

Arboricultural Implications Assessment

8th April 2021

Land East of Holbeach Manor

The erection of five bungalows

Client: Seagate Homes

DOCUMENT HISTORY

Revision	Layout Assessed	Author	Reviewer	Date
O	"Site Layout"	AMB	TC	08/04/2021

FILE REFERENCES:

This Report File Ref: 4119.Holbeach.APX.AIA

Arbicultural Implications Plan: 4119.Holbeach.APX.AIP

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SUMMARY

This report, read in conjunction with drawing 4119.Holbeach.APX.AIP, describes the arboricultural implications of the proposed development.

It is my opinion that although the proposed development requires some tree loss to provide dwellings in the approximate locations shown, none of the trees offer a significant visual amenity to the public at large. The only trees shown for removal and included in the TPO are four low-quality conifers and a Silver Birch with a very asymmetric crown. All other trees are more recent ornamental planting or were never included in the TPO.

The effects of the retained trees on the liveability in the indicative dwellings is acceptable.

Protection of the retained trees can be detailed in an Arboricultural Method Statement, secured through an appropriately-worded Condition attached to any Consent.

In the process of redevelopment, I also consider that there is an opportunity to replace trees and provide additional planting that would provide a net gain in tree cover, providing a positive overall benefit to the locality in terms of landscape quality and value.

Signed:



A M Belson

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1 INTRODUCTION

1.1 Instructions

- 1.1.1 This assessment was commissioned by the Client because trees are a material consideration and this report is required to support the Client's outline planning application.
- 1.1.2 The first instruction was to survey the trees on or adjoining the site in line with the recommendations of BS5837: 2012 and to provide a plan of arboricultural constraints in the first instance to inform design. This survey took place on 3rd September 2020 and this data has been used to inform the layout of the site.
- 1.1.3 The results of that survey are found at Appendix B.
- 1.1.4 The second instruction was to draw a plan showing the tree constraints overlaid to the planning drawing so that the implications could be assessed, and to write an Arboricultural Implications Assessment report for the indicative proposed development.

1.2 Source documents

- 1.2.1 The drawings that have been used to inform this assessment are:

- Topographical survey
- Indicative proposed site plan: "Site Layout"

Note: This assessment is specific to the drawings listed above and cannot be generalised.

1.3 Assessment elements

1.3.1 This assessment provides the elements recommended by BS5837: 2012 'Trees in relation to design, demolition and construction':

- Consideration of any statutory protection affecting the site. (BS5837 section 5.2.3) (this document, section 2.4)
- Evidence of a tree survey conducted to BS5837:2012, including tree categorization (BS5837 section 4.4 and 4.5) (see Appendix A for explanatory notes on method, and Appendix B for the Survey Data Table)
- An impact assessment of the relationship between the trees and the proposed layout (see section 4; see also Appendix C for explanatory notes). Including:
 - A discussion of proposed tree losses (BS5837 section 5.2.3 and 5.4.3)
 - The potential impact of RPA incursions (BS5837 section 5.3.1 and 5.3.2)
 - Factors which may affect the reasonable enjoyment of the proposed structures such as shading, screening and privacy (BS5837 section 5.3.4)
 - Future growth and/or pressures for removal or pruning (BS5837 section 5.3.4)
 - Factors that may affect foundation design (BS5837 Annex A)
 - Foreseeable issues with the planned demolition/construction of the proposed layout such as working space and access. (BS5837 section 5.4.2)
- An Arboricultural Implications Plan showing the trees and their RPAs overlaid to the proposed layout, indicating trees for retention and removal. (BS5837 section 4.5 and 4.6) (provided with this report, see also Appendix D)

2 THE SITE

2.1 Setting

- 2.1.1 All of the trees inspected are growing within the site boundary.
- 2.1.2 The site is part of the grounds of Holbeach Manor.
- 2.1.3 The land falls from north to south.

2.2 Soil and Geology

- 2.2.1 With reference to Figure 4.3, Volume 1 'Tree Root Damage to Buildings' (P G Biddle), some soils can have shrinkable characteristics and this can affect the depth or type of foundations needed for both current and future planting.
- 2.2.2 The British Geological Survey of England and Wales identifies the bedrock geology at this location as Amphill Clay Formation – Mudstone with superficial deposits of Tidal Flat Deposits - Clay and silt.
- 2.2.3 Clay soils are easily damaged through compaction. This information can be used to inform an Arboricultural Method Statement.

2.3 Statutory protection

- 2.3.1 This site does not lie within a Conservation Area.
- 2.3.2 Several of the trees surveyed are included in South Holland District Council (Fleet and Holbeach) Tree Preservation Order No 1 1987 (see Fig. 1) and South Holland District Council (Fleet and Holbeach) Tree Preservation Order No 2 1987 (see Fig 2.) although these trees are on land adjacent to the application site.
- 2.3.3 Full Planning Consent would allow those works described in the supporting documentation or necessary to implement the consented development to go ahead without the need for any further notice or application to the Local Planning Authority.
- 2.3.4 Appropriate advice regarding the protection of wildlife and other ecological matters must be sought before any tree work proceeds on site.

