ARBORICULTURAL IMPACT ASSESSMENT REPORT

BS 5837:2012 'Trees in relation to design, demolition and construction - Recommendations'

SITE

38-42 Vincam Close, Twickenham

CLIENT

NFC Homes Limited

Philippa Roberts
FdSc, MArborA

DATE: 13th August 2021

OUR REF: RA802

Executive summary

This report is submitted in connection with a planning application for the demolition of the existing dwellings and construction of eight replacement dwellings, at 38-42 Vincam Close, Twickenham. All information is provided in accordance with the British Standard BS 5837: 2012 '*Trees in relation to demolition, design and construction – recommendations*'.

The site is not located within a designated conservation area. No details in respect to tree preservation orders is available on the council website, and therefore checks should be made with the council directly.

The proposed development requires the removal of five low quality trees, two small groups of trees and two hedges. All other trees will be retained and will be protected during construction. There is a small amount of demolition within the root protection area (RPA) and crown spread of trees to be retained, but no new construction.

Provided the recommendations made within this report are followed, the proposed development should not adversely affect trees to be retained, and therefore should be acceptable to the Local Planning Authority from an arboricultural point of view.

Contents

Appendices

1. Introduction:

1.1. This report accompanies a planning application made by NFC Homes Limited, to the London Borough of Richmond Upon Thames, for the demolition of the existing dwellings and construction of eight replacement dwellings, at 38-42 Vincam Close, Twickenham.

1.2. This report details tree condition, the impact of the proposal on, and from, the existing trees and the measures taken to protect trees to be retained. It also includes tree surgery recommendations.

1.3. The survey has resulted in a layout as shown in the tree protection plan at Appendix 3. Where technical terms are used, explanations are provided within the glossary.

2. Statement of instructions and the issues addressed:

2.1. Roberts Arboriculture Limited have been instructed by NFC Homes Limited , to:-

2.1.1. Carry out a tree survey in accordance with BS 5837:2012 '*Trees in relation to design, demolition and construction – Recommendations*';

2.1.2. Analyse the proposals and the impact on trees to be retained;

2.1.3. Produce a tree protection plan, showing the location of the tree protection fencing in accordance with BS 5837, and a specification for the protection of the existing trees;

2.1.4. Provide a tree surgery schedule which includes work to facilitate construction, based on the layout, and works to trees, due to their condition or previous management;

2.1.5. Provide an arboricultural method statement in as much detail as is practical at this stage.

3. The site:

3.1. Location: The site is located at the eastern end of Vincam Close, and consists of the three end properties nos. 38-42. Nos. 38-40 are semi-detached two storey properties, and no. 42 is a bungalow which is set back slightly further from Vincam Close than other properties. All three properties have a modest garden/parking area to the front, with a larger garden space to the rear. The site as a whole is relatively flat, with a few level changes in respect to landscaping.

3.2. Site soils*:* An assessment of soils on-site was carried out by a desktop analysis using the National Soil Resources Institute website which identified the soils as likely to be 'loamy soils with naturally high groundwater'. This is a guide only and detailed on-site soil analysis should be undertaken by the project engineer to inform the foundation design.

4. The trees:

4.1. Generally*:* There are eight individual trees, two hedges and four groups of tree, which form the subject of this survey, five of which are offsite. Full details are found in the survey sheets at appendix 1 and their location on the tree survey plan RA802 TSP at appendix 2.

4.2. Legislation*:* The property is not located within a designated conservation area. No details in respect to tree preservation orders is available on the council website, and therefore checks should be made with the council directly.

5. The Proposal

5.1. The proposal is for the demolition of the existing dwellings and construction of eight replacement dwellings, with off road parking.

6. Arboricultural impact assessment:

6.1. Summary of the impact on trees: Development can adversely impact trees; either through removal to facilitate development; future pressure to prune or remove, through poor layout design/consideration; or from a future decline in health or structural condition, through a lack of suitable protection during development.

6.2. Tree roots can be asphyxiated and die if the rooting zone becomes compacted and soil structure damaged, which can easily occur, particularly on clay soils, even with the passage of light vehicles. At the design stage, disturbance within the RPA should be avoided. If unavoidable (which may need demonstrating), consideration must be given to any construction activity such as demolition, including removal of existing hard surfaces, changing soil levels and the provision of services where within RPAs, as well as new surfaces and structures.

6.3. At the planning stage, any works proposed with RPAs must be shown to be achievable with minimal impact on retained trees. Areas should be identified where a detailed Arboricultural Method Statement will be required post planning consent.

6.4. Construction of hard surfaces and other construction may be acceptable within RPAs providing specialist methods of design and construction are used. This can result in the use of minimal or no-dig methods which result in higher finished levels which must be allowed for during design, due to the effect on access thresholds and structure heights etc. The ability of trees to tolerate some disturbance depends on individual circumstances, including prevailing site conditions, tree species, age and condition.

6.5. Building lines, ideally, should be at least 2m outside of the RPA, to allow for scaffolding and other construction issues, and to allow for service runs and paths around the edge of buildings. Trees are long-lived organisms which take a long time to mature and if considered at an early stage can complement and increase the value of a development.

6.6. Arboricultural Impact Assessment

Five individual trees, two groups of trees and two hedges are proposed to be removed. All are of low quality and value, and one is a dead tree. All higher quality and offsite trees are to be retained and protected during the course of the development.

6.7. *Comments on specific trees and the arboricultural impact*

6.7.1. **T1, sycamore (offsite) & T2, privet**

The sycamore is an offsite tree, which could only be viewed from a distance and over the garage/outbuilding. It appears to be in reasonable form and condition. The privet tree has been heavily pruned in the past and allowed to grow on in recent years. It has no major defects, but is rather unremarkable.

Photo 1 – T1 (centre) located behind outbuilding, T2 (left, arrow), looking north-east

Arboricultural impact assessment*:* The privet will be removed to facilitate landscaping works, the sycamore will be retained and protected during the development, particularly during the demolition phase.

6.7.2. **H3, cypress & T4, silver birch**

The cypress hedge and silver birch tree are located within a raised bed. The cypress have grown quite tall until the tops were taken out and a number of larger, lower branches has been removed on the south. The feature provides some screening value, but is rather tatty and of low aesthetic value. The silver birch is rather etiolated and of low value.

