

Tree Survey Schedule



Dip Arb (RFS);MArborA
LANTRA: Professional Tree Inspector
QTRA: Licenced User

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Tree Survey Schedule Key Terms

Tree no	Links the specimen to tree locations plan and survey schedule
Name	Common name
Height	Estimated total height in metres from ground level
Stem	Tree stem diameter in mm measured at 1.5m height. The number of stems are shown in brackets.
Branch Spread	Branch spread of crown (in metres) measured from the centre of the trunk at the four cardinal points
Crown Hgt	Distance from adjacent ground level to lowest part of lowest branch, in metres
FSB	Height above ground and direction of growth of first significant live branch
Age	Y: Young: Newly planted tree or young sapling/tree usually under 15 years old. EM: Early Mature: Tree within first 1/3rd normal life expectancy. M: Mature: Tree in final 2/3rds normal life expectancy. LM: Late-mature: Tree reaching the end of or exceeding normal life expectancy.
Physiology	Good: Typical for species and age. Fair: Signs of physiological stress or dysfunction; but not significant enough that the tree may not recover. Poor: Signs of physiological stress or dysfunction; significant enough that the tree might not recover. Dead: Dead tree
Structure	Good: No significant structural defects. Fair: Significant structural defects; but these are either remediable or do not put the tree at immediate or early risk of collapse. Poor: Significant and irreparable structural defects, such that there may be a risk of early or premature collapse.
ULE	Useful Life Expectancy: Estimated remaining contribution, in years (<10, 10+, 20+, 40+) 0 Dead trees. <10 Less than ten years. 10+ more than ten years. 20+ more than twenty years. 40+ more than forty years
Comments	General comments relating to vitality, structure, value and/or recommendations
Category	B5 5837 categorisation: A: Trees/Vegetation of high quality and value. B: Vegetation of moderate quality and value C: Trees/Vegetation of low quality and value. U: Those in such a condition that they cannot realistically be retained as living trees for longer than 10 years. Sub categories (suffix): 1: Trees with mainly arboricultural value, 2: Trees with mainly landscape value, 3: Trees with mainly cultural / conservation value
RPR	Root Protection Area (RPA) as radius (m) from the centre of the trunk
RPA	Root Protection Area (RPA) (m ²)

Table 1 Cascade chart for tree quality assessment

Category and definition	Criteria (including subcategories where appropriate)			Identification on plan
Trees unsuitable for retention (see Note)				
Category U Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years	- Trees that have a serious, irreparable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning) - Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline - Trees infected with pathogens of significance to the health and/or safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality <i>NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve; see 4.5.7.</i>			See Table 2
	1 Mainly arboricultural qualities	2 Mainly landscape qualities	3 Mainly cultural values, including conservation	
Trees to be considered for retention				
Category A Trees of high quality with an estimated remaining life expectancy of at least 40 years	Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups or formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)	See Table 2
Category B Trees of moderate quality with an estimated remaining life expectancy of at least 20 years	Trees that might be included in category A, but are downgraded because of impaired condition (e.g. presence of significant though remediable defects, including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation	Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality	Trees with material conservation or other cultural value	See Table 2
Category C Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories	Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value; and/or trees offering low or only temporary/transient landscape benefits	Trees with no material conservation or other cultural value	See Table 2

Tree Survey Schedule

Tree no.	Name	Height	Stem	Branch Spread	Crown Hgt	FSB	Age	Physiology	Structure	ULE	Comments	Recommendations	Category	RPR	RPA
T1	Quercus robur (Common Oak)	28	1250	N:8 E:6 S:6 W:10	6	3(N)	M	Good	Good	40+	Boundary tree. Front garden tree. Large tree. Very large, important specimen. Moderate deadwood in Crown. Very large, important specimen.		A	15	706.95
T2	Chamaecyparis lawsoniana (Lawson Cypress)	26	450	N:4 E:3 S:3 W:4	4	0.5(SW)	M	Good	Good	40+	Driveway side tree.		A	5.4	91.62
T3	Chamaecyparis lawsoniana (Lawson Cypress)	27	900	N:2 E:4 S:4 W:3	5	5(S)	M	Good	Good	40+	Triple stemmed from 2m. Easterly stem previously topped.		A	10.8	366.48
T4	Quercus robur (Common Oak)	22	1050	N:6 E:7 S:8 W:8	6	4(SW)	M	Good	Good	40+	Very large, significant specimen.		A	12.6	498.82
T5	Taxus baccata (Yew)	9	200,150	N:3 E:3 S:2 W:3	5	5(NW)	M	Good	Good	40+	Medium tree. Driveway side tree. Suppressed development.		B	3	28.28
T6	Taxus baccata (Yew)	14	750	N:4 E:6 S:5 W:6	6	2(S)	M	Good	Good	40+	Large tree. Part of a group of tres. Stem divides above 1.5m.		A	9	254.5
T7	Chamaecyparis lawsoniana (Lawson Cypress)	28	1000	N:3 E:3 S:3 W:3	6	7(N)	M	Good	Good	40+	Very large, significant specimen. Good example of species.		A	12	452.45
T8	Taxus baccata (Yew)	6	250	N:1 E:2 S:3 W:2	2	2(N)	EM	Good	Good	40+	Front garden tree. Small tree. Part of a group of tres. Crown distorted due to group pressure.	Remove to facilitate parking bays	C	3	28.28
T9	Robinia pseudoacacia (Locust Tree)	10	240	N:3 E:1 S:1 W:2	6	5(W)	EM	Good	Fair	40+	Front garden tree. Medium tree. Part of a group of tres. Drawn up crown.		B	2.88	26.06
T10	Robinia pseudoacacia (Locust Tree)	10	350	N:3 E:5 S:5 W:2	3	2(E)	EM	Good	Fair	10+	Front garden tree. Medium tree. Part of a group of tres. Low bud/leaf density. Major deadwood in crown.		C	4.2	55.42
T10a	Robinia pseudoacacia (Locust Tree)	10	230	N:0 E:3 S:3 W:1	4	1(SE)	EM	Fair	Good	20+	Front garden tree. Medium tree. Part of a group of tres. Major deadwood in crown. Unbalanced crown shape. Crown distorted due to group pressure.		B	2.76	23.93
T11	Chamaecyparis lawsoniana (Lawson Cypress)	16	350	N:2.5 E:2.5 S:2.5 W:2.5	0	1(N)	M	Good	Good	40+	Front garden tree. Large tree. Part of a group of tres. Twin stems.		A	5.94	110.86
T12	Chamaecyparis lawsoniana (Lawson Cypress)	9	300	N:1 E:1 S:1 W:1	4	2(E)	EM	Poor	Dead	<10	Medium tree. Dead, ivy covered tree.	Fell.	U	3.6	40.72
T13	Betula pendula (Silver Birch)	16	230	N:3 E:2 S:3 W:1	2	5(S)	M	Good	Good	20+	Medium tree. Part of a group of tres. Drawn up crown.		B	2.76	23.93
T14	Chamaecyparis lawsoniana (Lawson Cypress)	20	350	N:3 E:3 S:3 W:3	0	1(N)	M	Good	Good	40+	Large tree. Part of a group of tres. 4 stems		A	8.4	221.7
T15	Liriodendron tulipifera (Tulip Tree)	5	180	N:4 E:2 S:1 W:1	1	1(NE)	EM	Good	Good	40+	Small tree. Part of a group of tres. Unbalanced crown shape. Crown distorted due to group pressure.		B	2.16	14.66