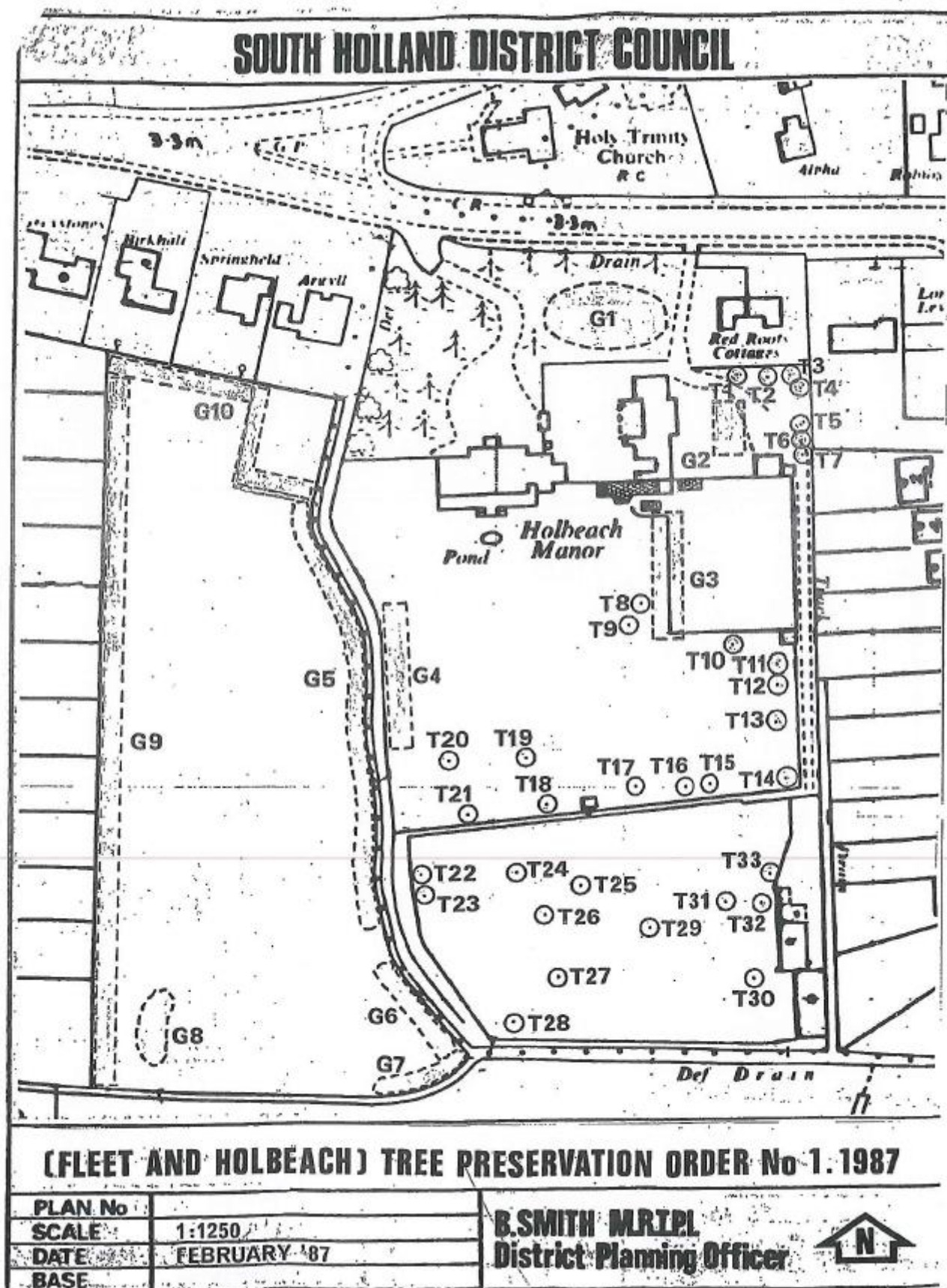


Fig. 1: Plan taken from South Holland District Council (Fleet and Holbeach) Tree Preservation Order No 1 1987

