Church House, Ashton Ingham,
Ross on Wye
Tree Survey & Arboricultural Impact Assessment

For:
Kevin Edwards

Based on an inspection
carried out
11th August 2020

By

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(Revision A)

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Church House,
Ashton Ingham

Tree Survey & Arboricultural Impact Assessment

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1 Summary:

1.1 The following report was prepared at the instruction of Kevin Edwards and concerns the plot of ground at Church House, Ashton Ingham, Ross on Wye. This report updates a previous survey carried out in July 2017.

1.2 The proposed development of the site for new housing will impact on a number of existing trees summarised in the table below. Proposed replacement planting to mitigate for the loss of these trees are as outlined in the Planting proposals plan.

1.3 Tree Survey Summary: *Total number of trees to be removed*

BS5837:2012 Quality Category:	**Total no.** (Individual trees)	**Total no.** (Group trees)	**Total no.** (Hedgerows)
A – High	0	0	0
B – Moderate	0	0	0
C - Low	2	0	0
U - Poor	2	0	0
Total nos.	4	0	0

Note: category 'U' trees are recommended for removal due to their limited life expectancy

2 Introduction:

2.1 The report is based upon the findings of a survey carried out on 11th August 2020 to assess the existing trees in terms of health, condition, form and overall significance within the local environment, the main objective being to assess the degree of constraint it represents with regard to the proposed development of the site. The methodology used is outlined in Appendix 1, while Appendix 2 sets out definitions of the terms used and codes used in the Tree Schedule.

2.2 Weather conditions were hot & sunny with adequate visibility for the purposes of this investigation. All inspections were made from ground level only: only those features apparent at the time of the inspection could be considered and no liability can be accepted regarding trees or their parts that were inaccessible or obscured in part or in whole.

2.3 It should be noted that, although the health and safety of the trees is part of the assessment methodology used, this report is intended for planning purposes only; it should not be construed as a tree risk assessment. Faults may be identified and recorded as part of this study but unless the trees in question represent a significant hazard under the existing site conditions, management recommendations will not normally be made. It remains the tree owner's responsibility to ensure the trees are managed appropriately: the assessor can accept no liability for damage or injury sustained as a result of the failure of any tree or its parts.

2.4 This report remains valid for a period of 3 years from the date the survey was carried out.

3 Inspection and General Observations:

3.1 The survey area is as indicated on the accompanying tree constraints plan. This has been based on the a topographical survey plan produced by Monument Geomatics Ltd (drawing number MG1098_S1).

3.2 We have been advised there is an area tree preservation order served in 1979 which applies to trees on this site; it is recommended that no tree felling or other works affecting trees be carried out without consulting the local planning authority.

3.3 The site consists of a flat area of ground consisting of mown grass with mature specimen trees and contains the access road serving Aston Court and Church House. The site adjoins St. John the Baptist Church (grade II* listed) on the eastern boundary and is separated by a small stream which flows south past the church and Ashton Court. The western boundary is enclosed from open agricultural land by a tall hedgerow consisting predominantly of naturalised plum (bullace).

3.4 There are a number of existing mature trees alongside the access road (adjacent to the hedge), adjacent to the stream corridor and on the boundary with the church and Aston Court.

3.5 In addition to the native broadleaved trees (including ash, oak, lime, sweet chestnut, alder and birch) there are a number of ornamental specimen trees which include Norway maple, Lawson cypress, spruce, Western red cedar and larch.

3.6 The majority of these trees are considered to be of moderate quality with good amenity value and they have been classified as a retention category ‘B’ trees. The lime (21) however is considered to be higher in quality and warrants a category ‘A’ designation.

3.7 The condition of these trees has deteriorated since the last survey in 2017 with a noticeable decline in canopy cover and build-up of deadwood within the crowns of several trees including the cherry, larch and ash.

3.8 There are two trees, a Norway maple (6) and larch (20) with defects that limit their safe useful life expectancy and have been classified as category ‘U’ trees.

3.9 Nominal root protection areas (based on a radial dimension) have been provided for each tree to give an indication of the rooting volumes required for the safe retention of each specimen. In reality the rooting areas will not be circular and in some instances, due to the presence of existing root barriers such as the stream and access road, they may require to be off-set into adjacent areas that are more conducive for root growth.

4 Arboricultural Impact Assessment:

4.1 The proposed development is for a new detached single storey residential dwelling with new car parking, car port and associated services.

4.2 The larch (20) is in decline with sparse canopy, needle loss and partial collapse. The tree has been classified as category ‘U’, due to it’s limited life-span and is recommended for removal.

4.3 The proposed scheme will impact on the RPA of the category 'A' lime (21). The existing stream limits the extent of the RPA to the east by approximately 30%, the total rooting requirement of 327 sq.m will therefore have to be contained within the site, which can be accommodated by offsetting the RPA to the north. The proposed building footprint infringes the RPA by 13% however with the use of 'limited-dig' construction techniques (such as mini piles and concrete ring beam) the eastern wing of the proposed property could be raised above the RPA with rain water directed under the built platform to minimise the impact on the tree and ensure its safe retention.

4.4 A cherry (22) and spruce (23), both category 'C' trees, will also need to be removed to accommodate the new building. These trees are estimated to be circa 30-35 years old and as such would not be protected by the area TPO.

4.5 There are row of five mature steam-side alders on the opposite bank (26-30), which although the 'nominal' RPA appears to be affected by the proposals, will remain unaffected as the stream will limit the extent of root growth into the site. The RPA's of these trees can be off-set in grassed areas to the east.

4.6 Retained trees will need to be protected by the provision of suitable barriers as outlined in the tree protection plan and Appendix 2A (Type 2 barriers). This will ensure there are no excavations or ground disturbance within the root protection areas of trees to be retained.

4.7 Service runs where possible are to be located to avoid the root protection areas (RPA's) of all retained trees and any proposed earthworks for the development should not extend into the construction exclusion zones defined by the RPA's of the retained trees.

4.8 The proposed infiltration trench will impact on trees 1 – 8 with the excavation of a 300mm wide trench to the east of the access track. The 'nominal' root protection areas shown on the tree protection plan will in reality be off-set to the east as the existing tarmac access road will act as a barrier to roots, limiting their extent west of the road. The impact of 300mm width into the actual rooting area will therefore be minimal and the trees can be retained as there is sufficient available ground to the east to accommodate the total rooting volume required for these trees.

4.9 Works will be within 1.0 – 1.5m of trees 4 & 5 and it is advised that hand digging for the infiltration trench is required through the root protection areas of these Norway maples with any large roots greater than 25mm diameter not to be cut and be retained intact.

