VETCERT

Indicative content / study guide

Consulting Level

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Introduction

This document elaborates on how the VETcert standards should be interpreted and explains what level of understanding or skill is deemed necessary to meet the VETcert standards.

This document is not exhaustive in any way, so it cannot be seen as a complete study book for passing the VETcert certification. It should rather be seen as a guide to point candidates to relevant/interesting literature, and the latest professional views on veteran tree management.

This is a 'living' document, which will be regularly adapted and updated.

Unit 1: Veteran trees; recognition and values.

1) Recognise veteran trees in their various forms and their context.

a) *Provide a technical definition for a veteran tree.*

For VETcert the following definition is used, which includes the common features of veteran trees in all partner countries:

- Great chronological age for their species
- In an advanced life stage where they may show retrenchment and have been through phases where they have demonstrated resilience
- Often large for their species
- Showing a complex structure or architecture with hollowing, decay, roots inside the trunk, a colony-tree structure/multiple functional units being common features
- Have high biological/ecological values
- Have a high cultural or heritage value – but this alone does not make a tree a veteran (for example a recently planted tree by a famous person is not a veteran)

Be aware that national and/or legal definitions might be more specific or vary from this definition. It is important to assess each veteran tree individually and to adapt any management to the important features of that specific tree.

As a VETcert specialist you will need to:

- Know that there are different definitions in different countries.
- Understand the definition in the country in which you are operating/taking the assessment.
- Know the definition (if there is one) that is enshrined in law in your country. Note that you should fully understand the definition.

You will <u>not</u> be asked to give a specific definition for a country other than that in which you take the assessment.

Please check the *VETcert fact sheet on definitions* for more information.

In English the distinction is made between 'ancient' trees, which have great chronological age and 'veteran' trees, which can have characteristics of old age (hollowing, decay, …), but are not necessarily very old. In most other languages this distinction is not made.

b) *Show an awareness that the definition of a veteran tree might differ in legislation, in official guidance and in different countries.*

As explained above, there is no definition of veteran trees that is valid throughout Europe. It might even differ within the same country. For example the technical definition of a veteran

tree (based on ecological, cultural, social, … characteristics) might differ from its legal definition, which might be based solely on the size of the tree.

The VETcert specialist must be aware of these differences and take them into account when consulting on veteran trees.

c) ***Identify veteran trees in the various forms in which they have developed in response to past management and/or environmental conditions.***

Veteran trees come in many forms and many sizes. A VETcert specialist must be able to identify them in the field, distinguishing them from non-veteran trees. There can sometimes be confusion, e.g. when trees are in a state of relatively rapid terminal decline. Generally, these declining trees cannot be considered veteran trees, as there is a difference between decline because of environmental factors (drought, soil compaction, …) and crown dieback because the tree is in an advanced life stage. For more information on this, see the VETcert advanced course and the VETcert fact sheet on tree architecture.

Identifying veteran trees can also be tricky for less obvious veteran trees like smaller tree species (e.g. hawthorn, hazel), or pioneer species (e.g. birch, willow). Remember veteran trees don't always have to be old or large.

The form of a veteran tree can give you hints of their past management or environmental conditions, which might be very different from the current situation. An open grown tree with a wide and low crown which is now in close shade is an indication of the change of land use around the tree. The presence of very low branches indicates that there were no browsing animals around when the tree was young. Some veteran trees can also be worked trees, which were actively managed for a product (wood, fodder, fruits, …). These worked trees can still be in cycle or management can be lapsed, which gives a totally different aspect.

Open grown trees now in secondary woodland indicate a change in land use around the trees (© Kris Vandekerkhove, INBO)

2) **Explain the wide range of values veteran trees provide.**

a) ***Describe the ecological, cultural heritage, social and aesthetic values these trees may provide.***

- Ecological value: value as part of an ecosystem/value for associated organisms/biodiversity
- Cultural heritage: linked to local traditions and/or management of land, linked to historical event or person, linked to cultural/designed landscape
- Social: benefits provided to health and wellbeing, due to their appearance.
- Economic value: e.g. income from tourism in estates because of veteran trees
- Religious importance: veteran trees are often associated to chapels, churches, graveyards; religious importance often predates Christianisation and dates back to pagan religions
- Ecosystem services such as carbon sink, flood alleviation, soil erosion, …
- Aesthetic: depending on landscaping 'fashion', veteran trees can have higher or lower status
- ...

b) ***Converse with a wide range of audiences about the values of veteran trees, and their special management requirements.***

Potential audiences include: the layperson, land managers and other tree care professionals. Focus on being able to inspire and convince people regarding the special values of veteran trees and their differences compared to 'standard' trees.