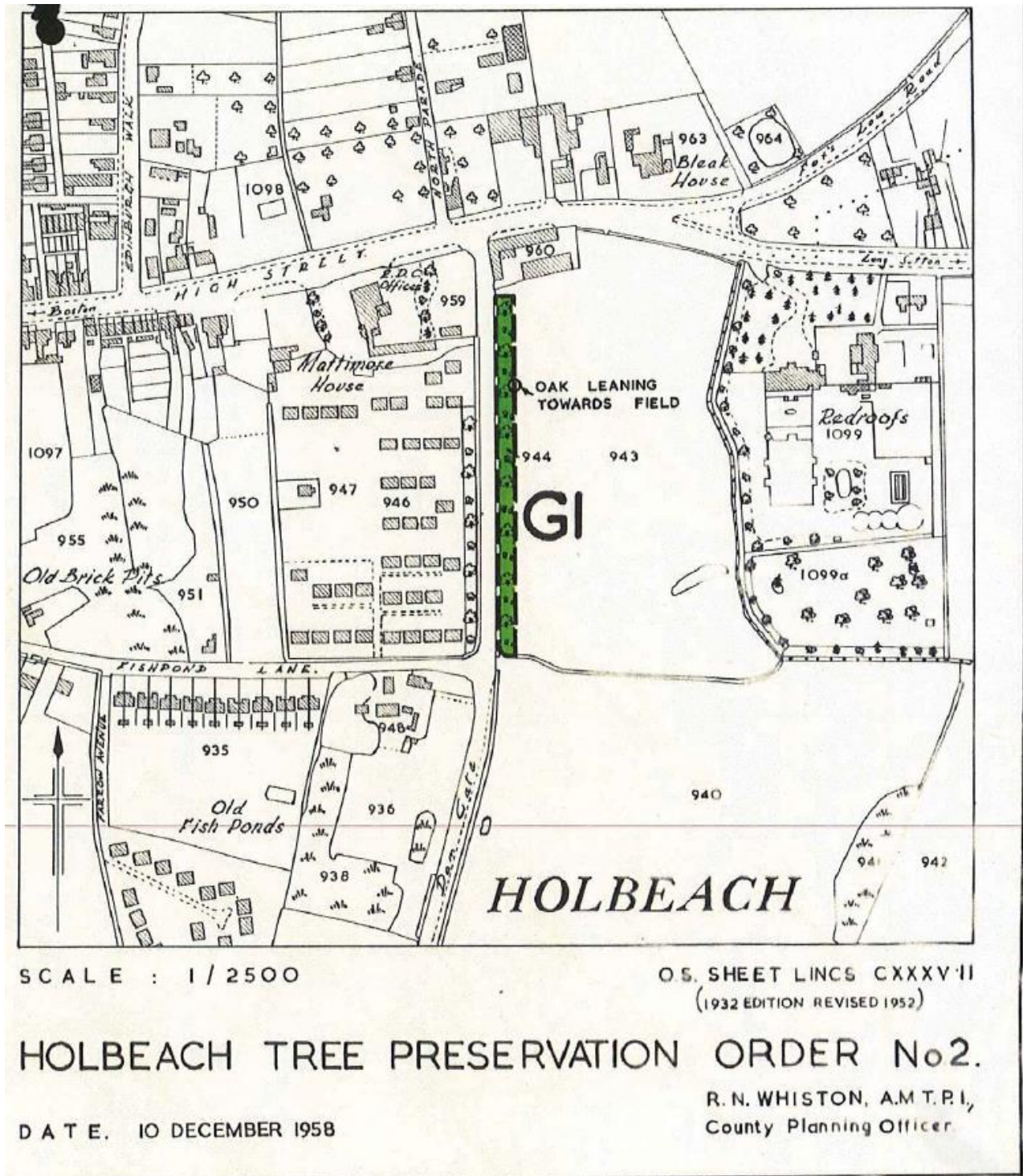


Fig. 2: Plan taken from South Holland District Council (Fleet and Holbeach) Tree Preservation Order No 2
1987

3 SURVEY FINDINGS

3.1 Overview

- 3.1.1 The trees were inspected in line with the recommendations of BS5837: 2012 on 3rd September 2020.
- 3.1.2 The best tree on the site is Oak tag 7035. This appears to be T17 of TPO 1.1987.
- 3.1.3 Note that several of the trees included in the 1987 TPO are not present and several trees are not old enough to be the trees listed.

3.2 Specific notes

- 3.2.1 The full table of survey data can be found in Appendix B.
- 3.2.2 Silver Maple 7012 is in poor condition with fewer than ten years remaining lifespan. It has a co-dominant main stems with included bark in the main stem union which presents a possible risk of partial stem failure. I recommend that it is felled and replaced.
- 3.2.3 Although off site, it was noted that 7023 Maidenhair tree is infected with *Kretschmaria deusta*. This is a fungal pathogen that causes the wood to become brittle; trees can fail at the base with a 'ceramic' type fracture. This tree is not suitable for retention and it has been graded 'U' as appropriate.
- 3.2.4 Silver Birch 7036 is in decline and in poor condition. It has bleeds on the main stem indicating an infection with *Phytophthora*, which is a fungal infection that generally shortens the life of a tree by causing low vigour, de-foliation and crown dieback. There is no cure or control and the tree should be felled and replaced.
- 3.2.5 Norway Maple 7046 is in poor condition with low vigour and has been graded 'U' as appropriate. It should be felled and replaced.
- 3.2.6 Leyland Cypress 7057 is in poor condition with signs of advanced crown dieback. It should be felled and replaced.
- 3.2.7 7028 Lombardy Poplar is in the last third of its safe useful life expectancy and in the context of development, it would be appropriate to fell and replace.
- 3.2.8 Group R Leyland Cypress, Lawson's Cypress is unlikely to be a suitable feature on this site and its landscape role is now redundant. I believe it would be appropriate to fell and replace this group.

4 ANALYSIS OF THE INDICATIVE PROPOSAL

4.1 Vehicular Access

4.1.1 Highway access is to be gained via the extant access off Fleet Road. This has no new arboricultural implications.

4.2 Layout

4.2.1 The implications of the proposed development are as-per the following table:

Tree reference	Species	Grade	Implications
7025	Silver Birch	B1	Must be removed for road layout
7029	Silver Birch	B1/B2	Must be removed for Plot 4 dwelling
7030	Silver Birch	B1/B2	Must be removed for Plot 4 dwelling
Group M	Cherry Laurel	C2	Must be removed for Plot 4 dwelling
7032	Silver Birch	B1/B2	Must be removed for Plot 5 dwelling
7058	Lawson's Cypress	C1	Must be removed for Plot 1 driveway
7059	Crab Apple	C1	Must be removed for Plot 1 driveway
7060	Deodar Cedar	B1	Must be removed for Plot 1 driveway
7061	Cedar	C1	Must be removed for Plot 1 driveway
7062	Sycamore	B1	Must be removed for driveway
7063	Japanese Cherry	C1	Not worthy of retention due to life stage. Partially within driveway
Group R	Leyland Cypress and Lawson's Cypress	C2	Must be removed for Plot 1 dwelling
7064	Western Red Cedar	B1	Must be removed for driveway

4.3 Engineering and Design

- 4.3.1 Subject to the soil type found on site and an engineer's appraisal, the trees (whether retained or removed) may influence foundation and retaining wall design.