5 Existing tree schedule:

5.1 *The table following overleaf provides details of all the trees surveyed; notes on the terms and abbreviations used can be found at Appendix 2 following the tree schedule:*

TREE SCHEDULE

ID	*Species*	Stem No.	Trunk Diam (mm)	Height (m.)	Crown Spread (metres)				Clearance (metres)		Life stage	Health & Vigour	Structural Condition	Remaining useful life	*Observations*	Retention CATEGORY	Protection Radius (m)	RPA (m^2)
					N	E	S	W	Mean	Lowest over site + Direction								
1	Ash	2	810	18	6.5	5	6	4	10+	-	M	Good	Good	20-40	Adjacent sycamore at base, early onset of ash dieback (10% canopy loss)	Bii	9.7	297
2	Lawson cypress	1	500	17	1.5	1.5	1.5	1.5	2	1.5-N	M	Fair	Good	10-20	Sparse canopy, dense ivy	Cii	6.0	113
3	Ash	1	660	19	5.5	5	5	4	8+	-	M	Good	Good	20-40	Ivy, early onset of ash dieback (20% canopy loss)	Bii	7.9	197
4	Norway maple	1	470	14	7	4	6	6	3.5	-	M	Good	Good	20-40		Bii	5.6	100
5	Norway maple	1	310	12	7.5	1.5	2	4	3	-	M	Good	Good	20-40	Asymmetrical crown, suppressed by adjacent tree	Cii	3.7	43
6	Norway maple	1	520	13.5	5	4.5	2	4	4	3-W	M	Poor	Poor	<10	Dense ivy, sparse canopy, dieback & deadwood, basal decay cavity	U	6.2	122
7	Ash	1	870	22	5	5	4	5.5	6	3-N	M	Poor	Fair	10-20	Large diameter deadwood branches, sparse canopy, ivy, ash dieback (30% canopy loss)	Cii	10.4	342
8	Ash	1	480	20	8	4	4	6	6	-	M	Poor	Fair	10-20	Minor deadwood, sparse canopy, ivy, ash dieback (30% canopy loss)	Cii	5.8	104
9	Spruce	1	625	19	2.5	3	3	3	5	4-S	M	Fair	Good	10-20	Dieback & needle loss in lower crown	Bii	7.5	177
10	Ash	1	460	14	4.5	1.5	2	6	2	-	M	Fair	Good	20-40	Slight lean west, asymmetrical canopy	Cii	5.5	96
11	Oak	1	660	20	3.5	4	6	2	6	-	M	Good	Good	20-40		Bii	7.9	197
12	Sweet chestnut	1	940	16	5.5	3	4	7	5	4-W	M	Good	Good	20-40	Dense ivy	Bii	11.3	400
13	Alder	4	590	21	5	2	4.5	5	8	-	M	Good	Good	20-40	Ivy on lower stems	Cii	7.1	157

ID	*Species*	Stem No.	Trunk Diam (mm)	Height (m.)	Crown Spread (metres)				Clearance (metres)		Life stage	Health & Vigour	Structural Condition	Remaining useful life	*Observations*	Retention CATEGORY	Protection Radius (m)	RPA (m^2)
					N	E	S	W	Mean	Lowest over site + Direction								
14	Goat willow	1	400	16	2.5	0	3	6	0	-	M	Fair	Poor	10-20	Lean to west, small decay pocket at 3.0m, ivy on lower stem	Cii	4.8	72
15	Alder	1	375	18.5	1	2	6	4	8	-	M	Good	Good	20-40		Cii	4.5	64
16	Cherry	1	650	17	2.5	4	3.5	5.5	6	-	M	Fair	Fair	10-20	Minor deadwood throughout, very sparse canopy	Cii	7.8	191
17	Sweet chestnut	2	500	16	2	4	3.5	7	6+	-	M	Fair	Good	10-20	Sparse canopy	Cii	6.0	113
18	Larch	1	410	15	4.5	2	3.5	2.5	3	2-E	M	Poor	Fair	10-20	Sparse canopy, needle loss lower crown, deadwood, ivy	Cii	4.9	76
19	Larch	1	390	16	3	3	2.5	2	4	-	M	Poor	Fair	10-20	Sparse canopy, needle loss lower crown, deadwood, ivy, basal decay	Cii	4.7	69
20	Larch	1	560	16	2	4	3	1.5	2	1.5-S	M	Fair	Poor	<10	Dense ivy, lean to east, partial collapse, ground lifting	U	6.7	142
21	Lime	1	850	18	5.5	5	5	5	3	-	M	Good	Good	40+		Ai	10.2	327
22	Cherry	2	345	15	2	1	3	4.5	2	1.5-W	M	Fair	Good	10-20	Dense ivy on stems, sparse canopy	Cii	4.1	54
23	Spruce	1	325	8	2.5	1	2.5	4.5	0	-	M	Fair	Good	10-20		Cii	3.9	48
24	Birch	1	470	22	4	0.5	5	5	2	-	M	Good	Good	10-20	Twisted stem, slight lean west	Bii	5.6	100
25	Birch	1	560	21	5	5	5	5	2	-	M	Good	Good	20-40	Good specimen tree	Bii	6.7	142
26	Western red cedar	5	890	18	5	5	5	5	0	-	M	Good	Good	20-40		Bii	10.7	358
27	Alder	4	700	20	5.5	6	5	6	8+	-	M	Good	Good	20-40	Tree located on opposite bank of stream	Bii	8.4	222
28	Alder	5	670	20	5	5	6	6	6	4-W	M	Good	Good	20-40	Tree located on opposite bank of stream	Bii	8.0	203

ID	*Species*	Stem No.	Trunk Diam (mm)	Height (m.)	Crown Spread (metres)				Clearance (metres)		Life stage	Health & Vigour	Structural Condition	Remaining useful life	*Observations*	Retention CATEGORY	Protection Radius (m)	RPA (m^2)
					N	E	S	W	Mean	Lowest over site + Direction								
29	Alder	5	560	20	3	5	3	5	8	-	M	Good	Good	20-40	Tree located on opposite bank of stream	Bii	6.7	142
30	Alder	1	400#	20	1.5	4.5	4.5	4	6	2-W	M	Good	Good	20-40	Tree located on opposite bank of stream	Bii	4.8	72
G1	Alder, ash, willow	1	450-600	20	4 x 4m				10+	-	M	Good	Good	20-40		Bii	7.2	-
H1	Bullace	m/s	<360	6-8	3 x 3m				0	-	M	Fair	Fair	20-40	Norway maple & Hawthorn, occasional holly & hazel (dogs mercury, lords & ladies, geranium within ground flora)	Bii	4.3	-

Estimated tree diameter

Details of the Terms & Abbreviations used are provided in Appendices

- The report has been framed as an 'Arboricultural Constraints Report', as defined in BS5837:2012 - *Trees in relation to design, demolition & construction-Recommendations*. Its purpose is to set out and to quantify the degree of constraint offered by existing tree cover with regard to any development or alteration in land-use that may be proposed and is intended to be used to inform feasibility studies and design options. As such it reflects the conditions *as they existed at the time of our inspections*: no account has been taken of any specific development proposals, although it has been assumed that certain unspecified alterations in site usage patterns are likely to occur, which are likely to result in an increase in site occupancy levels. Additional arboricultural input may be required at subsequent stages of design, planning and implementation in relation to the assessment & management of possible arboricultural impacts.

