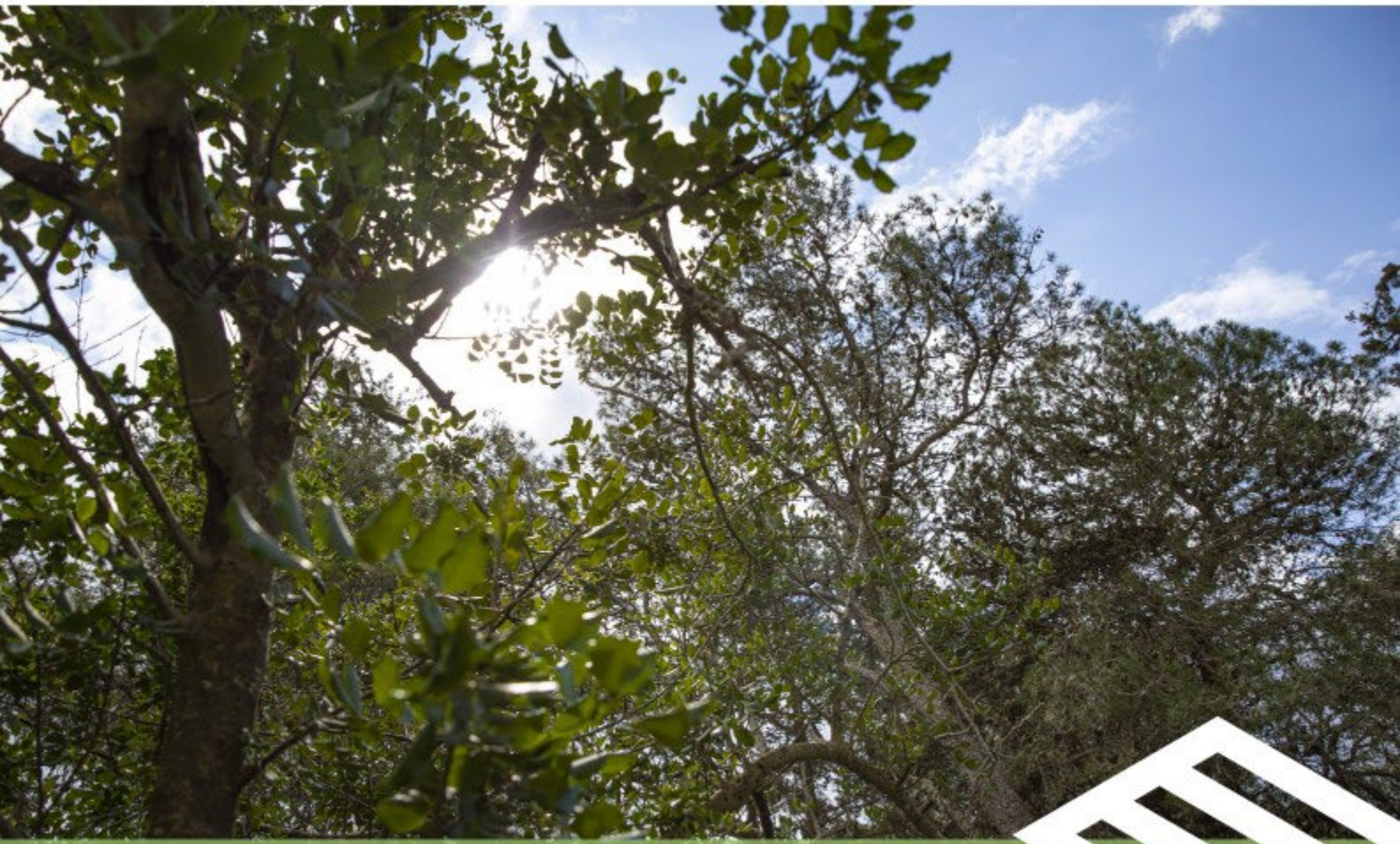
ERA
Environment & Resources Authority

Guidelines on Works involving Trees

2026



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Guidelines on works involving trees 2026

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1 Introduction

The Trees and Woodlands Protection Regulations, 2018 (S.L. 549.123), hereunder referred to as "*the Regulations*", is the principal legal instrument that regulates which trees are protected, and therefore whether a permit is required for works thereon.

The Environment & Resources Authority (ERA) has developed this framework which includes a list of conditions that shall be observed when carrying out interventions which can potentially be damaging to trees and thus ensures best practice during such works. These conditions seek to find a balance between works that are to be carried out and the health of the trees in question in order to ensure their long-term survival and their various ecological services.

1.1 Structure of Guidelines

These Guidelines have been divided into various sections, dealing with permits, registration of specialists and different works which are potentially damaging to trees.

Chapter 3 of these Guidelines on Compensatory Planting updates and supersedes Appendix I of the *Guidelines on Trees, Shrubs and Plants for Planting and Landscaping in the Maltese Islands* (EMU, 2002)

2 Protected Trees, Permits and Exceptions

2.1 Protected Trees

The Regulations specify which trees are protected and under which circumstances. There are a number of underlying principles which make trees protected, including those related to horticulture and the location of the tree (Diagram 1).

