Arboricultural Impact Assessment

- in accordance with BS5837: 2012

28 Southview Road

Hoyland

Barnsley

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Reference: **JC/259/200723**

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Summary of report

This report assesses trees at 28 Southview Road in Hoyland. It considers the impact upon them of a proposed new development, and specifies measures for the protection of the retained trees throughout the construction process. It is prepared following guidance contained in BS5837: 2012.

Five trees will be removed as a result of this proposal. These trees are not of such great merit that a development must be planned around them (one is already dead and one in decline); rather they are to be removed and replaced with new trees. The specified new trees include beech and hornbeam - which if cared for in their early years should have particularly good potential for longevity – and four further trees selected for their fine aesthetic qualities and their ability to support biodiversity. Most are trees are varieties with slender or columnar growth forms appropriate to the space available. Planting methodology is clearly specified in detail: adherence to this and the provision of adequate post-planting maintenance will be essential for ensuring that these new trees can thrive.

The retained trees are to be protected throughout the construction period by temporary fencing: this is shown on the Tree Protection Plan which is included with the other essential drawings and schedules in the appendices to this report.

CONTENTS

1. INTRODUCTION 5
1.1 Terms of instruction 5
1.2 Scope of survey 5
1.3 Documents supplied by client 5
1.4 Items included within this report 5
1.5 Qualifications and experience 6
1.6 Caveats and limitations 6

2. DATA COLLECTION 6
2.1 Site visit 6
2.2 The site 6
2.3 Survey method 7

3. SUMMARY OF DATA 8
3.1 Trees 8
3.2 Retention categories 8
3.3 Below ground constraints 9
3.4 Above ground constraints 9

4. ARBORICULTURAL IMPACT ASSESSMENT 10
4.1 Tree removals 10
4.2 Impact on neighbouring trees and shrubs 10
4.3 Replacement planting 11

5. TREE PROTECTION PLAN 11
5.1 Timing and importance of Tree Protection Plan 11
5.2 Tree Protection Fencing – specification 12

6. ARBORICULTURAL METHOD STATEMENT 12
6.1 Scheduling 12
6.2 Tree removals 13
6.3 Implementation of Tree Protection plan 13
6.4 Drainage, services and utilities 13
6.5 New trees: planting, support and post-planting maintenance 13

7. OTHER OBSERVATIONS 16
7.1 Legal status of trees on site 16
7.2 Wildlife considerations and law 16
7.3 Standards of tree work 17

Reference List **18**

Appendix A:	Tree Schedule (excluding Root Protection Areas and crown spread)	19
Appendix B:	Tree Constraints Data: Root Protection Areas (RPAs) and crown spread	22
Appendix C:	Key to botanical names	24
Appendix D:	Tree retention categories	25
Appendix E:	Calculating Root Protection Areas	27
Appendix F:	Tree Constraints Plan	28
Appendix G:	Proposed development plan	29
Appendix H:	Tree Removals and New Tree Planting	30
Appendix I:	Tree protection plan - drawing	31

1. Introduction

1.1 Terms of instruction

Jon Coe Tree Consultancy Ltd were instructed by Mr Richard Taylor to survey trees at 28 Southview Road in Hoyland; to report on the arboricultural impact of a proposed development, and to specify measures for the protection of the retained trees throughout the construction process. This work was carried out following the guidelines in BS5837: 2012[1] '*Trees in relation to design, demolition and construction: Recommendations*'.

1.2 Scope of survey

The key requirements identified were to establish the condition of the trees on site, and the constraints presented by these, in accordance with BS5837: 2012[1] '*Trees in relation to design, demolition and construction: Recommendations*' (referred to herein as BS5837: 2012[1]). This was not a detailed risk assessment survey.

The survey included any trees that the site visit determined could be affected by the proposed development.

1.3 Documents supplied by client

The topographical survey was supplied at the time of instruction.

1.4 Items included within this report

The main report describes, in this order: the collection of data; summary of data; arboricultural impact; tree protection; method statement requirements and other relevant issues. It is followed by references and appendices.

Central to the purpose of this report are several of the appendices. These are the tree schedules (Appendices A and B), the Tree Removals and New Tree Planting plan (Appendix H) and the Tree Protection Plan (Appendix I).

1.5 Qualifications and experience

Principal Consultant Jon Coe holds a BSc (Honours) degree in Arboriculture, Professional-grade membership of the Arboricultural Association, and Associate membership of the Institute of Chartered Foresters. He has worked in arboriculture for 16 years continuously and is committed to continued professional development:

https://joncoetreeconsultancy.co.uk/

1.6 Caveats and limitations

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The survey was solely concerned with the requirements of BS5837: 2012[1]. It was not a risk assessment survey, and it considered tree health only so far as necessary to fulfil the requirements of BS5837: 2012[1].

The survey and all observations were made from ground level only.

Observations were valid at the time they were made. However, trees are dynamic and growing structures that experience changes affected by time, weather and other factors.

2. Data collection

2.1 Site visit

The survey was conducted on 9th July 2020. It was a wet day, but visibility was sufficient for survey purposes.

2.2 The site

The site and tree layout is as shown on the Tree Constraints Plan. Individual tree's details are found in the Tree Schedule - findings are summarised in section 3.1.

The site slopes from north (higher) to south (lower)

2.3 Survey method

The survey was conducted without influence of the development proposal.

Each tree was given a tree identification number, as shown on the Tree Constraints Plan (Appendix F).

Tree locations were mostly matched to the topographical survey. For those trees that were not included on the topographical survey, the arboricultural surveyor has plotted the stems' locations himself - using measurements taken from existing site features with a laser rangefinder.

The species of each tree was recorded. Common names are used in the Tree Schedule (Appendix A), with a list of botanical names supplied in Appendix C.

Tree height was estimated in metres (m), to the nearest 0.5 m (rounded up) - or the nearest metre for trees above 10 m.

Stem diameter was measured in millimetres (mm) using a diameter tape, in accordance with the conventions detailed in Annex C of BS5837: 2012[1], which in most cases is at 1.5m above ground level.

Crown spread was recorded at the four cardinal points, to the nearest 0.5m (rounded up) - using a laser range-finder (Leica Disto D810).

Height of canopy clearance was recorded to the nearest 0.5 m. This was necessarily an estimate, as canopy clearance is not usually consistent around the whole tree; a figure for the typical low point around the canopy was therefore estimated. Where appropriate, minor or epicormic branch growth was disregarded, in order to better portray the situation so far as clearance was concerned. Where canopy cover extends both on and off site (i.e. boundary trees), the more relevant on-site value was used unless otherwise stated.

