

Arboricultural Impact Assessment
&
BS5837 Tree Survey
at
Land at Moorgreen (Phase 2b), Hedge End
for
Foreman Homes Limited



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 Institute of
Chartered Foresters



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1 **Instruction**

To inspect the trees on and adjacent to the site in relation to British Standard 5837:2012 Trees in relation to design, demolition and construction - Recommendations. To give recommendations to reduce the impact of such development where feasible in relation to RM/18/82821.

I have been instructed due to my qualifications and experience in Arboriculture. I am a qualified member of the Institute of Chartered Foresters, Royal Institute of Chartered Surveyors, a Chartered Environmentalist and have a Professional Diploma in Arboriculture awarded by the Royal Forestry Society, Technicians' Certificate awarded by the Arboricultural Association, HNC in Forestry and a member of the Arboricultural Association, International Society of Arboriculture and the Royal Forestry Society. I started in the industry as a forestry contractor in 1995, progressing to the surveying and management of arboricultural contracts for a national forestry company, the running of the arboricultural part of a horticultural business overseas. From 2000 I worked in Local Government, initially at a Borough Council and subsequently at Hampshire County Council. Since August 2006 I have been practicing as an independent Arboricultural Association Registered Consultant; providing arboricultural advice to private individuals, companies, developers, architects, structural engineers, landscape architects and local authorities.

2 **Site survey**

The survey of the trees was of a preliminary nature carried out from ground level. Detailed investigations were not carried out and no tree climbed. The conclusions are based on my own observations, qualifications and experience in arboriculture. All dimensions recorded are estimated. No soil assessments have been undertaken.

3 **Site details**

The site is on the north side of Botley Road, to the west of the M3 and to the east of Monarch Way. The site is an extension of phase 1. There is a group of mature Oak trees in the south west corner and a line of trees and hedge on the southern, western and northern sides. To the north east is a small group of trees. The site is relatively flat.

4 **Proposals**

The proposals are to construct 30 dwellings with associated access, car parking and public open space.

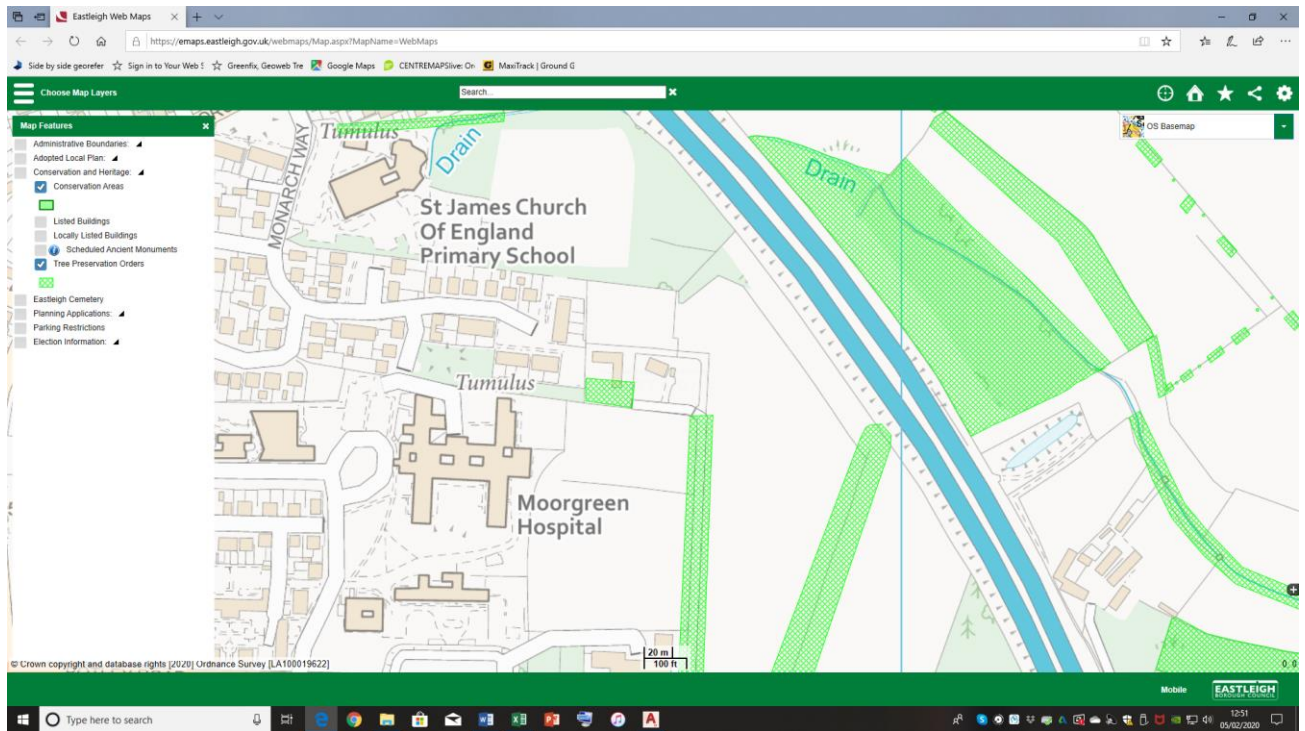
5 **Drawings**

Drawings were provided by Foreman Homes Limited on the 29th August 2023. The drawings have been provided by the client for the purposes of this assessment and they are:

- 19.030 Moorgreen Phase 2 Draft Layout with Revised Parking (in DWG and PDF format)

6 Tree Preservation Orders and Conservation Areas

Using the interactive mapping service provided online by Eastleigh Borough Council, accessed 5th February 2020 and 31st August 2023 it is possible to identify that the trees to the south of the site are subject to Tree Preservation Order (TPO) 773-E. No Conservation Area is shown as associated with the site.



This impact assessment has been carried out to assess which trees are worthy of retention and how the proposed scheme may affect them.

7 Summary

The main arboricultural feature of the site and locality is mature Oak trees T101B to T106B in the south west corner. These trees are to be retained and industry standard construction methods and tree protection methods (tree protection barriers, ground protection, above ground construction, site monitoring) should to be used to reduce the impact of the works upon them. Additionally, the hedge with trees, G100C, is also to be retained.

Some trees are necessary to be removed to allow development of the site. The loss of these trees will need to be considered in relation to the benefits of permitted development for residential properties and the replacement tree and hedge planting and landscaping to be carried out.

Provided the trees to be retained are protected throughout the development in accordance with this Arboricultural Impact Assessment and Appendix 1: Method Statement the impact upon the retained trees is likely to be insignificant. As the impact upon the trees is likely to be insignificant there is unlikely to be any arboricultural impact upon the character of the local area.

8 Findings

Please see Appendix 2: BS5837 Tree Survey Sheet for specific details.

8.1 Proposed access road and car parking spaces

The proposed access road is within the root protection area (RPA) of trees and hedge T86U to T92C. Due to the form and structure of the trees and the proximity of the construction adjacent to the trees it is not feasible to retain this line of outgrown hedge and occasional trees. Replacement planting suitable for the site is appropriate and will, in the long term, help mitigate the loss of these trees and hedge.

8.2 The visitor car parking spaces to the north of plots 22 to 23 will require the loss of G85.7C to G85.9C. Replacement planting suitable for the site is appropriate and will, in the long term, help mitigate the loss of these trees and hedge.

8.3 The car parking construction for the car parking spaces to the east of plot 4 are partially within the root protection area of G110C. To minimise the impact of the adjacent trees and to avoid tree root severance, a porous construction including a cellular confinement system for the base course, for instance <https://greenfix.co.uk/geoweb/geoweb-tree-root-protection.html> or similar, will need to be used for the above ground, no dig car parking construction.