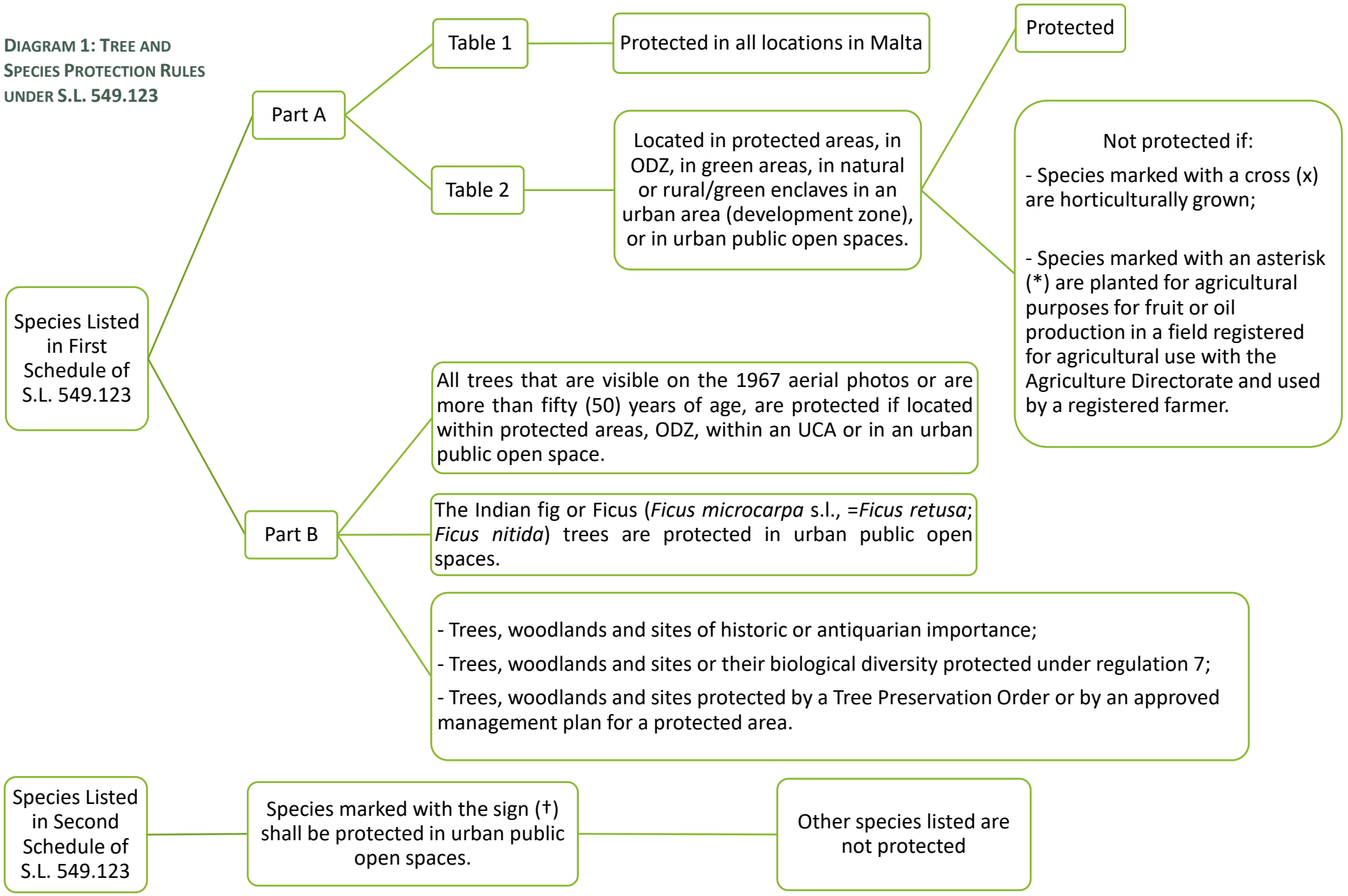
Protected trees are listed in the First Schedule of the Regulations and are divided into those that are strictly protected in all areas (Part A, Table 1) and those protected in specific areas (Part A, Table 2) or under specific conditions (Part B).

The Second Schedule of the Regulations also lists trees which are **potentially damaging to the environment and which are not protected**.

These tree species are not protected even when over 50 years of age in view that they are invasive, alien and environmentally incompatible species which are causing damage or adverse effect to the environment. Only specimens of *Eucalyptus* sp. **are protected in urban public open spaces.**

Diagram 1: Tree and Species Protection Rules under S.L. 549.123

DIAGRAM 1: TREE AND SPECIES PROTECTION RULES UNDER S.L. 549.123



2.1 Which interventions require a permit and exceptions

Permits are required for any intervention on all the trees protected except for the following:

a. interventions on horticulturally grown trees (**Restricted to activities listed in Section 2.2.2**); and
b. plant quarantine interventions and actions (**Restricted to activities listed in Section 2.2.4**)).

There are several exceptions related to pruning, provided that the main tree trunk is not touched, and that:

a. The trees are horticulturally grown;
b. The purpose of pruning is to:
    i. Revive damaged trees or prevent further damage such as when cleaning and treating bark wounds caused by motor accidents, for public roadside plantations;
    ii. Preserve and enhance the overall strength of trees;
    iii. Remove water sprouts or suckers, grafting, improving fruit productivity;
    iv. Avoid injury to persons or damage to property; and
    v. Control growth for avoiding entry of mice or rats. The latter is subject to pruning branches not more than 1.5 m from the property elevation.

These exceptions **do not apply** to strictly protected trees (Table 1 of First Schedule) and trees having an antiquarian importance.

TABLE 1 - SUMMARY TABLE FOR PERMIT REQUIREMENTS

Species of trees	Horticulturally grown trees	Trees harbouring quarantine pests
Strictly protected: First Schedule, Part A, Table 1	Yes	Yes
Protected trees: First Schedule, Part A, Table 2	Yes unless covered by para. 2.2.2	No
Protected trees: First Schedule, Part B (i): Due to age	Yes, unless covered para. 2.2.2.	No
Protected trees: First Schedule, Part B (ii): Due to Antiquarian importance	Yes	No
Protected trees: First Schedule, Part B (iii) and (iv): Due to location in Tree Protection Area or area covered by approved management plan	Yes, unless covered by para. 2.2.2.	No

Protected trees: First Schedule, Part B (v): *Ficus microcarpa* s.l.	Yes unless covered by para. 2.2.2.	No
Protected trees: First Schedule, Part A, Table 2 marked with *, planted for agricultural purposes	No	No
Alien species: Second Schedule	No	No
Particular Second Schedule trees species (*Eucalyptus* spp.)	Yes, unless covered by para. 2.2.2.	No

2.2 Emergencies or particular circumstances

In cases of emergency or grave danger **to property and/or to human life**, where action would need to be taken immediately and before an Environmental Permit can be formally applied for and processed, ERA may issue an emergency permit under Regulation 25 of the Regulations S.L. 549.123.

