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Arboricultural Impact Assessment

Method Statement & Tree Protection Plan

(to BS:5837 2012)

Milestone House, 86 Hurst Road

Horsham, RH12 2DT

Prepared for AVG (Arun Veterinary Group)

Prepared by Trevor Heaps BSc, MICFor, RC. Arbor. A

Date: 24th January 2025

Ref: TH 4760 B

AA Registered CONSULTANT trees.org.uk

Institute of Chartered Foresters
Registered Consultant

Summary

It is proposed to extend the existing dwelling to the rear and to also create a ramp and steps. It is also proposed to create a new dropped kerb and provide extra car parking spaces.

The proposals are within influencing distance of several trees and so some basic tree protection measures and working methodology (in accordance with BS 5837:2012) will ensure they are not detrimentally affected during works.

The relationship between the proposal and trees is sustainable and will not result in any unreasonable pressure to carry out inappropriate tree works.

If the proposal is implemented in accordance with the recommendations laid out in this report, neither the trees or wider landscape will be adversely affected.

This is an arboriculturally defensible scheme and there are no (arboricultural) reasons why planning consent should not be granted.

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1.0 Introduction

1.1 I am Trevor Heaps, Director of Trevor Heaps Arboricultural Consultancy Ltd. I hold a First-Class Honours Degree in Arboriculture; I am a Chartered Arboriculturist and a professional member of the Institute of Chartered Foresters; and I am also a Registered Consultant with the Arboricultural Association. Further information about my qualifications and experience is provided in Appendix 1.

1.2 Contact details:

Who	Name	Organisation	Details
Arboricultural Consultant	Trevor Heaps	THAC Ltd., 12 Plover Drive, Milford-on-Sea, Hampshire, SO41 0XF	Tel: 07957 763 533 trevor@trevorheaps.co.uk
Client		AVG (Arun Veterinary Group)	
Horsham District Council – LPA	Tree Officer	Parkside, Chart Way, Horsham, West Sussex, RH12 1RL	Tel: 01403 215100 Email: yoursay@horsham.gov.uk

2.0 Instruction

2.1 We are to survey all significant trees that could be affected by the proposed works.

2.2 We are then to prepare a report to appraise the effect these works will have on any nearby trees and the surrounding landscape.

2.3 We are then to set out recommendations for the protection of the trees during development - in accordance with British Standard 5837:2012 'Trees in relation to design, demolition and construction – Recommendations' (BS5837).

3.0 Drawings provided.

3.1 Proposed Tree Survey + Block Plan – Ref 403-24-004-B-01-b – Drawn by R+R Architects

4.0 Report context

4.1 The site was surveyed by Trevor Heaps on the 5th September 2024.

4.2 The trees were surveyed from within the site at ground level. No climbed inspections were carried out and no root/soil samples were taken for analysis.

4.3 The trees were inspected based on the Visual Tree Assessment (VTA) developed by Mattheck & Breloer (The Body Language of Trees, 1994).

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4.4 Tree heights, crown spreads and stem diameters were measured with a clinometer, a Disto laser measure and a diameter measuring tape respectively.

4.5 Small trees and shrubs (with stem diameters less than 75mm) were not surveyed.

4.6 This report is based on the information provided (i.e. site plans, proposed drawings, scales, measurements etc.) and our observations during the site visit.

4.7 This report will support a planning application or an application to discharge a tree-related condition and its purpose is to assist and inform the planning process.

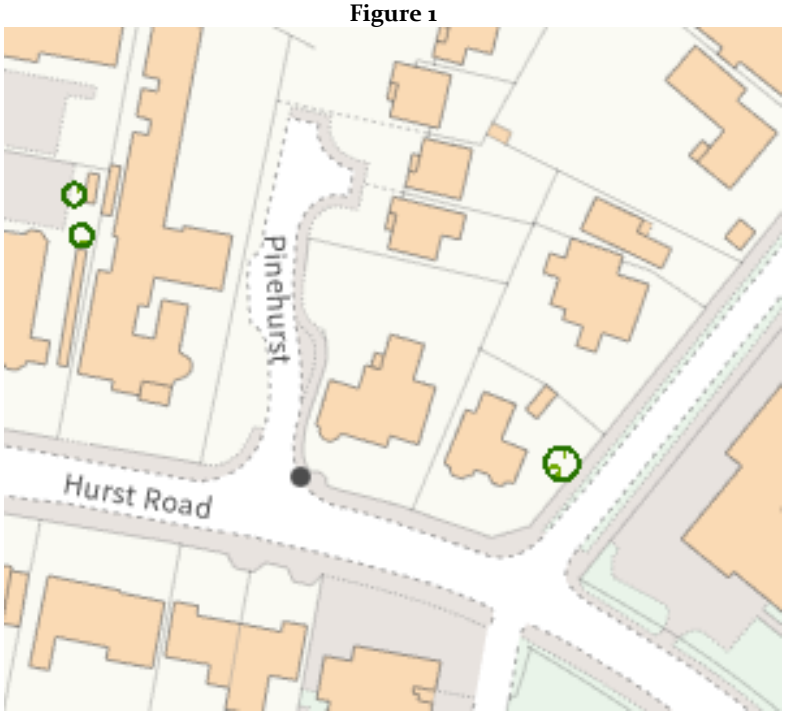
4.8 This report does not set out the detailed, working specifications of tree protection measures and engineering / design features, but provides sufficient detail to demonstrate the feasibility of the scheme in principle.

4.9 The report does not assess the potential influence of trees upon load-bearing soils beneath existing and proposed structures (resulting from water abstraction by trees on shrinkable soils).

5.0 Statutory tree protection

5.1 According to the Council's website (checked 06/09/2024), none of the trees within or adjacent to this site are covered by a Tree Preservation Order (TPO), or growing within a Conservation Area.

Figure 1



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6.0 Ecological constraints

6.1 The Wildlife and Countryside Act 1981 (as amended by the Countryside and Rights of Way Act 2000) provides statutory protection to birds, bats and other species that inhabit trees.

6.2 In addition to any tree matters considered in this report, these protected animals could impose significant constraints on the use and timing of access to the site.

7.0 The site

7.1 This property is situated within a leafy, residential part of Horsham.

8.0 The soil and topography

8.1 The soils at this site were determined using information provided by the British Geological Survey and observations during the site visit.

8.2 The site is level with no adverse features, and the soil texture is Upper Tunbridge Wells Sand - Sandstone and mudstone.

8.3 Given the information above, the soil has little potential of becoming compacted (which is harmful to tree roots); however, tree protection will not be relaxed.

9.0 Arboricultural Impact Assessment (AIA) and Tree Protection Methods

9.1 The following section describes the potential effects the construction works will have on the subject trees. Mitigation measures are recommended, and this information should be read in conjunction with the supporting Tree Protection Plan (TPP). Further information on the subject trees is provided in Appendices 2 & 3.

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9.2 Ecological enhancements

9.2.1 The proposals will not require the loss of vegetation and therefore no mitigation planting is required; however, the applicant plans to plant a new mixed boundary hedge along part of the front boundary as an ecological enhancement.

9.2.2 It is normally appropriate to deal with re-planting matters by condition or by way of a landscape plan; however, the location of a new hedge has been shown on the TPP and the following details can be confirmed at this stage:

Hedges

- The new hedges will be formed with 600-800 mm high, mixed native hedge plants (see Figure 1 below for species mix) to give a good immediate effect;
- The typical planting density will be about 3 per metre. The new hedge plants will be supported with canes and mulched to suppress weeds.
- All planting will be carried out in full accordance with current British Standards (BS 8545: From Nursery to Independence in the Landscape).
- Once planted, the hedges will be regularly maintained (watered and weeded during the spring and summer months and clipped regularly to the required height) for at least 5 years or until established.

Figure 1.

Code	Species	Container / Form	Height (cm)	Distribution %
Ace	Acer campestre	TP 1+1	60-80cm	10%
Car	Carpinus betulus	TP 1+1	60-80cm	10%
Cos	Cornus sanguinea	TP 1+1	60-80cm	10%
Cor	Corylus avellana	TP 1+1	60-80cm	10%
Cra	Crataegus monogyna	TP 1+1	60-80cm	10%
Ila	Ilex aquifolium	C / 2L	40-60cm	10%
Lig	Ligustrum vulgare	TP 1+1	60-80cm	10%
Vib	Viburnum opulus	TP 1+1	60-80cm	10%
Ace	Acer campestre	TP 1+1	60-80cm	10%
Car	Carpinus betulus	TP 1+1	60-80cm	10%
Cos	Cornus sanguinea	TP 1+1	60-80cm	10%
Cor	Corylus avellana	TP 1+1	60-80cm	10%

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9.3 Physical damage to stems of retained trees

9.3.1 There is a risk that the crowns and stems of some of the retained trees could be accidentally damaged during development.

