

Tree Constraints Report Arboricultural Impacts Assessment

Vine Street, Liverpool.

T: 01829 770075

www.amenitytree.com

THE ANNEX WILLOW HILL SCHOOL LANE BURWARDSLEY
CHESTER CH3 9NX

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1.0 Introduction

1.1 Instruction

- 1.2 I have been instructed by Mr Darryl Kelly BSc MCIOB, Development Director of Carpenter Investments to prepare the following Tree Constraints Report and Arboricultural Impact Assessment (AIA) for land at Vine Street, Liverpool.
- 1.3 This site visit and report was compiled by Simon Brain chartered arboriculturist and registered consultant of the Institute of Chartered Foresters.
- 1.3 The survey was conducted using the client supplied Ordnance Survey base which was issued by L7Architects. The AIA contained within this report was updated on the 23.12.2013 based on the most recent design layout for the site, provided by L7Architects.
- 1.4 The tree constraints report has been carried out in line with the recommendations in BS 5837:2012 *Trees in relation to design, demolition and construction – Recommendations* and will evaluate the direct and indirect impacts of the current tree population.
- 1.5 The constraints assessment considers constraints posed above and below ground.
- 1.6 Specialist design and construction techniques may be required and will be assessed in the form of an Arboricultural Impact Assessment (AIA).
- 1.7 Below ground constraints are influenced by the root protection area and are determined in line with the recommendations set out in BS 5837:2012. These recommendations quantify the root protection area based on a measured stem diameter in accordance with Annex C, and the root protection area determined from Annex D.
- 1.8 It is important to understand that when considering the root protection area with regards to the circular plot as delineated on the tree protection plan that a number of site factors can influence root morphology and disposition of tree roots. Root morphology will be taken into account when determining the impacts of the proposed development on existing woody vegetation.

- 1.9 Above ground constraints are considered in line with the recommendations in BS 5837:2012 and include shade, dominance, current and future crown spread as well as the ultimate height of those retained trees, where this is considered applicable.
- 1.10 Impacts associated with development sites and retained trees can develop from site operations that can subject trees to multiple impacts (*root severance, compaction, loss of photosynthetic material*), where this is applicable it will be highlighted in the Arboricultural Impact Assessment (AIA).

2.0 Report Limitations

- 2.1 The inspection has been carried out from ground level only, using visual observation methods as this is a preliminary report as requested by the client, should a more detailed inspection be required then this will be highlighted in the recommendations.
- 2.2 Trees are living organisms whose health and condition can change rapidly, the health, condition and safety of trees should be checked on a regular basis, preferably at least once a year. The conclusions and recommendations in this report are only valid for a period of six months from the date of this report. This period of validity may be reduced in the case of any change in conditions to or in proximity to the tree.
- 2.3 I have not contacted the local planning authority to determine whether any Tree Preservation Order (TPO) covers the tree, nor to determine if the site is a Conservation Area.
- 2.4 No analysis of soil samples was undertaken.
- 2.5 Any legal descriptions or information given to the consultant are understood to be accurate.
- 2.6 No responsibility is assumed by Amenity Tree Care Ltd for legal matters that may arise from this report and the consultant shall not be required to give testimony or to attend court / inquiry unless subsequent contractual arrangements are made.

- 2.7 Any alteration or deletion from this report will invalidate it as a whole
- 2.8 The responsibility for any work undertaken on the surveyed trees rests with the land managers / owners.
- 2.9 A topographical drawing has positioned those tree stems growing in Group three and is accurate to within 0.3m.

