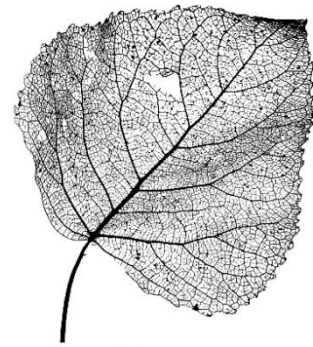




Sharon Hosegood
ASSOCIATES

APPLICATION REFERENCE - 56865/APP/2020/459 CONDITION 4

ARBORICULTURAL IMPACT ASSESSMENT AND METHOD STATEMENT REPORT
BS 5837:2012 'Trees in relation to design, demolition and construction. Recommendations'

report

SITE

Land adjacent to 1 St Helen Close, Cowley, Hillingdon UB8 3RS

CLIENT

NFC Homes Ltd

Sharon Durdant-Hollamby
FICFor FARborA BSc (Hons) Tech Cert (ArborA)

DATE: March 2021
OUR REF: SHA 1369

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Executive summary

This report is submitted in connection with the approved planning application ref 56865/APP/2020/459 (condition 4), for *'erection of 4 x 2 bedroom two bedroom and 1 x 3 bedroom houses with associated car parking, landscaping and external works'* at Land adjacent to 1 St Helen Close, Cowley, Hillingdon UB8 3RS. I have provided all information in accordance with the British Standard (BS 5837: 2012 *"Trees in relation to design, demolition and construction. Recommendations"* (referred to as BS).

There are no trees on site and none of the neighbouring trees are protected by a Tree Preservation Order; the site is not in a Conservation Area. This report addresses how an offsite eucalyptus tree (SHA T2) and large cypress trees (G5) will be protected during construction. One self sown elder bush will be removed as it is growing in an unsustainable location between the palisade fence and timber fence.

There are no direct impacts from the approved development in that the approved development is outside the crown spreads of the trees, and one property just clips the root protection area of the eucalyptus.

This report includes details of tree protection, lifting of the existing hard surface and replacement with new soft landscaping and paving slabs within root protection areas.

One virtual site supervision will take place at the beginning of the project to check on tree protection measures, and one in-person visit will take place at the lifting of the hard surfacing. Both site supervisions will be reported to Hillingdon Council. From then on there will be virtual inspections at 8 week intervals to ensure that tree protection measures are in place.

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1. Introduction:

1.1. This report provides information in relation to condition 4 of an approved planning application to London Borough of Hillingdon for '*Erection of 4 x 2 bedroom two bedroom and 1 x 3 bedroom houses with associated car parking, landscaping and external works.*'

The work is in accordance with BS 5837:2012 '*Trees in relation to design, demolition and construction. Recommendations*' (referred to as BS).

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 found in the glossary.

2. Statement of instructions and the issues addressed:

2.1. I was instructed by NFC Homes Ltd to:-

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

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 the BS and a specification for the protection of the existing trees;

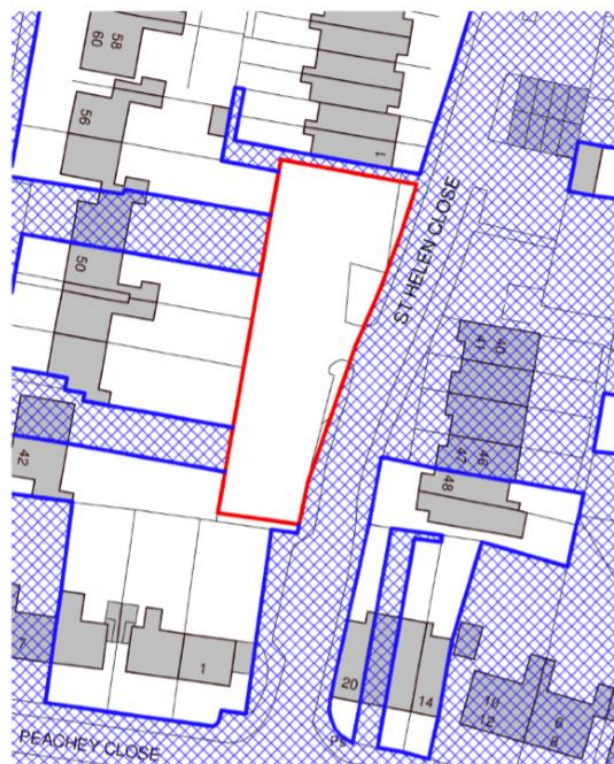
2.1.4. Provide a tree surgery schedule which includes work to facilitate construction, based on the layout of, and works to, trees due to their condition or previous management;

2.1.5. Provide arboricultural method statements as requested by Condition 4 of consent

2.2. The issues addressed are tree condition, and how the proposal impacts on the site and vice versa.

3. The site:

3.1. The site is currently laid to hardstanding with residential property to the north, rear gardens of residential property on New Peachey Lane to the west, and residential property and associated front driveways and landscaping to the east. A residential property and rear garden lie to the immediate south of the site.



Plan 1 – extract from MEPK architects Site Location Plan. Red line – site boundary. Blue cross hatched – land in Hillingdon Council Ownership. Do not scale. North is vertical.

- 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 four individual trees, and one group of trees which form the subject of this survey. Full details are found in the survey sheets at appendix 1 and their location on the tree survey plan SHA 1369 TSP at appendix 2.
- 4.2. *Legislation:* No Tree Preservation orders exist on site. The site does not lie within a Conservation Area. Further information on legislation is found at appendix 7.