Unit 2: The development and ageing of trees: the role of physiological function and dysfunction.

1) **Describe how trees grow.**

   a) ***Describe the structural and functional characteristics of trees that allow them to grow indefinitely.***

   Trees have an indefinite growth habit, continuously laying down new layers of wood and bark and with the capacity to produce new roots and shoots throughout their lives. They have the capacity to reiterate, form epicormic growth, …

   b) ***Describe the wide range of factors which affect how trees grow, with specific reference to veteran trees.***

   Environmental/abiotic: soil, climate, exposure, sunlight/shade (including shade from ivy and taking account of the shade-tolerance of the tree species concerned), 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 because of management (e.g. pollard, …) , lapses in management.

2) **Describe the ageing process in trees and why they can live so long.**

   a) ***Describe the development of trees as they grow older.***

   - Loss of apical dominance.
   - Reduction in size of the annual growth ring width and the length of the growth units. This leads to more hydraulic resistance in the vascular system and thus to retrenchment.
   - The tree responds by forming epicormic growth, eventually leading to the formation of a secondary crown.
   - Note that ageing is not a one-way process.

   b) ***Describe the resilience and survival strategies by which veteran trees can reach great age.***

   - A new layer of compartmentalised wood is created each year the tree is alive.
   - There's changes in crown architecture, with ability for reiterative growth (epicormic shoots.
   - Trees have the ability to layer and form phoenix growth.

- Recycling of nutrients by hollowing and adventitious roots.
- Retrenchment of the crown, 'growing downwards,' which reduces biomechanical forces acting on tree.

c) ***Describe the natural hollowing process of trees over time and the impact of hollowing on the tree (biomechanical and ecological) and other organisms.***

Heart-rot is associated with the loss of the tap root and /or above-ground injury or dieback as the tree ages. This decay, which culminates in hollowing, develops in physiologically dysfunctional central wood (ripewood or heartwood). This process recycles minerals locked up in the wood and is also beneficial for dependent wildlife. Extensive exposure of wood, caused by injury can, however, lead to decay extending into functional sapwood and perhaps compromising the survival of the tree.

Hollowing also has a biomechanical impact on the trees, as it increases flexibility. But on the other hand excessive hollowing can lead to weakening of the biomechanical structure.

Also, trees react to white rot by formation of reaction wood, compensating for the strength loss. Trees impacted with brown rot generally show less reaction wood formation.

d) ***Describe semi-autonomous 'functional units' and how these affect how veteran trees should be managed.***

Semi-autonomous units comprise root, trunk and shoot tissue. They need to be assessed or managed as separate units rather than all units being treated as one tree.

In a lot of French literature (e.g. Christophe Drénou), this is referred to as a 'state of colony' (état de colonie).

Functional units are described in detail in: David Lonsdale (2013) The recognition of functional units as an aid to tree management, with particular reference to veteran trees, Arboricultural Journal, 35:4, 188-201, DOI: 10.1080/03071375.2013.883214

3) Describe the impacts that damage has on a tree.

a) ***Describe types of stress and dysfunction in a tree.***

- Drought
- Competition for light
- Competition for water and minerals (root competition)
- Catastrophic events (storm damage, …)
- …

b) ***Describe the impact damage (including cutting) has on a tree.***

Creation of wounds leads to inlet of air in wood (oxygen levels rise). This results in physiological dysfunction (embolism), and eventually decay of sapwood. Connected older

wood with pre-existing physiological dysfunction also becomes liable to decay. If the extent of cutting is substantial the tree's defences could be overwhelmed by dysfunction and decay.

c) ***Describe the main defence mechanisms of the tree following stress or injury, taking account of key differences between tree species.***

Passive defence: very low oxygen content of wood can prevent the development of decay fungi. Also natural preservatives in heartwood of some species limit the rate of decay. Anatomical boundaries in wood, safety valves between conducting cells.

Active defence after wounding that leads to local ingress of air into sapwood: compartmentalisation (modelled in CODIT), which reinforces existing anatomical barriers in wood (reaction zone formation) and creates a new wall (barrier zone), protecting tissue formed after damage. Decay usually develops more rapidly in tree species in which the central wood is ripewood or non-durable heartwood.

d) ***Describe the different characteristics of tree species relating to damage and decay.***

Differences between:

- Deciduous and conifers trees.
- Heartwood and ripewood.
- Durable and non-durable heartwood.
- Presence/absence and number of dormant and adventitious buds

More details on this topic can be found in Lonsdale (2013) – Ancient and other veteran trees: further guidance to management - chapter 4: Tree work: assessment of requirements

Unit 3: Roots of veteran trees and the soil environment

1) **Describe the natural soil environment and how this affects tree health.**

   a) ***Explain the importance of a healthy soil environment, and why veteran trees are susceptible to changes in this environment.***

   Changes in soil environment affect natural cycles, affecting nutrient movement and recycling processes.

   b) ***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.***

   Input and recycling of organic matter by a range of organisms.

