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Arboricultural and Planning Integration Report: 3 Rogers Ruff, Northwood, HA6 2FD

2nd December 2019

Ref: GHA/DS/125260:19

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Arboricultural Report

Location: 3 Rogers Ruff, Northwood, HA6 2FD
Ref: GHA/DS/125260:19
Client: Dusek Design
Date: 2nd December 2019
Report Prepared by: Glen Harding MSc (Forestry), MArborA
Date of Inspection: 13th November 2019

Please note that abbreviations introduced in (brackets) may be used throughout the report.

Instructions

Issued by – Dusek Design

TERMS OF REFERENCE – GHA Trees were instructed to survey the subject trees within and adjacent to 3 Rogers Ruff, Northwood, in order to assess their general condition and to provide a planning integration statement for the indicative proposed development that safeguards the long term well being of the retained trees in a sustainable manner.

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Executive Summary

The proposal for the site is to construct new extension to the side and rear of the existing dwelling. The existing access and parking areas will be retained for the purposes of the proposed site works. The retained trees require protection in accordance with industry best practice and BS 5837: 2012 – Trees in relation to design, demolition and construction – recommendations, in order to ensure their longevity.

Documents Supplied

Dusek Design supplied the following documents:

1. Existing layout plans
2. Proposed layout plans

Scope of Survey

- 1.1 The survey is concerned with the arboricultural aspects of the site only.
- 1.2 The planning status of the subject property was not investigated in detail.
- 1.3 A qualified Arboriculturist undertook the report and site visit and the contents of this report are based on this. Whilst reference may be made to built structure or soils, these are only opinions and confirmation should be obtained from a qualified expert as required.
- 1.4 Trees in third party ownership were surveyed from within the subject property, therefore a detailed assessment was not possible and some (if not all) measurements were estimated. Where the stem location of a third party tree has been estimated, this is noted on the plan.
- 1.5 No discussions took place between the surveyor and any other party.
- 1.6 The trees were inspected on the basis of the Visual Tree Assessment method expounded by Mattheck and Breleor (The body language of tree, DoE booklet Research for Amenity Trees No. 4, 1994)
- 1.7 The survey was undertaken in accord with British Standard 5837: 2012 – Trees in relation to design, demolition and construction – recommendations.
- 1.8 Underground services near to trees will need to be installed in accord with the guidance given in BS5837 together with the National Joint Utilities Group Booklet 4: 2007 Guidelines for the planning, installation and maintenance of utility services in proximity to trees (NJUG4).
- 1.9 The client's attention is drawn to the responsibilities under the Wildlife and Countryside Act (1981).

Survey Method

- 2.1 The survey was conducted from ground level with the aid of binoculars if needed.

- 2.2 No tissue samples were taken nor was any internal investigation of the subject trees undertaken.
- 2.3 No soil samples were taken.
- 2.4 The height of each subject tree was estimated using a clinometer and recorded to the nearest half metre.
- 2.5 The stem diameter for each tree was measured in line with the requirements set out in BS 5837: 2012 – Trees in relation to design, demolition and construction – recommendations.
- 2.6 The crown spreads were measured with an electronic distometer and recorded to the nearest half metre. Where the crown radius was notably different in any direction this has been noted on the Plan (appendix A) and within the tree table (Appendix B). The crowns of those trees that are proposed for removal, or trees where the crown spread is deemed insignificant in relation to the proposed development are not always shown on the appended plan; however their stem locations are marked for reference.
- 2.7 The Root Protection Area (RPA) for each tree is included in the tree table, both as an area, and as the radius of a circle.
- 2.8 The crown clearance was measured using a clinometer and recorded to the nearest half metre. Where it is significantly lower in one direction, this is noted within the tree table at appendix B.
- 2.9 All of the trees that were inspected during the site visit are detailed on the plan at Appendix A; this plan was produced in colour and **MUST** only be scanned or reproduced in colour. The trees on this plan are categorised and shown in the following format:

COLOUR CODING AND RATING OF TREES:

Category A – Trees of high quality with an estimated remaining life expectancy of at least 40 years. Colour = light **green** crown outline on plan.

Category B – Trees of moderate quality with an estimated remaining life expectancy of at least 40 years. Colour = mid **blue** crown outline on plan.

Category C – Trees of low quality with an estimated remaining life expectancy of at least 40 years, or young trees with a stem diameter below 150mm. Colour = uncoloured crown outline on plan.

