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Arboricultural and Planning Integration Report: 9 Linksway, Northwood, HA6 2XA

30th November 2020

Ref: GHA/DS/155660:20

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Arboricultural Report

Location: 9 Linksway, Northwood, HA6 2XA

Ref: GHA/DS/155660:20

Client: DDA

Date: 30th November 2020

Prepared by: Glen Harding MICFor, MSc (Forestry), MArborA

Date of Inspection: 24th November 2020

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

Instructions

Issued by – DDA

TERMS OF REFERENCE – GHA Trees were instructed to survey the subject trees within and adjacent to 9 Linksway, 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 demolish the existing house and then build a new detached house and garage. The proposed scheme requires the removal of a small number of trees, which will not significantly impact the local or wider landscape. The development presents an excellent opportunity to plant some new trees, to enhance the site and local area for the future. 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

The client supplied the following documents:

1. Topographical survey
2. Existing layout plans
3. 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 Dense vegetation or climbers (such as ivy) also prohibited full inspections for some trees; this is noted where applicable.
- 1.6 No discussions took place between the surveyor and any other party.
- 1.7 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)
- 1.8 The survey was undertaken in accord with British Standard 5837: 2012 – Trees in relation to design, demolition and construction – recommendations.
- 1.9 Pruning works will be required to be in accord with British Standard 3998 – 2010 (Tree Work - Recommendations).
- 1.10 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).
- 1.11 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 20 years. Colour = mid **blue** crown outline on plan.

Category C – Trees of low quality with an estimated remaining life expectancy of at least 10 to 20 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 Linksway, a residential through road located to the south west 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 (west) 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-four individual trees, and groups of trees surveyed, fourteen have been assessed as BS 5837 category B, with the remaining trees being assessed as BS 5837 category C.

Category B	14 trees / groups
Category C	10 trees / groups

The Proposal

- 5.1 The proposal for the site is to demolish the existing house and then build a new detached house and garage.
- 5.2 The proposed location of the above structures can be seen on the appended plan.

Arboricultural Impact Assessment

PROPOSED TREE REMOVAL / RETENTION:

- 6.1 The following trees are proposed for removal as part of the new development, as these specimens could not be effectively retained as they are located within the outline of the new structures, or located too close to make their retention feasible / sustainable.
T4, T5, T6, G9 and T16
- 6.2 The assessed grading (as per BS5837 table 1) of each of the trees to be removed, as well as any relevant comments on their condition can be seen in the tree table at appendix B.

TREE PRUNING TO ACCOMODATE THE PROPOSAL OR ACCESS TO THE SITE

- 6.3 T15 will be pruned to improve clearances from the proposed new structure. A full specification for the proposed pruning can be seen in the tree table at appendix B.
- 6.4 The implementation of the proposal does not lead to the requirement to prune any of the other retained trees, or shrubs.

ASSESSMENT OF RETAINED TREES ROOT PROTECTION AREAS

- 6.5 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.
- 6.6 Some of the RPAs have been amended to take account of the existing house next door and road to the front; these adjustments can be seen on the appended plan.
- 6.7 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.
- 6.8 The new garage is within a small section (~8%) of the Root Protection Area of T3 and the new house is within a small section (~5%) of the RPA of T15; these encroachments are shown 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.
- 6.9 It is of note that the ground levels near where the garage will sit slope away to the south; this will work well with such a footing.
- 6.10 Regarding T15, there are two existing structures in the RPA of this tree which will be removed and this will benefit this tree.
- 6.11 **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.

6.12 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.

PROPOSED ACCESS TO THE NEW DEVELOPMENT

6.13 Where sections of the new driveway are within the RPA of nearby trees, an "up and over" style construction will be necessary, to ensure that all existing ground levels are retained in their current form, as well as ensuring that satisfactory moisture and oxygen can be obtained from the underlying soil by any tree roots in this area. A design for this proposed access route must be drawn up by a structural engineer, in close co-ordination with the retained arboriculturalist.

INSTALLATION OF SERVICES

6.14 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.

