



38 Linksway, Northwood

**BS 5837:2005 Tree Survey and
Report**

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SUMMARY

There are 34 trees in the vicinity that may offer a constraint to development. The garden is somewhat overstocked with trees and in addition many of these trees are of poor quality- with careful design and a pragmatic approach a replacement dwelling could be accommodated within this garden.

1. Introduction

- 1.1 I have been instructed by Terrain Surveys Ltd. to carry out a survey of the trees within this garden, and by Seabrook Architects to assess the implications of the proposed new dwelling on the existing trees.
- 1.2 The purpose of this report is to assess the condition of the trees, and provide recommendations on the constraints to development that they may pose.
- 1.3 The survey is to take the form of a visual assessment of trees from ground level recording the measurement of the trees, describing their age, amenity, condition and recommending work. Trees have been plotted on plan and full details of survey work are included in the appendices.
- 1.4 The site was visited on 20 March 2009 and a survey carried out identifying and locating the relevant trees and other vegetation. The trees were inspected from ground level and indicative dimensions of their crowns marked on plan.

2. Background

- 2.1 The house is situated along a suburban road on the outskirts of Northwood, bordered on the eastern side by a golf course. The character of the area is of large gardens with a high percentage of trees.
- 2.2 The garden is flat with no indication of bad or impeded drainage.
- 2.3 From the aerial photographs the area of Northwood and Ruislip still contains many woodlands. Native oaks and hornbeam are present in woods within neighbouring gardens and there are mature oaks retained along the road.
- 2.4 The garden has been well maintained and is laid to lawn and shrub beds. The house dates from early in the 20th century and many of trees within the garden originate from this period. The oaks and hornbeams could predate the house.
- 2.5 The proposal is to demolish this property and built a replacement dwelling within the plot. Details of this new dwelling have been supplied by Graham Seabrook Partnership, plan reference 4836/PL/05

3.0 Tree Survey

3.1 Full details of this tree survey are included on tree survey sheets. (Appendix B) Information recorded complies with BS5837:2005, and is outlined as follows:-

- The species (English names), size and position of the trees within the garden.
- No trees with stem diameter of less than 150mm have been surveyed as according to the British Standard Recommendations these trees can be transplanted or replaced.
- The dimensions of the trees are the height, and the girth measured at 1.5 metre above ground level. The spread is measured at the four points of the compass, and this is represented on plan and the crown height is measured from the lowest point of the foliage.
- The maturity is recorded and details of this classification are included on the tree survey sheets.
- A description of the trees condition includes any visual defects at the time of the survey. As this survey is conducted from ground level not all defects may be visible, and pathogens may not be apparent because of the season of inspection.
- General recommendations for each tree are outlined, which may need to be reviewed once development proposals are finalised.
- Estimated remaining contribution in years in view of the existing site conditions are classified as, (less than 10 years; 10 to 20 years, 20 to 40 years or more than 40 years).

3.2 Topographical drawings have been provided by Terrain Surveys Ltd. Tree survey information has been added to this plan and details amended for the purpose of this report. The tree survey is included on the 'Tree Constraints Plan' which outlines the arboricultural constraints to development. (Appendix C)

3.3 It is important to note that the trees are surveyed and their condition evaluated in the current site conditions. If there is a change in the site conditions and within the root protection area the trees may need to be re-surveyed and their potential longevity re-evaluated.

4. BRITISH STANDARDS: TREES IN RELATION TO CONSTRUCTION 5837:2005

4.1 **Assessment of the trees' amenity values** The British Standard Recommendations provide an assessment of trees on development sites and outlines four categories in which trees should be placed for assessment

purposes. These assessment categories are outlines Table 1 of this British standard, Cascade Chart for Tree Quality Assessment , and simplified as:-

- A Good, quality trees that should be retained,
- B Fair, or trees that might be included in a higher category, but downgraded because of impaired condition. It also includes trees which have a stem diameter under 150mm which could be transplanted.
- C Poor quality trees, or young trees that could be transplanted,
- R Trees, dead dying or dangerous tree to be removed.

