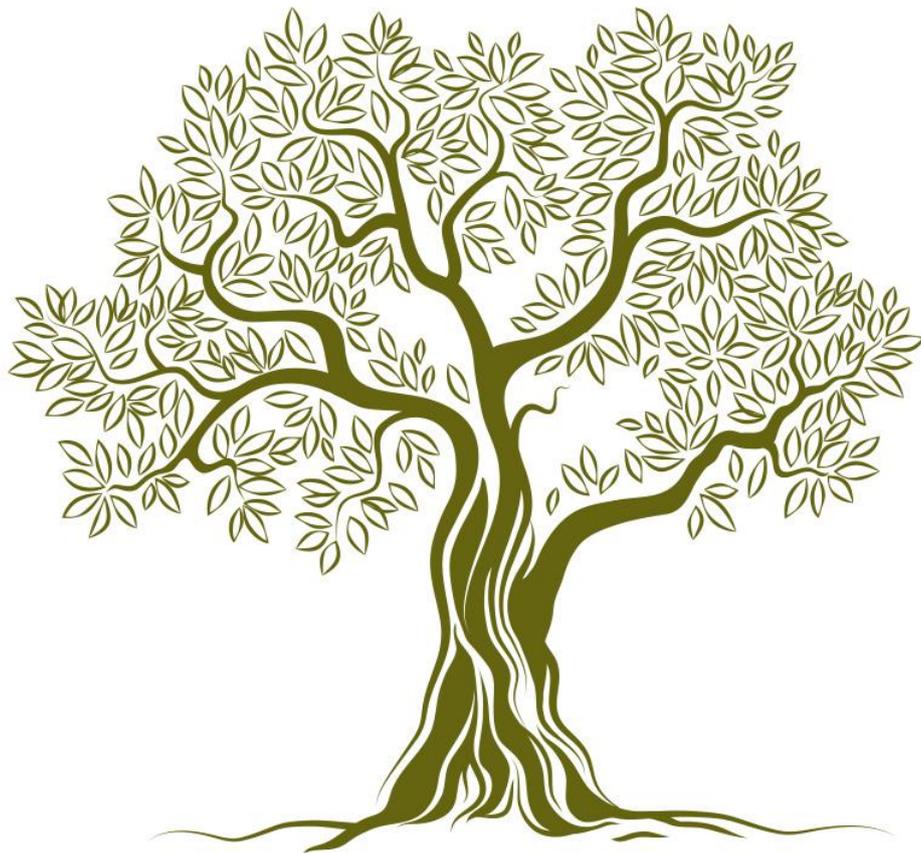


Guidelines on Works involving Trees



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1. Introduction

- 1.1. 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.
- 1.2. The Environment & Resources Authority (ERA) acknowledges that the permitting system in place for interventions on protected trees will gain considerably from promotion of best practice on such works. ERA hence developed this framework to follow by presenting a list of conditions that shall be observed when carrying out interventions which can potentially be damaging to trees. 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.

Structure of Guidelines

- 1.3. These Guidelines have been divided into various sections, dealing with permits, registration of specialists and different works which are potentially damaging to trees.
- 1.4. 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)
- 1.5. These Guidelines shall apply to interventions on protected trees and interventions carried out by Licensed Tree Specialists. It is being clarified that the ERA shall apply such guidelines to protected trees only. Nonetheless, interventions on any tree should be carried out in a sensitive manner.
- 1.6. ERA may update and amend these Guidelines as appropriate, and shall publish such guidelines on the Authority’s website.

2. Protected Trees, Permits and Exceptions

2.1 Protected Trees

- 2.1.1 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. For the purposes of the law, plants cultivated in pots which are movable (this excluding permanently fixed planters) are not considered trees, and hence do not require a permit for interventions thereon.
- 2.1.2 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).
- 2.1.3 Strictly protected trees listed in Table 1 of the First Schedule comprise rare or unique specimens, or trees forming part of rare habitats. These trees are protected **under all circumstances and in all areas, with the exception of those found in pots.**
- 2.1.4 Trees listed in Table 2 of the First Schedule represent specimens which are protected depending on the location. The species listed in the mentioned table are protected if located within:
- a. **Protected areas:** According to the Regulations, the term protected area means any area which is legally protected, scheduled or designated for conservation in view of its **ecological, scientific or landscape-related value** either through the Environment Protection Act, 2016 or the Development Planning Act, 2016, as well as any Tree Protection Area. Protected areas include:
 - i. Natura 2000 sites, both National and International Special Areas of Conservation (SACs) and Special Protection Areas (SPAs);
 - ii. Tree Protection Areas;
 - iii. Bird Sanctuaries as listed in Schedule V of the Conservation of Wild Bird Regulations, 2006 (S.L. 549.42) which include all cemeteries and their surroundings within 50 m, all public gardens, the Pinetum at Pieta', Manoel Island, Ta' Qali, and various other sites located ODZ such as protected beaches;
 - iv. Areas of Ecological Importance (AEIs) and Sites of Scientific Importance (SSIs); and
 - v. Areas of High Landscape Value (AHLVs).