- The survey parameters are as set out in BS5837:2012 and based on the findings each tree or group is allocated to one of four 'Retention Categories' (see Appendix 2, p2). The factors taken into account in categorising the trees include their overall arboricultural quality, their general health and structural stability, their likely useful life-expectancy, their significance to the local landscape and general public amenity value, the degree to which they provide wildlife habitat and enhance local biodiversity and any other social or cultural values that they may embody.

- Also integral to the methodology of BS5837 is the calculation of **Root Protection Areas (RPAs)** for each of the trees in question. The RPA is defined as 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 the roots and soil structure is treated as a priority."*

- It should be noted that in most cases the plan accompanying this report will show the *nominal* RPAs of the trees, indicated as circles centred upon the tree of a radius such that they enclose an area equal to the relevant RPA. In practice the distribution of roots around a tree will frequently prove to be uneven due to the presence of a variety of constraining influences. These may be physical barriers such as existing foundations etc, or the existence of localised soil conditions inhospitable to root growth, such as waterlogging or soil compaction. Conversely, soil conditions may be particularly *conducive* to root development in one quarter and this might also lead to an asymmetric distribution of roots around the tree. However in most cases the nominal circular areas as indicated will provide a reasonable guide as to where special measures will be required to protect tree roots and preserve good soil condition.

- The RPAs of the trees will provide the basis for defining **Construction Exclusion Zones (CEZs),** these being areas around all of those trees intended to be retained where access should be prevented throughout the entire process of site preparation and construction. In certain cases the CEZ will exceed the size of the RPA in order to accommodate the aerial parts of wide-spreading trees.

- Access within the CEZ should be prevented through the erection of barriers, constructed in accordance with BS5837:2012. Where access within an RPA is unavoidable, appropriate ground protection should be installed. Outline details of the design of suitable barriers and ground protection are given in Appendices A & B. These protection measures should be put in place prior to any site clearance or construction work commencing on the site and they should remain *in situ* until all works have been completed. Some activities within the CEZs may be acceptable but should not be put in hand until appropriate arboricultural advice has been sought.

The **DIMENSIONS** Taken are:

- **STEM-No.** indicates the number of main stems (i.e. whether the trunk divides at or below 1.5m; (Used in the calculation of RPA.) "m-s" = Multi-stemmed.
- **DIAMETER** (in centimetres), obtained from the girth measured at approx.1.5m. For trees with 2 to 5 sub-stems, a notional figure is derived from the sum of their cross-sectional areas. For multi-stemmed trees the notional diameter may be estimated on the basis of the average stem size x the number of stems. (A notional diameter may be estimated where measurement is not possible.)
- **HEIGHT**, estimated and expressed in metres.
- The **CROWN SPREAD** is expressed in terms of the crown radii estimated at the four cardinal points (or as otherwise specified) and given in metres.
- **CLEARANCES** are indicated as an estimate of the *mean, overall* height of the canopy above ground level with an additional figure for the height above ground of the *lowest significant branch* within the site, together with the direction of its growth.

LIFE STAGE is defined as follows:

P recently Planted; sapling: A tree that is still establishing and which would be relatively easy to replace or even transplant. Likely to be vulnerable to damage from (e.g.) strimmers, mowing equipment, drought, vandals, etc. (Easily replaced thus a negligible constraint).

Y Young, establishing trees. Should be growing fast, usually primarily increasing in height more than spread, but as yet making limited impact upon the landscape.

EM Early-mature. Established young trees, normally of good vigour and still increasing in height, but beginning to spread laterally. Beginning to make an impact upon the local landscape & environment.

M Mature: Well-established trees, still growing with some vigour, but tending to fill out and increase spread. Bark may be beginning to crack & fissure. In the middle half of their safe, useful life-expectancies.

LM Late-Mature: In full maturity. Still retaining some vigour but growth slowing.

O Old: Fully mature with vigour declining. Likely to possess features that could be regarded as potential faults, such as large, ponderous branches, old wounds etc. etc., but also likely to be of high amenity value.

A Ancient: Old trees can survive for very many years with healthy growth continuing although the tree may be of low vigour. Crown size usually becomes reduced, either through natural branch-loss or through management (e.g. pollarding). Decay is usually present. Such trees may embody certain hazards but they are also likely to be of considerable conservation value (i.e. "Veteran" trees).

HEALTH & VIGOUR: Essentially a snapshot of the general health of the tree based upon its general appearance, its apparent vigour and the presence or absence of symptoms associated with poor health, physiological stress etc. (Fungal infections may be recorded here but *decay giving rise to structural weakness* would be recorded under 'Structural Condition' – see next parameter):

Good no significant health issues.

Fair indications of slight stress or minor disease (e.g. the presence of minor dieback/deadwood or of epicormic shoot growth)

Poor Significant stress or disease noted; larger areas of dieback than above

Bad Severe decline; widespread dieback and/or severe stress; life-threatening disease.

Dead (or Moribund)

STRUCTURAL CONDITION: Defects affecting the structural stability of the tree, including decay, significant dead wood, root-plate instability or significant damage to structural roots, weak forks (e.g. those where bark is included between the members) etc. etc. Classified as:

Good No obvious structural defects: basically sound

Fair Minor, potential or incipient defects

Poor Significant defect(s) likely to lead to actual failure in the medium to long-term

Bad Defects liable to cause significant failure in the short term, or to lead to a major or total collapse in the foreseeable future

Severe Tree that has already suffered or is at imminent risk of a major collapse.

REMAINING USEFUL LIFE EXPECTANCY: An estimate of the length of time in years that a tree might be expected to continue to make a useful contribution to the locality at an acceptable level of risk (based on an assumption of continued routine maintenance)

V - less than 10 years S - 10+ years
M - 20+ years L - 40+ years

RETENTION CATEGORY: Trees are classed as category **U, A, B** or **C**, based on criteria given in BS5837:2012; summary definitions as follow (see BS5837 for further details). Categories A, B and C are further characterised by the use of sub-categories, which attempt to identify what aspect of the tree is the main source of its perceived value:
(**i**) **arboricultural** qualities (**ii**) **landscape** qualities and (**iii**) **cultural, historic or ecological/conservation** qualities. Examples of these qualities for each of the three categories are given below, although these are indicative only.

Note: *This is NOT a health and safety classification; the classification does not take into account any requirement for remedial tree care or ongoing maintenance apart from that which may affect the trees' general suitability for retention.*

U UNSUITABLE: (red) Trees likely to prove to be unsuitable for retention for longer than 10 years should any significant increase in site usage arise as a result of development.