Tree Survey Schedule

Tree no.	Name	Height	Stem	Branch Spread	Crown Hgt	FSB	Age	Physiology	Structure	ULE	Comments	Recommendations	Category	RPR	RPA
T16	Chamaecyparis lawsoniana (Lawson Cypress)	19	450	N:2 E:2 S:2 W:2	0	3(S)	M	Good	Good	40+	Large tree. Part of a group of tres.		A	5.4	91.62
T17	Quercus robur (Common Oak)	12	750	N:6 E:5 S:6 W:7	2	4(NW)	M	Good	Good	10+	Large tree. Dieback in crown. Low bud/leaf density. Major deadwood in crown.Low vitality. Tree in potential early stage decline.	Monitor tree condition	C	9	254.5
T18	Quercus robur (Common Oak)	16	1000	N:6 E:6 S:5 W:4	1	6(S)	M	Good	Good	40+	Remnants of detached fungus on lower Eastern stem. Unable to identify.Remnants of detached fungus on lower Eastern stem. Unable to identify.	Further inspection. Carry out decay mapping investigation of lower stem.	B	12	452.45
T19	Quercus robur (Common Oak)	20	700	N:7 E:5 S:5 W:7	3	2(N)	M	Good	Good	40+	Rear garden tree. Large tree. Part of a group of tres.		A	8.4	221.7
T20	Ilex aquifolium (Holly)	8	350	N:2 E:2 S:2 W:2	1	1(W)	M	Poor	Dead	<10	Medium tree. Part of a group of tres.	Fell.	U	4.2	55.42
T21	Picea abies (Norway Spruce)	13	220	N:2 E:2 S:2 W:2	1	2(E)	EM	Good	Good	40+	Boundary tree. Medium tree. Part of a group of tres.		A	2.64	21.9
T22	Liquidambar styraciflua (Sweet Gum)	6	190	N:3 E:3 S:3 W:3	0	1(N)	SM	Good	Good	40+	Rear garden tree. Small tree.		B	2.28	16.33
T23	Malus (Apple)	6	300	N:5 E:3 S:3 W:4	1	1(NE)	M	Good	Fair	20+	Boundary tree. Rear garden tree. Medium tree. Unbalanced crown shape.		B	3.6	40.72
T24	Prunus domestica (Damson)	5	500	N:2 E:2 S:3 W:3	2	2(W)	OM	Fair	Fair	10+	Saprophytic fungus on large historic branch wound. Short life expectancy.Saprophytic fungus on large historic branch wound. Short life expectancy.		C	6	113.11
T25	Malus (Apple)	5	100	N:2 E:2 S:2 W:2	1	1(N)	M	Good	Fair	20+	Rear garden tree. Small tree.	Remove to facilitate refurbishment works	C	1.69	8.97
T26	Malus sylvestris (Crab Apple)	5	150	N:2 E:2 S:2 W:2	1	1(S)	EM	Good	Good	40+	Rear garden tree. Small tree.	Remove to facilitate refurbishment works	C	1.8	10.18
T27	Salix caprea (Goat Willow)	6	150	N:2.5 E:2.5 S:2.5 W:2.5	1	2(NE)	SM	Good	Good	40+	Small tree.	Remove to facilitate parking bays	C	1.8	10.18
G28	Pyrus (Pear)	4	150	N:1 E:1 S:1 W:1	1	1(N)	M	Good	Fair	10+	Small tree. Group of trees.3 x wall grown fruit trees.	Remove to facilitate refurbishment works	C	1.8	10.18
T29	Ficus carica (Fig)	5	150	N:2 E:2 S:2 W:2	1	1(E)	M	Good	Good	20+	Canopy overhangs rear site entrance.	Raise low branches overhanging site entrance to 5m/ cut back to wall-line.	B	1.8	10.18
S30	Prunus laurocerasus (Cherry Laurel)	7	150	N:3 E:3 S:3 W:3	1	1(N)	EM	Good	Good	20+	Overgrown shrub engulfs building Corner elevation.	Overgrown shrub fouls site rear entrance. Fell/ remove	C	4.02	50.78
G31	Crataegus monogyna (Hawthorn)	7	150	N:2 E:2 S:2 W:2	1	1(N)	M	Good	Good	20+	Boundary trees. Small tree. Part of a row of trees. Group of trees.	Remove dead stem within group	B	4.02	50.78
G32	Taxus baccata (Yew)	7	100	N:2 E:2 S:2 W:2	1	1(N)	EM	Good	Good	40+	Small trees. Part of a row of trees. Group of lapsed hedge trees.	Re-establish at previous hedgeheight of 1.5m.	B	1.2	4.52
T33	Picea omorika (Serbian Spruce)	22	750	N:5 E:5 S:5 W:5	1	3(N)	M	Good	Good	40+	Boundary tree. Large tree. Ivy on tree.		A	9	254.5
T34	Malus sylvestris (Crab Apple)	3	150	N:0 E:0 S:1 W:2	1	2(N)	M	Good	Good	10+	Boundary tree. Small tree. Unbalanced crown shape.		C	1.8	10.18