- 4.2 **Tree root protection** - The recommendations provide a formula for calculating the Root Protection Area (RPA) required to be protected for existing trees that are to be retained. The shape of the root protection area is calculated by multiplying the girth by either 12 or 10 as in the case of multi-stemmed trees, and is shown as a radius on plan.
- 4.3 Within development sites the British Standard recommends that trees are fenced off to ensure the root protection area is not damaged by construction works. In compliance with the British Standards, protective fencing should be erected at the edge of the root protection area. If access is required within this area, then the ground should be protected. Construction techniques using geo-web and geo-textile, in accordance with BS recommendations might be used to minimise damage to trees and enable working space for demolition or construction within the root protection area of trees.
- 4.4 Drainage and service runs need to be identified at this stage to ensure that if new service runs are to be excavated they should be located outside the root protection zone of existing trees.
- 4.5 Building foundation can be specifically designed to reduce the impact of a building if there is a minor incursion into the root protection area of tree. Specific design considered may be a reinforced raft or mini piles with above ground beams.
- 4.6 **Other considerations-** In addition, the British Standard takes into account future growth of the crown of the tree, the spatial implications and its effects on light.
- 4.7 Existing levels within the root protection areas of trees should be retained.
- 4.8 Any new hard surfacing or terraces could be designed with minimal excavation using geo grid or geo web to reduce the necessity for excavation. All works within the root protection areas must be carried out by hand.
- 4.9 Some tree work might be required to ensure that the crowns of trees are cut back from working space and to provide access for construction vehicles.
- 4.10 There are adequate areas within the site to ensure that handling and storage of materials can be accommodated well outside the root protection.

5.0 Synopsis of the tree survey

- 5.1 It is likely that the native trees, the oak and the hornbeam predate the house and may originate from when this land was part of woodland. There are three oaks (T18-T20) within the grounds and one further tree (T34) within the garden of 36 Linksway and a specimen (T1) growing along the road. This tree is a large mature specimen with surface roots lifting surrounding pavement areas- its root protection area extends into the frontage of 38 Linksway and may offer a constraint to development.
- 5.2 Of the oaks the best specimen (T34) has a well formed crown, which has been subject to crown reduction. It has an exposed buttress root on the eastern side and is within 8.4 metres of 36 Linksway. Its extensive root protection area extends into the grounds of 38 and would act as a constraint to development.
- 5.3 The other three oaks are at the south western side of the garden, two of which (T18 and T19) have severe die back of peripheral branches in the crown. The third tree appears to be a healthy specimen but on observation has incurred damage to the western side of the trunk with exposed bark and evidence of a scar of decayed wood, consistent with fire damage. Some tree surgery would be recommended to reduce the risk of deadwood falling or causing damage.
- 5.4 The hornbeam (T27) growing in the neighbours garden has a well developed crown but with exposed buttress roots and a small cavity under the buttress. Its root protection area extends into the north east side of the garden.
- 5.5 Other native trees include two hollies (T17 and T35), the latter tree a poor quality tree leaning out over the lawn. There are two birches within the neighbouring garden (T28) a tree with prolific ivy competing with the crown, and a birch (T32) with defects in the trunk- both the root protection areas of these birch extends into the garden and may offer a constraint to development.
- 5.6 Within and in vicinity of the front garden there are five ornamental trees all of which are graded as C quality trees, because of their age, limited amenity, and defective structure, and they would not offer a constraint to development. They include a sapling maple (T2) two purple leaved plums (T3 and T4) and conifer (T5) in the neighbouring garden of 40 Linksway (T6). A further poor quality purple leaved plum is growing adjacent to the south western side of the house.
- 5.7 The boundary planting along the northern side of 40 Linksway includes three hornbeam and two beeches- (T8-T12). These appear to have been planted as a hedge, and have now developed into trees and are too close together to develop into good quality trees, with the two beeches recently having been reduced. Although on the boundary of this garden, due to their suppressed crown formation they have a low quality assessment and may not offer a constraint to development.

- 5.8 The remaining trees within the garden are all conifers. There are eleven Lawson cypress, mostly good quality trees, and belonging to several cultivars (of which there are over 200). Owing to the fact that Lawson s Cypress can be potentially be very large trees, all these conifers have been graded as B quality as it is likely that they will outgrow this garden setting. There may be a case for management of their height, and due to the number of trees within the garden they would not necessarily offer a constraint to development.
- 5.9 The most significant conifer within the rear garden is a mature Norway spruce, 26 metres high, with a crown spread of nearly 12 metres which would offer a constraint to development. As this species is susceptible to windthrow, removal of trees which shelter it from the westerly prevailing wind should be avoided.