Dead or moribund trees; those at risk of collapse or in terminal decline;; trees that will be left unstable by other essential works such as the removal of nearby category U trees; trees infected by pathogens that could materially affect other trees; low quality trees that are suppressing better specimens

(Category U trees may have conservation values which it might be desirable to preserve.
It may also include trees that should be removed irrespective of *any* development proposals.)

A HIGH QUALITY (green) Trees or groups whose retention should be given a particularly high priority within the design process. Normally with an expected useful life-expectancy of at least 40 years.

(i) Notably fine specimens; rare or unusual specimens; essential component trees within groups, semi-formal or formal plantings (e.g. dominant trees within an avenue etc.)

(ii) Trees, groups or woodlands of particular visual importance as landscape features.

(iii) Trees, groups or woodlands of particular significance by virtue of their conservation, historical, commemorative or other value (e.g. veteran trees or wood pasture.)

B MODERATE QUALITY (blue): Trees or groups of some importance with a likely useful life-expectancy in excess of 20 years. Their retention would be highly desirable; selective removal of certain individuals may be acceptable, but only after full consideration of all alternative courses of action.

(i) Fair quality but not exceptional; good specimens showing some impairment (e.g. remediable defects, minor storm damage or poor past management.)

(ii) Acceptable trees situated such as to have little visual impact within the wider locality. Also numbers of trees, perhaps in groups or woodlands, whose value as landscape features is greater collectively *than would warrant as individuals (such that the selective removal of an individual would not impact greatly upon the trees' overall, collective value).*

(iii) Trees, groups or woodlands with clearly identifiable conservation or other cultural benefits.

C MINOR VALUE (grey): Trees or groups of rather low quality, although potentially capable of retention for at least approx. 10 years. *Also* small trees below 15cm diam.
Potentially retainable, but not of sufficient value to be regarded as a significant planning constraint.

(i) Unremarkable trees of very limited merit or of significantly impaired condition.

(ii) Trees offering only low or short-term landscape benefits; also secondary specimens within groups or woodlands whose loss would not significantly diminish their landscape value.

(iii) Trees with extremely limited conservation or other cultural benefit.

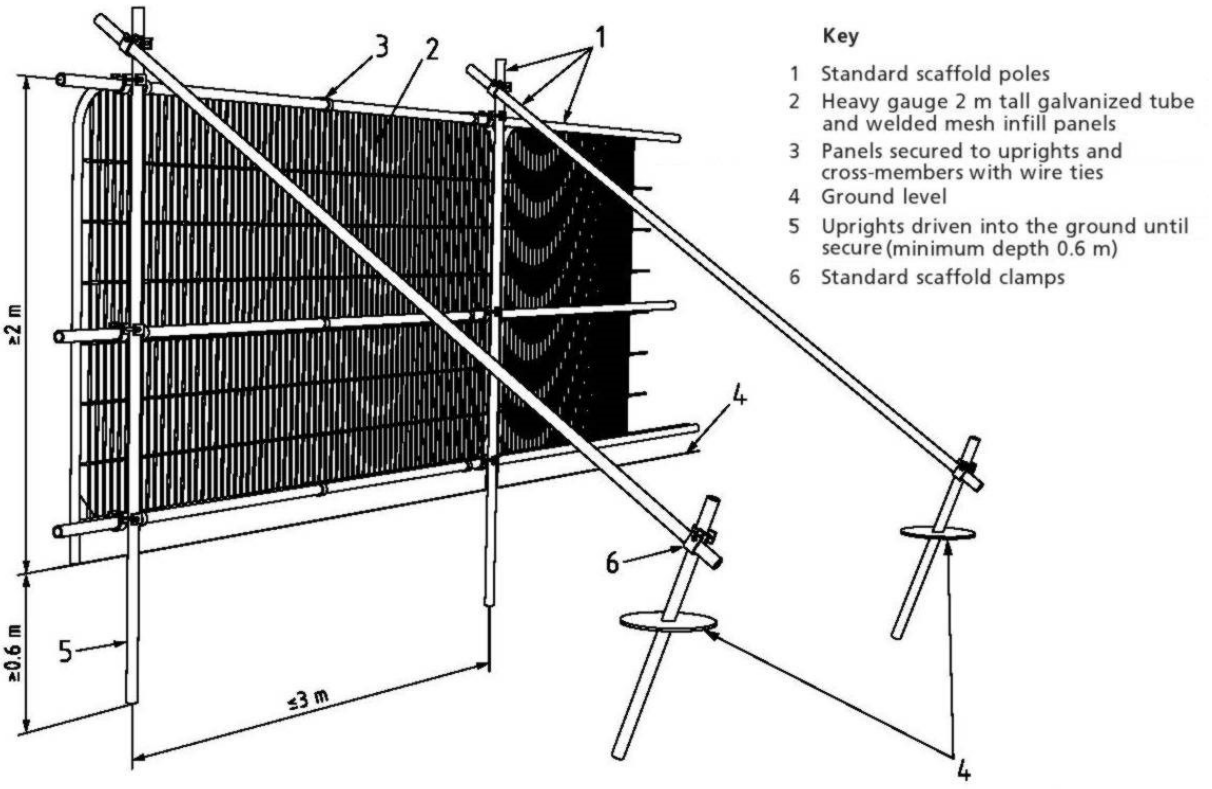
ROOT PROTECTION AREA (RPA): *This is the area in square metres formed by a circle of radius* (the **Protection Radius**) *twelve times the actual or notional stem diameter of the tree (see 'Diameter', above). The RPA represents the minimum area deemed to contain sufficient roots & soil to maintain the tree's viability. It is the basis whereby the layout of the* **Construction Exclusion Zone (CEZ)** *is determined, which should encompass an area equal to the RPA, although its form may be adapted in the light of arboricultural considerations and pre-existing physical constraints. The CEZ should be protected by sturdy temporary fencing (see BS5837:2012) throughout the entire process of site preparation and construction.*

*A **CONSTRUCTION EXCLUSION ZONE** should be established around all trees intended for retention, based upon the Root Protection Areas (RPAs) of those trees. These zones should be adequately protected by appropriately designed **Protective Barriers** & **Ground Protection** throughout the all demolition & construction processes.*

A: PROTECTIVE BARRIERS

- Vertical barriers should be erected and ground protection installed **before any materials or machinery are brought onto the site and before any demolition, development or stripping of soil commences**. Areas of new or retained structure planting should be similarly protected, based on the extent of the soft landscaping as shown on the approved drawings. The project arboriculturist should confirm that barriers and ground protection have been erected and set out correctly prior to the commencement of other operations, and that they are fit for purpose
- Where required, pre-development tree work may be undertaken before the installation of tree protection, with the agreement of the project arboriculturist and the local planning authority.
- **Once erected, barriers and ground protection should be regarded as sacrosanct,** and should not be removed or altered without prior recommendation by the project arboriculturist and approval of the local planning authority.
- Barriers should be fit for the purpose of excluding construction activity and appropriate to the degree and proximity of work taking place around the retained tree(s). On all sites, special attention should be paid to ensuring that barriers remain rigid and complete.
- In most cases, barriers should consist of a scaffold framework in accordance with the illustration below, comprising a vertical and horizontal framework, well braced to resist impacts, with vertical poles spaced at a maximum interval of 3m. Onto this, weldmesh panels should be securely fixed.