Cases meriting consideration as an emergency may include instances where:

- the tree has leaned and is posing a danger to property, vehicular traffic or pedestrians;
- the tree or parts-of have collapsed and interventions on the remaining sections are required;
- tree specimens are dead and showing signs of deterioration.

However, this situation does not include instances whereby, due to lack of project planning or foresight, the applicant requests a permit for interventions on trees and requests its rapid processing.

Given the definition of *tree* under the Regulations, dead trees are also considered protected. However, in case of a request for removal in view of dangerous situations, this can also be considered through an emergency permit, supported by relevant proof.

In cases of emergency, it is the responsibility of the site manager or owner to communicate to ERA the emergency, a site location plan and evidence of danger as follows:

- photographic evidence;
- a report by qualified professionals (such as architects in case of danger to structures and/or licensed tree specialists in case of emergency situations on trees, such as trees about to collapse).

Provided sufficient justification is submitted to merit consideration as an emergency situation~~,~~ the requirement of a permits fee is waived. If the situation is not fully justified, the request is directed for submission under normal permitting procedures.

2.3 Registration as a Licensed Tree Specialist

Regulation 19 of the Tree Regulations establishes a Register of Licensed Tree Specialists. Licensed Tree Specialists shall be in possession of:

a. The minimum requirements established by the licensing authority; and
b. A clean track record

The minimum requirements for applying successfully to be registered as a Licensed Tree Specialist are found in Annex 1.

How to apply for Registration
Applications are submitted in the manner prescribed by the Authority on the ERIS portal.

Submissions required to be uploaded as part of the application include:

a. A copy of the course certificate/s and transcript showing course content/ learning objectives;
b. The Curriculum Vitae showing practical experience;
c. A recent good quality passport photo;
d. A copy of police conduct obtained within the last six months; and
e. Payment of €50 fee.

Registrations issued are valid for three years.

To **renew the license**, one must submit an application for renewal on the ERIS portal. Submissions required to be uploaded as part of the application include:

a. A copy of any updated courses (where applicable);
b. A recent good quality passport photo; and
c. Payment of fee (€50/€30), depending on whether the current license is expired or not).

3 Good Practice for Works involving trees

3.1 Pruning of Trees

In accordance with the Regulations "pruning" means *the practice of cutting away of primary branches, secondary branches, offshoots, and suckers.*

Pruning constitutes a tree maintenance procedure which in certain species helps in developing structurally strong and healthy trees. Appropriate pruning measures should aim to first prune for safety, then for health of the tree, and finally for aesthetics (achieving the desirable natural tree form). Pruning for safety involves the removal of those branches that may potentially fall, cause damage/injury to property, and impede the line of vision in roads, whereas pruning for plant health constitutes removal of the diseased, pest-infested wood, corrective pruning, removal of potentially rubbing branches or other branches to ensure a good framework, a suitable micro-climate and an appropriately shaped canopy.

Pruning carried out with equipment larger than pruning sheers (c. 5 cm) or a hedge trimmer is considered as **hard pruning**. This form of pruning should be avoided by carrying out long term maintenance and care of trees such as through regular pruning, and should only be carried out for reasons of safety and health of the tree. Hard pruning for aesthetic reasons shall be avoided altogether.

3.1.1 Principles of pruning

Poor pruning practices, such as lopping of the entire head or formation of a topiary may cause a life-long damage on the tree. When young trees are pruned and cared for appropriately, they will require less corrective pruning as they mature. Thus, it is important to consider that:

a. Each cut is made with a purpose since every cut made opens a wound in the tree and changes the growth of the tree;
b. If necessary, the intervention needs to be carried out in stages over several months; and
c. Removal of branches greater than 5 cm in diameter should be based on proper reasoning.

Proper pruning cuts shall be performed just outside the branch collar as shown in Figure 1. For small branches, the cut shall be:

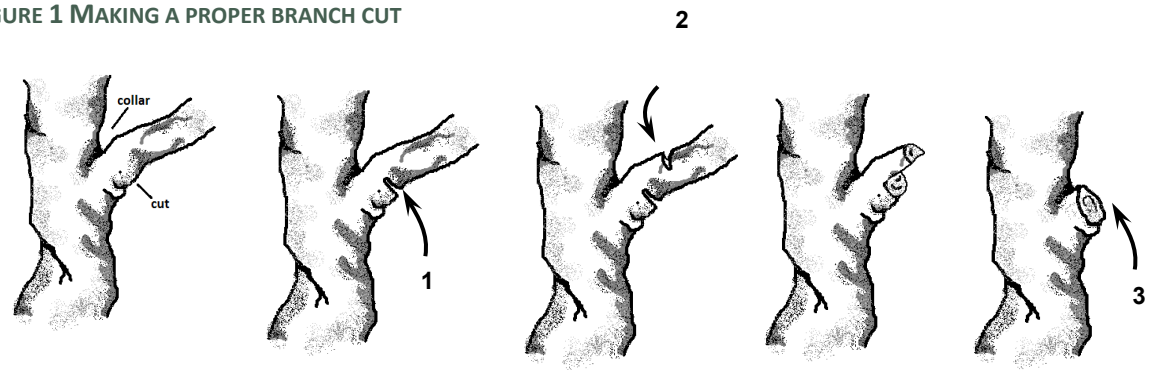
a. At a minimal distance from the main trunk and just beyond the branch collar;
b. Performed in an upwards motion; and
c. Perpendicular to the branch, ensuring the cut is clean and without any shearing.