4.4 Services

- 4.4.1 Services are not shown on the drawing but within the site, there appears to be room to accommodate all services and soakaways without affecting any trees.
- 4.4.2 Any trenching for new services within the access can be installed without any significant harm to Groups C, D and S.
- 4.4.3 Techniques are available for the installation of pipes and cables that can minimise soil disturbance and root damage. This element could safely be left to a Condition of any Consent.

4.5 Shading, screening and privacy

- 4.5.1 All the Plots will be partially shaded by the retained trees at specific parts of the day but all the gardens will receive direct sunlight for part of the day.
- 4.5.2 The Tree Preservation Order provides a robust framework for protecting trees from calls to carry out unjustified pruning or removal. Given the uniqueness of the site and the screening provided by the retained trees, I consider that new residents will accept some light loss for the privilege of living at this location.

4.6 Future growth and pressure to prune

- 4.6.1 Future growth has been shown by way of a light green dashed line around retained trees with the potential to grow larger radially. There is room for all the trees to grow to maturity without the need for any significant arboricultural intervention.

5 ASSESSMENT CONCLUSIONS

5.1 Tree work

5.1.1 The proposed development will result in the loss of several trees; however, the condition of some of the trees means their value is restricted to site and several are recommended for removal as a result of their health or condition. These trees are indicated on the Arboricultural Implications Plan (see Appendix D) by way of a red dashed line.

5.1.2 The following trees are recommended for removal as a result of their health or condition, regardless of any layout:

REF.	SPECIES
7012	Silver Maple
7023	Maidenhair Tree
7036	Silver Birch
7046	Norway Maple
7057	Leyland Cypress

5.1.3 In addition, the following trees are implicated for removal as a result of the proposed development:

REF.	SPECIES
7025	Silver Birch
7029	Silver Birch
7030	Silver Birch
Group M	Cherry Laurel
7032	Silver Birch
7058	Lawson's Cypress
7059	Crab Apple
7060	Deodar Cedar
7061	Cedar
7062	Sycamore
7063	Japanese Cherry
Group R	Leyland Cypress and Lawson's Cypress
7064	Western Red Cedar

5.1.4 Red Horse Chestnut 7026 will need to be pruned to clear the water tower building.

5.2 Tree Preservation Order

5.2.1 Two Tree Preservation Orders include trees on and adjacent to the site. Most of the trees in TPO 1.1987 are 'Individuals' or 'Groups'. The trees on adjoining land in TPO 2.1987 are included in an 'Area'. This only includes trees present at the time the TPO was made.

5.2.2 Trees included in either TPO have been marked on the Arboricultural Implications Plan with a green 'hound' hatch.

5.3 Design

- 5.3.1 The current indicative layout has been achieved through an informed design process. It appears possible to provide dwellings in the approximate locations without any significant conflict.
- 5.3.2 The layout indicated respects the best trees on the site which can be retained to maturity without the need for any arboricultural intervention

5.4 Construction

- 5.4.1 Space will be at a premium for the receipt, storage and handling of materials and for the movement of plant and machinery. Therefore, in order to avoid accidental damage, a suitable tree protection scheme must be implemented before development begins.
- 5.4.2 Full details of a tree protection methodology can be secured through an appropriately worded Condition attached to any Consent.

5.5 Protection

- 5.5.1 Barriers and ground protection will be required before any work commences on site.
- 5.5.2 The order in which the works are implemented will need to be carefully considered in order to provide the most successful tree protection scheme.
- 5.5.3 A high standard of site management will be essential to avoid damage to retained trees.
- 5.5.4 The retention of an Arboricultural Clerk of Works is recommended to enable works near trees to progress without damaging retained trees.

5.6 Replacement

- 5.6.1 The detail of the landscape scheme and how it will be maintained can be secured by Condition of any Consent.

Appendices

Appendix A – Tree Survey Explanatory Notes

Identification

All significant trees within and adjoining the site were surveyed. Most of the significant individual trees within the site were tagged with numbered aluminium tags, attached to the tree with two nails at around head height. Inaccessible or neighbouring trees have been designated the prefix 'NT' and numbered. Groups of trees were identified and designated a letter. Reference to the trees' locations can be made using the plans appended to this report.

Limitations

The tree survey was carried out for the purpose of informing the planning process. Relevant structural defects and aspects of tree condition are noted in the tree survey table in Appendix B; however, a full hazard assessment has not been carried out.

As trees and shrubs are living organisms whose health and condition can change rapidly, conclusions and recommendations are only valid for one year. The health, condition and safety of trees should be checked regularly, preferably annually.

It may have been necessary to estimate some measurements when assessing trees on neighbouring land. This will not generally affect the conclusions of this report.

No invasive investigations were carried out to assess the internal condition of the trees. Should this be required, it will be highlighted in the report.

The soil was not examined and no soil samples were taken. Should soil analysis be indicated, this will be recommended in the report.

Assessment

The trees were assessed in accordance with British Standard 5837.

Appendix B – Tree Survey Data

Key to Survey

Height	Measured with a clinometer or estimated where not considered critical (m)
Crown spread	At cardinal points (m)
Remaining Contribution	Estimated number of years the tree may make a safe useful contribution
Main Stem Diameter	Measured at 1.5 metres above ground or in accordance BS5837 Annex C and D
Condition	<p>Good: No visible defects seen</p> <p>Reasonable: Some defects seen but none that contribute significantly to the overall health and safety of the tree</p> <p>Poor: Defects or health issues that contribute significantly to the overall health and safety of the tree</p>
Age Class	<p>Y = Young (Less than 1/3 of normal expected life)</p> <p>SM = Semi-mature (1/3 – 2/3 of normal expected life)</p> <p>M = Mature</p> <p>OM = Over-mature or in decline</p> <p>V = Veteran</p>
Root Protection Area (Radius)	Distance in metres from centre of tree to achieve a circular Root Protection Area
Root Protection Area (Area)	Root Protection Area in square metres.
Recommendations	Recommendations based on the findings of the survey. These are intended to help guide the site layout; appropriate tree retention; tree management and generally inform site design. These are irrespective of proposed site layout and DO NOT form part of the Arboricultural Implications Assessment.