Default specification for protective barrier (Type 1)



- Where driven vertical poles are impractical due to the likelihood of causing damage to tree roots or to underground services, above-ground stabilizing systems may be specified.
- Alternative specifications may be acceptable but should be specified in conjunction with the project arboriculturist but they must always ensure an adequate degree of protection for the conditions likely to obtain on site. Weldmesh panels on rubber or concrete feet (Type 2 barrier) may be sufficient where protection is only required from pedestrians, cars, vans and manually operated plant, but in such cases the panels should be securely joined together using a minimum of two anti-tamper couplers, installed so that they can only be removed from inside the fence. The panels should be supported on the inner side by stabilizer struts. Timber post and sheep net fencing 1.1m high (Type 3 barriers) may be used in instances where deemed acceptable in low risk areas.

B: GROUND PROTECTION

- Where construction working space or temporary construction access is justified within the RPA, this should be facilitated by a set-back in the alignment of the tree protection barrier. In such areas, suitable existing hard surfacing that is not proposed for re-use as part of the finished design should be retained to act as temporary ground protection during construction, rather than being removed during demolition. The suitability of such surfacing for this purpose should be evaluated by the project arboriculturist and an engineer as appropriate
- However, where the set-back of the tree protection barrier would expose unmade ground to construction damage, new temporary ground protection should be installed as part of the implementation of physical tree protection measures prior to work starting on site. Such temporary ground protection should be capable of supporting any traffic entering or using the site without being distorted or causing compaction of underlying soil.
- The ground protection might comprise one of the following:
    - *a) for pedestrian movements only, a single thickness of scaffold boards placed either on top of a driven scaffold frame, so as to form a suspended walkway, or on top of a compression-resistant layer (e.g. 100 mm depth of woodchip), laid onto a geotextile membrane;*
    - *b) for pedestrian-operated plant up to a gross weight of 2 t, proprietary, inter-linked ground protection boards placed on top of a compression-resistant layer (e.g. 150 mm depth of woodchip), laid onto a geotextile membrane;*
    - *c) for wheeled or tracked construction traffic exceeding 2 t gross weight, an alternative system (e.g. proprietary systems or pre-cast reinforced concrete slabs) to an engineering specification designed in conjunction with arboricultural advice, to accommodate the likely loading to which it will be subjected.*
- In all cases, the objective should be to avoid compaction of the soil, which can arise from the single passage of a heavy vehicle, especially in wet conditions, so that tree root functions remain unimpaired.

C: ADDITIONAL PRECAUTIONS OUTSIDE THE EXCLUSION ZONE:

- Once the exclusion zone has been protected by barriers and/or ground protection, construction work can commence. All weather notices should be erected on the barrier with words such as:

Construction exclusion zone – NO ACCESS

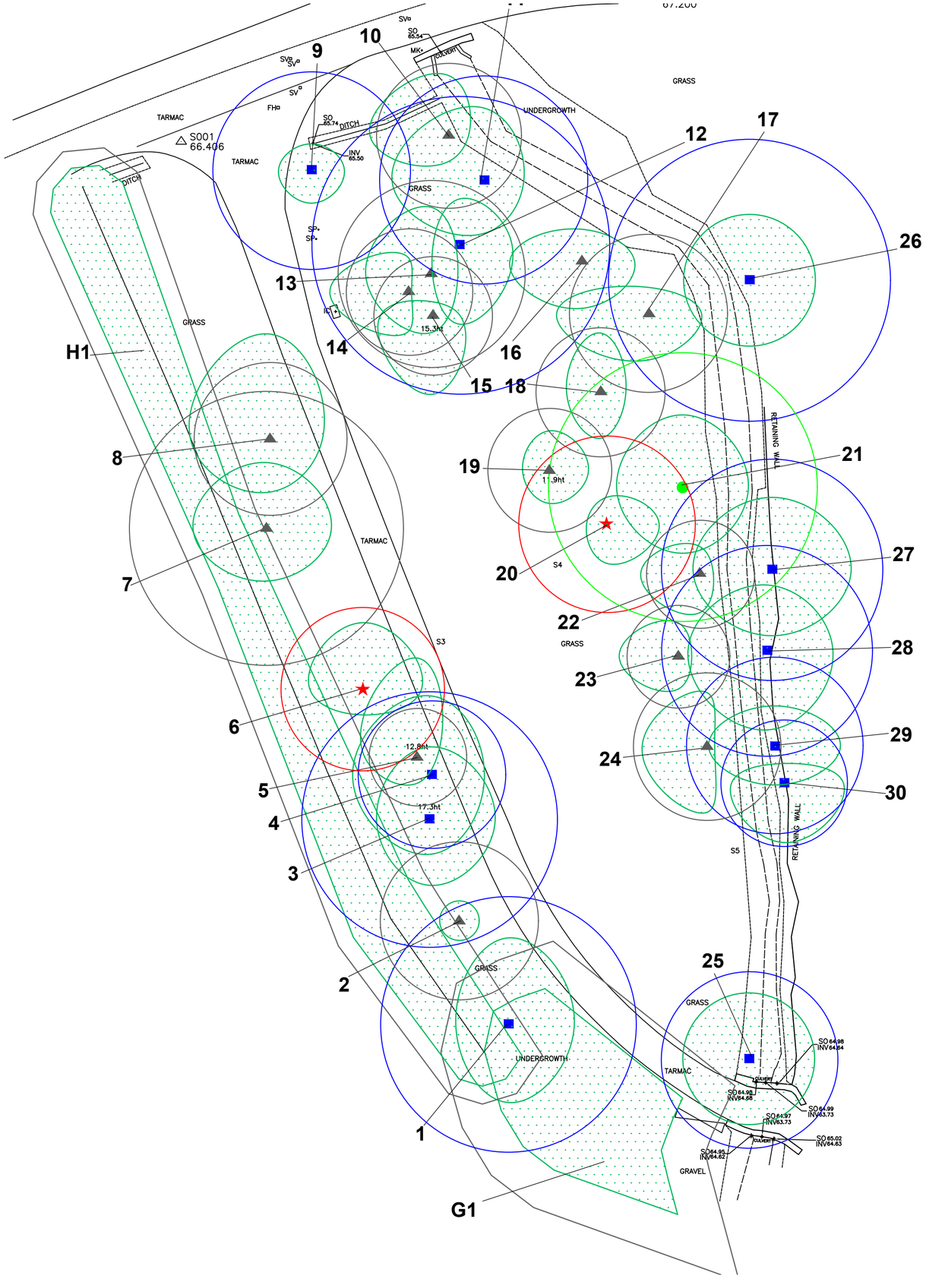
In addition the following should be addressed or avoided.