9.3.2 To minimise this risk, protective fencing will be erected in front of their stems and, where space allows, along their canopy extents.

9.4 Foundations within RPA of retained trees

9.4.1 The excavations required for the new (extension) foundations and new dropped kerb will result in the following RPA incursions:

- Western Red Cedar T1 – 11m of 452m² = 2.5%
- Silver Birch T8 – 3.4m of 55m² = 6%

9.4.2 Section 5.3.1 (a) of BS 5837:2012 recommends that, if operations (in this case, excavations for foundations) are proposed within a tree's RPA then, the project arboriculturist should demonstrate that it can remain viable and that the area lost to encroachment can be compensated for elsewhere, contiguous with its RPA.

9.4.3 An RPA is an estimation of the minimum root system needed to sustain the condition of a tree (if all roots outside it were to be severed); it is not a measure of a tree's entire rooting system.

9.4.4 It is commonly accepted, within the arboricultural industry, that the RPA represents about a third of a tree's actual rooting system and, consequently, whilst the RPA is particularly important to ensure that there are no adverse effects on stability, if an encroachment does not significantly reduce the overall assimilative function of the root system, it is unlikely to cause harm.

9.4.5 Therefore, although there are incursions into these trees' RPAs (minimum root systems needed); the percentage of the trees' actual rooting systems affected is much less (a third of the figures shown above). Furthermore, it is possible to off-set the incursions within soft areas contiguous with the RPAs (on the other side of the road for T1 and within the front garden for T8).

9.4.6 In terms of viability, research has shown that healthy trees of most species can withstand the loss of some roots (to a maximum of about 20% of the rooting area) with no long-term detrimental impact (Helliwell & Fordham 1992).

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9.4.7 The trees are healthy, and methodology has been provided in the appendices to minimise root disturbance.

9.4.8 So long as the methodology is followed, and the vulnerable parts of the trees' RPAs are protected during construction, they will not be adversely affected.

9.5 Foundations for lightweight steps and ramp

9.5.1 A new set of steps and a ramp is to be constructed within the RPA of Western Red Cedar T1.

9.5.2 To minimise root disruption, the they will be of a lightweight design and supported by posts, the holes for which shall be hand-dug and lined with plastic sheeting prior to back-filling with concrete. The surfaces can also be made from steel mesh (or similar) and so can be permeable.

9.5.3 The works will take place from on top of temporary ground protection.

9.5.4 The tree is healthy and will tolerate these very minor works within its RPA. Subsequently, there will be no detrimental effect on the health or appearance of the tree, nor the visual amenity or arboreal character of the area.

9.6 Soil compaction around retained trees

9.6.1 Soil compaction can be caused by various construction-related activities such as storage or materials and the use of heavy machinery (or even heavier than normal pedestrian access during works). It is harmful to tree roots because it reduces gaseous exchange and the availability of water and nutrients.

9.6.2 To avoid the soil becoming unnecessarily compacted , all vulnerable areas will be separated from the working area by protective fencing or will be covered with ground protection.

9.6.3 The existing hard surfaces will provide ample protection for any roots growing beneath and so do not need reinforcing.

9.7 Potential conflict with low branches of retained trees

9.7.1 The lower lateral branches of Birches T2 & T3 are potentially vulnerable to damage during construction from vehicles accessing the site (although the site has been accessed this way for many years before).

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9.7.2 To reduce the risk of accidental damage to acceptable levels, the lateral branches over the driveway entrance will be crown lifted to improve clearance (see appendix 2 for more specific details).

9.7.3 The proposed pruning is minor, targeted and will not affect the health or appearance of the trees.

9.8 Underground services

9.8.1 The proposals will be designed in such a way as to either connect directly to existing underground services (with no further excavations) or be connected to existing services using a route outside the RPAs of trees shown retained.

9.8.2 If existing services within RPAs require upgrading, care shall be taken to minimise disturbance and where practicable, trenchless techniques employed; only as a last resort should open excavations be considered. Where existing services within RPAs are deemed not satisfactory for any further use, they should be left in situ rather than being excavated or removed.

9.8.3 If, for whatever reason, the proposed services need to be moved (and incursions into RPAs are unavoidable), then the installation works will be carried out under full arboricultural supervision and will, at the very least, comply with the methods and guidelines detailed in the National Joint Utilities Group publication NJUG 4, Guidelines for the Planning, Installation, and Maintenance of Utility Services in Proximity to Trees (November 2007).

9.9 New surfaces to be laid within RPA of retained trees

9.9.1 Part of the new driveway and one of the new parking areas are to be constructed within the RPA of Silver Birch T8.

9.9.2 To minimise root disruption during construction and allow for root growth afterwards, this new surface will be 'no-dig' and permeable (i.e. grasscrete or gravel grids).

9.9.3 To ensure an adequate level of ground protection is provided during all stages of development, this area will be covered in ground protection during works.

9.9.4 Where within the tree's RPA, the new surface edging will be held in place with raised timber sleepers (pegged into place). There will be no kerbs or concrete haunching.

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10.0 Conclusions

10.1 No vegetation will need to be removed to facilitate these works.

10.2 The retained / third-party trees will be protected using up-to-date methodology and guidance provided by the current British Standards (BS 58378:2012). To this end, a site-specific AMS and TPP have been provided. These are found in Section 11 and Appendix 9 respectively.

10.3 Provided the recommendations laid out in this report are followed, the proposals will not detrimentally affect the trees or the character / appearance of the local area.

10.4 The trees do not cause any significant conflicts in terms of construction activities, nor will any significant issues of post-development pressure be likely to emerge that could not be managed with routine, minor tree maintenance.

11.0 The Arboricultural Method Statement (AMS)

11.1 Effective tree protection relies on following a logical sequence of events and arboricultural supervision. This AMS lays down the methodology for all construction works that may influence significant trees and recommendations for arboricultural supervision are provided in Section 12.

11.2 It is essential that this AMS is observed and adhered to. Therefore, a copy of this AMS must be issued to the building contractor to be integrated into their work schedule and must also be permanently made available on-site for the duration of development.

11.3 This AMS should be read in conjunction with the supporting Tree Protection Plan (TPP), which is found in Appendix 9.

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11.4 At this site, operations are to occur in the following sequence (refer to Appendix 4 for further details on underlined methodology; which are listed in alphabetical order):

1. Carry out tree work operations highlighted yellow in the tree data schedule (Appendix 2). All tree works are to be carried out by a competent and experienced arborist to current British Standards (see Appendix 5.9 for assistance finding a suitable arborist).

2. Erect protective fencing along the position(s) shown by the dashed red line/s on the TPP.

3. Lay ground protection and/or retain suitably hard-wearing existing hard surfaces within the area(s) shown by the diagonal blue lines on the TPP. Retain all other existing hard surfaces as shown by the sandy coloured squares on the TPP.

4. Provide a photographic record of all tree protection to arboricultural consultant – this will be forwarded to and approved by the Council's Arboricultural Officer and must demonstrate that all aspects of tree and ground protection measures have been implemented in accordance with this Arboricultural Report. The tree protection measures shall be retained until completion of all works hereby permitted.

5. Working from on top of existing hard surfaces and/or suitable ground protection, excavate traditional strip foundation trenches (methodology to be followed where orange shading is shown).

6. Commence construction (of extensions).

7. Working from on top of existing hard surfaces and/or suitable ground protection, excavate post holes (by hand) for the steps and ramp. Line holes with plastic sheeting prior to back-filling with concrete.

8. Remove tree protection when all construction activity has ended.

9. Working from on top of existing hard surfaces and/or suitable ground protection, excavate road sub base (methodology to be followed where orange shading is shown).

10. Carry out landscaping works (including laying of 'no-dig', permeable driveway and parking area).

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12.0 Arboricultural supervision

12.1 A suitably-qualified arboriculturalist will provide on-going supervision during construction. The occasions when supervision is required are outlined in Table 2. If the LPA wish to see further supervision, this matter can be dealt with by amending the report and/or by condition.