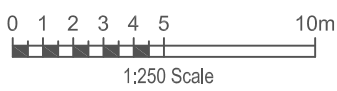
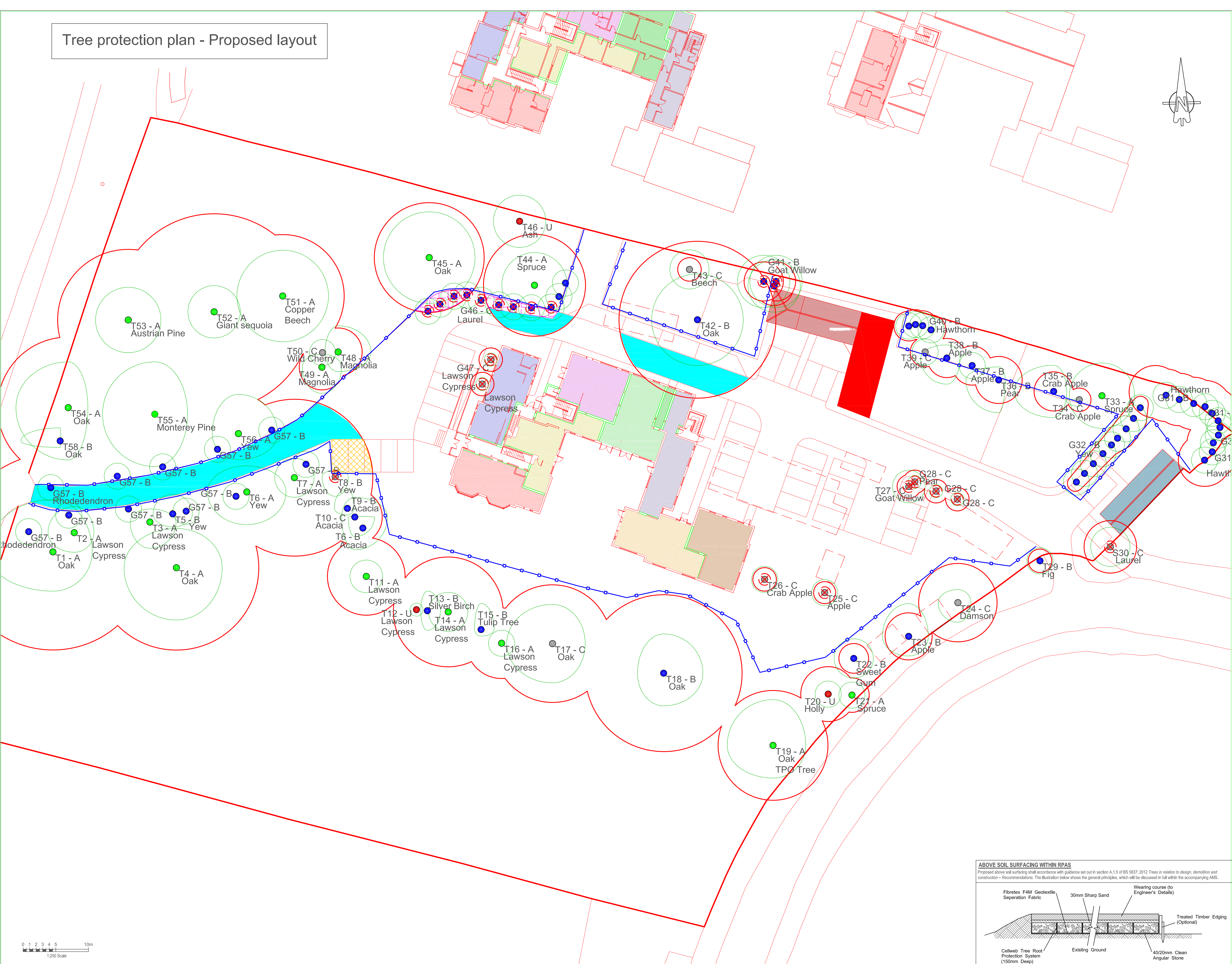
Tree Survey Schedule