Age class was assessed according to the five possible categories listed in BS5837: 2012[1]. These are young, semi-mature, early-mature, mature and over-mature.

Structural and physiological condition of trees were separately assessed and summarised using five possible categories: poor, moderate, fair, good,

very good. More specific observations on condition were noted under 'Observations'.

'Observations' included details of specific structural and physiological issues, notes on past and suggested future management, and problems currently presented by the trees.

An estimate was made (in years) of the potential remaining contribution that each tree could offer, in its current situation, without a need for significant tree surgery operations.

Each tree was categorised according to the guidance given in BS5837: 2012[1] (Appendix D). Retention categories of A, B, C or U were allocated (in descending order of tree quality), with an additional sub-category of 1, 2 or 3 that defines whether the principal category was allocated for arboricultural, landscape or cultural reasons respectively.

3. Summary of data

3.1 Trees

The survey includes 20 individually listed trees and one boundary group. There are 16 trees at the southern end of the site, collectively forming useful screening and good contribution to biodiversity. There are also three individual trees at the north end of site, a grouped selection of trees on neighbouring land just outside the eastern site boundary, and one small cherry on the western boundary.

Individual trees' details and comments are recorded in the Tree Schedule (Appendix A) and the Tree Constraints data (Appendix B). Tree locations are shown on the Tree Constraints Plan (Appendix F).

3.2 Retention categories

Retention categories have been assigned in accordance with the criteria in BS5837: 2012[1] (Appendix D).

None of the trees on site merit retention category A.

Five trees are assigned category B, though for four of these it's noted that they are at the lower end of the category.

The remainder of the trees on site lack the qualities required to raise them above the level of category C.

3.3 Below ground constraints

The Root Protection Areas (RPAs) are the areas in which construction and activities related to the construction process should not take place, in order to protect the trees' root systems. Where such activities cannot be avoided, it may be possible to incorporate design measures that prevent the damage that may occur to the tree's health and stability through soil compaction, level changes, root severance and contamination. Sections 6 and 7 of BS5837: 2012[1] outline methods for protecting RPAs during the construction process, and for building within them where this is unavoidable.

RPAs are generically calculated as an area equivalent to a circle with a radius 12 times the stem diameter, in accordance with section 4.6.1 of BS5837: 2012[1]; this also provides methods for calculating the combined stem diameter of multi-stem trees.

In accordance with BS5837: 2012[1], the RPAs listed in the Tree Constraints data (Appendix B) have been determined from the stem diameter by using Table 4 (Appendix E), whose values are themselves extracted from Table D.1 in Annex D of the standard (BS5837: 2012[1]). Stem diameters are rounded up to align with those in Table 4; potentially to the trees' benefit.

Where group locations occur, a continuous RPA boundary has been shown on the Tree Constraints Plan (Appendix F). The extent of this boundary has been determined by the tree assessor, using a balanced judgement of the various contributing factors – particularly the species composition and density of the group.

3.4 Above ground constraints

Data for crown spread is shown in the Tree Constraints Data (Appendix B) and the Tree Schedule contains data on canopy clearance (Appendix A).

4. Arboricultural Impact Assessment

4.1 Tree removals

Trees 02, 03 and 04 are to be removed. Removal of 01 is also recommended if tree ownership is clarified. A dead cherry is also to be removed (tree 11). Reasons for these removals are as follows:

- Trees 02 and 03 conflict directly with the proposed layout. Tree 04 is not a sufficiently attractive tree to be a new garden's centrepiece, nor does it have sufficient quality to merit the use of specialist surfacing within the Root Protection Area (RPA) which would be required to enable tree retention (its replacement is the better option).
- Tree 02 (willow) is a moderate example of a species which lacks great longevity, and tree 03 is nearing the age at which cherries will often begin a gradual decline.
- Tree 01 (cherry) has reduced vitality as indicated by its noticeably sparse foliage - its removal is therefore recommended. The tree may be in neighbouring ownership, and if that is the case it can only be removed with the agreement of the tree owner.
- Tree 11 is dead (cherry).

The proposed planting of six new trees includes beech and hornbeam - which if cared for in their early years should have particularly good potential for longevity – and four further trees selected for their fine aesthetic qualities and their ability to support biodiversity.

4.2 Impact on neighbouring trees and shrubs

No significant effect on the neighbouring trees and shrubs on the eastern boundary is expected. The larger of those trees will have their RPAs protected by temporary fencing during the construction period (see Tree Protection Plan).

4.3 Replacement planting

The plan at Appendix H shows the locations for six proposed new trees. Species have been chosen to be appropriate to the character of both the site and the wider landscape. Most are trees are varieties with slender or columnar growth forms appropriate to the space available. Species are as follows:

- **Tree 1** – *Betula papyrifera*
- **Tree 2** – *Carpinus betulus* 'Frans Fontaine' – Hornbeam, with a columnar growth form
- **Tree 3** - *Pyrus calleryana* 'Redspire' – relatively narrow growth form
- **Tree 4** – *Betula pendula* (variety to be either 'Obelisk', or 'Fastigiata', or 'Zwisters Glory') – Silver birch, with the 3 listed varieties all having narrow or columnar growth forms)
- **Tree 5** – *Fagus sylvatica* 'Dawyck' – Dawyck's beech, which has a columnar growth form)
- **Tree 6** – *Liquidambar styraciflua* 'Worplesdon' – Sweet Gum

The new trees are to be procured and planted at nursery specification 'Standard' size. A full specification for procurement, planting and post-planting care and maintenance is provided at section 6.5.

5. Tree Protection Plan

5.1 Timing and importance of Tree Protection Plan

All the indicated Tree Protection fencing must be correctly in place (as per the measurements supplied on the drawing at Appendix I) prior to the commencement of any demolition or construction work or the delivery of any construction materials or machinery to site. All parties operating on site must be made aware of the requirements of the Tree Protection Plan.

The primary purpose of the Tree Protection Plan is to prevent the serious and often irreversible harm that can be caused to trees through the compaction of their rooting soil. Compacted soil prevents root function, which causes tree decline or death. This decline is often gradual over a

period of time, such that it is often not observed by the offending party. Harmful soil compaction can be caused by vehicles, machinery, footfall, or the weight of stored materials. Chemical spillages, bonfires, level raises and excavation are also all activities that can seriously harm tree roots. The abundant small and fine minor roots are of great importance to trees - these and the roots in general are found much closer to the soil surface than is often assumed.

5.2 Tree Protection Fencing – specification

Tree protection fencing should be positioned exactly where shown on the drawing at Appendix I, and in exact accordance with the measurements shown on the drawing.