Table 2: Indicative arboricultural supervision requirements

Supervision details	Required (Y / N)	When	Details	Nature	Sign off
~~Pre-commencement site meeting~~	~~N~~	~~Prior to any site activity~~	~~To ensure contractors are briefed & understand the AMS & TPP. A site supervisor will be appointed to oversee tree protection & the reporting of any damage to trees or deviation from the AMS - to the project arboriculturist / LPA~~	~~Informal and open discussions. Induction form signed by attendees~~	~~Details of meeting to be sent to LPA within 5 days~~
~~Meeting with tree contractors~~	~~N~~	~~Prior to protective measures being installed~~	~~To ensure tree work instructions are clear and understood.~~	~~Informal meeting~~	~~No follow up required~~
Protective measure check	Y	Prior to any site activity	To ensure that protective measures are fit-for-purposed and correctly positioned.	Photos to be provided to consultant	Details of to be sent to LPA within 5 days
~~On-going supervision~~	~~N~~	~~Every 2 weeks during construction~~	~~To ensure that the protective measures have not been moved and continue to be fit-for-purpose.~~	~~Site meeting with a site monitoring report to be prepared~~	~~Details of to be sent to LPA within 5 days~~
~~Supervision of excavation works near trees~~	~~N~~	~~During construction~~	~~To supervise key stages of works near trees (insert which / when)~~	~~Site meeting with a site monitoring report to be prepared~~	~~Details of to be sent to LPA within 5 days~~
~~Meeting with landscape contractors~~	~~N~~	~~After construction~~	~~To provide advice on tree / shrub selection (if not conditioned)~~	~~Informal meeting~~	~~No follow up required~~

12.2 A site inspection record (see Appendix 8) will be prepared after each visit and will state the condition of tree protection measures and outline any required remedial action (and timescales).

12.3 To demonstrate compliance, and to help the LPA discharge relevant planning conditions, all site monitoring reports will be forwarded to the LPAs arboricultural officer within 5 working days of the visit.

12.4 NOTE: It is the applicant's responsibility to arrange meeting dates with the arboriculturist.

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13.0 Signature

This report represents a true and factual account of the potential arboricultural impacts, and makes recommendations for appropriate protective measures, at the subject property.

Signed



.....

Trevor Heaps
Chartered Arboriculturist
BSc, MICFor, RC. Arbor. A

Dated

24th January 2025

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Appendix 1 - Professional résumé

I am Trevor Heaps, Director of Trevor Heaps Arboricultural Consultancy Ltd. I hold a First-Class Honours Degree in Arboriculture; I am a Chartered Arboriculturist and a professional member of the Institute of Chartered Foresters; and I am also a Registered Consultant with the Arboricultural Association.

Professional training

- Arboriculture and Bats: Scoping Surveys for Arborists (BCT & AA) – October 2017
- Tree Science (AA) – June 2016
- OPM (Oak Processionary Moth) Training (FC) – May 2016
- Visual Tree Assessment (Arboricultural Association) - October 2015
- Trees and the Law (Dr Charles Mynors) - June 2015
- Mortgage (Home Buyers) Report Writing (LANTRA / CAS) - February 2015
- Tree Preservation Orders - effective application (LANTRA / CAS) - November 2014
- Professional Tree Inspection 3-day course (LANTRA / AA) - July 2014
- Arboricultural Consultancy Course (AA) - May 2014
- Further down the subsidence trail 1-day course (AA) - April 2013
- Getting to grips with subsidence 1-day course (AA) - November 2012

AA – Arboricultural Association

BCT – Bat Conservation Trust

CAS – Consulting Arborist Society

FC – Forestry Commission

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Appendix 2 - Tree data schedule

Ref	Name	Age	DBH (mm)	Hgt. (m)	Can. hgt. (m)	Can N (m)	Can E (m)	Can S (m)	Can W (m)	Physio cond.	Struct cond.	Life Exp.	Ret. Cat.	Comments	Rec's (proposed works are highlighted)
T1	Thuja plicata (Western Red Cedar)	M	1000	12	3	5	5	5	5	Fair	Normal	40+	A2	Street tree growing in grass verge.	
T2	Betula pendula (Silver Birch)	EM	240	14	3	3	3	2	2	Normal	Fair	20+	B2	Suppressed due to growth from nearby trees.	Crown lift over access to 4m (if needed)
T3	Betula pendula (Silver Birch)	M	400	17	3	4.5	4.5	4.5	4.5	Normal	Fair	20+	B2	Ivy (heavy covering).	Crown lift over access to 4m (if needed)
G4	Chamaecyparis lawsoniana (Lawson Cypress)	SM	200	5	2.5	2	2	2	2	Normal	Normal	40+	C2	Outgrown boundary hedge.	
T5	Juglans regia (Walnut)	EM	250	10	1.5	3.5	4.5	1.5	1.5	Normal	Fair	40+	B2	Suppressed due to growth from nearby trees.	
T6	Malus sylvestris (Crab Apple)	EM	250	10	1.5	3.5	4.5	1.5	1.5	Normal	Fair	40+	B2	Suppressed due to growth from nearby trees.	
T7	Juglans regia (Walnut)	M	600,400	12	2	8	8	8	8	Normal	Fair	40+	A2	Crown reduced in past.	
T8	Betula pendula (Silver Birch)	M	350	16	2	3.5	3.5	3.5	3.5	Normal	Normal	20+	B2		
T9	Betula pendula (Silver Birch)	M	350	17	3	4.5	4.5	4.5	4.5	Normal	Normal	20+	B2		
G10	Chamaecyparis lawsoniana (Lawson Cypress)	SM	200	5	2.5	2	2	2	2	Normal	Normal	40+	C2	Outgrown boundary hedge.	

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Appendix 3 - Tree data schedule explanatory notes

This section explains the terms used in the **Tree data schedule** (Appendix 2).

Ref: Each item of vegetation has its own unique number, prefixed by a letter such that:

T1=Tree **S2**=Shrub or stump **G3**=Group **H4**=Hedge **W5**=Woodland

Species: Latin (and common names in brackets) are given.

Age:

- **Y - Young** - Usually less than 10 years' old
- **SM - Semi-mature** - Significant future growth to be expected, both in height and crown spread (typically below 30% of life expectancy)
- **EM - Early-mature** - Full height almost attained. Significant growth may be expected in terms of crown spread (typically 30-60% of life expectancy)
- **M - Mature** - Full height attained. Crown spread will increase but growth increments will be slight (typically 60% or more of life expectancy)
- **V - Veteran** - A level of maturity whereby significant management may be required to keep the tree in a safe condition
- **OM – Over-mature** - As for veteran except management is not considered worthwhile

DBH (mm): Stem diameter, measured in mm, taken at 1.5m above ground level where possible.

Hgt. (m): Height: Measured from ground level to the top of the crown in metres.

Can Hgt. (m): Crown height: Measured from ground level to the lowest tips of the main crown begins in metres. Where the crown is unbalanced it is measured on the side deemed to be most relevant. This is usually the side facing the area of anticipated development.

Can N, S, E, W: - Canopy extents
Approximate radial crown spread measured to the four cardinal points (for individual trees only)

Physio cond.: Indicates the physiological condition of the tree as one of the following categories:

- **Normal** - Healthy tree with no symptoms of significant disease
- **Fair** - Tree with early signs of disease, small defects, decreased life expectancy, or evidence of less-than-average vigour for the species
- **Poor** - Significant disease present, limited life expectancy, or with very low vigour for the species and evidence of physiological stress
- **Very poor** - Tree is in advanced stages of physiological failure and is dying
- **Dead** - No leaves or signs of life

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Struct cond.: Indicates the structural condition of the tree as one of the following categories:

- **Normal** - No significant structural defects noted
- **Fair** - Some structural defects noted but remedial action not required at present
- **Poor** - Significant defects noted resulting in a tree that requires regular monitoring or remedial action
- **Very poor** - Major defects noted that compromise the safety of the tree. Remedial works or tree removal is likely to be required.
- **Dead** - No leaves or signs of life

Life Exp.: The estimated number of years before the tree may require removal (<10), (10 – 20), (20 – 40), or (40+).

Ret. Cat.: - Retention category: BS5837:2012 Category where:

- **U = Trees unsuitable for retention**. Trees in such a condition that cannot realistically be retained as living trees in the context of the current land use for longer than 10 years. These trees are shown on the tree plans with red centres.

- **A = Trees of high quality**. Trees of high quality with an estimated remaining life expectancy of at least 40 years. These trees are shown on the tree plans with green centres.

- **B = Trees of moderate quality**. Trees of moderate quality with an estimated remaining life expectancy of at least 20 years. These trees are shown on the tree plans with blue centres.

- **C = Trees of low quality.** Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150mm. These trees are shown on the tree plans with grey centres.

Trees of notable quality are graded as Category A or Category B. These trees are sometimes divided further into sub-categories:

- Sub-category 1 is allocated where it has been assessed that the tree has mainly arboricultural qualities.
- Sub-category 2 is allocated where it is assessed that the tree has mainly landscape qualities.
- Subcategory 3 is allocated where it is assessed that the tree has mainly cultural qualities, including conservation.