   Decomposers and detritivores (e.g. worms) – 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 and provide protection against drought and pathogens.

   Bacteria

   Inter-relationships between these different groups - invertebrates browsing on fungal hyphae for example.

   c) ***Describe a variety of soil types and their influence on the rooting environment.***

   Sand, clay and loam soils have different characteristics in terms of the availability of air and water which then impacts on tree roots and has consequences for how the tree grows. Trees growing in well drained sandy soils may suffer drought conditions more frequently than those on loamy soils, for example.

2) **Describe factors which can have a detrimental impact upon the soil environment around veteran trees and recognise these *in situ*.**

   a) ***Identify the effects of deficient or excessive nutrients, pollutants and contaminants on veteran trees.***

   Nutrient deficiencies – Reduction in health and new growth. (Discolouration or poor growth of vegetation).

   Nutrient excess (especially nitrogen from fertilisers or burning of fossil fuels) – Nutrient burning. Loss or impairment 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 mycorrhizas.

b) ***Identify different types of soil damage and provide options for avoiding or reducing impact.***

Types of soil damage

- Compaction: Reduction or removal of air spaces within soil leading to unfavourable, anaerobic conditions.
- Erosion: displacement/removal of soil.
- Changes in soil level: alters aerobic/anaerobic conditions.
- Changes in hydrology: change in water table or in ground water conditions alters aerobic/anaerobic conditions.
- Ploughing: direct damage to roots in upper soil area.
- Chemical damage: De-icing salt damage, herbicide, fungicide, chemicals used in tree management.
- ...

Options to avoid/reduce damage

- Identifying and setting up a root protection area. (15x trunk diameter or 5m beyond drip line – whichever is greatest).
- Use of ground protection.
- Avoidance of use of de-icing salt, herbicides and fungicides within root protection area of veteran tree.
- Appropriate management of chemicals used during tree management e.g. store fuels and oils outside of rooting protection area, 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 degraded growing conditions around veteran trees.

a) ***Identify and evaluate options for soil management around veteran trees.***

Identify source of nutrient deficiencies (laboratory analysis) .

Addition of organic matter such as mulch or compost tea, according to good practice

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.

Also see VETcert fact sheet on mulching.

4) **Identify where roots and mycorrhizal fungi grow.**

a) ***Describe common root architecture patterns and how root development is influenced by the rooting environment.***

Like the base of a wine glass in shape, but usually much wider than crown of the tree, rather than a mirror image of the crown. Influenced by oxygen, water and nutrient availability, physical barriers within soil, bacteria, mycorrhizas, pH, ...

b) ***Explain the relationship between roots and shoots.***

There is a balance between root area and shoot area, impacting one will result in a change in the other.

c) ***Describe types of symbiotic relationships between tree roots and other organisms and explain their benefits.***

Especially mycorrhizas - Provision of water and nutrients to tree, protection from diseases.

And bacteria help fix nitrogen in some tree species

See VETcert video on mycorrhizas

d) ***Show an awareness of the problems associated with identifying actual root location.***

Root growth often opportunistic and influenced by oxygen, water and nutrient availability, physical barriers within soil, bacteria, mycorrhizas, pH, need to dig to see them! ...

e) ***Identify and evaluate methods of root detection.***

Dig hole, use ground penetrating radar, root tomography, ...

Unit 4: Veteran trees as ecosystems

1) **Describe the wide range of ecological values of veteran trees, and how they fit into the wider ecosystem.**

   a) ***Explain the importance for biodiversity of abundant, good quality veteran tree habitat, continuously present for centuries.***

   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.

   b) ***Explain the importance of the distribution of veteran trees in the landscape and the mobility of associated organisms.***

   A species cannot survive in one tree indefinitely, but needs a number of veteran trees, together with successor trees for future habitat provision, in close proximity to survive in the long term; there are few sites with sufficient numbers of veteran trees.

   c) ***Describe how an individual veteran tree sits in a wider ecosystem and recognise that ecological processes are linked.***

   An impact on one can affect others. Veteran tree management needs to take a holistic approach. Organisms don't operate in isolation. For example, larval and adult stages of invertebrates often have different habitat requirements.

   d) ***Demonstrate an understanding of the complexity and diversity of habitats veteran trees can provide. Explain:***
   - ***How these vary between tree species.***
   - ***How these vary as a result of the history of the tree.***
   - ***How these change over time.***
   - ***That the habitat requirements vary between organisms and even the same organisms at different life stages.***

   Niche habitats, such as wood mould (late-stage decay product) and 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).