All indicated tree protection fencing shall meet the following specification:

- Welded mesh panels (2 metres high). These panels should be driven into the ground (or fixed to site pins which are driven into the ground) such that they cannot be easily moved back during the construction process. The panels shall be joined together using at least two anti-tamper couplers, installed so their removal is only possible from behind the fence (the tree side) – these fence couplers should be spaced apart by at least 1 metre.
- Fencing panels must be supported on their inner sides by stabiliser struts, with these attached to base plates that are secured with ground pins – to ensure that the fencing line cannot be readily moved during construction.

All-weather notices should be affixed at 5 metre intervals with the following wording: 'Construction Exclusion Zone for protection of tree roots – no access permitted behind this fencing'.

6. Arboricultural Method Statement

6.1 Scheduling

The various components of this method statement are arranged sequentially, in the order in which they should be carried out.

6.2 Tree removals

All tree removals should be carried out in accordance with the various guidance in *BS 3998: 2010 Tree work – Recommendations* [2].

Trees for removal are 02, 03, 04, and 11.

Tree 01 is also recommended for removal, but it may be in neighbouring ownership, and if that is the case it can only be removed with the agreement of the tree owner.

6.3 Implementation of Tree Protection plan

The requirements of the Tree Protection Plan should be implemented in full prior to the commencement of any demolition or construction work or the delivery of any materials or machinery to site (Section 5).

6.4 Drainage, services and utilities

There must be no excavation for drainage, services or utilities within the Root Protection Areas of any retained trees.

6.5 New trees: planting, support and post-planting maintenance

The plan at Appendix H shows the locations for six new trees. Species have been chosen to be appropriate to the character of both the site and the wider landscape. Most are trees varieties with slender or columnar growth forms appropriate to the space available. Species are as follows:

- **Tree 1** – *Betula papyrifera*
- **Tree 2** – *Carpinus betulus* 'Frans Fontaine' – Hornbeam, with a columnar growth form
- **Tree 3** - *Pyrus calleryana* 'Redspire'
- **Tree 4** – *Betula pendula* ('Obelisk', or 'Fastigiata', or 'Zwisters Glory') – Silver birch, with the 3 listed varieties all having narrow or columnar growth forms)

- **Tree 5** – *Fagus sylvatica* 'Dawyck' – Dawyck's beech, which has a columnar growth form)
- **Tree 6** – *Liquidambar styraciflua* 'Worplesdon' – Sweet Gum

Tree planting should take place during the period November to March, when trees are dormant and ground moisture is plentiful.

All new trees should be procured and planted at nursery specification 'Standard' size: this means they will be 2.5 to 3.0 m height, 1.75 to 2.0 m clear stem, and 8 - 10 cm girth when measured at one metre height.

Procurement, planting, tree support, protection and post-planting maintenance should all be in accordance with *'BS 8545 Trees: from nursery to independence in the landscape*' (BSI Standards, 2014)'.

Particularly important points are:

- Follow the detailed guidance in *'BS 8545* as regards the process of procurement from tree nurseries and ensuring biosecurity. This is important to ensure healthy and viable trees, and to avoid the import to the area or country of any one of the many current plant diseases affecting trees. Use a reputable nursery – further advice can be given.
- Do not at any point leave tree roots exposed and vulnerable to drying out.
- Dig a planting pit that is no deeper than the depth of the container or rootball, or an approximation to this for bare-rooted trees. Pit width should be at least 75 mm wider than the supplied root system – ideally it will be wider than that. Scarify and loosen up the sides of the pit, as glazed or compacted pit edges hinder the necessary outwards root development.
- Soil from excavation should be placed in two piles: topsoil and subsoil. In planting the tree, pit depth may require adjustment such that the tree's root flare is clearly visible at the soil surface (planting too deep is a common reason for tree failure).
- Soil should then be replaced to match the order in which it was extracted (subsoil lower, topsoil higher) such that the soil horizon

profile is as similar as possible to prior to excavation - and hence is consistent with the soil profile surrounding the pit, which will encourage the necessary outwards root development. This soil backfilling should be achieved in layers of depths between 150 mm and 230 mm. After each layer is added, it should be firmed in by foot to remove air pockets. This should not involve heavy foot stamping or any similar level of excessive compaction that could damage soil structure. The final layer does not require firming in, but its depth must take into account subsequent soil settlement and also the addition of a mulch layer: it is essential that the tree's root flare remains uncovered by either soil or mulch. Seasoned broadleaf woodchip is an ideal mulch.

- The tree should be staked to prevent uprooting or root damage through movement during the formative years. Numerous staking systems exist: one that uses either two or three stakes will be appropriate. A system appropriate to the expected wind loading should be chosen, with consideration given also to any likelihood of damage by children or others.
- The tree must be lightly supported only by the stakes and ties (though with a sturdy mechanism) – there must be scope for some stem and crown movement. This is because it is the wind induced movement of stem and crown that stimulates the production of a sufficiently supportive root system. Any ties securing the tree to the staking system must therefore be loosely fitted such that movement can occur, and they should have sufficient room for the growth of stem diameter (this should be checked as the young tree grows).
- After three to five years it is recommended that the stake and tie supports are removed. Following support removal, the tree's root development will be fully stimulated during the following years of rapid growth.
- The potential for damage to the new tree's bark by rodents or domestic animals should be assessed, and some form of stem protection should be used to protect the stem to an appropriate height. This will most likely involve either a cage of posts, rails and

mesh; or a flexible tree guard fitted around the stem and allowing room for growth. Any risk of damage by children or others should also be considered. Protection of stems is important, as bark damage can result in tree death and a likely requirement to replant.

- It is essential to water newly planted trees, particularly for the first three to five years after planting. Regular watering in limited quantities is of far more use than occasional soakings of the root area.
- It is important to keep weed competition away from the stem base, and similarly grass growth. The use of a surrounding mulch layer as previously described will assist in this regard, but regular weeding may also be necessary.
- After planting and during the early years of growth, formative pruning may be required to produce a crown form that is structurally viable, healthy and attractive. *BS 854*5 provides detail on this subject.

7. Other observations

7.1 Legal status of trees on site

Please note that the status of trees on site - with regard to Tree Preservation Orders and Conservation Areas - has not been independently checked. It is advised that this is done before any further investment in the planning process. The relevant legislation to these matters is contained within the Town and Country Planning Act 1990 [3] and The Town and Country Planning (Tree Preservation) (England) Regulations 2012 [4].

This report has not considered the requirements of the Forestry Act 1967 [5]: felling licences may still be required in the earlier stages of the planning process, depending on the volume of timber involved.