Trees may be allocated more than one sub-category. All sub-categories carry equal weight, with for example an A3 tree being of the same importance and priority as an A1 tree.

Comments: Tree form and pruning history are also recorded along with an account of any significant defects.

Rec's - Recommendations: Usually based on any defects observed and intended to ensure that the tree is in an acceptable condition.

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Appendix 4 – Specifications for tree protective measures

Excavations for shallow sub-bases (i.e. for block paving / resin-bonded gravel)

The RPA of the subject tree shall be clearly marked on the ground with fluorescent marker paint - by tying the spray can to a tree's stem using a pre-determined length of string to represent the tree's root protection radius (RPR) and keeping the string taught when spraying the ground. Cross reference the fourth column of the table in Appendix 2 (DBH mm) with the 2nd column in table 1 below to determine the length of string required.

Table 1. The RPRs given below are for single-stemmed trees.
Please contact the project arboriculturist if the subject tree is multi-stemmed.

Single stem diameter (mm)	Radius of nominal circle (m) / RPR	RPA (m^2)	Single stem diameter (mm)	Radius of nominal circle (m) / RPR	RPA (m^2)	Single stem diameter (mm)	Radius of nominal circle (m) / RPR	RPA (m^2)
75	0.9	3	475	5.7	102	875	10.5	346
100	1.2	5	500	6	113	900	10.8	366
125	1.5	7	525	6.3	125	925	11.1	387
150	1.8	10	550	6.6	137	950	11.4	408
175	2.1	14	575	6.9	149	975	11.7	430
200	2.4	18	600	7.2	163	1000	12	452
225	2.7	23	625	7.5	177	1025	12.3	475
250	3	28	650	7.8	191	1050	12.6	499
275	3.3	34	675	8.1	206	1075	12.9	523
300	3.6	41	700	8.4	222	1100	13.2	547
325	3.9	48	725	8.7	238	1125	13.5	572
350	4.2	55	750	9	254	1150	13.8	598
375	4.5	64	775	9.3	272	1175	14.1	624
400	4.8	72	800	9.6	289	1200	14.4	651
425	5.1	82	825	9.9	308	1225	14.7	679
450	5.4	92	850	10.2	327	1250	15	707

To ensure any surface roots are cut as cleanly as possible, a hand-spade will be used to cut along the edge of the excavation - to a depth no greater than 150mm.

Having cleanly severed any roots growing within the upper soil horizons, a rake can then be used to scrape away the loose soil.

A sub-base of gravel and then a laying course of grit / sharp sand (not builders' sand, which has a high salt content) can then be laid prior to the final laying of block paving (with textured sides to allow drainage) or resin-bonded gravel.

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Excavations for road sub-bases

The RPA of the subject tree shall be clearly marked on the ground with fluorescent marker paint - by tying the spray can to a tree's stem using a pre-determined length of string to represent the tree's root protection radius (RPR) and keeping the string taught when spraying the ground. Cross reference the fourth column of the table in Appendix 2 (DBH mm) with the 2nd column in table 1 below to determine the length of string required.

Table 1. The RPRs given below are for single-stemmed trees.
Please contact the project arboriculturist if the subject tree is multi-stemmed.

Single stem diameter (mm)	Radius of nominal circle (m) / RPR	RPA (m^2)	Single stem diameter (mm)	Radius of nominal circle (m) / RPR	RPA (m^2)	Single stem diameter (mm)	Radius of nominal circle (m) / RPR	RPA (m^2)
75	0.9	3	475	5.7	102	875	10.5	346
100	1.2	5	500	6	113	900	10.8	366
125	1.5	7	525	6.3	125	925	11.1	387
150	1.8	10	550	6.6	137	950	11.4	408
175	2.1	14	575	6.9	149	975	11.7	430
200	2.4	18	600	7.2	163	1000	12	452
225	2.7	23	625	7.5	177	1025	12.3	475
250	3	28	650	7.8	191	1050	12.6	499
275	3.3	34	675	8.1	206	1075	12.9	523
300	3.6	41	700	8.4	222	1100	13.2	547
325	3.9	48	725	8.7	238	1125	13.5	572
350	4.2	55	750	9	254	1150	13.8	598
375	4.5	64	775	9.3	272	1175	14.1	624
400	4.8	72	800	9.6	289	1200	14.4	651
425	5.1	82	825	9.9	308	1225	14.7	679
450	5.4	92	850	10.2	327	1250	15	707

To ensure the roots are cut as cleanly as possible, a hand-spade will first be used to cut along the edge of the excavation - to a depth no greater than 300mm (about spade depth).

Having cleanly severed any roots growing within the upper soil horizons, a mini digger can then be used to scrape away the soil – to the required depth.

The excavated area shall then be lined with plastic sheeting (to avoid concrete residues leaching into rooting area/s of the retained trees) and the sub-base can then be created.

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Excavation of traditional strip foundation trenches

To minimise root disruption during excavation works, the following guidance shall be followed:

The RPA of the subject tree shall be clearly marked on the ground with fluorescent marker paint - by tying the spray can to a tree's stem using a pre-determined length of string to represent the tree's root protection radius (RPR) and keeping the string taught when spraying the ground. Cross reference the fourth column of the table in Appendix 2 (DBH mm) with the 2nd column in table 1 below to determine the length of string required.

Table 1. The RPRs given below are for single-stemmed trees.
Please contact the project arboriculturist if the subject tree is multi-stemmed.

Single stem diameter (mm)	Radius of nominal circle (m) / RPR	RPA (m^2)	Single stem diameter (mm)	Radius of nominal circle (m) / RPR	RPA (m^2)	Single stem diameter (mm)	Radius of nominal circle (m) / RPR	RPA (m^2)
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100	1.2	5	500	6	113	900	10.8	366
125	1.5	7	525	6.3	125	925	11.1	387
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175	2.1	14	575	6.9	149	975	11.7	430
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225	2.7	23	625	7.5	177	1025	12.3	475
250	3	28	650	7.8	191	1050	12.6	499
275	3.3	34	675	8.1	206	1075	12.9	523
300	3.6	41	700	8.4	222	1100	13.2	547
325	3.9	48	725	8.7	238	1125	13.5	572
350	4.2	55	750	9	254	1150	13.8	598
375	4.5	64	775	9.3	272	1175	14.1	624
400	4.8	72	800	9.6	289	1200	14.4	651
425	5.1	82	825	9.9	308	1225	14.7	679
450	5.4	92	850	10.2	327	1250	15	707

To ensure the roots are cut as cleanly as possible, a hand-spade will first be used to cut along the edge of the excavation - to a depth of at least 300mm (spade depth).

Having cleanly severed any roots growing within the upper soil horizons, a mini-digger can then be used to complete the excavation.

Once complete, all severed roots shall be cut cleanly back to a suitable growth point using sharp secateurs or a sharp pull saw.

The foundation trenches shall then be lined with plastic sheeting (to avoid concrete residues leaching into rooting area/s of the retained trees) and back-filled with concrete.

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Excavation of post-hole footings within Root Protection Areas (RPAs) of retained trees

The RPA of the subject tree shall be clearly marked on the ground with fluorescent marker paint - by tying the spray can to its stem using a pre-determined length of string to represent the tree's root protection radius (RPR) and keeping the string taught when spraying the ground. Cross reference the fourth column of the table in Appendix 2 (DBH mm) with the 2nd column in table 1 below to determine the length of string required.

Table 1. The RPRs given below are for single-stemmed trees.
Please contact the project arboriculturist if the subject tree is multi-stemmed.

Single stem diameter (mm)	Radius of nominal circle (m) / RPR	RPA (m^2)	Single stem diameter (mm)	Radius of nominal circle (m) / RPR	RPA (m^2)	Single stem diameter (mm)	Radius of nominal circle (m) / RPR	RPA (m^2)
75	0.9	3	475	5.7	102	875	10.5	346
100	1.2	5	500	6	113	900	10.8	366
125	1.5	7	525	6.3	125	925	11.1	387
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175	2.1	14	575	6.9	149	975	11.7	430
200	2.4	18	600	7.2	163	1000	12	452
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300	3.6	41	700	8.4	222	1100	13.2	547
325	3.9	48	725	8.7	238	1125	13.5	572
350	4.2	55	750	9	254	1150	13.8	598
375	4.5	64	775	9.3	272	1175	14.1	624
400	4.8	72	800	9.6	289	1200	14.4	651
425	5.1	82	825	9.9	308	1225	14.7	679
450	5.4	92	850	10.2	327	1250	15	707

A cable avoidance tool (C.A.T.) will then be used to check for underground cables. If found, their locations will be marked with a biodegradable marker paint (using a different colour to the one used to mark the RPAs).