   Wood decay habitats vary between tree species due to different parent material and fungal interactions.

Wood decay habitats vary as a result of management (positive/negative), natural damage, the abiotic environment, ...

Decay process is dynamic, habitats change as decay progresses (succession), pH of bark changes over time,...

Each species is suited to a particular niche. For example early vs late stage decay, white versus brown rot, wet vs dry, sunny vs shade. A species may be dependent on another being present e.g. woodpecker holes and bats, mournful wasp and anobiid beetles, cobweb beetle and spiders, species whose larvae feed on specific fungal fruiting bodies, ...

Difference between aerial or standing deadwood and lying deadwood, large pieces and /small pieces, sun-exposed, partial shade or full shade.

e) ***Identify the issues that impact on the sustainability of veteran tree populations.***

e.g. Mortality rate is high, numbers of veterans is low or there is a generation gap.

2) Identify veteran tree habitats *in situ*

a) Identify a range of potential microhabitats associated with veteran trees.

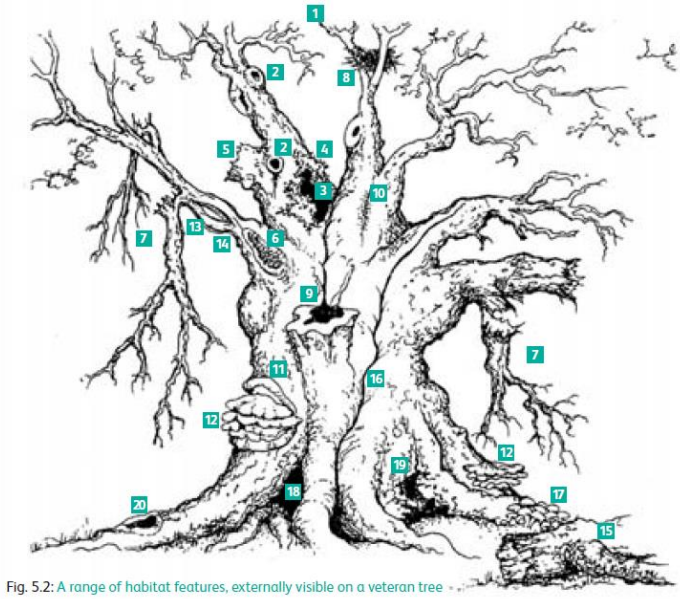

Fig. 5.2: A range of habitat features, externally visible on a veteran tree

1 MAJOR DEADWOOD
Sunbaked, aerial deadwood, desiccated wood (longhorn beetles)

2 UPPER CROWN LIMB – SMALL CAVITIES
Dry rot holes – birds, bat roost indicated by urine stain (hornets' nests)

3 CROWN LIMB – LARGE CAVITY
Brown-rot (stiletto flies, cardinal click beetle, darkling beetles, barn owl roosts)

4 FUNGAL GROWTH ON LIMB
Fungi on bark (wood awl flies, false ladybirds)

5 SNAG/STUB
Large surface area for egg laying and fungi (cardinal beetle)

6 BARK WITH FUNGAL GROWTH
Fungi on bark (cardinal beetles, wood awl flies, false ladybirds)

7 SUSPENDED BROKEN LIMB
Shattered end provides large surface area for egg laying and fungi

8 WEAK FORK WITH INCLUDED BARK
Nest (birds, squirrels, rove beetles, micro-moths)

9 WATER FILLED ROT HOLE
Water filled rot hole (hoverflies, water beetles)

10 FLUX ON BARK
Established sap run (sap beetles, hoverflies and fungus gnats)

11 SCAR TISSUE FROM OLD WOUND
Damaged loose bark (bark beetles, false scorpions and spiders)

12 BRACKET FUNGI
Heart-rot prepares wood for invertebrates; (fungus gnats, shining fungus beetles)

13 DELAMINATION OF WOOD
Fungi/invertebrates (cardinal beetle, sap beetle)

14 SUBSIDING MAJOR LIMB
Fracture can produce shattered stub habitat

15 FALLEN LIMB
Fallen timber habitat: leave in partial shade

16 LIGHTNING STRIKE
Burnt wood (flat bugs, false weevil, smoke flies)

17 FUNGAL COLONISATION OF ROOT
Damaged loose bark: (bark beetles, false scorpions and spiders)

18 BASAL CAVITY
Hollowing trunk (cardinal beetles, lesser stag beetle, crane flies)

19 ROT HOLE IN TRUNK
Soft-textured white-rot (lesser stag beetle, rhinoceros beetle, combhorn crane flies)

20 ROOT DAMAGE FROM BROWSING
Soft-textured white-rot (stag beetle, hoverflies, combhorn crane flies)

b) ***Demonstrate an understanding of how management may affect key species associated with veteran trees***