3.0 Methodology and data collection

- 3.1 The site was visited as indicated above and the trees were assessed visually utilising the Visual Tree Assessment methodology.
- 3.2 Each individual tree has been assessed with general regard to condition, health and structural suitability and commented upon in the survey sheets (Appendix 3).
- 3.3 An individual and group schedule is appended to this report (Apx. 3) and includes detailed information relating to tree height, stem diameters, crown dimensions and estimated remaining contribution.
- 3.4 Where dimensions have been recorded the following measurement conventions have been observed:
- a) Height, crown spread and crown clearance have been recorded to the nearest half metre for dimensions up to 20m
 - b) Stem diameters have been recorded in millimetres
 - c) Where dimensions have been estimated (*e.g. for those trees located off site or where access is restricted and accurate data cannot be recorded*) these trees will be suffixed with *, within the survey sheets.
- 3.5 Recommendations for remedial tree works (Preliminary Management Recommendations) have been provided on the basis of the tree(s) current condition.

4.0 Above and below ground arboricultural constraints

- 4.1 Below ground constraints are influenced by the root protection area (RPA) and are determined in line with the recommendations set out in section 4.6 of BS 5837:2012. These recommendations quantify the RPA based on a measured stem diameter in accordance with Annex C, and the RPA determined from Annex D. those trees with two to five stems are calculated using the calculation in 4.6.1. It is important to understand that when considering the RPA with regards to the circular plot that a number of site factors can influence the root morphology and disposition of tree roots as stated in section 4.6.3 of BS 5837:2012. All these factors must be considered when contemplating the impacts of the proposed development on existing woody vegetation.
- 4.2 Above ground constraints are considered in line with the recommendations in section 5.2 of BS 5837:2012 and include shade dominance, current and future crown spread as well as the ultimate height of those retained trees.

5.0 Study area

- 5.1 The site is situated to the south of Myrtle Street and lies in between Vine Street to the east and Chatham Street to the west. The surrounding area would be described as residential. The trees to the frontage stretch along Myrtle Street.
- 5.2 The study area is in its current state contains some built, permanent structures. The site is currently used a car park. The tree stock tends to populate the northern site boundary and the western boundary.
- 5.3 The site topography would be described as flat.

6.0 Tree Survey

- 6.1 Six individual trees and four groups of trees were surveyed.
- 6.2 The overall quality of tree stock to the north of the site is good, however are number of trees within the group that have short life expectancy. Those trees located on the western boundary are overhanging site. One tree T3 is in particularly poor structural condition warranting its removal. This will result in an impact on the remaining trees through the impact associated with altered exposure.
- 6.3 The majority of the trees are of retention value B (six records), retention value C records (2 records), one Category A record and one Category U record.

7.0 Site Tree Constraints and Arboricultural Impact Assessment

7.1 Root Protection Area (RPA) analysis

The physical root protection area for each tree, group, hedge or woodland has been shown on the Tree Constraints Plan. The design team have ensured placement of development accords with BS5837:2012 with respect to RPA and Retention value classifications.

The RPA for tree numbers 1, 2 and 4 remains unaffected by development, assuming confirmation that no ground level change will occur in the Construction Exclusion Zone (CEZ) as detailed on the Tree Protection Plan (TPP). It is however highly likely that actual root location has been restricted by the presence of the boundary wall and root ingress into the site is likely to be less than has been indicated. Confirmation of this by supervised trial hole may be required. The RPA for T6 extends into the site and as such a designated Special Measure Area (SMA) has been provided for the installation of the proposed car parking within the CEZ. All operations to construct in the SMA shall be conducted in accordance with the following procedures:

- A no dig policy shall apply, only hand tools will be allowed to be used to remove surface vegetation/minor contours only.
- A propriety geo textile shall be used within the construction layers of any new surfaces incorporating a textile base layer and appropriate inert granular infill suited to vehicular and pedestrian use.