Photo 2 – H3 (yellow arrow), T4 (red arrow), looking north

Arboricultural impact assessment: The cypress hedge and birch tree are to be to facilitate landscaping works and likely level changes.

6.7.3. **T5, false acacia (offsite)**

This is an offsite tree which was only viewed from a distance and over a tall closeboard fence. The tree appears to be in reasonable condition and is an attractive tree.

Photo 3 – T 5 (centre, red arrow), H3 (right, yellow arrow), H6 (left, yellow arrow)

Arboricultural impact assessment: There are no impacts to this tree

6.7.4. **T8, cherry & G9, hawthorn & walnut**

The cherry is the dominant tree within this area of the site, and has a typical broad spreading form. The hawthorn and walnut are suppressed by the cherry and surrounding vegetation. All three trees are unremarkable and of low value.

Photo 4 – T8 (right, red arrow), G9 (yellow arrow), looking south-west towards Vanquish Close

Arboricultural impact assessment: These trees are proposed for removal as they conflict with the replacement dwellings.

7. Conclusions:

7.1. Only small, low value trees are proposed to be removed to facilitate the development. All larger, higher value trees are to be retained and protected during the development.

7.2. There are no construction works proposed within the RPA of retained trees. The proposed, replacement dwellings are located at a suitable distance from retained trees, to avoid future conflict.

8. Recommendations:

8.1. That a copy of this report is kept on site, including a colour copy of the tree protection plan. The arboricultural documents will be part of site induction by the main contractor to all sub-contractors.

8.2. That the foundation design takes into account trees to be retained, trees to be removed and trees to be planted.

8.3. That there are no ground level changes within the area shown on the plan by tree protection fencing.

8.4. That the line of the underground services should be ideally located outside of root protection areas. However, as a precaution the final service plan should be assessed by an arboriculturist. If it is unavoidable that services are to be located in RPAs, then a method statement must be produced.

8.5. That the landscaping scheme includes a mix of trees from a cross section of species to ensure biosecurity against host specific pests and diseases. The trees must be planted and maintained in accordance with BS 8545:2014 *Trees: from nursery to independence in the landscape – Recommendations.*

8.6. That no tree works take place until consent is granted.

8.7. That the tree protection fencing is installed before machinery enters the site and remains in place until the soft landscaping stage.

8.8. That the locations of any exploratory, intrusive, investigation for contamination are assessed by the arboricultural consultant, including ground remediation methodology near trees.

8.9. That the drainage strategy detailing on and/or offsite drainage works, including SuDS, is reviewed by the arboricultural consultant to ensure minimum impact on trees to be retained, and is mindful of new trees to be planted.

Appendix 1

Tree survey sheets

Explanation of the tree survey sheets

The tree survey has been carried out in accordance with BS 5837:2012 'Trees in relation to design, demolition and construction – Recommendations'. Below is an annotation of the abbreviations in the sheet and their meanings.

1	2	3	4	5	6	7				8	9	10	11	12	13	14
Tree Number	Botanical Name (Common name)	Age	Dia (mm)	Stems	Height (crown height)	N	E	S	W	Cond	Life Exp	BS Cat	RPR (m)	RPA (m^2)	Comments	Recommendations

1 Tree

T - Tree, **G** - Group of trees, **H** - Hedge and **S** -shrub mass

2 Species - Botanical name and (Common name)

3 Age

NP – Newly planted, **Y** – Young - an establishing tree that could be easily transplanted

SM - Semi-mature - an established tree still to reach its ultimate height and spread with considerable growth potential.

EM – Early mature – a tree reaching its ultimate height and whose growth is slowing, however it will still increase considerably in stem diameter and crown spread.

M – Mature – a tree with limited potential for further significant increase in size, although likely to have a considerable safe useful life expectancy

OM – Over-mature – of an age where the mature size of the tree can no longer be maintained, and adaptive growth strategies such as retrenchment (growing down) are commencing. These strategies should not be confused with senescence or a moribund condition, as a good life expectancy can remain.

V – Veteran/Ancient – either a tree older than typical for the species, or a tree showing signs of age, and of great ecological, cultural or aesthetic value.

4 Dia (mm)

Diameter of the stem in millimetres at 1.5m above ground level for single stemmed tree or in accordance with Annex C of BS 5837 for multi-stemmed trees or trees with low forks or irregular stems.

5 Stems

Number or stems at 1.5m

6 Height (Crown height)

Height in metres from the ground to the top of the crown

(Crown height) – height of canopy above ground level

7 NSEW

The crown spread from the trunk to the tips of the crown at the four cardinal points

8 Cond

Physiological/structural condition. Good, fair, poor or dead

9 Life Exp

Estimated remaining contribution in years; <10, 10+, 20+ and 40+.

10 BS Cat

Category in accordance with Table 1 and section 4.5 of BS

U – unsuitable for retention. Existing condition is such that they cannot be realistically retained as living trees in the context of the current land use for longer than 10 years. Note, category U trees can have existing or potential conservation value which might be desirable to preserve.

A – high quality and value (non-fiscal) with at least 40 years remaining life expectancy

B – moderate quality and value with at least 40 years remaining life expectancy

C – low quality and value with at least 10 years remaining life expectancy, or young trees with a stem diameter below 150mm

A, B and C category trees are additionally graded into: 1 – mainly arboricultural values, 2 – mainly landscape values and 3 – mainly cultural values including conservation

11 RPR (m)

RPR – Root protection area radius (m)

12 RPA (m^2)

RPA -Root protection area

13 Comments

Detailed comments about the tree

14 Preliminary recommendations

Recommendations based on the tree's condition and current setting

Tree Number	Botanical Name (Common name)	Age	Dia (mm)	Stems	Height (crown height)	N	E	S	W	Cond	Life Exp	BS Cat	RPR (m	RPA (m^2)	Comments	Recommendations
T1	Acer pseudoplatanus (Sycamore)	EM	400	1	8(2)	5	5	5	5	Fair	20+	B2	4.8	72.39	Offsite tree, only viewed from a distance with views obscured by garage. Ivy up stem has been severed and has since died off. Tree appears in reasonable condition, but is currently fairly unremarkable, therefore low category B.	
T2	Ligustrum ovalifolium (Privet)	SM	150	1	4(0)	2	2	1	2	Fair	10+	C1	1.8	10.18	Tree has been heavily pruned in past, but allowed to grow on in recent years. Unremarkable tree of average form and condition.	
H3	X Cupressocyparis leylandii (Leyland Cypress)	SM	200	1	5(1.5)	2	2	2	2	Fair	10+	C2	2.4	18.1	Row of semi mature cypress trees. Formal management has come quite late to maintain as a typical hedge. Trees have had the tops taken out and some larger branches removed on the south. The feature now acts more as high hedge, providing screening to the subject and adjacent properties.	
T4	Betula pendula (Silver Birch)	SM	160	1	7(1.5)	2	1	2	1	Fair	10+	C1	1.92	11.58	Located in raised bed. Some minor cankering otherwise no major defects. Unremarkable tree of average -poor form and condition.	