For **cutting heavy branches** (hard pruning) the procedure as shown in Figure 1 is to be adopted as follows:

a. At a distance of approximately 10 cm from the main trunk perform an upward cut until the centre of the branch to be removed;
b. At a point outward from this cut, for example 2 cm, perform a cut from top to bottom so that the remaining outward branch falls off;

c. For safety reasons, in cases of large and heavy branches, the procedure in point (a) and (b) may need to be repeated several times, proceeding from the outward section of the branch towards the trunk;
d. The remaining part of the branch is cut just off the collar in a similar manner when cutting lighter branches; and
e. If necessary larger wounds are treated with due aftercare to naturally close the cut, except for those species which rapidly close cuts.

FIGURE 1 MAKING A PROPER BRANCH CUT



Branch collar and location for a proper pruning cut | First cut | Second cut | Removal of outer branch | Third Cut

In case large primary or secondary branches are to be removed, their weight needs to be reduced first. This shall be achieved through a series of cuts as shown in Figure 1.

Properly maintained trees are unlikely to require heavy pruning, except in emergency situations. If hard pruning is needed (barring when required for transplanting vide Section 3.2), works should not denude the tree completely by coppicing/ lopping and the general tree shape should be maintained.

During pruning works, due consideration should be given to biodiversity afforded by the tree, such as bird nesting sites and roosting, biota within the trunk (such as borers), and any surrounding vegetation and flora.

3.1.2 Timing of pruning

Pruning during different seasons triggers different responses. Thus, as a general rule, pruning shall ideally be carried out in late autumn (October to December) or during winter (January to March). Pruning during late spring and summer or during flowering shall be avoided unless this is a case of emergency or the species is tolerant to pruning. For example, for deciduous trees, any pruning shall be carried out only when the tree is dormant (November to February), whereas for species like *Ficus microcarpa* which are very resistant to pruning, pruning may occur all year round.

Heavy pruning of live tissue after the spring growth flush shall be avoided. Pruning from spring through summer shall be avoided due to effects on the health of the tree and insect or disease problems (e.g. red palm weevil or tree borers).

Exceptions arise when there are hazards on the tree itself or other specimens, hazards to the public, vehicles, buildings and/or other cases as determined and approved through a permit issued by the ERA. Such pruning to remove weak, diseased or dead branches can be done anytime of the year.

3.1.3 Aftercare

Pruning is desirable to improve tree structure, enhance vitality or reduce risk. Poorly maintained trees constitute a significant liability. Thus, regular inspections of any tree species and aftercare follow-ups for a period of one year after the implementation of any type of pruning minimizes damaging and environmental problems.

Any water shoots which sprout from the stub should be duly monitored and removed as necessary. In this regard, aftercare is necessary to improve tree health, appearance and structure integrity.

3.1.4 Adequate tool use

Thin branches are to be pruned with hand pruners. For cuts on stems thicker than 2.5 cm in diameter, lopping shears or a pruning saw should be used. Pole pruners should be used to cut those branches beyond reach.

Chainsaws should only be used when branches are larger than 10 cm in diameter and by qualified and experienced individuals.

Pruning tools need to be kept sharp and in good working conditions. Hand pruners, lopping shears, and pole pruners should be periodically sharpened.

Before performing cuts on different tree specimens, pruning tools should be sanitized to prevent spread of any pests and disease from infected to healthy trees.

3.2 Transplanting of Trees

Transplanting is the technique of moving a tree from one location to another and replanting it. Such technique aims to preserve the tree in its integrity (i.e. structurally and health wise), while re-rooting the tree into another suitable location.

Each tree species reacts differently to the transplanting process and for some specific species transplanting is not advisable. The rate of success would depend on age, health status and site-specific constraints. Transplanting of mature specimens is not recommended as these do not respond well to transplanting in particular when it comes to Cypress and Pine trees. If specimens of these species are less than 5-10 years of age, transplanting is recommended due to a higher chance of success.

Retaining trees on site in the context is the preferred solution. Transplanting shall be carried out only when all the other options have been exhausted. Only in case that the species is not readily transplantable or in view of particular conditions of works (size, location, etc.) uprooting and compensation can be considered favourably.

3.2.1 Principles of transplanting

The following methodology shall be followed:

a. Any dead, weak and damaged branches shall be pruned in line with good practice. This will stimulate growth and reduce water loss. In general, not more than 25% of the overall crown and no major boughs should be removed;

b. The tree is watered well for two days prior its removal. This ensures that the root ball is compact, retains its shape and does not fall apart. This depends on the type of soil and substrate, and should be thus treated on a case by case basis;

c. Flexible branches are tied together loosely with a twine or rope without causing damage;

d. An excavator and/or hand held tools are used to dig a two-foot deep trench around the diameter of the tree at a **minimum distance as shown in Table 2**. For trunks thicker than 15 cm, a root ball diameter of 1.5 meter is considered sufficient, although this may be larger depending on the extent of the primary roots. The trench should be excavated in advance of the transplanting to promote the growth of root hairs, and covered in burlap;
    - In cases of species which are particularly sensitive to transplanting such as pines, two perpendicular trenches are first excavated and covered by burlap, to allow roots to settle. Following a number of weeks, the trench is completed;

e. Once the trench is dug around the whole circumference, the ball is undercut at least at a distance indicated in Table 2 from the soil surface by tilting the tree to one side. Roots that extend beyond the ball shall be pruned while digging;

f. While performing the above, when the root ball starts to be partially exposed, begin to wrap it in burlap, hessian and/or sacking. Wrapping is to start from the base of the tree down using twine or rope.

    a. This will ensure that soil ball disturbance is kept to a minimum when moving. Heavy twine should be used when the tree is moved a considerable distance. Any exposed roots are to be covered by moist burlap and/or newspaper and adequate protection shall be placed around the tree to prevent damage to the trunk;

g. The tree and root ball are lifted onto an adequately sized transporter and taken to the new location in a secured manner. Lifting should ensure not to damage the trunk of branches through shearing of the bark, bending or other potentially damaging actions;

h. The new location of the tree is prepared prior to the uprooting of the tree. The new pit is excavated at a diameter which is larger than the root ball by at least twice. The depth should be equal to the depth of the root ball. The bottom of the pit is beaten down manually and watered;

i. Place subsurface irrigation pipes, where available, embedded with the root ball for irrigation purposes and the tree is lowered into the new pit, ensuring the new soil level is in line with previous and the orientation of the tree is the same as the original location (e.g. south facing). Ensure that the tree is upright and secured in position. The root ball and trunk wrapping is removed or holes are poked within the trunk wrapping to ensure roots have a way out and the hole infilled with topsoil and gentle compacted around the root ball;

