

TPS

Tree Planning Solutions Ltd
Arboricultural Consultancy



Arboricultural Impact Assessment
and
Preliminary Method Statements

For

Land adjacent The Moors, Great Bentley, Essex

Date	18 th February 2024
Client	Hills Residential Ltd
Report by	Mr James Choat BSc, M Arbor A
Site	Land adj The Moors
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1. Summary

1.1.1 Tree Planning Solutions received instruction from Hills Residential Ltd to complete a suitable arboricultural site survey and produce this subsequent arboricultural impact assessment (AIA) for an area of land adjacent The Moors, Gt Bentley, Essex.

1.1.2 Trees are a material consideration during the planning application process and require specialist input at the design stage to ensure the success for the end use of the proposed development whilst retaining the best tree specimens. Generally, local authorities provide local plan policies for planning applicants with regards to the suitable retention and protection criteria for trees during the application process and subsequent construction phase, and the level of detail that will be required to determine the application - details can be found on the local authority web site. Central government provide 'The National Planning Policy Framework' (NPPF 2023), which provides specific details of application acceptability; paragraphs 136, 185 and 186 specifically relate to tree planting, tree retention, biodiversity, habitat including trees and woodlands. Consultants providing arboricultural impact assessment (AIA) apply British Standard 5837 2012 criteria to demonstrate the suitable retention, design and protection of trees during the application / design process. The completed assessment forms part of the application detail and will aid the Planning Authority's decision with regard to the impact of the proposed development on the existing tree stock and local landscape character.

1.1.3 The survey and this report are provided in support of a planning application for development of 1 dwelling with associated access, parking and hard and soft landscaping.

1.1.4 The site was surveyed on the 16th February 2024, the weather was dry with a light wind, conditions for surveying trees were good. 16 individual trees, 1 tree group and 1 hedgerow were surveyed as part of the assessment for trees that could be affected either directly or indirectly by the construction of the proposed development.

1.1.5 The report provides the following information and data in accordance with the criteria provided within BS 5837 2012 'Trees in relation to design, demolition and construction Recommendations'

Tree survey and schedule

Tree constraints data and plan

Arboricultural Impact Assessment

Arboricultural Method Statement and Tree Protection Plan

1.1.6 This report pays particular reference to:

British Standard 5837 2012	Trees in relation to design, demolition and construction Recommendations
British Standard 3998 2010	Recommendations for tree work
NHBC CH 4.2	Building near trees
NJUG 4	National Joint Utilities Group 'Working Near Trees'
NPPF 2023	National Planning Policy Framework

1.2 Statutory protection

1.2.1 It is not known at the time of preparing this report whether the site is subject to a Tree Preservation Order (TPO) or Conservation Area (CA). The hedgerows at the site are not subject to hedgerow regulations as they are not situated on land used for agriculture, the keeping of livestock or horses, common land or within a site of special scientific interest (SSSI). It is recommended the applicant obtain written consent from Tendring District Council and where applicable the Forestry Commission, before carrying out recommendations contained within this report. Furthermore, no works should be carried out to any 3rd party tree(s) without first obtaining consent from the owner(s) of the tree(s).

1.2.2 Multi agency nature on the map GIS data (MAGIC) was checked 18/02/24, specifically data sets for trees – statutory designations and habitats (woodlands) were checked. The site is subject to site of special scientific interest (SSSI), special area of conservation (SAC), special protection area (SPA) and Ramsar impact zones – (Riddles Wood SSSI, Weeley Hall Wood SSSI, St Osyth Pit SSSI and Colne Estuary, SPA, SAC, Ramsar and SSSI).

1.3 Limitations

1.3.1 The applicant has supplied a plan of the existing and proposed (desired) site, no further information has been provided.

The following plans have been provided with the instruction for this report:

Existing layout drawing provided by Hills Residential

Proposed layout/concept drawing provided by Hills Residential

1.3.2 This survey is for the purpose of determining the impact of the development upon existing trees; it is not a detailed tree condition survey and should not be used as such. All trees have been assessed from ground level; no aerial or below ground parts have been inspected in detail.

1.3.3 The survey remains valid for 12 months. If during 12 months following the tree survey adverse weather conditions have occurred, or the site environment changed in any form, it is recommended the trees be reassessed.

1.3.4 The content of this report remains the property of Tree Planning Solutions unless otherwise stated. This report is not to be copied without written consent from Tree Planning Solutions.

1.3.5 The consultant is a qualified arboriculturist, occasionally opinions and views are provided regarding buildings and structures, the consultant is not a qualified buildings surveyor or structural engineer and therefore all opinions and views should be supported by a qualified structural/building engineer.

1.4 Qualifications

1.4.1 The consultant has been working within the Arboricultural industry for 24 years as a tree surgeon, tree officer and consultant. Knowledge and experience are regularly updated by attending industry related seminars and courses. Continued professional development is verified by professional membership to the Arboricultural Association (membership No. PR00530), CPD is updated on-line, a record can be provided upon request.

1.4.2 The consultant holds a Bachelor of Science (BSc) degree in Rural Resource Development, a Higher National Diploma (HND) in Rural Resource Management, the Lantra Professional Tree Inspection Award, the RFS Level 2 Certificate in Arboriculture, level 3 certificate in Ecology and is a registered user of Quantified Tree Risk Assessment (QTRA).

