

Arboricultural Impact Assessment & Tree Protection Plan

For trees on land at

Pagham South in Pagham



On behalf of

Hanbury Properties Ltd

17 Northgate

Chichester

West Sussex

PO19 1BJ

Inspected and prepared by

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SUMMARY

The trees considered in this report are located on and around land at Pagham Road in Bognor Regis. The report is intended to support an outline plan to create a new mixed-use development at the site.

An outline planning application has been made (Ref: P/140/16/OUT) and the arboricultural raised an objection on the basis that the proposal would involve the loss of too many trees along the road frontage. As a result of this objection the design of the access roads and footpaths alongside Pagham Road have been altered. Also the trees alongside Pagham Road have now been tagged to help identify them. The amendments to the proposal have greatly reduced the impact on the trees alongside Pagham Road. The retained trees along the road frontage will screen the site and new tree planting will also be added to reinforce this visual barrier. The overall result of these changes to the design is that the proposed development would have a greatly reduced impact on the character and appearance of the local area.

Nine trees will need to be removed in order to construct the proposed development, this includes four B-grade trees and five C-grade tree. Five groups of trees will also need to be removed including four B-grade groups and one C-grade group. One further B-grade group will need to be partially removed and two C-grade hedgerows also partially removed. The loss of these trees will be compensated by a large quantity of new tree planting, especially on the eastern and western boundaries. The proposed planting scheme has been carefully designed to ensure that the new trees will have the chance to mature and make a long-term contribution to the local landscape.

Temporary fencing will be used during construction to protect retained trees situated near works areas; the location of necessary tree protection fencing is indicated on the tree protection plan (TPP-1) and a specification for this fencing is provided in Appendix 2. **For effective tree protection it is crucial that the protective fencing is installed before any heavy plant machinery is used on the site.** The tree protection fencing must remain in place until the construction works have been completed.

Arboricultural supervision will be required if any unforeseen construction activity is to take place within the root protection area of any of the retained trees on or near the site. This supervision must be carried out by a suitably qualified arboriculturist. It is advised that the project arboriculturist and the local authority's tree officer are informed of necessary works near trees as soon as they become apparent.

General advice on the protection of trees during construction works has also been provided in this report. The site manager must be made aware of the tree protection requirements at the site and provided with a copy of this report; this information must be passed on to all construction staff.

Contents

Summary	ii
1 Introduction	1
1.1 Background Information	1
1.2 The Assignment.....	1
1.3 Limitations.....	2
2 Tree Survey Information	2
2.1 Details of Site Visit	2
2.2 Data Collection	2
2.3 The Tree Plans	3
3 arboricultural Impact Assessment and proposed mitigation	3
3.1 Trees for Removal	3
3.2 New Service Runs	4
3.3 Level Changes and Retaining Walls.....	4
3.4 Final Landscaping Works Near Retained Trees.....	4
3.5 Tree Protection Fencing	4
3.6 General Specification for Effective Tree Protection	5
4 Recommendations	6
4.1 Tree Work	6
4.2 Legal Restrictions to Tree Works	6
4.3 Works Supervision and Monitoring	6

Appendix 1: Tree schedule, group schedule, hedge schedule and schedule key

Appendix 2: Specification for tree protection fencing

Appendix 3: The A0 Tree Removal Plan (TR-1B)

Appendix 4: The A0 Tree Protection Plan *with RPAs* (TPP-1B)

Appendix 5: The A0 Tree Protection Plan *without RPAs* (TPP-1C)

1 INTRODUCTION

1.1 Background Information

Hanbury Properties Ltd propose to develop an area of land at Pagham Road in Pagham, Bognor Regis, PO4 2NN; this land is hereafter referred to as the 'Site'. This would involve constructing a new mixed-use development that will include a range of residential properties and a primary school with sports pitches; these proposals are hereafter referred to as the 'Proposed Development'. This document is intended to support an outline planning application for the Proposed Development.

The following documents have been reviewed to inform this report:

- Framework Plan - DLA - Drawing # DLA.1731.L001.02(01) A
- Illustrative Masterplan - DLA - Drawing # DLA.1731.L003.05
- Landscape Framework - DLA - Drawing # DLA.1731.L003.06
- Arun DC Arboricultural Officer comments - 23rd August 2017
- Proposed Site Access Junctions - Highgate Transportation - Drawing # 03

An initial tree constraints plan was produced in August 2016 and this has informed the proposed Site layout.

An outline planning application has been made (Ref: P/140/16/OUT) and the arboricultural raised an objection on the basis that the proposal would involve the loss of too many trees along the road frontage. As a result of this objection the design of the access roads and footpaths alongside Pagham Road have been altered. Also the trees alongside Pagham Road have now been tagged to help identify them. The amendments to the proposal have greatly reduced the impact on the trees alongside Pagham Road.

It has not been confirmed to Bosky Trees whether any trees on this Site are protected by a TPO or if they are located within a Conservation Area.

1.2 The Assignment

Davies Landscape Architects instructed Bosky Trees on behalf of Hanbury Properties Ltd to undertake a Site visit, survey the trees that could be affected by the Proposed Development and specify suitable tree protection measures. The information compiled within this report is in accordance with BS5837:2012¹ - Trees in relation to design, demolition and construction - Recommendations. The following information is provided in this report to accompany a planning application for the Proposed Development:

- A tree survey plan based on the topographical survey provided, with any additional tree(s) indicatively plotted.
- An arboricultural impact assessment of the Proposed Development identifying trees that will be lost as well as trees that can be retained and protected during development works.

¹ British Standards Institution (2012). BS5837 Trees in relation to design, demolition and construction – Recommendations. BSI, London.

- Information regarding the location of tree protection fencing and ground protection measures on a tree protection plan.
- Recommendations for remedial tree works to be undertaken to retained trees prior to commencement of the necessary Site clearance and construction.
- Method statements for works near trees.

1.3 Limitations

The assessment and works recommendations relate to conditions found at the time of inspection. Any significant alteration to the Site that may affect the trees that are present or have a bearing on the planning implications (including level changes, hydrological changes, storms, extreme climatic events or Site works) will necessitate a re-assessment of the trees.