Tree no.	Name	Height	Stem	Branch Spread	Crown Hgt	FSB	Age	Physiology	Structure	ULE	Comments	Recommendations	Category	RPR	RPA
T35	Malus sylvestris (Crab Apple)	8	250	N:4 E:2 S:4 W:6	1	1(SE)	M	Good	Good	10+	Boundary tree. Medium tree. Ivy on tree. Unbalanced crown shape. Crown distorted due to group pressure.		B	3	28.28
T36	Pyrus (Pear)	9	300	N:2 E:1 S:5 W:5	2	1(N)	OM	Good	Good	20+	Overgrown crown		B	3.6	40.72
T37	Malus sylvestris (Crab Apple)	5	250	N:2 E:2 S:2 W:2	2	2(E)	M	Good	Good	20+	Boundary tree. Medium tree. Part of a group of tres. Ivy on tree.		B	3	28.28
T38	Malus sylvestris (Crab Apple)	6	250	N:2 E:2 S:4 W:4	2	2(N)	M	Good	Good	20+	Boundary tree. Medium tree. Part of a group of tres. Ivy on tree.		B	3	28.28
T39	Malus sylvestris (Crab Apple)	6	190	N:2 E:2 S:2 W:2	3	2(S)	M	Good	Fair	10+	Boundary tree. Small tree. Part of a group of tres. Major deadwood in crown.		C	2.28	16.33
G40	Crataegus monogyna (Hawthorn)	6	190	N:2 E:2 S:2 W:2	3	2(S)	M	Good	Good	20+	Medium tree. Part of a group of tres. Group of trees. Branches encroaching upon building.	Shorten branches from building by 2m	B	2.28	16.33
G41	Salix caprea (Goat Willow)	10	250	N:4 E:4 S:4 W:4	3	2(S)	EM	Good	Fair	20+	Medium tree. Group of trees. Dieback in crown. Branches encroaching upon building.Group rooted adjacent to low level brick wall. Insufficient space for future development	Fell to facilitate refurbishment works and for arboricultural reasons	B	3	28.28
T42	Quercus robur (Common Oak)	21	1000	N:7 E:7 S:7 W:7	5	4(SE)	M	Fair	Fair	20+	Slightly reduced shoot extension and wilted leaves. Marginal below normal vitality. Located in raised bed. Several woodpecker holes indicate areas of internal decay	Carry out aerial inspection of cavities	B	12	452.45
T43	Fagus sylvatica (Beech)	7	150	N:3 E:3 S:3 W:3	1	2(N)	SM	Good	Good	40+	Boundary tree. Small tree.		C	1.8	10.18
T44	Picea abies (Norway Spruce)	19	650	N:5 E:5 S:5 W:5	3	3(E)	M	Good	Good	40+	Large tree.Well balanced crown		A	7.8	191.16
T45	Quercus robur (Common Oak)	19	700	N:7 E:7 S:7 W:7	3	7(N)	M	Good	Good	40+	Good specimen		A	8.4	221.7
T46	Fraxinus excelsior (Ash)	17	600	N:4 E:4 S:4 W:4	4	4(N)	M	Poor	Poor	<10	Almost dead. Ash dieback disease	Fell.	U	7.2	162.88
G46	Prunus laurocerasus (Cherry Laurel)	3	150	N:2 E:2 S:2 W:2	0	1(N)	EM	Good	Good	20+	Overgrown group of Laurel bushes.	Remove to facilitate driveway extension	C	1.8	10.18
G47	Chamaecyparis lawsoniana (Lawson Cypress)	5	150	N:1 E:1 S:1 W:1	0	1(N)	EM	Good	Good	20+	Cypress stems growing in limited space, adjacent to front of building	Fell for arboricultural reasons. Include directly adjacent shrub group	C	1.8	10.18
T48	Magnolia (Magnolia)	9	180,120,180,120	N:4 E:5 S:3 W:2	0	0.3(W)	M	Good	Good	40+	Ornamental tree of Good quality		A	3.67	42.32
T49	Magnolia (Magnolia)	5	180,170,150	N:2 E:3 S:4 W:3	1	1(E)	M	Good	Good	40+	Ornamental tree of Good quality		A	3.47	37.83
T50	Prunus avium (Wild Cherry)	6	150	N:2 E:2 S:2 W:2	2	2(W)	EM	Good	Good	40+	Front garden tree. Small tree. Part of a row of trees.		C	1.8	10.18

Tree Survey Schedule

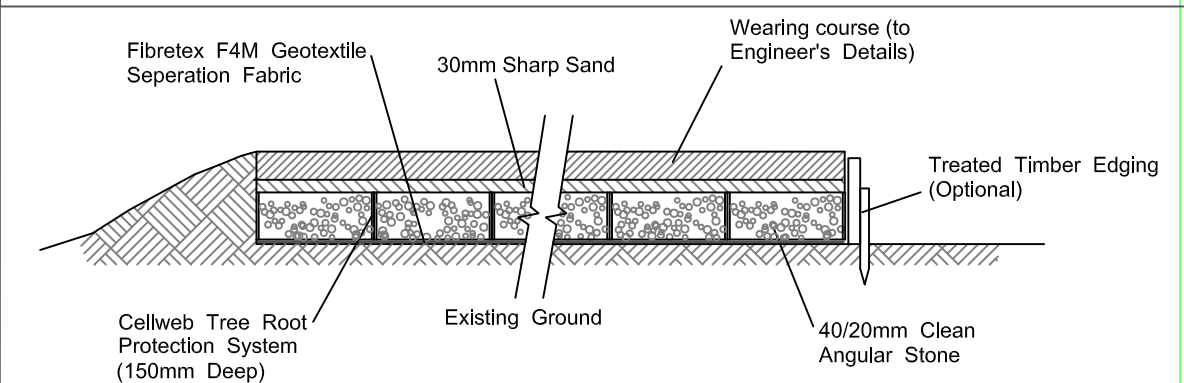
Tree no.	Name	Height	Stem	Branch Spread	Crown Hgt	FSB	Age	Physiology	Structure	ULE	Comments	Recommendations	Category	RPR	RPA
T51	Fagus sylvatica 'Purpurea' (Copper Beech)	20	700,350	N:7 E:7 S:7 W:7	1	3(E)	M	Good	Good	40+	large important specimen tree		A	9.4	277.63
T52	Sequoiadendron giganteum (Wellingtonia)	34	1400	N:4 E:4 S:4 W:4	8	10(W)	OM	Good	Good	40+	Unable to inspect stem due to undergrowth.Very large important specimen tree.	Clear vegetation around tree base and re-inspect	A	15	706.95
T53	Pinus nigra (Austrian Pine)	28	900	N:5 E:5 S:5 W:5	7	9(NE)	M	Good	Good	40+	Very large important specimen tree		A	10.8	366.48
T54	Quercus robur (Common Oak)	19	900	N:7 E:3 S:8 W:8	5	5(N)	M	Good	Good	40+	Boundary tree. Front garden tree.Very large important specimen tree		A	10.8	366.48
T55	Pinus radiata (Monterey Pine)	35	1500	N:8 E:5 S:8 W:8	2	2(E)	OM	Good	Fair	40+	Minor dieback from upper crown noted.Minor dieback from upper crown noted.	Monitor tree condition	A	15	706.95
T56	Taxus baccata (Yew)	12	500	N:6 E:6 S:4 W:4	1	1(W)	M	Good	Good	40+	Front garden tree. Large tree.		A	6	113.11
G57	Rhododendron spp.	6	150	N:2 E:2 S:2 W:2	1	1(W)	M	Good	Good	10+	Group of Rhododendrons and Laurels bordering driveway	Trim back branch ends overhanging driveway, in-line with chainlink fence	B	1.8	10.18
T58	Quercus robur (Common Oak)	10	650	N:2 E:0 S:1 W:6	7	5(N)	M	Good	Good	20+	Boundary tree. Large tree. Unbalanced crown shape. Crown distorted due to group pressure.Historic trunk wound at 5m with visible decay	Carry out aerial inspection of decayed wound at 5m height	B	7.8	191.16