8.4 Proposed dwellings

The proposed dwellings have been located to retain the line of trees and hedge G100C on the boundary to the west. This will help minimise the impact of development for the site for the adjacent properties to the west.

8.5 Plot 15 is in close proximity to trees T92C to G97U and these trees will need to be removed to allow development of the site. Replacement hedge and tree planting will help to mitigate the loss of these trees in the medium and long term.

8.6 The layout for plots 1 to 11 retains the group of mature Oak trees T101B to T106B in the south west corner with the proposed dwellings sufficiently distant for a reasonable long-term relationship.

8.7 The footway to access the rear garden of plot 10 is within the root protection area of T104B to T106B and the footway to the rear garden of plot 5 is within the root protection area of G110C. To minimise the impact of the adjacent trees and to avoid tree root severance, a porous construction including a cellular confinement system for the base course, for instance <https://greenfix.co.uk/geoweb/geoweb-tree-root-protection.html> or similar, will need to be used for the above ground, no dig footway construction.

8.8 Tree protection measures will be required to minimise the impact of development of these trees to an acceptable level and such measures are detailed in Appendix 1 and 2.

8.9 The design of the site has focused tree removals on trees of lower quality and value. Therefore, as a natural consequence of retaining the better quality and condition trees, the loss of lower quality trees to allow development of the site is reasonable. The view of these trees from outside the site is limited and therefore there is unlikely to be any significant impact as a result of the loss of these trees. Replacement planting suitable for the site is appropriate and will, in the long term, help mitigate the loss of these trees and hedge.

8.10 Removal of existing access road

The existing domestic access road along the southern edge of the site is to be incorporated into the gardens of the adjacent proposed dwellings. To minimise the impact upon the adjacent retained trees the works must be carried out as detailed in Appendix 1: Method Statement and Tree Protection Plan under the heading “Method statement for the removal of existing hard surfaces”. Once the original soil beneath is revealed and new topsoil installed, then the area must be subject to tree protective fencing to avoid harm to the adjacent trees.

8.11 Services

Services should avoid the RPAs of retained trees. If this is not possible then the services must be designed by an Engineer in consultation with the Arboricultural Consultant (NQF level 4 or higher in Arboriculture). Prior to installation the position of the service must be accepted in writing by the local planning authority Arboricultural Officer. Further advice is available in Appendix 1: Method Statement and NJUG Volume 4 “Guidance for the planning, installation and maintenance of utility services in proximity of trees”.

8.12 Site monitoring and tree protection measures

BS5837:2012 Trees in relation to design, demolition and construction - Recommendations states in paragraph 6.3:

Wherever trees on or adjacent to a site have been identified within the tree protection plan for protective measures, there should be an auditable system of arboricultural site monitoring. This should extend to arboricultural supervision whenever construction and development activity is to take place within or adjacent to any RPA.

8.13 Therefore, it is necessary for site monitoring by an Arboricultural Consultant (qualified in Arboriculture to NQF Level 4 or higher) to occur for the proposed works. Details of the occasions and frequency of site monitoring will be given in Appendix 1: Method Statement, Arboricultural Method Statement Summary table: Timing of operations.

8.14 Tree protection measures are necessary to aid the retention of the trees. The details of these tree protection measures are specified in Appendix 1: Method Statement and Tree Protection Plan.

8.15 Site compound

The site compound can be located within the site and distant (>1m) from tree protection measures. If there is insufficient space within the site for storage, materials will need to be delivered to site on an ‘as required basis’ and the use of an offsite storage compound may be necessary.

8.16 Soft landscaping

Within the RPA of retained trees there must be no changes of grade (up or down) and the amount of new planting limited to reduce the impact upon the retained trees through severance or damage to tree roots.

8.17 Post development

Falling branch debris is a regular maintenance issue and should be treated as such. A routine of tree survey and inspection will identify foreseeable failures allowing them to be resolved prior to them becoming an issue.

- 8.18 Falling leaves, seed and needles debris is a regular maintenance issue and should be treated as such. If desired, then www.suraflow.co.uk (which prevents debris falling in the gutter through the coanda effect), mesh (www.guttergrid.co.uk or similar) or 'hedgehog' (www.hedgehoggutterbrush.com or similar) inserts can be used to filter out tree debris. Down pipes can also be installed with traps that are easily cleaned or chains used as the down pipe (which requires no cleaning).

8.19 Soils

In the event of shrinkable soils being found on the site, it will be for an engineer to design the foundations in accordance with the current industry guidance to reduce any potential risk of tree related subsidence to an acceptable level.

8.20 Other trees

This report considers the trees that may significantly be affected by the proposed development. Any trees not mentioned or not surveyed are sufficiently distant that the proposed works are unlikely to have an influence upon them.

9 **Conclusion**

The main arboricultural features of the site are to be retained and tree protective measures must be utilised to minimise the impact of the proposals upon the trees.

The principles and details of the Arboricultural Impact Assessment and Appendix 1: Method Statement and Tree Protection Plan should be followed to reduce the impact upon the retained trees.

10 **Recommendations**

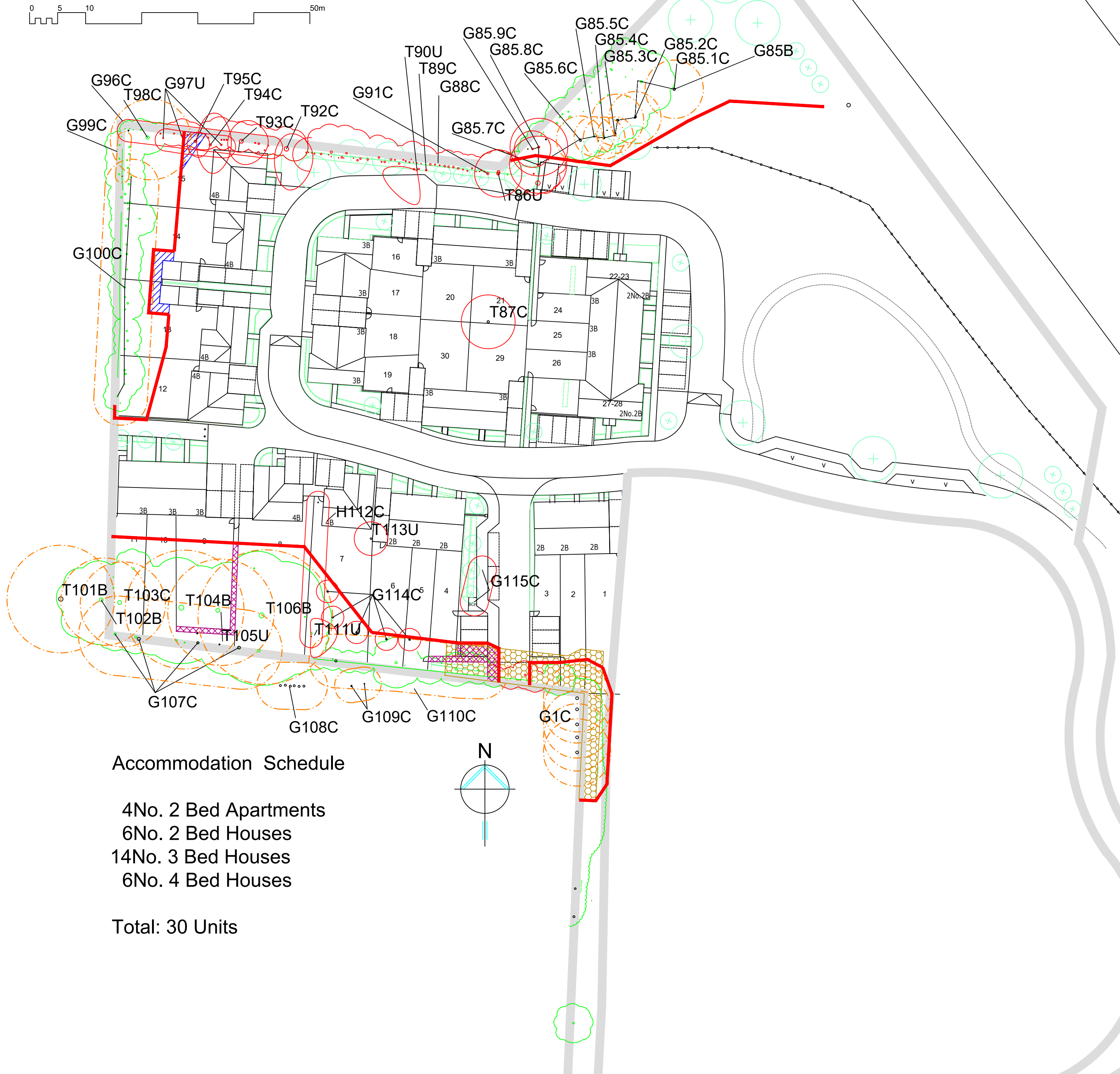
That, following any permission from the Local Planning Authority, the principles and details of the Arboricultural Impact Assessment and Appendix 1: Method Statement and Tree Protection Plan are followed to reduce the potential for harm to the retained trees during development.