- The finished wearing surface shall be permeable and a resin bonded finish is suggested for this in all SMA areas of new surfacing
- The finished levels of the new surface in the SMA areas shall be higher than the existing due to the no dig policy. This will be dependent upon the depth of the new surface; typically this can range from 125mm-300mm in depth
- An arboricultural clerk of works is required to oversee all operations in the SMA during construction
- Confirmation of California Bearing Ration for use of geotextile
- Arboricultural Method Statement for construction

The RPA for Groups for 1, 2 and 4 are in such a position that these trees require removal for specific reasons associated with the proposed development including; current physiological and structural condition, the species suitability of poplar and sycamore is limited as these trees have a short life expectancy by comparison to the lime trees growing on the frontage. The poplar and sycamore are therefore unsuitable tree species for the provision of sustained visual amenity in the wider landscape. Removal of the poplar and sycamore will allow future development of retained group three, compromising a number of limes of the site frontage. The importance of the limes to the character of the area is that they can exhibit sustained visual amenity for a significantly long period. The retention of the Group three affords long term sustained visual amenity and green infrastructure for this area of the the city and one of its major public roads.

The positioning of boundary walls on the Chatham and Myrtle Street frontages will act as root barriers into this site, the position of the frontage wall is shown on the TPP. It can be assumed that root development will have most likely to have occurred immediately adjacent to the foundations for these walls but in some cases root morphology may have been totally restricted by them. In cases of deeper rooting species such as Poplar the roots may extend underneath foundation. The extent of root morphology has not been quantified or assessed by this report and RPA modifications have not therefore been shown on the TPP. The development has been positioned outside RPA, given that the existing wall will act as a root barrier.

7.2 The potential for indirect and direct root damage to structures.

The likelihood of potential indirect damage to the existing built infrastructure such as walls and property will depend mainly on the shrink ability of any clay component within the soil and rooting depth of the tree, the condition/age of the structure and also the proximity of the tree to the structure. The assessment of soil shrink ability is outside the area of our expertise and the scope of this report.

7.3 The crown dimension analysis.

The crown dimension has been shown at four cardinal points for each tree reference on the Tree Constraints Plan. The physical contact and subsequent nuisance arising from tree crowns interfering typically with built property can manifest in post construction tree resentment and adequate planning is required to manage these issues at the current design stage. Facilitation pruning will be required to maintain a satisfactory distance from the new development to allow its construction. Following construction completion Group three will need to be maintained to a distance of 1.5m from edge of branch overhang to face of elevation.

7.4 Dominance and shading related considerations analysis.

The scheme has been designed to maintain a maximum distance from dwellings and trees. In addition pruning applies to T4 on the western boundary therefore post construction tree resentment is not anticipated.

7.5 Other matters

Demolitions

The demolition of the existing walls within the RPA of retained trees will require the supervision of an arboricultural clerk in order to ensure tree protection as stated in this AIA is upheld.

Construction Exclusion Zones (CEZ).

All retained trees will be protected throughout the period of development with barrier fencing that will be constructed in line with the guidance given in BS 5837:2012 and consisting of a vertical and horizontal scaffold framework, braced to resist impacts. Weld mesh panels will be securely attached to the scaffold framework. The Construction Exclusion zone will be regarded as sacrosanct and access will only be allowed prior to a consultation with the consultant arboriculturist and local authority Tree Officer. Full barrier specifications and details delineating the extent of the construction exclusions zones are detailed on the Tree Protection Plan.

Site supervision and monitoring

Where retained trees have been delineated on the tree protection plan as requiring SMA for construction, this has been done in order to ensure that the proposed development does not adversely impact on the health and safety of trees retained. There will be a requirement to supervise construction operations in these areas in order to ensure that no damage occurs to retained trees.

To ensure that there is an auditable system of site monitoring, reports will be compiled following site visits and issued to the site manager.

Supervision will be required for the construction of the parking bays within the root protection area of T6 and demolition of walls near retained Tree numbers G3, T1, T2 and T4.

Installation of below ground infrastructure

No detailed plans have been provided specifying the location of site utilities which if available will need to be submitted for AIA

8 Tree Works (Preliminary management recommendations)

Preliminary Management recommendations have been provided within the arboricultural survey sheets. These recommendations are provided in contemplation of development and also represent our recommendations for the current management of trees in order that the landowners discharge his/her duty of care. Those trees categorised as U represent those trees that have irremediable structural defects. Facilitation pruning is required for Group Three.