Tree protection plan - Proposed layout



ABOVE SOIL SURFACING WITHIN RPAS

Proposed above soil surfacing shall accordance with guidance set out in section A1.5 of BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations. The illustration below shows the general principles, which will be discussed in full within the accompanying AMS.



Tree categorization:
In accordance with the cascade chart in Table 1 of British Standard 5837 (2012) Trees in relation to design, demolition and construction — Recommendations

Category U tree ●
Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years

Category A tree ●
Trees of high quality with an estimated remaining life expectancy of at least 40 years

Category B tree ●
Trees of moderate quality with an estimated remaining life expectancy of at least 20 years

Category C tree ●
Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150mm

Legend:

ROOT PROTECTION AREA
CANOPY EDGE
PROTECTIVE FENCING
RESURFACING WITHIN RPA
SUPERVISED EXCAVATION
TREE TO BE REMOVED
1 — TREE NO.
— SPECIES
● TRUNK
CEZ CONSTRUCTION EXCLUSION ZONE

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

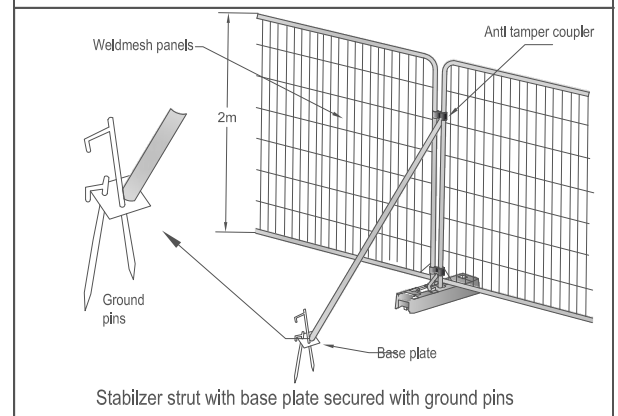
CONSTRUCTION EXCLUSION ZONES (CEZs)
Area which access is prohibited during development (based on the RPAs). Construction Exclusion Zones shall be segregated during development by the installation of protective fencing and / or flt for purpose ground protection before any development works occur.

There shall be no development within CEZs including:

- No soil disturbance
- No trenches for foundations, services or drainage
- No soil level changes
- No new hard surfaces

If any such works are later proposed within any RPAs of trees to be retained these shall be supervised by the arboricultural consultant.

PROTECTIVE FENCING
Protective fencing shall consist of a scaffold framework in accordance with figure 3 of British Standard 5837 (2012) comprising 2m tall welded mesh panels on rubber or concrete feet. Once this, weldmesh panels shall be securely fixed with wire or scaffold clamps joined together using a minimum of two anti-tamper couplers, installed so that they can only be removed from inside the fence. The distance between the fence couplers shall be at least 1m and shall be uniform throughout the fence. The panels shall be supported on the inner side by stabilizer struts, attached to a base plate secured with ground pins.



EXCAVATION WITHIN RPAS
Excavation within root protection areas (RPAs) shall be carried out carefully by hand, under direct supervision of the arboricultural consultant. Roots smaller than 25mm diameter; shall be pruned back, making a clean cut with a suitable sharp tool (e.g. bypass secateurs or handsaw), except where they occur in dumps. Roots occurring in dumps or of 25mm diameter and over shall only be severed by the arboricultural consultant if (s)he is satisfied that this action will not lead to significant detriment to the trees' health or safety. Roots, whilst exposed, shall immediately be wrapped or covered by hessian to prevent desiccation and to protect them from rapid temperature changes. Any wrapping shall be removed prior to backfilling, which will take place as soon as possible. Prior to backfilling, retained roots shall be surrounded with topsoil or un-compacted sharp sand ('builders' sand will not be used because its high salt content is toxic to tree roots), or other loose inert granular fill, before soil or other suitable material is replaced. This material shall be free of contaminants and other foreign objects potentially injurious to tree roots.

