VETCERT

Veteran Tree Management Standards

Consulting Level – Public Draft

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Unit number	**Unit title**	**Unit summary**
1	Veteran trees; recognition and values.	Candidates will have to demonstrate knowledge of a variety of veteran trees, their history, and values.
Knowledge outcomes *The candidate will be able to*	**Skill and knowledge standard** *The candidate can*	**Notes**
1. Recognise veteran trees in their various forms and their context.	i) Provide a technical definition for a veteran tree. ii) Show an awareness that the definition of a veteran tree might differ in legislation and in different countries. iii) Identify veteran trees in various forms and provide a description of the main forms of veteran trees across Europe. (C) iv) Identify the context, present or historic, these trees sit within. (C)	i) Refer to glossary. iii) Ability to recognise veteran trees *in situ*. Including knowledge that veteran trees don't always have to be old or large. iv) e.g. • Contexts include: wood pasture, woodland, traditional orchards, hedges, urban environment, ... • Open grown trees now in close shade = change of land use around tree. • Presence of low branches = absence of browsing animals when tree was young. • Worked trees = productive trees managed for a product.
2. Explain the wide range of values veteran trees provide.	i) Describe the ecological, cultural heritage, social, amenity and aesthetic values these trees may provide.	i) • Ecological value: value as part of an ecosystem/biodiversity. • Cultural heritage: linked to local traditions and/or management of land, link to historical event or person. • Social: benefits provided to health and wellbeing. • Amenity and aesthetic: their appearance. • ...

	ii) Converse with a wide range of audiences about the values of veteran trees, and their unique management requirements. iii) Be an ambassador for veteran trees. iv) Undertake a financial valuation of veteran trees and show awareness of the potential limitations of valuation systems. (C)	ii) Audiences include: the layperson, land managers and other tree care professionals.
3. Explain possible reasons why these trees persist today.	i) Describe the different historical factors which have resulted in these trees persisting today. (C)	i) e.g. continuity of land ownership, common rights over trees or their products, sacred trees, boundary trees, recognition of values veteran trees provide, too expensive to remove, ...
	ii) Identify the main factors influencing the longevity of such trees.(C)	ii) Natural survival strategies, individual genetics, ...

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2	Growth, development and dysfunction of trees.	Candidates will have a detailed understanding of how trees grow, age and decay and why this is relevant to veteran tree management.
Knowledge outcomes *The candidate will be able to*	**Skill and knowledge standard** *The candidate can*	**Notes**
1. Describe how trees grow.	i) Describe the structural and functional characteristics of trees that allow them to grow indefinitely. ii) Describe the wide range of factors which affect how trees grow, with specific reference to veteran trees. (C)	i) Trees are compartmented, capable of producing new roots, trunk and shoots throughout their life. ii) • Environmental: soil, climate, exposure, sunlight/shade, pollution, wind and other external stimuli. • Genetic: variations between and within tree species, including the health of the individual tree. • Management history: variations in growth form, lapses in management.
2. Describe the ageing process in trees and why they can live so long.	i) Describe the development of trees as they grow older. (C) ii) Describe the resilience and survival strategies by which veteran trees can reach great age. (C)	i) Retrenchment due to reduction in size of annual growth ring. Loss of apical dominance. Re-iterative growth – formation of secondary crown. Ageing is not a one-way process. ii) • New layer of wood is created each year the tree is alive. • Changes in crown architecture, with ability for re-iterative growth (epicormic buds, change in composition of wood). • Ability to layer and form phoenix growth. • Recycling of nutrients by hollowing and adventitious roots. • 'Growing downwards,' which reduces biomechanical forces acting on tree.