2.1 The Site

2.2 Site description

2.2.1 The site is located to the north of the village of Great Bentley and accessed via Weeley Road. The trees subject of this report are situated to and beyond boundaries of the site with occasional internal trees. The application site does not contain any built structures. The site consists of the following habitat / green features – improved grass, formal hedgerows and amenity trees.

2.3 Topographical survey

2.3.1 A topographical survey was provided with the instruction for this project, OD recordings ranging from 25.97 (north) to 25.77 (south) were provided on the topographical survey plan over a linear distance of approx. The application site is generally flat with no significant changes in levels that will influence root orientation or morphology, it is therefore reasonable to assume the root protection areas throughout the site will be normal in size and shape. Various inspection chambers were recorded during the survey, the date of construction/servicing is not known, it is not known therefore whether the below ground services are affecting / have previously affected the rooting zone of the trees. Overhead services were not recorded during the tree survey.

2.4 Soils

2.4.1 British Soil Geology Maps scaled at 1:50,000 show the site to be situated on bedrock of Thames Group – clay, silt and sand and superficial deposits of Cover Sand – clay, silt and sand. Sand and gravel soil texture is likely to offer a deeper rooting environment than that of clay as the roots can easily penetrate and explore sandy soils with little resistance, clay like soils tend to restrict root exploration. Clay soils can be modified by moisture, either reduced or increased in volume by fluctuations in moisture content, such fluctuations can influence how structures perform and therefore may require additional, engineered support to improve the stability of the structure. Local variations and differing soil seams of superficial and bedrock deposits do occur, differing bedrock and superficial deposits will have a different soil texture and structure to those described above and will perform differently. It is recommended core samples be obtained to determine the exact soil texture at the site.

Part 1 Tree Survey, Constraints and Impact Assessment

3.1 Tree survey and schedule

3.1.1 The tree schedule provides an account of all the trees at or adjacent to the site and is written on to a tabular form. Each tree is given a reference number (T1, T2, T3, G1 etc) that is plotted on to a tree survey plan to be cross-referenced with the tabular form. Contained within the schedule are the dimensions of each individual tree and any notable physiological or mechanical defects. An estimated life expectancy is derived from the condition and context of the tree and the tree is then graded for its quality. The tabular form can be found in appendix 1 with explanatory notes for each column heading. The tree survey plan can be found in appendix 2. Provided below is a table of the existing trees, their current condition and British Standard 5837 category quality grading. The categories for quality are; A - high value, B - moderate value, C - low value and U - unable to be retained as a living tree, each category is given a colour code for use with the tree survey plan (appendix 2), A - Green, B- Blue, C - Grey and U- Red. There are further sub-categories used alongside the categorisation; 1 arboricultural, 2 landscape and 3 wildlife or historical values. British Standard 5837 recommends trees with a stem diameter of less than 150mm are categorised as C regardless of condition, form etc. it is assumed that a tree of this size can either be transplanted or replaced without any negative impact upon tree-based visual amenity. Veteran and Ancient trees are automatically graded as category A due to their age and / or wildlife associations and cultural / historical value, although veteran trees will likely contain significant defects, generally the defects are the microhabitats that increase the ecological value. Should an assessment be made with regards to veteran or ancient trees, then the standing advice from Natural England and the Forestry Commission will be applicable and the criteria for irreplaceable habitats as outlined in NPPF 2023 will need to be met.

Table 1 Tree condition table

Tree ref	Species	Age class	Observations	Category grading
T1	Norway maple <i>Acer platanoides</i>	EM	Good condition.	B1/3
T2	Walnut <i>Juglans regia</i>	EM	Good condition.	B1/3
T3	Norway maple <i>Acer platanoides</i>	EM	Previous crown reduction. Tensile fork at 2.5m.	B1/3
H1	Beech <i>Fagus sylvatica</i>	Y	Good condition. Maintained in a shape and pruned on frequent regime.	C1/3
T4	Whitebeam <i>Sorbus aria</i>	M	3rd party tree, unable to fully assess.	B1/3
T5	Oak <i>Quercus robur</i>	EM	3rd party tree, unable to fully assess.	B1/3
T6	Himalayan birch <i>Betula utilis</i>	EM	3rd party tree, unable to fully assess.	B1/3
T7	Sweet gum <i>Liquidambar</i>	EM	Good condition.	B1/3

Tree ref	Species	Age class	Observations	Category grading
T8	Maidenhair tree <i>Ginkgo biloba</i>	Y	Good condition.	B1/3
T9	Cypress oak <i>Quercus robur fastigiata</i>	EM	Good condition.	B1/3
T10	Beech <i>Fagus sylvatica</i>	EM	Good condition.	B1/3
T11	Red Oak <i>Quercus rubra</i>	EM	Good condition.	B1/3
T12	Lime <i>Tilia sp</i>	M	Good condition.	A1/3
T13	Birch <i>Betula pendula</i>	M	Good condition. Asymmetric crown.	B1/3
T14	Ash <i>Fraxinus excelsior</i>	M	Good condition.	B1/3
G1	Himalayan birch <i>Betula utilis</i> Young's birch <i>Betula youngii</i>	EM	Good condition.	B1/3
T15	Oak <i>Quercus robur</i>	M	Large wounds on primary laterals.	C1
T16	Alder <i>Alnus sp</i>	M	Slight leaning stem	B1

3.2 Further discussion

3.2.1 Visual amenity value.

Visual tree amenity value of Trees T1 and T2 is reasonable, the trees can be seen from the public open space (village green), although are generally limited from any other significant public vantage point such as the highway, footway or any public right of way. The remaining trees provide low visual amenity value, the trees cannot be seen clearly from the publicly maintainable highway or public open space, the trees are either young or small specimens or are obscured from view by the existing natural and built form.