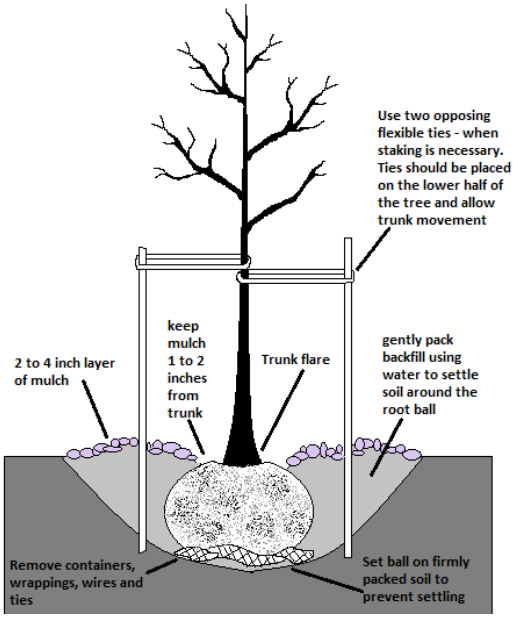
j. Support struts are placed around the tree (Figure 2). Manure/ fertilizer are spread over soil in the new location and covered with mulch and watered. In case of large trees both a staking system for support and a root ball anchorage system should be used.

TABLE 2 TRUNK/ ROOT BALL DIAMETER RATIO

Trunk calliper (cm)	Minimum Root ball diameter (cm)
2.5	40
5.0	60
7.5	80
10.0	100
12.5	120
15+	150

Transplanting shall be supervised and carried out by qualified, experienced persons.

FIGURE 2 REPLANTING OF A TREE ROOT BALL



3.2.2 When and Where to Transplant

Transplanting during different seasons triggers different responses and different success rates. Any transplanting shall be carried out between autumn and early spring (October to March).

Transplanting after the spring growth flush and through summer shall be avoided altogether particularly for deciduous trees due to water stress and since the plant will likely not recuperate from the transplanting.

Exceptions to this timing may arise when there are hazards on the trees themselves or to persons, the general public vehicles, buildings and/or other cases as determined and approved through a permit issued by ERA.

Consideration should be given to the site of transplanting ensuring that this is as much as possible similar to the existing location of the tree in terms environmental parameters, such as exposure to sun. Moreover, trees need to be transplanted in a manner that compliments the natural or urban environment.

Consideration should be given to a minimum trunk-to-trunk spacing depending on the species of the tree and the space needed to thrive when mature. In cases of small trees and shrubs, a distance of 3 m is deemed adequate whereas for larger trees, a distance of up to 10 m may be required. Some sites may require cluster planting where the specified distances would not be the best option.

3.2.3 Aftercare

Depending on the species, adequate aftercare is required to be provided. The tree shall be regularly monitored for growth, appropriately watered and fertilised until it is clear that transplanting has been successful and for a period of at least three years. Thus, regular inspections of any transplanted tree specimen and follow-ups for aftercare are required for at least three years.

Should the transplanting not be successful, or in case the transplanted tree dies, the permit holder shall compensate for the deceased tree accordingly in accordance with Section 3.3 of these Guidelines.

3.3 Compensatory Planting

Compensatory planting is the replacement, planting or making available of a number of trees as a replacement for a damaged or uprooted tree. The aim of this section is to address the conditions that shall be observed when carrying out compensatory planting with respect to uprooted or damaged trees in accordance with the Regulations.

The ultimate aim of this measure is to balance the loss of ecological services provided by the tree to both humans and wild species. In the respect of the latter the use of species which provide a wide range of ecological services and the planting in areas which may constitute buffers, ecological corridors or similar is encouraged.

This section supersedes Appendix I of the Guidelines on Trees, Shrubs and Plants for Planting and Landscaping in the Maltese Islands (EMU, 2002).

3.3.1 General Principle

Wherever removal of existing trees is justified and permitted, the ERA requires the applicant to carry out compensatory planting in accordance with the regulations. Whilst compensatory planting is a compulsory requirement for all protected trees, the Authority may request compensatory planting for non-protected trees, even when the trees are not indigenous.

Where the tree is not protected this should be considered as an act to balance out the loss of the services provided by the tree. In addition, compensatory planting is also deemed applicable in cases where trees are uprooted or removed if they are dead or for harbouring pests and diseases.

The criteria for compensatory planting are to be approved as part of the permit authorizing interventions on trees. The Authority may keep such issues as reserved matters or impose relevant bank guarantees as deemed fit.

The quality of trees and site targeted for replacement should meet certain specifications to ensure as much as possible equivalence to offset the adverse impact on the environment, landscape, general amenity and ensure conditions for the survival of newly planted species.

3.3.2 Quality and type of trees

The following replacement ratios apply as an **indicative requirement.** The Authority may apply more flexibility in specific cases where this would be considered appropriate to maximize the success rate of compensation.

TABLE 3 INDICATIVE COMPENSATORY PLANTING RATIOS - MAY BE CHANGED SUBJECT TO FINAL VERIFICATION ON A CASE-BY-CASE BASIS.

Compensatory planting ratios	Age of tree		
	< 10 years	10- 50 years	>50 years
Protected trees (First Schedule, Part A, Table 1)	1:10	1:20	1:40
Protected trees (First Schedule, Part A, Table 2 and Part B)	1:5	1:10	1:20
Protected trees harbouring pests and diseases and Protected trees (Second Schedule)	1:1	1:2	
Dead tree specimens	1:1		

Unless directed by the ERA, such as in the case of non-indigenous or invasive alien species, **replacement of indigenous trees is to make use of indigenous trees**. Non-indigenous species located outside development zones are to be replaced by indigenous species which are context specific.