- Care should be taken when planning site operations to ensure that wide or tall loads, or plant with booms, jibs and counterweights (including drilling and piling rigs) can operate without coming into contact with retained trees. Such contact can result in serious damage to them and might make their safe retention impossible. Consequently, any transit or traverse of plant in close proximity to trees should be conducted under the supervision of a banksman to ensure that adequate clearance from trees is maintained at all times. In some circumstances it may be impossible to maintain adequate clearance thus necessitating access facilitation pruning. Local Planning Authority consent for such pruning may be required.
- Material which will contaminate the soil, e.g. concrete mixings, diesel oil and vehicle washings, should not be discharged within 10 m of the tree stem.
- Fires should be avoided on sites if at all possible. Where they are unavoidable they must not be lit in a position where heat could affect the trunk, branches or foliage of any tree. The size of the fire and the wind direction should be taken into account, and fires must be attended at all times.
- Notice boards, telephone cables or other services should not be attached to any part of the tree.
- It is essential that allowance should be made for the slope of the ground so that damaging materials such as concrete washings, mortar or diesel oil cannot run towards trees..

D: ROADS, DRIVEWAYS AND PATHS NEAR TREES
(including outline notes on 3-dimensional 'Cellular Confinement' load-support systems)

1. The overriding principles to be adhered to in the design of hard surfaces near trees are: (i) the preservation of the character of the soil in a form no more compacted or otherwise disturbed, disrupted or contaminated than it is at present; (ii) to maintain gaseous exchange between the upper layers of soil and the atmosphere; (iii) to ensure adequate (but not excessive) water supply to the soil; and (iv) the avoidance of damage to retained trees as a result of root severance, crushing or abrasion.
2. Tree roots are concentrated in the upper metre of the soil, with the great majority 300-600 mm below the soil surface. Beyond 3 or 4 metres from the trunk most of the roots are small in diameter and not readily apparent as originating from trees. They are nevertheless vital to the tree's well-being, as well as being very easily damaged by even rather shallow soil disturbance, such as may be required in establishing a path or driveway.
3. Wherever possible paths etc should be routed well outside the Root Protection Area (RPA), when problems should not arise. Note, however, that the position of a path or road on a layout plan may indicate the surface only: *Allowance must be made for any kerbing, and the footing into which kerbs will be set, when considering possible conflicts between trees and nearby paths, roadways etc*.
4. Where there is no alternative other than for such a route to impinge upon the RPA of a tree, the possibility of damage can be significantly reduced through the use of No-Dig techniques, where an adequately load-bearing sub-base and hard-wearing surface is established over existing roots without them being disturbed. A variety of techniques are available including three-dimensional cellular confinement systems[1]. Alternatively, piles, pads or elevated beams can be used to support surfaces to bridge over the RPA or, following exploratory investigations to determine location, to provide support within the RPA while allowing the retention of roots greater than 25 mm in diameter. The design of all such systems should be specified in liaison with the project arboriculturist.
5. Temporary haul roads must be similarly designed and specified, taking into account the extra loading that is likely to be imposed by construction traffic. Where proposed *permanent* new surfaces will be used for construction access, it is essential that this extra loading and wear is taken into account during the design process. A temporary sacrificial wearing surface may be required for the duration of construction activity.
6. Wherever possible, new surfaces should permit the percolation of moisture into the soil and allow free gaseous exchange. Suitable permeable wearing course include washed gravel (either loose or in laid gravel-retention grids, but note that self-binding gravels and 'hoggin' is NOT suitable) or paving slabs or block pavers with built-in infiltration spaces. These must be laid dry-jointed, bedded onto a free-draining sub-base such as sharp sand or coarse, no-fines aggregate. Porous asphalt and resin-bonded gravels will provide good porosity initially but will eventually become blocked by fines and should be laid following the principles used for impermeable surfaces (see below).
7. New permanent impermeable hard surfacing should not exceed 20% of any existing un-surfaced ground within the RPA. The hard surface should be resistant to or tolerant of deformation by tree roots, and should be set back from the stem of the tree and its above-ground root buttressing by a minimum of 500 mm to allow for growth and movement. Resulting gaps may be filled using appropriate inert granular material.
8. Prior to and during installation, the soil structure in the area beneath the proposed new surfacing must be protected from compaction, using temporary ground protection where necessary (see appendix 2B). During installation the new surface should be "rolled out", using machinery working forward from the surface as it is constructed.
9. If it proves necessary, existing surface vegetation should be killed using an *appropriate herbicide* that will not leach into the soil and will not affect tree roots. All herbicides must be applied strictly in accordance with the manufacturer's instructions.
10. The soil should not be skimmed to reduce ground levels. However loose organic matter and/or turf should be removed carefully, using hand tools. If the surface needs to be levelled or raised, this should be achieved using a suitable granular fill material (e.g. no-fines gravel, washed aggregate etc.)

[1] Suppliers of suitable proprietary products include Geosynthetics ('CellWeb') and Terram ('Geocell') and Greenfix ('Geoweb')



KEY

Trees are indicated by symbols below, colour coded to indicate their 'Retention Categories'.

- Category U (defective, negligible or redundant trees)
- Category A (high retention value)
- Category B (moderate retention value)
- Category C (low retention value)
- APPROXIMATE crown spread of individual trees

The nominal ROOT PROTECTION AREA (RPA) of each tree is indicated by a solid line using the colour coding above

NORTH

All dimensions must be checked on site and not scaled from this drawing.

This drawing is for the purposes of: PLANNING ONLY.

Based on topographic survey/Ordnance Survey data as supplied.