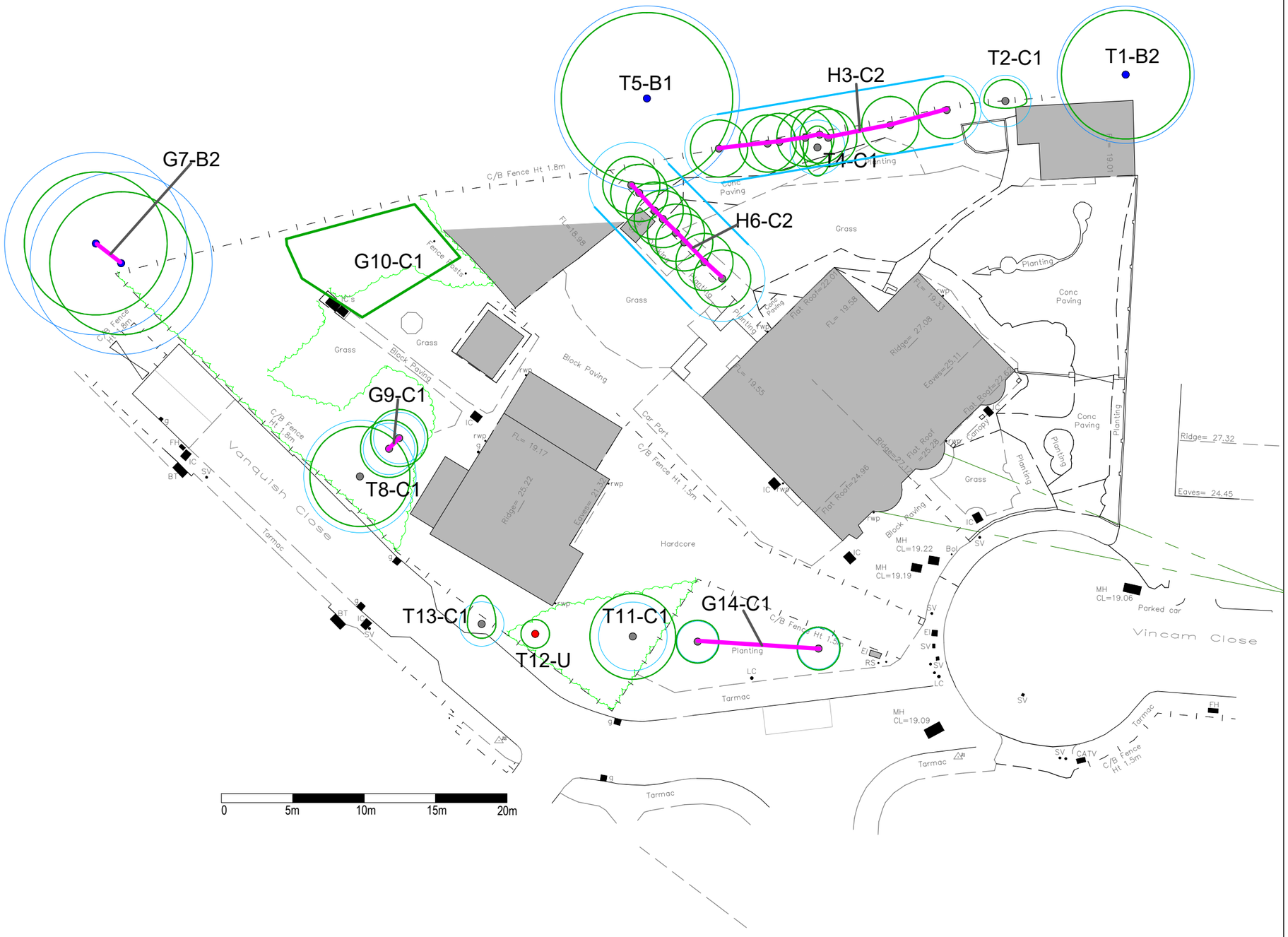
Tree Number	Botanical Name (Common name)	Age	Dia (mm)	Stems	Height (crown height)	N	E	S	W	Cond	Life Exp	BS Cat	RPR (m	RPA (m^2)	Comments	Recommendations
T5	Robinia pseudoacacia (False Acacia)	EM	539	2	9(1.5)	6	6	6	6	Good	20+	B1	6.47	131.53	Offsite tree located approximately 4m from boundary fence. Only inspected from a distance with view obscured by high fence. DBH completely estimated as stem at 1.5m was not visible over the fence. Tree appears to be in good form and condition.	
H6	X Cupressocyparis leylandii (Leyland Cypress)	SM	250	1	5(1.5)	2	2	2	2	Fair	10+	C2	3	28.28	Row of semi mature cypress trees. Formal management has come quite late to maintain as a typical hedge. Trees have had the tops taken out and some larger branches removed on the east. The feature now acts more as high hedge, providing screening to the subject and neighbouring property.	
G7	Aesculus hippocastanum (Horse Chestnut)	M	532	2	9(1.5)	5	5	5	5	Fair	20+	B2	6.38	127.89	Offsite trees, close access not available and view obscuredd by vegetation and fencing. Appears to be two trees, in reasonable form and condition. All dimensions are estimated.	