REPLACEMENT HARD SURFACING:
Existing hard surfacing within RPAs shall be replaced under arboricultural supervision; so that the soil beneath the existing sub-base is not disturbed. The new hard surfacing shall be installed above the undisturbed sub-base.

RELEVANT STANDARDS
If planning permission is granted the proposed development and associated tree works will have to adhere to the following standards:

BS 5837 (2012) Trees in relation to design, demolition and construction — Recommendations.

- This British Standard gives recommendations and guidance on the relationship between trees and design, demolition and construction processes. It sets out the principles and procedures to be applied to achieve a harmonious and sustainable relationship between trees and structures.

BS 3998 (2010) Tree work — Recommendations.

- This British Standard gives general recommendations for tree work. It gives guidance on management options for established trees (including soil care and tree felling) and overgrown hedges.

NHBC Standards Chapter 4.2.

- Gives guidance on meeting the technical requirements and recommendations when building near trees, hedgerows and shrubs, particularly in shrinkable clay soils

CHRONOLOGICAL ORDER OF EVENTS

1. Pre-start meeting
2. Tree pruning and removals
3. Protective fencing installed
4. Demolition of existing buildings/sheds and site preparation
5. Installation of service and drainage routes
6. Reconstruction works
7. Supervised excavation for driveway extension in area of G46
8. Installation of above soil surfacing in area of T5-T10a
9. Resurfacing within RPAs
10. Removal of tree protection fencing
11. Soft landscaping

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ARBORICULTURAL CONSULTANTS

Client: St Marks Properties Ltd

Site: Hollyrood House
Ardingly Road, Haywards Heath RH16 2QY

Title: Tree Protection Plan - Proposed Layout

Date: 06.2024 Scale: 1:250 Paper Size: A1

Drawn: WJK Checked: WJK Job Ref: HH 06.24

Drawing Number: TPP-01



Site Guidance Note 9: Installing/upgrading surfacing in root protection areas

This document is only a summary of its subject matter. You should not rely on this general guidance in isolation, and you should always seek detailed advice from an appropriate expert in relation to specific circumstances before any action is taken or refrained from. The content of these pages is protected by copyright © Barrell Treecare Ltd 2018. You may download and republish (in its full format) and print copies of the guidance – but you must not adapt any guidance.

SGN 9: Summary guidance for site operatives

Administration

1. Unauthorised damage to protected trees is a criminal offence and could lead to enforcement action.
2. Work under the normal site risk assessment procedures and comply with the wider site safety rules.
3. Brief operatives entering root protection areas (RPAs) by the supervising arboriculturist before work starts.

Other relevant SGNs

4. Monitor works in RPAs by the supervising arboriculturist (See SGN 1 Monitoring tree protection).
5. Design access to avoid soil compaction (See SGN 3 Ground protection).
6. Follow the guidance in SGN 4 Pollution control, if concrete is poured within or near RPAs.
7. Minimise excavation into original undisturbed soil (See SGN 7 Excavation in RPAs).
8. Follow the guidance in SGN 8 Removing surfacing and structures in RPAs, if existing surfacing is to be removed before installing new surfacing.
9. Follow the guidance in SGN 10 Installing structures in RPAs, if the surfacing is to be installed on supports, i.e. piles, pads, or posts.