The protection **does not cover sites protected for their archaeological or cultural value**, albeit these may be covered by additional protective designations as per above.

- b. **Outside the Development Zone (ODZ);**
- c. **Green areas and natural or rural/green enclaves in Urban Areas:** these are areas that are specifically zoned in Local Plans or planning schemes as green zones or enclaves; or

- d. **Urban public open spaces:** these areas comprise roads, road sides, pavements, piazzas, public gardens, parks, cemeteries, roundabouts, central strips and other traffic islands, and ancillary landscaped areas associated with these spaces.

2.1.5 Part B of the First Schedule specifies a number of other conditions in which trees are protected namely all trees:

- a. **of more than 50 years** if located in protected areas, in ODZ, within an Urban Conservation Area (UCA) or in an urban public open spaces;
- b. listed in the List of Historical Trees Having an Antiquarian Importance Order;
- c. located within Tree Protection Areas;
- d. located within a site protected by a Tree Preservation Order or covered by an approved Management Plan for a protected area.
- e. of the species *Ficus microcarpa* within urban public open space.

2.1.6 Finally the Second Schedule of the Regulations also lists trees which are **potentially damaging to the environment and which are not protected**. Specimens of *Eucalyptus* sp. **are protected** in urban public open spaces.

2.2 Which interventions require a permit and exceptions

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

- a. interventions on horticulturally grown trees (refer to 2.2.2); and
- b. plant quarantine interventions and actions (refer to 2.2.4).

2.2.2 Regulation 15 provides 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 and trees having an antiquarian importance.

2.2.3 For interpretation purposes, horticulturally grown trees are considered those specimens that are grown and cultivated as part of the management of a garden and within artificial

environments, that is agricultural land, private gardens, roadsides and paved areas. This excludes trees in protected areas (see Para. 2.4) and thus excludes trees within public gardens and in areas outside the development zone growing in their natural environment, and whether they were originally planted or not.

- 2.2.4 In cases related to any **tree harbouring quarantine pests**, its pruning, cutting, felling, treatment or destruction is allowed, provided there is written clearance from the Plant Health Directorate, and unless the tree is listed in Table 1 of the First Schedule (strictly protected trees). A permit would be required for trees listed in Table 1, despite clearance from the Plant Health Directorate.
- 2.2.5 Permits are not required for pruning of trees planted in gardens of private dwellings in urban areas, but excludes trees in protected area.
- 2.2.6 Permits are also required to import, export, sow, propagate and plant any trees listed in Schedule II.

Summary

- 2.2.7 Table 1 provides a summary **where a permit is required** (i.e. exemptions do not apply) for interventions.

Species of trees	Horticulturally grown trees (Para 2.2.2)	Trees harbouring quarantine pests (Para. 2.2.4)
Strictly protected: First Schedule, Part A, Table 1	Yes	Yes
Protected trees: First Schedule, Part A, Table 2	No, subject to para. 2.2.2	No
Protected trees: First Schedule, Part B (i): Due to age	No, subject to 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	No, subject to para. 2.2.2.	No
Protected trees: First Schedule, Part B (v): <i>Ficus microcarpa</i> s.l.	No, subject to para. 2.2.2.	No
Alien species: Second Schedule	No	No

Particular Second Schedule trees species (<i>Eucalyptus</i> spp.)	No, subject to para. 2.2.2.	No
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Table 1: Summary of exceptions

2.3 How to apply for a permit

- 2.3.1 The application form, which can be downloaded from ERA website or completed on the servizz.gov website ([https://servizz.gov.mt/en/Pages/Environment -Energy -Agriculture-and-Fisheries/Environment/Nature-Permits/default.aspx](https://servizz.gov.mt/en/Pages/Environment_-_Energy_-_Agriculture-and-Fisheries/Environment/Nature-Permits/default.aspx)), should be duly filled in, signed and sent by e-mail on tree.permitting@era.org.mt or by post together with:
- A site plan showing location of interventions;
 - A block plan of the trees on site;
 - Good quality photos of the trees indicating the interventions proposed on the photo;
 - Where applicable, further documents e.g. justification, evidence of damage to the property by a warranted architect, historic photos, reference/ clearance by Plant Health Department, the Planning Authority Permit, other clearances/reports, etc;
 - Where applicable, a compensatory planting plan in line with these Guidelines;
 - Where applicable, the 1967 photo of site of intervention (applicable for Schedule I part B); and
 - A permit fee (€20 for a permit covering less than 20 trees, €100 for more than 20 trees, n/a in case of emergency permits).
- 2.3.2 The ERA will process the application within the period stipulated by law, provided all information is submitted.
- 2.3.3 In case a request for further information by the ERA is required, such as clarifications or a compensatory planting plan, the applicant has two weeks to provide the information, and should no reply be received, and following a one-time reminder, the application is withdrawn by the ERA. Following receipt of all information, ERA will consider the request and reply to the applicant within two weeks with its decision to grant or refuse, quoting the reasons.
- 2.3.4 As part of the permit approval, ERA will issue a letter with conditions to be followed as part of the works. These conditions may include monitoring by ERA or third parties, management of waste generated, bank guarantees and/or compensatory planting measures. ERA is to be informed of works on trees at least one week in advance, for monitoring purposes.
- 2.3.5 Permits are issued for a maximum validity of one year and may be renewed upon request of the permit holder.
- 2.3.6 A number of additional issues are applicable to all interventions carried out on trees including those related to ownership and third party rights.
- 2.3.7 The permit holder is responsible to ensure that the owner of the site is duly notified of the works to be carried out.