Category U – Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years. Colour = **red** crown outline on plan.

All references to tree rating are made in accordance with BS 5837: 2012 – Trees in relation to design, demolition and construction – recommendations', Table 1.

The Site

- 3.1 The site is located on Rogers Ruff, a residential road located to the south of Northwood.
- 3.2 A good tree cover is present on the site itself as well as adjacent sites, with many semi-mature and mature trees of both native and exotic origin characterising the local area.
- 3.3 Access to the property is currently gained via a driveway to the front (north east) of the site.

The Subject Trees

- 4.1 The details of the subject trees are set out in the Schedule at Appendix B.
- 4.2 The overall quality of the trees is good.
- 4.3 Of the twenty-seven individual trees, and groups of trees surveyed, eighteen have been assessed as BS 5837 category B, with the remaining trees being assessed as BS 5837 category C.

Category B	18 trees / groups
Category C	9 trees / groups

The Proposal

- 5.1 The proposal for the site is to construct new extension to the side and rear of the existing dwelling.
- 5.2 The existing access and parking areas will be retained for the purposes of the proposed site works.
- 5.3 The proposed location of the above structures can be seen on the appended plan.

Arboricultural Impact Assessment

PROPOSED TREE REMOVAL / RETENTION:

- 6.1 The proposed site layout and all of its associated structures allows for the healthy retention of all of the trees on the site itself, and within nearby adjacent sites; therefore, the arboricultural landscape character of the site will be retained.

TREE PRUNING TO ACCOMMODATE THE PROPOSAL OR ACCESS TO THE SITE

- 6.2 The implementation of the proposal does not lead to the requirement to prune any of the retained trees, or shrubs.

ASSESSMENT OF RETAINED TREES ROOT PROTECTION AREAS

- 6.3 Section 4.6.3 of BS 5837: 2012 states that the Root Protection Area (RPA) of each tree should be assessed by an arboriculturalist considering the likely morphology and disposition of the roots, when known to be influenced by past or existing site conditions.
- 6.4 The RPAs of several trees on and near to the site have been amended to take account of the existing structures as can be seen on the appended plan.
- 6.5 The other RPAs have been drawn as notional circles, as there are no structures within their RPAs that have been assessed to significantly impact the root layout.
- 6.6 A small portion of the proposed new structure to the rear would be situated within a small section of the assessed Root Protection Areas of T13 (~4%) and T14 (~2%) as can be seen on the appended plan. The construction design process has shown consideration of this issue (of working within the RPA) by specifying the use of specialised footings; these footings will ensure minimal root disturbance occurs near these trees.
- 6.7 BS 5837: 2012 supports the use of specialised piled foundations within the RPA:

5.3.1 The default position should be that structures (see 3.10) are located outside the RPAs of trees to be retained. However, where there is an overriding justification for construction within the RPA, technical solutions might be available that prevent damage to the tree(s) (see Clause 7). If operations within the RPA are proposed, the project arboriculturist should: a) demonstrate that the tree(s) can remain viable and that the area lost to encroachment can be compensated for elsewhere, contiguous with its RPA; b) propose a series of mitigation measures to improve the soil environment that is used by the tree for growth. Section 7.5 of BS 5837 states the following:

7.5.2 Root damage can be minimized by using:

- *piles, with site investigation used to determine their optimal location whilst avoiding damage to roots important for the stability of the tree, by*

means of hand tools or compressed air soil displacement, to a minimum depth of 600 mm;

- beams, laid at or above ground level, and cantilevered as necessary to avoid tree roots identified by site investigation.*

7.5.4 Slabs for larger structures (e.g. dwellings) should be constructed with a ventilated air space between the underside of the slab and the existing soil surface (to enable gas exchange and venting through the soil surface). In such cases, a specialist irrigation system should also be employed (e.g. roof run-off redirected under the slab). The design of the foundation should take account of any effect on the load-bearing properties of underlying soil from the redirected roof run-off. Approval in principle for a foundation that relies on topsoil retention and roof run-off under the slab should be sought from the building control authority prior to this approach being relied on.

7.5.5 Where piling is to be installed near to trees, the smallest practical pile diameter should be used, as this reduces the possibility of striking major tree roots, and reduces the size of the rig required to sink the piles. If a piling mat is required, this should conform to the parameters for temporary ground protection given in 6.2.3. Use of the smallest practical piling rig is also important where piling within the branch spread is proposed, as this can reduce the need for access facilitation pruning. The pile type should be selected bearing in mind the need to protect the soil and adjacent roots from the potentially toxic effects of uncured concrete, e.g. sleeved bored pile or screw pile.