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Arboricultural Association Registered Consultant

Appendix 1: Method Statement (for protection of trees during development) and Tree Protection Plan

Method Statement Summary / Timing of operations		
	Activity	Date complete
01	Pre-commencement meeting with appointed Arboricultural Consultant (NQF Level 4 or higher in Arboriculture) and Site Manager prior to construction works to discuss the tree protection measures. Planning authority Arboricultural Officer to be invited to the meeting with 2 weeks notice.	
02	Implementation of tree works as detailed in Appendix 2.	
03	Installation of tree protection measures (tree protective fencing, ground protection) to facilitate development (demolition, excavation, construction).	
04	Site Manager is to issue photographs showing the position of the tree protection measures for Arboricultural Consultant to assess. If tree protection measures are sufficient and fit for purpose, the appointed Arboricultural Consultant is to provide written approval of the correct installation of the tree protection measures to allow development. Alternatively, if the Site Manager is not able to issue photographs, then the Arboricultural Consultant is to visit site for the assessment of the tree protection measures.	
05	Development of the site with Arboricultural Consultant site monitoring once per month during the first three months of the development and / or as requested by the Site Manager. Site Manager to give 1 months notice of the start of development.	
06	Following completion of the external works (construction and hard landscaping), the Site Manager is to issue photographs showing the completed works for Arboricultural Consultant to assess. If construction and hard landscaping works are complete, the appointed Arboricultural Consultant is to provide written approval for the removal of the tree protection measures to allow soft landscaping. Alternatively, if the Site Manager is not able to issue photographs, then the Arboricultural Consultant is to visit site for the assessment of the completed works. Once written confirmation has been issued by the Arboricultural Consultant, the soft landscaping can commence.	
07	Soft landscaping works	
08	Tree condition and hazard survey for remedial works	
09	Remedial tree works	
10	Occupancy	



Accommodation Schedule

4No. 2 Bed Apartments
6No. 2 Bed Houses
14No. 3 Bed Houses
6No. 4 Bed Houses

Total: 30 Units

Appendix 1: Method Statement

1. A pre-commencement meeting prior to the start of any works between the Local Planning Authority (LPA) Arboricultural Officer, appointed Arboricultural Consultant and Site Manager must take place to clarify any additional protection measures required.

The purpose of the pre-commencement site meeting is to:

- confirm the position of the tree protective fencing and / or ground protection on site;
- discuss any potential conflict with the tree protection measures and identify acceptable solutions;
- understand the timeframe for the site clearance, demolition and construction phases;
- identify and agree the frequency of Arboricultural site monitoring, recording process and reporting procedure to the Local Planning Authority to aid discharge of relevant planning conditions (appointed Arboricultural Consultant to issue written report to Site Manager and Local Planning Authority discussing findings from site monitoring).

To aid the site clearance, demolition and construction phase for the development of the site an Arboricultural Consultant (NQF Level 4 or higher in Arboriculture) must be appointed to inspect and monitor the site at the start of the works and on an as required basis throughout the construction works to ensure that the protection procedures are adhered to and to assist with addressing further arboricultural issues that may arise.

2. Tree works may be required in the interest of good arboricultural practice and to facilitate the use of the site once development is complete. These works are listed in the recommendations of Appendix 2: BS 5837 Tree Survey. All tree works should be carried out according to BS5958: 2010 'Recommendations for tree works' and carried out by an appropriately competent, experienced, qualified and insured arboricultural contractor and preferably under the supervision of the Arboricultural Consultant.

3. The protective measures, as shown on the drawing "Tree protection plan" must be erected after the tree works and prior to any demolition or construction works. Once erected, barriers and ground protection must be considered sacrosanct, and tree must not be removed or altered without prior recommendation by the appointed Arboricultural Consultant and written approval by the LPA.

The protective barriers and ground protection must be erected according to drawings "Tree protection plan" and Appendix 2: BS5837 survey sheet which is based upon the guidelines in BS5837: 2012 'Trees in relation to construction'. Tree protective fencing and ground protection positions to be identified at the pre-commencement site meeting. Scaling from the tree protection plan should not be used.

Barriers must be fit for the purpose of excluding construction activity and appropriate to the degree and proximity of work taking place around the retained trees. On all sites, special attention should be paid to ensure that the barriers remain rigid and complete. Barriers must consist of a 1.8 high scaffold framework comprising a vertical and horizontal framework, well braced to resist impacts, with vertical tubes spaced at a maximum interval of 3m. Onto this 1.8m high weldmesh panels should be securely fixed with wire or scaffold clamps. Weldmesh panels on rubber or concrete feet are not resistant to impact and must not be used. If an alternative specification is preferred then it must be agreed in writing with the Local Planning Authority prior to installation.

Ground protection for pedestrian movements (and scaffolding activities) within the root protection area (RPA) must be a single thickness of scaffold boards on top of a compressible layer (for instance bark mulch) laid onto a geotextile membrane, or supported by scaffold (see drawing on Tree Protection Plan). If an alternative specification is preferred then it must be agreed in writing with the Local Planning Authority prior to installation.

Ground protection for wheeled or tracked construction traffic movements within the root protection area (RPA) must be designed by an engineer and Arboricultural Consultant to accommodate the likely loading and may involve the use of proprietary systems (for instance www.evetrakway.co.uk) or reinforced concrete slabs or a series of railway sleepers pinned together or other suitable system to ensure that the bulk density of the soil remains lower than 1.5g/cm³. If an alternative specification is preferred then it must be agreed in writing with the Local Planning Authority prior to installation.

These tree protective measures shall be identified and marked on the 'Tree protection plan' and all the approved engineering drawings to be used on site.

Any encroachment within the RPA or breaches of the tree protection measures must be reported to the appointed Arboricultural Consultant to enable them to provide recommendations to mitigate the encroachment / breach and to allow the issue and mitigation to be reported to the Local Planning Authority for their written approval.