9 Conclusions and recommendations

The proposed scheme was assessed in line with guidance provided in BS 5837:2012 *Trees in relation to design demolition and construction – Recommendations* with the aim to achieve a harmonious relationship between trees and structures that can be sustained in the long term.

It is my professional opinion as an arboriculturist that the proposed development should be allowed to proceed on the grounds that the design proposal has achieved a harmonious relationship between those trees retained on site and the proposed scheme.

The scheme requires the loss of those trees indicated on the TPP. The remaining trees can be retained and protected in accordance with BS5837:2012 as has been shown on the supporting Tree Protection Plan providing sustained visual amenity in the wider landscape.

A planning condition can be used to satisfy the need for an Arboricultural Method Statement for this site with particular regard to SMA, tree replacements and no dig construction.

Appendix 1

Survey Key

Tree No. Sequential reference number e.g. T1, T2 for individual trees, where trees are determined to be a group they will be denoted as follows G1, G2 and W1, W2 for woodlands.

Species: Recorded and listed by both common name and scientific name

Stem: Principal above ground structural component(s) of a tree that supports its branches.

Height: Provides indication of the height of the tree and is measured in meters from ground level to the upper canopy edge and is recorded up to the nearest half meter for heights up to 10 meters and the nearest meter for heights over 10 meters.

Stem diameter: Measured at a height of 1.5 meters from ground level using a diameter tape and recorded in millimetres. Where the stem cannot be measured at 1.5 meters due to irregular swellings on the stem or low branching then the position of measurement will be taken in accordance with the specification in Annex C of BS 5837:2012

Crown spread: Measured at the four cardinal points of a compass (north, south, east, and west) from the centre of the stem and rounded up to the nearest meter in order to provide an accurate representation of the crown spread in order to show above ground constraints.

Crown height: Measured distance between the lowest points of the crown from ground level.

Age class: A method of age estimation e.g. young - the first one third of the estimated life expectancy, middle mature- the second third of the estimated life expectancy, mature- The last third of the estimated life expectancy , over mature- trees showing obvious signs of senescence

First significant branch (FSB): The direction of growth of the first significant branch from the point of attachment.

Comments: A brief evaluation and description of the tree in order to inform on significant defects or characteristics relating to tree form. Where comments are not present it should be assumed that no relevant features were exhibited.

Recommendations: Arboricultural recommendations based on the current land use only and are provided where action is required in order to aid in the long term management of the tree or for reasons of site safety.

Survey restrictions: It may be necessary on occasion to estimate tree dimensions where access is not available or where structure or vegetation is precluding the visual assessment. Where dimension are estimated it will clearly be marked in the tree survey schedule and be suffixed with #.

Root protection area (RPA) Layout design tool indicating the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the trees viability. All stem diameters are calculated in line with the guidance given in BS 5837:2012 Annexe D

Tree categorisation: a method of apportioning a value (non-fiscal) to trees in order to identify the quality and value of existing tree stocks, allowing for informed decisions to be made regarding which trees are to be retained or removed dependant on development occurring. Category U-Those in such a condition that cannot realistically be retained as living trees in the context of the current land use for longer than 10 years. Category A-Trees of a high quality with an estimated life expectancy of at least forty years. Category B-Trees of a moderate quality with an estimated remaining life expectancy of at least 20 years. Category C-Trees of a low quality with an estimated remaining life expectancy of at least 10 years.

Please refer to Table 1 Cascade chart for tree quality assessment, including subcategories, reference BS 5837:2012

Remaining life expectancy: estimated remaining life expectancy e.g. <10, 10+, 20+, 40+