Tree Number	Botanical Name (Common name)	Age	Dia (mm)	Stems	Height (crown height)	N	E	S	W	Cond	Life Exp	BS Cat	RPR (m	RPA (m^2)	Comments	Recommendations
T8	Prunus avium (Wild Cherry)	EM	328	4	5(0.5)	4	4	4	4	Fair	10+	C1	3.94	48.78	Multi stem tree, tight main unions but not of any immediate concern. Some crossing rubbing branches and light ivy. No major defects but unremarkable tree of average form and condition.	
G9	Juglans regia (Walnut), Crataegus monogyna (Hawthorn)	SM	150	1	5(0.5)	2	2	2	2	Fair	10+	C1	1.8	10.18	Group containing one hawthorn and one walnut. Both trees are suppressed by surrounding vegetation. No major defects but unremarkable trees of average form and condition.	
G10	Crataegus monogyna (Hawthorn), X Cupressocyparis leylandii (Leyland Cypress)	SM	200	1	4(0.5)	2	2	2	2	Fair	10+	C1	2.4	18.1	Scrubby area of trees amongst dense vegetation. Contains 2 or 3 cypress which have had their tops taken out, a declining hawthorn and some other dead trees. Group heavily clad in ivy and brambles.	
T11	Prunus laurocerasus (Cherry Laurel)	SM	200	1	4(0.5)	3	3	3	3	Fair	10+	C1	2.4	18.1	Larch shrub developing into small tree. Typical broad spreading crown. Unremarkable tree of average form and condition.	
T12	Unknown (Unknown)		200	1	5.5(0)	1	1	1	1	Dead	<10	U	2.4	18.1	Dead tree covered in creepers.	

Tree Number	Botanical Name (Common name)	Age	Dia (mm)	Stems	Height (crown height)	N	E	S	W	Cond	Life Exp	BS Cat	RPR (m	RPA (m^2)	Comments	Recommendations
T13	Prunus domestica (Plum)	SM	130	1	3(0)	2	1	1	1	Fair	10+	C1	1.56	7.65	Offsite tree located within limited rooting and growing environment. Crown bias to the north. Unremarkable tree of average form and condition, with limited SULE.	
G14	Sorbus aria (Whitebeam)	SM	120	1	3.5(1)	2	2	2	2	Fair	20+	C1	1.44	6.52	Offsite trees. No major defects and reasonable form and condition.	

Appendix 2

Tree survey plan RA802 TSP



T1 - A Category A - high quality and value

T1 - B Category B - moderate quality and value

T1 - C Category C - low quality and value

T1 - U Category U - unsuitable for retention

Crown spread

RPA - root protection area as defined by Table 2 BS 5837:2012

Group of trees or hedge

Less defined group of trees

Notes

1. Contractors to check all dimensions on site
2. Discrepancies must be reported to the Arboricultural Consultant before proceeding
3. The original of this drawing was produced in colour, a monochrome copy should not be relied upon.
4. It is the responsibility of the contractor to ensure necessary consents for tree works are in place

Rev :	Description :	Authorized :