To include positive and negative effects of management.

c) ***Identify decaying wood of different types and stages of decay.***

Consultants have to be able to identify the main types of decay, as far as habitat-type is concerned: white rot, brown rot, soft rot, wood mould.

Unit 5: Veteran trees: their value for people

1) **Describe the social value of veteran trees.**

   a) ***Describe the social value of veteran trees and the implications for their management.***

   Include the concept of 'ecosystem services'

   - Aesthetic,
   - Health and wellbeing,
   - Air quality,
   - Cooling effect,
   - Consultation,
   - Funding,
   - …

   b) ***Describe the importance of public support for protecting and managing veteran trees.***

   - Communication and consultation,
   - Funding opportunities,
   - more likely to be retained…
   - less likely to be vandalised or damaged

Unit 6: Veteran trees; their cultural history values

1) **Recognise the historical, aesthetic and cultural context in which veteran trees sit.**

   a) ***Identify the past and/or present aesthetic context that these trees sit within and how intact* this is.***

- Wood pasture,
- Parkland,
- Avenues,
- Designed landscapes,
- Churchyards
- Traditional orchards,
- Urban environment,
- ...

*In this context, intact reflects how much of the original cultural context remains i.e. if there is a single pollard in a grazed landscape, there is not much that is still intact. If for example there are lots of old pollards and new pollards and grazing is still in place, then it could be considered to be relatively intact. By comparison, an avenue with only 4 or 5 trees remaining would not be considered as intact if it were once part of an avenue with more than 100 trees.

   b) ***Describe the cultural heritage and aesthetic values these trees may provide and the relationship with the landscape over time.***

   Cultural heritage: linked to local traditions and/or management of land, link to historical event or person, sacred trees, ...

   Aesthetic: their appearance and context as individuals and in groups of veteran trees.

   Inspiration for artists, poets, musicians etc.

   How intact is the landscape?; are there several layers of history evident?

   Continuity of land ownership, boundary trees, recognition of values veteran trees provide, too expensive to remove, …

2) **Describe how the location of veteran trees in cultural landscapes may introduce management challenges.**

   a) ***Demonstrate an understanding of the unique history of each veteran tree in a variety of cultural, historic and aesthetic landscapes and the management challenges this may present.***

- Formal/designed landscapes (including vistas). e.g. may not be appropriate to retain dead wood on the ground, preference may be to move to an alternative location.
- Churchyards e.g. digging of the roots is likely to be an issue, this is also a workplace
- Agricultural/animal husbandry/grazing. e.g. overgrazing, compaction, getting grazing pressure right also means the trees can be retained and have enough light. Too little grazing and site become overgrown.
- Urban e.g inappropriate pruning or root damage, risk management higher priority
- Wood pasture with pollards e.g lapsed pollards may be challenging to manage, new pollards may not exist
- Avenues e.g. challenging to retain the symmetry and uniformity, risk management may be higher priority
- Archaeological, e.g conflict with root system of the tree and the earthwork
- Conflict with safety/risk…
- Special clone or species
- Historic management
- …

b) ***Identify the opportunities and challenges faced by managers of 'famous trees' and of sites with high visitor pressure.***

Challenges include:

- Soil compaction,
- Vandalism,
- Greater pressure on management for risk
- …

Opportunities include:

- Potential funding,
- Education/interpretation,
- …

Unit 7: Surveying of veteran trees and veteran tree sites

1) **Conduct a tree survey, where veteran trees make up part or all of the tree population.**

a) ***Collect and record accurate information on veteran trees, in accordance with existing guidance. Use this information to inform veteran tree management.***

Consultants should consider

- physiological condition/vitality.
- factors affecting phenology.
- structural condition (biomechanics).
- characteristics of the tree species concerned, including propensity for decay.
- biodiversity.
- heritage/historical/landscape data.
- Tree architecture.
- …

During the VETcert exam a template will be available for the management report exercise.

b) ***Assess the physiological condition of a tree.***

Leaf colour/size, bud density, extension growth, dieback, crown retrenchment, epicormic growth, callus growth, …

There are also differences in crown development, sometimes also in different parts of the crown.