It should be noted that this survey is not a tree safety inspection; it has been carried out in order to inform the planning process. Where clear and obvious hazards have been observed, these have been addressed in the works recommendations. A full assessment of the levels of risk posed by trees would be informed by considering Site use together with hazards present within a tree. Changes in Site use are likely to occur during, and result from, the Proposed Development. In light of these factors, regular tree risk assessments are advised.

This report does not consider any aspect of tree-related building subsidence. If shrinkable clay soils are present on Site the guidance given in the National House Building Council (NHBC) chapter 4.2² should be used to avert the risk of future subsidence of new buildings.

No detailed assessment of the potential conflict between future Site use and the shade cast by trees has been undertaken within this report.

2 TREE SURVEY INFORMATION

2.1 Details of Site Visit

I visited the Site and carried out the tree surveys on 10th August 2016 and on 4th October 2017. On both days the weather conditions were dry and clear and did not present any constraints. The survey considered all of the trees in and around the Site.

The Site is currently three large arable fields and there are numerous mature sycamore and ash trees situated on the eastern boundary alongside Pagham Road. A large group of tall poplars grow on the western boundary, and there are smaller trees sparsely distributed on the other field boundaries.

2.2 Data Collection

Trees, tree-groups and hedgerows were allocated an individual number that is used to identify them throughout this report. These are listed in the tree schedule at the rear of the report and they are also used on the plans presented at the front of this report.

² National House Building Council (2008). NHBC Standards Chapter 4.2 - Building near trees.

The tree inspections took place from ground level using the Visual Tree Assessment method³. In addition each tree has been classified into four retention categories, A, B, C or U (in accordance with the system described in Table 1 of BS5837). The stem diameter has been used to calculate the root protection area (RPA⁴) required by each tree during construction. Information on each tree, tree-group and hedgerow is listed in the schedule provided in Appendix 1.

A total of 83 individual trees, 15 groups of trees and 10 hedges were surveyed. A summary of their value/retentive worth is provided in Table 1.

Table 1: A summary of the retentive worth classified to the trees, groups and hedgerows included in the survey.

BS5837 Category	Quality	Number of Trees	Number of Groups	Number of Hedges
A	High	0	0	0
B	Moderate	32	6	0
C	Low	43	7	10
U	Very poor	8	2	0
	Total	83	15	10

2.3 The Tree Plans

The tree removal plan (TR-1B) shows the root protection areas required by each tree and identifies which trees are to be removed to enable the Proposed Development. The tree protection plans (TPP-1B & TPP-1C) show where fencing will be installed in order to protect trees during construction. These plans are provided as separate A0 sheets.

3 ARBORICULTURAL IMPACT ASSESSMENT AND PROPOSED MITIGATION

3.1 Trees for Removal

Nine individual trees will need to be removed in order to construct the Proposed Development, these include four B-grade trees (T401, T402, T416 and T417) and five C-grade tree (T415, T423, T470, T471 and T481). Five groups of trees will also need to be removed, these include four B-grade groups (G3–G6) and one C-grade group (G14). One further B-grade group will need to be partially removed (G12) and two C-grade hedgerows also partially removed (H1 and H3).

The trees within tree-groups that will need to be removed along the eastern boundary (G3–G6) have been individually tagged and are shown on the tree removal plan (TR-1B). The tag numbers for these trees are also listed in the group schedule in Appendix 1.

This updated plan includes a crucial difference to the original plan submitted, by altering the alignment of footpaths many more mature trees and lengths of hedgerow can be retained along the

³ Mattheck, C. and Breloer, H. (1995). The Body Language of Trees: A handbook for failure analysis. Research for Amenity Trees 4. HMSO, London.

⁴ The root protection area (RPA) is a layout design tool indicating the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree's viability, and where the protection of roots and soil structure is treated as a priority.

road frontage. These retained trees will screen the Site and new tree planting will also be added to reinforce this visual barrier. The overall result of these changes to the design is that the Proposed Development would have a greatly reduced impact on the character and appearance of the local area.

New trees will be planted to compensate for the loss of these trees, the locations for the new trees are shown on the Illustrative Masterplan that has been produced by Davies Landscape Architects (Drawing ref. DLA.1731.L003.05). The masterplan includes extensive proposals for new tree planting throughout the Site, especially on the eastern and western boundaries.

3.2 New Service Runs

Installation of underground services by typical 'open trench' methods near trees is likely to sever roots; this will harm the physiological condition of the trees, provide an opportunity for fungal infection, and could leave them prone to windthrow. Therefore, the locations for new underground services will be designed to avoid the root protection areas required by the retained trees.

If any additional underground services are required I recommend that suitable members of the project team, including an arboricultural consultant, should design their routes. An appropriate specification and method statement for their installation would need to be produced, and guidance provided in NJUG⁵ must be followed.

3.3 Level Changes and Retaining Walls

Any changes in levels or slopes need to comply with the constraints attached to the construction exclusion zones. This means that any soil grading must take place outside of the fenced areas identified on the tree protection plan.

3.4 Final Landscaping Works Near Retained Trees

Once the construction process has been completed it will be necessary to remove the tree protection measures and landscape the areas near the retained trees. Care must be taken at this point to ensure that root damage does not occur and so vehicles must stick to designated transit routes and any digging near trees should be carried out with the use of hand tools only. The ground may be levelled by adding topsoil rather than skimming the surface.

3.5 Tree Protection Fencing

Temporary fencing and/or barriers must be used during construction to protect retained trees situated near works areas. The location of necessary tree protection is indicated on the tree protection plan (TPP-1C). **For effective tree protection it is crucial that the protective fencing is installed before any heavy plant machinery is used on the Site.** The tree protection fencing must remain in place until the construction works have been completed (unless under arboricultural supervision). The fenced off areas will be construction exclusion zones.

A specification for suitable tree protection fencing is provided in Appendix 2.

⁵ NJUG (2007): Guidelines for the Planning, Installation, and Maintenance of Utility apparatus in the Proximity to Trees. National Joint Utilities Group Volume 4.

3.6 General Specification for Effective Tree Protection

Trees are vulnerable to root damage caused by ground disturbance, direct injury of the trunk or branches, environmental change, pests, and diseases. Construction work often exerts pressures on existing trees, and a tree that has taken many decades to reach maturity can be damaged irreparably in a few minutes by unwitting or negligent actions.