SGN 9: Summary guidance for site operatives

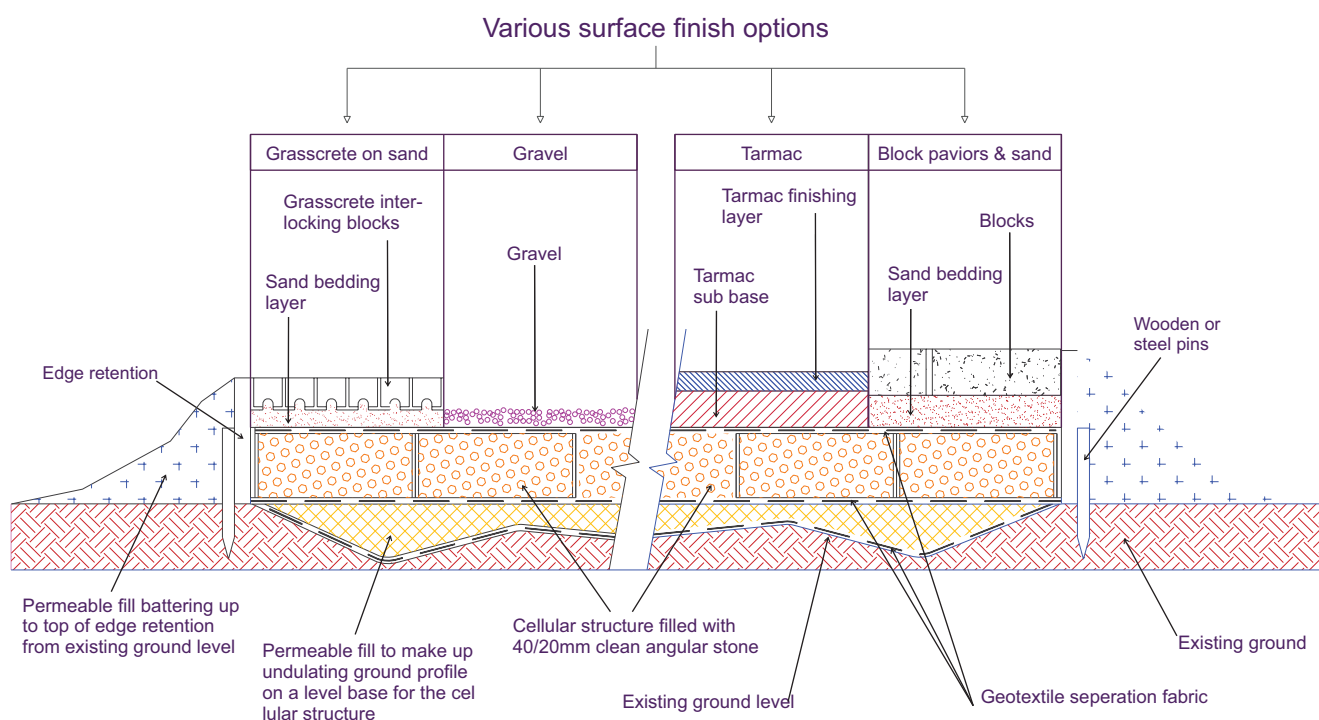
Important Reminders

10. For ground without existing surfacing, remove any loose material at the soil surface by hand and do not excavate into existing soil levels unless approved by the supervising arboriculturist.
11. For ground with a vegetation layer, excavations may be appropriate to remove the turf layer and surface vegetation, but this must be agreed by the supervising arboriculturist.
12. All new surfacing must be set back from trunks and buttress roots by at least 50 cm, unless otherwise agreed by the supervising arboriculturist.
13. Fill low points on undulating surfaces to an even level with any high points using an agreed granular material such as sand or stone.
14. Do not mechanically compact new fill or existing soil.
15. If a three-dimensional cellular confinement system is used, install it according to the manufacturer's technical specification. Note: The cellular fill will be washed angular stone with no fines, as specified by the manufacturer.

SGN 9: Explanatory notes and examples

Purpose

SGN 9 describes the practical requirements for installing new surfacing and upgrading existing surfacing in RPAs, based on the recommendations in BS 5837 (7.4).



Illustrative specification for no-dig cellular confinement surfacing with examples of finishing options.

Note: The final design must be site specific and detailed by an appropriate specialist

BS 5837 recommends that three-dimensional cellular confinement systems are an appropriate sub-base for installing surfacing in RPAs. Most products are made from heavy-duty plastic that is pulled apart to open into cells. These are then filled with washed stone, after the product is spread over the ground and pinned in place. This forms a base layer that acts as a floating raft, spreading the load across the whole construction width. The base layer can be topped with a variety of finishes as illustrated in the cross-section.

Product suppliers: Protectaweb 3D cellular confinement product - <https://wrekinproducts.com>

SGN 9: Explanatory notes and examples

General principles and clarifications

Conventional surfacing installation based on excavating and compacting a supporting sub-base is unacceptable in RPAs because it can damage roots and the rooting environment. This harm is caused by killing roots, compacting soil structure, and impeding water/gaseous exchange through the soil. Adverse impact on trees will be reduced by minimising the extent of these changes in RPAs.

New surfacing solutions

Important elements of an effective design include protecting roots and the rooting environment during installation, a load spreading capability to prevent localised compaction, and providing adequate permeability for water and gasses to support living roots. The main approaches are:

- three-dimensional cellular confinement systems filled with washed stone laid directly onto the soil surface;
- concrete slabs cast directly onto the soil surface; and,
- surfacing supported above the soil surface on top of piles, pads, or posts.

The specific design of the chosen approach is an engineering issue that will take account of the bearing capacity of the soil, the intended loading, and the frequency of loading. The detail of

product and specification are technical matters to be provided by an appropriate specialist.

Dealing with undulating surfaces and establishing a tolerable level of excavation

The precise location and depth of roots within the soil is unpredictable and will often only be known when careful digging starts on site. Ideally, all new surfacing in RPAs will be no-dig, i.e. requiring no excavation, but this can sometimes be difficult on undulating surfaces. New surfacing normally requires an evenly graded sub-base layer, which can be made up to any high points with granular, permeable fills such as crushed stone or sharp sand. This sub-base will not be compacted as would happen in conventional surface installation. Some limited excavation can be necessary to achieve this and need not be damaging if carried out carefully and large roots are not cut. Tree roots and grass roots rarely occupy the same soil volume at the top of the soil profile, so the removal of an established turf layer up to 5cm from the surface is unlikely to be damaging to trees. However, this may not be possible where there is no grass because tree roots may grow right up to the soil surface. In some situations, it may be possible to dig to a greater depth,

SGN 9: Explanatory notes and examples

depending on local conditions, but this will be assessed by the supervising arboriculturist if excavation deeper than 5cm is anticipated.

On undulating surfaces, finished gradients and levels will be planned with sufficient flexibility to allow on-site adjustment if excavation of any high points reveals large unexpected roots near the surface. If the roots are less than 2.5cm in diameter, they can be cut and the base for the surfacing formed with the preferred minimal excavation of up to 5cm. However, if roots over 2.5cm in diameter are exposed, cutting them may be too damaging and further excavation may not be possible. If that is the case, the surrounding levels will be adjusted to take account of these high points by filling with suitable material. If this is not practical, the situation will be discussed with the supervising arboriculturist before a final decision is made.

Edge retention

Conventional kerb edge retention set in concrete-filled excavated trenches can cause damage to roots and will be avoided. Edge retention in RPAs will be designed to avoid any significant excavation into existing soil levels, with several approaches that are fit for this purpose. For block pavements, the use of pre-formed edging secured by metal pins is effective and can be reinforced by concrete supports if there is no

excavation into the soil. Railway sleepers pinned in place or wooden boards offer alternative options, depending on the expected loading of the surfacing. If the edge retention needs to be battered down to lower surrounding ground levels, a permeable soil fill will be used, as agreed with the supervising arboriculturist.