4.3 BS retention category:

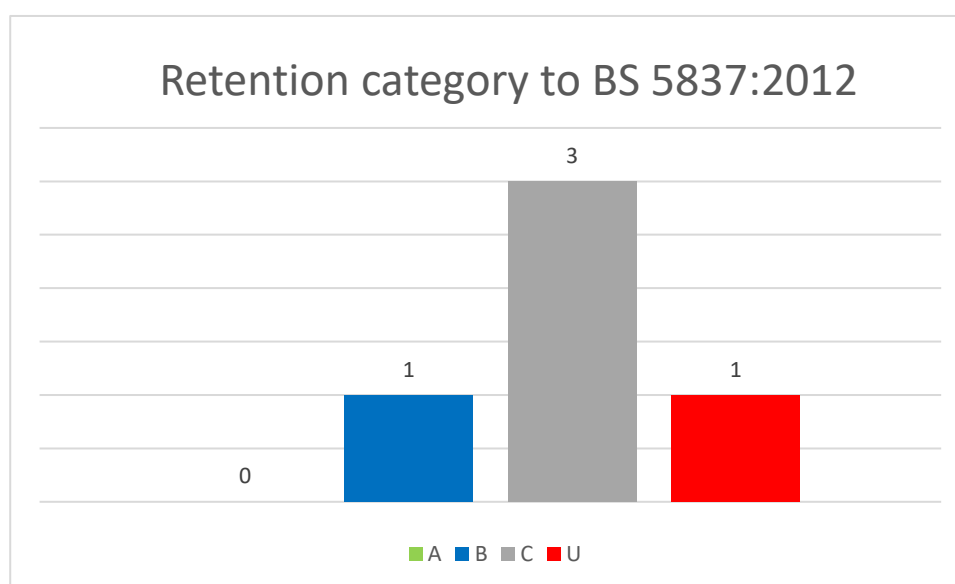


Table 1 – Retention category

A – high quality

B – moderate quality

C – low quality

U – unsuitable for retention

5. The approved development

5.1. Planning consent reference: 56865/APP/2020/459 for 'Erection of 4 x 2 bedroom two bedroom and 1 x 3 bedroom houses with associated car parking, landscaping and external works' was granted on 11 February 2020.

5.2. Condition 4 requires that:

No site clearance or construction work shall take place until the details have been submitted to, and approved in writing by, the Local Planning Authority with respect to:

1. A method statement outlining the sequence of development on the site including demolition, building works and tree protection measures.

2. Detailed drawings showing the position and type of fencing to protect the entire root areas/crown spread of trees, hedges and other vegetation to be retained shall be submitted to the Local Planning Authority for approval. No site clearance works or development shall be commenced until these drawings have been approved and the fencing has been erected in accordance with the details approved. Unless otherwise agreed in writing by the Local Planning Authority. Such fencing should be a minimum height of 1.5 metres.

Thereafter, the development shall be implemented in accordance with the approved details. The fencing shall be retained in position until development is completed. The area within the approved protective fencing shall remain undisturbed during the course of the works and in particular in these areas:

- 2.a There shall be no changes in ground levels;*
- 2.b No materials or plant shall be stored;*
- 2.c No buildings or temporary buildings shall be erected or stationed.*
- 2.d No materials or waste shall be burnt; and.*
- 2.e No drain runs or other trenches shall be dug or otherwise created, without the prior written consent of the Local Planning Authority.*

3. Where the arboricultural method statement recommends that the tree protection measures for a site will be monitored and supervised by an arboricultural consultant at key stages of the development, records of the site inspections / meetings shall be submitted to the Local Planning Authority.

REASON To ensure that trees and other vegetation can and will be retained on site and not damaged during construction work and to ensure that the development conforms with policy DMHB 14 of the Hillingdon Local Plan: Part 2 - Development Management Policies (Jan 2020)

6. Arboricultural impact assessment:

- 6.1. *Summary of the impact on trees:* Development can adversely impact on trees by causing them to be removed to facilitate the development, or in the future, by adversely affecting their potential for retention through disturbance in root protection areas (RPAs) or through post development pressure to prune or remove.
- 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 within 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. Building lines ideally should be at least 2m outside of the RPA to allow for scaffolding and other build-ability 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.
- 6.5. *Comments on specific trees and the arboricultural impact: T1 butterfly bush (Category C under the BS – low value), T2 eucalyptus (B – moderate value), T3 elder (U – unsuitable for retention), T4 lilac (C) and G5 Leyland cypress (C).*



Photo 1 of T1 butterfly bush, T2 eucalyptus and T3 elder. Looking south-west. Note hard surfacing on the site side.

T1 is a multi-stemmed butterfly bush in the neighbouring garden and of low landscape value. T2 is a large eucalyptus tree which is in good health and has potential to reach over 28m tall. The crown lightly overhangs the site boundary and the theoretical root protection area.

T3 is a small self-sown elder growing in a narrow space between the palisade fencing and hoarding and should be removed irrespective of construction. T4 is a small offsite lilac of low significance. The fence is densely clad in ivy as shown by photo 2 and this will be cut back/removed.



Photo 2 of G5 looking north-west. Note dense ivy overhanging fence that will be removed.

G6 are a group of closely grown Leyland cypress, currently 14m high with a potential to reach 28m. The trees have not been managed and provide a dense, rather oppressive screen. There is a large patch of brown foliage, most likely due to cypress aphid.



Photo 3 of G5. Note brown patch from cypress aphid (see arrow)

Arboricultural Impact Assessment:

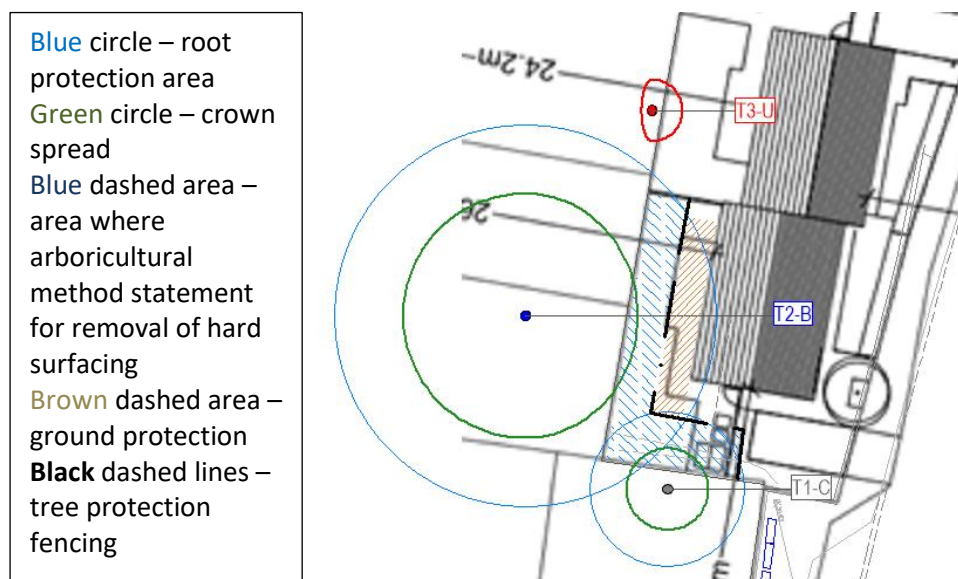
The trees can all be retained, but I recommend the removal of T3 elder.

Impact on the crowns:

There are no direct impacts, but this report includes pruning back of the overhang of T2 and G5 by 1 – 2m (within the green) as detailed in the tree surgery schedule at appendix 4. In time the eucalyptus will need to be pruned back towards the fence line as it matures to maintain a reasonable relationship between the tree and house.