7.2 Wildlife considerations and law

The requirements of the following legislation should also be considered in the planning of any arboricultural operations.

- Wildlife and Countryside Act 1981 [6]
- Countryside and Rights of Way Act 2000 [7]
- The Conservation of Habitats and Species Regulations 2010 [8]
- The Conservation of Habitats and Species (Amendment) Regulations 2011 [9]

One combined effect of the above legislation is that tree work operations must be planned to avoid disturbance to nesting, breeding or roosting birds, or to bats and their roosts. The nests of wild birds are protected whilst in use, and all 18 bat species found in the UK are afforded European Protected Species status.

7.3 Standards of tree work

Unless otherwise specified, any tree work recommended in this report should be carried out in accordance with the British Standard *BS 3998: 2010 Tree work – Recommendations* [2].

Reference List

1. British Standards Institution (2012) *BS 5837: 2012 Trees in relation to design, demolition and construction – Recommendations*. London, BSI Standards Ltd.
2. British Standards Institution (2010) *BS 3998: 2010 Tree work – Recommendations*. London, BSI Standards Ltd.
3. *Town and Country Planning Act 1990*. London, HMSO.
4. *The Town and Country Planning (Tree Preservation) (England) Regulations 2012*. London, HMSO.
5. *Forestry Act 1967*. London, HMSO.
6. *Wildlife and Countryside Act 1981*. London, HMSO.
7. *Countryside and Rights of Way Act 2000*. London, HMSO.
8. *The Conservation of Habitats and Species Regulations 2010*. London, HMSO.
9. *The Conservation of Habitats and Species (Amendment) Regulations* 2011. London, HMSO.

Appendix A: Tree Schedule (excluding Root Protection Areas and crown spread)

Table 1 (below) contains data for all trees, excluding Root Protection Areas and crown spread details – which are in Appendix B.
Condition categories, in ascending order of quality: poor – moderate – fair – good - very good

Tree Number	Species (common name)	Height (m)	Canopy clearance (m)	Life stage	Observations, and suggestions for management	Remaining contribution (years)	BS retention category	Condition (physiological : structural)
01	Cherry	9	3	Early Mature	Base concealed in laurel hedgerow. Sparse foliage.	10 to 20 Years	C1	Moderate : Fair
02	Weeping Willow	12	0	Early Mature	No significant issues observed. Lowest end of category B.	40+ Years	B1-	Good : Good
03	Cherry	14	1	Mature	Substantial cherry tree, without apparent defects. Lower end of category B.	20 to 40 Years	B1-	Very good : Good
04	Cypress	14	0.5	Mature	No significant issues observed	20 to 40 Years	C1	Good : Good
05	Sycamore	20	2	Early Mature	Single stem sycamore without defect. Structurally well-formed.	40+ Years	B1	Good : Good
06	Cherry	9	1.5	Mature	Dense ivy prevents full view of stem structure. Heavy growth lean to northeast.	20 to 40 Years	C1	Good : Fair
07	Lime	19	1	Early Mature	No defects observed (ivy partially conceals lower stem). Lower end of category B.	40+ Years	B1-	Good : Good

Tree Number	Species (common name)	Height (m)	Canopy clearance (m)	Life stage	Observations, and suggestions for management	Remaining contribution (years)	BS retention category	Condition (physiological : structural)
08	Sycamore	19	4	Early Mature	Co-dominant stems above 4 m height - no obvious bark inclusion.	40+ Years	C1	Good : Fair
09	Cherry	10	2	Mature	Heavy lean to northeast	10 to 20 Years	C1	Good : Moderate
10	Sycamore	18	4	Early Mature	Good structural form with good future potential and longevity. Lower end of category B.	40+ Years	B1-	Good : Very good
11	Cherry	9	2	Dead	Dead cherry	Dead	U	Dead : Dead
12	Cypress	15	1	Early Mature	No significant issues observed	20 to 40 Years	C1	Good : Fair
13	Cypress	9	0.5	Early Mature	No significant issues observed	20 to 40 Years	C1	Good : Fair
14	Leyland Cypress	9	4	Early Mature	Crown raised for no apparent reason.	20 to 40 Years	C1	Good : Fair
15	Sycamore	17	4	Early Mature	No significant issues observed	40+ Years	C1	Good : Good
16	Leyland Cypress	9	0	Early Mature	No significant issues observed	20 to 40 Years	C1	Good : Fair
17	Lawson Cypress	15	0	Early Mature	On neighbouring land. Details estimated.	20 to 40 Years	C1	Good : Fair

Tree Number	Species (common name)	Height (m)	Canopy clearance (m)	Life stage	Observations, and suggestions for management	Remaining contribution (years)	BS retention category	Condition (physiological : structural)
18	Leyland Cypress	14	1.5	Early Mature	On neighbouring land. Details estimated.	20 to 40 Years	C1	Good : Fair
19	Cypress	14	1.5	Early Mature	On neighbouring land. Details estimated.	20 to 40 Years	C1	Good : Fair
20	Sycamore	13	2	Semi Mature	Neighbouring tree, twin-stemmed.	20 to 40 Years	C1	Good : Fair
21	Mixed species Boundary Grouping	15	0	Early Mature	Trees on neighbouring land. Various, including cypress, sycamore, birch, holly, cotoneaster and others.	20 to 40 Years	C2	Fair : Fair

Appendix B: Tree Constraints Data - Root Protection Areas (RPAs) and crown spread

Table 2 (below) contains data for Root Protection Areas and crown spread for all trees – all other data is found in in Appendix A.

Tree Number	No. of stems	Diameter (mm) single stem	Diameter (mm) - 2 to 5 stems					Mean stem diameter (mm)	Calculated stem diameter (mm)	Radius of nominal circle (m)(from BS5837: 2012[1] Annex D)	RPA Area (m^2) (from BS5837: 2012[1] Annex D)	Crown spread (m)			
			stem 1	stem 2	stem 3	stem 4	stem 5	> 5 stems				north	south	east	west
01	1	200							200	2.4	18	5	5	4	3
02	1	480							480	6	113	6.5	8	7.5	8
03	1	640							640	7.8	191	6.5	6.5	6.5	6.5
04	1	500							500	6	113	2	2	2	2
05	1	470							470	5.7	102	5.5	4	4	4.5
06	1	400							400	4.8	72	8	1	5	1
07	1	480							480	6	113	6.5	6	4	6
08	1	480							480	6	113	6	4	4	4
09	1	380							380	4.8	72	8	0	7	3
10	1	470							470	5.7	102	4.5	4.5	4.5	3
11	1	300							300	3.6	41	4	4	4	4
12	1	200							200	2.4	18	1.5	1.5	1.5	1.5
13	1	200							200	2.4	18	2	2	2	2
14	1	350							350	4.2	55	2	2	2	2
15	1	400							400	4.8	72	2	6	4	5
16	1	350							350	4.2	55	3	3	3	3
17	1	200							200	2.4	18	2	2	2	2