Roberts Arboriculture Ltd

Client
NFC Homes Limited

Site Address
32 - 42 Vincam Close, Twickenham

Drawing Title
Tree Survey Plan

Orientation

Drawn
PJR

Date
11.08.2021

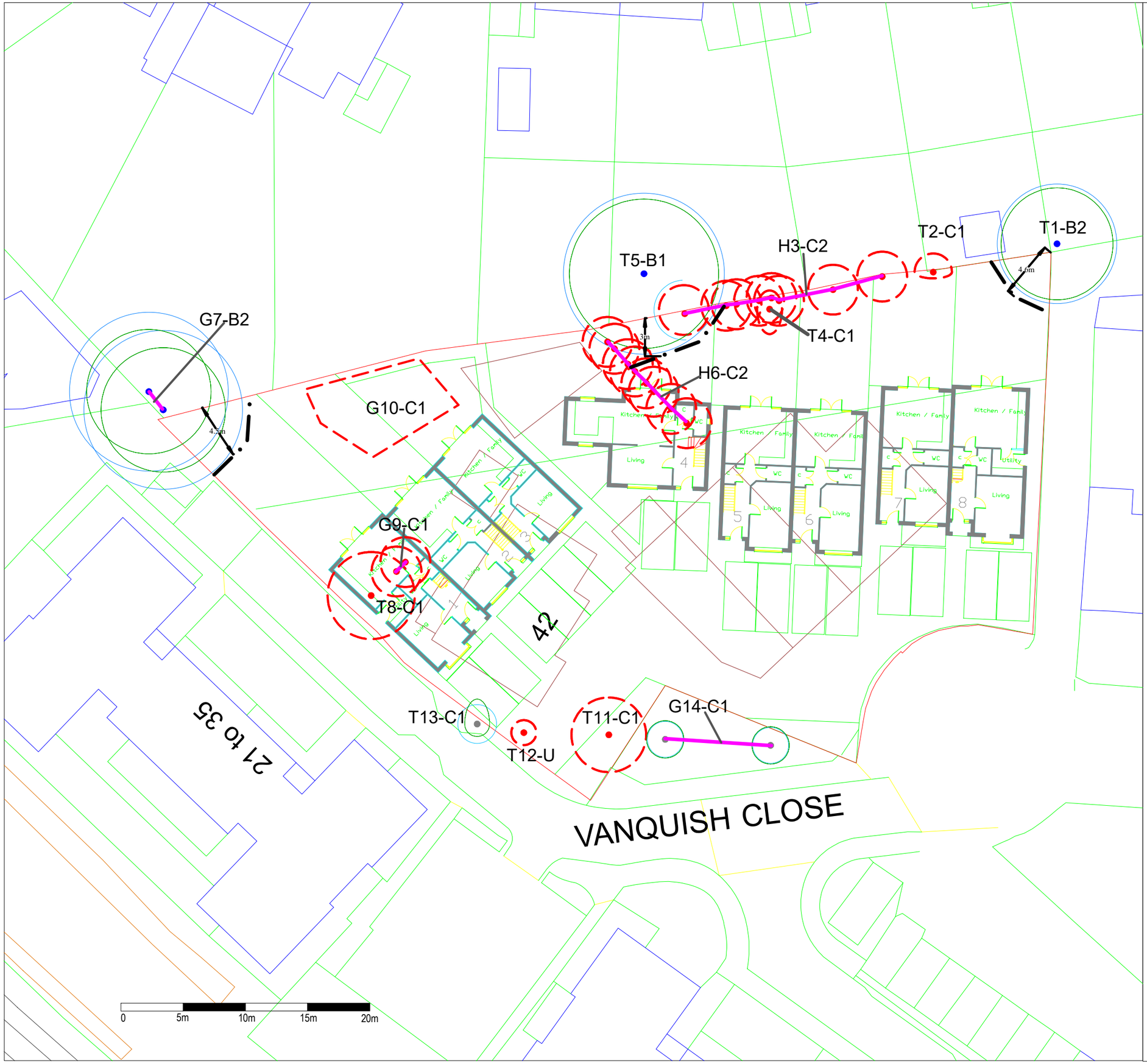
Drawing Number
RA802 TSP

Scale
1:300 @ A3

Revision
-

Appendix 3

Tree protection plan RA802 TPP



T1 - A Category A - high quality and value

T1 - B Category B - moderate quality and value

T1 - C Category C - low quality and value

T1 - U Category U - unsuitable for retention

Crown spread of tree to be retained

RPA - root protection area as defined by Table 2 BS 5837:2012

Tree to be removed

Group of trees to be removed

Tree protection fencing

Notes

1. Contractors to check all dimensions on site
2. Discrepancies must be reported to the Arboricultural Consultant before proceeding
3. The original of this drawing was produced in colour, a monochrome copy should not be relied upon.
4. It is the responsibility of the contractor to ensure necessary consents for tree works are in place

Rev :	Description :	Authorized :

Roberts Arboriculture Ltd

Client
NFC Homes Limited

Site Address
38-42 Vincam Close, Twickenham

Drawing Title
Tree Survey Plan

Orientation

Drawn
PJR

Date
11.08.2021

Drawing Number
RA802 TSP

Scale
1:300 @ A3

Revision
-

Appendix 4

Tree surgery schedule

Tree surgery schedule

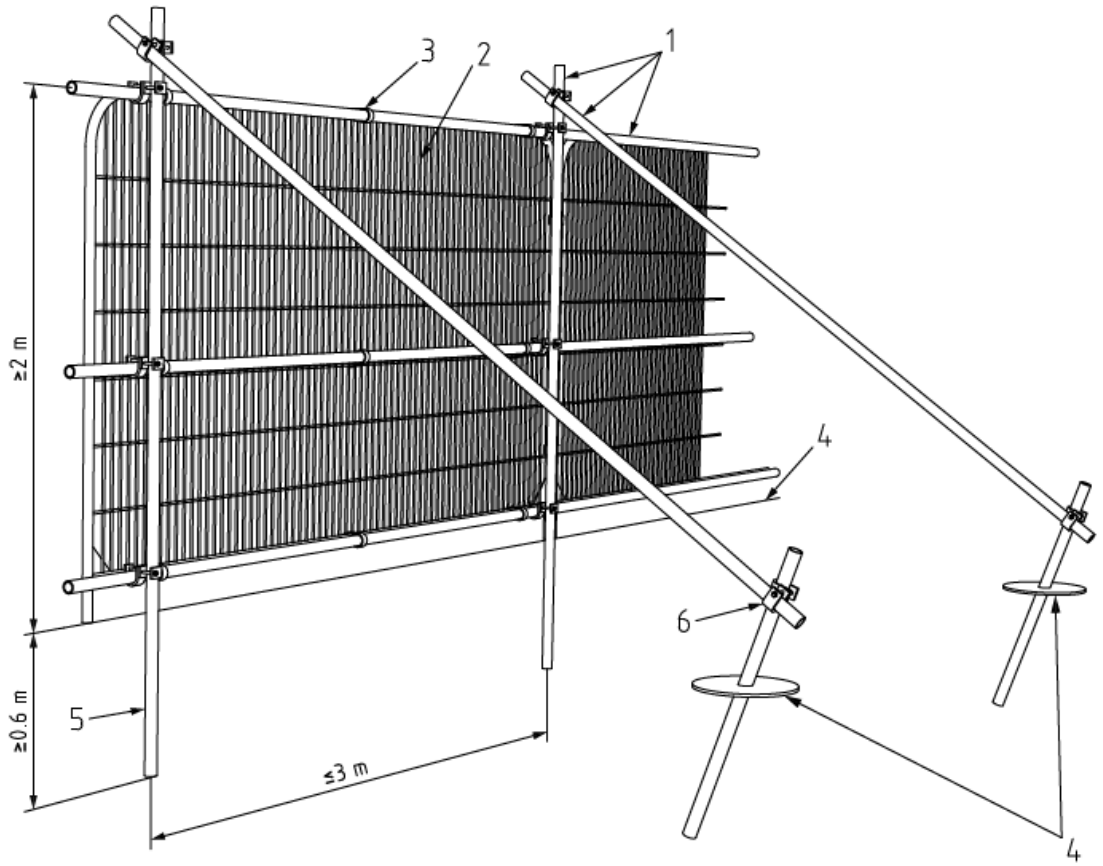
All works to be carried out in accordance with BS 3998:2010 'Tree works – Recommendations'. All pruning cuts to be made at suitable growing points in the line with the principles of 'natural target pruning'. An ecological check is required by a competent person prior to tree works being carried. Works should not take place until planning permission is granted and all pre-commencement conditions are discharged.

Tree no.		Species	Proposed works	Reason
T	2	Privet	Remove	To permit improved landscaping, and likely level changes
H	3	Cypress	Remove	To permit improved landscaping, and likely level changes
T	4	Silver birch	Remove	To permit improved landscaping, and likely level changes
H	6	Cypress	Remove	Conflicts with proposed replacement dwelling
T	8	Cherry	Remove	Conflicts with proposed replacement dwelling
G	9	Hawthorn & walnut	Remove	Conflicts with proposed replacement dwelling
G	10	Cypress, dead trees and scrub	Remove	To permit improved landscaping
T	12	Dead tree	Remove	Unsuitable for retention
T	11	Cherry laurel	Remove	To permit improved landscaping

Appendix 5

Tree protection specification

Figure 2 Default specification for protective barrier



Key

1 Standard scaffold poles
2 Heavy gauge 2 m tall galvanized tube and welded mesh infill panels
3 Panels secured to uprights and cross-members with wire ties
4 Ground level
5 Uprights driven into the ground until secure (minimum depth 0.6 m)
6 Standard scaffold clamps