Working off either ground protection or an existing hard surface, the optimal locations for the post-holes (i.e. between roots) will be determined by hand, using tools such as a fork, spade, trowel, stiff brush or an air spade.

If roots below 25mm in diameter are discovered, they can be severed cleanly back to a suitable growth point with sharp secateurs or a sharp pull saw. If roots over 25mm in diameter are discovered, they will be bent / relocated as best as possible. If impractical, then the above process will be repeated.

When the post-hole location(s) have been determined, the remainder of the hole(s) will be hand-dug and lined with plastic sheeting (to avoid concrete residues leaching into rooting area/s of the retained trees).

The posts shall then be set in place and back-filled with concrete.

The structure-supporting beam(s) can now be fixed to the posts and construction can commence.

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Gravel Grid parking system (for reference)

Working off suitable ground protection, the existing hard surface shall be removed by hand / or the existing vegetation shall be treated with a suitable systemic herbicide. When the vegetation has died, the turf layer (usually about 5cm deep) will be removed (using hand tools).

Working with the new bare surface, any localised depressions will be filled in with sharp sand (not builders' sand, which has a high salt content) to create an even surface profile. The area will not be 'rolled' or consolidated in any way.

Once the even surface profile has been formed, a layer of geotextile fabric will be laid across the 'no-dig' area and the Gravel Grid (or similar) will be laid on top. In principle, this system will normally be cellular and filled with crushed stone, although the detail may vary with different products. Suitable surface finishes include washed gravel, permeable tarmac or block paviours set on a sand base.

Conventional kerb edges (set in concrete-filled trenches) are likely to result in damage to roots and should be avoided. Edge retention in RPAs must be designed to avoid any significant excavation into existing soil levels (BS 5837, 7.4.3) and there are several approaches that are fit for this purpose: Railway sleepers pinned in place or wooden boards are two options, depending on the expected loading of the surfacing. A permeable soil fill can then be used to batter the grade back down to the existing soil level.

Photo 1 An example of a gravel grid driveway under construction



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Ground Protection

The following *italicised* text is based on an extract from British Standard 5837:2012 - Trees in relation to design, demolition and construction– Recommendations.

Temporary ground protection should be able to support any traffic entering or using the site without being distorted or causing compaction of underlying soil and 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, 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.

The location of the temporary ground protection is shown on the tree protection plan and detailed within the arboricultural method statement.

In all cases, the objective will be to avoid the unnecessary compaction of soil (which can arise from a single passage of a heavy vehicle, especially in wet conditions) so that tree root functions remain unimpaired.

All ground protection is to be maintained in good order, so it is fit for purpose throughout development. The ground protection will not be altered in any way, or prematurely removed without prior consent of the project arboriculturist or the LPA arboricultural officer.

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Figure 1: An example of ground protection on work areas within a RPA (BS 5837:2005).

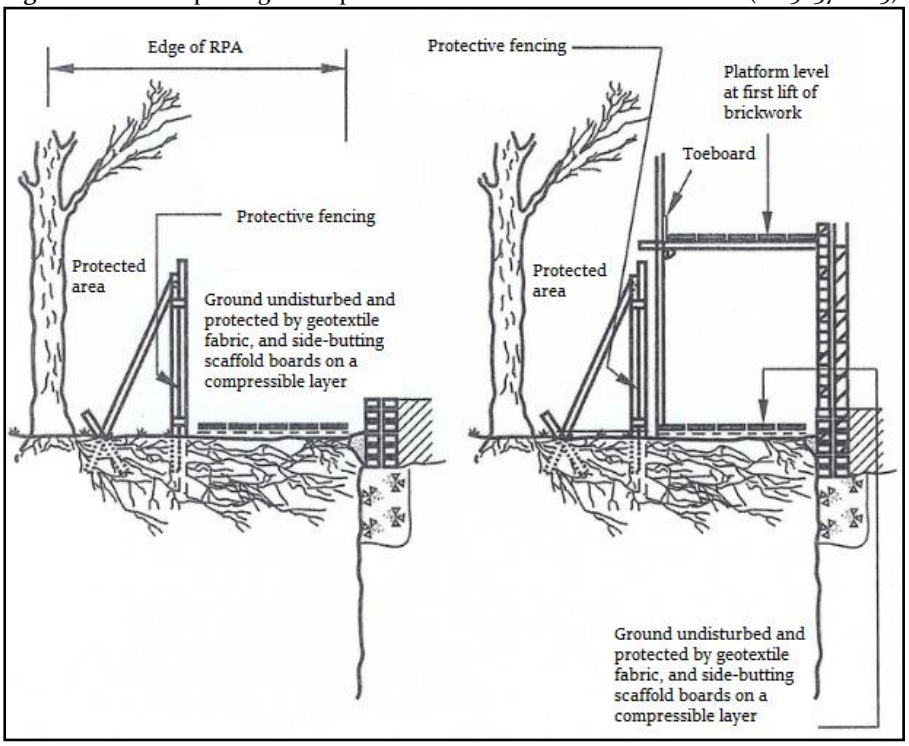

Photo 2. Scaffold boards placed on woodchip

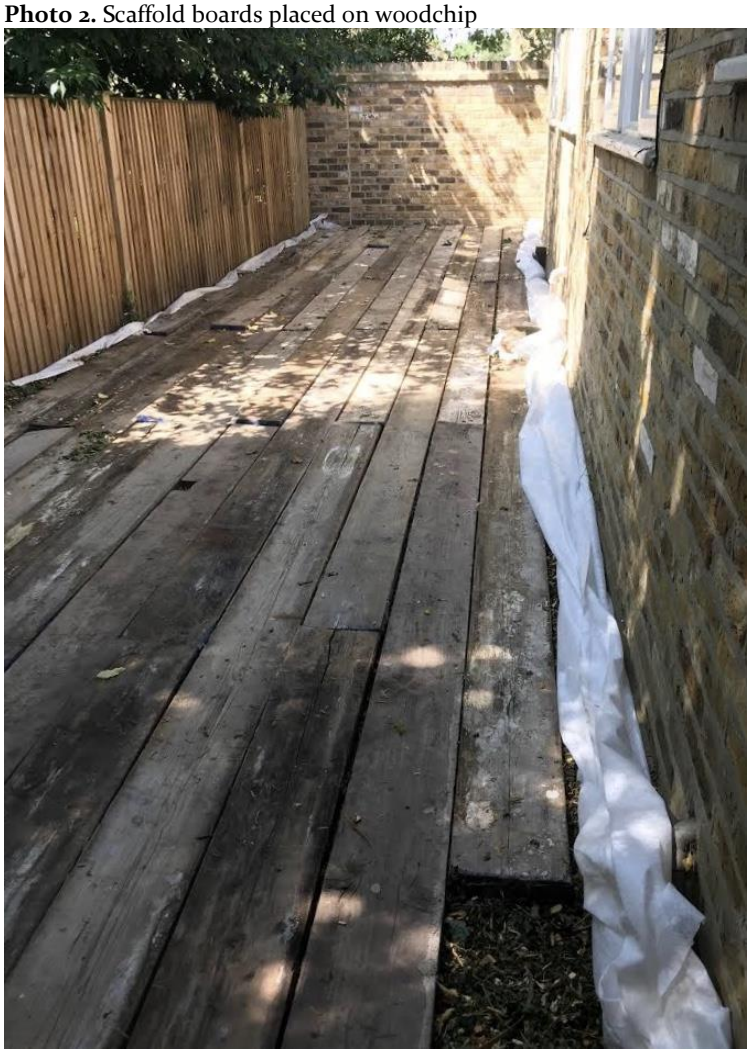

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Photo 2. An example of heavy-duty ground protection.