3.2.1 Landscape value

The trees provide reasonable landscape value. The trees help screen and reduce the perceptual load of the built form at and beyond the site boundaries reducing the visual impact of the hard landscape and roof line within the immediate area. The trees are not however associated with the historical landscape or landform and are considered recent landscape additions.

3.2.2 Wildlife value

The wildlife value is low, the structural diversity and connectivity is poor, with limited connectivity of the ground and sub canopy layers which reduces foraging, breeding, migratory and navigational opportunity for less mobile fauna. The trees are mostly non-native specimens, non-native trees tend to have limited numbers of associated native insects, the trees are young to early mature specimens with a limited number of associated microhabitats.

3.2.3 Condition

Trees T4, T5, T6 and T15 could not be assessed due to 3rd party ownership. The remaining tree stock appeared in reasonable condition with few notable defects observed.

3.2.4 Provided below is the British Standard 5837 categorisations with total number of surveyed trees for each corresponding categorisation:

A = 1

B = 15

C = 2

U = 0

3.2.1 All category A trees should be retained. The development design should seek to accommodate such trees using special construction techniques and design modification. There should be only very minor work within the RPA and only minor crown works, generally those required to improve the condition of the tree. Category A trees are those that offer a significant contribution to the amenity and character of the area, they have a long-life expectancy and contain very few defects.

3.2.2 The majority of category B trees should be retained where their long-term retention is achievable. A mixture of tree works, design modification and special construction techniques should be employed to accommodate these trees. Generally, category B trees have a life expectancy over 20 years and offer a medium to long-term contribution to the amenity/character of the area. They contain some defects that can be remedied with suitable tree works.

3.2.3 The category C trees are desirable for retention in the short term. Generally, category C trees have a life expectancy of less than 10 years and would be acceptable to remove once new planting is established. Category C trees contain many defects that are likely to reduce the long-term life expectancy of the tree. Category C trees do not add to the character or visual amenity of the area.

4.1 Tree constraints

4.1.1 The above and below ground tree constraints are represented by the present crown spread and root protection areas (RPA) of each retained tree. British Standard 5837 provides a calculation for root protection areas for both single and multi-stem trees. The constraints are plotted to a site plan around each individual tree; the constraints plan is used to determine the site layout feasibility and further clarifies suitable tree retention or removal. The constraints plan can be found in appendix 2. Further consideration should be given to the future growth potential for each retained tree; the table below provides estimated growth rates that should be considered when achieving a suitable design layout.

4.1.2 Provided below is a constraints table that provides data for the radial distance required for the RPA, the present height and spread of the tree, the future increase in height and spread of the tree in 10 years and tree management considerations.

Table 2 Tree constraints table

Tree ref	Species	Height in m	Stem diameter in mm	Radial distance required for RPA	Branch spread				Height of crown clearance in m	Estimated increase in crown height in M in 10 years	Estimated increase in crown spread in M in 10 years	Management considerations
					N	E	S	W				
T1	Norway maple Acer platanoides	9	350	4.2	4	4	4	4	2.5	2	2	None
T2	Walnut Juglans regia	10	290	3.48	4	4	4	4	3	2	2	None
T3	Norway maple Acer platanoides	14	380	4.56	4	4	4	4	4	2	2	None
H1	Beech Fagus sylvatica	1.2	75	0.9	0.3	0.3	0.3	0.3	0	0	0	Maintained with regular pruning
T4	Whitebeam Sorbus aria	13	300	3.6	4	4	4	4	4	2	2	None
T5	Oak Quercus robur	15	350	4.2	5	5	5	5	4	2	2	None
T6	Himalayan birch Betula utilis	14	300	3.6	2	2	2	2	4	2	2	None
T7	Sweet gum Liquidambar	13	290	3.48	4	4	4	4	2.5	2	2	None
T8	Maidenhair tree Gingko biloba	9	200	2.4	1	1	1	1	3	2	2	None

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Tree ref	Species	Height in m	Stem diameter in mm	Radial distance required for RPA	Branch spread				Height of crown clearance in m	Estimated increase in crown height in M in 10 years	Estimated increase in crown spread in M in 10 years	Management considerations
					N	E	S	W				
T9	Cypress oak Quercus robur fastigiata	17	330	3.96	1	1	1	1	1.2	2	2	None
T10	Beech Fagus sylvatica	9	380	4.56	5	5	5	5	2	2	2	None
T11	Red Oak Quercus rubra	13	390	4.68	5	5	5	5	2	2	2	None
T12	Lime Tilia sp	17	670	8.04	5	5	5	5	2	2	2	None
T13	Birch Betula pendula	16	410	4.92	1	1	3	3	3	2	2	None
T14	Ash Fraxinus excelsior	15	400	4.8	2	2	3	3	3	2	2	None
G1	Himalayan birch Betula utilis Young's birch Betula youngii	15	280	3.36	3	3	3	3	0.5	2	2	None
T15	Oak Quercus robur	15	400	4.8	4	4	4	4	5	2	2	None
T16	Alder Alnus sp	17	480	5.76	3	3	3	3	5	2	2	None

5.1 Arboricultural impact assessment

5.1.1 Provided below is an assessment of the impact of the development on each individual tree and any design requirements for the site. Such factors include tree preservation orders, tree amenity, tree retention, removal of structures within RPA, infrastructure requirements, construction of infrastructure, end use of space, tree loss / new planting, light issues, proximity to structures, relationship with new homeowners and tree nuisance.