Tree protection fencing specification from BS 5837:2012 Figure 2

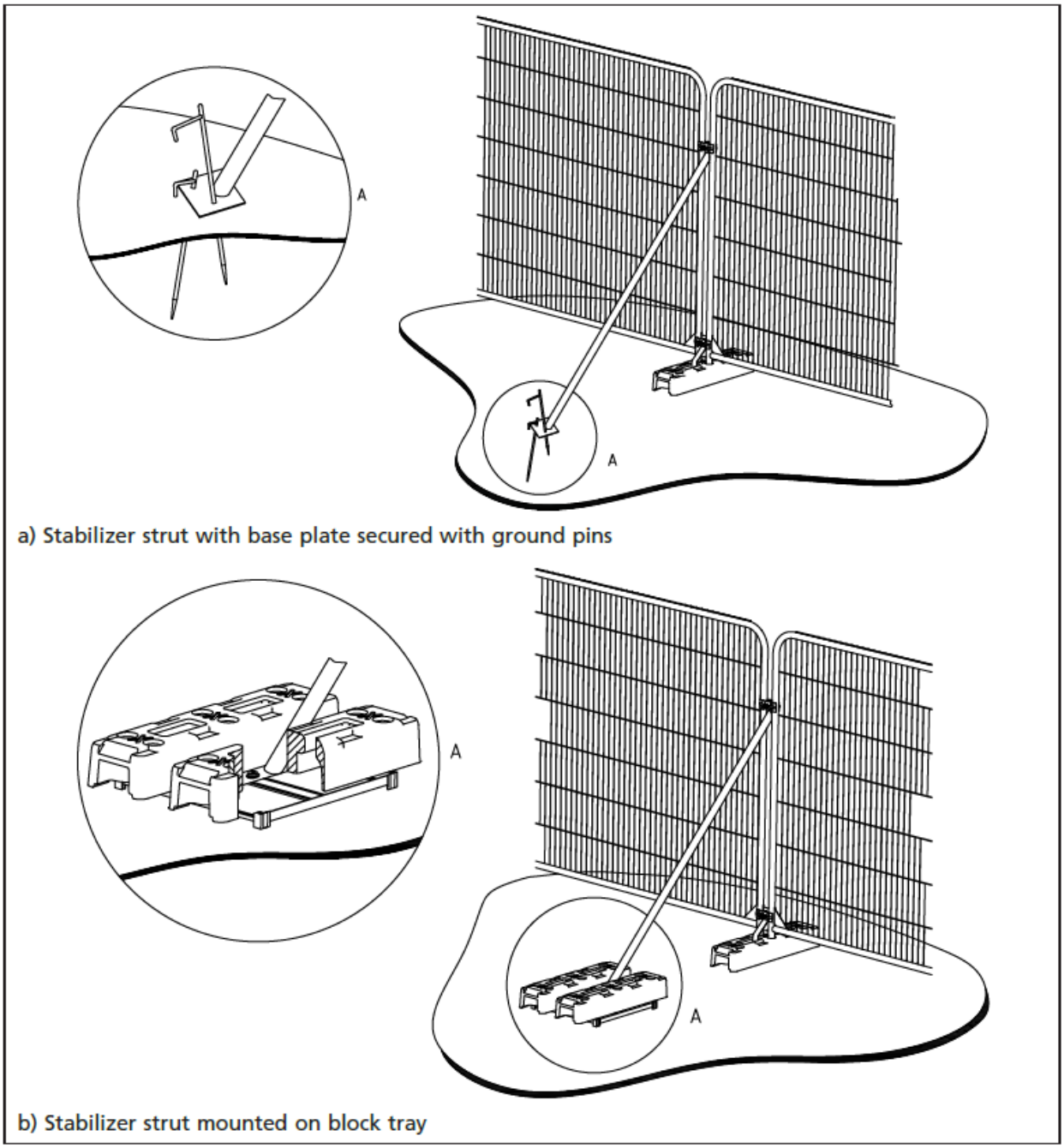
Section 6.2.2 of BS 5837.

Barriers should be fit for purpose of excluding construction activity and appropriate to the degree and proximity of work taking place around the retained trees(s). Barriers should be maintained to ensure that they remain rigid and complete.

The default specification is shown above at Figure 2. Care should be taken when locating the vertical poles to avoid underground services and structural roots. Where it is not possible to drive a pole into the ground, for example on hard surfacing, figure 3 overleaf, applies.

The location for the tree protection fencing is shown on the tree protection plan delineated by a black dash/dot line. The location of the fencing is shown by dimensions from fixed points on the tree protection plan (TPP). All weather signs should be affixed to the barriers, no more than 12m apart.

Figure 3 **Examples of above-ground stabilizing systems**



a) Stabilizer strut with base plate secured with ground pins

b) Stabilizer strut mounted on block tray

Suggested site warning sign format

Ground protection during demolition and construction

Where working space 'temporary access' is needed within the root protection area during works, fencing should be set back the minimum amount to achieve the required room. If there is existing hard surfacing in this area, it should remain during the works as ground protection. The suitability of this surfacing for ground protection, and whether it needs to be reinforced to bear the weight of machinery, should be assessed by an engineer and discussed with an arboriculturist.

Where the set back of the fencing exposes unmade ground, the ground must be protected before any works take place on site. This is to prevent root damage and soil compaction.

The ground protection might comprise of one of the following: (section 6.2.3.3 of BS 5837)

A) For pedestrian movements only, a single thickness of scaffold boards placed either on top of a driven scaffold frame, so as to form a suspended walkway, or on top of a compression-resistant layer (e.g. 100mm depth of woodchip), laid onto a geotextile membrane;
B) For pedestrian-operated plant up to a gross weight of 2 tonnes, proprietary, inter-linked ground protection boards placed on top of a compression-resistant layer (e.g. 150mm depth of woodchip), laid onto a geotextile membrane;
C) For wheeled or tracked construction traffic exceeding 2 tonnes gross weight, an alternative system (e.g. proprietary systems or pre-cast reinforced concrete slabs) to an engineering specification designed in conjunction with arboricultural advice, to accommodate the likely loading to which it will be subjected.

The location for ground protection is shown on the tree protection plan by coloured hatching, identified in the key.

Appendix 6

Draft arboricultural method statement

Tree works:

Recommendations for tree works can be found in the tree surgery schedule in Appendix 4. All works shall be in accordance with BS 3998:2010 '*Tree work. Recommendations'*. The use of a competent and insured tree surgery contractor is necessary to comply with this. The main contractor and tree surgery contractor must ensure that any necessary consents have been received from the local authority and that no protected species are harmed whilst carrying out site clearance or tree surgery works. Within root protection areas, stumps, shrubs and other vegetation must be removed by hand or using stump grinding machinery to minimize root damage of retained trees. Where poisoning of stumps is specified, this must be carried out by competent operatives. Only chemicals approved for this purpose and used in accordance with the manufacturer's instructions will be used.