Condensed Notes from Table 1 BS5837

U	Trees in poor condition offering less than 10 years safe useful life due to irreversible decline; containing serious defects; infected with pathogens significant to health of other trees nearby; or dead.
A1	Trees of high quality and value offering at least 40 years' contribution; particularly good example of species
A2	Trees of high quality and value; offering at least 40 years' contribution; a group or woodland or particular visual importance
A3	Trees of high quality and value; offering at least 40 years' contribution with conservation, historical or other value
B1	Trees of moderate value; offering at least 20 years' contribution; slightly impaired condition but remediable
B2	Trees of moderate value; offering at least 20 years' contribution; distinct landscape feature as a group or woodland.
B3	Trees of moderate value; offering at least 20 years' contribution; trees with clearly identifiable conservation or other cultural benefits.
C1	Trees of low quality and value; at least 10 years' contribution; unremarkable trees of very limited merit
C2	Trees of low quality and value; at least 10 years' contribution; groups or woodlands without significant landscape value, trees of low or temporary landscape value
C3	Trees of low quality and value; at least 10 years' contribution; trees with limited conservation or other value

ref.	Species	Age Class	Ø m/s (mm)	Height (m)	Lower crown height (m)	Ultimate height (m)	Grade	Crown Spread N (m)	Crown Spread S (m)	Crown Spread E (m)	Crown Spread W (m)	RPA radius (m)	RPA (m ²)	Remaining Contribution (yrs)	Condition	Comments	Recommendations made at time of survey, irrespective of any layout
Group B	Hawthorn	M	150	1.2	0	1.2	C2	0.3	0.3	0.3	0.3	1.8	10.18	40+	Good	Regularly maintained at present dimensions.	Could be retained. Cut as a hedge.
Group C	Western Red Cedar	M	1000	18	2	18	C2	7.5	7.5	7.5	7.5	12	452.45	40+	Reasonable	Multi-stemmed form. Low vigour. Linear group offering reasonable high-level screening. Characteristic multi-stemmed form with arching stems at ground level, which is typical for the species. High public visual amenity.	No work required.
Group D	Cherry Laurel	SM	150	1.5	0	1.5	C2	0.4	0.4	0.4	0.4	1.8	10.18	20+	Reasonable	Regularly maintained at present dimensions.	Could be retained. Cut as a hedge.
7005	Norway Maple (Variegated)	Y	150	6	3	15	C1/C2	2.5	1	2.5	2.5	1.8	10.18	40+	Reasonable	No visible defects seen. Suppressed. Ivy on tree.	Could be retained. Remove Ivy.
7006	Oak	Y	340	10	1.5	18	C1/C2	3.5	3.5	4.5	2.5	4.08	52.3	40+	Reasonable	Poor form. Suppressed.	Could be retained.
7010	Silver Birch	M	631	16	1	16	B1	8	8	8	8	7.57	180.05	40+	Good	Multi-stemmed form. No visible defects seen.	No work required.

ref.	Species	Age Class	Ø m/s (mm)	Height (m)	Lower crown height (m)	Ultimate height (m)	Grade	Crown Spread N (m)	Crown Spread S (m)	Crown Spread E (m)	Crown Spread W (m)	RPA radius (m)	RPA (m ²)	Remaining Contribution (yrs)	Condition	Comments	Recommendations made at time of survey, irrespective of any layout
7011	Bay	M	400	8	1.5	8	C1	3	3	3	3	4.8	72.39	40+	Good	Multi-stemmed form. No visible defects seen.	No work required.
7012	Silver Maple	SM	350	8	1.5	8	C1/C2	6	5	6	1	4.2	55.42	<10	Poor	Multi-stemmed form. Not worthy of retention. Stem divides above 1.5m. Included bark present in fork.	Fell and replace.
7013	Bay	M	180	10	2	16	B1/B2	3	3	3	3	2.16	14.66	40+	Good	Multi-stemmed form. No visible defects seen.	No work required.
7014	Silver Maple	SM	400	16	1.5	18	B1/B2	5	5	5	5	4.8	72.39	40+	Reasonable	No visible defects seen.	Could be retained with space.
7015	Norway Maple (Purple)	SM	400	12	2	18	C1/C2	1.5	1.5	2	2	4.8	72.39	40+	Reasonable	No visible defects seen. Suppressed.	Could be retained with space.
7016	Norway Maple (Purple)	Y	120	5	1.5	18	C1	1.5	1.5	2	2	1.44	6.52	40+	Reasonable	No visible defects seen.	Could be retained with space.
7017	Silver Maple	SM	320	16	0.5	18	C1/C2	2	3	5	5	3.84	46.33	40+	Reasonable	No visible defects seen. Suppressed.	Could be retained with space.