Impact on the roots:

The site is mostly laid to a hard surface, including within the root protection areas of T2 and G5. This will need to be removed prior to construction of footings for access reasons. A method statement at appendix 6 details how this will be achieved without affecting tree roots and the area to which this applies is shown by blue hatching on the plan *SHA 1369 TPP* at appendix 3. This is a sensitive operation and will take place under arboricultural supervision. Removal of the hard surface provides potential to improve the rooting area of the trees by creating porosity (for gaseous exchange and water infiltration; both of which are essential for root function) and to boost the soil condition. During site supervision, the arboricultural consultant will add biochar at c.5% to a screen of top soil to provide multiple benefits.



Plan 2 – extract from SHA 1369 TPP. Do not scale. North is vertical.

There will no excavation in the areas marked blue on the plan.

Construction: Tree protection fencing will be installed in the location shown on the tree protection plan, set back 2m towards T2 to enable room for scaffolding. The area between the property and fence will be protected by ground protection to prevent compaction. This is also the area for a piling mat (assuming the site is to be piled) and there may be localised excavation down to 600mm, usually 1m out from the building line, to facilitate this. As this is on the outer edge of the root protection area of T2, and the garden in which the tree is growing provides a more favourable rooting environment, I do not consider this to be an issue. As a precaution, the excavation for the piling mat will take place under arboricultural supervision during the removal of the hard surfacing.

There is ample room for any required cranes/piling rigs which can operate without needing to be close to the trees.

The proposed hard surfacing within the root protection areas of T1 and T2 is pre-cast slabs for pedestrian use. As the locations are in areas currently hard surfaced (although this will be removed), there are no requirements for special method statements for the installation.

Service provision can be easily achieved without the requirements to disturb the root protection areas of T1, T2 and G5.

7. Conclusions:

7.1. The approved consent retains all trees without conflict. As a precaution, trees will be protected during works by tree protection fencing, ground protection and the application of arboricultural method statements in this report.

7.2. The work will be supervised remotely to check on tree protection measures, and then during the removal of the hard surfacing near T1, T2 and G5. If a piling mat is required, the excavation for this where it is slightly beyond the southern most building footprint, will be supervised at this same visit. The arboricultural consultant will take the opportunity to add biochar to the soil at this stage. From then on supervision will be every 8 weeks remotely.

7.3. Note that T2 and G5 are classified as high water demanding trees under NHBC Chapter 4.2 and both have potential to achieve 28m+ in height.

7.4. This report provides information in relation to condition 4 of consent for development and the supervision notes will be sent to Hillingdon Council as a record.

8. Recommendations:

- 8.1. That a copy of this report is kept on site, including A3 colour copies 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 arboricultural method statements are observed by all site personnel and supervised at key stages by the project arboricultural consultant. Short supervision reports are to be written after each inspection as a record of compliance and audit trail to the Local Authority.
- 8.3. That the foundation design takes into account trees to be retained, trees to be removed and trees to be planted.
- 8.4. That there are no ground level changes with the area shown on the plan by tree protection fencing.
- 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 the tree protection fencing is installed before machinery enters the site and remains in place until the soft landscaping stage.
- 8.7. That the removal hard surfacing and installation of piling mat (if required) near trees to be retained is carried out under arboricultural supervision.

Sharon Durdant-Hollamby

FICFor FARborA BSc (Hons) Tech. Cert. (Arbor A)

Director

Sharon Hosegood Associates Ltd

Appendix 1

Tree survey sheets

Tree Number	Botanical Name (Common name)	Age	Dia (mm)	Stems	Height (crown height)	Ult ht (m)	N	E	S	W	Cond	Life Exp	BS Cat	RPR (m)	RPA (m ²)	Comments	Recommendations
T1	Buddleja davidii (Butterfly bush)	M	100	10	4(0.5)	8	2	2	2	2	Fair	<10	C2	3.79	45.13	Offsite tree. Plotted by eye as not on topo. Multiple stems at ground level. Large butterfly Bush growing over boundary fence. More semi mature Lawson cypress tree set back c. 6m from fence.	
T2	Eucalyptus gunnii (Cider Gum)	EM	550	2	18(1)	28	6	6	6	6	Good	40+	B2	9.34	274.09	Provides a high level of visual amenity. Prominent tree. Offsite tree. Stem divides below 1.5m. Co dominant. Growing in neighbouring rear garden so stem data estimated. Appears to be in a Good form and condition with potential to become a very large tree.	
T3	Sambucus nigra (Elder)	EM	100	3	2.5(0)	6	2	2	2	1	Fair	<10	U	2.08	13.59	Plotted by eye as not on topo. Multiple stems at ground level. Growing in an unsustainable location between the palisade fence and close boarded fence.	Remove tree and root.
T4	Syringa vulgaris (Lilac)	SM	100	1	2(2)	8	2	2	2	2	Fair	10+	C2	1.2	4.52	Reasonable form and condition. Plotted by eye as not on topo. Growing close to boundary fence. Stem data estimated as off site.	

[illegible]

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		15
Tree Number	Botanical Name (Common name)	Age	Dia (mm)	Stems	Height (crown height)	Ult ht (m)	N	E	S	W	Cond	Life Exp	BS Cat	RPR (m)	RPA (m²)	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 of stems. Multi-stemmed is m/s

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 Ult ht (m)

Height in metres that could be reasonably expected for the species given its condition, past management and location.

8 NSEW

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

9 Cond

Physiological condition. Good, fair, poor or dead

10 Life Exp

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

11 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

12 RPR (m)

RPR – Root protection area radius (m)