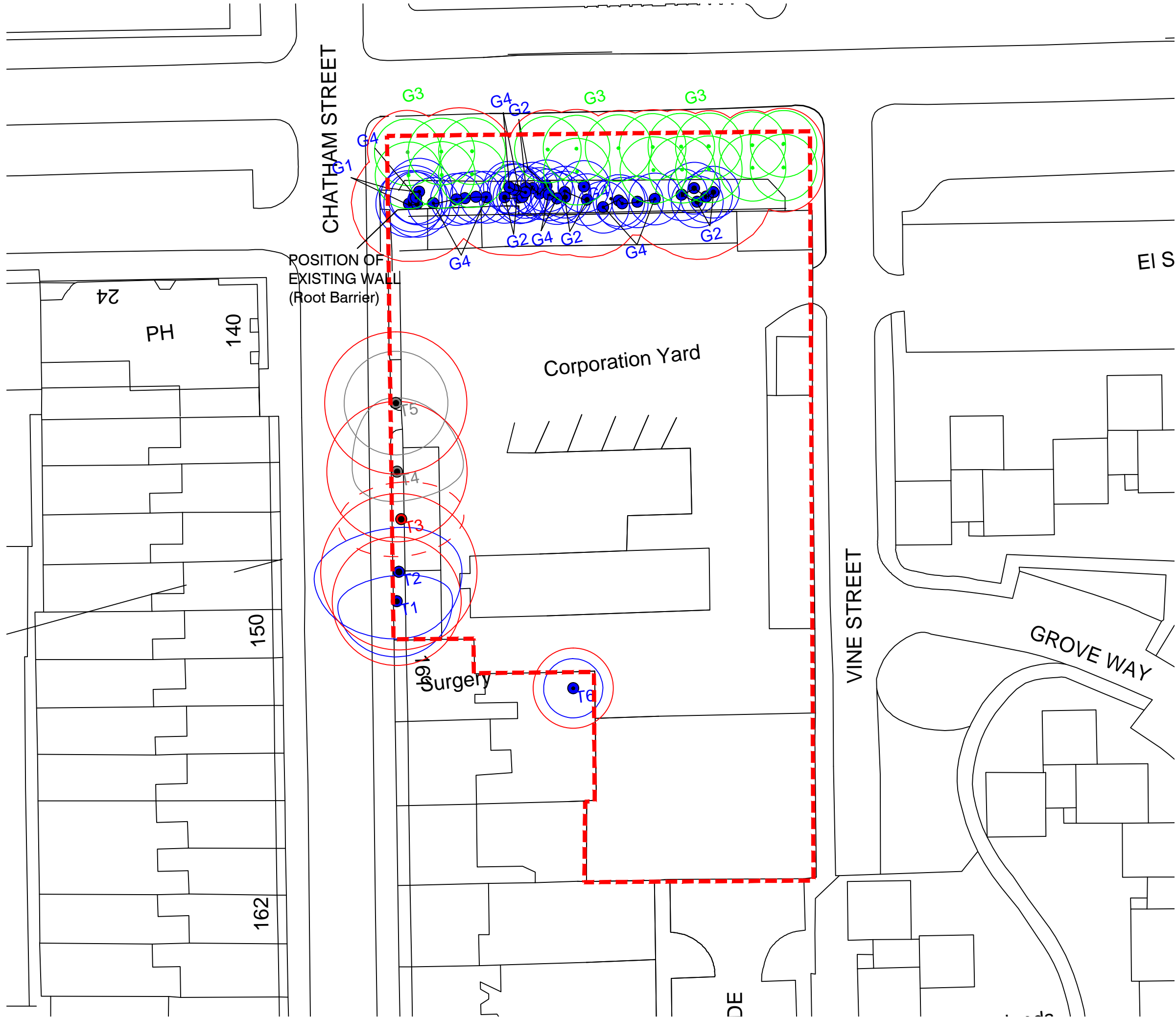
Appendix 2

BS5837: 2012 Table one – cascade chart for tree quality assessment

Table 1 - Cascade chart for tree quality assessment			
TREES FOR REMOVAL			
Category and definition	Criteria		
Category U Those in such a condition that any existing value would be lost within 10 years and which should, in the current context, be removed for reasons of sound arboricultural management	<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 R category trees (i.e. 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 declineTrees infected with pathogens of significance to the health and/or safety of other trees nearby (e.g. Dutch Elm Disease) or very low quality trees suppressing adjacent trees of better quality <p>NOTE: Habitat reinstatement may be appropriate (e.g. R category tree used as a bat roost: installation of bat box in nearby tree).</p>		
TREES TO BE CONSIDERED FOR RETENTION			
Category and definition	Criteria - Subcategories		
	1. Mainly arboricultural values	2. Mainly landscape values	3. Mainly cultural values including conservation
Category A Those of high quality and value: in such a condition as to be able to make a substantial contribution (a minimum of 40 years is suggested)	Trees that are particularly good examples of their species, especially if rare or unusual, or essential components of groups, or of formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	Trees, groups or woodlands which provide a definite screening or softening effect to the locality in relation to views into or out of the site, or those of particular visual importance (e.g. avenues or other arboricultural features assessed as groups)	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)
Category B Those of moderate quality and value: those in such a condition as to make a significant contribution (a minimum of 20 years is suggested)	Trees that might be included in the high category, but are downgraded because of impaired condition (e.g. presence of remediable defects including unsympathetic past management and minor storm damage)	Trees present in numbers, usually as groups or woodlands, such that they form distinct landscape features, thereby attracting a higher collective rating than they might as individuals but which are not, individually, essential components of formal or semi-formal arboricultural features (e.g. trees of moderate quality within an avenue that includes better, A category specimens) or trees situated mainly internally to the site, therefore individually having little visual impact on the wider locality	Trees with clearly identifiable conservation or other cultural benefits
Category C Those of low quality and value: currently in adequate condition to remain until new planting could be established (a minimum of 10 years is suggested) or young trees with a stem diameter below 150mm	Trees not qualifying in higher categories	Trees present in groups or woodlands, but without this conferring on them significantly greater landscape value and/or trees offering low or only temporary screening benefit	Trees with very limited conservation or other cultural benefits