ref.	Species	Age Class	Ø m/s (mm)	Height (m)	Lower crown height (m)	Ultimate height (m)	Grade	Crown Spread N (m)	Crown Spread S (m)	Crown Spread E (m)	Crown Spread W (m)	RPA radius (m)	RPA (m ²)	Remaining Contribution (yrs)	Condition	Comments	Recommendations made at time of survey, irrespective of any layout
7018	Norway Maple (Purple)	Y	120	10	1.5	18	C1	1.5	1.5	1.5	1.5	1.44	6.52	40+	Reasonable	No visible defects seen.	Could be retained with space.
7019	Box Elder	Y	270	10	2	14	B1/B2	2.5	3	5	5	3.24	32.98	40+	Reasonable	No visible defects seen.	Could be retained with space.
7020	Norway Maple (Purple)	Y	140	10	1.5	18	C1	2	1.5	2	2	1.68	8.87	40+	Reasonable	No visible defects seen.	Could be retained with space.
7021	Silver Maple	SM	500	16	2	18	C1/C2	6	6	5	5	6	113.11	10+	Reasonable	Stem divides above 1.5m. Included bark present in fork.	Could be retained in the short-term.
7022	Purple Leaf Plum	M	160	5	0	5	C1	1	3	2	2	1.92	11.58	10+	Reasonable	Multi-stemmed form. Now in last third of safe useful life expectancy.	Could be retained in the short-term.
7023	Maidenhair Tree	OM	500	14	1	14	U	4	4	4	4	6	113.11	<10	Poor	Infected with <i>Kretschmaria deusta</i> .	Fell and replace.
7024	Japanese Maple	M	150	3.5	0.5	3.5	C1	2.5	2.5	2.5	2.5	1.8	10.18	40+	Good	Multi-stemmed form.	Could be retained.
Group H	Privet	M	100	2	0	2	C2	0.5	0.5	0.5	0.5	1.2	4.52	40+	Good	Regularly maintained at present dimensions.	Could be retained. Cut as a hedge.

ref.	Species	Age Class	Ø m/s (mm)	Height (m)	Lower crown height (m)	Ultimate height (m)	Grade	Crown Spread N (m)	Crown Spread S (m)	Crown Spread E (m)	Crown Spread W (m)	RPA radius (m)	RPA (m ²)	Remaining Contribution (yrs)	Condition	Comments	Recommendations made at time of survey, irrespective of any layout
Group J	Privet	M	100	2	0	2	C2	0.5	0.5	0.5	0.5	1.2	4.52	40+	Good	Regularly maintained at present dimensions.	Could be retained. Cut as a hedge.
7025	Silver Birch	M	370	16	1	16	B1	3	4	2	8	4.44	61.94	40+	Good	No visible defects seen.	No work required.
7026	Red Horse Chestnut	M	650	14	1.5	14	C1	5	3	5	4	7.8	191.16	<10	Poor	Low vigour. Moderate infection with Horse Chestnut Bleeding Canker. Branches encroaching upon building.	Could be retained in the short-term. Prune to clear building by 1m.
7027	Silver Birch	M	350	16	1	16	B1	3	5	5	4	4.2	55.42	40+	Good	No visible defects seen.	No work required.
Group K	Privet	M	100	2	0	2	C2	0.5	0.5	0.5	0.5	1.2	4.52	40+	Good	Regularly maintained at present dimensions.	Could be retained. Cut as a hedge.
7028	Lombardy Poplar	M	950	24	1	24	C1	2.5	2.5	2.5	2.5	11.4	408.33	10+	Reasonable	Now in last third of safe useful life expectancy. Unlikely to be considered suitable for retention.	Fell and replace.
Group L	Privet	M	100	2.5	0	2.5	C2	0.8	0.8	0.8	0.8	1.2	4.52	40+	Good	Regularly maintained at present dimensions.	Could be retained. Cut as a hedge.
7029	Silver Birch	M	400	15	1	15	B1/B2	5	3	6	5	4.8	72.39	40+	Good	No visible defects seen.	No work required.
7030	Silver Birch	M	250	15	1	15	B1/B2	1	5	6	5	3	28.28	40+	Good	No visible defects seen.	No work required.

ref.	Species	Age Class	Ø m/s (mm)	Height (m)	Lower crown height (m)	Ultimate height (m)	Grade	Crown Spread N (m)	Crown Spread S (m)	Crown Spread E (m)	Crown Spread W (m)	RPA radius (m)	RPA (m ²)	Remaining Contribution (yrs)	Condition	Comments	Recommendations made at time of survey, irrespective of any layout
Group M	Cherry Laurel	SM	150	2	0	2	C2	0.6	0.6	0.6	0.6	1.8	10.18	20+	Reasonable	Regularly maintained at present dimensions.	Could be retained. Cut as a hedge.
Group N	Privet	M	100	3	0	3	C2	0.6	0.5	0.5	0.5	1.2	4.52	40+	Good	Regularly maintained at present dimensions. Several gaps	Could be retained. Cut as a hedge.
7031	Oak	Y	330	12	1	18	B1/B2	5	6	6	4	3.96	49.27	40+	Good	No visible defects seen.	No work required.
7032	Silver Birch	M	520	16	1.5	16	B1/B2	6	5	4	5	6.24	122.34	40+	Good	Multi-stemmed form. No visible defects seen.	No work required.
7033	Lime	OM	550	8	0	8	U	3	3	3	3	6.6	136.87	<10	Poor	Infected with <i>Kretschmaria deusta</i> . Historically cut as a pollard.	Could be retained in the short-term as a pollard.
7035	Oak	M	900	18	1	18	A1	9	9	9	9	10.8	366.48	40+	Good	No visible defects seen.	No work required.
Group P	Cherry Laurel	SM	150	2	0	2	C2	0.6	0.6	0.6	0.6	1.8	10.18	20+	Reasonable	Regularly maintained at present dimensions.	Could be retained. Cut as a hedge.
NT2	Hazel	M	350	6	0	6	B1/B2	2	3	4	0	4.2	55.42	40+	Reasonable	No visible defects seen.	No work required.
7034	Box Elder	M	600	12	1.5	12	B1	6	6	6	6	7.2	162.88	40+	Good	Early signs of decay at old wounds. Scattered minor dead wood throughout crown.	Remove dead wood greater than 25mm in diameter.