13 RPA – Root protection area (m²)

14 Comments

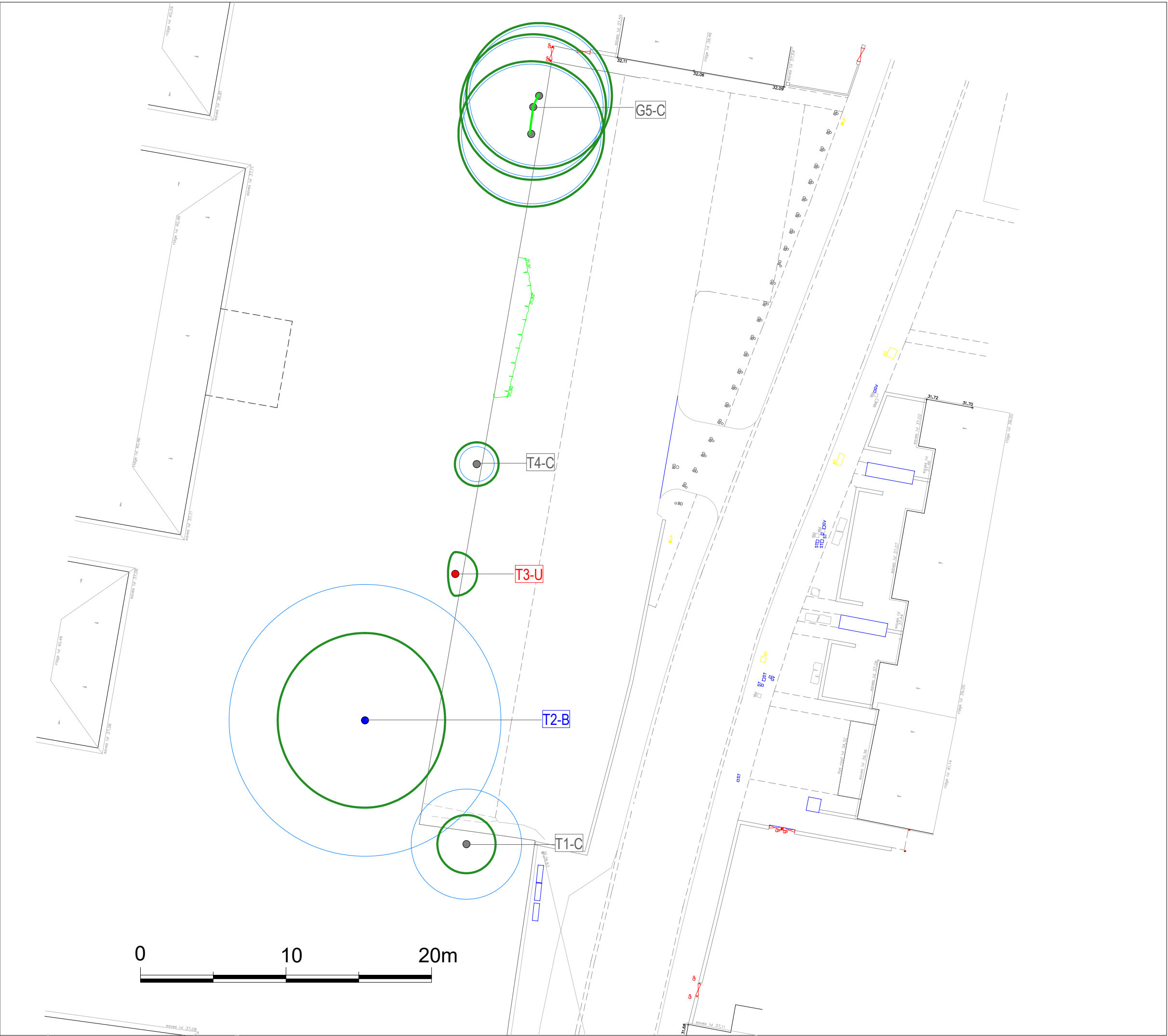
Detailed comments about the tree

15 Preliminary recommendations

Recommendations based on the tree's conditions and its current surroundings.

Appendix 2

Tree survey plan SHA 1369 TSP



- 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

Notes

- Contractors to check all dimensions on site
- Discrepancies must be reported to the Arboricultural Consultant before proceeding
- The original of this drawing was produced in colour, a monochrome copy should not be relied upon.
- It is the responsibility of the contractor to ensure necessary consents for tree works are in place
- This drawing is copyright © Sharon Hosegood Associates Ltd

Rev :	Description :	Authorized :
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Client

NFC Homes Ltd

Site Address

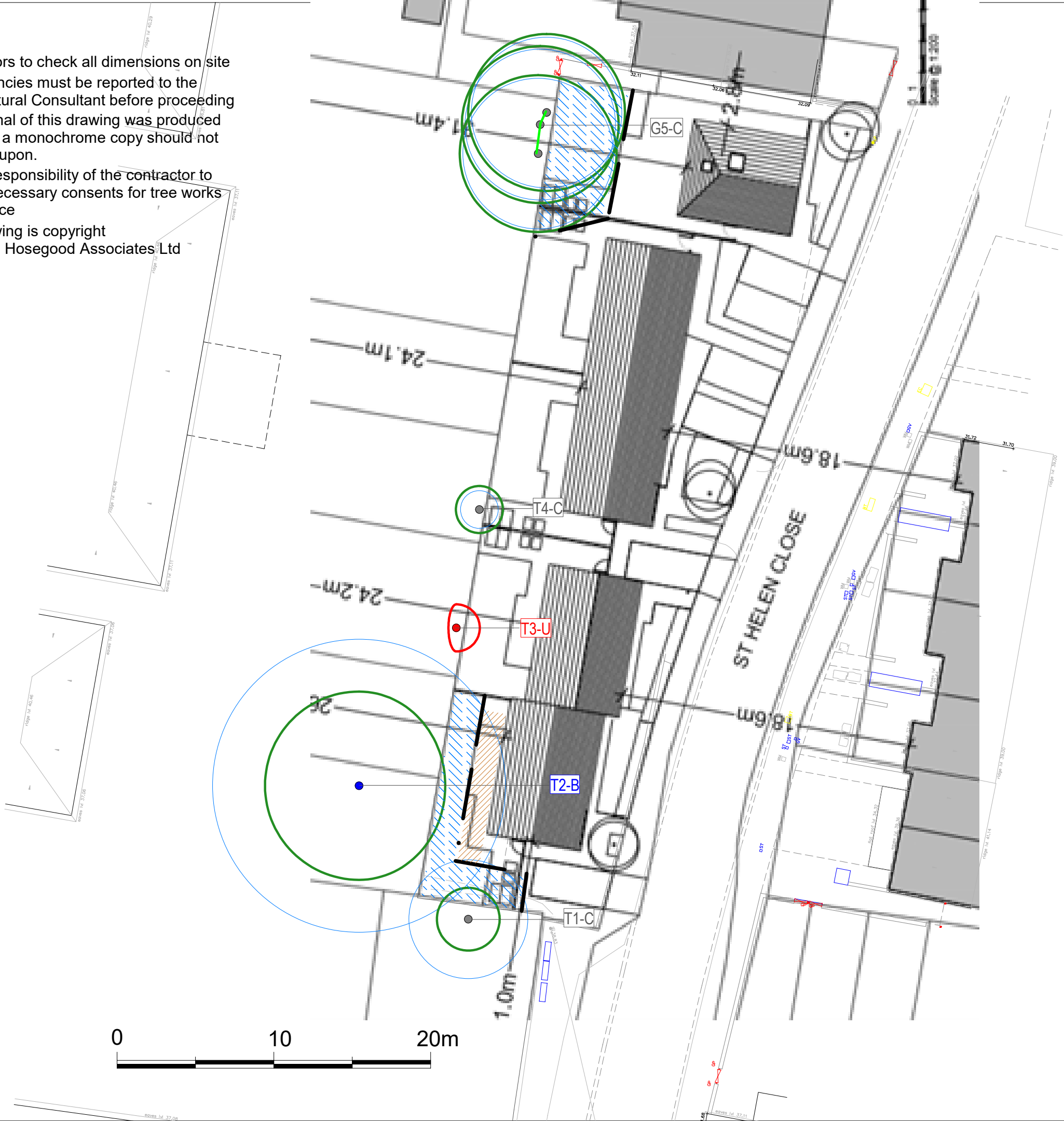
Land adjacent to 1 St Helen Close, Cowley, Hillingdon UB8 3RS