	NOTE: Whilst C category trees will usually not be retained where they would impose a significant constraint on development, young trees with a stem diameter of less than 150mm should be considered for relocation		

Tree Ref	Common Name	Latin Name	Age Class	Stem Diameter	Height	Lower Crown Height	Crown N	Crown S	Crown E	Crown W	Retention Value	Life Exp	Arboricultural Comments	Preliminary management Reccomendations	RPA - R
1	London Plane	Platanus X hispanica	M	725	18	4	3.5	7.5	7.5	8	B2	20+	Part of linear group. Within site and growing immediately adjacent to wall.	Unaffected by development, assuming no ground level change in RPA can be confirmed and maintained throughout development. Install Construction Exclusion Zone (CEZ) as shown on Tree Protection Plan (TPP). Root morphology altered from BS5837:2012 circle due to presence of boundary wall.	8.7
2	London Plane	Platanus X hispanica	M	880	19	5	6	9	8.5	11.5	B2	20+	Part of linear group. Within site and growing immediately adjacent to wall.	Unaffected by development, assuming no ground level change in RPA can be confirmed and maintained throughout development. Install Construction Exclusion Zone (CEZ) as shown on Tree Protection Plan (TPP). Root morphology altered from BS5837:2012 circle due	10.6
3	London Plane	Platanus X hispanica	M	800	19	5	5	5	8.5	8.5	U	20+	Part of linear group. Within site growing immediately adjacent to wall. Bark loss on stem is extensive, crown dieback covering 50% of canopy.	Remove for safety and replace	9.6
4	Poplar	Populus spp	M	790	19	5	10	4	9	6	C2	10+	Part of linear group. Growing immediately adjacent to wall. Minor crown deadwood present overhanging site. Limb overhanging road is dead and requires removal. This would leave a remaining canopy heavily suppressed to site and therefore the tree becomes unsuitable for retention.	Either prune heavily all branches overhanging site by 5-6m or replace. Aerially inspect limb rubbing on T5 tree part.	9.5
5	Poplar	Populus spp	M	800	19	5	7	7	7	7	C2	10+	Part of linear group. LPA street tree growing immediately adjacent to wall. Deadwood present overhanging site and footway. Scaffold limb fused to T4 requires removal. Unsuitable for long term retention	Remove for development, replace.	9.6
6	Deodar	Cedrus deodora	EM	450	13.5	5	4	4	4	4	B2	20+	Part of linear group. Garden tree. Located adajcent to significant third party boundary wall	Special Measures Areas apply to a number of proposed car parking bays as shown on TPP. Refer to Arboricultural Implications Assessment for construction details (No dig, porous surface and site monitoring all needed).	5.4
G1	Lombardy Poplar	Populus nigra 'Italica'	M	650	23	5	4.5	4.5	4.5	4.5	B2	20+	Trees growing immediately adjacent to large wall in a group of 3 poplar.	Lost for development	7.8
G2	Lombardy Poplar	Populus nigra 'Italica'	M	650	23	5	3.5	3.5	3.5	3.5	B2	20+	Trees growing immediately adjacent to large wall in a group of poplar.	Lost for development	7.8