ref.	Species	Age Class	Ø m/s (mm)	Height (m)	Lower crown height (m)	Ultimate height (m)	Grade	Crown Spread N (m)	Crown Spread S (m)	Crown Spread E (m)	Crown Spread W (m)	RPA radius (m)	RPA (m ²)	Remaining Contribution (yrs)	Condition	Comments	Recommendations made at time of survey, irrespective of any layout
7036	Silver Birch	M	866	16	1.5	16	C1	4	7	5	5	10.39	339.19	<10	Poor	Low vigour. In decline. Phytophthora bleeds on main stem	Fell and replace.
7037	Blue Atlas Cedar	M	1000	20	1	20	B1	10	10	10	10	12	452.45	40+	Reasonable	Scattered minor dead wood throughout crown. Some moderately-sized pieces of deadwood in crown. Evidence of minor branch shedding throughout crown	Remove dead wood greater than 25mm in diameter.
7038	Blue Atlas Cedar	M	1000	17	1	17	C1	10	6	7	10	12	452.45	20+	Poor	Scattered minor dead wood throughout crown. Evidence of several major branches shed throughout crown	Remove dead wood greater than 25mm in diameter.
7044	Field Maple	Y	350	10	1.5	18	C1	5	5	5	5	4.2	55.42	40+	Reasonable	Multiple stems below 1.5m. Included bark present in fork.	Could be retained with space.
7040	Yew	M	500	5	1.5	5	C1	2.5	2.5	2.5	2.5	6	113.11	40+	Good	Multi-stemmed form. No visible defects seen. Suppressed.	Could be retained.

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7041	Weeping Willow	OM	1471	17	0	17	C1	10	6	10	10	15	706.95	<10	Poor	Multi-stemmed form. Now in last third of safe useful life expectancy. Unlikely to be considered suitable for retention. Decay present in main stem and scaffolds. Cavities in stem. Evidence of recent and historic limb and branch shedding	Could be retained.
7042	Western Red Cedar	M	500	17	0	17	C1	3.5	3.5	3.5	3.5	6	113.11	40+	Good	No visible defects seen.	Could be retained.
7043	Leyland Cypress	M	450	17	0	17	C1	3	4	4.5	2.5	5.4	91.62	40+	Good	No visible defects seen.	Could be retained.
7045	Yew	M	450	5	1.5	5	C1	2	3	2.5	1	5.4	91.62	40+	Reasonable	Multi-stemmed form. No visible defects seen. Suppressed.	Could be retained.
NT3	Oak	Y	330	12	1	18	B1/B2	5	6	6	4	3.96	49.27	40+	Good	No visible defects seen.	No work required.
NT4	Field Maple	Y	350	10	1.5	18	C1	5	5	5	5	4.2	55.42	40+	Reasonable	Multiple stems below 1.5m. Included bark present in fork.	Could be retained with space.

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7046	Norway Maple (Purple)	Y	160	8	2.5	8	U	2	2	2	2	1.92	11.58	<10	Poor	Low vigour. Not worthy of retention.	Fell and replace.
7047	Purple Beech	Y	230	8	1	18	B1/B2	4	4	4	3	2.76	23.93	40+	Good	No visible defects seen.	Could be retained with space.
7048	Sycamore	Y	210	10	1.5	18	C1/C2	4	4	1.5	2	2.52	19.95	40+	Reasonable	No visible defects seen. Suppressed.	Could be retained with space.
7049	Norway Maple (Variegated)	Y	350	11	1.5	18	C1/C2	5	4	1	5	4.2	55.42	40+	Reasonable	No visible defects seen.	Could be retained with space.
7050	Cherry	SM	500	10	1.5	14	B1/B2	5	5	5	5	6	113.11	40+	Good	No visible defects seen.	Could be retained.
7051	Box Elder	Y	210	10	2	14	B1/B2	3	3	3	0	2.52	19.95	40+	Reasonable	No visible defects seen. Suppressed.	Could be retained with space.
7052	Sycamore	Y	250	12	1.5	18	C1/C2	2	2	3	3	3	28.28	40+	Reasonable	No visible defects seen.	Could be retained with space.
7053	Norway Maple (Purple)	Y	160	10	1.5	18	C1/C2	1	1	2	2	1.92	11.58	40+	Good	No visible defects seen. Suppressed.	Could be retained with space.

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7054	Sycamore	Y	450	12	1.5	18	C1/C2	4	4	6	6	5.4	91.62	10+	Poor	Stem divides below 1.5m. Included bark present in fork.	Could be retained in the short-term.
7055	Norway Maple	Y	250	11	1.5	18	C1/C2	1	2.5	4	2	3	28.28	40+	Reasonable	No visible defects seen. Suppressed.	Could be retained with space.
7056	Norway Maple	Y	250	11	1.5	18	C1/C2	2	5	5	6	3	28.28	40+	Reasonable	No visible defects seen. Suppressed.	Could be retained with space.
7057	Leyland Cypress	M	650	17	0	17	U	2	4	5	3	7.8	191.16	<10	Poor	Advanced crown dieback.	Fell and replace.
Group R	Leyland Cypress, Lawson's Cypress	M	600	18	0	18	C2	5	5	5	5	7.2	162.88	40+	Good	Unlikely to be considered suitable for retention. Landscape role now redundant	Fell and replace.
7058	Lawson Cypress	Y	200	8	0	18	C1	1.5	1.5	1.5	1.5	2.4	18.1	40+	Good	No visible defects seen.	Could be retained with space.
7059	Crab Apple	Y	100	5	1	5	C1	1.5	1.5	1.5	1.5	1.2	4.52	20+	Reasonable	No visible defects seen. Suppressed.	Could be retained.