The Site manager must be made aware of the tree protection requirements at the Site and the guidance provided in this report. It is strongly recommended that there is a pre-start meeting to ensure the correct erection of barriers forming the construction exclusion zones.

For this project temporary fencing will be used during construction to protect the retained trees at the Site (see section 3.5 for further guidance). The fenced off areas will be construction exclusion zones.

Soil compaction quickly occurs if vehicles pass over an area of soil. Compaction may cause reduced infiltration rates of water, poor drainage, reduced availability of water, and reduced air and oxygen supply to roots. This leads to reduced root growth and as a result the health of the tree is impacted. Therefore, to ensure that soil compaction is avoided, it is very important that no vehicles enter the fenced-off areas during construction operations.

All construction staff should be made aware of the following restrictions that apply to the construction exclusion zones:

- 1) No excavation or raising of soil levels is permitted within the construction exclusion zones without written permission from the project arboriculturist;
- 2) Site offices and staff welfare facilities must be located outside of the construction exclusion zones unless agreed with the local authority's arboricultural officer;
- 3) No materials of any kind are to be stored dumped or discharged within the construction exclusion zone;
- 4) No utility trenches are to be routed through a construction exclusion zone without written permission from the local authority's arboricultural officer;
- 5) Care must 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. Branches may be tied back so that they are out of the way if necessary;
- 6) Potential contaminants such as diesel oil, cement and bitumen must be stored at least 10m from any trees, with provision made for any spillage or run off to be contained away from the protected area;
- 7) Cement and concrete mixing must take place at least 10m from any trees, over a suitable hard surface to prevent soil contamination from spillage or washing out;
- 8) Fires should be avoided, however if permitted by the site manager, they must not be lit in a position where heat could affect foliage or branches, (At least 15m from the base of a tree would normally be sufficient).

4 RECOMMENDATIONS

4.1 Tree Work

All of the tree works that would be necessary for the Proposed Development to proceed are listed in the schedule in Appendix 1.

All permitted and approved tree work must be undertaken in accordance with BS3998:2010 – Recommendations for tree work⁶. It would be easiest if these works are carried out at the beginning of the construction phase, before protective fencing is put up. Only qualified and insured tree surgeons should be employed.

4.2 Legal Restrictions to Tree Works

It has not been confirmed to Bosky Trees whether any trees on this Site are protected by a TPO or if they are located within a Conservation Area.

You should be aware that it is an offence to wilfully damage or destroy a tree the subject of a tree preservation order (TPO). The Town and Country Planning (Tree Preservation) (England) Regulations 2012 and its accompanying 'Guide to tree preservation procedures', makes clear that deliberate destruction of a protected tree or damage in a manner likely to destroy it, without the permission of the Local Planning Authority, would render you liable to an unlimited fine. Also, a replacement tree would normally have to be planted if the tree was cut down or destroyed. If the trees stand within a Conservation Area they have the same protection as trees protected by a TPO.

If this report is submitted to support a full planning application, and that application is subsequently approved, any tree works listed in the report may be carried out prior to the commencement of construction without the requirement for further permission from the planning authority. However, if trees are owned by a third party permission for their removal must be agreed with the owners of the trees.

If any arboricultural works are intended before planning permission has been approved then the local planning authority should be contacted to find out if any of the trees are protected. If the trees are in a Conservation Area then the local planning authority must be notified of the intended works and they have up to 6 weeks to respond. If the trees are protected by a TPO then an application for works must be made and the local authority will respond within 8 weeks. Please contact Bosky Trees if you would like these matters explained in more detail.

4.3 Works Supervision and Monitoring

Arboricultural supervision will be required if any unforeseen construction activity is to take place within the root protection area of any of the retained trees on or near the Site. This supervision must be carried out by a suitably qualified arboriculturist. It is advised that the project arboriculturist and the local authority's tree officer are informed of necessary works near trees as soon as they become apparent.

⁶ British Standards Institution (2010). BS3998 Recommendations for Tree Work. BSI, London.

Appendix 1 - Tree Schedule

Surveyor: Nick Baxter

Site: Land at Pagham South, Pagham

Date of Surveys: August 2016 and September 2017



Tree Number	Tree Species	Height (m)	Number of Stems	Stem Ø (cm)	N - Radius (m)	S - Radius (m)	E - Radius (m)	W - Radius (m)	1st Branch (m)	Age Class	Overall Health	ULE (Years)	Tree Structural Condition & Site Notes	Recommended Management	Category
T11	Elm	6	1	90	1	1	1	1	2	EM	G	<10	This tree will soon reach the age of getting Dutch elm disease.	No action required at present.	U
T12	Oak	8	1	480	5	2	5	5	3.5	M	F	20+	Minor crown dieback. The south side of the crown appears to have been trimmed back with a flail. Arboreal ivy. Ditch immediately to the north.	No action required at present.	C2
T13	Oak	8	1	180	2.5	1	1.5	1.5	3	EM	G	20+	Minor crown dieback. Ditch immediately to the south. Ploughed field to the north.	No action required at present.	C2
T14	Oak	11	1	375	4.5	4.5	4.5	4.5	3	M	G	40+	Slight trunk lean to the north. Arboreal ivy. No obvious significant defects. Ditch immediately to the east.	No action required at present.	B1
T15	Field maple	7	MS	637	3	4	4	3	2	M	G	40+	Multi stemmed from base. Crown flailed on the east side. Arboreal ivy. No obvious significant defects. Ditch immediately to the west. Ploughed field to the east.	No action required at present.	C2
T16	Field maple	7	MS	637	3	4	4	3	2	M	G	40+	Multi stemmed from base. Crown flailed on the east side. Arboreal ivy. No obvious significant defects. Ditch immediately to the west. Ploughed field to the east.	No action required at present.	C2
T17	Apple	5	MS	457	3	3	3	3	1.5	M	G	40+	Five stems from 1m. No obvious significant defects. Ploughed field to the west. Situated outside of the boundary in private garden.	No action required at present.	C2
T18	Goat willow	8	1	275	3	3	3	3	2	M	G	40+	Multi stemmed from 2m. No obvious significant defects. Ploughed field to the west. Situated outside of the boundary in private garden.	No action required at present.	C2
T401	Ash	10	1	532	5	3	5	5	3	M	F	40+	Minor crown dieback. Past crown lift over road. A ditch lies directly north of the tree.	Fell.	B2
T402	Ash	10	1	640	3	4	5	5	2.5	M	G	40+	Crown extends from 2m. Past crown lift over road.	Fell.	B2
T415	Sycamore	9	1	304	3.5	3.5	4	2.5	3.5	M	G	40+	Past crown lift. Upper crown leans to the east. No obvious significant defects. Ditch immediately to the west.	Fell.	C2