Tree Ref	Common Name	Latin Name	Age Class	Stem Diameter	Height	Lower Crown Height	Crown N	Crown S	Crown E	Crown W	Retention Value	Life Exp	Arboricultural Comments	Preliminary management Reccomendations	RPA - R
G3	Common Lime London Plane	Tilia X europaea, Platanus X hispanica	EM	450	12	5	4.5	4.5	4.5	4.5	A2	20+	Trees growing within site boundary.	Retained and protected. Three trees will require a 1.5m shortening of southern canopies in SE group corner (facilitative pruning) to achieve a 1.5m finished stand off distance from ground floor ramps and stairs. Remaining canopies extend approximately 1.2m from northern elevation and require only a 1m reduction in length of branch canopy in South. Watching brief required for demolition of wall.	5.4
G4	Common Alder Sycamore	Alnus glutinosa, Acer pseudoplatanus	EM	375	12	5	3.5	3.5	3.5	3.5	B2	20+	Part of linear group. Trees growing immediately adjacent to large retaining wall, a number of specimens resting / damaged by wall overhanging site that require management.	Lost for development	4.5



TREE CONSTRAINTS PLAN

Retention value key

(RETENTION VALUE A)

(RETENTION VALUE C)

(RETENTION VALUE B)

Trees to be removed
(RETENTION VALUE U)

Root Protection Areas (RPA)

Root Protection Areas (RPA's) have been identified and are based on BS5837:2012. RPA's have been shown as a red polyline.

RPA

Canopy extent

Root Protection Areas - Merged

Where Root Protection Areas overlap in a group of trees they have been shown as a merged polyline.

T123

T1234

WARNING

This drawing will not be read in black and white

AMENITY
TREE CARE
Ltd

Client:

Carpenter Investments

Project:

Vine Street Liverpool

Detail:

TREE CONSTRAINTS PLAN

Drawn By:

SB

Date:

23 12 13

Scale:

1:500@A3

Drg No:

TR-01

Revision:

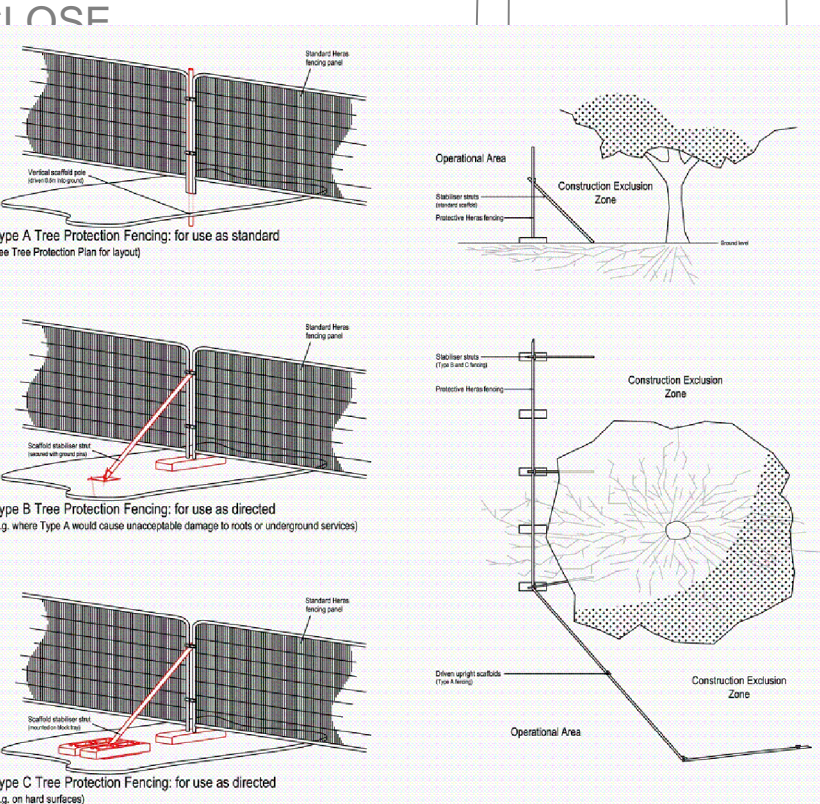
V3

Tree Work Listing

- T1 London Plane. Install Construction Exclusion Zone (CEZ) as shown on Tree Protection Plan (TPP)
- T2 London Plane. Install CEZ as shown on TPP.
- T3 London Plane. Remove for safety
- T4 Poplar. Either prune heavily all branches overhanging site by 5-6m or replace. Aerially inspect limb rubbing on T5 tree part.
- T5 Poplar. Remove for development.
- T6. Cedar. No Works
- G1. Poplar. Remove for development.
- G2. Poplar. Remove for development.
- G3. Retained and protected. 3 trees will require a 1.5m shortening of southern canopies in SE group corner (facilitative pruning) to achieve a 1.5m finished stand-off distance from ground floor ramps and stairs. Remaining canopies extend approximately 1.2m from northern elevation and require only a 1m reduction in length of branch canopy in South. Watching brief required for demolition of wall.
- G4 Common Alder and Sycamore. Remove for development.

Arboricultural Supervision of the site

- Demolition of boundary walls affecting retained trees (T1, T2, T4 and G3)
- Construction of no dig surfacing for retained trees (T6)



CHATHAM STREET

162

POSITION OF EXISTING WALL (Root Barrier)



Special Measure Area (SMA) for no dig surfacing

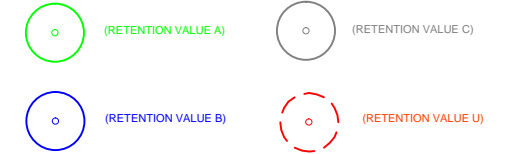
44 No parking spaces

VINE STREET

Special Measure Area (SMA) for wall demolition.

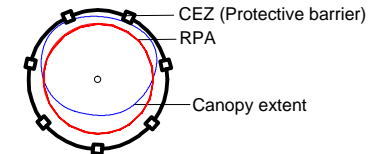
TREE PROTECTION PLAN

Retention value key



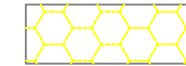
Root Protection Areas (RPA) & Construction Exclusion Zones (CEZ)

Root Protection Areas (RPA's) have been identified and are based on BS5837:2012. RPA's and Construction Exclusion Zones (CEZ) have been shown as detailed below. The CEZ shall act as the protective barrier for retained trees.



Special Measure Area/s (SMA)

Special Measure Areas (SMA's) have been identified for construction in these areas and have been shown as detailed below.



Refer to Arboricultural Implications Assessment (AIA) for details of recommended construction in SMA's.

MONOCHROME WARNING
This drawing shall not be reproduced in black and white.

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Client:
Carpenter Investments

Project:
Vine Street Liverpool

Detail:
TREE PROTECTION PLAN

Drawn By: SB Date: 23 11 13 Scale: 1:500@A3

Dwg No: TR-01 Revision: V3