The following information must be sought:

- Current employers, public and product liability insurance
- Waste carriers Licence
- Qualification and experience of key personnel, including relevant NPTC certificates
- COSHH assessment
- Tool and task based risk assessment, including a Working at Height Risk Assessment
- Site specific risk assessment
- Emergency procedure plan
- Method Statement

A list of suitable tree surgeons is found at: http://www.trees.org.uk/find-a-professional/Directory-of-Tree-Surgeons

Bio security measures are important and found athttps://www.forestry.gov.uk/biosecurity

Fires: Fires on site should be avoided if possible. If unavoidable, they should be situated far enough so that there is no risk of damage to the trees, taking into consideration the wind direction.

Site and fuel storage, cement mixing and washing points: All site storage areas, cement mixing and washing points for equipment and vehicles and fuel storage areas should be outside root protection areas unless otherwise agreed with the Local Planning Authority. No discharge of potential contaminants should occur within 10m of a retained tree stem or where there is a risk of run off into Root Protection Areas.

Temporary buildings for site use: Site cabins, trailers and other temporary buildings can sometimes be used in root protection area if consent is agreed by the local planning authority. This can be very useful if there is a robust existing hard surfacing in place. The method for installing the buildings, and assessment of whether ground protection is needed is to be agreed with the Arboriculturist and specified prior to installation.

Protection of tree canopies: Piling rigs and cranes are often used close to trees. Work must be carefully planned so that there is sufficient room to avoid hitting the canopy during transportation or operation. Arboricultural supervision may be required, however it is the responsibility of the contractor to assess and plan the work. Any access facilitation pruning required is detailed in the tree surgery schedule.

Demolition of existing outbuildings: This relates to the buildings south-west of T1 and T5. The structures should be demolished using a 'top down, pull back' technique, to ensure that none of the above-ground structures of the tree, i.e. the trunk and branches, are damaged. Any foundation or slab should be removed, with machinery working from outside the RPA or on the intact hard surface, starting from the area closest to the trunk and working backwards away from the tree. It should be anticipated that roots may be present immediately beneath the hard surface, and demolition works carried out carefully with this in mind. Machinery should not enter the area once the surface has been removed, any exposed roots should be covered with top soil, and tree protection fencing installed as detailed on the tree protection plan (RA802 TPP)

New landscaping: Within the root protection areas of trees to be retained, the preparation of soil for planting and turfing will be carried out by hand. Cultivation will be kept to a minimum and new topsoil must not exceed 100mm in depth within 1m of the stem. Top soil and other materials will be transported by wheelbarrow on running boards when working near trees.

Arboricultural site supervision

An initial site meeting:

Before works have started, but after the tree surgery and tree protection measures are in place. At this meeting the site manager, contractor, arboricultural consultant should discuss methodology and the tree protection measures will be examined.

After each site supervision, a short report will be sent to the contractor, client and local authority as a record of compliance.

Appendix 7

Tree related legislation affecting the site

Tree preservation orders

The Town and Country Planning (Tree Preservation) (England) Regulations 2012.
No details in respect to tree preservation orders is available on the council website, and therefore checks should be made with the council directly.

Conservation Area:

The site does not lie in a conservation area.

Ecological considerations

The Wildlife and Countryside Act 1981, as amended, The Conservation of Habitats and Species Regulations 2010 and the Countryside and Rights of Way Act 2000, provide statutory protection to species of flora and fauna including birds, bats and other species that are associated with trees.

Occupiers Liability Act 1957 and 1984

The Occupiers Liability Act (1957 and 1984) places a duty of care to ensure that no reasonably foreseeable harm takes place due to tree defects. Therefore, this report includes recommendations within the tree tables for work required for safety reasons. 'Common sense risk management of tree (National Tree Safety Group 2012)' states that *'The owner of the land on which a tree stands, together with any party who has control over the tree's management, owes a duty of care at Common Law to all people who might be injured by the tree. The duty of care is to take reasonable care to avoid acts or omissions that cause a reasonably foreseeable risk of injury to persons or property'.*

Common law enables pruning back to the boundary line providing the work is reasonable. Other restrictions, such as tree preservation orders/conservation areas still apply.
The owner of a tree is not obliged to trim their trees or hedges to prevent them from crossing over a boundary. Whilst the tree owner is not obliged to cut back the branches, the person whose property is overhung has the right to cut back the branches to the boundary providing there are no planning or legal restrictions on the trees such as Tree Protection Orders or if they are located in a church yard, in which case suitable consent must be obtained. Such pruning works must be undertaken to a suitable standard and must not cause significant damage to the tree, whereby it dies or becomes unstable.

The resulting debris remains the property of the tree owner, and therefore permission should be sought before it is disposed. In the interests of good neighbourly relations, we would encourage neighbours to discuss their intentions with each other before carrying out such works, providing the work is reasonable and that the trees are not subject to TPO or Conservation Area protection.

Appendix 8

Statement of methodology and reference material

Statement of methodology

Review of architects' plans

Site visit made by Philippa Roberts on 10th August 2021

Tree survey using Visual Tree Assessment carried out in accordance with BS 5837:2012 '*Trees in relation to design, demolition and construction – Recommendations*'. All investigations were from ground level only and binoculars were used when necessary. All trees with a trunk diameter of 75mm or above were surveyed. Obvious hedges and shrub masses were identified where appropriate. Information collected is in accordance with recommendations in subsection 4.4.2.5 of BS and include species, height, diameter, branch spread, crown clearance, age class, physiological condition, structural condition and remaining contribution. Each tree was then allocated one of four categories (U, A, B or C).