An important point is the difference between dieback and senescence. Also see the fact sheet on tree architecture.

c) ***Identify a range of biomechanical defects that may affect the stability of a tree and make assessment of their severity with respect to failure.***

Included bark, weak fork, lifted root plate, obvious split, lapse in management…..
Consultants should be aware that biomechanical defects are common on veteran trees and that they may also be high value ecological features.

d) ***Collect information relating to the context the tree sits within.***

e.g. the landscapes they sit within (past and present), ...

e) ***In the course of a tree survey, identify and record veteran trees according to recognised criteria, taking account of any such trees that may occur on land outside the defined survey site.***

It is important to see outside of the specific survey area or even the individual tree and put it in context.

f) ***Identify a range of key species associated with veteran trees.***

Consultants required to identify a range of key species associated with veteran trees. To include

- Fungi (wood decay and mycorrhizal)
- Epiphytes
- Invertebrates
- Cavity-using birds
- Cavity-using mammals

See the VETcert fact sheet on species.

For wood decay fungi, consultants are required to identify main species in the country of examination, the usual locations of fruiting bodies, their main hosts and the type of wood decay they cause. Able to comment on the likely position, extent of the associated decay and impacts upon the structural integrity of the tree.

g) ***Show an understanding of the complexity of fungal life strategies and how they might change over time.***

To include latency/endophytes.

See VETcert films on fungi.

h) ***Interpret information and identify management options to inform a veteran tree management plan.***

i) ***Describe the various methods and theories available in relation to tree surveying and assessment, and evaluate their limitations for assessing veteran trees.***

j) ***Demonstrate an understanding of the difference between surveying individual veteran trees and veteran tree landscapes.***

There are differences in time and cost of surveys.

Consultant has to consider population dynamics when surveying populations.

k) ***Collect sufficient information to allow veteran trees to be located by others and identified (e.g. record coordinates and draw simple plans).***

Able to tag and photograph trees effectively and record GPS coordinates.

l) ***Undertake a financial valuation of veteran trees, and show an awareness of the potential limitations of valuation systems.***

See VETcert fact sheet on economic valuation.

2) **Describe diagnostic tools which can be used as part of a veteran tree inspection.**

a) ***Describe a range of diagnostic tools and be able to interpret results produced by these tools specific to veteran trees. Provide a list of benefits and limitations for each option and give examples of when they could be used to inform veteran tree management.***

- Root radar.
- Chlorophyll fluorescence.
- Thermal imaging.
- Sonic tomography.
- Electrical impedance tomography.
- Resistance drills.
- Pulling tests.
- Tree statics.
- Mallet.
- …

See VETcert fact sheet on diagnostic tools.

Unit 8: Legislation and official guidance in relation to veteran trees

1) **Demonstrate an understanding of the legislation affecting veteran tree management within the country of examination.**

   a) Detail the legislation affecting veteran tree management within the country of examination and how to comply

   - Protected sites and species
   - Biodiversity e.g. Habitats Directive
   - Protected trees varies from country to country, but often requires permits to undertake work.
   - Felling restrictions
   - Heritage
   - Liability
   - Health and Safety
   - Urban planning
   - Biosecurity
   - Forestry legislation e.g. may require felling licences
   - Historic or ancient monuments e.g. may require special permits or dispensation. May be compromises in relation to the roots.
   - …

   The VETcert consultant does not need to be a specialist in the field of legislation, but has to be familiar with all aspects of legislation impacting veteran tree management.

   b) ***Demonstrate an awareness that if he /she works in another region/country, legislation in relation to veteran trees may differ.***

   e.g. the local, regional and national legislation is likely to vary and should be understood before undertaking work in a different country (see Legislation fact sheets for the relevant country.

   See the VETree and VETcert fact sheets on legislation in different countries.