Photo 3 Scaffold framework supporting wooden boards



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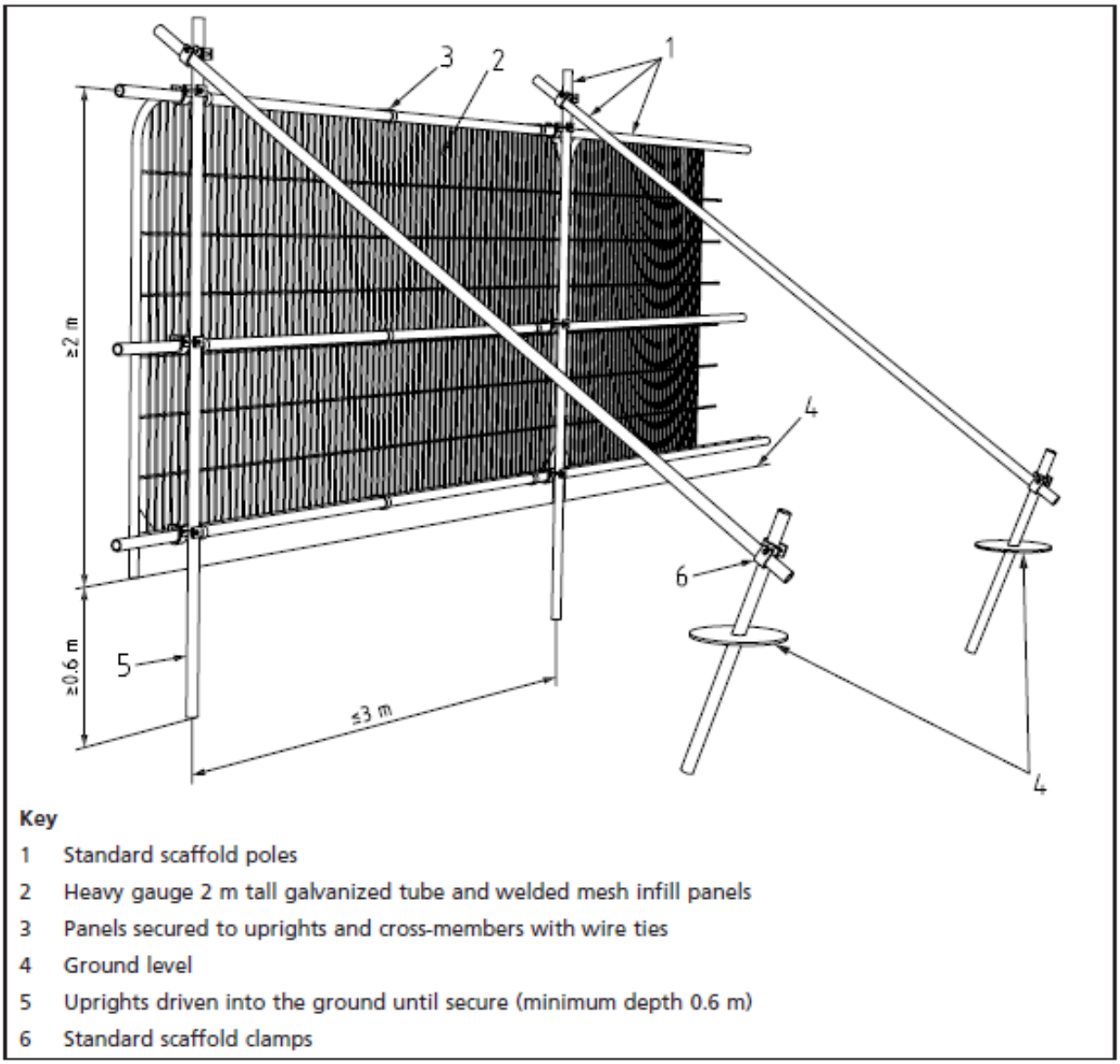
Protective fencing

The following is based on an extract from British Standard 5837:2012 - Trees in relation to design, demolition and construction– Recommendations.

The framework support (shown in Figure 2 and photo 1) is the usual method of support for 'Heras' fencing. Some variations are possible if site conditions are appropriate; i.e. support by wooden posts (75mm x 75mm x 2.75m) dug or concreted into the ground (dry mix concrete contained within a plastic bag), or if there is no pressure for access, a lighter form of netting on stakes.

Figure 2: Default specification for protective barrier (BS 5837:2012)



Key

1 Standard scaffold poles
2 Heavy gauge 2 m tall galvanized tube and welded mesh infill panels
3 Panels secured to uprights and cross-members with wire ties
4 Ground level
5 Uprights driven into the ground until secure (minimum depth 0.6 m)
6 Standard scaffold clamps

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Photo 1: A worked example of the default specification for protective barrier (BS 837:2012)



Durable, all-weather signs are to be attached to the fencing (an example sign is provided below). These shall be printed, laminated and attached at regular intervals along the fencing.

Once erected, the protective fencing is to be regarded as sacrosanct and there is to be no access into the area protected by it - the construction exclusion zone (CEZ).

The protective fencing is to be maintained in good order, so it is fit for purpose throughout the construction process. The fencing will not be altered in any way, or prematurely removed without prior consent of the project arboriculturist and/or (if necessary) the LPA arboricultural officer.

Where specified in the AMS, the tree(s) stem/s shall be boxed off with wooden ply boards or wrapped in hessian and chestnut pale fencing / trunk protection (see example below). This will help avoid any direct damage to tree stems from passing machinery (see photo 2).

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Photo 2: Trees protected by hessian & chestnut pale fencing / limbs protected by wooden boxing



Photo 2. https://greengridsystems.com/products/trunk-protecta



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TREE PROTECTION FENCING

KEEP OUT

This fencing must not be removed or altered in any way without prior consultation with the project arboriculturist!

Please report any damage to trees and/or fencing to the site manager or the project arboriculturist

Trevor Heaps

07957 763 53

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Soft landscaping within or close to the Root Protection Areas (RPAs) of retained trees

The following precautions are necessary to avoid damage to trees (where activities are to take place within their RPAs):

- Ground levels will not be changed;
- Soil must be of good quality and free of contaminants and other foreign objects potentially injurious to tree roots. The topsoil must satisfy the requirements of BS3882:200;
- No heavy machinery will be operated within the RPAs of retained trees during the installation of soft landscaping;
- Unwanted vegetation shall be removed manually or by using systemic herbicide that will not damage tree roots;
- No fuels or chemicals shall be used or stored within these areas; and
- No irrigation or drainage pipes shall be installed within the RPAs

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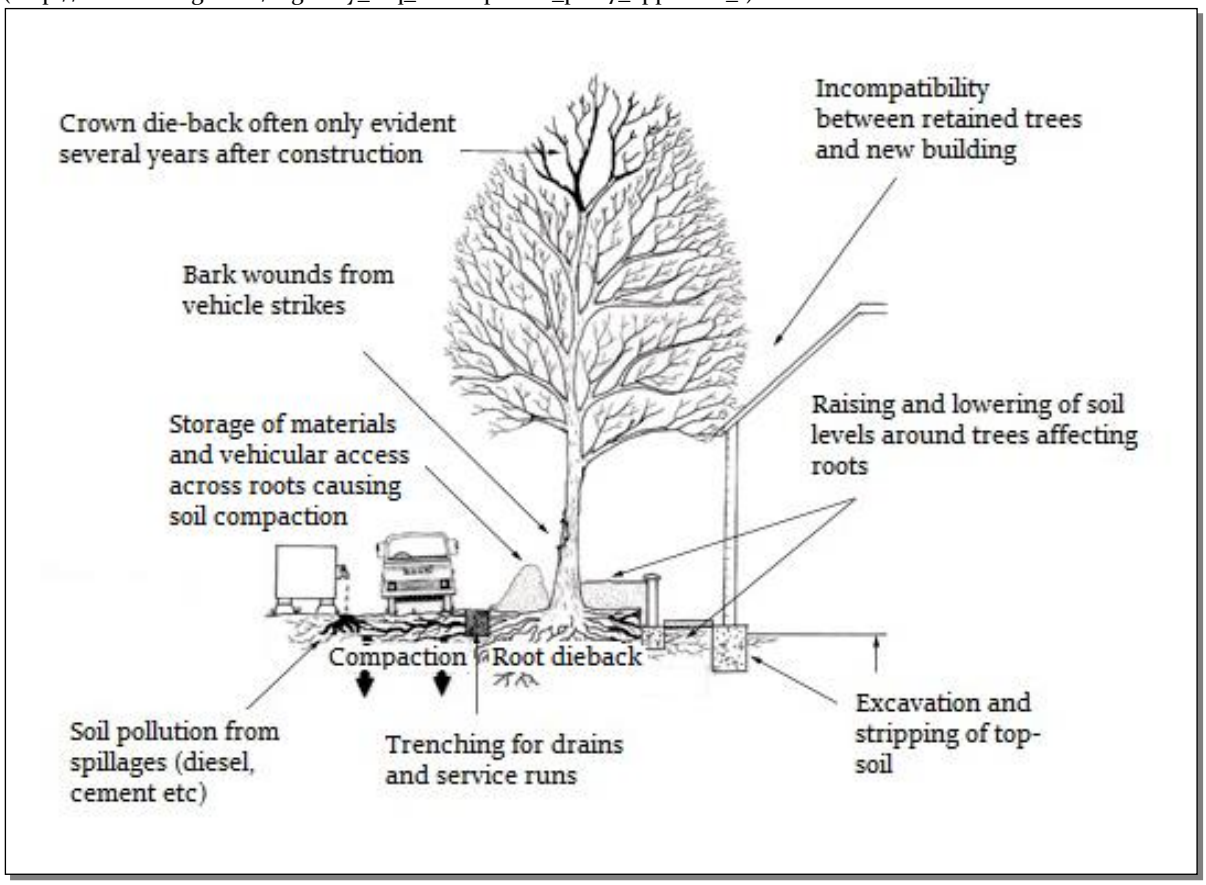
Appendix 5 – General precautions and further information

Figure 4: Common problems for trees on development sites
(http://www.leics.gov.uk/highway_req_development_part7_appendix_f)



5.1 Services and drainage: Surface run-off water shall be sent to existing drains and/or soakaways located outside the RPAs of retained tree(s). If trenching is required within the RPA of retained trees to provide routes for services, this work shall be undertaken using mole boring and / or hand digging (under arboricultural supervision).