Drawing Title	Orientation	Drawn	Authorized
Tree Survey Plan	I	ND-H	SMD-H
Date	Drawing Number	Scale	Drawing Status
3.3.21	SHA 1369TSP	1:250@A3	For Issue
Revision			

Appendix 3

Tree protection plan SHA 1369 TPP

- 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
 - 5. This drawing is copyright © Sharon Hosegood Associates Ltd



T1-B Category B - moderate quality and value
T1-C Category C - low quality and value
T1-U Category U - unsuitable for retention

Tree to be retained

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

Small elder bush to be removed

Area for existing hard surface to be removed in accordance with Arboricultural Method Statement (AMS) - preferably a external works phase. No other excavation in this area.

Ground protection during construction

Tree protection fencing comprising braced Heras panels

Rev :	Description :	Authorized :
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Client
NFC Homes Ltd

Site Address
Land adjacent to 1 St Helen Close,
Cowley, Hillingdon UB8 3RS

Drawing Title	Orientation	Drawn	Authorized
Tree Protection Plan		ND-H	SMD-H
Date	Drawing Number	Scale	Drawing Status
3.3.21	SHA 1369TPP	1:250@A3	For Issue
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.

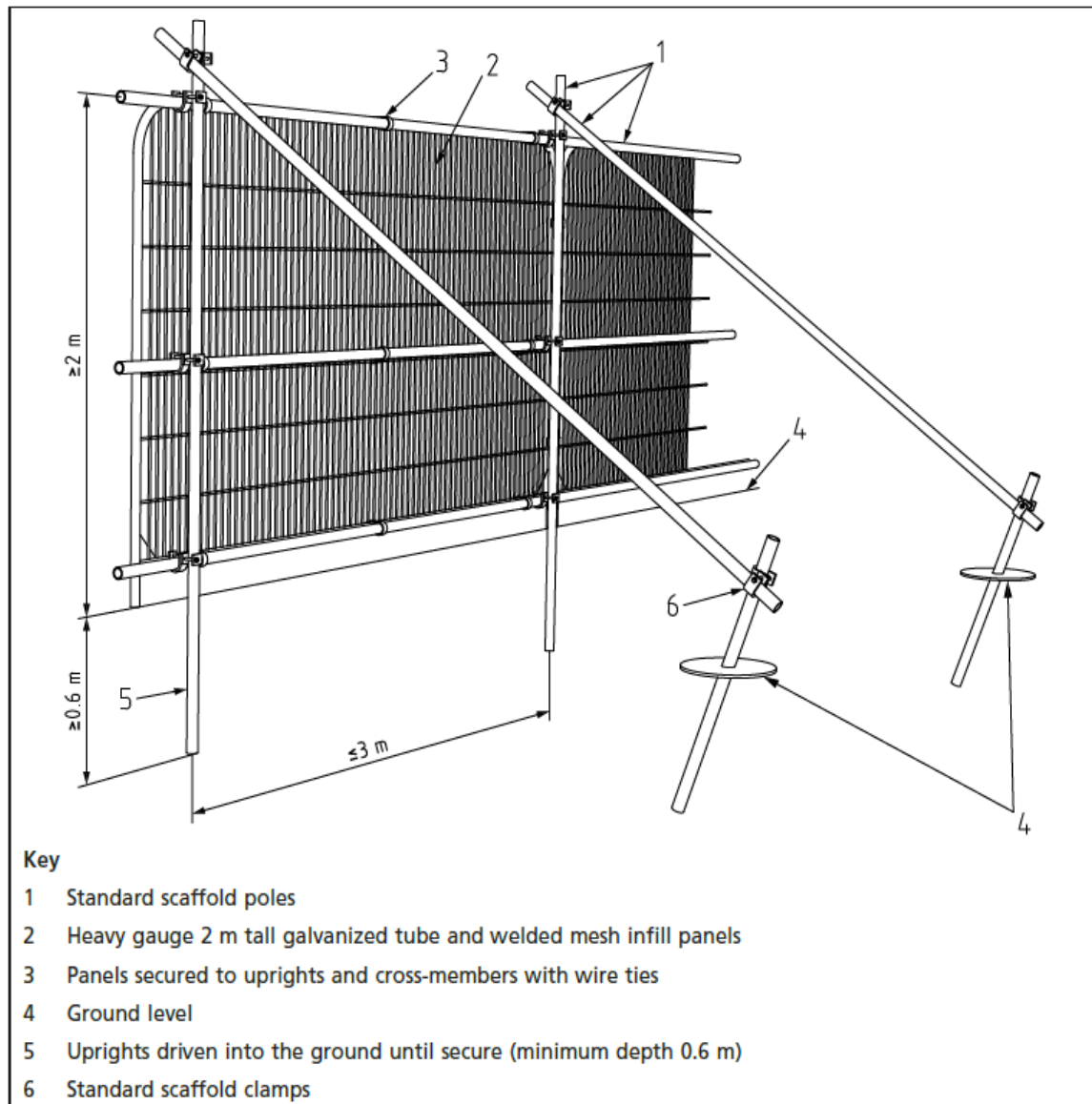
Tree no.	BS category	Species	Proposed works	Reason
T1	C2	Butterfly bush	No works	n/a
T2	B2	Cider Gum	Prune back lower branches over site by 2m	To reduce overhang
T3	U	Elder	Remove tree and treat root with ecoplug or similar to prevent regrowth	Growing in a tight spot between two fences
T4	C2	Lilac	No works	n/a
G5	C2	Leyland Cypress	Prune back lower branches over site by 2-3m within the green and remove dead wood	To reduce overhang

Cut back the ivy on the fence line or remove completely

Appendix 5

Tree protection specification

Figure 2 Default specification for protective barrier



Tree protection fencing specification from BS 5837:2012 Figure 2

Section 6.2.2 of BS.

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.

On this site orange mesh fencing supported by metal pins will be sufficient as a visual barrier as this is a private domestic garden.