Unit 9: Veteran tree risk management

1) **Undertake tree risk assessments according to relevant guidance and taking account of any special requirements for veteran trees.**

   a) ***Identify the difference between the potential to cause harm (hazard) and the likelihood of a given severity of harm occurring (risk).***

   Risk from tree failure (i.e. the likelihood of a given severity of harm occurring) arises from three main components. If any of these (e.g. the likelihood of a target being present in the potential impact area) has a low value, the risk is also very low. If risk needs to be mitigated, this can often be done by moving the target. The likelihood of tree failure, which is another of the three components, could be influenced by tree-species characteristics.

   b) ***Undertake a risk assessment of a veteran tree following a suitable methodology.***

   To include consideration of target, likelihood of failure and severity, ...

   c) ***Undertake a risk vs benefit analysis, in order to inform veteran tree management.***

   Consultants should refer to risk management guidance in the country of examination.

   d) ***Demonstrate an appreciation that it is not possible to remove risk entirely. Risk needs to be managed to tolerable levels.***

   Consultant needs knowledge on general principles of risk management: aspects of risk, statistical approach of risk, target management, …

   e) ***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.***

   - Target removal.
   - Target modification through use of barriers (fencing or dead hedging) or informal methods (letting grass grow longer).
   - Propping.
   - Cabling.
   - Bracing.
   - Assisted layering
   - ...

   Consultants should provide some recognition of the cost and practicalities of each option. The simplest and cheapest may be the most effective.

Unit 10: Veteran trees: planning for urban development and infrastructure

1) **Demonstrate an understanding of how veteran trees should be considered during the planning and construction process in the country of examination.**

   a) ***Demonstrate an understanding of the legal framework guiding the construction of urban development and infrastructure and how these relate to veteran trees.***

      To include underground infrastructure.

   b) ***Demonstrate an understanding of good practice for protecting veteran trees in relation to construction, infrastructure or events.***

      Note that 'standard' tree protection guidance may not be sufficient for veteran trees.

   c) ***Undertake an assessment of the impact of proposals on veteran trees and their successors, allowing reasoned decisions to be made in the planning process.***

      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.

   d) ***Prepare a management plan to enable the protection of veteran trees before, during and after the construction process and temporary events.***

      To include protection areas, assessment of impacts and mitigation measures.

   e) ***Deliver effective site supervision.***

Unit 11: Veteran tree management in all its aspects

1) Detail the basic principles behind veteran tree management.

a) *Detail the overall aim of all veteran tree management and explain why it might be necessary to manage veteran trees.*

No avoidable loss of veteran trees. (This is the overall aim but management also includes tree risk management which is covered by Unit No. 8).

Examples include, remove or ameliorate threats such as excessive shading, soil compaction, nutrient enrichment of soil, prevention of structural collapse and fire (deliberate or accidental) or other vandalism.

b) *Describe the decision making process before carrying out any veteran tree management.*

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?

c) *Explain how the various characteristics of veteran trees guide management.*

- 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.

a) *Identify threats to particular veteran trees or groups of trees, and provide options for improvement.*

e.g. Shade (depending on shade-tolerance of the species concerned), soil compaction, nutrient enrichment of soil, root damage, pests and diseases, structural collapse, fire and vandalism. (Fire protection could include vegetation management and/or individual tree protection).

To include modification of land use to ameliorate environmental conditions where appropriate.

For pests and diseases, up-to-date awareness of threats is necessary in order to avoid spreading them through working practices.

To be assessed *in situ*.

b) ***Evaluate a specific veteran tree's reactions to past management and/or natural events, and how this should affect its future management.***

Taking account of species-characteristics in respect of the likely effects of pruning (e.g. subsequent shoot growth and whether durable heartwood is present).

When considering the tree's reactions to pruning, account should be taken of environmental conditions (climate, microclimate, weather, wind-exposure, presence of pests or pathogens etc.)

Responses to past pruning or natural events might include new shoots/branches, callus growth etc.

c) ***Use their knowledge of tree species to inform management decisions.***

e.g. species with durable heartwood vs non-durable heartwood or ripewood, effective compartmentalisation vs poor compartmentalisation, species ability to produce epicormic shoots.

d) ***Evaluate any gaps in knowledge and identify appropriate courses of action***

e.g. Further surveys, specialist advice, further investigation, …

e) ***Understand and acknowledge the limits of current scientific and professional knowledge on veteran tree management.***

Acknowledge that work may be based on hypotheses rather than scientific facts. Consultants should strive towards continuous professional development/lifelong learning.

f) ***Ensure that any pest and diseases prevalent at the site are taken into account when considering management options.***

E.g. Oak mildew and greater sensitivity to drought stress.