6.0 Discussion

- 6.1 The proposed new dwelling is located centrally in the plot and will intrude into the root protection area of a purple leaved plum (T7) an oak growing within the neighbouring garden (T34) and a holly (T35). The garage is sited within the root protection area of two purple leaved plums (T3 and T4).
- 6.2 According to the British Standards there might be scope for some development within the root protection areas of trees given the option for 20% incursion of this area. This may be feasible with special design of the foundations. It is noted that although the new house is close to the oak (T34) although the building only extends 5% into the tree root protection area.
- 6.3 Methods to mitigate foundations can be designed with virtually non invasive techniques using a mini pile and above ground beam and raft construction; specialist companies can construct these foundations and are experienced at ensuring tree protection techniques are deployed. By inserting gravel filter medium above ground and below the raft foundation some surface water ground filtration can provide moisture to the underlying tree roots.
- 6.4 A further constraint to development will be the terrace proposed within the oaks root protection area. On calculation this was found to be 14.6% incursion into this area. To mitigate any detriment to the tree, there is scope for the terrace to be constructed with minimal excavation, all carried out by hand, and with the use of geo textile. Indicative details are included within the method statement, and use of permeable material within this area would ensure the underlying soil remains hydrated.
- 6.5 British Standards "*Category C trees*" are those of low quality and value, currently in adequate condition to remain until new planting could be established. Their projected longevity should be in excess of 10 years. According to this British Standard these trees should not act as constraint to development.

- 6.6 The other four trees which will be affected by this proposal are all classified as C category tree- T3,T4 and T7 are purple leave plum, with defects and limited prognosis, the holly (T5) is poor quality suppressed under the oak and limited visibility outside this garden.
- 6.7 Although removal of these four trees may not be contentious there is scope to replant new trees on the southern aspect to replace (T7) and a dead tree, there is not sufficient space for replacement planting to the two plums (T3 and T4) on the northern aspect of the garage. There may be an opportunity, if foundations of the garage are designed to enable shrub and climber planting against this flank wall.
- 6.8 Suitable species for planting within this site may include evergreen trees such as tree Cotoneaster or Photina which could be planted near the terrace are provide low to medium high screen planting. Planting along the flank wall could include evergreen wall shrubs such as Pyracantha or Garrya elliptica which will provide a good all year.
- 6.9 The root protection area of the hornbeam and beech trees growing within the garden of 40 Linksway do not extend into the footprint of the terrace or the new house and will not be effected by this proposal.

7.0 Tree surgery

- 7.1 As part of the application for planning permission the following tree surgery is outlined. All works will be carried out by a competent tree surgeon in accordance with BS3889:1989 Tree Work . The timing of tree surgery should also be carried out in accordance with the Wildlife and Countryside Act and in view of the nesting season of birds within the garden.

Tree no	Species	Management recommendations
T3 and T4	Purple leaved plum	Remove
T7	Purple leaved plum	Remove
T35	Holly	Remove
Dead tree and T29	Dead tree and cherry	Remove
T34	Oak	Face back from building work and crown lift as required to avoid damage during construction works.

8.0 Recommendations-

- Retain all significant, mature and good quality trees within this garden
- Fence off the root protection areas during demolition and construction works.
- Site any underground service outside these areas.
- Minimise incursion of the new building within the root protection area of these trees.
- Design the foundations within the root protection area of the oak to accommodate tree and minimise excavation for example mini pile and above ground beam.
- Minimise levels and excavation of the terrace within the root protection area of the oak (T34)- design permeable paving and carry out all excavation by hand.
- Retain the oaks and trees within the western side of the garden with some tree surgery to address tree safety
- Provide some replacement planting to replace defective and poor quality trees that have been removed along the garden boundaries and within the front garden to ensure continuity of the ambience of this area.
- Carry out regular inspection with maintenance of these trees

9.0 Conclusion

- 9.1 Trees within and in vicinity of the garden will be a constraint to development. Methods of construction will mitigate minor incursion of the proposed new dwelling into the root protection areas of the mature oak. This will be by specialist design of building foundations and surfacing. Other poorer quality trees can be replaced with good quality and more sustainable new planting.
- 9.2 Great care will in any event be required to minimise any detrimental impact upon existing trees and it is recommended that all measures set out in this report are fully implemented in advance and during any works, with regular monitoring and confirmation of compliance carried out.