	iii) Describe the natural hollowing process of trees over time and the impact of hollowing on the tree (biomechanical and ecological) and other organisms. (C)	iii) Central hollowing brought about by the loss of the tap root as the tree ages. This decay extends up to the centre of the trunk recycling dysfunctional wood. Hollowing potentially beneficial. Sapwood-heartwood. Damage caused to the external parts of the tree might lead to the inlet of air into the vascular system. Functional wood becomes dysfunctional and decayed, and eventually decay may reach dysfunctional wood in the centre of the tree.
	iii) Describe semi-autonomous 'functional units' and how these affect how veteran trees should be managed.(C)	iii) Semi-autonomous units comprising roots, trunk and shoots. Need to be managed as separate units rather than all units being treated as one tree.
3. Describe the impacts that damage has on a tree.	i) Describe types of stress and dysfunction in a tree. (C)	
	ii) Describe the main defence mechanisms of the tree following stress or injury. (C)	ii) Compartmentalisation - Active process triggered by inlet of air into the vascular system. Reinforcement of existing barriers in wood (three) and the creation of a new wall after damage.
	iii) Describe the impact damage (including cutting) has on a tree.	iii) Creation of wounds, inlet of air (oxygen levels rise), leading to dysfunction, and eventually decay. If the extent of cutting is substantial the tree may not be able to compartmentalise the dysfunction.

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3	Roots of veteran trees and the soil environment.	Candidates will have an understanding of a healthy soil environment, and how a poor soil environment has a negative impact upon the health of veteran trees.
Knowledge outcomes *The candidate will be able to*	**Skill and knowledge standard** *The candidate can*	**Notes**
1. Describe the natural soil environment and how this affects tree health.	i) Explain the importance of a healthy soil environment, and why veteran trees are susceptible to changes in this environment. ii) Provide an overview of the range of organisms present within the soil and how these contribute to the function of a soil and the tree through nutrient recycling. (C) iii) Describe a variety of soil types and their influence on the rooting environment.	i) Changes in soil environment affect natural cycles, affecting nutrient movement and recycling processes. ii) • Input and recycling of organic matter by a range of organisms. • Decomposers and detritivores – recycling nutrients from the leaf litter and other organic matter, releasing organic material and aerating the soil. • Mycorrhizal fungi – in symbiosis with tree roots, can enable more efficient uptake of water and nutrients.
2. Describe factors which can have a detrimental impact upon the soil environment around veteran trees and recognise these *in situ.*	i) Identify the effects of deficient or excessive nutrients, pollutants and contaminants on veteran trees. (C)	i) • Nutrient deficiencies – Reduction in health and new growth. (Discolouration or poor growth of vegetation). • Nutrient excess – Nutrient burning. Abandonment of symbiotic relationships with mycorrhizal fungi, leading to reduced capacity to absorb water and nutrients and reduced resilience to external stresses. (Lush green vegetation present at base of tree. Presence of nitrogen loving species).

		• Pollutants and contaminants – alteration of soil biology and chemistry, toxicity to tree roots and mycorrhizae.
	ii) Identify different types of soil damage and provide options for avoiding or reducing impact. (C)	ii) <u>Types of soil damage</u> • Compaction: Reduction or removal of air spaces within soil leading to unfavourable, anaerobic conditions. • Erosion: displacement of soil. • Changes in soil level: alters aerobic/anaerobic conditions. • Changes in hydrology: change in water table alters aerobic/anaerobic conditions. • ... <u>Options to avoid/reduce damage</u> • Identifying and setting up a root protection area. • Use of ground protection. • Store fuels and oils outside of rooting area (15x trunk diameter or 5m beyond drip line – whichever is greatest). • Use of suitable fuel and oil cans to prevent spillages. • Use of fuel mat to catch and/or a spill kit to absorb any spillages. • ...
3. Be able to identify remediation options for poor soils around veteran trees.	i) Identify and evaluate options for soil management around veteran trees. (C)	i) • Identify source of nutrient deficiencies (laboratory analysis) and supplement soil with suitable quantity of nutrient. • Addition of organic matter such as mulch or compost tea. • Identify and remove source of enrichment (agricultural fertiliser, excessive animal urination and dunging): Little can be done to remove nutrient excesses already present in soil. • Remove excess soil or mulch to restore soil level. • ...