Tree Number	No. of stems	Diameter (mm) single stem	Diameter (mm) - 2 to 5 stems					Mean stem diameter (mm)	Calculated stem diameter (mm)	Radius of nominal circle (m)(from BS5837: 2012[1] Annex D)	RPA Area (m^2) (from BS5837: 2012[1] Annex D)	Crown spread (m)			
			stem 1	stem 2	stem 3	stem 4	stem 5	> 5 stems				north	south	east	west
18	1	250							250	3	28	2	2	2	2
19	1	250							250	3	28	2.5	1.5	2	2
20	2		150	150					212	2.7	23	2.5	2.5	2.5	2.5
21	Mixed species boundary grouping on neighbouring land. See Tree Constraints Plan for root and canopy constraints.														

Appendix C: Key to botanical names

Cherry	- *Prunus* spp.
Common lime	- *Tilia x europaea*
Cypress	- *Cupressus* spp.
Leyland cypress	- X *Cupressocyparis leylandii*
Sycamore	- *Acer pseudoplatanus*
Weeping willow	- *Salix x babylonica*

Appendix D: Tree retention categories

Trees are assessed for their retention categories in the order in which those categories appear in Table 3 below – with all trees initially assessed against the criteria for category 'U', followed sequentially by categories 'A', 'B' and 'C'. Table 3 is based on Table 1 of BS5837: 2012 [1]; some but not all of the text is necessarily reproduced verbatim.

Trees that are not suitable for retention			
Category U Trees whose condition means that their retention as living trees beyond 10 years is unrealistic in the context of the current land use	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 (where, for example, 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 nearby trees, or very low quality trees suppressing better adjacent trees. In some circumstances, category U trees may have conservation value which it might be desirable to preserve, despite tree condition.		
Trees whose retention should be prioritised			
	1. **Predominantly arboricultural merit**	**2.** **Predominantly landscape merit**	**3.** **Predominantly cultural merit (includes conservation value)**
Category A High quality trees, currently with life expectancy of at least 40 years	Trees that are particularly good examples of their species, especially if rare or unusual. Also the essential trees within groups or formal or semi - formal arboricultural features (such as avenues' dominant or principal trees).	Trees, groups or woodlands that have particular visual importance as arboricultural and/or landscape features.	Trees, groups or woodlands that have significant conservation, historical, commemorative or other value (such as veteran trees or wood - pasture).

Trees whose retention should be considered (with Category B assuming the greater priority in retention decisions)			
	1. **Predominantly arboricultural merit**	**2.** **Predominantly landscape merit**	**3.** **Predominantly cultural merit (includes conservation value)**
Category B Moderate quality trees, currently with life expectancy of at least 20 years	Trees that are excluded from category A due to impaired condition (such as the presence of significant though remediable defects, including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention beyond 40 years. Also trees that simply lack the special quality necessary to merit the category A designation.	Trees present in numbers, often those growing as groups or woodlands, such that their collective rating is higher than that which they might attract as individuals. Also trees occurring as collectives but situated so as to make little visual contribution to the wider locality.	Trees that have material conservation or other cultural value.
Category C Low quality trees, currently with life expectancy of at least 10 years. Also young trees of stem diameter <150mm.	Trees that are unremarkable or of very limited merit, or that have such impaired condition that they do not qualify in higher categories.	Trees growing as groups or woodlands, but without this conferring on them significantly greater collective landscape value. Also trees offering low or only temporary/transient landscape benefits	Trees lacking any material conservation or other cultural value.

Appendix E: Calculating Root Protection Areas

Table 4. This table was used to establish Root Protection Areas (RPAs) in accordance with section 4.6.1 of BS5837: 2012[1], and Annex D of the same standard (from which this table's values are drawn). 'Stem diameter' refers to either the measured diameter of single stem trees, or the calculated combined stem diameter of multi-stem trees (BS5837: 2012[1], 4.6.1).

Stem diameter (mm)	Radius of a uniformly circular RPA (m)	RPA – area (m^2)
75	0.9	3
100	1.2	5
125	1.5	7
150	1.8	10
175	2.1	14
200	2.4	18
225	2.7	23
250	3.0	28
275	3.3	34
300	3.6	41
325	3.9	48
350	4.2	55
375	4.5	64
400	4.8	72
425	5.1	81
450	5.4	92
475	5.7	102
500	6.0	113
525	6.3	124
550	6.6	137
575	6.9	150
600	7.2	163
625	7.5	177
650	7.8	191

Stem diameter (mm)	Radius of a uniformly circular RPA (m)	RPA – area (m^2)
675	8.1	206
700	8.4	222
725	8.7	238
750	9.0	255
775	9.3	272
800	9.6	290
825	9.9	308
850	10.2	327
875	10.5	346
900	10.8	366
925	11.1	387
950	11.4	408
975	11.7	430
1000	12.0	452
1025	12.3	475
1050	12.6	499
1075	12.9	519
1100	13.2	547
1125	13.5	573
1150	13.8	598
1175	14.1	625
1200	14.4	652
1225	14.7	679
1250+	15.0	707

SOUTHVIEW ROAD

ST01 152.960

ST02 152.387

ST03 150.400

ST05 149.910

ST06 147.426

01 Cherry C1

02 Weeping Willow B1-

03 Cherry B1-

04 Cypress C1

05 Sycamore B1

06 Cherry C1

07 Lime B1

08 Sycamore C1

09 Cherry C1

10 Sycamore B1-

11 Cherry U

12 Cypress C1

13 Cypress C1

14 Leyland Cypress C1

15 Sycamore C1

16 Leyland Cypress C1

17* Lawson Cypress C1

18* Leyland Cypress C1

19* Cypress C1

20* Sycamore C1

G21* Mixed species C2

G21* Mixed species C2

NO 28 brick house

brick house

brick building

hedgerow ht 2.0

tarmac

grass

concrete slabs

stones(sub-base)

spoil heap

sand pile

plants

debris

concrete flag steps

overhanging bush

tree/bush canopy

dense vegetation

vegetation / tree cuttings

fence obstructed-approximate position

N

5m 10m

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Site: 28 Southview Road, Hoyland	1:200 @ A2
Drawing Title: Tree Constraints Plan	July 2020

Key:

- Category A
- Category B
- Category C
- Category U

Category — Crown Spread
Root Protection Area — 13 Birch B2 — Tree Number / Species
Category

NOTE: Tree numbers marked with an * have approximate locations.