6.15 New services should be routed to avoid all RPAs of retained trees on site and within nearby sites. From an assessment of the subject site, undertaken in conjunction with the project architect, there is no reason to assume this isn't possible. Inspection chambers must also be sited outside the RPAs of any nearby 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.

REMEDIATION / REPLACEMENT PLANTING AND SOFT / HARD LANDSCAPING

7.5 An assessment of suitable planting sites within the proposed development area confirms that the loss of trees discussed in section 6.1 can be addressed by the planting of new trees that would complement the existing landscape.

7.6 Any new trees that are planted should be selected to ensure they do not become a nuisance and that the level of routine maintenance is low.

7.7 The architects plans show 2x *Quercus ilex* (Holm oak) to be planted on the site frontage. These are proposed to replace the cluster of tightly packed trees which are proposed for removal in the south west corner.

Tree Protection Measures and Preliminary Method Statement for Development Works

8.1 TREE PRUNING / REMOVAL

A list of all tree works that are required (including trees to be removed) is included in the tree table at Appendix B. Pruning / removal has only been specified for the following reasons:

- Where work is necessary to implement the proposed scheme.
- Where works are required for safety reasons.
- Where work is required to improve tree form, or improve the appearance of overgrown areas of the site.

Where any tree work is needed, this work will be in accordance with British Standard 3998 – 2010 (Tree Work - Recommendations).

8.2 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. The position of the fence **MUST** be marked out with biodegradable marker paint on site and agreed with appropriate representatives from the LPA and contractor. The fencing **MUST** be erected **prior** to any works in the vicinity of the trees and removed only when all development activity is complete. The protective fencing **MUST** 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 **MUST** be 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"

8.3 GROUND PROTECTION – LIGHTWEIGHT ACCESS ONLY

Where any additional ground protection is required, these areas **MUST** be covered with a permeable membrane, with 150mm 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.

8.4 IMPLEMENTATION OF THE NEW GARAGE 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 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.

8.5 BOUNDARY TREATMENTS

Boundary fencing installation / upgrades **MUST** be undertaken as part of the soft landscaping phase and **MUST** be installed ONLY when all machinery that is on site for the main build has permanently left the site (NB. If needed, boundary fencing can also be installed prior to the commencement of site works, i.e.. before any machinery has been bought onto the site). Where sections of new / upgraded fencing are located within the RPA of ANY tree that is to be retained, this work **MUST** be undertaken by hand using hand tools only. The locations of the new fence upright posts will be finalised following trial digs to confirm there are no major (over 25mm) roots present; if any such roots are found, the location must be altered. If any smaller roots are found, these can be cut using sharp hand sharp tools to leave a 'clean' cut, in order to minimise the risk of infection by decay pathogens. The post holes within the RPAs should then be lined with plastic sheeting before any concrete or cement is placed into the hole, in order that there is no risk of leaching into the nearby soil as the mixture dries.

8.6 SITE HUTS, WELFARE FACILITIES AND STORAGE OF EQUIPMENT, MATERIALS AND CHEMICALS

All site huts **MUST** be positioned outside of the retained trees RPA's.

8.7 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.

8.8 INCOMING SERVICES, DRAINAGE AND SOAKAWAYS

New services **MUST** be routed to avoid all RPAs of retained trees on site and within nearby sites. From an assessment of the subject site, undertaken in conjunction with the project architect, there is no reason to assume this isn't possible. Inspection chambers **MUST** be sited outside the RPA.

8.9 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.

8.10 OTHER TREE PROTECTION PRECAUTIONS

- **NO** level alterations will occur within the RPA of any tree to be retained.
- **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 poured on site.
- **NO** storage of any materials within the root protection zone.

8.11 HARD / SOFT LANDSCAPING NEAR RETAINED TREES

All new pathways and hard landscaping areas within the Root Protection Areas (RPA's) of the retained trees should be designed using no-dig, up and over construction techniques, and be specified in close co-ordination with the retained Arboriculturalist. Porous materials should also be used when surfacing near the trees. No machinery will be used for this work, which must all be done by hand.