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7060	Deodar Cedar	Y	360	12	2	25	B1	3	3	3	3	4.32	58.64	40+	Good	No visible defects seen. Not site appropriate. Unlikely to be considered suitable for retention.	Could be retained.
7061	Cedar	Y	210	10	2	25	C1	1	2.5	2.5	0	2.52	19.95	40+	Good	No visible defects seen. Suppressed. Not site appropriate. Unlikely to be considered suitable for retention.	Could be retained.
7062	Sycamore	Y	550	12	1.5	18	B1	6	6	6	6	6.6	136.87	40+	Reasonable	No visible defects seen. Not site appropriate.	Could be retained in the short-term.
7063	Japanese Cherry	M	350	10	1.5	10	C1	7	5	4	7	4.2	55.42	<10	Poor	Now in last third of safe useful life expectancy. Infected with Bacterial Canker.	Could be retained in the short-term.
7064	Western Red Cedar	M	620	13	0	18	B1	4.5	4.5	4.5	4.5	7.44	173.92	40+	Good	No visible defects seen. Not site appropriate. Branches encroaching upon building.	Could be retained in the short-term. Prune to clear building by 1m.
Group S	Cherry Laurel	SM	150	1.5	0	1.5	C2	0.4	0.4	0.4	0.4	1.8	10.18	20+	Reasonable	Regularly maintained at present dimensions.	Could be retained. Cut as a hedge.

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Group T	Hawthorn	M	150	1.2	0	1.2	C2	0.3	0.3	0.3	0.3	1.8	10.18	40+	Good	Regularly maintained at present dimensions.	Could be retained. Cut as a hedge.

Appendix C – Assessing Constraints

General

It is desirable to retain trees as they add maturity and structure to a site; provide shade and amenity value; screening or acoustic barrier.

In general, Grade 'A' and 'B' trees should be retained, especially if they offer a visual amenity to the wider community. It may be desirable to retain Grade 'C' trees where they can continue to offer a presence until they are replaced but they should not generally prevent an otherwise satisfactory layout from being achieved.

Root system

Construction can impose enormous strain on trees through damage to, or loss of root mass. The root system is the part of the tree most susceptible to damage during construction. Any retained trees could be at risk of root damage through:

- Demolition and site clearance
- Excavation causing root severance
- Siting of services and excavation causing root severance
- Access for plant and vehicles which may cause compaction of the root zone leading to root death through asphyxiation
- Storage of materials or spillage of damaging substances such as fuel oil, petrol or lime, which can kill roots.
- The raising of soil levels which can kill roots through asphyxiation
- The lowering of soil levels which removes root mass, including many of the fine water collecting roots and beneficial humus layer

The symptoms that can arise from root damage as identified above can take several years to become evident.

The Arboricultural Implications Plan (see Appendix D) shows the Root Protection Area (RPA) as a magenta circle or polygon around each tree or group of trees. This is the area where if the trees are retained, ideally no excavation should take place; the soil level should not be raised or lowered; no materials should be stacked; there must be no contamination and no services should be routed. However, trees can be tolerant of some disturbance or root loss and recent advances in construction techniques can avoid causing significant damage to roots. This will depend on a number of factors including tree species and site conditions along with the type of construction methods available to the developer.

The Root Protection Area (RPA) required for each tree may affect the layout of road, footpath, housing services and other built structures. It may be possible to pave a proportion of the RPA.

Above Ground

Construction can threaten the aerial parts of the tree through physical damage by contact from various plant and delivery vehicles; and through the lighting of fires.

The height of the lower crown above ground is shown in the Tree Survey Table (Appendix B). Lifting (or raising) the crown to a set height above ground in order to allow access for plant and machinery or to erect fences for example would be an acceptable arboricultural practice. Crown spread may in itself be a constraint where it is greater than the RPA radius.

A development may affect the way wind passes the retained trees, by raising its speed or direction. This may leave weakened or newly exposed trees liable to wind throw.

Suitability and future growth

Some trees are not suitable for retention due to brittle wood, poisonous berries or leaves, prickles and thorns. Leaves falling from any of the retained trees may block gutters of nearby buildings. Fruit, blossom and leaves can become a potential slip hazard.

Whilst trees may be small at the time of survey, future growth may be considerable, both in height and radial crown spread. Very large trees worry some people because they perceive the trees to be imposing and dangerous. This is typically unfounded.

Shade

Building within the shade area can be acceptable where internal layout, fenestration or proposed use of buildings means they are not adversely affected by a lack of daylight received. Some shading may be welcomed in the summer when solar gain can make room temperatures uncomfortable.

The shade footprint that may be cast by the trees has been shown as a grey hatch on the Arboricultural Implications Plan (see Appendix D). The shade area is based on a solar inclination of 45 degrees in line with the median suggested by BS5837: 2012 that covers the main daylight hours. This simplifies the actual shade area that may affect the site but it is considered to be a good representation of the area in question.

It should also be noted that deciduous trees only cast shade for seven or eight months of the year, depending on species.

Engineering and Design

The species and height of trees (both retained or removed) may also affect the type and depth of foundations used.

The British Standard 5837: 2012 'Trees in Relation to Design, Demolition and Construction' gives more detailed guidance.