A key explaining each category is provided at the rear of the schedule

Tree Number	Tree Species	Height (m)	Number of Stems	Stem Ø (cm)	N - Radius (m)	S - Radius (m)	E - Radius (m)	W - Radius (m)	1st Branch (m)	Age Class	Overall Health	ULE (Years)	Tree Structural Condition & Site Notes	Recommended Management	Category
T416	Sycamore	12	1	445	6.5	7	6	5	4	M	G	40+	Past crown lift. Upper crown leans to the east. No obvious significant defects. Ditch immediately to the west.	Fell.	B2
T417	Sycamore	8	1	380	4	4	5	5	4	M	G	40+	Past crown lift over the field. A ploughed field lies 2m to the west and a ditch to the east.	Fell.	B2
T418	Oak	8	1	200	2	3	4	4	3	EM	F	40+	Suppressed crown. A ploughed field lies 2m to the west and a ditch to the east.	No action required at present.	C2
T419	Oak	7	2	233	3	2	3	3	3	EM	F	40+	Suppressed crown. A ploughed field lies 2m to the west and a ditch to the east.	No action required at present.	C2
T420	Oak	9	1	625	6	4	6	6	4	M	G	40+	Arboreal ivy. No obvious significant defects. A ploughed field lies 2m to the west and a ditch to the east.	No action required at present.	B2
T421	Sycamore	6	1	268	2.5	2	3	3	3	EM	F	40+	Dieback in lower crown from farm machinery damage. Arboreal ivy. A ploughed field lies 2m to the west and a ditch to the east.	No action required at present.	C2
T422	Sycamore	6	1	180	2	2	2	2	3	EM	G	40+	Dieback in lower crown from farm machinery damage. A ploughed field lies 2m to the west and a ditch to the east.	No action required at present.	C2
T423	Sycamore	5	1	200	2	2	2	2	3	EM	G	40+	Dieback in lower crown from farm machinery damage. A ploughed field lies 2m to the west and a ditch to the east.	Fell.	C2
T433	Field maple	5	3	195	3	2	2	2	4	EM	G	40+	Dieback in lower crown from farm machinery damage. A ploughed field lies 1m to the west and a ditch to the east.	No action required at present.	C2
T434	Oak	8	1	350	4.5	2	5	4	4	M	G	40+	Minor damage to lower branches on west side from farm machinery. A ploughed field lies 2m to the west and a ditch to the east.	No action required at present.	B2
T435	Sycamore	7	1	366	2	3	4	3	4	M	G	40+	Minor damage to lower branches on west side from farm machinery. A ploughed field lies 2m to the west and a ditch to the east.	No action required at present.	B2
T436	Oak	6	1	185	2	2	2	2	3	EM	G	40+	No obvious significant defects. A ploughed field lies 2m to the west and a ditch to the east.	No action required at present.	C1
T437	Goat willow	5	3	310	4	4	4	4	4	M	G	40+	Multi stemmed from base. Damage to lower crown on west side. A ploughed field lies 2m to the west and a ditch to the east.	No action required at present.	C2
T438	Oak	5	2	201	2	2	3	0.5	2	EM	G	40+	Suppressed crown. A ploughed field lies 2m to the west and a ditch to the east.	No action required at present.	C2

A key explaining each category is provided at the rear of the schedule

Tree Number	Tree Species	Height (m)	Number of Stems	Stem Ø (cm)	N - Radius (m)	S - Radius (m)	E - Radius (m)	W - Radius (m)	1st Branch (m)	Age Class	Overall Health	ULE (Years)	Tree Structural Condition & Site Notes	Recommended Management	Category
T439	Oak	9	1	450	5.5	3	6	5	4	M	G	40+	Crown extends from 2m. Minor damage to lower branches on west side from farm machinery. No obvious significant defects. A ploughed field lies 2m to the west and a ditch to the east.	No action required at present.	B2
T440	Oak	8	2	246	2	3	5	4	4	EM	F	40+	Minor crown dieback. A ploughed field lies 2m to the west and a ditch to the east.	No action required at present.	C2
T441	Oak	8	1	324	4	4	5	5	3	M	G	40+	Minor crown dieback. A ploughed field lies 2m to the west and a ditch to the east.	No action required at present.	B2
T442	Ash	8	2	266	4.5	4.5	4.5	4.5	3	M	G	40+	Minor damage to lower branches on west side from farm machinery. A ploughed field lies 2m to the west and a ditch to the east.	No action required at present.	B2
T443	Ash	7	1	438	4.5	4.5	4.5	4.5	3	M	G	40+	Recent branch failure at 3m. Past crown lift. A ploughed field lies 4m to the west and a ditch to the east.	No action required at present.	B2
T444	Field maple	5	1	250	4.5	1	4	1	2	M	G	40+	Three stems from 2m. Windswept crown leans to the north. No obvious significant defects. Ditch immediately to the east.	No action required at present.	C2
T445	Sycamore	8	3	260	3.5	3.5	3.5	3.5	3	M	G	40+	Crown lift on west side over field. No obvious significant defects. Ploughed field to the west. Large ditch immediately to the east.	No action required at present.	C2
T446	Sycamore	8	2	269	3.5	3.5	3.5	3.5	3	M	G	40+	Crown lift on west side over field. No obvious significant defects. Ploughed field to the west. Large ditch immediately to the east.	No action required at present.	C2
T447	Sycamore	10	1	480	5	5	5	4	3	M	G	40+	Roadside tree. Three stems from 2m. Past crown lift on east side over road. No obvious significant defects. Ditch immediately to the west.	No action required at present.	B2
T448	Sycamore	12	1	475	6.5	7	6	5	4	M	G	40+	Roadside tree. Three stems from 2m. Past crown lift on east side over road. No obvious significant defects. Ditch immediately to the west.	No action required at present.	B2
T449	Oak	9	1	450	4	4	5	2	4	M	G	40+	Arboreal ivy. No obvious significant defects. Ploughed field to the west. Large ditch immediately to the east. Tree not tagged.	No action required at present.	B2
T450	Oak	7	1	280	2	1	4	2	4	EM	P	20+	Crown dieback. Arboreal ivy. Ploughed field to the west. Large ditch immediately to the east.	No action required at present.	C2
T451	Ash	6	1	130	1	1	1	1	3	SM	F	40+	Small self sown tree. Ploughed field to the west. Large ditch immediately to the east.	No action required at present.	C1