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References

- British Standards 5837: 2005 Trees in relation to construction.
- Tree Preservation Orders - A Guide to Good Practice
- Diagnosis of ill health in trees - R G Sprouts and T G Winter - Forestry Commission Publication ISBN 0-11-753545-1
- Principles of tree hazard management - David Lonsdale - Forestry Commission Publication ISBN 0-11-753355-6
- The body language of trees - Claus Mattheck and Helge Breloer - Forestry Commission Publication ISBN 0-11-753067-0
- Arboriculture research and Information note 12 Tree Root Systems .
- Tree Roots and in the Built Environment John Roberts, Nick Jackson and Mark Smith. DCLG ISBN 13-978-0-11-753620-3
- Manual of Wood Decay Fungi- K. Weber and C. Mattheck - -The Arboricultural Association, ISBN 0- 900978

Accompanying document

Method statement - Demolition of the existing house and construction of a new house at 38 Linksway, Northwood

Appendices

- A) Photographs of the trees
- B) Tree Survey Sheets
- C) Tree Constraints Plan 111.09.1
- D) Tree Protection Plan 111.09.2

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A. Photographs of the trees



Above left, the oak, T1, **left centre**, T18 and **right centre**, T34. **Right**, the Norway spruce T30
Below left, the two purple leaved plums within the front garden, **left centre**, the hornbeam and beech within 40 Linksway, an overgrown hedge, **right centre**, Lawson Cypresses T22, T23 and T25 and **below right**, T31



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B. Tree Survey Sheets

Tree Survey in accordance with BS5837:2005				Age class-			M-Mature	Contribution in years	Root protection area	BS5837:2005 Quality assessment		
Height, spread and clearance dimensions in metres				Y-Young,			OM-Over mature	less than 10, 10-20, 20-40, more than 40	in accordance with formula Table 2	A good quality trees	C Low quality	
Girth diameter in millimetres				MA-Middle aged			V- Veteran			B Moderate quality	R Trees for removal	
Tag	Species	Height	Girth diameter at 1.5m	Spread	Height of crown clearance	Age class	Physiological Condition	Structural condition	Preliminary management recommendations	Estimated contributing years	Root protection area (radius in metres)	Category grading
T1	Oak (in road outside)	19.4	770	N 5.6 E 6.1 S 5.3 W 4	5	m	good	Growing on the pavement with restricted rooting area, and lifting the footpath tarmac-surfaces up to buttress root- Has been reduced in the past- with regrowth-some deadwood in canopy	Remove deadwood	20-40	9.24	B1
T2	Maple	8	110	N 3 E 3.3 S 2 W 3.3	2.5	y	fair	Leaning and suppresses	Limited amenity-	40	1.32	C
T3	Purple leaved plum	7.8	170	N 3.5 E 3 S 2.5 W 1	0	y	fair	Well branched suppressed under neighbouring tree, poor stem division		10 to 20	2.04	C
T4	Purple leaved plum	9.5	320	N 3 E 3 S 3 W 3	0	m	fair	Multi-stemmed, poor stem division, crossing branches and storm damage		10 to 20	3.84	C

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T5	Lawsons cypress	10.6	285	N 1.3 E 1.3 S 1.3 W 1.3		ym	poor	Divided at 1/5 metre with a poor stem division and indication of internal decay. Overhead wires	Trim back from overhead wires	10 to 20	3.42	C
T6	Conifer (multi stemmed) within 36 Linksway	2	600 at base	N 1 E 2 S 3 W 1.5	0	M	Fair to poor	Lean to south, poor stem division, on edge of tarmac drive		10 to 20	6	C
T7	Purple leaved plum	9.3	400	N 2.5 E 2.5 S 1 W 1	0	m	fair/ poor	Heavy ivy growth, suppressed by nearby trees	Clean ivy from base	10 to 20	4.8	C
T8	2 stem hornbeam within 40 Linksway	10	100/ 150	N 0 E 2 S 4 W 3	2	y	fair	Grown as hedge along boundary, close to house etiolated form	Management by owner? Bring into hedge management by reduction and pruning	10 to 20	1.5	C
T9	Hornbeam within 40 Linksway	10	190	N 0 E 2 S 4 W 1	1	y	fair	Grown as hedge along boundary, close to house etiolated form-damage to stem	As above	10 to 20	2.28	C
T10	Hornbeam within 40 Linksway	16	220	N 1 E 3 S 4 W 2	2.5	m	fair poor	Grown as hedge along boundary, close to house etiolated form-suppressed	Management by owner? Bring into hedge management by reduction and pruning	10 to 20	2.64	C
T11	Beech within 40 Linksway	15	400	N 5 E 4 S 5 W 2	1.5	m	poor	Grown as hedge along boundary, poor structure, with poor stem divisions- has been reduced	Limited management options	10 to 20	4.8	C/R

