruning. Selective removal of parts of the tree to achieve a desired outcome.
Root Protection Area (RPA). An area around a tree identified by multiplying the stem diameter at 1.5 m from ground level by 12 to produce a radial area or rooting volume around a tree to be protected Ref. BS 5837: 2012.
Service. Any above and below ground structure or apparatus for utility provision.
Size of part. Relating to risk assessments, identifying the size of the hazard, or parts of a tree which may cause harm if failure occurs.
Stem(s). The main structure from the ground up supporting the crown.
Stress. In plants, the physiological depletion as a result of environmental influences.
Structure. A manufactured object, such as building, roads, path, wall or excavated structures.
Structural Roots. The primary larger diameter roots which hold and support the aerial parts of the tree.
Subsidence. The shrinkage of soil through the absorption of water via vegetation and the sinking effects on surrounding architectural structures.
Targets. In risk assessment, persons or property at risk of harm as a result of a hazard (falling tree, branch, etc.).

Transitioning Veteran Trees: Trees with some veteran features, but not sufficient veteran features to be considered full veteran trees. They contribute to the veteran tree resource and, through the ageing process are expected to become true veterans in time, before which they offer bridge and continuity habitat for important saproxylic invertebrates and fungi.
Tree Protection Plan (TPP). A scaled drawing informed by descriptive text where necessary, based upon finalised Site proposals, showing trees for retention and illustrating the tree and landscape protection measures.
Veteran Tree. Tree that, by recognized criteria, shows features of biological, cultural or aesthetic characteristics of, but not exclusive to, individuals surviving beyond the typical age range for the species concerned.
Windthrow. The blowing over a tree at its roots.



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Structural Consultant
ARTI Civils
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London, EC1Y 8AF
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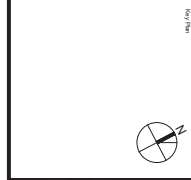
Environmental Consultant
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Transport Consultant
Carter Transport
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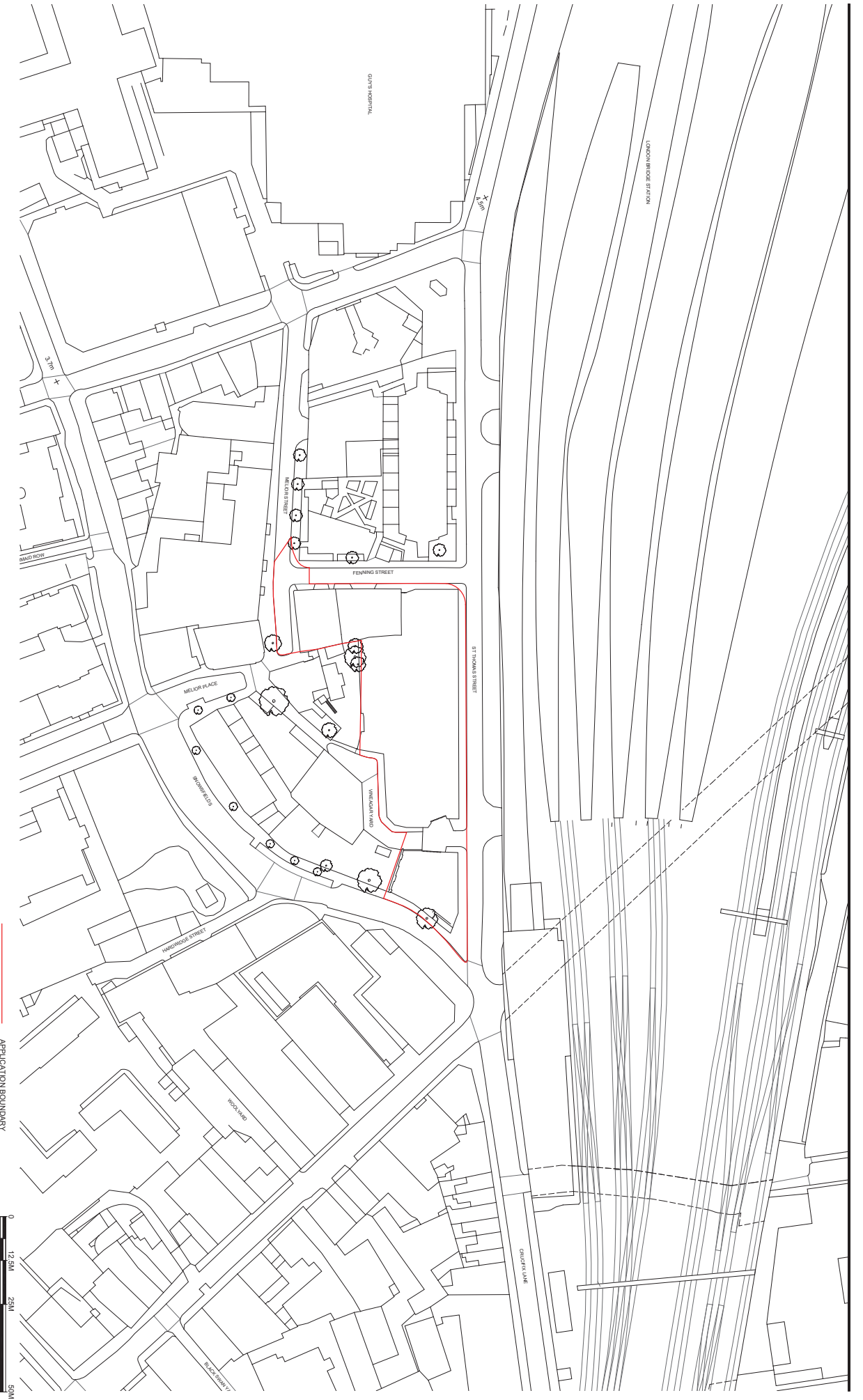
Cost Consultant
Academy House, 34 York Way
London, N1 2 5DQ
Tel: (020) 7531 7777

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Project: 2472 Vinegar Yard
Drawing No: A-011
Drawing Title: EXISTING SITE PLAN
Scale: 1:500
Drawing Date: 11/2018
Drawing Status: CB
Drawing Type: LV
Drawing Code: P00



Appendix 9
Existing Site Plan

STOKE-ON-TRENT

Sir Henry Doulton House
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