Table 3 Arboricultural Impact Assessment

Tree Ref	TPO/CA/other statutory protection. Amenity assessment. Retention recommendation.	Removal of existing structures and hard surfacing within RPA	Proposed Infrastructure within RPA	Construction methods for proposed infrastructure	End use of space	Tree loss and new planting	Shading and light	Proximity to structures	Future pressure for tree removal/works	Seasonal tree nuisance
T1 and T3	TPO or CA not checked with local authority MAGIC GIS checked 17/02/24 – site listed within Nitrate vulnerable zone, SSSI, SPA, SAC, Ramsar Impact Zones. Limited amenity and wildlife value, reasonable landscape value. Trees recommended for removal.	N/a	N/a	N/a	N/a	Trees to be removed to facilitate development. Replacement planting as part of detailed landscape scheme. Native species to be planted – species that do not cause future nuisance - low / moderate water demand and low root penetration strength (birch, hornbeam, rowan, field maple)	N/a	N/a	N/a	N/a

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Tree Ref	TPO/CA/other statutory protection. Amenity assessment. Retention recommendation.	Removal of existing structures and hard surfacing within RPA	Proposed Infrastructure within RPA	Construction methods for proposed infrastructure	End use of space	Tree loss and new planting	Shading and light	Proximity to structures	Future pressure for tree removal/works	Seasonal tree nuisance
T7, T8, T9, T10 T11, T12, T13, T14, T15, G1 and H1	TPO or CA not checked with local authority MAGIC GIS checked 17/02/24 – site listed within Nitrate vulnerable zone, SSSI, SPA, SAC, Ramsar Impact Zones. T1 has reasonable amenity value, remaining trees have limited amenity and wildlife value, reasonable landscape value. Trees recommended for retention.	N/a	N/a	N/a	Amenity spaces and dwellings not constrained by the retained trees.	N/a	No significant shading to occur.	Trees at sufficient distance from the dwelling and garage so as not to cause future general nuisance.	Low. Trees not likely to cause significant nuisance or loss of enjoyment of the proposal.	Leaf and fruit dispersal Nuisance of blocked drains, gutters etc. Recommend use of guards as appropriate to prevent blockages occurring. Use surfaces that do not tarnish from tree deposits (shingle, loose stone, grass, etc.) Patios and sheds to be located outside present and future crown spread to prevent future nuisance occurring.
T12 and T16	TPO or CA not checked with local authority MAGIC GIS checked 17/02/24 – site listed within Nitrate vulnerable zone, SSSI, SPA, SAC, Ramsar Impact Zones. Reasonable amenity, landscape and wildlife value. Trees recommended for retention.	N/a	Proposed access road within RPA.	No-dig construction, see method statement - section 9 and tree protection plan - appendix 5 for construction profile and location. Hand excavation to prepare site levels, not to exceed 50mm.	Amenity spaces and dwellings not constrained by the retained trees.	N/a	No significant shading to occur.	Trees at sufficient distance from the dwelling and garage so as not to cause future general nuisance.	Low. Trees not likely to cause significant nuisance or loss of enjoyment of the proposal.	Leaf and fruit dispersal Nuisance of blocked drains, gutters etc. Recommend use of guards as appropriate to prevent blockages occurring. Use surfaces that do not tarnish from tree deposits (shingle, loose stone, grass, etc.) Patios and sheds to be located outside present and future crown spread to prevent future nuisance occurring.



5.2 Further discussion

- 5.2.1 The default position for hard, load-bearing surfaces should be outside of the RPA of the retained trees. If however, this is not viable then no/reduced dig construction methods should be adopted. Excavation may be required to allow pre-existing features such as road/footway levels or damp course layer to be maintained, the maximum depth for excavation should not exceed 150mm and where possible levels should be graded to existing joins to allow reduced excavation with a preference for construction above ground. Where existing levels do not need to be maintained, the excavation should be for preparation purposes only and not to exceed 50mm of the upper soil horizon. The finished surface should be porous and allow the tree roots to carry out their required biological and structural function (elongation, respiration, water/nutrient uptake, anchorage, storage of sugars). The finished surface should be easily cleaned and not tarnish from tree deposits.
- 5.2.2 Below ground services for drainage, electricity, gas, water, telecoms, are to be located outside the RPA of the retained trees or connected to existing services within the site. If however, this is not viable then trenchless methods of working will be adopted, shallow trenching may be permitted although a trial trench should be prepared to determine the presence of roots and the impact upon the health of the tree/s affected. Overhead services such as lighting columns, electricity, telecoms, etc. are to be outside the present and future canopy spread, use of Table 2 'Tree Constraints' will aid design.
- 5.2.3 Guttering and drains will have guards to prevent leaf/fruit drain blockages. Where a significant loss of rainwater water is likely due to loss of natural soft surfaces, the rainwater drainage will be redirected into the soil area of the retained trees. The drainage will result in an even and slow distribution within the soil environment, it will not cause waterlogged conditions or damage to the soil structure, structural engineer to advise further.