In order to arrive at a suitable foundation design (which minimises root disturbance within the RPAs of nearby retained trees), site specific and specialist advice regarding footings should be sought from an Engineer, in close discussion with the projects Arboriculturalist.

- 6.8 The proposed new building(s) are situated outside of the assessed RPA's of all of the other trees proposed for retention, therefore these trees pose no below ground constraints on the new buildings or vice versa.

INSTALLATION OF SERVICES

- 6.9 The installation of underground apparatus and drainage systems with the use of mechanical excavators will undoubtedly sever any roots that may be present and can change the hydrology and structure of the nearby soil in a way that will adversely affect the health of any nearby trees. Particular care should therefore be taken when assessing the layout of new services and consideration **MUST** be given to the methods of installation of **ALL** underground apparatus.
- 6.10 From an assessment of the subject site, undertaken in conjunction with the project architect, the existing drainage system has been assessed as suitable for re-use and it is assumed that the electric and gas cabling is also satisfactory. Therefore, there is no reason to assume that any new service installations will be required within the RPAs of any trees.

Post Development Pressure

FUTURE TREE AND STRUCTURE RELATIONSHIPS

- 7.1 The retained trees are at a satisfactory distance from the proposed new building, and highly unlikely to give rise to any inconvenience.
- 7.2 Some minor lateral pruning of the retained trees and shrubs may be required in the medium term; however any such work would not have a significant impact on the health or amenity value of these trees.
- 7.3 The BS3998: 2010 – Recommendations for Tree Work discusses and endorses various methods of pruning that can alleviate the minor inconveniences trees can cause, whilst retaining them in a healthy condition. Methods such as crown reductions (section 13.4) partial or whole, crown lifting (section 13.5) and crown thinning (section 13.6) can be used to both increase light to properties, as well as improve clearances from buildings. Trees in towns are often sited in close proximity to buildings; however residents concerns can be readily appeased with the implementation of regular, well-planned, sensitive pruning.
- 7.4 Regular inspections of the retained trees by a suitably qualified Arboriculturalist and subsequent remedial works will ensure that the trees are maintained in a suitable manner, to exist in harmony with the new structures and its occupants for many years to come.

Tree Protection Measures and Preliminary Method Statement for Development Works

8.1 TREE PROTECTION BARRIERS

It is essential for the future health of the trees to be retained on site, that all development activity is undertaken outside the root protection zone of these trees, whenever this is practical. The position of the proposed protective fencing for the site is shown on the plan 'Appendix A' by a pink line. The position of the fence is to be marked out with biodegradable marker paint on site and agreed with appropriate representatives from the LPA and contractor. The fencing will be erected **prior** to any works in the vicinity of the trees and removed only when all development activity is complete. The protective fencing will be as that shown in BS 5837 (see Appendix C). The herras panels must be joined together using a minimum of two anti-tamper couplers which must be installed so they can only be removed from the inside of the fence. The panels should supported by stabilizer struts, which must be installed on the inside and secured to the ground using pins or appropriate weights.

The Fence must be marked with a clear sign reading:

“Construction Exclusion Zone – No Access”

8.2 GROUND PROTECTION – LIGHTWEIGHT ACCESS ONLY

An area of the site will require ground protection to ensure that soil erosion or excessive compaction does not occur. The areas where this protection is required are outlined in orange hatching on the appended plan. This area will be covered with a permeable membrane, with 100mm layer of compressible woodchip overlaying it; an 18mm marine ply boards will then be secured on top of the woodchip to allow a 1.5tonne mini-digger to access the area without causing major compaction or soil erosion.