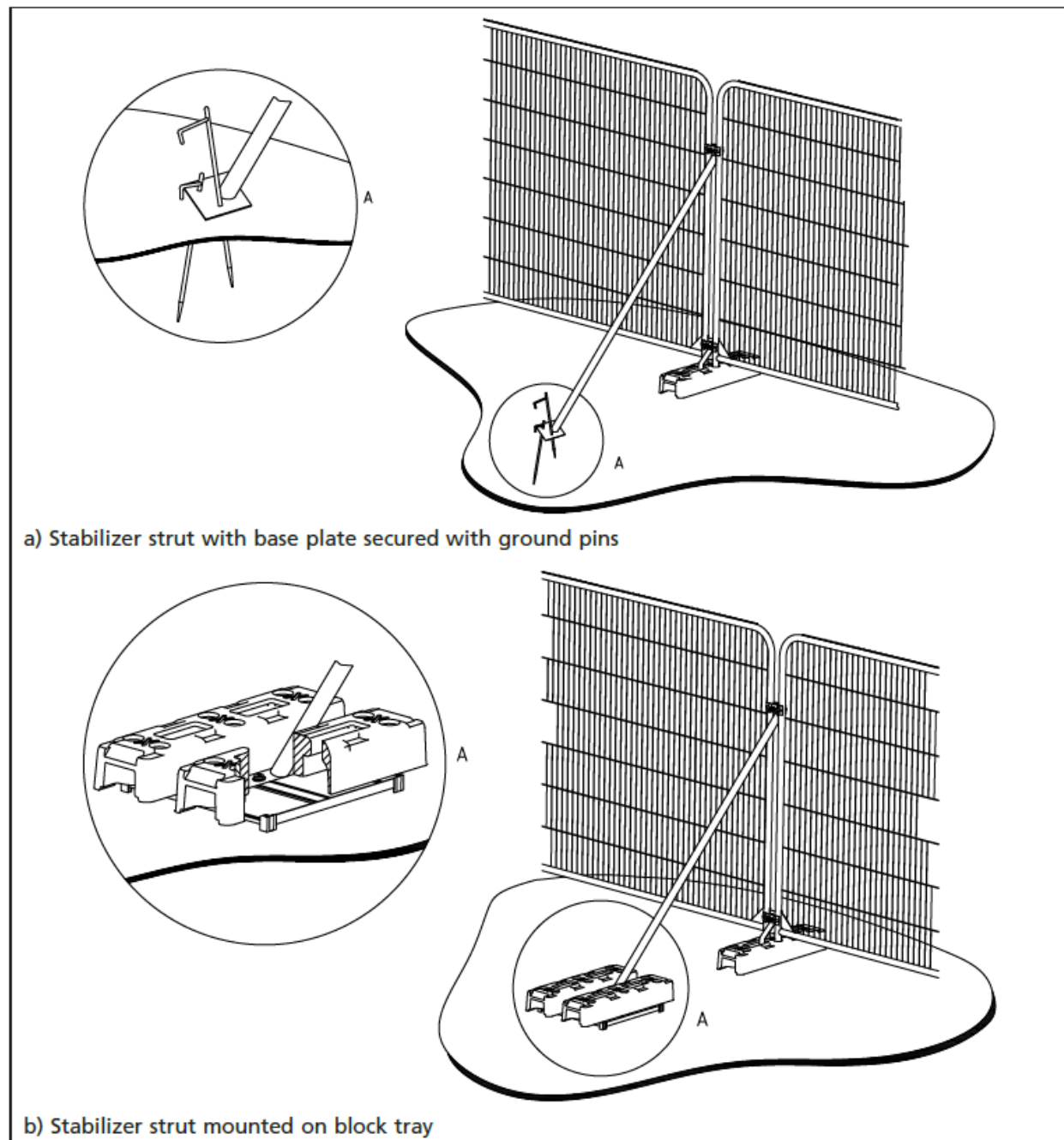
This does not apply to * which must be protected with Heras panels

The location for the tree protection fencing is shown on the tree protection plan delineated by a black dashed line. The location of the fencing is out the outer edge of the root protection area and the dimensions from fixed points are shown on the drawings. All weather signs should be affixed to the barriers, no more than 12m apart.

BRITISH STANDARD

BS 5837:2012

Figure 3 Examples of above-ground stabilizing systems



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)

- 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 brown diagonal hatching, identified in the key.

Appendix 6

Arboricultural method statement

Tree works:

Recommendations for tree works can be found in the tree surgery schedule in Appendix 5. 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 at:

<https://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.

Removal of hard surfacing within the root protection areas

The hard surfacing will remain in place during works and lifted at the external works stage. The following method statement will be observed:

Lift the concrete using handheld tarmac spade or a digger pulling backwards to lift the hard surfacing whilst keeping the ground underneath intact. In my experience, using a smooth bucket digger carefully can lift large slabs relatively easily without disrupting the ground beneath. There may be a sheath of fine feeder roots and main structural roots beneath the concrete. Great care must be taken to avoid scuffing and damaging these roots. Once removed, the exposed soil must be immediately covered with a suitable backfill medium such as good quality top soil.

The works should not take place in frosty or hot sunny dry weather as this can harm fine roots. If roots are accidentally damaged, then the arboricultural consultant must be contacted immediately.

Foundation installation with piling mat

This applies to T2.

- Mark the area where the method statement applies with spray paint
- The spade will continue until the shallowest root with a diameter greater than 25mm, or a mat of fine fibrous tree roots, are encountered.
- The roots will be pruned cleanly with bypass secateurs by the arboricultural consultant.

- The trench will be dug down to the minimum and all roots within this depth will be pruned.
- A record will be made of the number, location, diameter and depth of the roots.
- The tree side edge of the trench will be faced with a double vertical wall of damp hessian, pegged in place with pins. This is to prevent desiccation of the roots and act as a soft barrier.
- An impermeable plastic sheet will be placed next to the hessian and pegged at the top to keep in place. This is to prevent the alkalinity of the crush forming the piling mat from leaching through the hessian onto the cut roots.
- A temporary orange mesh fence to be installed along the edge of the piling mat to prevent the mat from spilling onto the area for ground protection.
- The piling mat crush to be installed in the normal way.

The piles will be encased in pile caps. The tree-side of the trench will be protected with hessian and then an impermeable plastic sheeting, to prevent the alkalinity of concrete from scorching the end of roots or locally raising the soil PH.

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. A '*What you need to know about working near trees at Land adjacent to 1 St Helen Close, Cowley, Hillingdon UB8 3RS*' sheet will be issued which includes contact details.

After each site supervision, a short report will be sent to the contractor, client and local authority as a record of compliance within 5 working days.