Notes:

PLANNING DRAWINGS, NOT TO BE USED FOR BUILDING REGULATIONS OR CONSTRUCTION PURPOSES

Revision: B

Revision List:

B - 17.10.19 - Reduced to 5 houses with unadoptable drive

All levels are approximate, awaiting topo survey, boundaries based on Ordinance Survey

0 20m

Project /Client: 28 Southview Rd/ Taylor

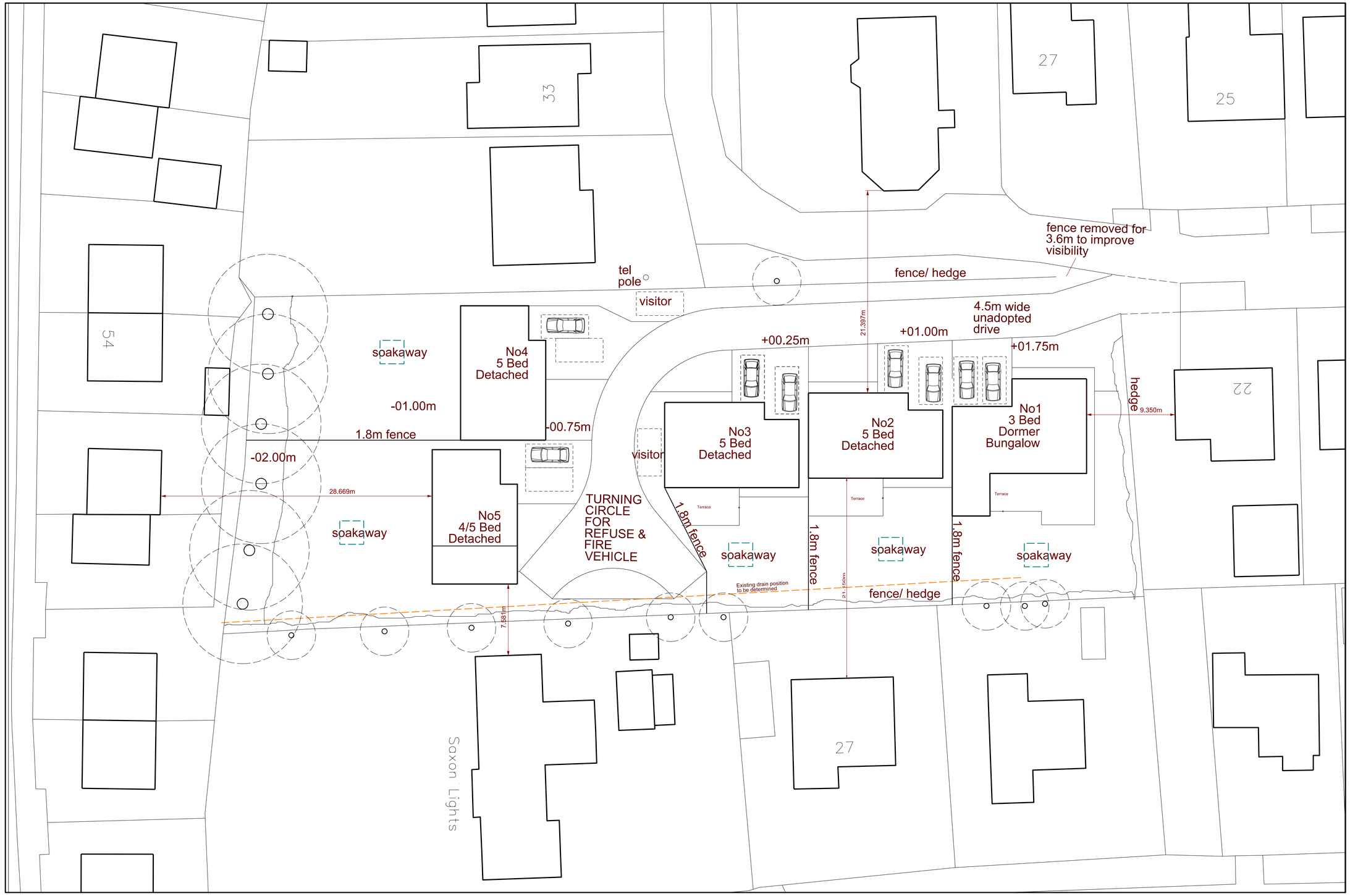
Drawing Title: Site Plan - Proposed

Drawing Number: 2078/SK/001

Scale at A1: 1:200

Date: Jun 19

N



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New trees: planting, support and post-planting maintenance

This plan shows the locations for six proposed new trees. Species have been chosen to be appropriate to the character of both the site and the wider landscape. Most are trees varieties with slender or columnar growth forms appropriate to the space available. Species are as follows:

- **Tree 1** - *Betula papyrifera*
- **Tree 2** - *Carpinus betulus* 'Frans Fontaine' - *Hornbeam, with a columnar growth form*
- **Tree 3** - *Pyrus calleryana* 'Redspire'
- **Tree 4** - *Betula pendula* ('Obelisk', or 'Fastigiata', or 'Zwisters Glory') - Silver birch, with the 3 listed varieties all having narrow or columnar growth forms)
- **Tree 5** - *Fagus sylvatica* 'Dawyck' - *Dawyck's beech, which has a columnar growth form)*
- **Tree 6** - *Liquidambar styraciflua* 'Worplesdon' - *Sweet Gum*