4. All site personnel must be briefed by the Site Manager or the Arboriculturalist on the importance of the trees to be retained and the protective measures implemented to aid their retention into the future. The Site Manager is responsible for the implementation of all tree protection measures.

5. Once the construction exclusion zone has been protected by barriers then construction work can commence. All weather notices should be erected on the barriers with words such as "Construction exclusion zone - keep out" (see recommended sign on the Tree Protection Plan).

6. Care should be taken when planning site operations to ensure that wide or tall loads or plant with booms, jibs and counterweights can operate without coming into contact with retained trees. Such contact can result in serious damage to the equipment and retained trees, and might make the safe retention of the retained trees impossible. Consequently, any transit or transverse of plant in close proximity to trees should be conducted under the supervision of a bankman to ensure that adequate clearance from trees is maintained at all times. In some circumstances it may be impossible to maintain adequate clearance thus requiring tree works to clear the necessary access.

Material which will contaminate the soil, e.g. concrete (dry or mixed), diesel, oil, vehicle washings, etc. must not be discharged within the root protection area. It is essential that an allowance should be made for the slope of the ground so that damaging materials such as concrete washings, mortar, diesel or oil cannot run towards the trees.

There must be no fires on the site.

Notice boards, telephone cables or other services must not be attached to any part of the tree.

7. The advice of the appointed Arboricultural Consultant must be sought where underground structures present within the RPA are / will become redundant. In general it is preferable to seal these off as this avoids the need for significant excavation.

8. Any excavations in proximity of retained trees will require certain precautions to avoid unnecessary damage to trees to be retained, and should be undertaken as follows:

- All excavations should avoid damage to the protective bark covering larger roots. Roots, whilst exposed, should be wrapped in dry, clean hessian sacking to prevent desiccation (drying) and to protect from temperature changes.
- Roots smaller than 25mm diameter may be pruned back, preferably to a side branch, using a proprietary clean cutting tool such as bypass secateurs or handsaw.
- Roots larger than 25mm diameter should only be severed following consultation with the appointed Arboricultural Consultant, as the roots may be essential to the tree's health and stability.
- Prior to backfilling, any hessian wrapping should be removed and retained roots should be surrounded by sharp sand (builder's sand should not be used because of its high salt content which is toxic to trees which is loam material is replaced). This material, e.g. general purpose grade topsoil to BS3882, should be free of contaminants and other foreign objects potentially injurious to tree roots.
- Further details are available in NJUG Volume 4 "Guidance for the planning, installation and maintenance of utility services in proximity of trees".
- Any excavation within the RPA of retained trees must be subject to Arboricultural Consultant supervision.

9. There are no services to be installed within the RPA of the retained trees, other than as described in the Arboricultural Impact Assessment or shown on the Tree Protection Plan.

10. There should be no changes in grade within the RPA without prior recommendation by the appointed Arboricultural Consultant and approval of the LPA.

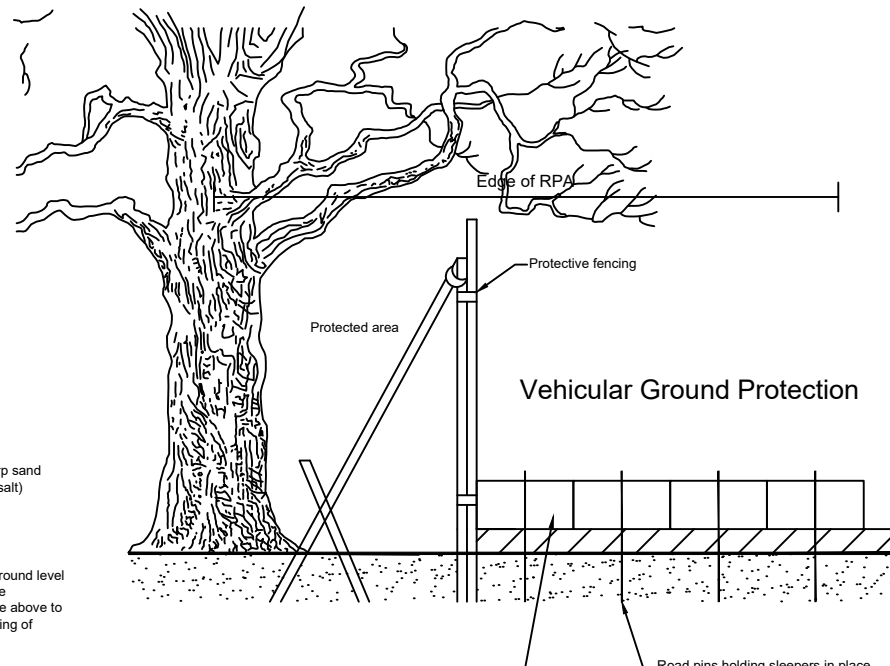
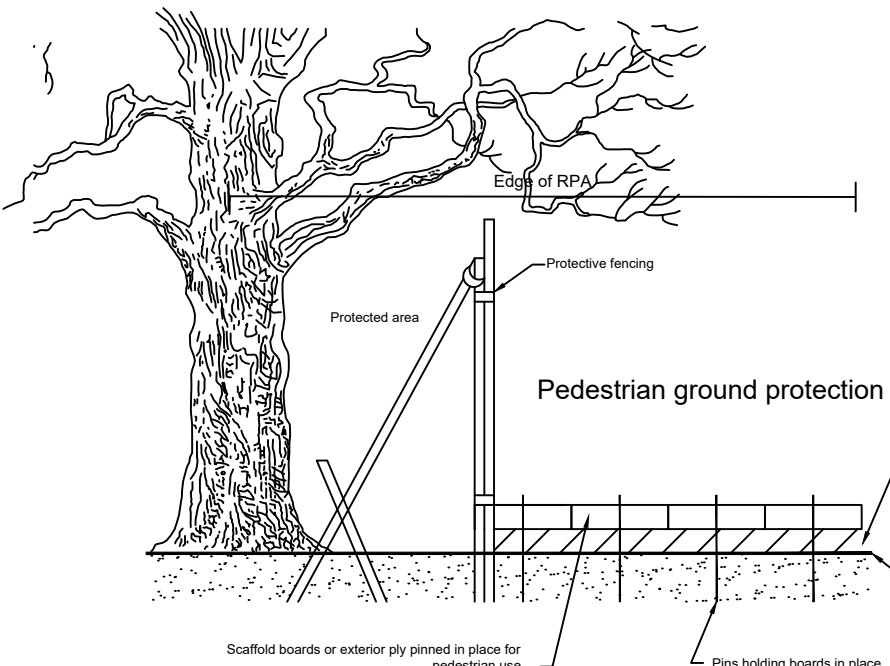
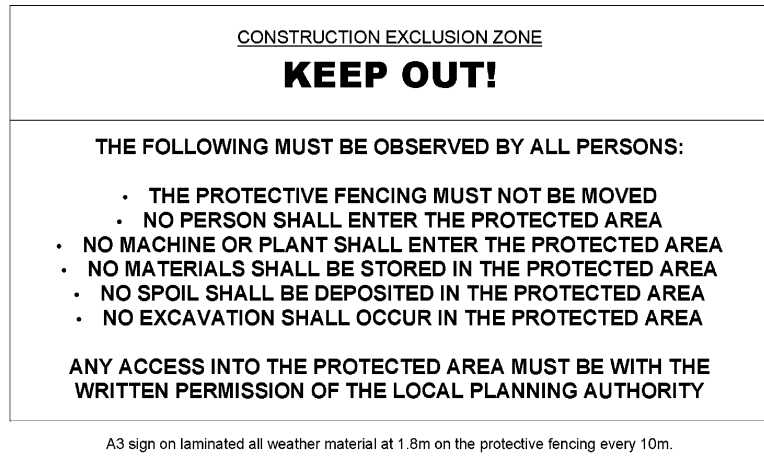
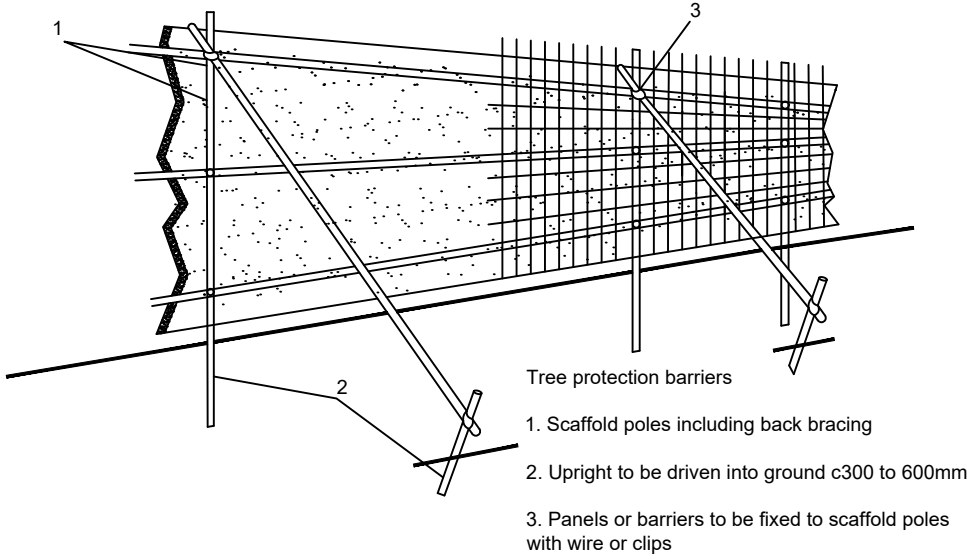
11. Following completion of the construction and hard landscaping works a site meeting between the Local Planning Authority Arboricultural Officer, appointed Arboricultural Consultant and Site Manager must take place to assess whether the protective barriers and ground protection can be removed to allow soft landscaping works.