Site supervision will take place:

- Virtually, at the beginning of works to check on tree protection measures
- In person during the excavation of hard surfacing and for the piling mat

- Form then on a virtual supervision will take place every 8 weeks unless a new matter arises.

What happens when things change, and, in an emergency

If there is a deviation for practical reasons on any matter affecting trees which is not outlined in the method statement or this document, the site manager and/or project team, will contact the arboricultural consultant in the first instance, and then the tree officers will be contacted by phone, followed up by email. Works near trees will stop until the opinion of the consultant and the approval (or otherwise) by the tree officers is given. In an emergency, the site manager will contact his team, the tree officer and the consultant before taking action. The site manager will record any incidences with photographs and a contemporaneous hand written and signed note outlining:

- The date and time
- The location of tree issue
- What happened
- When the tree officers were contacted and their response

When the consultant was contacted and her response

Appendix 7

Tree related legislation and National Policy

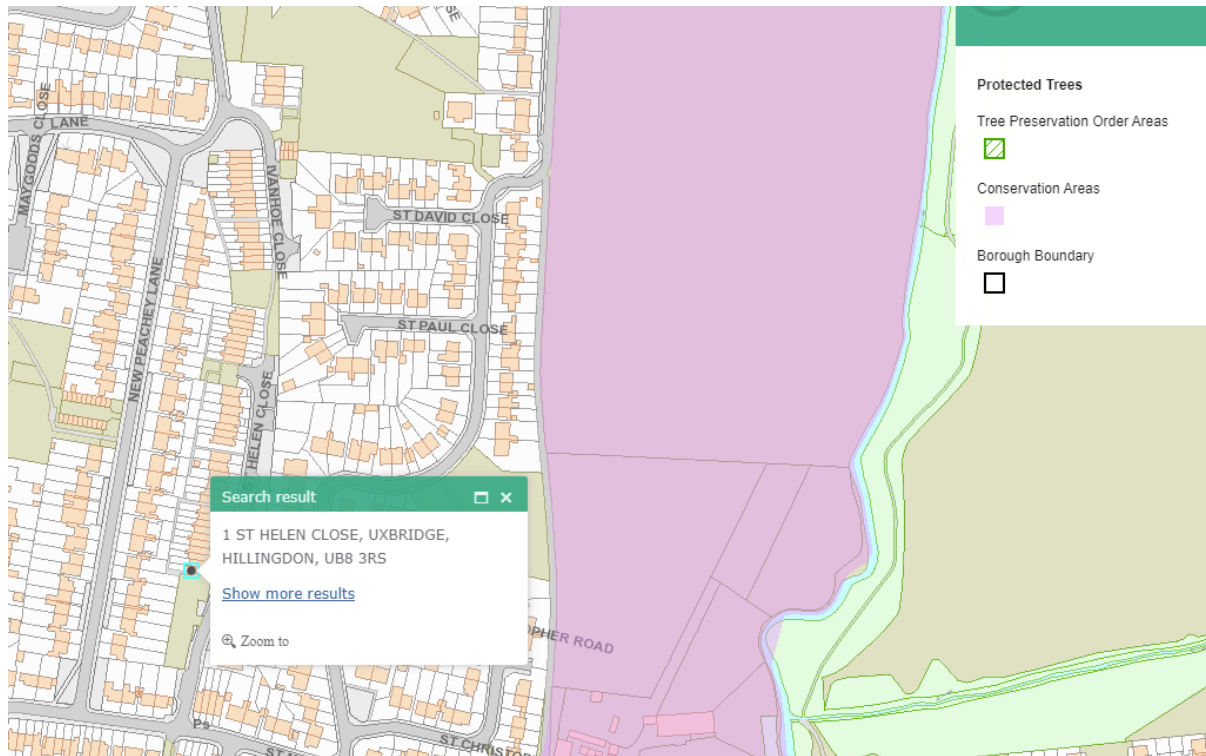
Tree preservation orders

The Town and Country Planning (Tree Preservation) (England) Regulations 2012.

No tree preservation orders affect the site.

Conservation Area:

The site does not lie in a conservation area.



Source:- LB Hillingdon website

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 damage to the tree.

The resulting debris remains the property of the tree owner, but you must not cause any damage to their property when returning it back to them and you do not have the right to trespass on the tree owner's property in carrying out the works. 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.

The National Planning Policy Framework June 2019

Section 175 states that:

- 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 exists; and a suitable compensation strategy

- d) development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to incorporate biodiversity improvements in and around developments should be encouraged, especially where this can secure measurable net gains for biodiversity.

Appendix 8

Statement of methodology and reference material

Statement of methodology

Review of supplied plans and information

Site visit made by Sharon Durdant-Hollamby on 1.3.21 .

Tree survey using Visual Tree Assessment carried out in accordance with BS 5837:2012 '*Trees in relation to design, demolition and construction – Recommendations*' (BS). 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

00520RB_FO_2D, 1955 P-02 Rev. A Site Layout and Ground Floor Plan[84], 1955-P01 Rev. B Site Context Plan[82], 1955-P-01-B, 1955-P-02-A, 1955-P-03-B, 1955-P-04 – A, 1955-P-05 – A, 1955-P-06 – A, 1955-P-07 – A, 1955-P-08, 1955-P-09, Decision notice and Location map.

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 Hillingdon website

C. Mattheck 'The body language of trees' 2015

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, I advise that a further check is made with London Borough of Hillingdon 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 measure of offsite trees has been estimated, except any crown within the site overhang which is measured. Where the crown of an onsite tree overhangs the boundary, the crown spread in this direction is also estimated.
8. The base and trunk of the offsite 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.

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Appendix 10

My experience and qualifications



Sharon Durdant-Hollamby

FICFor FArbor A BSc (Hons) Tech Cert Arbor A



Profile

Sharon is an Expert Witness, chartered arboriculturist and Director of Sharon Hosegood Associates Ltd. Sharon had eleven years' experience as a local government tree and landscape officer before joining DF Clark Contractors as a tree consultant in 2005. In 2007 she formed an environmental practice in Essex with the owner. As managing director, she built up the ecological and arboricultural consultancy to a team of 20. She is a regular presenter and an occasional trainer for Trevor Roberts Associates. She appeared on BBC1 in July 2015 and September 2015, in 'Britain Beneath Your Feet' demonstrating tree radar at the Burghley Country Park, Lincs, with Dallas Campbell, the consumer programme 'Rip Off Britain', and latterly, again with tree radar equipment, Springwatch, investigating the rooting of the Major Oak at Sherwood Forest in June 2018. Sharon was the technical coordinator and chair of the Institute of Chartered Foresters national study tour 2016 'The streets of London'. In November 2018 Sharon presented at the Annual International Arboricultural Summit in Hong Kong. She became Vice President of the Institute of Chartered Foresters in April 2019.