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SITE

Land by St. John the Baptist church, Ashton Ingham, Ross-on-Wye

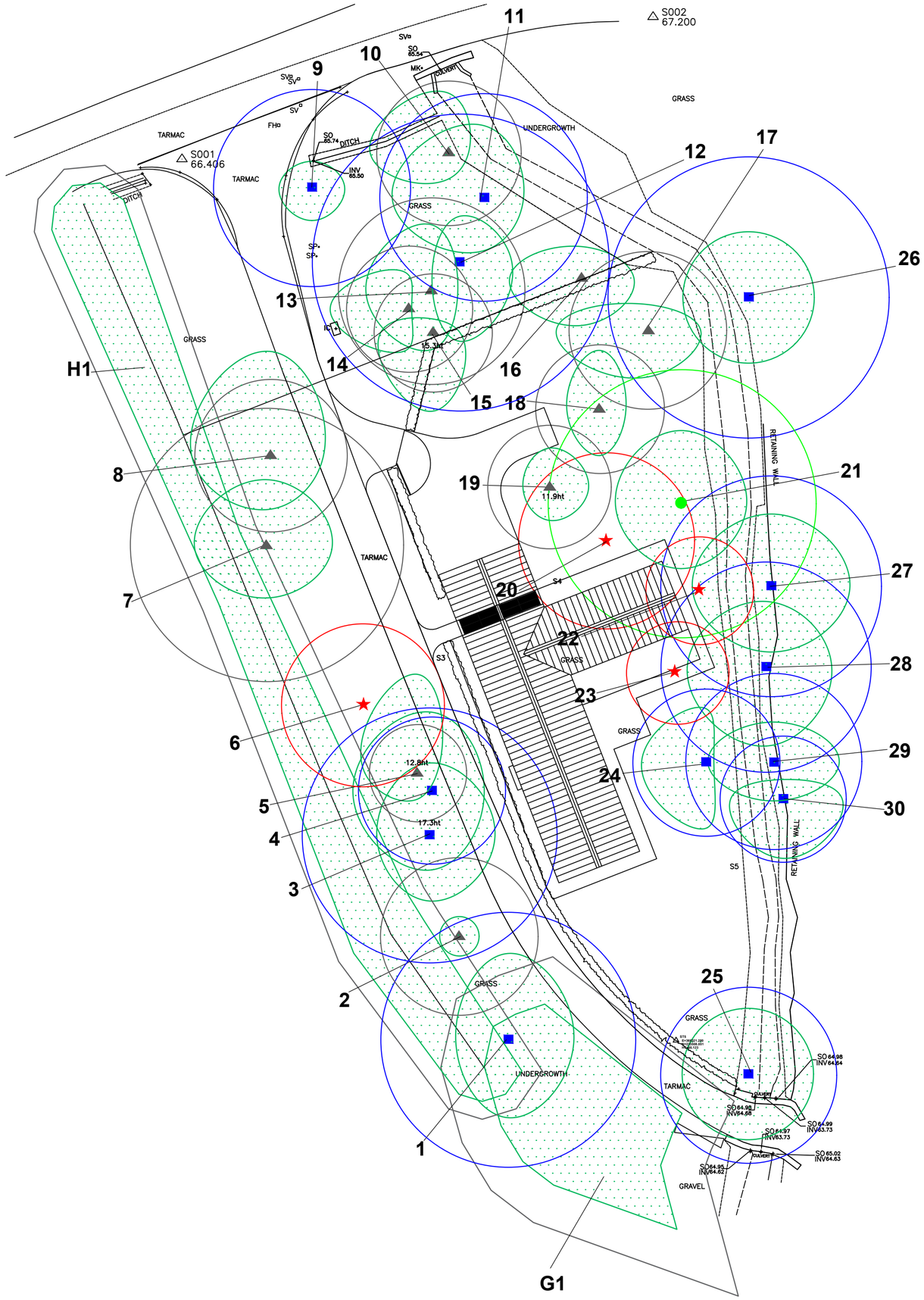
CLIENT

Kevin Edwards

DRAWING TITLE

Tree location & constraints plan

SCALE	1:250 @ A2	Job No.	17/583/01
DATE	August 2020	REVISION No.	B



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SITE

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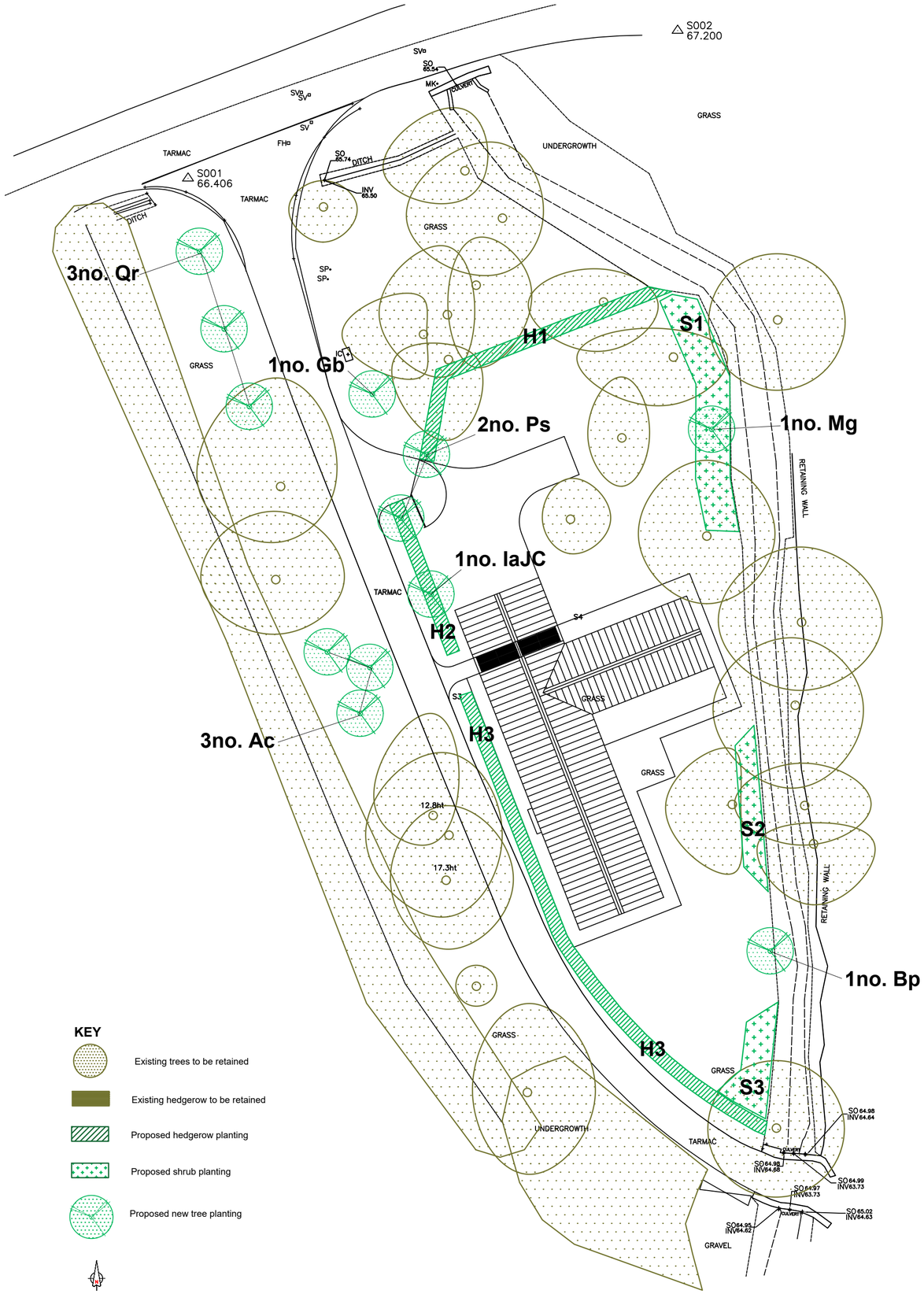
CLIENT