5.2.4 The information provided in the impact assessment and constraints advice has provided a basis for tree retention, works specification and construction techniques required. Further details for this can be found in the following sections of this report.





6.1 Tree removals and impact assessment

6.1.1 Provided below is a table of the trees to be removed and the impact upon visual amenity value. This is to be cross-referenced with the tree survey plan provided in appendix 2.

Table 4 Trees to be removed

Trees to be removed	Reason for removal	Impact upon visual amenity
T1 and T3	Facilitate development	Low. Trees are relatively small, young specimens or are obscured by the existing built and natural form. Replacement planting is a viable option to restore tree loss. Planting of heavy standard trees will restore tree loss within 8-10 years of planting.



Part 2 Arboricultural Method Statement

7.1 Tree works specification

7.1.1 All tree works are to be completed as a starting phase of development unless otherwise stated.

7.1.2 All works are to be completed to BS3998 2010 'Recommendations for tree works'

7.1.3 Research suggests that tree works are better completed when the trees are using the least amount of energy and when conditions do not favour pathogens. It is recommended that the works specified below be carried out in midsummer July/early August or the dormant period Jan/Feb. Specifically, times of bud break and leaf abscission should be avoided. This may need further assessment for different species or for aged/veteran trees whose energy reserve and potential to kinetic ratio is susceptible to change from minor tree works. Where this is likely to occur, a separate management plan for that individual tree may be required.

7.1.4 Provided below is a table showing tree works specification. The key for works urgency can be found in Appendix 1 Explanatory notes.

Table 5 Tree works specification

Tree ref	Species	Age class	Tree works to facilitate development and or access	Preliminary management recommendations	Works urgency	Category grading
T1	Norway maple <i>Acer platanoides</i>	EM	Fell and grind stump following below ground service check	None	0	B1/3
T2	Walnut <i>Juglans regia</i>	EM	None	None	0	B1/3
T3	Norway maple <i>Acer platanoides</i>	EM	Fell and grind stump following below ground service check	None	0	B1/3
H1	Beech <i>Fagus sylvatica</i>	Y	None	Maintain to current dimensions.	0	C1/3
T4	Whitebeam <i>Sorbus aria</i>	M	None	None	0	B1/3
T5	Oak <i>Quercus robur</i>	EM	None	None	0	B1/3
T6	Himalayan birch <i>Betula utilis</i>	EM	None	None	0	B1/3
T7	Sweet gum <i>Liquidambar</i>	EM	None	None	0	B1/3
T8	Maidenhair tree <i>Ginkgo biloba</i>	Y	None	None	0	B1/3

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Tree ref	Species	Age class	Tree works to facilitate development and or access	Preliminary management recommendations	Works urgency	Category grading
T9	Cypress oak <i>Quercus robur fastigiata</i>	EM	None	None	0	B1/3
T10	Beech <i>Fagus sylvatica</i>	EM	None	None	0	B1/3
T11	Red Oak <i>Quercus rubra</i>	EM	None	None	0	B1/3
T12	Lime <i>Tilia sp</i>	M	Hand excavation and root pruning within the RPA for the installation of the no-dig constructed access. See method statement in section 9 and tree protection plan appendix 5.	None	0	A1/3
T13	Birch <i>Betula pendula</i>	M	None	None	0	B1/3
T14	Ash <i>Fraxinus excelsior</i>	M	None	None	0	B1/3
G1	Himalayan birch <i>Betula utilis</i> Young's birch <i>Betula youngii</i>	EM	None	None	0	B1/3
T15	Oak <i>Quercus robur</i>	M	None	None	0	C1
T16	Alder <i>Alnus sp</i>	M	Hand excavation and root pruning within the RPA for the installation of the no-dig constructed access. See method statement in section 9 and tree protection plan appendix 5.	None	0	B1



8.1 Tree protection method statement

8.1.2 Tree protection is required to prevent physical damage to the stem, branch and crown structure. Tree protection is used also to prevent indirect damage caused by loads passing over the root protection area that would otherwise cause compaction of the soil. Soil compaction reduces soil pore space, which in turn reduces; soil air, available water and nutrients, the anaerobic environment will prevent healthy and strong root growth (elongation, thickening, mycorrhizal association, etc.). Prolonged anaerobic soil conditions will lead to longer term poor tree health with symptoms (crown die back, sparse crown, poor extension growth, etc.) not evident until well after the occurrence. The simplest and most effective way to prevent damage to any retained tree on the development site is the provision of a construction exclusion zone around the tree and its calculated rooting area.