A key explaining each category is provided at the rear of the schedule

Tree Number	Tree Species	Height (m)	Number of Stems	Stem Ø (cm)	N - Radius (m)	S - Radius (m)	E - Radius (m)	W - Radius (m)	1st Branch (m)	Age Class	Overall Health	ULE (Years)	Tree Structural Condition & Site Notes	Recommended Management	Category
T452	Oak	6	1	265	3	2	4	3	3	EM	G	40+	Crown extends east. Minor crown dieback. Ploughed field to the west. Large ditch immediately to the east.	No action required at present.	C2
T453	Ash	8	1	251	3	0.5	3	1	3	M	F	20+	Suppressed crown. Arboreal ivy. Ploughed field to the west. Large ditch immediately to the east.	No action required at present.	C2
T454	Oak	8	1	453	5	5	6	4	4	M	G	40+	Arboreal ivy. No obvious significant defects. Ploughed field to the west. Large ditch immediately to the east.	No action required at present.	B2
T455	Oak	5	1	245	3	3	5	4	3	EM	G	40+	Minor damage to lower branches on west side from farm machinery. Ploughed field to the west. Large ditch immediately to the east.	No action required at present.	C2
T456	Ash	5	1	320	4	2	4	2	3	M	G	40+	Low crown. Ploughed field to the west. Large ditch immediately to the east.	No action required at present.	C2
T457	Ash	9	1	280	4	2	4	2	4	EM	G	40+	Two stems extend from 2m. Crown extends north away from larger companion. Ploughed field to the west. Large ditch immediately to the east.	No action required at present.	B2
T458	Ash	11	1	450	4	2	5	4	4	M	G	40+	Arboreal ivy. No obvious significant defects. Ploughed field to the west. Large ditch immediately to the east.	No action required at present.	B2
T459	Oak	9	1	480	3	3	4	5	3	M	G	40+	Arboreal ivy. No obvious significant defects. Ploughed field to the west. Large ditch immediately to the east.	No action required at present.	B2
T460	Sycamore	8	1	550	3	5	5	5	3	M	G	40+	Arboreal ivy. No obvious significant defects. Ploughed field to the west. Large ditch immediately to the east.	No action required at present.	B2
T461	Sycamore	16	1	475	6.5	6.5	5	6	3.5	M	G	40+	Slight crown lean to the east. No obvious significant defects. Prolific arboreal ivy. Ploughed field to the west. Large ditch immediately to the east.	No action required at present.	B2
T462	Cherry	5	2	228	4.5	4.5	4.5	4.5	3	M	G	40+	Two stems from base. Ploughed field to the west. Large ditch immediately to the east.	No action required at present.	C1
T463	Goat willow	4	MS	294	4	2	3	2	1	EM	G	40+	Multi stemmed from base. Damage to lower crown on west side. Situated on the edge of the ditch.	No action required at present.	C1
T464	Oak	5	1	285	3	3	3	3	2	EM	G	40+	Arboreal ivy. No obvious significant defects. Ploughed field to the west. Large ditch immediately to the east.	No action required at present.	C2
T465	Goat willow	6	MS	294	4	1	3	3	2	M	G	40+	Multi stemmed from base. Ploughed field to the west. Large ditch immediately to the east.	No action required at present.	C2

A key explaining each category is provided at the rear of the schedule

Tree Number	Tree Species	Height (m)	Number of Stems	Stem Ø (cm)	N - Radius (m)	S - Radius (m)	E - Radius (m)	W - Radius (m)	1st Branch (m)	Age Class	Overall Health	ULE (Years)	Tree Structural Condition & Site Notes	Recommended Management	Category
T466	Goat willow	7	MS	294	4	1	3	3	2	M	G	40+	Multi stemmed from base. Ploughed field to the west. Large ditch immediately to the east.	No action required at present.	C2
T467	Sycamore	7	MS	397	4	4	4	4	3	M	G	40+	Multi stemmed from base. Arboreal ivy. Ploughed field to the west. Large ditch immediately to the east.	No action required at present.	B2
T468	Sycamore	8	1	350	5	5	5	5	3	M	F	20+	Minor crown dieback. Ploughed field to the west. Large ditch immediately to the east.	No action required at present.	C2
T469	Ash	7	1	280	4	4	4	4	3	M	G	40+	No obvious significant defects. Ploughed field to the west. Large ditch immediately to the east.	No action required at present.	B2
T470	Ash	7	2	247	3	3	3	3	3	EM	G	40+	Two stems from base. Arboreal ivy. Ploughed field to the west. Large ditch immediately to the east.	Fell.	C2
T471	Ash	7	1	257	3	3	3	3	3	EM	G	40+	Arboreal ivy. No obvious significant defects. Ploughed field to the west. Large ditch immediately to the east.	Fell.	C2
T472	Sycamore	5	2	325	2	3	3	2	2	M	P	<10	Severe crown dieback. Arboreal ivy. Ploughed field to the west. Large ditch immediately to the east.	No action required at present.	U
T473	Whitebeam	7	1	250	3	3	3	3	3	M	G	40+	Arboreal ivy. No obvious significant defects. Ploughed field to the west. Large ditch immediately to the east.	No action required at present.	B1
T474	Goat willow	4	MS	220	2.5	2.5	2.5	2.5	1	EM	G	20+	Multi stemmed from base. Ploughed field to the west. Large ditch immediately to the east.	No action required at present.	C2
T479	Oak	9	1	500	4.5	4.5	4.5	4.5	3	M	G	40+	Two stems extend from 3m. Arboreal ivy. Ploughed field to the west. Large ditch immediately to the east.	No action required at present.	B2
T480	Field maple	5	2	170	2	2	2	2	2	EM	G	40+	Suppressed crown. Arboreal ivy. No obvious significant defects. Ploughed field to the west. Large ditch immediately to the east.	No action required at present.	C2
T481	Goat willow	4	MS	450	3	3	3	3	2	M	G	40+	Multi stemmed from base. Ploughed field to the west. Large ditch immediately to the east.	Fell.	C2
T482	Ash	7	1	550	4	4	4	4	4	M	G	40+	Symmetrical crown. Arboreal ivy. Tree not tagged. Ploughed field to the west. Large ditch immediately to the east.	No action required at present.	B2
T483	Whitebeam	4	1	175	3	3	2	2	3	M	G	40+	Past machinery damage to lower crown. Ploughed field to the west. Large ditch immediately to the east.	No action required at present.	C1
T484	Oak	3	1	150	2	2	2	2	2	EM	G	40+	No obvious significant defects. Ploughed field 3m to the west. Large ditch immediately to the east.	No action required at present.	C2