Specialties:	Trees in relation to development, including appeals and planning hearings Tree root investigations, including TreeRadar Tree hazard evaluation Tree preservation orders Trees and well-being with community engagement
Professional bodies:	Vice President of the Institute of Chartered Foresters Fellow of the Institute of Chartered Foresters (ICF) Assessor for the ICF examination board Fellow of the Arboricultural Association
Qualifications:	Cardiff University Law School Bond Solon Civil Expert Certificate Arboricultural Associations Technicians Certificate BSc (Hons) Geography and Landscape Studies Managing Safely IOSH (2017)
Awards:	Top student award for the Technician's certificate in 2005 The Broomfield Hospital Woodland Management project she has managed between 2009 -2015 won the following awards: The Essex Biodiversity Awards (nomination) The Excellent Community Engagement Award (NHS Forest) Green Flag and Green Apple Award Highly commended for the Health Sector Journal Award 2013

Appendix 11

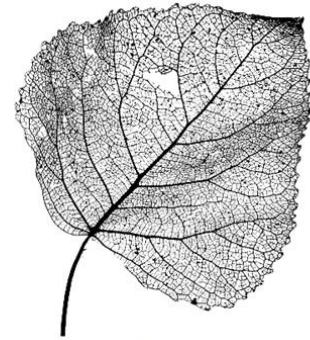
Glossary

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.
Architecture	In a tree, a term describing the pattern of branching of the crown or root system.
Biochar	Biochar is charcoal used as a beneficial soil amendment enabling nutrient uptake and assisting the trees defense mechanism
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.
Canopy	The topmost layer of twigs and foliage in a tree.
Co-dominant	In trees, a similarity between two or more stems or branches with regard to their size and their position within the canopy.
Column	In the wood or phloem of a tree, an axially elongated zone of tissue that is distinguished from the surrounding tissue; e.g. Live versus dead or decayed versus non-decayed.
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 or 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.
Direct damage	Direct physical damage to a structure of surface from pressure exerted by the trunk or growing roots.

Ecosystem services	The benefits that a particular species or range of species bestow upon others (including humans) through ecological relationships. Such services can sometimes be estimated in a form that allows them to be included in financial accounting.
Epicormic	Pertaining to shoots or roots which are initiated on mature woody stems; shoots can form in this way from dormant buds or they can be adventitious.
Failure	In connection with tree hazards, a partial or total fracture within woody tissues or loss of cohesion between roots and soil.
Flush cut	A pruning cut close to the parent stem which removes part of the branch bark ridge.
Foreseeable	In hazard assessment, pertaining to failure and associated injury of damage which are predictable on the basis of evidence from a tree and its surroundings.
Fungi	Organisms of several evolutionary origins, most of which are multicellular and grow as branched filamentous cells within dead organic matter or living organisms.
Hazard	A thing, a process or a potential event that has the potential to cause harm.
Heartwood	The dead or predominantly dead central wood of various tree species whose outer living wood, sapwood, has a finite and pre-determined lifespan.
Independent in the landscape	Point at which a newly planted tree is no longer reliant on excessive or abnormal management intervention in order to grow and flourish with realistic prospects of achieving its full potential contribute to the landscape.
Level arm	A mechanical term denoting the length of the lever represented by a structure that is free to move at one end, such as a tree or an individual branch.
Landscape character	A distinct, recognisably and consistent pattern of elements in the landscape that make one landscape different from another, rather than better or worse.
Mulch	Material laid down over the rooting area of a tree or other plant to help conserve moisture, suppress weeds and encourage a beneficial microflora.
Mycorrhizal	Pertaining to an intimate symbiotic association between plant roots and specialised fungi.
PICUS	The Picus Sonic Tomograph is a non-invasive tool for assessing decay in trees. It works on the principle that sound waves passing through decay move more slowly than sound waves traversing solid wood. By sending sound waves from a number of points around a tree stem to a number of receiving points, the relative speed of the sound can be calculated and a two-dimensional image of the cross-section of the tree can be generated
Pollard	A term for a pollarded tree
Pollarding	The complete or partial removal of the crown of a young tree so as to encourage the development of numerous branches; also, further cutting to maintaining this growth pattern.
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.
Resistograph	

	The IML-RESI system is based on the measurement of drilling resistance. The IML-RESI operates in a similar manner to a normal drill. A drilling needle with a diameter of 1.5mm is inserted into the wood under constant drive. While drilling, the resistance is measured as a function of the drilling depth of the needle. The data is printed and stored electronically at a scale of 1:1 simultaneously. Although invasive the relatively small needle diameter causes very little damage, testing is normally only undertaken to confirm the remaining stem wall thickness in decaying trees.
Retrenchment	Progressive reduction in the size of the crown of an old tree, by means of the dieback or breakage of twigs and small branches, accompanied by the enhanced development of the lower or inner parts of the crown.
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 ' <i>Trees in relation to design, demolition and construction – Recommendations</i> '.
Root flare	Thickened and expanded base of a tree stem at ground level from which buttress roots form.
Rootplate	The central part of the root system of a tree, consisting of the large-diameter main roots and a dense mass of smaller roots and soil.
Service	In construction, any above-or below-ground structure or apparatus for utility provision.
SULE	Safe useful life expectancy of a tree (Barrell)
Stag-headed	In a tree, a state of dieback in which dead branches protrude beyond the current living crown.
Stress	In plant physiology, a condition under which one or more physiological functions are not operating within their optimum range, for example owing to lack of water, inadequate nutrition or extremes of temperature.
Stub cut	A pruning cut which is made at some length distal to the branch bark ridge.
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).

Veteran tree	<i>'A tree that has passed beyond maturity and is old, or aged, in comparison with other trees of the same species'.</i> Ancient Tree Guide No. 4 (ATF, 2008).
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, in which high vitality equates with healthy function.
Visual Tree Assessment (VTA)	In addition to the literal meaning, a system expounded by Matlack and Breloer (1995) to aid the diagnosis of potential defects through visual signs and the application of mechanical criteria.
White-rot	Various kinds of wood decay in which lignin, usually together with cellulose and other wood constituents, is degraded.
Wound	Injury caused to a tree by a physical force.



Sharon Hosegood
ASSOCIATES

APPLICATION REFERENCE - 56865/APP/2020/459 CONDITION 4

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

SITE

Land adjacent to 1 St Helen Close, Cowley, Hillingdon UB8 3RS

CLIENT

NFC Homes Ltd

DATE: March 2021
OUR REF:SHA 1369

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