8.1.2 The areas for protection will see the RPA confirmed on the ground with the erection of a scaffold frame with wire mesh attached (Please see appendix 3 Barrier protection construction profile, diagram 2). Where site personnel require access across the RPA, ground protection will be installed utilising scaffold boards laid on a compressible layer (100mm of woodchip) with geotextile membrane beneath, as per British Standard 5837 section 6.2.3.3 (see appendix 5 tree protection plan). Where plant less than 2 tonnes requires access across an RPA, the compressible layer, as described above, should be increased to 200-300mm and the scaffold boards substituted for composite boards fit for the applied load, plant above 2 tonnes should use an engineered design using reinforced concrete slabs or specialised track mats fit for the applied load.

8.1.3 The barrier protection will contain and display information highlighting the protected tree and consequences of any breach of tree protection. Please see appendix 4, example of informative to be placed on barrier protection.

8.1.4 The tree protection plan is shown in appendix 5. This shows; the RPA for each retained tree, the location of protective barriers/ground protection and areas for site storage and contractors parking.

9.1 Construction method statements

9.1.2 Provided in this section are arboricultural method statements primarily concerned with working within the RPA of the retained trees. The method statements are designed to minimise/remove any identified impact or damage/disturbance that may otherwise occur. The method statements provided should be distributed to all key staff involved with the development.

9.1 Excavation within the RPA

9.2.1 Excavation will be required within part of the RPA of T12 and T16 as identified in the arboricultural impact assessment section 5 and tree protection plan appendix 5 for the construction of no-dig access road. The method statement provided below is in accordance with British Standard 5837 section 7.2.

Supervised sequential method statement for hand excavation and root pruning T12 and T16

1. Soft surfaces - Underlying soils and or existing grassed surfaces - Remove turf layer with turf remover set to 50mm, use an air spade or rake to soften the underlying soils. Carefully remove topsoil / upper soil horizon using handheld tools only (spade, shovel, soft brush, trowel) to achieve excavation depth of 50mm for level preparation purposes only for the no-dig construction. Hand barrow and store all debris outside of the RPA.
2. Where roots are pliable and will not damage from movement push to side of pit or downwards, pin with hazel rod and cover with minimum of 50-75mm of soil to surround.
3. Any exposed roots should immediately be wrapped or covered in damp hessian to prevent desiccation and to protect them from rapid temperature changes.
4. If required, sever any roots with a diameter less than 25mm (use a sharp tool to provide a clean cut across the cross section near to a root junction/ growth point).

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5. Avoid severing roots greater than 25mm or clumps of roots (root mats). If this is necessary, then request an arboriculturist to attend the site to assess likely impact upon tree health and future stability.
6. Prior to backfilling any roots should be removed from the protective wrapping and surrounded by sharp sand, or other loose granular fill, before soil or other material is replaced. The backfill is to be free from any contaminants or foreign objects.
7. Monitor tree health during next 2 growth season. Check leaf colour, size, density and extension growth.

9.3 Hard surfacing within RPA

9.3.1 Hard, load-bearing surfaces will be required within part of the RPA's of T12 and T16 as detailed within the impact assessment section 5 and tree protection plan appendix 5. The following method statement should be adopted once approved by the local authority. The construction profile and further information is provided in appendix 5 tree protection plan. The finished surface is to be permeable to allow water infiltration and gaseous diffusion.

Sequential method statement for installation and construction of no-dig surface - supervised visits T12 and T16.

- 1 Point 1 may not be necessary if level preparation has already occurred as above within the hand excavation method statement. Kill any ground vegetation using black plastic sheets laid over existing soft surface for around 8-12 weeks prior to construction; if permitted, use a suitable herbicide, consult a qualified operative with correct NPTC certification.
- 2 Rake off dead vegetation. Loosen topsoil / leaf litter with air spade or rake and carefully remove to achieve excavation depth - 50mm for preparation of levels only.

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- 3 Remove major obstructions such as rocks or old tree stumps.
- 4 Fill major hollows with sharp sand.
- 5 Add the geotextile to cover the working area.
- 6 Lay the 100mm 3d cellular confinement system directly on to the geotextile as detailed within the tree protection plan appendix 5.
- 7 Install sleepers or metal banding for edge support with use of surveyors pegs as support fixings.
- 8 Working from outside of the RPA, tip the 20-40mm stone/ aggregate for the sub-base at the start point of the cellular system. Initially rake/ shovel the 20-40mm stone for the first 2-3m of the area into place covering the cellular confinement system to the 100mm depth, compact and bind using movements from the tracked mini excavator. Following the first 2-3m of construction of the access, then push the remaining stone using the tracked mini excavator working directly on the newly created surface/subbase, compacting and binding as the surface is laid using movements of the tracked mini excavator.
- 9 Complete and / or repeat point 8 until the sub-base is constructed and covers the length of the cellular confinement/ access route to the required depths. Leave the finished surface until the intensive phase of development is complete.
- 10 Lay the final/ finished surface following intensive phase of development. Top dress to the edge support with topsoil and lawn seed mix.

9.4 Soft surfaces within RPA

9.4.1 Provided below is a method statement to avoid damaging/disturbance to the roots of the retained trees during soft landscape operations.

Damage to roots is to be avoided, large structural roots may be seen at or near the surface and where they radiate from the stem of the tree from large buttresses. After around 4m radial distance structural roots tend to taper to around 3cm in diameter.

No tractor mounted or heavy plant rotavating machinery is to be used.

Cultivation is to be completed using manual hand tools only.