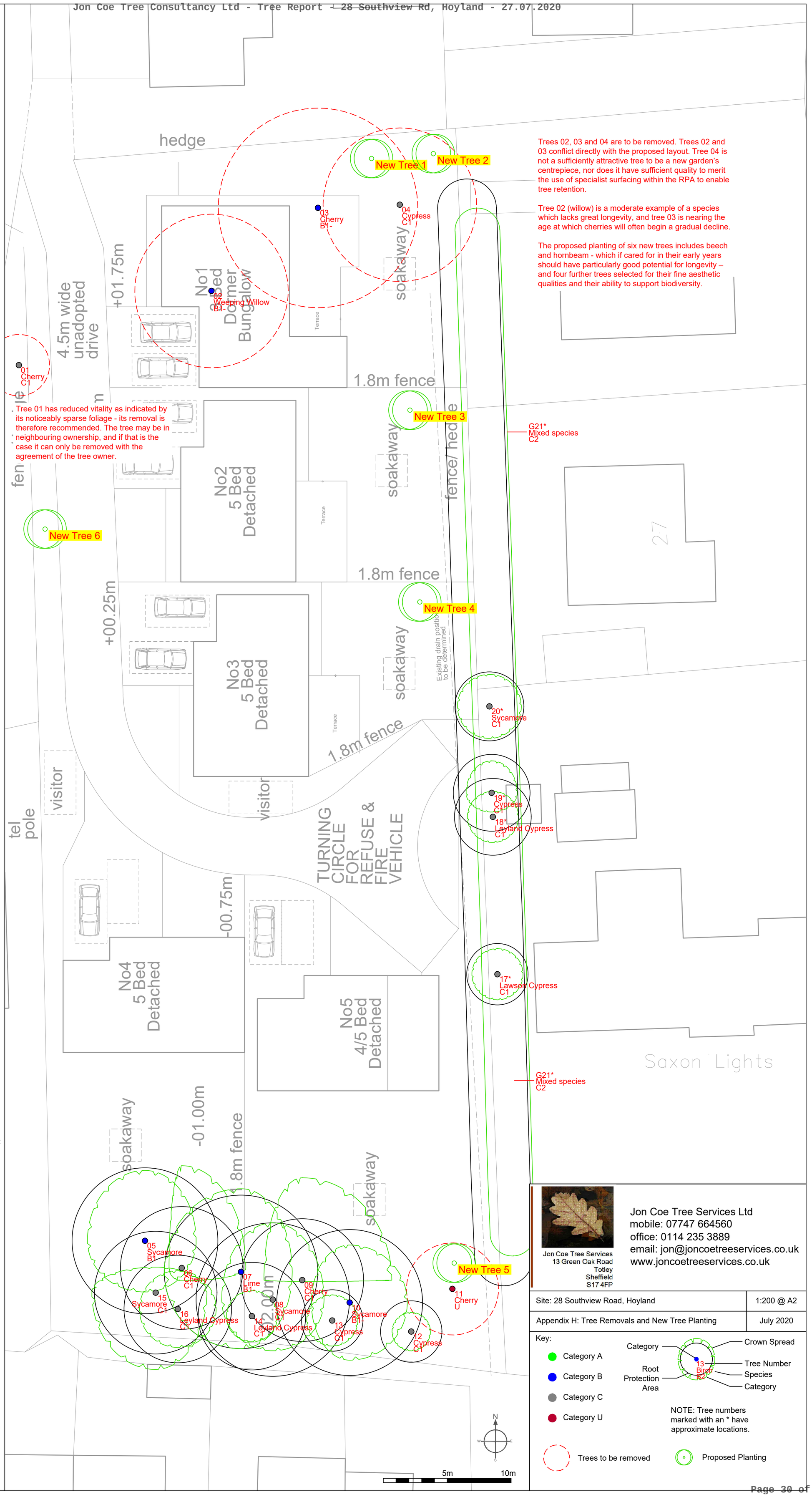
Tree planting should take place during the period November to March, when trees are dormant and ground moisture is plentiful.

All new trees should be procured and planted at nursery specification 'Standard' size: this means they will be 2.5 to 3.0 m height, 1.75 to 2.0 m clear stem, and 8 - 10 cm girth when measured at one metre height.

Procurement, planting, tree support, protection and post-planting maintenance should all be in accordance with *'BS 8545 Trees: from nursery to independence in the landscape'* (BSI Standards, 2014)'.

Particularly important points are:

- Follow the detailed guidance in *'BS 8545* as regards the process of procurement from tree nurseries and ensuring biosecurity. This is important to ensure healthy and viable trees, and to avoid the import to the area or country of any one of the many current plant diseases affecting trees. Use a reputable nursery - further advice can be given.
- Do not at any point leave tree roots exposed and vulnerable to drying out.
- Dig a planting pit that is no deeper than the depth of the container or rootball, or an approximation to this for bare-rooted trees. Pit width should be at least 75 mm wider than the supplied root system - ideally it will be wider than that. Scarify and loosen up the sides of the pit, as glazed or compacted pit edges hinder the necessary outwards root development.
- Soil from excavation should be placed in two piles: topsoil and subsoil. In planting the tree, pit depth may require adjustment such that the tree's root flare is clearly visible at the soil surface (planting too deep is a common reason for tree failure).
- Soil should then be replaced to match the order in which it was extracted (subsoil lower, topsoil higher) such that the soil horizon profile is as similar as possible to prior to excavation - and hence is consistent with the soil profile surrounding the pit, which will encourage the necessary outwards root development. This soil backfilling should be achieved in layers of depths between 150 mm and 230 mm. After each layer is added, it should be firmed in by foot to remove air pockets. This should not involve heavy foot stamping or any similar level of excessive compaction that could damage soil structure. The final layer does not require firming in, but its depth must take into account subsequent soil settlement and also the addition of a mulch layer: it is essential that the tree's root flare remains uncovered by either soil or mulch. Seasoned broadleaf woodchip is an ideal mulch.
- The tree should be staked to prevent uprooting or root damage through movement during the formative years. Numerous staking systems exist: one that uses either two or three stakes will be appropriate. A system appropriate to the expected wind loading should be chosen, with consideration given also to any likelihood of damage by children or others.
- The tree must be lightly supported only by the stakes and ties (though with a sturdy mechanism) - there must be scope for some stem and crown movement. This is because it is the wind induced movement of stem and crown that stimulates the production of a sufficiently supportive root system. Any ties securing the tree to the staking system must therefore be loosely fitted such that movement can occur, and they should have sufficient room for the growth of stem diameter (this should be checked as the young tree grows).
- After three to five years it is recommended that the stake and tie supports are removed. Following support removal, the tree's root development will be fully stimulated during the following years of rapid growth.
- The potential for damage to the new tree's bark by rodents or domestic animals should be assessed, and some form of stem protection should be used to protect the stem to an appropriate height. This will most likely involve either a cage of posts, rails and mesh; or a flexible tree guard fitted around the stem and allowing room for growth. Any risk of damage by children or others should also be considered. Protection of stems is important, as bark damage can result in tree death and a likely requirement to replant.
- It is essential to water newly planted trees, particularly for the first three to five years after planting. Regular watering in limited quantities is of far more use than occasional soakings of the root area.
- It is important to keep weed competition away from the stem base, and similarly grass growth. The use of a surrounding mulch layer as previously described will assist in this regard, but regular weeding may also be necessary.
- After planting and during the early years of growth, formative pruning may be required to produce a crown form that is structurally viable, healthy and attractive. *BS 8545* provides detail on this subject.