A key explaining each category is provided at the rear of the schedule

Tree Number	Tree Species	Height (m)	Number of Stems	Stem Ø (cm)	N - Radius (m)	S - Radius (m)	E - Radius (m)	W - Radius (m)	1st Branch (m)	Age Class	Overall Health	ULE (Years)	Tree Structural Condition & Site Notes	Recommended Management	Category
T485	Hawthorn	4	MS	150	2	2	2	2	2	EM	G	40+	No obvious significant defects.	No action required at present.	C2
T486	Field maple	5	2	212	3	3	3	3	3	EM	G	40+	Two stems from base. Ploughed field to the west. Large ditch immediately to the east.	No action required at present.	C2
T487	Field maple	5	3	251	3	3	3	3	3	EM	G	40+	No obvious significant defects. Ploughed field to the west. Large ditch immediately to the east.	No action required at present.	C2
T488	Field maple	5	3	311	3.5	3.5	3.5	3.5	3	M	G	40+	Minor damage to lower branches on west side from farm machinery. Ploughed field to the west. Large ditch immediately to the east.	No action required at present.	B1
T489	Elm	5	1	90	1	1	1	1	2	EM	G	<10	This tree will soon reach the age of getting Dutch elm disease. Tree not tagged.	No action required at present.	U
T490	Elm	7	1	120	1	1	1	1	2	EM	G	<10	This tree will soon reach the age of getting Dutch elm disease. Tree not tagged.	No action required at present.	U
T491	Whitebeam	5	1	178	1	2	2	2	3	M	G	40+	Minor deadwood in lower crown. Ploughed field to the west. Large ditch immediately to the east.	No action required at present.	B2
T492	Ash	7	1	237	3	3	3	3	4	M	G	40+	No obvious significant defects. Ploughed field to the west. Large ditch immediately to the east.	No action required at present.	B2
T493	Whitebeam	5	1	210	1.5	1.5	1.5	1.5	3	M	G	40+	Suppressed crown. Recent branch torn in lower crown. Ploughed field to the west. Large ditch immediately to the east.	No action required at present.	C2
T494	Whitebeam	5	2	255	3	3	3	3	3	M	G	40+	Two stems from base. No obvious significant defects. Ploughed field to the west. Large ditch immediately to the east.	No action required at present.	B2
T495	Elm	6	1	100	1	1	1	1	2	EM	G	<10	This tree will soon reach the age of getting Dutch elm disease. Tree not tagged.	No action required at present.	U
T496	Elm	6	1	100	1	1	1	1	2	EM	G	<10	This tree will soon reach the age of getting Dutch elm disease. Tree not tagged.	No action required at present.	U
T497	Elm	6	1	100	1	1	1	1	2	EM	G	<10	This tree will soon reach the age of getting Dutch elm disease. Tree not tagged.	No action required at present.	U
T498	Elm	6	1	100	1	1	1	1	2	EM	G	<10	This tree will soon reach the age of getting Dutch elm disease. Tree not tagged.	No action required at present.	U
T499	Ash	8	1	380	5	5	5	5	3	M	G	40+	Arboreal ivy. No obvious significant defects. Ploughed field to the west. Large ditch immediately to the east.	No action required at present.	B2

A key explaining each category is provided at the rear of the schedule

Tree Number	Tree Species	Height (m)	Number of Stems	Stem Ø (cm)	N - Radius (m)	S - Radius (m)	E - Radius (m)	W - Radius (m)	1st Branch (m)	Age Class	Overall Health	ULE (Years)	Tree Structural Condition & Site Notes	Recommended Management	Category
T500	Field maple	8	1	480	5	5	5	5	3	M	G	40+	No obvious significant defects. Ploughed field to the west. Large ditch immediately to the east.	No action required at present.	B2

A key explaining each category is provided at the rear of the schedule

Appendix 1 - Group Schedule

Surveyor: Nick Baxter

Site: Land at Pagham South, Pagham

Date of Surveys: August 2016 and September 2017



Group Number	Tree Species	Number in Group	Height (m)	Number of stems	Stem Ø (cm)	N - Radius (m)	S - Radius (m)	E - Radius (m)	W - Radius (m)	1st Branch	Age Class	Overall Health	ULE (Years)	Tree Structural Condition & Site Notes	Recommended Management	Category
G1	Crack willow	5	14	1	250	4	4	4	4	3	M	G	40+	Previously crown lifted on the north side over children's play park. No obvious significant defects. Ditch to the south.	No action required at present.	C2
G2	Leyland cypress and field maple	3	11	1	250	4	4	5	4	2	M	G	40+	Arboreal ivy. Multi stemmed from 2m. No obvious significant defects. Large ditch immediately to the east.	No action required at present.	C2
G3	Field maple and ash	7	9	1	350	4	4	4	4	3	M	G	40+	These have all been crown lifted over both the road on the field. No obvious significant defects. Tag no. 403-410	Remove.	B2
G4	Sycamore	4	9	1	350	4	4	4	4	3	M	G	40+	These have all been crown lifted over the road. No obvious significant defects. A ditch lies to the west of these trees. Tag no. 412-414	Remove.	B2
G5	Oak and sycamore	8	10	1	300	2	2	4	4	3	M	G	40+	These have all been crown lifted over the field. No obvious significant defects. A ditch lies to the west of these trees and a ploughed field 1-2m to the east. Tag no. 424-432	Remove.	B2
G6	Oak	4	8	1	300	4	4	4	4	3	M	G	40+	Arboreal ivy. No obvious significant defects. A ditch lies to the west of these trees and a ploughed field 1-2m to the east. Tag no. 475-478	Remove.	B2
G11	Elm	5	9	1	120	1.5	1.5	1.5	1.5	2	EM	G	<10	This group will soon reach the age of getting Dutch elms disease. Ditch immediately to the north.	No action required at present.	U
G12	Ash and oak	5	14	1	250	4	4	4	4	5	M	G	40+	Arboreal ivy. No obvious significant defects. Ditch immediately to the north.	Remove three trees from this group as indicated on the tree removal plan (TR-1B).	B2
G13	Elm	5	3	1	90	1	1	1	1	1	SM	F	<10	This group will soon reach the age of getting Dutch elms disease. Ditch immediately to the east.	No action required at present.	U
G14	Goat willow	4	6	MS	300	5	7	7	2.5	2	M	G	20+	Multi stemmed from base. Recent pruning work on the west side for clearance of farm track. Growing on the south side of a ditch.	Remove.	C2