The existing soil is to be used, where additional soil is required it should be contaminant free, well drained and suitable PH, texture and structure for the site and planting/existing trees/shrubs.

Changes in ground levels are to be avoided, any lowering or raising of levels should be carried out using a suitable method statement that maintains continued soil conditions for gas exchange and water percolation.

Planting is to be done with care and to avoid severing tree roots; generally, planting should be completed outside the RPA.

10.1 General arboricultural considerations

10.1.1 Provided in this section are wider arboricultural considerations to be used either at the later design stage or for the 'on-site' contracting team. Further information contained within this section provides details on tree and associated wildlife legislation. The method statements provided should be distributed to all key staff involved with the development.

10.2 Storage

10.2.1 There is to be no storage within the RPA of any retained trees. An outline area can be designated at pre-commencement construction site meeting.

10.3 Contractors parking

10.3.1 There is to be no parking within the RPA of any retained trees. An outline area can be designated at pre-commencement construction site meeting.

10.4 Slope

10.4.1 All mixing and storage of materials/chemicals to be done on a pre-prepared flat/level surface with sealed sides to prevent any runoff. Storage of all chemicals/materials likely to cause harm to the trees should be in a sealed container or area with a bund to prevent run off if spillages occur. Site personnel are to have access to spillage treatment equipment.

10.5 Services

10.5.1 Methods for service run construction within the RPA are micro tunnelling, Surface launched directional drilling, pipe ramming and impact moling, method statements for these should be provided by the relevant utility companies. Shallow trenching may be

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acceptable for minor services; if shallow trenching is required then hand excavation should be adopted using an approved method statement.

10.5.2 All overhead services to be located outside the present and future crown spread of the retained trees, use tree constraints table provided in section 4 to aid design.

10.6 Levels

10.6.1 No stripping or raising of levels within the RPA without consent from the local authority. If site levels need to be reduced the use of hand excavation or an air spade should be adopted using an approved method statement. If site levels are to be raised the material added should allow for water infiltration and gaseous exchange allowing the roots to carry out their normal biological function, the use of structural soil and below ground aeration system may be required depending on area and depth.

10.7 Development phasing

10.7.1 All contracting staff working at the site should be briefed on approved working practices and protection requirements for the retained trees.

10.7.2 The tree works specification should be completed following approval from the local authority.

10.7.3 Prior to the commencing of development the chosen arboriculturist should re-assess all retained trees and provide further assessment.

10.7.4 All barrier/ground protection should be erected/laid and confirmed as correct by the arboriculturist. All signs should be placed on the barriers at a height of 2m at 3m intervals.

10.7.5 Excavation and construction of the no-dig access road within the RPA using handheld tools as per method statement supplied

10.7.6 Barrier/ground protection removed after intensive phase of development.

10.7.7 Soft landscaping as final phase of development.



10.8 Monitoring

10.8.1 Site key personnel

Architect and Contractors

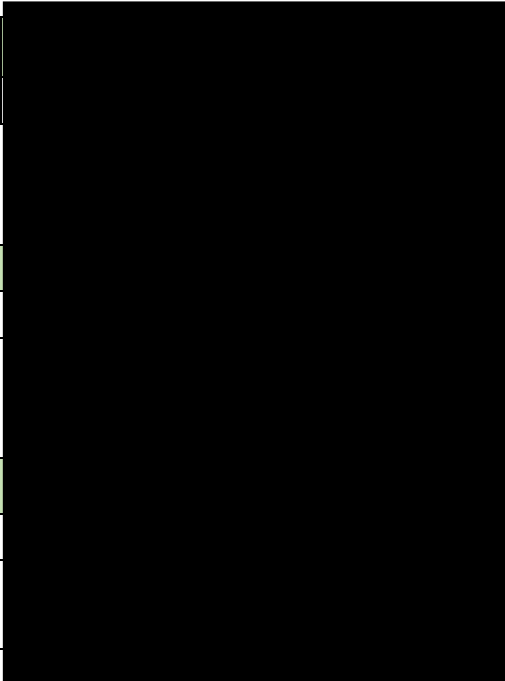
Name	Position
Hills Residential Ltd	Lead consultant

Planning Authority

Name	Position
Clive Dawson	Tree and Landscape Officer

Arboriculturist

Name	Position
James Choat	Arboricultural Consultant



10.8.2 It is recommended that all trees and protection methods be monitored for the duration of development. A qualified arboriculturist will make a regular visit; the project arboriculturist is to carry out an assessment of tree health and protection condition and make recommendations when required.

10.8.3 Site specific monitoring

Item	Number of visits required	Timing of visit
Pre-commencement site meeting with key personnel. (Contractor, site manager, architect). Tree works Tree protection installation (ground/barrier) as per tree protection plan and method statements within supplied arboricultural report. Identify area for contractors parking, site storage and access. Place 'exclusion zone' signs at 2m height, 3m intervals facing outwards on temporary fencing.	1 – 2 depending on whether items can be completed on same day.	Meeting to be arranged between architect and site manager before construction phase.
Site visit during construction phase to monitor tree health and tree protection condition.	4 - 2 specifically when excavating and constructing the no-dig within the RPA of T12 and T16	During construction phase
Removal of tree protection.	1	After intensive construction phase



10.8.4 The above is subject to the client/site manager informing the project staff of the proposed date for each development activity. Following each site visit a brief report (see appendix 6 pro forma) to be sent to the client and local authority within 24 hrs following the visit. Any incidents will be dealt with within 2 hours and to be reported to the project arboriculturist, photos to be provided via email and recommendations provided verbally, if required a site visit should be undertaken to provide further advice/ recommendations.