4. Identify where roots and mycorrhizal fungi grow.	i) Describe common root architecture patterns and how root development is influenced by the rooting environment. (C)	i) Like the base of a wine glass, rather than a mirror image of the above ground parts of a tree. Influenced by oxygen, water and nutrient availability, physical barriers within soil, bacteria, mycorrhizae, pH, ...
	ii) Explain the relationship between roots and shoots.	ii) There is a balance between root area and shoot area, impacting one will result in a change in the other.
	iii) Describe types of symbiotic relationships between tree roots and other organisms and explain their benefits. (C)	iii) Especially mycorrhizae.
5. investigate root growth.	i) Show an awareness of the problems associated with identifying actual root location.	i) Root growth often opportunistic and influenced by oxygen, water and nutrient availability, physical barriers within soil, bacteria, mycorrhizae, pH, ...
	ii) Identify and evaluate methods of root detection. (C)	ii) Dig hole, use ground penetrating radar, root tomography, ...

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4	Veteran trees as ecosystems.	Candidates will have to demonstrate an understanding of the ecological importance of veteran trees, both individually and in the wider landscape.
Knowledge outcomes *The candidate will be able to*	**Skill and knowledge standard** *The candidate can*	**Notes**
1. Describe the wide range of ecological values of veteran trees, and how they fit into the wider ecosystem.	i) Explain the importance for biodiversity of abundant, good quality veteran tree habitat over long periods of time. (C)	i) Species are able to survive in habitats where habitat provision remains stable. The rate of change is minimal, avoiding the need for organisms to adapt to new conditions. The veteran trees act as the keystone of the ecosystem by providing a range of habitats.
	ii) Demonstrate an understanding of the importance of the distribution of veteran trees in the landscape and the mobility of associated organisms. (C)	ii) A species cannot survive in one tree indefinitely, but needs a number of veteran trees in close proximity to survive for the long term; there are few sites with sufficient quantities of veteran trees.
	iii) Identify decaying wood of different types and stages of decay. Describe their value and diversity, including their relevance to management. (C)	iii) • Candidates able to identify the two main types of decay (white and brown). • How different organisms require wood at different stages of decay and how the tree species affects what organisms will utilise decaying wood. • Difference between aerial deadwood and lying deadwood, large pieces and /small pieces, …
	iv) Describe the complexity and diversity of habitats veteran trees can offer and demonstrate an understanding of the organisms which are dependent on veteran trees. Identify a range of potential microhabitats associated with veteran trees. (C)	iv) Dependent on niche habitats created by veteran trees, such as wood mould (late-stage decay product), wood substrate with different pH than younger trees of the same species., ... These trees provide unique habitat, as such many of the dependent organisms are found nowhere else, and many of

		them are vulnerable to (at least local) extinction (extinction debt).
	v) Demonstrate an understanding of the variation of habitats between tree species. (C)	
	vi) Demonstrate an understanding that the unique history of each veteran tree leads to a unique ecological value. (C)	vi)e.g. Individuality of trees as a result of historic management (positive/negative), natural damage, the abiotic environment, ... These factors create veteran trees with unique characteristics.
	vii) Demonstrate an understanding how an individual veteran tree sits in a wider ecosystem and identify that ecological processes are linked. An impact on one can affect others. (C)	vii) Veteran tree management needs to take a holistic approach. Organisms don't operate in isolation.
	viii) Identify the issues that impact on the sustainability of veteran tree populations. (C)	viii) e.g. Mortality rate is high, numbers of veterans is low or there is a generation gap.

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5	Veteran trees and people.	Candidates will have to demonstrate an understanding of the cultural, social and historical importance of veteran trees.
Knowledge outcomes *The candidate will be able to*	**Skill and knowledge standard** *The candidate can*	**Notes**
1. Describe how the location of veteran trees in cultural landscapes may introduce management challenges.	i) Describe the unique management challenges faced in a variety of landscapes with veteran trees and how these can affect veteran tree management. (C)	i) • Formal/designed landscapes (including vistas). • Churchyards • Agricultural/animal husbandry/grazing. • Urban • Wood pasture with pollards • Avenues • Archaeological • Woodland/forestry • …
2. Describe the amenity and social value of veteran trees.	i) Show an understanding of the amenity and social value of veteran trees and the implications for their management. ii) Understand the importance of public support for protecting and managing veteran trees. (C) iii) Identify the opportunities and challenges faced by 'famous trees' and sites with high visitor pressure. (C)	i) e.g. Health and wellbeing, air quality, cooling effect, consultation, funding, … ii) e.g. Communication and consultation, funding opportunities, … iii) Challenges: soil compaction, vandalism, … Opportunities: potential funding, education/interpretation …