12. Following the completion of the soft landscaping works a tree survey must be undertaken to identify whether additional tree works are required for the safe use of the site and adjacent land users.

Method statement for the removal of the existing hard surfaces.

RPA refers to the Root Protection Area as detailed in Appendix 2: BS5837 Tree Survey.

- The existing hard surface should be broken up, lifted and removed from the RPA from outside the RPA where feasible, or from exiting hard surfaces within the RPA.
- The excavation of the hard surface must not extend into the soil underneath unless specifically determined by the Arboricultural Consultant. In reality this would mean that the 'toothless' excavator bucket should be kept horizontal so that any disturbance to the soil is kept to a minimum. When the hard surface is thin or close to the soil level, the works must be carried out by hand to prevent avoidable unnecessary damage to the tree roots.
- All material, once lifted, must be transported to outside the RPA to prevent compaction or contamination of the tree roots. No material should be stored within the RPA.
- Due care and attention must be undertaken to ensure that machinery or other operations do not cause damage to the above ground parts of the tree.
- Where an existing hard surface is removed and replaced with soil the infill material must be a good quality, weed free aerobic natural topsoil with good crumb structure. Man made soppis are not acceptable. Soil samples must be issued to the Arboricultural Consultant for written approval prior to delivery on site where the soil is to be installed within the RPA of retained trees.



General / Key:
Root protection area
Indicative canopy
Barrier fencing
Ground protection
Special surface
Manual excavation
Tree to be removed

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Item reference (T/G/H/W)
Item number (1, 2, etc.)
BS5837 category (A/B/C/U)
For instance: T1C

Site: Land at Moorgreen (Phase 2b), Hedge End
Data: Site layout and survey data provided by Client. ©Crown Copyright and database rights OS Licence no. 1000224521
Revision: Revision B
Date: 31st August 2023
Scale: 1 to 500 on A1 (site layout only)
Sheet: 1 of 1

Drawing title:
Tree protection plan
Drawing reference:
J1053.06
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Appendix 2: BS5837 tree survey

BS5837 Tree Survey

Site Moorgreen Botley Road - phase 2b
Date of survey 6th February 2019
Job reference J1093.06 Revision A
Surveyor Ben Abbatt

Designation	Reference number	BS 5837 Category	Species	Height (m)	Single stem diameter (mm at 1.5m)	N Canopy spread (m)	E Canopy spread (m)	S Canopy spread (m)	W Canopy spread (m)	Canopy height (m)	Canopy height cardinal point	Age class	Physiological condition	Structural condition	Condition notes	Anticipated remaining life span	Root Protection Area - Radius (m)	Development related tree works	Development related mitigation
G	1	C2	Leyland Cypress	18	300 x 3	3	3	3	3	3		Mature	Fair	Fair	7 x trees located offsite on low embankment. 1 tree recently felled following root plate instability - future instability of root plates likely due to loss of companion shelter. Overhead services.	<10	6.2	Crown lift to 5m over access road and car parking.	Install tree protective measures. Removal of hard standing as detailed in Arboricultural Method Statement.
G	85	B1	Scots Pine, Birch, Beech, Sycamore, Cherry, Chamaecyparis, Oak, Willow, Norway Maple	14	437	6	6	6	6	0	~	Middle aged	Good	Fair	Close grown group with occasional failure. Stem diameter up to 450mm.	>40	5.2	Refer to individual trees within the group.	Install tree protection measures.
G	85.1	C1	Cherry / Gean	14	437	5	5	5	5	1	~	Middle aged	Good	Fair	Etiolated form with growth to the south for light.	>40	5.2	No tree works required.	Install tree protective fencing.
G	85.2	C1	Birch	14	226	3	3	3	3	1	~	Middle aged	Good	Fair	Etiolated form with growth to the south for light.	>40	2.7	No tree works required.	Install tree protective fencing.
G	85.3	C1	Birch	14	272	3	3	3	3	1	~	Middle aged	Good	Fair	Etiolated form with growth to the south for light.	>40	3.3	No tree works required.	Install tree protective fencing.
G	85.4	C1	Scots Pine	14	269	3	3	3	3	1	~	Middle aged	Good	Fair	Etiolated form with growth to the south for light.	>40	3.2	No tree works required.	Install tree protective fencing.
G	85.5	C1	Birch	14	235	3	3	3	3	1	~	Middle aged	Good	Fair	Etiolated form with growth to the south for light.	>40	2.8	No tree works required.	Install tree protective fencing.
G	85.6	C1	Sycamore	14	230	4	4	4	4	1	~	Middle aged	Good	Fair	Etiolated form with growth to the south for light.	>40	2.8	No tree works required.	Install tree protective fencing.
G	85.7	C1	Norway Maple	14	283	4	4	4	4	1	~	Middle aged	Good	Fair	Etiolated form with growth to the south for light.	>40	3.4	Remove.	Replacement tree and hedge planting.
G	85.8	C1	Birch	14	288	3	3	3	3	1	~	Middle aged	Good	Fair	Etiolated form with growth to the south for light.	>40	3.5	Remove.	Replacement tree and hedge planting.
G	85.9	C1	Oak	14	234	3	3	3	3	1	~	Middle aged	Good	Fair	Etiolated form with growth to the south for light.	>40	2.8	Remove.	Replacement tree and hedge planting.