In the case of dead tree specimens, the ratio mentioned in Table 3 is subject to clear provision of evidence that the tree died of natural causes. The higher ratios mentioned in Table 3 may apply in cases where such sufficient evidence is not provided to ERA's satisfaction.

In case of removal of invasive alien species, the authority may consider the removal of such species as adequate benefit to the environment, especially in cases where habitat restoration is being carried out. Nonetheless, if the removal is considered to require replacement, the replacement species shall be indigenous.

In order to prevent monocultures, where compensation would involve the planting of a considerable number of trees, species composition should not be limited to the species for which compensation is being carried out. A diversity of species shall be requested to compensate for the tree, such as reflecting the natural diversity at the site earmarked for planting.

Indigenous trees for planting purposes shall be insofar as reasonably possible from local stock.

Unless prevented by the conditions on the site chosen for compensatory planting, replacement trees shall be at least of medium-standard trees, that is, the overall height exceeding 1 m and stem diameter exceeding 5 cm, with a well-balanced branching head.

Trees to be planted in urban public open spaces, in particular along roadsides should be realistic, are **not conducive to future conflicts** or result in long term pressures for removal of trees. Species should be carefully selected according to the site's typology, the hardness of the tree species, and a clear above and below ground site analysis. In principle, the following guidelines are to be adhered to when designing planting areas and relevant landscaping plans:

a. **For wide streets**, large trees with overarching canopies and medium density foliage are preferred. **For smaller streets**, medium sized trees with light to medium density foliage with columnar forms such as *Cupressus sempervirens*, *Laurus nobilis*, etc are preferred.

b. The **mature canopy should not interfere with street lighting or building** fronts, surrounding infrastructure and power lines. In addition, the mature canopy should not interfere with ongoing traffic and should not in anyway pose danger to traffic.
c. The **root systems** should not affect utilities, sidewalks, or curbs- hence consideration of root barriers should be included accordingly in the design.
d. **Trees which produce large seeds** or similar fruits such as olives, nuts, kernels, etc should not be planted in areas where vehicles are envisaged.
e. **Trees should be planted in open areas**. Planting under bridges or overpasses or similar structures should be avoided.
f. Any existing trees should be integrated within the project and nurtured during project phase, by being taken care of, watered, protected from damage and monitored for even during the time when area is hoarded, and work is ongoing;
g. Irrigation network is to be sleeved so that easy access to irrigation pipe network remain in the post project phase;
h. In general, species which are pollinator friendly are recommended for improved biodiversity services and aesthetics;
i. Planting should consider the space available, as follows:

    a. **In areas where the planter/ soil diameter for planting is less than 2m wide and of a depth of less than** 0.5m, species of trees that grow into a large size such as *Quercus ilex*, *Ceratonia siliqua*, *Pinus halepensis*, are to be avoided. In such cases, small trees such as *Arbutus unedo*, *Cercis siliquastrum*, *Spartium junceum*, *Vitex agnus-castus*, *Myrtus communis* are recommended, or indeed even smaller species such as shrubs/bushes for example *Prasium majus*, *Lonicera implexa*, *Pistacia lentiscus*, *Rhamnus alaternus*, *Chamaerops humilis*.

    b. A distance of more than 2m from a party wall or structure such as a bridge should be kept. If the distance is less, consider using small tree species or shrubs;

    c. The landscaping should be designed with regards to context. For example, predominantly coastal or exposed environments should include species which tolerate such conditions including for example planting of *Tamarix africana* or shrubs such as *Limbarda chritmoides*, *Salsola melitensis* or similar. Similarly rural areas should include only indigenous species which are context specific.

    d. **The distance between one tree and another should be not less than 3m when considering large trees when mature, 2m for smaller ones or shrubs.** This avoids the requirement of thinning or removal at a later stage. Nonetheless, small specimens of shrubs may be planted in the interstices between trees.

Table 4 below, identifies different characteristics of trees Insert table with common trees used for landscaping and include maximum trunk thickness, size of tree (Small/ medium/ large) leave shedding and other characteristics.

TABLE 4 PROPERTIES OF INDIGENOUS SPECIES COMMONLY USED FOR LANDSCAPING

Species	Mature size of tree	Sheds leaves in Autumn	Other notes
Anagyris foetida	Medium	Yes - in Spring	
Arbutus unedo	Small	No	
Celtis australis	Large	Yes	
Ceratonia siliqua	Large and spreading	No	
Chamaerops humilis	Small	No	
Crataegus sp.	Medium	Yes	
Cupressus sempervirens	Large and columnar	No	Produces cones
Fraxinus angustifolia	Large	Yes	
Juniperus sp.	Medium	No	
Laurus nobilis	Medium	No	
Morus sp.	Medium	Yes	Drops fruit
Myrtus communis	Small	No	
Olea europaea	Medium	No	Drops fruits
Phoenix dactylifera	Medium	No	Large seeds
Pinus spp.	Large	No	Produces cones
Pistacia lentiscus	Small	No	
Pistacia terebinthus	Medium	Yes	
Populus alba	Large	Yes	
Punica granatum	Small	Yes	Large fruit
Quercus ilex	Large and spreading	No	Large seeds
Rhamnus alaternus	Small	No	
Salix alba	Large	Yes	
Salix pedicellata	Medium	Yes	
Spartium junceum	Small	No	
Tamarix africana	Medium	Yes	
Tetraclinis articulata	Medium	No	
Ulmus sp.	Large	Yes	
Vitex agnus-castus	Medium	Yes	

3.3.3 Location and Timing

Replacement trees shall be planted in accordance with good arboricultural practice, ensuring distance between individual trees and built structures are appropriate for growth of mature trees specimens. In certain contexts, this requirement may need to be reconciled with other specifications (e.g. denser planting, clustering) that may need to be pursued for the purpose of improved blending into surrounding landscape, improved screening of structures or for mimicking the natural distribution of trees within a particular natural habitat.