Footpaths and surfacing without a load-spreading base layer

In some situations, limited-width floating concrete rafts constructed directly onto the soil surface may be acceptable for both pedestrian and vehicular access, but the design will not include any strip-dug supports. If concrete is poured directly, precautions must be taken to ensure that no toxic fluids can contaminate the adjacent soil, e.g. confining the concrete in an impermeable liner. Alternatively, elevated paths supported on low impact frames or post supports allow a decking surface to cross sensitive areas. Where paths are installed very close to trunks, provision will be made for distortion from future root growth through using flexible components for the supporting frame and surfacing.

Specific considerations for upgrading existing surfacing

When upgrading existing surfacing, the preferred option will be to leave it in place and install the new surfacing on top of it. If the retained surfacing is impermeable, it may improve conditions for tree roots if it

SGN 9: Explanatory notes and examples

is punctured before the new surfacing is laid, but this is detail to be agreed with the supervising arboriculturist. If the existing surfacing is to be removed, it will be excavated down to the soil level beneath following the guidance set out in SGN 8 (Removing surfacing and structures in root protection areas). The new surfacing will then be installed on this surface, as described above.

New surfacing near trunks

All new surfacing should be set back from trunks and buttress roots by at least 50cm to allow space for future growth and minimise the risk of distortion.

The flat-packed three-dimensional cells are pulled apart, spread across the area to be surfaced, and pinned in place ready for the washed angular stone fill (with no fines).



SGN 9-01

The stone-filled cells spread the load of traffic to prevent localised compaction. The permeable geotextile membrane on the ground allows the movement of water and gasses, but prevents the migration of stone into the soil profile.



SGN 9-02 ;

SGN 9: Explanatory notes and examples



Although BS 5837 recommends a minimum distance of 50cm between new surfacing and buttress roots, there may be scope for flexibility in this separation for mature trees with little potential for future growth, if agreed by the supervising arboriculturist.



A conventional concrete haunching can be used to retain new surfacing if it is not dug into a trench - here it is placed on top of the three-dimensional cellular confinement layer.



This preparation for a new residential access drive shows the base formation above the original ground level, with the permeable geotextile layer covering the ground. The wooden boards are pinned in place, creating an informal and rustic surface edging.

SGN 9: Explanatory notes and examples

The three-dimensional cells have been installed and filled with washed stone, ready for the finished surface to be laid above. The ground beyond the drive edges has been profiled with backfilled topsoil.



An alternative to the flexible three dimensional cells is rigid interlocking plastic cells, again filled with washed stone and retained by pinned wooden edges.



Another option for wooden edges at corner points that allows for vehicles to accidentally track over the edge of the formal surfacing.



SGN 9: Explanatory notes and examples



SGN 9-09

This temporary access for heavy construction traffic on the outer edge of a RPA is a concrete slab cast above ground level and will be removed when the project is completed. This approach is particularly suitable for slopes where a three-dimensional approach may be more prone to distortion when carrying heavy loads.



SGN 9-10

In some situations, it may be appropriate to cast a free-floating concrete surface directly onto the soil surface provided provision is made to prevent soil contamination while the concrete is being poured.



SGN 9-11

The RPA of this oak extended about 12m from its trunk and was previously covered in tarmac as parking. This original surfacing was removed and replaced with a new patio set above the ground level, with provision for water and air input into the covered RPA.

SGN 9: Explanatory notes and examples

Where new surfacing is to be installed over existing, sometimes it may assist the movement of gasses and water if the existing surfacing is punctured. In this situation, exploratory digging showed important roots directly beneath the existing tarmac, which would have been damaged if the tarmac was removed.



An option for installing surfacing close to mature trees is to use a light metal frame with rubberised surfacing to allow the path to distort without failing as the roots grow.



Board walks supported on posts or a light frame are another way of providing pedestrian access across sensitive RPAs (photo courtesy of Philip van Wassenaer).



SGN 9: Explanatory notes and examples



SGN 9-15

New surfacing such as decking can be supported above the ground on posts leaving the soil surface beneath undisturbed.



SGN 9-16

Although this is only a temporary surface, railway sleepers pinned into the ground can be used to retain the edges of new surfacing.



SGN 9-17

Where space is restricted it is possible to use metal edging.

SGN 9: Explanatory notes and examples

Technical reference

Due to copyright restrictions, the relevant British Standard clauses are summarised, not quoted, as follows:

1. **BS 5837 (2012) Trees in relation to design, demolition and construction – Recommendations:**

Clause 7.4 (Permanent hard surfacing within the RPA) recommends:

- *7.4.2.1 New surface design should not require excavation other than the removal of the turf layer and surface vegetation. The design should be able to bear any anticipated loading, especially if it must carry construction traffic.*
- *7.4.2.2 The design should evenly distribute the loading to avoid localised compaction.*
- *7.4.2.7 The design should be resistant to or tolerant of deformation by tree roots, and should be set back from the stem and any root buttresses by a minimum of 50cm to allow for growth and movement. Levels can be made up using appropriate inert granular material.*

NOTE *Piles, pads, elevated beams, and three-dimensional cellular confinement systems, can be used to support surfaces. If excavation is required, the location of roots greater than 2.5cm in diameter should be determined by exploratory investigations and retained if possible.*

- *7.4.3 The conventional installation of kerbs, edgings, and haunchings, can damage tree roots and should be avoided either by using alternative methods of edge support or by not using supports at all.*

NOTE *Examples of suitable edge supports include above-ground peg and board edging, sleepers, gabions, and other non-invasive ground-contact structures.*

- *7.4.4.3 Ground levels should not be reduced to establish the new hard surface at the former ground level. Loose debris and turf should be removed carefully and the new surface should sit on top of the original soil.*
- *7.4.4.4 Fill to raise levels should be a granular material which remains gas- and water-permeable throughout its design life.*
- *7.4.4.5 Wet concrete should not be poured in the RPA unless an impermeable liner has been installed to prevent soil contamination from the toxic leachate.*