Designation	Reference number	BS 5837 Category	Species	Height (m)	Single stem diameter (mm at 1.5m)	N Canopy spread (m)	E Canopy spread (m)	S Canopy spread (m)	W Canopy spread (m)	Canopy height (m)	Canopy height cardinal point	Age class	Physiological condition	Structural condition	Condition notes	Anticipated remaining life span	Root Protection Area - Radius (m)	Development related tree works	Development related mitigation
T	86	U	Cupressus macrocarpa	16	500	4	0	4	4	0	N	Mature	Good	Good	Off site. Stem diameter estimated. Adjacent tree to east removed. Stem failure at base on north side.	10 to 20	6.0	Remove.	Replacement tree and hedge planting.
T	87	C3	Apple	8	400	4	3	5	7	1	E	Mature	Fair	Fair	Offsite. Mistletoe throughout. Stem diameter estimated.	10 to 20	4.8	Remove.	Replacement tree and hedge planting.
G	88	C2	Lawson cypress	<18	330	3	0	3	0	1	S	Middle aged	Fair	Fair	Line of unmanaged Lawson cypress at c0.6m centres with stem diameter up to 330mm. Located at c1m from northern boundary of site. Group contributes to screen the site from the north. Offsite woodland immediately to the north has potential to screen site from the north.	10 to 20	4.0	Remove.	Replacement tree and hedge planting.
T	89	C1	Silver Birch	17	320	0	4	4	4	8	S	Middle aged	Fair	Fair	Reasonable form. Recently crown lifted on south side.	10 to 20	3.8	Remove.	Replacement tree and hedge planting.
T	90	U	Beech	17	320	0	0	6	6	7	S	Middle aged	Poor	Poor	Heavily suppressed crown / imbalanced. Recently crown lifted on south side.	<10	3.8	Remove.	Replacement tree and hedge planting.
G	91	C1	Beech, Silver Birch	16	440	5	3	6	6	4	S	Middle aged	Fair	Fair	Fair – Poor 3 x Beech with stem diameter up to 440mm. 3 x Silver Birch with stem diameter up to 300mm established within group G88. Crowns suppressed due to group pressures associated with evergreen cypress and adjacent off site woodland to the north. Woodland to the north considered to provide screening function.	10 to 20	5.3	Remove.	Replacement tree and hedge planting.
T	92	C2	Leyland Cypress	20	850	3	4	7	2	1	S	Mature	Good	Good	Prominent in the locality due to size, contributes to screen the site from the north. Species susceptibility to branch failure and root plate instability likely to limit safe useful life expectancy. Estimated stem diameter.	10 to 20	10.2	Remove.	Replacement tree and hedge planting.

Designation	Reference number	BS 5837 Category	Species	Height (m)	Single stem diameter (mm at 1.5m)	N Canopy spread (m)	E Canopy spread (m)	S Canopy spread (m)	W Canopy spread (m)	Canopy height (m)	Canopy height cardinal point	Age class	Physiological condition	Structural condition	Condition notes	Anticipated remaining life span	Root Protection Area - Radius (m)	Development related tree works	Development related mitigation
T	93	C2	Leyland Cypress	21	700	4	4	4	3	1	S	Mature	Good	Good	Prominent in the locality due to size, contributes to screen the site from the north. Species susceptibility to branch failure and root plate instability likely to limit safe useful life expectancy. Estimated stem diameter.	10 to 20	8.4	Remove.	Replacement tree and hedge planting.
T	94	C1	Silver Birch	15	470	6	3	5	3	7	S	Mature	Fair	Fair	Reasonable form despite close proximity to neighbouring evergreen trees. Recently crown lifted on south side.	10 to 20	5.6	Remove.	Replacement tree and hedge planting.
T	95	C2	Lawson cypress	15	420	2	2	2	2	1		Middle aged	Fair	Fair	Co-dominant stems from tight fork with included bark at c6m above ground. Crown a little suppressed on north side. Contributes to screen the site from the north.	10 to 20	5.0	Remove.	Replacement tree and hedge planting.
G	96	C2	Lawson cypress	5 to 11	200	2	2	2	2	1		Middle aged	Fair	Fair	Line of unmanaged Lawson cypress at c0.6m centres with stem diameter between 100 & 200mm. Occasional failed / suppressed specimens plus occasional holly & hazel beneath. Group contributes to screen the site from the north.	10 to 20	2.4	Remove.	Replacement tree and hedge planting.
G	97	U	Beech	7 to 15	<300	2	2	2	2	8		Young	Poor	Poor	3 x trees with stem diameter 120, 220, 300mm. Suppressed / etiolated form / one with lost leader.	<10		Remove.	Replacement tree and hedge planting.
T	98	C2	Leyland Cypress	20	600	4	4	4	4	1		Mature	Fair	Fair	Prominent in the locality due to size, contributes to screen the site from the north. Species susceptibility to branch failure and root plate instability likely to limit safe useful life expectancy. Estimated stem diameter.	10 to 20	7.2	No tree works required.	Install tree protective measures.

Designation	Reference number	BS 5837 Category	Species	Height (m)	Single stem diameter (mm at 1.5m)	N Canopy spread (m)	E Canopy spread (m)	S Canopy spread (m)	W Canopy spread (m)	Canopy height (m)	Canopy height cardinal point	Age class	Physiological condition	Structural condition	Condition notes	Anticipated remaining life span	Root Protection Area - Radius (m)	Development related tree works	Development related mitigation
G	99	C1	Hawthorn	4	100	0	0	0	4	2	W	Middle aged	Fair	Fair	Estimated stem diameter. Heavily suppressed form - encroaching to edge of garage turning area.	10 to 20	1.2	Reduce to approx 1.5m height to encourage low level regeneration & manage as hedge feature.	Install tree protective measures.
G	100	C2	Lawson cypress, Silver Birch	18 to 14	400	4	4	4	4	2	W	Mature	Fair	Fair	Tree line immediately to the rear of properties on Monarch Way. Comprising Lawson cypress at c0.6m centres with stem diameter up to 240mm interspersed with c20 No. Silver birch with stem diameter up to 400mm. Cypress encroaching low over garden buildings and site access. Group serve to screen dwellings on Monarch way from the site. Single Birch at southern end in decline.	10 to 20	4.8	1. Remove any failed / heavily suppressed specimens. 2. Crown lift / tip back to appropriate natural target pruning points to clear garden buildings by 1m. 3. Reduce leaning stems by up to 3m to achieve uniform top height for the group of c8m and maintain at this height. 4. Remove declining Birch.	Install tree protective measures. Use of cellular confinement system and porous wearing course for car parking and above ground cast concrete slab on mini piles for the garage to maintain access for tree roots to air and water.
T	101	B2	English Oak	21	800	9	3	9	3	7		Mature	Fair	Fair	Offsite. Component of line of mature oaks extending east west and considered to be prominent in the locality. Intermediate crown with minor deadwood less than 25mm diameter. No access for survey - estimated stem diameter.	20 to 40	9.6	No tree works required.	
T	102	B2	English Oak	21	650	9	8	8	3	8		Mature	Fair	Fair	Off site. Component of line of mature oaks extending east west and considered to be prominent in the locality. Intermediate crown with deadwood 25 - 75mm diameter over site. No access for survey - estimated stem diameter.	20 to 40	7.8	Remove deadwood >25mm diameter where over site.	Install tree protective measures.