5.2 Storage of materials: No materials or spoil are to be stored within areas protected by protective fencing and/or ground protection. The same applies for existing hard surfaces that are being used as ground protection.

5.3 Spillages: If any cement residues fall within root protection areas, it shall be swept up, bagged and removed from site – it shall <u>not</u> be washed away with water.

5.4 Demolition: Where any existing structures are to be demolished, they will be done so inwardly (away from root protection areas / retained soil).

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5.5 Levels: There is to be no alteration of ground levels within the area protected by protective fencing and/or ground protection, unless previously specified and agreed upon. The same applies for existing hard surfaces that are being used as ground protection.

5.6 Fires: No fires are to be lit within 20 metres of the stems of retained trees.

5.7 Above ground damage to trees: Care must be taken in planning the location and operation of machinery to avoid above ground damage to trees. BS5837 (2012) Section 6.2.4.1 states '*Planning of site operations should take sufficient account of wide loads, tall loads and plant with booms, jibs and counterweights (including drilling rigs) in order that they can operate without contacting retained trees. Such contact can result in serious damage to trees and might make their safe retention impossible. Consequently, any transit or traverse of plant in proximity to trees should be conducted under the supervision of a banksman, to ensure that adequate clearance of trees is always maintained. Access facilitation pruning should be undertaken where necessary to maintain this clearance.*

5.8 Remedial works and soil improvement: Exposed soils are easily compacted resulting in loss of water and gaseous exchange; this can lead to root death (and subsequently tree death).

5.8.1 To relieve ground compaction, which may have resulted from the use of vehicles or by the storage of materials, the soils should be broken up to allow air to penetrate and for the soil structure to be restored. There are various methods to achieve this, such as: auguring the soil by hand / fork or pneumatic excavation (e.g. with an air spade); both should be combined with soil structure improvements (see 5.8.2).

5.8.2 The soil structure can be improved by incorporating a compost or mulch within the topsoil, of 75-100mm in depth. This can be spread over the surface and gently forked into the soil. If bark chip is used as mulch, NPK fertilizer should be added to counteract the nitrogen depletion of the soil. There is also the option of adding mycorrhizal fungal which may also improve root function.

5.9 Choosing an arborist: When appointing a tree works contractor, please only use properly qualified and experienced companies who comply with current British Standards (3998) and always check that they carry Public Liability Insurance within a minimum of £2,000,000 cover, and the relevant Employers Liability Insurance. A list of contractors approved by the Arboricultural Association can be found at www.trees.org.uk or by calling 01242 522 152.

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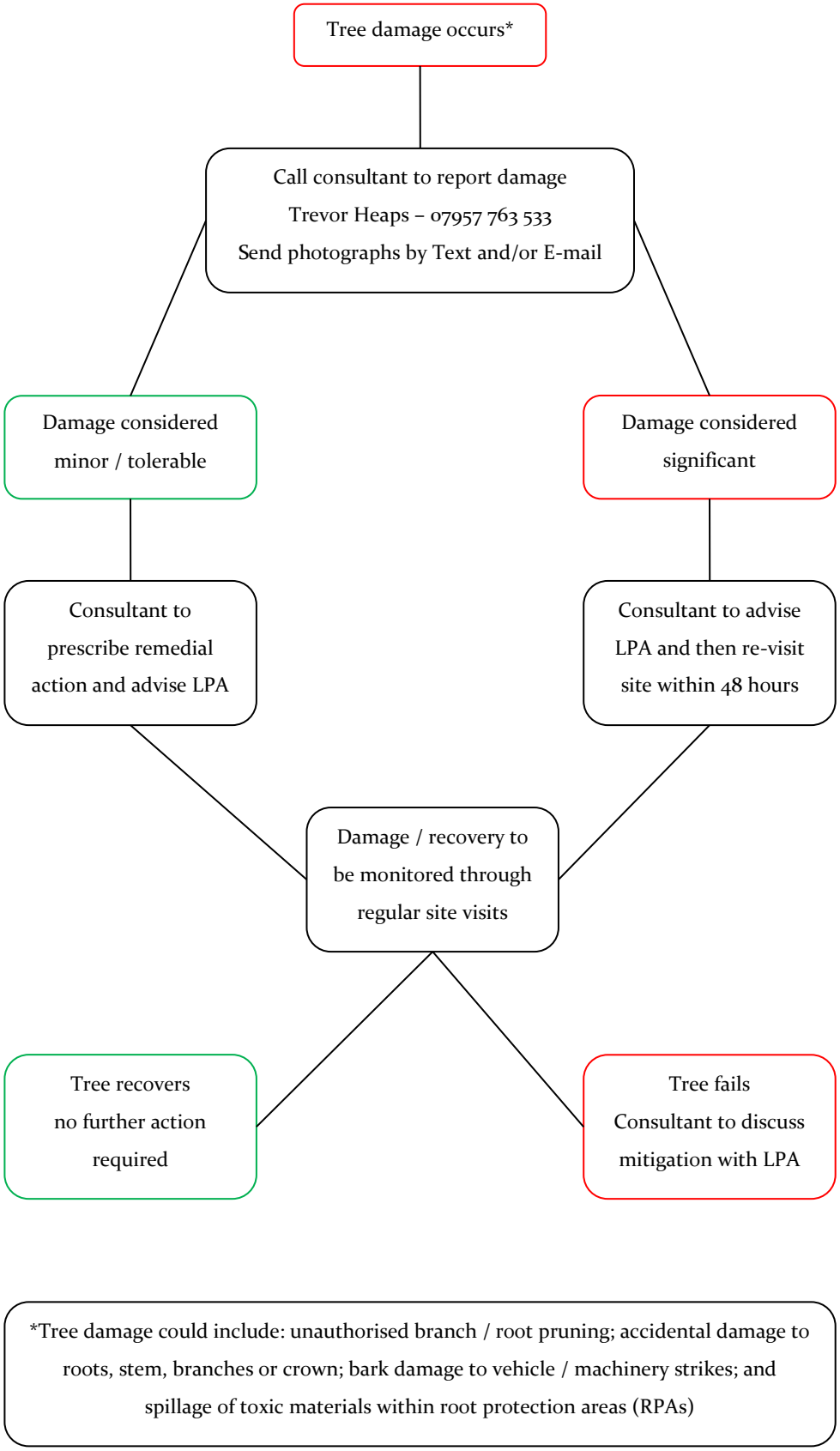
Appendix 6 - Procedure to follow in case of damage to retained trees



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Appendix 7 - Induction form for all site personnel

Site name: .....

App. No.: .....

Appointed Site Supervisor: .....

- I have had explained to me by the Site Manager the key implications of the Arboricultural Method Statement relating to the development at the above site.

- I am aware that trees have shallow roots and any excavation works beneath the canopy could cause irreparable damage.

- I am aware that the tree protective fencing / ground protection must remain in its original position and must not be moved without the approval of the appointed Arboricultural Consultant.

- I understand that certain operations must be supervised by the appointed Arboricultural Consultant and that these must not start until the consultant is present and has given approval.

- I confirm that I will bring any concerns about potential damage to trees to the attention of the Site Manager.

- I am aware that I must not cause damage to any of the retained trees on or adjacent to the site. Damage may be caused by direct means (i.e. physical damage caused to roots or the trunk/branches of the tree) or by indirect means (e.g. by fire or toxic materials entering the rooting environment of the tree).

Print Name: .....

Sign Name: .....

Date: .....

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Appendix 8 - Site inspection record

Date: Time:	Planning reference:
.....	.....
Site:	
.....	