Also see VETcert fact sheet on pests and diseases.

g) ***Provide a set of potential objectives for a specific veteran tree, or site, and identify appropriate and realistic management options, including timescales.***

Overarching aims, not necessarily detailed.

h) ***Demonstrate an understanding of undertaking veteran tree work in practice.***

Sensitivity, climbing may be difficult, species associated can be unpredictable/hard to spot…..

i) ***Identify and provide a list of 'pros and cons' for a range of management options and techniques. Make recommendations for the most suitable option.***

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, …

Dealing with arisings

Access to the tree

Consultants should provide some recognition of the cost and practicalities of each option. The simplest and cheapest may be the most effective.

j) ***Identify and specify when the use of suitable artificial support systems may be appropriate.***

To include specifying appropriate cabling and bracing systems to alleviate bio-mechanical forces acting on an identified defect, detailing calculation of loads and suitable attachment points.

k) ***Identify and specify appropriate soil management to meet the needs of the tree/site.***

Mulching, compost tea, removing cause of problem (e.g. amend grazing pressure).....

l) ***Describe why techniques for veteran tree management might differ from standard management guidance.***

e.g. size of root protection areas, retention of stubs instead of target pruning (taking account of species-dependent epicormic shoot formation), allowing natural crown retrenchment, natural fracture cuts, more emphasis on selecting particular branches for tree work, functional units, …

3) **Identify options for improving habitats in the vicinity of veteran trees, where appropriate**

a) ***Specify improvements in the management of vegetation and fallen or cut wood in order to enhance habitats.***

Options might for example include:

- Encouraging the abundance of plants that provide nectar and pollen for saproxylic insects
- Leaving fallen or cut wood in situ, in preference to cutting it up to create 'habitat piles'
- Managing the shading of bark, where this has become unfavourable for sensitive lichens.

4) **Prepare a clear and accurate veteran tree management plan and specifications of work.**

a) ***Provide clear guidance on what/where/when/how/why/who? This is to be set out in a method statement and includes overarching management principles, compliance with any legal requirements in the country concerned and specifications for work, including the management of arisings.***

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).

Add a list of common management operations

Plan to include long term aim for tree and/or site.

To include consultation with stakeholders, in particular practitioners.

Including details of when trees are unlikely to respond positively to management, and resources should be focused elsewhere.

5) **Undertake veteran tree management, in accordance with management plan.**

a) ***Implement good practice biosecurity measures in accordance with guidance in the country of examination.***

To minimise chances of spread of pests and diseases e.g. limited vehicle access, sterilise tools, shoes etc.

b) ***Use his / her 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.***

Consultants 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).

c) ***Inspect completed work or supervise work to ensure compliance with management plan.***

Ensure objectives have been met.

6) **Identify the need for, and undertake monitoring.**

a) ***Explain the importance of monitoring in veteran tree management.***

Is the management having the desired effect? If not, does management need to be changed or ceased?

b) ***Collect information to guide ongoing veteran tree management.***

e.g. Collect information on mortality rates at a given site.

7) **State strategies for providing veteran trees for the future.**

a) ***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.***

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. Plant in appropriate locations (i.e. not under veteran trees) and at wide spacings.

Consider special measures for habitat continuity where appropriate (e.g. re-erection of fallen or cut hollow stems.

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 there is a need to sustain a particular type of decay.

b) ***Have an awareness of the importance of providing veteran trees for future generations of people.***

- Social.
- Heritage.
- Urban tree populations.
- Health and well-being
- Artistic
- …

c) ***Discuss the benefits and drawbacks of planting non-native tree species when planting to provide future generations of veteran trees.***

Non-native tree species may provide equivalent habitat (decay type) at a quicker rate, or without disease risk in comparison to some native species. They may be more suited to projected future climate. However, possible higher risk of importing diseases.

Unit 12: Personal skills

1) **Demonstrate excellent communication skills to promote the protection of veteran trees.**

   a) ***Work with professionals within the industry, and with professionals from other disciplines.***

   To promote conservation of veteran trees through collaboration with others, e.g. practicing veteran tree professionals and non-specialists.

   b) ***Promote two-way communication with all stakeholders, including practitioners. Take into account all relevant information provided by others in his/her work and work complementary to other professionals.***

   Communication is two-way. Consultant able to listen to, and utilise information from the practising veteran tree manager.

   c) ***Produce high quality written material in the form of clearly written, accurate and concise reports.***

   Reports to be practical and comprehensible. 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.**

   a) ***Demonstrate ability to take account of differing interests and opinions in veteran tree management.***

   e.g. aesthetics, social, historical, …

   Acknowledgement of the need to compromise.

3) **Demonstrate excellent organisation skills.**

   a) ***Keep clear and accurate records regarding veteran tree management.***

   To ensure management is properly documented to enable effective future management.

4) **Recognise the limits of his / her professional abilities.**

   a) ***Understand and acknowledge the limit of his /her professional knowledge and skills, and seek additional assistance where necessary.***

e.g. contact a colleague or a professional in another discipline to provide advice on specific matters. This includes input by practitioners.