10.9 Incidents/variatioins

10.9.1 Planned

Site manager to contact arboriculturist for any anticipated/planned variations

Arboriculturist to assess impact upon trees and offer advice regarding alternative methods

Arboriculturist to update tree officer providing details of variations

10.9.2 Non-planned

Site manager to inform arboriculturist of incident

Site manager to photograph incident and send to arboriculturist

Arboriculturist to provide initial advice via telephone or email

Arboriculturist to make site visit within 1 day to assess impact upon trees and offer advice to reduce/remove impact

Arboriculturist to update the local authority tree officer providing details of incident and measure taken to reduce/remove impact.

10.10 Wildlife legislation

10.10.1 The Wildlife and Countryside Act 1981, The Habitats Directive 1994 (consolidated under Conservation of Habitats and Species Regulations 2017) and The Countryside and Rights of Way Act 2000. These acts protect certain species of flora and fauna; it is an offence to intentionally or recklessly destroy species or habitats contained within these acts. Trees, especially veteran or ancient, can support associated flora and fauna that

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is protected via the above legislation. It is recommended the applicant employ a suitably qualified ecologist to carry out a survey of the area to ensure no offence is committed. See the following link for further details.

<https://www.gov.uk/guidance/protected-species-how-to-review-planning-applications>

10.11 Tree legislation

10.11.1 The Town and Country Planning Act 1990. It is an offence to cut down, uproot, lop, top, or cause wilful damage or destruction to a tree subject of a tree preservation order or conservation area. Such acts will lead to prosecution and if convicted a fine not exceeding £20,000 in the magistrate's court; if the case is referred to the crown court the fine may be unlimited. See the following link for further details.

<https://www.gov.uk/guidance/tree-preservation-orders-and-trees-in-conservation-areas>

10.11.2 Hedgerow regulations 1997 protect certain hedgerows from being removed, certain exemptions apply. A removal notice is required to be sent to the local authority for consideration to determine whether the hedgerow is important before the authority can permit the removal of a hedgerow subject of the above regulations. See the following link for further details.

<http://www.legislation.gov.uk/ukxi/1997/1160/contents/made>

10.11.3 Forestry Act 1967 as amended - Felling licences are issued by the forestry commission, certain exemptions apply. Before felling trees, a check with the Forestry Commission should be made to ensure a felling licence is not required. See the following link for further details. <http://www.legislation.gov.uk/ukpga/1967/10/contents>

11.1 Conclusion

11.1.1 All surveyed trees have been categorised in accordance with British Standard 5837 2012.

Visual tree amenity value of Trees T1 and T2 is reasonable, the trees can be seen from the public open space (village green), although are generally limited from any other significant public vantage point such as the highway, footway or any public right of way. The remaining trees provide low visual amenity value, the trees cannot be seen clearly from the publicly maintainable highway or public open space, the trees are either young or small specimens or are obscured from view by the existing natural and built form. The trees provide reasonable landscape value. The trees help screen and reduce the perceptual load of the built form at and beyond the site boundaries reducing the visual impact of the hard landscape and roof line within the immediate area. The trees are not however associated with the historical landscape or landform and are considered recent landscape additions. The wildlife value is low, the structural diversity and connectivity is poor, with limited connectivity of the ground and sub canopy layers which reduces foraging, breeding, migratory and navigational opportunity for less mobile fauna. The trees are mostly non-native specimens, non-native trees tend to have limited numbers of associated native insects, the trees are young to early mature specimens with a limited number of associated microhabitats. Trees T4, T5, T6 and T15 could not be assessed due to 3rd party ownership. The remaining tree stock appeared in reasonable condition with few notable defects observed.

11.1.2 Trees T1 and T3 will require removal to facilitate construction of the development proposal. The loss of the trees will not have a detrimental effect on visual tree amenity, the trees are either small / managed specimens or are obscured from public view by the existing natural and built form, the loss to local landscape character can be mitigated with suitable replacement planting of heavy standard, native trees within the proposed application site as part of the detailed landscape design. Trees T12 and T16 will require hand excavation, root pruning and construction of hard surfacing within the RPA for the construction of the access road. A suitable method statement for a no-dig constructed access road is provided to reduce the impact that would otherwise result from

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mechanical excavation and the use of deep subbase support causing soil compaction, tearing of roots and unnecessary root loss. No further tree works are required to facilitate the construction of the proposal or access to the site, the retained tree stock can be adequately protected during the construction phase using temporary barrier protection as per BS 5837 recommendations. Visual tree amenity will not be further obscured by the proposal, the proposal is therefore considered to have a low impact upon visual tree amenity value.

11.1.3 Tree protection and method statements have been provided within this report to reduce the risk of direct and indirect development related damage that may otherwise occur to the retained trees. In conclusion, assuming the method statements and tree protection are implemented as part of the development, the proposal can be constructed with reduced disturbance to the trees.