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6	Veteran tree survey and assessment.	Candidates will be able to undertake surveys and inspections of veteran trees in order to inform management.
Knowledge outcomes *The candidate will be able to*	**Skill and knowledge standard** *The candidate can*	**Notes**
1. Conduct a veteran tree survey.	i) Collect and record accurate information on veteran trees, in accordance with existing guidance. (C)	i) Candidates should consider • physiological condition/vitality. • factors affecting phenology. • structural condition (biomechanics). • biodiversity. • heritage/historical/landscape data. • … Annex includes pro forma survey sheet.
	ii) Identify the main species of wood decay fungi in the country of examination, including their main hosts and the type of wood decay they cause. (C)	ii) Including the usual location of their fruiting bodies on the tree.
	iii) Show an understanding of the complexity of fungal life strategies and how they might change over time. (C)	iii) To include latency/endophytes.
	iv) Interpret information and identify management options to inform a veteran tree management plan. (C)	
	v) Describe the various methods and theories available in relation to tree surveying and assessment, and evaluate their limitations for assessing veteran trees. (C)	
	vi) Demonstrate an understanding of the difference between surveying individual veteran trees and veteran tree landscapes (C).	

	vii) Collect sufficient information to allow veteran trees to be located by others and identified (e.g. record co-ordinates and draw simple plans).	vii) Able to tag and photograph trees effectively.
2. Describe diagnostic tools which can be used as part of a veteran tree inspection.	i) Describe a range of diagnostic tools (e.g. decay detection equipment). Provide a list of 'pros and cons' for each option and give examples of when they could be used to inform veteran tree management. (C)	i) • Sonic tomography. • Electrical impedance tomography. • Resistance drills. • Pulling tests. • Tree statics. • Mallet. • Chlorophyll fluorescence. • …

Unit number	Unit title	Unit summary
7	Legislation in relation to veteran trees.	Candidates will have an understanding of relevant legislation within the country of examination, what the legislation covers, prohibits, and knowledge of how to achieve consent to undertake works.
Knowledge outcomes *The candidate will be able to*	**Skill and knowledge standard** *The candidate can*	**Notes**
1. Demonstrate and understanding of the legislation affecting veteran tree management within the country of examination.	i) Detail the legislation affecting veteran tree management within the country of examination and how to comply: (C) • Protected sites and species • Biodiversity • Protected trees • Felling restrictions • Heritage • Liability • Health and Safety • Urban planning • Biosecurity • Forestry legislation • … ii) Demonstrate an awareness that if they work in another region/country, legislation in relation to veteran trees may differ.	

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8	Veteran tree risk management.	Candidates will have to demonstrate an understanding of the way risk might be assessed, in accordance with legislation and guidance within the country of examination.
Knowledge outcomes *The candidate will be able to*	**Skill and knowledge standard** *The candidate can*	**Notes**
1. Undertake a robust risk assessment of a veteran tree.	i) Identify the difference between the potential to cause harm (hazard) and the likelihood and severity of harm (risk). ii) Describe how biomechanical defects may also be high value ecological features. iii) Undertake a risk vs benefit analysis, in order to inform veteran tree management. (C) iv) Demonstrate an appreciation that it is not possible to remove risk entirely. Risk needs to be managed to tolerable levels. (C) v) Identify options other than felling or cutting the tree in order to manage the risk. Provide a list of 'pros and cons' for each option. (C)	i) The likelihood and severity of harm (risk) is influenced by the target. iv) Candidates should refer to risk management guidance in the country of examination. v) • Target removal. • Target modification through use of barriers (fencing or dead hedging) or informal methods (letting grass grow longer). • Propping. • Cabling. • Bracing. • ... Candidates should provide some recognition of the cost and practicalities of each option. The simplest and cheapest may be the most effective.