8.12 TREE PLANTING

Some proposed locations for new trees can be seen on the architect's plans. Tree planting should be undertaken between the months of November and March by a suitably experienced contractor. The scheme should include the implementation of an aftercare package to include: weed management, tree hydration, stake and tie maintenance, replacement of any failures, mulching and formative pruning.

Conclusion

- 9.1 Subject to precautionary measures as detailed above, the proposal will not be injurious to trees to be retained.
- 9.2 There will be no appreciable post development pressure, and certainly none that would oblige the council to give consent to inappropriate tree works.
- 9.3 New trees and shrubs can be planted following approval from the Local Planning Authority to ensure a sustainable tree stock for the future.

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.

30th November 2020

A handwritten signature in blue ink that reads "Glen Harding". The signature is fluid and cursive, with "Glen" on the top line and "Harding" on the bottom line.

Glen Harding MICFor, 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	15	720	1	8.64	7	4	5	6	M	6 north	20-40	B1	Previously crown reduced. Ganoderma at base of tree on road side.
G2	Hornbeam	15	447	5	5.37	7	4	6	6	M	6 north	20-40	B1	Off site - full inspection not possible.
T3	Oak	19	800	1	9.60	5	5	7	7	M	8	20-40	B1	Off site - full inspection not possible.
T4	Pine	23	380	1	4.56	3	3	3	2	M	1	20-40	B1	No notable defects recorded during inspection. Recommend: to be removed.
T5	Purple leaf plum	6	150	1	1.80	3	1	1	3	M	3 north	10-20	C1	Small tree of little value. Recommend: to be removed.
T6	Hornbeam	13	360	1	4.32	7	7	4	6	M	4	20-40	B1	No notable defects recorded during inspection. Recommend: to be removed.
T7	Hornbeam	14	350	1	4.20	6	3	4	6	M	4	20-40	B1	Off site - full inspection not possible.
T8	Oak	17	650	1	7.80	6	6	6	6	M	6 south	20-40	B1	Off site - full inspection not possible.
G9	Birch	14	240	1	2.88	4	4	4	4	M	5	10-20	C2	Of limited value in the wider landscape. Recommend: to be removed.

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
T10	Birch	15	300	1	3.60	5	4	6	6	M	4 north	10-20	C2	Of limited value in the wider landscape.
T11	Birch	13	200	1	2.40	4	3	4	3	M	4 north	10-20	C2	Of limited value in the wider landscape.
T12	Cedar	14	280	1	3.36	6	6	5	3	M	4 north	20-40	B1	Off site - full inspection not possible.
G13	Cypress	6 to 12	200	1	2.40	3	3	3	3	M	0	10-20	C2	Small tree of little value.
T14	Ash	16	432	2	5.18	6	6	6	6	M	3	10-20	C1	Early signs of ash dieback.
T15	Hornbeam	11	500	2	6.00	4.5	4.5	4.5	4.5	M	5 south	20-40	B1	Off site - full inspection not possible. Recommend: prune laterally by 2m on site side.
T16	Beech	11	360	1	4.32	4	4	5	4	M	3	10-20	C1	Topped in past. Recommend: to be removed.
T17	Hornbeam	11	400	1	4.80	4	4	4	4	M	5	10-20	C1	Topped in past.
T18	Oak	17	700	1	8.40	8	8	8	8	M	8	20-40	B1	Off site - full inspection not possible.
T19	Oak	17	600	1	7.20	7	7	7	7	M	8	20-40	B1	Off site - full inspection not possible.
T20	Oak	17	430	1	5.16	7	7	7	7	M	4	20-40	B1	No notable defects recorded during inspection.
G21	Hornbeam	10	300	1	3.60	4	4	4	4	M	3	10-20	C2	Lapsed hedge.
T22	Leyland cypress	9	450	1	5.40	3	3	3	3	M	5 south	10-20	C1	Low value tree.

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
T23	Oak	22	600	1	7.20	7	7	7	7	M	8	20-40	B1	No notable defects recorded during inspection.
G24	Hornbeam	12 to 20	400	1	4.80	7	7	7	7	M	2 over site	20-40	B2	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