The following options should be considered when proposing sites for transplanting, and replacement or additional measures (e.g. through environmental gain), subject to the Authority's agreement:

a. Planting in a different part of same site;
b. Planting in a different site within the same general vicinity. When trees are removed from urban public areas these are to be replaced in similar urban public areas; and/or
c. Any other location - This may include donating trees to Local Councils, Government Ministries or Departments or Non-Governmental Organisations.

Planting for such purposes may need to make use of more than one site, especially if this would be preferable from an environmental or planning perspective, or if it is inevitable due to the physical or practical limitations of the proposed site(s) and/or the surrounding area.

When designing the compensatory planting plan, due consideration should be given to a minimum trunk-to-trunk spacing needed by the tree to thrive when mature. In cases of small trees and shrubs, a distance of 3 m is deemed adequate whereas for larger trees, a distance of up to 10 m may be required.

Replacement planting shall be implemented within the first suitable planting season following the issuing of the relevant permit. Planting during the dry season shall be avoided.

The person in possession of the permit for which compensatory planting is required shall maintain the replacement trees at his own expense for not less than three years from planting. The Authority may take any action deemed necessary to ensure replacement trees are duly maintained.

In cases where one or more of the replacement trees dies within the three years of planting, the person is responsible to make provisions to replace this specimen with another individual of the same species of the same size within the closest planting season from the death of the tree and maintain the tree in accordance with the above.

The Regulations consider that compensation through an alternative environmental benefit may occur. This may include contribution to the Environment Fund which shall be of a monetary value of €500 per compensatory tree.

Finally, in instances when the intervention may include more than 100 trees as compensation the applicant may enter into an agreement with the Authority for due compensation.

3.4 Avoiding Impacts of Construction Works on Trees

The aim of this section is to provide a concise list of notes that should be observed when trees and shrubs are located in the vicinity of or within sites where works shall be carried out. This includes construction and demolition, trenching and renovation works. This guidance note is recommended for any works which potentially affect trees and any interventions beyond what is mentioned in the guidance or which causes damage to the tree is to be permitted by ERA in case of protected specimens.

3.4.1 Protecting trees against construction related damage

Trees can be damaged or killed by a wide variety of construction activities. Some practices lead to obvious injuries such as broken branches or torn bark. Such open wounds deplete a plant's energy resources and provide entry points for insects and/or for diseases. The worst damage, however, is often related to roots, which albeit not visible are one of the most vital parts of a tree.

It is critical that roots in the zone defined as per distances in Table 2 are not damaged. However, trees are never the same shape below ground as they are above, so it is difficult to predict the length or location of their roots. Typically, a considerable proportion of a tree's root system is in the top metre of soil, and more than half is in the top foot. In addition, the extent of roots from the trunk also varies. In general, the PRZ may extend to the verge of the canopy of the tree in large trees.

3.4.2 General Steps to take to protect trees during construction

Plan and monitor ahead - Careful planning may avoid the creation of hazardous situations such as damaged trees located too close to a building or dangerous overhanging branches or after damage due to roots. The following steps will help in creating a successful plan:

a. **Create an inventory of trees on the site:** Record the location, type, size, and health of each tree, select the trees to be retained and the others to be transplanted or removed (applying for any necessary permits);
b. **Mark tree boundaries on site, taking note of the approximate protected root zone;**
c. **Protect the trees you plan to save.** Install fencing (a roped fencing may also be adequate) around trees you intend to keep, bearing in mind the root zone. Inform the builders to avoid these trees;
d. **Prepare the trees for construction disturbance**. The trees' chance for survival will be increased if it is ensured that the trees are as healthy as possible before construction begins. Regular watering and fertilizing of the trees if rainfall is not adequate is ideal. Branches which are dead, diseased, hazardous, or detrimental to the plant's natural form shall be pruned;

e. **Protect and preserve the soil for future tree planting.** Apply a layer of mulch or HDPE plastic overlain with spalls at least 15 cm thick over areas that will be used for traffic or materials storage during construction;
f. **Monitor the construction process;**
g. **Make a final inspection of the site;**
h. **Commit to long-term maintenance**. Trees will not recover from construction damage in one or two years. Mulch as much of the root zone as possible.

Minimize the impact of construction activity - In addition to protecting the tree and it roots, there are other ways in which the impact of construction activities on trees can be reduced. Some of these are relatively simple; others can be extremely expensive. Carefully consider the importance of each tree to the future appearance and ecological aspects of the site and consult a tree-care specialist before deciding whether protective measures are worth the cost.

a. Site clearing: When a large number of trees are removed, the remaining plants are exposed to new conditions. Sudden increases in amounts of sunlight and wind will negatively impact trees. It is not uncommon to find scorched leaves, broken branches, and uprooted trees after a site is cleared. Although some of these problems are temporary, they may compromise tree health when coupled with additional construction damage.
- Sun and wind stress can be avoided by saving groups of trees rather than individual trees. When possible, unwanted trees are removed as per guidelines on transplanting.
- Use of heavy machinery such as bulldozers should not be used to remove trees near other trees to be preserved or driven over nearby soils, agricultural land, natural environment, etc.

b. **Soil damage**: Tree roots need good textured soil to grow, obtain oxygen, and absorb water and nutrients. Stockpiled building materials, heavy machinery, and excessive foot traffic all damage soil structure.
- Prevent soil compaction by carefully selecting storage areas and traffic routes (the future driveway is a good choice for both) and installing protective fences and signs.
- Concrete mixing trucks carrying material shall be kept off tree roots and nearby soil by transporting concrete from the truck through conveyor pipes.