Designation	Reference number	BS 5837 Category	Species	Height (m)	Single stem diameter (mm at 1.5m)	N Canopy spread (m)	E Canopy spread (m)	S Canopy spread (m)	W Canopy spread (m)	Canopy height (m)	Canopy height cardinal point	Age class	Physiological condition	Structural condition	Condition notes	Anticipated remaining life span	Root Protection Area - Radius (m)	Development related tree works	Development related mitigation
T	103	C2	English Oak	21	630	1	2	9	3	8		Mature	Poor	Poor	Component of line of mature oaks extending east west and considered to be prominent in the locality. Suppressed canopy. Historic limb failure. Epicormic growth. Occluded wounds on lower trunk. Historic bark damage commensurate with severance of ivy. Stem diameter measured over ivy.	10 to 20	7.6	1. Reduce suppressed leading stem and largest limb extending to the south by up to 3 - 4m back to appropriate natural target pruning points to reduce risk of failure. 2. Sever ivy at base to 2m and remove. 3. Crown lift to 5m with a maximum wound diameter of 60mm.	Install tree protective measures.
T	104	B2	English Oak	22	885	7	5	7	6	14		Mature	Fair	Fair	Component of line of mature oaks extending east west and considered to be prominent in the locality. Co dominant stems from fork at c8m above ground. Deadwood 25 - 75mm diameter throughout crown. Historic wound to east side of trunk base c300mm high by c400mm wide with moderate wound wood response. Ivy impedes survey. Stem diameter measured over ivy.	20 to 40	10.6	1. Sever ivy at base to 2m and remove. 2. Remove deadwood more than 25mm diameter throughout crown. 3. Crown lift to 5m with a maximum wound diameter of 60mm.	Install tree protective measures.
T	105	U	English Oak	20	790	8	2	8	3	6		Mature	Poor	Poor	Slightly sparse canopy. Component of line of mature oaks extending east west and considered to be prominent in the locality. Suppressed intermediate crown. Heavy limbs. Epicormic growth. Recently crown lifted on north side. Evidence of historic ring barking. Ganoderma australe fungal bracket present on eastern root buttress. Deadwood 25 - 100mm diameter throughout crown. Stem diameter measured over ivy.	10 to 20	9.5	Remove due to basal decay.	Install tree protective measures.

Designation	Reference number	BS 5837 Category	Species	Height (m)	Single stem diameter (mm at 1.5m)	N Canopy spread (m)	E Canopy spread (m)	S Canopy spread (m)	W Canopy spread (m)	Canopy height (m)	Canopy height cardinal point	Age class	Physiological condition	Structural condition	Condition notes	Anticipated remaining life span	Root Protection Area - Radius (m)	Development related tree works	Development related mitigation
T	106	B2	English Oak	21	1010	5	8	10	6	6		Mature	Fair	Fair	End tree in line of mature oaks extending east west and considered to be of prominence in the locality. Deadwood 25 - 75mm diameter throughout crown. High crown with numerous pruning wounds to main stem. Stem diameter measured over ivy. Ivy impedes survey.	20 to 40	12.1	1. Sever ivy at base to 2m and remove. 2. Remove deadwood more than 25mm diameter throughout crown. 3. Crown lift to 5m with a maximum wound diameter of 60mm.	Install tree protective measures. Use of cellular confinement system and porous wearing course to maintain access for tree roots to air and water.
G	107	C2	Western Red Cedar, Hawthorn	12	590	4	3	4	3	0		Mature	Fair	Fair	4 x trees. Stem diameter for each tree (East - West) 570mm, (450 & 370), 590, 380. Occasional middle aged hawthorn between. Wounds on south side of all 4 trees. 3rd tree has fractured limb fallen to the south. 4th tree has c20° lean to south and oak limb hung up in crown. Contribute to screen site from the south.	10 to 20	7.1	Crown lift to 3m over footway.	Install tree protective measures. Use of cellular confinement system and porous wearing course to maintain access for tree roots to air and water.
G	108	C2	Leyland Cypress	15	350	0	0	0	0	0		Mature	Fair	Fair	Located off site on low embankment. 1 tree recently felled following root plate instability & 1 tree has 10 degrees lean to the east - future instability of root plates / branch failure likely due to loss of companion shelter. No access for survey - 6 x trees with estimated stem diameter up to 350mm.	<10	4.2	No tree works required.	Install tree protective measures.
G	109	C1	Larch, English Oak	6 to 8	250	0	0	0	0	0		Young	Fair	Fair	2 trees at c3m from boundary on offsite land with crowns that do not overgrow the site. Oak has suppressed crown. No access for survey - estimated dimensions. 1 x Larch with estimated stem diameter 2 at 150mm each, 1 x English Oak with estimated stem diameter 250mm.	10 to 20	3.0	No tree works required.	Install tree protective measures.

Designation	Reference number	BS 5837 Category	Species	Height (m)	Single stem diameter (mm at 1.5m)	N Canopy spread (m)	E Canopy spread (m)	S Canopy spread (m)	W Canopy spread (m)	Canopy height (m)	Canopy height cardinal point	Age class	Physiological condition	Structural condition	Condition notes	Anticipated remaining life span	Root Protection Area - Radius (m)	Development related tree works	Development related mitigation
G	110	C2	Silver Birch, Lawson Cypress	15	400	4	4	4	4	2		Mature	Fair	Fair	Tree line between the edge of driveway and southern boundary of the site. No access for survey - estimated dimensions. 3 x Silver Birch with estimated stem diameter between 250 - 400mm. 11 x Lawson Cypress with estimated stem diameter between 150 - 300mm.	10 to 20	4.8	Crown lift to 5m over access road, car parking and footway.	Install tree protective measures. Removal of hard standing as detailed in Arboricultural Method Statement. Use of cellular confinement system and porous wearing course to maintain access for tree roots to air and water.
T	111	U	Silver Birch	10	320	3	4	4	0	2		Mature	Poor	Poor	Ivy. Suppressed crown weighted to the east. Exudates on lower trunk. Severe canopy decline.	<10	3.8	Remove.	Replacement tree and hedge planting.
H	112	C1	Beech	2	150	2	2	2	0	0		Middle aged	Poor	Poor	Suppressed hedge (suppressing trees recently removed) - gaps.	10 to 20	1.8	Remove.	Replacement tree and hedge planting.
T	113	U	Lawson Cypress	7	300	3	3	3	3	0		Mature	Poor	Poor	Previously topped. Crowns suppressed on west side. Encroaching on bungalow - internal to site. No access for survey - estimated dimensions.	<10	3.6	Remove.	Replacement tree and hedge planting.
G	114	C1	Cypress	4 to 15	300	2	2	2	2	0		Middle aged	Fair	Fair	Cypress suppressed due to group pressures. No access for survey - estimated dimensions. 3 x Cypress with estimated stem diameter 150 - 300mm, 1 x Yew with estimated stem diameter 100mm, 1 x Laburnum with estimated stem diameter 100mm.	10 to 20	3.6	Remove.	Replacement tree and hedge planting.
G	115	C1	False Acacia	7	150	2	2	2	2	1		Young	Fair	Fair	Regrowth from previously felled trees. Estimated dimensions.	10 to 20	1.8	Remove.	Replacement tree and hedge planting.

General notes

The tree survey is not a “Tree Hazard Survey” and must not be relied upon in this regard. Such a survey is to be carried out, on the instruction of the Site Manager as detailed on the Tree Protection Plan, Timing of operations.