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T12	Beech within 40 Linksway	15	450	N 5 E 2 S 5 W 5	1	m	poor	Grown as hedge along boundary, suppressed, crossing branches	Limited management options	10 to 20	5.4	C/R
T13	Conifer Lawson	17	385	N 2.5 E 2.5 S 2.5 W 2.5	0	m	good			10 to 20	4.62	B2
T14	Beech	17	340	N 5 E 2 S 2 W 3		m	Fair	Divided at the base, poor stem division, suppressed by conifer		10 to 20	4.08	B2/C
T15	Lawsons cypress within 40 Linksway	16.5	450	N 2.5 E 2.5 S 2.5 W 2.5	0	m	good	Divided at 6 metres, poor stem division, inclusion, partly suppressed by beech		10 to 20	5.4	B/C
T16	Lawsons cypress	17	375	N 2.5 E 2.5 S 2.5 W 2.5	0	m	good			20 to 40	4.5	A/B
T17	Holly	12	230	N 3 E 3 S 3 W 2.5	0	m	good	Suppressed by oak		20 to 40	2.76	B2
T18	Oak	18	530	N 3.2 E 5.8 S 3.5 W 2.8	5	m	in decline	Ivy ascending into the crown, deadwood- the tree has been reduced-	Remove deadwood and cut ivy out of crown- observe	20 to 40	6.36	B/C

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T19	Oak	18	460	N 3.3 E 3.4 S 5.5 W 3.4	6	m	good	Some die back of peripheral branches	Remove deadwood	20 to 40	5520	B/C
T20	Oak	19.7	640	N 5.5 E 4.1 S 4.5 W 5	6	m	good	Lightning damage in upper crown- Fire damage to west side of trunk with exposed wood 1200mm long x 300mm wide	Remove deadwood - do not light fires within proximity of trees	20 to 40	7.68	B
T21	Lawsons cypress	17.2	340	N 1.9 E 1.9 S 1.9 W 1.9	0	m	good	As a group T21-26	May be prone to lightning damage- consider management of height	40+	4.08	B
T22	Lawsons cypress	17.9	300	N 2.3 E 2.3 S 2.3 W 2.3	0	m	good	As a group T21-27	As above	40+	3.6	B
T23	Lawsons cypress	17.6	350	N 2.2 E 2.2 S 2.2 W 2.2	0	m	good	As a group T21-28	As above	40+	4.2	B
T24	Lawsons cypress	17.5	29.5	N 1.9 E 1.9 S 1.9 W 1.9	1.7	m	good	As a group T21-29	As above	40+	3.54	B
T25	Lawsons cypress	15.9	30	N 2.3 E 2.3 S 2.3 W 2.3	0	m	good	As a group T21-30	As above	40+	3.6	B

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T26	Lawsons cypress	15.3	310	N 2.3 E 2.3 S 2.3 W 2.3	0	m	good	As a group T21-31	As above	40+	3.72	B
T27	Hornbeam within 36 Linksway	20.4	515	N 3.9 E 5.3 S 6 W 6.4	3	M	good	Some branch removal on the stem, slight lean, small cavity under buttress and exposed roots		20 to 40	6.18	A/B
T28	Birch within 36 Linksway (Betula pendula)	20.1	380	N 3.8 E 3 S 3.5 W 5	3	m	fair/ good	heavy infestation of ivy to 16 metres, low lateral of southern side		20 to 40	4.56	B
T29	Cherry			N E S W			dead	REMOVE				R
T30	Norway spruce	26	760	N 5.7 E 5.1 S 6.1 W 5.7	1.5	m	Good	Exposed buttress roots, resinous discharge on northern side of the stem with sooty moulds, apical dominance has been lost	May be prone to lightning damage-consider management of height	20 to 40	9.12	A/B
T31	Lawsons Cypress (golden form)	15.5	300	N 2.4 E 2.4 S 2.4 W 2.4	0	m	Good	Dense branching to ground		40	3.6	B
T32	Birch within 36 Linksway (Betula pubescens)	17.2	350	N 5.2 E 1 S 4.5 W 5	3	m	fair /good	Burs on trunk, divided, some decay at area of division		20 to 40	4.2	B/C

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T33	Cypress	188	525	N 2.4 E 2.4 S 2.4 W 2.4	0	m	Good			40	6.3	B
T34	Oak within 36 Linksway	18.3	700	N 4.9 E 5.5 S W 5.5	2	M	good	Surface buttress roots on NE side. Tree has been reduced - bunched regrowth with some deadwood	Under management of owner-Crown management with thinning at the reduction points	40+	8.4	A
T35	Holly	10	150	N 0 E 2.6 S 3.1 W 2.5	1.5	y	Fair	Divided at 1 metre- poor branch junction, leaning to south	Poor quality consider replacement	20 to 40	1.8	C

C. Tree Constraints Plan 111.09.1

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D. Tree Protection Plan 111.09.2