A key explaining each category is provided at the rear of the schedule

Group Number	Tree Species	Number in Group	Height (m)	Number of stems	Stem Ø (cm)	N - Radius (m)	S - Radius (m)	E - Radius (m)	W - Radius (m)	1st Branch	Age Class	Overall Health	ULE (Years)	Tree Structural Condition & Site Notes	Recommended Management	Category
G15	Blackthorn	20	4	1	90	2	2	2	2	2	M	G	20+	Blackthorn scrub. Brambles growing within group.	No action required at present.	C2
G16	Hybrid black poplar	40	22	1	450	4	4	8.5	8.5	4	M	G	40+	A linear planting of trees acting as a screen and shelterbelt for the buildings behind. Prominent trees in the landscape. Arboreal ivy. Ploughed field to the east of this group.	No action required at present.	B2
G17	Willow	7	5	1	150	3	3	3	3	1	M	G	40+	Dense area of willow scrub.	No action required at present.	C2
G18	Field maple and crack willow	3	7	1	250	4	4	4	4	3	M	F	20+	No obvious significant defects. Growing to the west side of a farm track and ditch.	No action required at present.	C2
G19	Leyland cypress	3	15	1	550	4	4	4	4	4	M	F	40+	Previously reduced in height. Hanging branch in crown.	No action required at present.	C2

A key explaining each category is provided at the rear of the schedule

Appendix 1 - Hedge Schedule

Surveyor: Nick Baxter



Site: Land at Pagham South, Pagham

Date of Surveys: August 2016 and September 2017

Hedge Number	Tree Species	Height (m)	No. of Stems	Stem Ø (cm)	Width (m)	Length (m)	Age Class	Overall Health	ULE (Years)	Condition & Notes	Management Recommendations	Category
H1	Sycamore and blackthorn	6	MS	10	2	20	EM	G	20+	These appear to be self sown trees that now act as a field boundary hedgerow.	Remove a 4m section of this hedgerow as indicated in the	C2
H2	Hawthorn, blackthorn and willow	6	MS	9	2	30	EM	G	20+	This is a field boundary hedgerow. It seems that it has never been managed. Ploughed field to the west of this hedge. Large ditch immediately to the east.	No action required at present.	C2
H3	Hawthorn, blackthorn and willow	4	MS	9	3	135	EM	F	20+	This is a field boundary hedgerow. It seems to be flailed on the west side. Ploughed field to the west of this hedge. Large ditch immediately to the east.	Remove a 52m section of this hedgerow as indicated in the tree removal plan (TR-1B).	C2
H4	Blackthorn and elm	5	MS	10	1.5	15	EM	G	20+	This is a field boundary hedgerow. It seems to be flailed on the west side. Ploughed field to the west of this hedge. Large ditch immediately to the east.	No action required at present.	C2
H5	Blackthorn	2	MS	9	2	5	EM	G	20+	This is a field boundary hedgerow. It seems to be flailed. Ditch immediately to the north.	No action required at present.	C2
H6	Blackthorn and hawthorn	3	MS	10	2	75	M	G	20+	Few gaps. This is a field boundary hedgerow. It seems to be flailed. Ditch immediately to the north.	No action required at present.	C2
H7	Blackthorn	3	MS	10	2	25	M	G	20+	Few gaps. This is a field boundary hedgerow. It seems to be flailed. Ditch immediately to the south.	No action required at present.	C2
H8	Blackthorn and willow	4	MS	10	3	30	M	G	20+	This is a field boundary hedgerow. It seems to be partly flailed. Ditch immediately to the east.	No action required at present.	C2
H9	Blackthorn and hawthorn	2	MS	10	1.5	75	EM	G	20+	This is a field boundary hedgerow. It doesn't seem to have been managed in several years. This hedge seems to have been planted outside of the boundary fence.	No action required at present.	C2
H10	Hawthorn, rowan and alder	3	MS	10	2	50	EM	G	20+	This is a field boundary hedgerow. It doesn't seem to have been managed in several years. Few small trees grow throughout the sparse hedge.	No action required at present.	C2

A key explaining each category can be found at the rear of the schedule.

Tree Schedule - KEY

Tree/Group/Hedge Number

Tree, tree-groups or hedges have been allocated a number for the purpose of this survey. Numbers within the Tree Schedule relate to those marked on the Tree Constraints Plan and Tree Protection Plan drawings.

Species

Common names are listed.

Number in Group

Number of trees within a group. A group of trees may comprise of more than one species.

Height (m)

All heights are estimated in metres.

Number of Stems

The number of stems is either 1, 2, 3, 4, 5 or MS (multi-stemmed). This feature influences how the area of the recommended root protection area is calculated.

Stem or Combined Diameter (cm)

Single stem diameters are measured at 1.5m with a diameter tape. The combined stem diameters for trees with up to five stems and trees with more than five stems (MS) trees are calculated in accordance with the guidance. The stem diameters are measured in accordance with Figure C.1 of BS5837:2012. All measurements in bold are estimates due to restricted access to the tree trunk.

Crown Spread Radius (m)

The crown radius from tree trunk to crown limit identified at the four cardinal points (N, S, E and W) in order to allow presentation of the above ground constraints on the Tree Constraints Plan and Tree Protection Plan. Measurements are approximate and recorded to the nearest half metre.