8.3 IMPLEMENTATION OF THE NEW BUILDING ON A "RAFT STYLE" FOUNDATION WITH ASSOCIATED PILES / PADS

- **NOTE: any excavations in the RPAS with the use of mechanical excavators will undoubtedly sever any roots that may be present and can change the hydrology and structure of the nearby soil in a way that will adversely affect the health of any nearby trees.**
- The locations of the supporting piles / pads is easily changeable, and the exact locations for them will be confirmed following hand excavated, trial digs of the top 1000mm of each potential hole (this is where the majority of roots exist).
- Hand tool excavations will only be undertaken by fully briefed site personnel. This operation will be done slowly and carefully to ensure the retention and protection of any roots that are discovered that are in excess of 25mm. These roots **MUST** then be covered and protected using damp hessian whilst further excavation commences; hessian must be left in situ until backfilling commences and re-wetted if needed to avoid root desiccation. **NOTE: OPERATIVES MUST CHECK FOR THE PRESENCE OF ANY EXISTING UNDERGROUND SERVICES PRIOR TO THE COMMENCEMENT OF SUCH WORK.**
- Any roots discovered in these trial pits in excess of 25mm diameter will immediately signal the requirement for a change of pit location.
- These trial digs will be attended by the retained arboriculturalist and site manager who will agree the final locations of the piles / pads.
- Ground protection as that detailed above should be placed over the working area whilst the deeper piling / excavation of the final locations commences, with the use of a closely supervised lightweight rig and / or hand tools. This will alleviate the possibility of excessive compaction or erosion within the RPA's.
- Once the trial holes are excavated to the correct depth, care must then be taken to ensure the new piles / pads are installed so as to avoid any roots present. **Any roots that require pruning (those less than 25mm diameter) should be cut using sharp tools to leave a 'clean' cut, in order to minimise the risk of infection by decay pathogens.**
- Once the piles / pads are installed, the excavated holes must then be backfilled and the soil compacted using hand tools only, to ensure not air pockets are left as these can be damaging to tree roots.

- 8.4 SITE HUTS, WELFARE FACILITIES AND STORAGE OF EQUIPMENT, MATERIALS AND CHEMICALS
All site huts will be positioned outside of the retained trees RPA's.
- 8.5 MIXING OF CONCRETE
All mixing of cement / concrete must be undertaken outside of the RPA of all of the retained trees.
- 8.6 USE CRANES, RIGS AND BOOMS
Precautionary measures must be observed to avoid contact of any retained trees when manoeuvring cranes rigs or booms into position.
- 8.7 INCOMING SERVICES, DRAINAGE AND SOAKAWAYS
From an assessment of the subject site, undertaken in conjunction with the project architect, the existing drainage system has been assessed as suitable for re-use, and it is assumed that the electric and gas cabling is also satisfactory.
- 8.8 ON SITE SUPERVISION
Regular site supervision is essential to ensure all potentially damaging activities near to trees are correctly supervised. A pre start meeting will occur to ensure all parties are aware of their responsibilities relating to tree protection on site; this will include a site induction for key personnel.
- 8.9 OTHER TREE PROTECTION PRECAUTIONS
- No fires lit on site within 20 metres of any tree to be retained.
 - No fuels, oils or substances with will be damaging to the tree shall be spilled or
- 8.10 DISMANTLING PROTECTIVE BARRIERS
Protective barriers must only be completely removed when all machinery, and equipment has left site.

Conclusion

- 9.1 In conclusion, the principal arboricultural features within the site can be retained and adequately protected during development activities.
- 9.2 Subject to precautionary measures as detailed above, the proposal will not be injurious to trees to be retained.

Recommendations

- 10.1 Site supervision – An individual e.g. the Site Agent, must be nominated to be responsible for all arboricultural matters on site. This person must:
- a. Be present on the site the majority of the time.
 - b. Be aware of the arboricultural responsibilities.

- c. Have the authority to stop any work that is, or has the potential to cause harm to any tree.
- d. Be responsible for ensuring that all site personnel are aware of their responsibilities towards trees on site and the consequences of the failure to observe those responsibilities.
- e. Make immediate contact with the local authority and / or retained arboriculturalist in the event of any related tree problems occurring whether actual or potential.

10.2 It is recommended, that to ensure a commitment from all parties to the healthy retention of the trees, that details are passed by the architect or agent to any contractors working on site, so that the practical aspects of the above precautions are included in their method statements, and financial provision made for these.