Unit number	**Unit title**	**Unit summary**
9	Veteran trees, urban planning and infrastructure.	Candidates will have to demonstrate an understanding of how veteran trees should be treated during the urban development process and the threats or benefits this may bring.
Knowledge outcomes *The candidate will be able to*	**Skill and knowledge standard** *The candidate can*	**Notes**
1. Demonstrate an understanding of how veteran trees should be considered during the planning and construction process in the country of examination.	i) Demonstrate an understanding of the legal framework guiding the construction of infrastructure (e.g. houses, roads, …) and how these relate to veteran trees. (C) ii) Demonstrate an understanding of good practice for protecting veteran trees in relation to construction of infrastructure and temporary events. (C) iii) Undertake a veteran tree impact assessment of proposed construction and temporary events, allowing reasoned decisions to be made in the planning process. (C) iv) Prepare a management plan to enable the protection of veteran trees before, during and after the construction process and temporary events. (C) v) Deliver effective site supervision. (C)	i) See glossary for definition of urban planning and construction of infrastructure. ii) Note that 'standard' tree protection guidance may not be sufficient for veteran trees. iii) To include direct impact, such as those caused by construction activities, as well as in-direct impacts, such as pressure from new residents to cut or remove tree in future.

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10	Personal skills.	Candidates will have a strong set of transferable skills, which complement their veteran tree knowledge, to promote veteran tree management and conservation.
Knowledge outcomes *The candidate will be able to*	**Skill and knowledge standard** *The candidate can*	**Notes**
1. Demonstrate excellent communication skills to promote the protection of veteran trees.	i) Work with professionals within the industry, and with professionals from other disciplines. Capable of communicating technical management information at all levels. (C) ii) Produce high quality written material in the form of clearly written, accurate and concise reports. Reports to be practical and comprehendible. (C)	i) To promote conservation of veteran trees through collaboration with others, e.g. practicing veteran tree professionals and non-specialists. ii) It is essential that the contractor understands why work is proposed, can understand the specification and can locate the tree(s) easily.
2. Demonstrate excellent negotiation and motivation skills.	i) Influence others to promote veteran tree conservation.(C) ii) Demonstrate ability to take account of differing interests in veteran tree management. (C)	i) Capable of motivating others. ii) e.g. aesthetics, social, historical, … Acknowledgement of the need to compromise.
3. Demonstrate excellent organisation skills.	i) Keep clear and accurate records regarding veteran tree management.	i) To ensure management is properly documented to enable effective future management.
4. Recognise the limits of their professional abilities.	i) Understand and acknowledge the limit of their professional knowledge and skills, and seek additional assistance where necessary.	i) e.g. contact a colleague or a professional in another discipline to provide advice on specific matters.

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11	Veteran tree management.	Candidates will have to demonstrate a detailed knowledge of the veteran tree management process and apply their knowledge and skills to achieve high quality results.
Knowledge outcomes *The candidate will be able to*	Skill and knowledge standard *The candidate can*	Notes
1. Detail the basic principles behind veteran tree management.	i) Detail the overall aim of all veteran tree management and explain why it might be necessary to manage veteran trees.	i) No avoidable loss of veteran trees. Examples include, remove threats such as shading, soil compaction, nutrient enrichment of soil, to prevent structural collapse and fire or vandalism.
	ii) Describe the decision making process before carrying out any veteran tree management.	ii) 1. Does anything need to be done? (if not, do nothing) 2. Does the land around the veteran tree need managing? 3. Does the veteran tree need managing?
	iii) Explain how the different characteristics of veteran trees guide management. (C)	iii) • Unique challenges brought about due to lapses in management. • Reduced vigour. • Risk of failure. • Decay. • Retrenchment. • Sensitive to change. • May be competitively weaker. • But may exhibit more natural survival strategies.
2. Identify and specify suitable management options.	i) Identify threats to specific veteran trees.	i) e.g. Shade, soil compaction, nutrient enrichment of soil, root damage, pest and diseases, structural collapse, fire and vandalism. To be assessed *in situ*.