Those present in addition to project arboriculturist:

Client / Agent: .....

Project / Site manager: .....

LPA arboricultural officer: .....

Other (specify): .....

	Yes	No	Notes
Tree protection measures located in accordance with TPP?			
Any disturbance within construction exclusion zone?			
Any materials stored within construction exclusion zone?			
Any evidence of damage to tree roots, stems or canopies?			
Any works programmed before next planned site visit that may affect retained trees? (if yes, provide details below)			

Additional site visit required to ensure compliance with required action? (Y / N)

Proposed visit date:

Signed: Date:

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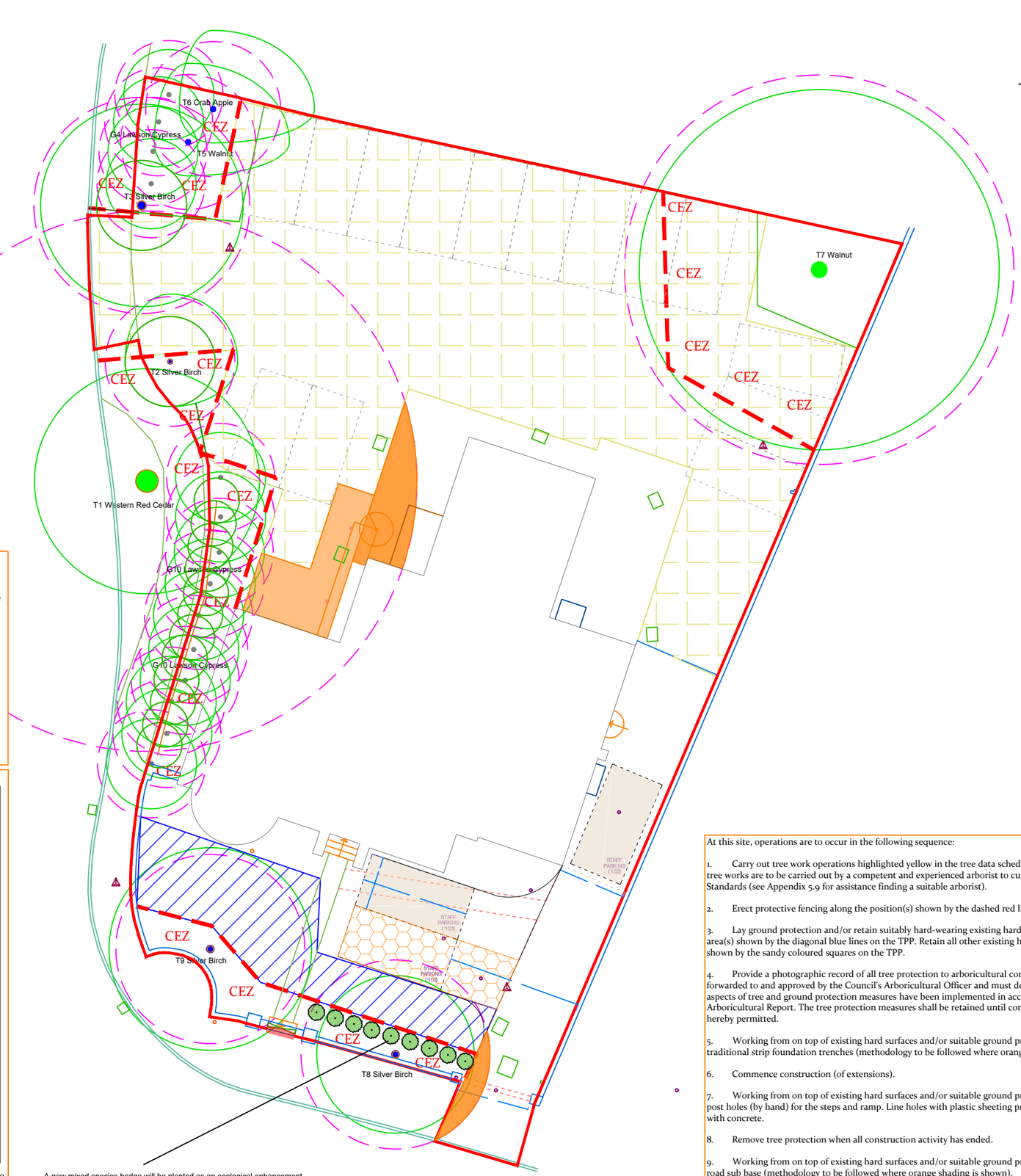
Appendix 9: Tree Protection Plan



Temporary ground protection should be able to support any traffic entering or using the site without being distorted or causing compaction of underlying soil and might comprise one of the following:

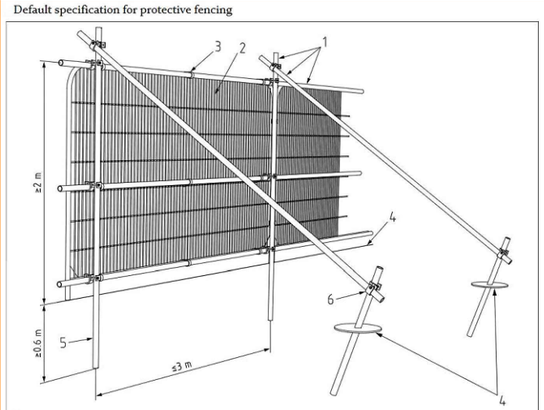
1. For pedestrian-movements only, a single thickness of scaffold boards placed either on top of a driven scaffold frame, to form a suspended walkway, or on top of a compression-resistant layer (e.g. 100 mm depth of woodchip), laid onto a geotextile membrane;

2. 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;

3. 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.

NOTE: If ground protection is to be laid near areas to be excavated, sheet piling should be used to shore up the sides of the excavations prior to being used (by pedestrians or machinery)

Default specification for protective fencing



Key

1 Standard scaffold poles
2 Heavy gauge 2 m tall galvanized tube and welded mesh infill panels
3 Panels secured to uprights and cross-members with wire ties
4 Ground level
5 Uprights driven into the ground until secure (minimum depth 0.6 m)
6 Standard scaffold clamps

NOTE: It might be possible to move the protective fencing slightly to provide more working / storage / office space, but this will need to be confirmed with the arboricultural consultant first. IF agreeable, suitable ground protection (details provided in the appendices) will need to be laid over the exposed RPAs.

At this site, operations are to occur in the following sequence:

1. Carry out tree work operations highlighted yellow in the tree data schedule (Appendix 2). All tree works are to be carried out by a competent and experienced arborist to current British Standards (see Appendix 5.9 for assistance finding a suitable arborist).

2. Erect protective fencing along the position(s) shown by the dashed red line/s on the TPP.

3. Lay ground protection and/or retain suitably hard-wearing existing hard surfaces within the area(s) shown by the diagonal blue lines on the TPP. Retain all other existing hard surfaces as shown by the sandy coloured squares on the TPP.

4. Provide a photographic record of all tree protection to arboricultural consultant - this will be forwarded to and approved by the Council's Arboricultural Officer and must demonstrate that all aspects of tree and ground protection measures have been implemented in accordance with this Arboricultural Report. The tree protection measures shall be retained until completion of all works hereby permitted.

5. Working from on top of existing hard surfaces and/or suitable ground protection, excavate traditional strip foundation trenches (methodology to be followed where orange shading is shown).

6. Commence construction (of extensions).

7. Working from on top of existing hard surfaces and/or suitable ground protection, excavate post holes (by hand) for the steps and ramp. Line holes with plastic sheeting prior to back-filling with concrete.

8. Remove tree protection when all construction activity has ended.

9. Working from on top of existing hard surfaces and/or suitable ground protection, excavate road sub base (methodology to be followed where orange shading is shown).

10. Carry out landscaping works (including laying of 'no-dig', permeable driveway and parking area).

Plan Legend

- Tree/s to be retained
- Tree/s to be removed
- Category A Tree
- Category B Tree
- Category C Tree
- Category U Tree
- Root Protection Area (RPA) If amended, the original is a dotted blue circle
- RPA Incursion. Extra care to be taken during excavations (see supporting report)
- Protective fencing
- CEZ — Construction & storage exclusion zone
- Ground protection or existing hard surface to remain
- Existing hard surface
- Ground protection during construction. 'No-dig', permeable, surface afterwards

Scale: 1:200 @ A3 (0 — 4m — 8m)

Site Address: Milestone House
86 Hurst Road, Horsham, RH12 2DT

Client: AVG (Arun Veterinary Group)
Drawing No: TH/A3/4760B/TPP

Job Ref: TH4760B | Date: 24/01/2025

Trevor Heaps
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End of Report