2nd December 2019

Signed:



Glen Harding MSc (Forestry), MArborA
For and on behalf of GHA Trees

Appendix A

Appendix B

Tree Number	Tree Name (species)	Ht (m)	Calculated Stem Diameter (mm)	Number of Stems	Root Protection Area (Radius, m)	N (m)	E (m)	S (m)	W (m)	Age Class	Clearance (m)	Estimated life expectancy	BS Category	Comments / Recommendations
T1	Oak	11	260	1	3.12	6	6	0	6	MA	3 (north)	20-40	B2	One sided crown. Off site - full inspection not possible.
T2	Hornbeam	15	393	3	4.72	6	6	4	6	M	5	20-40	B2	Old coppice stool. Off site - full inspection not possible.
T3	Hornbeam	18	457	3	5.48	6	6	3	6	M	6	20-40	B2	Old coppice stool.
T4	Hornbeam	18	377	4	4.53	4	6	4	4	M	6 plus epicormic	20-40	B2	Old coppice stool.
T5	Oak	16	450	1	5.40	5	7	6	7	M	7	20-40	B1	Off site - full inspection not possible.
T6	Oak	12	390	1	4.68	4	4	4	4	M	5 (north)	20-40	B1	Topped in past.
T7	Hornbeam	16	505	3	6.06	5	5	5	5	M	6 plus epicormic	20-40	B2	Old coppice stool.
T8	Holly	10	100	1	1.20	3	3	3	3	M	3	10-20	C1	Off site - full inspection not possible.
G9	Yew, oak, hornbeam	10	140	1	1.68	4	4	4	2	MA	4	10-20	C2	Off site - full inspection not possible.
T10	Ash	16	536	4	6.43	4	7	7	4	M	8 (north)	20-40	B1	Off site - full inspection not possible.
T11	Cypress	4	144	2	1.73	2	2	1	1	M	0.5	10-20	C1	Small tree of little value.
T12	Field maple	14	424	2	5.09	5	5	5	5	M	4	20-40	B1	Off site - full inspection not possible.
T13	Hornbeam	22	665	2	7.98	7	5	5	6	M	7	20-40	B1	No notable defects recorded during inspection.

Tree Number	Tree Name (species)	Ht (m)	Calculated Stem Diameter (mm)	Number of Stems	Root Protection Area (Radius, m)	N (m)	E (m)	S (m)	W (m)	Age Class	Clearance (m)	Estimated life expectancy	BS Category	Comments / Recommendations
T14	Oak	20	670	1	8.04	5	4	5	5	M	6	20-40	B3	Localised decay at old pruning points. Some deadwood.
G15	Horse chestnut and birch	17	450	1	5.40	5	5	5	5	M	4	20-40	B2	Off site - full inspection not possible.
T16	Oak	17	610	1	7.32	6.5	5	5	6.5	M	6 (east)	20-40	B1	No notable defects recorded during inspection.
T17	Oak	17	700	1	8.40	10	10	10	10	M	5	20-40	B1	Off site - full inspection not possible.
T18	Birch	14	280	1	3.36	2	3	3	3	M	4	10-20	C1	Dead top.
T19	Ash	19	370	1	4.44	5	4	4	5	M	6	10-20	C1	Localised decay at old pruning wound - 1m.
T20	Oak	21	600	1	7.20	7	6	5	7	M	6 (east)	20-40	B2	Off site - full inspection not possible.
T21	Oak	16	400	1	4.80	6	6	6	0	M	2 (east)	20-40	B2	Off site - full inspection not possible.
T22	Hawthorn	6	141	2	1.70	1	3	2	0	M	2	10-20	C1	Small tree of little value.
G23	Mixed cypress	6 to 8	100	1	1.20	2.5	2.5	2.5	2.5	M	3	10-20	C2	Off site - full inspection not possible.
T24	Lawson cypress	10	140	1	1.68	1	1	1	1	M	3	20-40	C1	Off site - full inspection not possible.
T25	Weeping birch	5	100	1	1.20	4	4	4	4	M	2	10-20	C1	Off site - full inspection not possible.

Tree Number	Tree Name (species)	Ht (m)	Calculated Stem Diameter (mm)	Number of Stems	Root Protection Area (Radius, m)	N (m)	E (m)	S (m)	W (m)	Age Class	Clearance (m)	Estimated life expectancy	BS Category	Comments / Recommendations
G26	Birch	13	300	1	3.60	4	4	4	4	M	5	20-40	B2	No notable defects recorded during inspection.
T27	Hornbeam	6	260	1	3.12	4	4	2	4	M	4 (south)	20-40	B1	No notable defects recorded during inspection.

KEY :

Tree No: (T= individual tree, G= group of trees, W= woodland)
Age class: Young (Y), Middle aged (MA), Mature (M), Over mature (OM),
Veteran (V)
Height (Ht): Measured in metres +/- 1m

Appendix C

Figure 3 Examples of above-ground stabilizing systems