Received material

Topographical survey, drawing no. 22935Y, by JPP Consulting

Vincam Site Plan (proposed)

Reviewed text

BSI. BS 3998:2010 *Tree Work-Recommendations.*

BSI. BS 5837:2012 *Trees in relation to design, demolition and construction – Recommendations*

R.G.Strouts and T.G.Winter 'Diagnosis of ill-health in trees' TSO 1994

London Borough of Richmond Upon Thames website

C. Mattheck 'The body language of trees' 2015

National Soil Resources Institute website

Appendix 9

Caveats & Exclusions

Specific report caveats

1. At the time of writing this report, the protected tree status is correct. However, this can change. Therefore, it is advised that a further check is made with London Borough of Richmond Upon Thames before any works to trees take place.
2. No internal diagnostic equipment was used other than a sounding mallet and probe and all inspections were from ground level only, with the aid of binoculars where necessary.
3. The survey is concerned solely with arboricultural issues.
4. Any changes in ground level, or excavations near to tree roots not discussed within this report may change the stability and condition of the trees and a further examination would be required.
5. As trees are a dynamic living organism this report is only valid for a period of 12 months, in respect to their health and condition.
6. Only the trees listed in this report have been examined.
7. The measurement of off-site trees has been estimated, except any crown which overhangs into the site, which is measured. Where the crown of an on-site tree overhangs the boundary, the crown spread in this direction is also likely to be estimated.
8. The base and trunk of the off-site trees could not be examined, and therefore a full assessment of the trees condition could not be made.
9. Dense ivy and undergrowth prevent a full condition survey being carried out. The vegetation may be hiding structural defects.
10. The tree information is from the time of the survey. Some pests, diseases and fungi only appear seasonally, therefore it is possible not all issues that may affect the health of the trees could be observed.

Appendix 10

Glossary

Abscission	**The shedding of a leaf or other short-lived part of a woody plant, involving the formation of a corky layer across its base.**
Access facilitation pruning	One-off tree pruning operation, the nature and effects of which are without significant adverse impact on tree physiology or amenity value, which is directly necessary for operations on site.
Adaptive growth	In tree biomechanics, the process whereby the rate of wood formation in the cambial zone, as well as wood quality, responds to gravity and other forces acting on the cambium. (This helps to maintain a uniform distribution of mechanical stress).
Adventitious	Describing shoots which develop neither from terminal nor axillary buds (see also Epicormic and dormant bud) or roots which form other than through primary development.
Arboriculture	Formerly all aspects of the culture of trees, especially for forestry. Latterly, the art and science of cultivating and managing trees as groups and individuals, primarily for amenity and other non-forestry purpose.
Arboricultural method statement	Methodology for the implementation of any aspect of development that is within the root protection area, or has the potential to result in loss of or damage to a tree to be retained.
Arboriculturist	Person who has, through relevant education, training and experience in the field of trees in relation to construction.
Backfill medium	Material used for refilling an excavated planting hole.
Bark	A term usually applied to all the tissues of a woody plant lying outside the vascular cambium, thus including the phloem, cortex and periderm.
Biodiversity	The variability among all living organisms of an ecological complex.
Biomechanical	Pertaining to the mechanical functions and properties of living organisms, such as trees.
Body language	In trees, the outward display of growth responses and/or deformation in response to mechanical stresses.
Branch	A limb extending from the main stem or parent branch of a tree.
Branch bark ridge	The raised arc of bark tissues that forms the acute angle between a branch and its parent stem
Branch collar	The swelling or roughened bark often found at the base of a branch which should be left intact if the branch is to be pruned off.
Canker	A lesion in which bark and cambium have been killed, sometimes exposing the wood and often showing a swollen appearance owing to the encircling growth of new tissues.
Cambium	Layers of meristematic cells in the cells peripheral to the phloem that give rise to bark.
Canopy	The topmost layer of twigs and foliage in a tree.
Construction exclusion zone	An area based on the root protection area from which access is prohibited for the duration of the project.
Crown	In arboriculture, the main foliage-bearing portion of a tree.

Crown lifting	The removal of shortening of the branches that form the lower part of the crown of a tree.
Crown reduction	Pruning in order to reduce the size of the crown of a tree.
Crown thinning	Pruning inside the crown of a tree in order to reduce its density.
Defect	In relation to tree hazards, any feature of a tree which detracts from the uniform distribution of mechanical stress, or which makes the tree mechanically unsuited to its environment.
Dieback	The death of part of a plant, usually starting from a distal point and often progressing proximally in stages.
Epicormic	Pertaining to shoots or roots which are initiated on mature woody stems; shoots can form tin this way from dormant buds or they can be adventitious.
Hazard	A thing, a process or a potential event that has the potential to cause harm.
Included bark	Bark of adjacent parts of a tree (usually forked stems, acutely joined branches or basal flutes) which is in face-to-face contact; i.e. without a woody connection. Such a structure lacks inherent strength but is in many instances strongly reinforced by a surrounding 'shell' of wood.
Probability	A statistical measure of the chance that a particular event (e.g. a specific failure of a tree or specific kind of harm to persons or property) might occur.
Risks	The likelihood of the potential harm from a particular hazard becoming actual harm.
Root protection area	A layout tool indicating the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree's viability, and where the protection of the roots and soil structure is treated as a priority. BS 5837:2012 *'Trees in relation to design, demolition and construction – Recommendations'.*
SULE	Safe useful life expectancy of a tree (Barrell)
Target pruning	The pruning of a twig or branch so that tissues recognisably belonging to the parent stem or branch are retained and not damaged.
Targets	In tree hazard assessment, persons or property or other things of value which might be harmed by mechanical failure of the tree or by objects falling from it.
Tree Preservation Order	In Great Britain, an order made by a local authority, whereby the authority's consent is generally required for the cutting down, topping or lopping of specified trees.
Tree protection plan	Scale drawing, informed by descriptive text where necessary, based upon the finalized proposal, showing trees for retention and illustrating the tree and landscape protection measures.
Utility	An undertaker by statute that has a legal right to provide customer services (e.g. communication, electricity, gas and water).
Vigour	In tree assessment, an overall measure of the rate of shoot production, shoot extension or diameter growth.
Vitality	In tree assessment, an overall appraisal of physiological and biomechanical processes, in which high vitality equates with near-optimal function.

Visual Tree Assessment (VTA)	In addition to the literal meaning, a system expounded by Matteck and Breloer (1995) to aid the diagnosis of potential defects through visual signs and the application of mechanical criteria.

ARBORICULTURAL IMPACT ASSESSMENT REPORT

BS 5837:2012 'Trees in relation to design, demolition and construction. Recommendations'

SITE

38-42 Vincam Close, Twickenham

CLIENT

NFC Homes Limited

Philippa Roberts

FdSc, MArborA

DATE: 13th August 2021

OUR REF: RA802