	ii) Evaluate a specific veteran tree's reactions to past management and/or natural events, and how this should affect its future management.(C)	ii) e.g. • Worked trees in regular cycle of cutting. • Worked trees not in regular cycle of cutting. • Concrete in hollow trunks. • ...
	iii) Evaluate any gaps in knowledge and identify appropriate courses of action. (C)	iii) e.g. Further surveys, specialist advice, further investigation, …
	iv) Ensure that any pest and diseases prevalent at the site are taken account when considering management options. (C)	
	v) Provide a set of potential objectives for a specific veteran tree, or site, and identify appropriate and realistic management options, including timescales. (C)	v) Overarching aims, not necessarily detailed.
	vi) Demonstrate an understanding of undertaking veteran tree work in practice. (C)	
	vii) Identify and provide a list of 'pros and cons' for a range of management options and techniques. Make recommendations for most suitable option. (C)	vii) To include consideration of tree health, factors affecting phenology, functional units, phasing of work and prevalence of local pest and disease (where appropriate). Techniques: e.g. natural fracture cuts, tools, … Candidates should provide some recognition of the cost and practicalities of each option. The simplest and cheapest may be the most effective.
	viii) Describe why techniques for veteran tree management might differ from standard management guidance. (C)	vi) e.g. size of root protection areas, retention of stubs instead of target pruning, natural fracture cuts, …

3. Prepare a clear and accurate veteran tree management plan and specifications of work.	i) Provide clear guidance on what/where/when/how/why/who? This includes overarching management principles and specifications for work. (C)	i) Annotated photographs and diagrams used to explain proposals. • What needs to be done? • To which trees? • When it needs to be done? • How works should be undertaken? • Using what tools? • Why work is being undertaken (desired end point of management)? • Who should undertake the work? • Details of necessary monitoring required and allowance for amendments as necessary (informed by monitoring). Including details of when trees are unlikely to respond positively to management, and resources should be focussed elsewhere. Plan to include long term aim for tree and/or site.
4. Undertake veteran tree management, in accordance with management plan.	i) Implement good practice biosecurity measures in accordance with guidance in the country of examination. ii) Use their knowledge, experience and existing guidelines to identify the extent of a suitable root protection area for a veteran tree and choose an appropriate method for setting one up. iii) Inspect completed works or supervise work to ensure compliance with management plan. (C)	i) To minimise chances of spread of pests and diseases. ii) Candidates should acknowledge that the guidance for root protection areas for a veteran tree may vary from standard arboricultural recommendations. Refer to guidance in relevant country, or if absent, Ancient Tree Forum guidance (15 times stem diameter or 5m from crown). iii) Ensure objectives have been met.

5. Identify the need for, and undertake monitoring.	i) Explain the importance of monitoring in veteran tree management. (C) ii) Collect information to guide ongoing veteran tree management. (C)	i) Is the management having the desired effect? If no, does management need to be changed or ceased? ii) e.g. Collect information on mortality rates at a given site.
6. State strategies for providing veteran trees for the future.	i) Describe some of the methods that may be applicable to promote development of abundant, good quality veteran tree habitat over long periods of time, for biodiversity. (C)	i) • Identify existing young trees to be retained as future veterans. Specify suitable protection measures to ensure the trees reach maturity and beyond. • Identify suitable areas for planting, select appropriate stock of known origin and provenance (following good practice biosecurity measures in the country of examination), and undertake planting and suitable aftercare. • Consider suitable veteranisation techniques to potentially speed up the production of decaying wood habitat. *VETERANISATION IS NOT TO BE UNDERTAKEN ON VETERAN TREES*. Suitable trees include, young trees which would otherwise be removed or trees that have limited potential to reach maturity. Selected tree species, if a particular type of decay is required.
	ii) Have an awareness of the importance of providing veteran trees for future generations of people. (C)	ii) • Amenity. • Heritage. • Urban tree populations. • …