All measurements depend on clear access about the crown.

1st Branch (m)

This is a record of the height of the lowest branch. This is useful when planning access routes or considering if pruning will be required to site new features under a tree crown.

Age Class

(Y) Young, (SM) Semi-Mature, (EM) Early-Mature, (M) Mature, (FM) Fully-Mature or (V) Veteran.

Overall Health

An overall assessment of the physiological condition of the tree recorded as (G) Good, (F) Fair, (P) Poor, (D) Dead.

ULE (Years)

Useful Life Expectancy. Anticipated future contribution to amenity, in years.

Tree Structural Condition & Site Notes

Observations on the form of the tree, condition and structural integrity.

Site notes are detailed when relevant to the growth conditions or rooting constraints.

Management Recommendations

Recommended tree surgery works to be carried out prior to construction. Terminology used is based on guidance detailed in BS3998:2010 – Recommendations for tree work¹.

Category

Tree category as defined within BS5837:2012. Categories A (high quality), B (moderate quality) and C (low quality) are trees that should be considered for retention. Category U trees are unsuitable for retention.

¹ British Standards Institution (2010). BS3998 - Recommendations for Tree Work. BSI, London.

APPENDIX 2

SPECIFICATION FOR TREE PROTECTION FENCING

The location of the tree protection fencing that will be required is shown on the tree protection plan, TPP-1C (this is provided as a separate A0 sheet). **For effective tree protection it is crucial that the protective fencing is installed before any heavy plant machinery is used on the site.** The tree protection fencing must remain in place until the construction works have been completed (unless under arboricultural supervision). The fenced off areas will be construction exclusion zones.

Most planning permission notices include a condition for tree protection that requires proof to be provided to demonstrate that the tree protection fencing has been put up properly and in accordance with the tree protection plan. This can be done by installing the fencing and informing the council two weeks in advance of starting construction, or by employing an arboricultural consultant to check the fencing and produce a record of the inspection. Alternatively photos could be taken as evidence that the fencing has been put up before any other works have started.

Fencing (or other forms of barrier) 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. In most cases fencing should consist of a scaffold framework comprising a vertical and horizontal framework, well braced to resist impacts, with vertical tubes spaced at a maximum interval of 3m. A specification for fencing suitable for most construction sites is provided in Figure 2 of BS5837 but in some situations more light-weight stabilising systems for fencing may be sufficient, this is detailed in Figure 3a and 3b in BS5837 (both of these diagrams are reproduced on the next page). Alternative methods of barrier could be appropriate for tree protection provided that they are sufficient to exclude construction activity; but any such methods must first be agreed by the Local Authority's arboricultural officer.

Once the barriers have been erected the areas of land within the construction exclusion zone should be regarded as sacrosanct, and should not be removed or altered without prior consultation with the project arboriculturist and, where necessary, approval from the local planning authority. All-weather notices should be attached to the fencing with words such as: 'Construction Exclusion Zone - No Access'. Throughout the construction period attention should be paid to ensure that barriers remain rigid and complete.

Arboricultural supervision will be required whenever construction and development activity is to take place within a construction exclusion zone. This supervision must be carried out by a suitably qualified arboriculturist.

Figure 2 Default specification for protective barrier

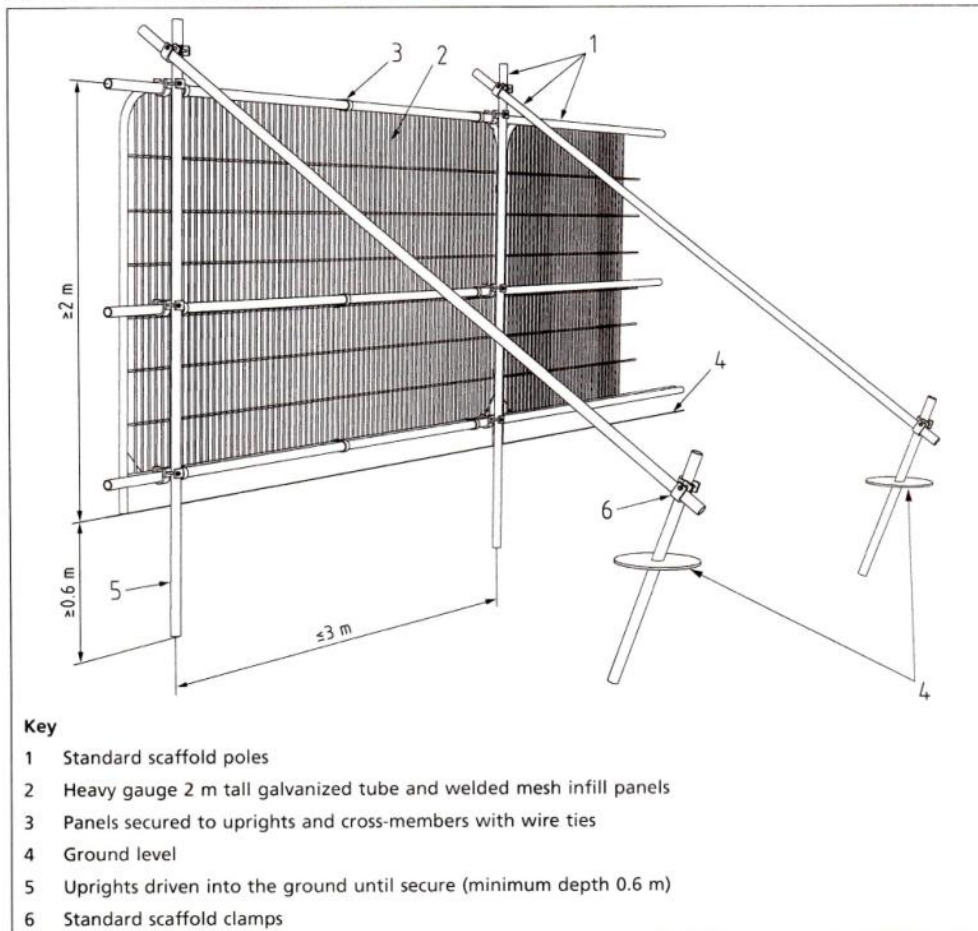


Figure 3 Examples of above-ground stabilizing systems