Trees 02, 03 and 04 are to be removed. Trees 02 and 03 conflict directly with the proposed layout. Tree 04 is not a sufficiently attractive tree to be a new garden's centrepiece, nor does it have sufficient quality to merit the use of specialist surfacing within the RPA to enable tree retention.

Tree 02 (willow) is a moderate example of a species which lacks great longevity, and tree 03 is nearing the age at which cherries will often begin a gradual decline.

The proposed planting of six new trees includes beech and hornbeam - which if cared for in their early years should have particularly good potential for longevity – and four further trees selected for their fine aesthetic qualities and their ability to support biodiversity.

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Site: 28 Southview Road, Hoyland	1:200 @ A2
Appendix H: Tree Removals and New Tree Planting	July 2020

Key:

- Category A
- Category B
- Category C
- Category U

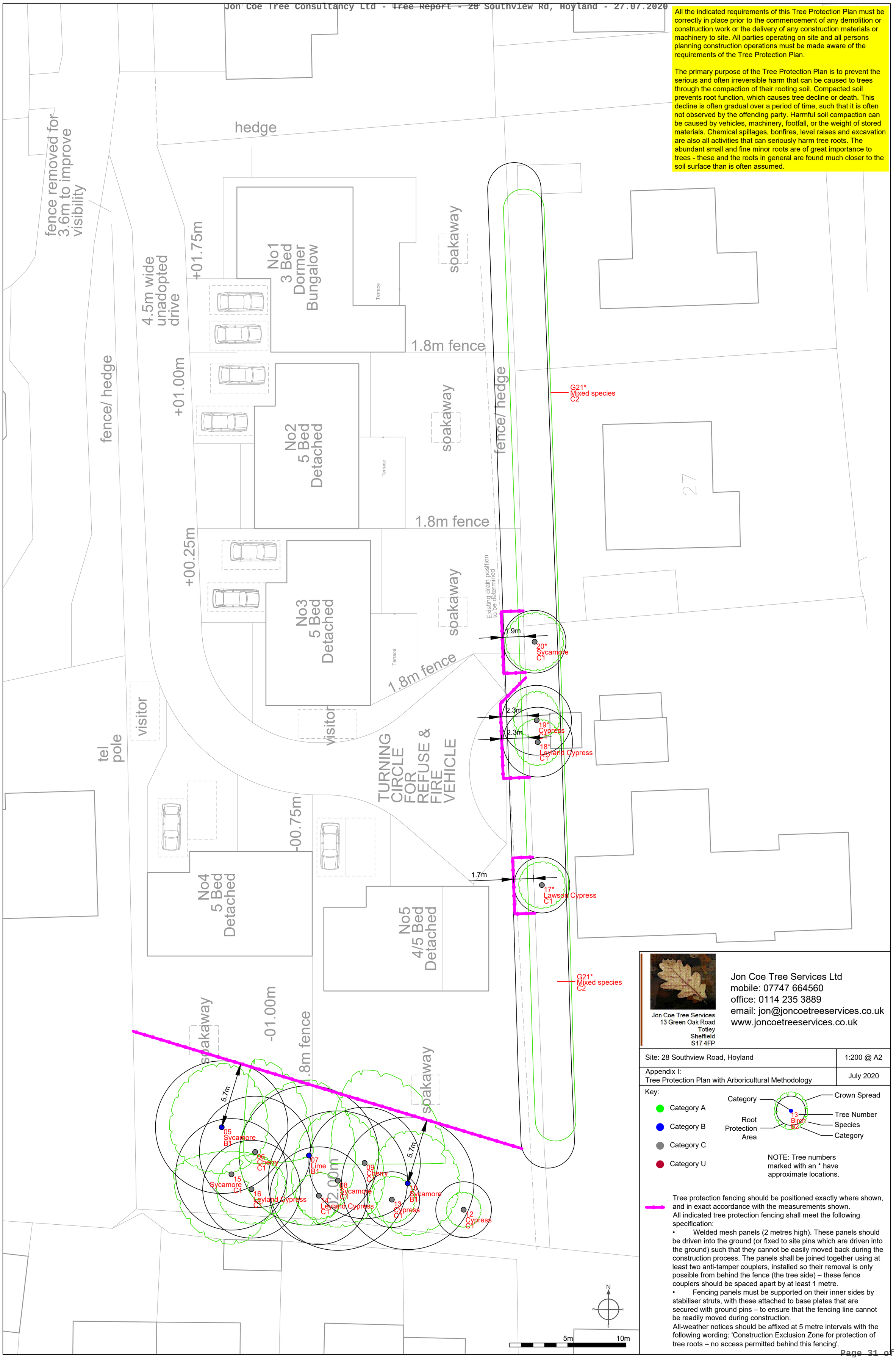
NOTE: Tree numbers marked with an * have approximate locations.

Trees to be removed

Proposed Planting

All the indicated requirements of this Tree Protection Plan must be correctly in place prior to the commencement of any demolition or construction work or the delivery of any construction materials or machinery to site. All parties operating on site and all persons planning construction operations must be made aware of the requirements of the Tree Protection Plan.

The primary purpose of the Tree Protection Plan is to prevent the serious and often irreversible harm that can be caused to trees through the compaction of their rooting soil. Compacted soil prevents root function, which causes tree decline or death. This decline is often gradual over a period of time, such that it is often not observed by the offending party. Harmful soil compaction can be caused by vehicles, machinery, footfall, or the weight of stored materials. Chemical spillages, bonfires, level raises and excavation are also all activities that can seriously harm tree roots. The abundant small and fine minor roots are of great importance to trees - these and the roots in general are found much closer to the soil surface than is often assumed.



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Site: 28 Southview Road, Hoyland	1:200 @ A2
Appendix I: Tree Protection Plan with Arboricultural Methodology	July 2020

Key:

- Category A
- Category B
- Category C
- Category U

NOTE: Tree numbers marked with an * have approximate locations.

Tree protection fencing should be positioned exactly where shown, and in exact accordance with the measurements shown.
All indicated tree protection fencing shall meet the following specification:

- Welded mesh panels (2 metres high). These panels should be driven into the ground (or fixed to site pins which are driven into the ground) such that they cannot be easily moved back during the construction process. The panels shall be joined together using at least two anti-tamper couplers, installed so their removal is only possible from behind the fence (the tree side) – these fence couplers should be spaced apart by at least 1 metre.
- Fencing panels must be supported on their inner sides by stabiliser struts, with these attached to base plates that are secured with ground pins – to ensure that the fencing line cannot be readily moved during construction.

All-weather notices should be affixed at 5 metre intervals with the following wording: 'Construction Exclusion Zone for protection of tree roots – no access permitted behind this fencing'.