Kevin Edwards

DRAWING TITLE

Tree protection plan

SCALE	1:250 @ A2	Job No.	17/583/02
DATE	August 2020	REVISION No.	B



KEY

- Existing trees to be retained
- Existing hedgerow to be retained
- Proposed hedgerow planting
- Proposed shrub planting
- Proposed new tree planting

Planting schedules:

Code:	Name:	Species:	Girth (cm)	Height (mm)	Pot size (L)	Total (no.)
	Specimen Trees:					
Ac	Field maple	Acer campestre	10-12	2,700	45L	3
Bp	Birch	Betula pendula	10-12	2,700	45L	1
Gb	Maidenhair	Gingo biloba	10-12	2,700	45L	1
laJC	Holly	Ilex a altaclarensis JC Van Tol	10-12	2,700	45L	1
Ps	Cherry	Prunus sargentii	10-12	2,700	45L	2
Qr	Oak	Quercus robur	10-12	2,700	45L	3
Mg	Dawn redwood	Metaseqoia glyptostroboides	12-14	3,300	45L	1

Name:	Species:	Height (mm)	Pot size (L or bare root)	Density: (No./ Lin.m)	H1 (23m)	H2 (12m)	H3 (39m)
Hedgerows:							
H1	Ilex x altaclarensis	600	5	3	69	-	-
H2 & H3	Carpinus betulus	900	b/r	5	-	60	95

Species:	Density (no./ sq. m)	Size (mm)	Pot size (L)	S1 (44 sq.m)	S2 (18 sq.m)	S3 (18 sq.m)
Shrubs:						
Aucuba japonica	1	300	3	7		
Elaeagnus x ebbingei	1	400	3	7		
Ilex x altaclaresis Golden King	1	900	5	4		
Prunus laurocerasus Otto Luyken	1	300	2	12		
Viburnum davidii	1	450	3	7		
Skimmia japonica	1	300	3	7		
Amelanchier lamarckii	2	900	5		6	6
Cornus alba Sibirica	2	450	3		10	10
Viburnum opulus	2	400	3		10	10
Salix stolonifera Flaviramea	2	400	3		10	10

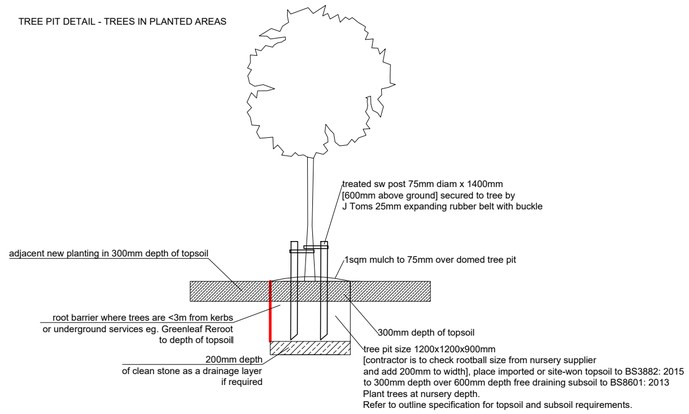
Code:	Species:	Density (no./ sq. m)	Total (no.)
	Groundcover:		
Cn	Cyclamen neopolitanum (plant under existing alder & willow at entrance)	20	100
Gn	Galanthus nivalis (plant in drifts under new cedar & gingo)	30	300
Nt	Narcissuss Tete-a-Tete (plant in drifts under new oaks)	20	400

Refer to planting plan (ref. drawing no. 17/583/03) for location of planting beds.

SPECIFICATION NOTES:

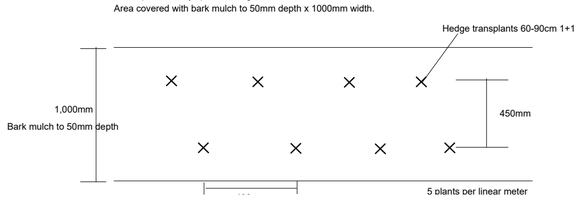
- All nursery stock to comply with BS3936 Part 1:1992; all landscape operations to comply with BS4428:1989, trees to be compliant with Table 1, p.21 BS8545:2014.
- The protection of topsoil and subsoil for planted areas to be in accordance with the Construction Code for the Sustainable Use of Soils on Construction Sites (DEFRA 2009), BS 3882:2015 and BS 8545:2014. Care must be taken to preserve existing soil quality and integrity.
- Trees planted into existing, in-situ soil wherever practicable, this soil to be protected from compaction and contamination during construction using tree protection barriers and/or ground protection as appropriate and in accordance with BS 5837:2012.
- All soils to be stripped, stored, handled, ameliorated and emplaced in full accordance with any Soil Resource Plan, BS 3882:2015, BS 8601:2013 and the 2009 DEFRA Construction Code of Practice for the Sustainable Use of Soils on Construction Sites.
- Planting beds to be mulched to settled depth of 50mm using hardwood bark chip, tapered to 25mm settled depth over rootball of trees. Trees to have 1.0m radial mulch ring.
- Failures of new planting: Any trees/shrubs/plants that fail to thrive during the first 5 years following planting will be regarded as defects and must be replaced during the next suitable planting season.
- Tree supply, planting and aftercare to be in accordance with BS 8545:2014. All tree works to be in accordance with BS 3998:2010.
- Maintenance (5 years):
  - Maintain a weed free area around each tree/shrub, min. radius 1.0m by use of suitable hardwood bark mulch.
  - Carry out formative pruning works (to BS3998:2010) as necessary to new trees and hedges.
  - Top-up bark mulch to 50mm settled depth (25mm depth over tree root ball).
  - Re-firm new trees and hedge plants as required without compacting topsoil.
  - Prune at appropriate times to remove dead or dying and diseased wood and suckers to promote healthy growth and natural shape. Prune trees to favour a single central leading shoot, unless specified otherwise. Prune in accordance with good horticultural practice (BS3998:2010 for trees).
- Management (5 years +):
  - Trim hedgerows on an annual basis cutting both sides to maintain a height of 2.0m

TREE PIT DETAIL - TREES IN PLANTED AREAS



HEDGE PLANTING DETAIL

5no. plants per linear meter:
bare root transplants (900mm high) planted in a double staggered row
set 450mm apart with 400mm spacing along the rows
Planted into 400mm depth newly placed topsoil.
Plants protected by spiral rabbit guards.
Area covered with bark mulch to 50mm depth x 1000mm width.



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Proposed planting plan

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