c. Improper handling or disposal of materials used during construction also can harm roots.
- Chemical spill damage shall be avoided by storing wastes and chemicals away from trees and in designated areas;
- All building debris and chemical wastes should be hauled away for proper disposal, and not burned or buried on the site. The discharge of any type of effluent (including wash-waters) to land is prohibited;
- Disposal, discharge or spillage of oil, fuel, paint or other pollutants, or of solid waste, ash or combustibles is prohibited. These shall be collected and disposed of accordingly;
- Any spillages of oil or other hazardous material shall receive immediate attention to prevent escape to surface water or land.

d. **Grade changes**: Moving large amounts of soil within the protected root zone may severely affect or kill a tree.
    - Except where absolutely necessary, disruptions to the natural contour of the site shall be avoided.
    - Any newly exposed roots that cannot be covered in soil are to be cut cleanly to promote quick wound closure and regeneration.
    - Damage is to be minimised by avoiding excavation during summer. Where this is unavoidable, the trees shall be kept well watered before and after digging; and any exposed roots shall be covered with soil, mulch, or damp burlap as soon as possible.

Pavements - Sidewalks and driveways located too close to a tree endanger its health, may threaten their stability and the pavement structure. These problems can be avoided if the spatial needs of a tree and its root system are taken into consideration when designing the layout of new sidewalks and driveways. The space required depends on a tree's sensitivity to root cutting and its future size (Table 2). Sidewalks and driveways should be located outside the anticipated root zone. The following steps, wherever possible, shall be followed:

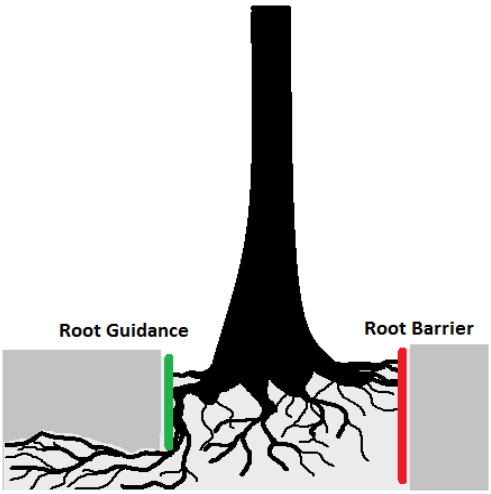
a. At a minimum, walkways should be at least 1 m from the trunk of a tree;
b. No tree should be boxed into an area of less than 1.5 m square by 1 m depth, with larger trees receiving at least 2 m3 of root/soil volume;
c. Disruption may be minimised by using alternatives to conventional paving materials such as brick or flagstone walkways or grass blocks on sand foundations as a substitute for concrete. These materials protect soil pH and allow water and oxygen penetration.

Trenching works - When trenching, a minimum distance is to be kept from the trunk of the tree depending on the size of the trunk (see Table 2). For trunks larger than 15 cm, keeping a distance of at least of 1.5 m from the trunk is considered sufficient for tree stability, unless otherwise approved by the ERA. Nonetheless, it is essential that trenching takes place cautiously to avoid damage to any major roots. Hence, any major roots encountered are not to be severed as they potentially destabilize the tree.

When infilling the trenching void located in the vicinity of the tree, only soil and no extraneous material such as concrete shall be used.

Root barriers and root guidance - Tree root growth can cause serious damage to roads, pavements and underground infrastructure. To prevent damage, root barrier systems may be used to reduce unwanted root growth. There are two methods to stop damage: root guidance systems and root barriers (Figure 3). The difference is that a barrier stops the root in its path and causes it to keep on circling along the panel. However, when a root barrier is installed too close to a tree the tree has no possibility to stabilize. On the other hand, root guidance panels direct root growth downwards. Subsequently, when the root arrives at the bottom of the panel it can proceed to grow along its horizontal path. As a rule of thumb the distance between the barrier and the tree trunk should be at least 2 m, albeit this will depend on the diameter of the mature tree trunk. If the distance is less than 2 m, root guidance should be considered.

FIGURE 3 ROOT BARRIER VS. ROOT



Annex 1 Minimum Requirements to become a Licensed tree Specialist

1. To successfully apply to be a Licensed Tree Specialist, the following is required:
    a. Clear evidence of certification in a course of approximately 25hours (5 ECTS credits) plus practice which is assessed either by written or practical assessment, by a recognised institution, at least at MQF level 3. This course shall be in the areas of biological sciences and forestry or other environmental management-related subject, and shall have a minimum the learning objectives as per section 'Course content' below;
    b. Clear evidence of practical work, either as part of the course (a minimum of 5 hours practice) or equivalent.

2. ERA makes emphasis on **both the background knowledge and practical experience** of the applicant to become a licensed tree specialist, with both criteria being required to be recognised.

3. The minimum requirements for courses to become a licensed tree specialist shall include the following learning objectives:
    f. Identify the basic principle of trees: Anatomy and Physiology and tree forms;
    g. Identify the basic principles of pruning and good practice including:
        - Evaluate reasons to prune;
        - The physiology of pruning cuts;
        - Types of pruning: Heading cut, shearing and stub cuts, thinning cut;
        - Trimming of conifers and palms;
        - Timing within the year and within the tree's life;
        - Wound dressing;
        - Pruning equipment and Personal Protective Equipment (PPE).
        - Basic principles in use and handling of chainsaws;
    h. Identify the basic principles of tree transplanting including:
        - Reasons to transplant and methods of transplanting;
        - Which species and types can be transplanted;
        - Time of year of transplanting;
        - Transplanting aftercare;
        - Transplanting equipment;
    i. Identify the basics of good tree surgery including include, staking, anchoring, guying, bracing and cabling, cavity treatments
    j. Be familiar with indigenous Mediterranean and/or Maltese trees ;
    k. Be familiar with the Trees and Woodlands Regulations, 2018 and other Guidelines including:
        - Requirements of a permit;
        - Overview of protected areas;
    l. Capable of applying knowledge into practice, including a workshop on pruning and use of a chainsaw and other mechanized trimmers or hedgecutters.