As trees are dynamic structures their condition and health may change in a short period of time, particularly in relation to changes in their immediate environment and circumstances. Therefore, the survey is an assessment of the trees at the time of the survey only. If there is a significant change in the immediate environment and circumstances, then this should be brought to the attention of the arboriculturalist so that they may advise accordingly.

We have not checked whether the site is within a Conservation Area or whether the trees are under Tree Preservation Order (TPO). Prior to any tree works confirmation of whether these legal restrictions apply to the site or trees ought to be sought from the Local Planning Authority (LPA). If the trees stand within a Conservation Area designated under the Town and Country Planning Act the LPA will normally require 6 weeks notice of intention to carry out any tree works as detailed in the survey. If the trees are under TPO then the LPA will normally require an application for any tree works. Some tree works are exempt, for instance if the trees are dead or dangerous, and certain works can be carried out without application. It is necessary to give the LPA at least five days notice prior to carrying out any of these tree works under these exemptions. This survey, with recommendations, can be used to support any such application or notice.

Wildlife issues are of significant concern to the general public. A balance has to be found between the protection of wildlife and the need for safety when managing trees. The Wildlife and Countryside Act (1980) and Countryside Rights of Way Act (2000) give statutory protection to wild birds, bats, mammals, some invertebrates and plants. It is important to ensure that this legislation is properly considered when carrying out any works to trees.

Bird nests were not identified whilst on site. However, any Arborist carrying out the tree works should ensure that there is no disturbance to nesting birds prior to the works being carried out. Further guidance upon the appropriate timing of the works can be sought from DEFRA, if necessary. Where nesting birds are found, further information should be sought from DEFRA 08459 33 55 77 or helpline@defra.gsi.gov.uk. Prior to any works being implemented the tree contractor must identify whether there are any bats or birds using the tree as roost or nest. If such habitation is identified, then the tree contractor must obtain the necessary licence from Natural England (**0845 601 4523** www.naturalengland.org.uk) to carry out the works.

A bat survey prior to tree works is not recommended, except where there is a high potential for habitat. During the tree works, the contractor should carry out the tree works with bats as an active consideration and follow the current industry best practice, e.g. Arboricultural Association Guidance Note 1 Bats in the context of tree work operations 2011, BS8596 Micro guide to surveying for bats in trees and woodland <https://shop.bsigroup.com/upload/273444/BSI-Bat-Microguide-UK-EN.pdf> which a competent tree contractor should be familiar with.

Biosecurity measures: To minimise the potential for contamination of the tree from other tree works it is appropriate to sterilise tools to be used before and after the works are implemented. Appropriate disinfectant includes Propellar or Cleankill Sanitizing spray. Loose debris is to be brushed off prior to treating with disinfectant to ensure appropriate application. See [http://www.forestry.gov.uk/pdf/FCMS028-guidance.pdf/\\$file/FCMS028-guidance.pdf](http://www.forestry.gov.uk/pdf/FCMS028-guidance.pdf/$file/FCMS028-guidance.pdf) for further information on Biosecurity and <http://www.forestry.gov.uk/forestry/infd-9fjd2d> for disinfectant information.

Appendix 3: Key to BS5837 tree survey

No	Tree number.	
Species	Species of tree.	
Height	Height measured in metres and rounded to the nearest metre.	
Stem Ø	Stem diameter at 1.5metres following normal Forestry conventions or immediately above the root flare for multiple stemmed trees, in millimetres.	
Canopy spread	Canopy spread in metres is taken at the four cardinal points to derive a reasonable representation of the canopy shape in plan view.	
Height of crown	Height in metres of crown clearance above adjacent ground level.	
Age class	Young	A tree considered to be less than approximately 20 years old.
	Middle aged	A tree in approximately the first 1/5th of its normal life span with apical dominance (rapidly growing with a clear main leader) and not yet fully at its environmental potential full height.
	Mature	A tree in its 2/5ths to 5/5ths of its normal life span with apical dominance lost and at its environmental potential full height.
Condition (Physiological and Structural)	Good	A tree of typical physiological and structural condition that requires only general tree works to facilitate its retention in the landscape.
	Fair	A tree of impaired physiological and / or structural condition that may require remedial and general tree works to facilitate its retention in the landscape.
	Poor	A tree of significantly impaired physiological and / or structural condition that will require remedial and general tree works to facilitate its retention in the landscape if feasible.
Preliminary management recommendations	As per BS3998: 2010 Recommendations for Tree Works.	
Category grading	See below: Table 1.	
Estimated remaining contribution (years)	Estimated remaining contribution in years (e.g. < 10, 10+, 20+, 40+).	
Root protection area	See below: Extract from BS5837:2012.	

All measurements in metres are approximate and rounded to the nearest metre.

Table 1 - Cascade chart for tree quality assessment, BS5837: 2012 Trees in relation to construction - Recommendations

TREES UNSUITABLE FOR RETENTION			
CATEGORY AND DEFINITIONS	CRITERIA		
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	• Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning). • Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline. • Trees infected with pathogens of significance to the health and/or safety of other trees nearby or very low-quality trees suppressing adjacent trees of better quality. <i>NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve; see 4.5 of BS5837:2012</i>		
TREES TO BE CONSIDERED FOR RETENTION			
CATEGORY AND DEFINITIONS	CRITERIA - SUBCATEGORIES		
	1 Mainly arboricultural values	2 Mainly landscape values	3 Mainly cultural values, including conservation
Category A Trees of high quality with an estimated remaining life expectancy of at least 40 years	Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups or formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue).	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features.	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)
Category B Trees of moderate quality with an estimated remaining life expectancy of at least 20 years	Trees that might be included in category A, but are downgraded because of impaired condition (e.g. presence of significant though remediable defects, including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation.	Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality.	Trees with material conservation or other cultural value
Category C Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below150 mm	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories.	Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value; and/or trees offering low or only temporary/transient landscape benefits.	Trees with no material conservation or other cultural value.

Root protection area (RPA)

Extract from BS5837:2012.

4.6.1 For single stem trees, the RPA (see **3.7**) should be calculated as an area equivalent to a circle with a radius 12 times the stem diameter. For trees with more than one stem, one of the two calculation methods below should be used. In all cases, the stem diameter(s) should be measured in accordance with Annex C, and the RPA should be determined from Annex D. The calculated RPA for each tree should be capped to 707 m².

a) For trees with two to five stems, the combined stem diameter should be calculated as follows:

$$\sqrt{(\text{stem diameter } 1)^2 + (\text{stem diameter } 2)^2 \dots + (\text{stem diameter } 5)^2}$$

b) For trees with more than five stems (not illustrated in Annex C), the combined stem diameter should be calculated as follows:

$$\sqrt{(\text{mean stem diameter})^2 \times \text{number of stems}}$$

4.6.2 The RPA for each tree should initially be plotted as a circle centred on the base of the stem. Where pre-existing site conditions or other factors indicate that rooting has occurred asymmetrically, a polygon of equivalent area should be produced. Modifications to the shape of the RPA should reflect a soundly based arboricultural assessment of likely root distribution.

4.6.3 Any deviation in the RPA from the original circular plot should take account of the following factors whilst still providing adequate protection for the root system:

- a) the morphology and disposition of the roots, when influenced by past or existing site conditions (e.g. the presence of roads, structures and underground apparatus);
- b) topography and drainage;
- c) the soil type and structure;
- d) the likely tolerance of the tree to root disturbance or damage.



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