- 2.3.8 Permits are issued safeguarding third party rights and without prejudice to the provisions of regulations and permits required by any other competent authorities. It is the permit holder's responsibility to obtain clearances from other authorities such as Local Councils, Police and/or the Plant Health Directorate.
- 2.3.9 ERA applies a system of Bank Guarantees for permits in accordance with the summary table below. In case where more than one tree is affected, the value in Table 2 is to be multiplied by the number of trees being affected or planted.

Activity	Minimum Bank guarantee per tree
Operations affecting First Schedule Part A Table 1 trees	€ 2500
Operations affecting First Schedule Part A Table 2 trees	€ 1250
Operations affecting First Schedule Part B trees	€ 750
Compensatory planting	€250
Transplanting (unless covered by the above)	€ 500

Table 2: Applicable bank guarantees on tree interventions

- 2.3.10 The said guarantee for compensatory planting and transplanting is only released by ERA after 3 years of the permit and ensuring that the compensatory trees or transplanted trees are still in place and thriving. ERA may apply higher bank guarantees or else extend the guarantee beyond the three-year timeframes.
- 2.3.11 Interventions on protected trees and trees within public open spaces can only be carried out by a tree specialist licensed with ERA.

2.4 Emergencies or particular circumstances

- 2.4.1 In cases of emergency or grave danger to property and/or to human life, where action would need to be taken immediately and before a Nature Permit can be formally applied for and issued, ERA may issue an emergency permit. In such cases, it is the responsibility of the site manager or owner to justify the emergency through the use of photographic evidence, reports by qualified professionals (such as architects in case of structures and arboriculturists in case of trees) or police reports.
- 2.4.2 Provided sufficient justification is provided, ERA waives the requirement of a permits fee and issues an emergency permit with mitigation measures to safeguard any other trees present and other environmental assets. Amongst the conditions of the permit, ERA may also require compensatory planting for the removed tree. The emergency permit is valid for 48 hours from issue and works must be carried out within that timeframe. If works are not carried out within 48 hours, a formal permit must be applied for.

2.5 Registration as a Licensed Tree Specialist

2.5.1 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

2.5.2 The aim of this section is to clarify the minimum requirements by the Authority for applying successfully to be registered as a Licensed Tree Specialist.

Minimum Requirement

2.5.3 In order to successfully apply to be a Licensed Tree Specialist, the following is required:

- a. Clear evidence of certification in a course of approximately 30 hours (5 ECTS credits) including a minimum of 10 hours practice, which is assessed by written and/or practical assessment, by a recognised institution, at least at MQF level 2 or 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, including a minimum; or
- b. Clear evidence of at least 3 years practical work on interventions on trees, plus a pass in written and/or practical assessment on the subject, by a recognised institution.

2.5.4 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.

Course Content

2.5.5 The minimum requirements for courses to become a licensed tree specialist shall include the following learning objectives:

- a. Identify the basic principle of trees: Anatomy and Physiology and tree forms;
- b. 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;
- c. 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;
- d. Identify the basics of good tree surgery including include, staking, anchoring, guying, bracing and cabling, cavity treatments
- e. Be familiar with indigenous Mediterranean and/or Maltese trees ;

- f. Be familiar with the Trees and Woodlands Regulations, 2018 and other Guidelines including:
 - Requirements of a permit;
 - Overview of protected areas;
- g. Capable of applying knowledge into practice, including a workshop on pruning and use of a chainsaw and other mechanized trimmers or hedge-cutters;
- h. Identify and capable of applying the basics of Health and Safety during work.

How to apply for Registration

- 2.5.6 Application forms for Licensed Tree Specialist may be downloaded from the ERA website, which should be duly filled in, signed and sent by e-mail or by post together with:
- a. A copy of the course certificate/s and transcript showing course content/ learning objectives;
 - b. The Curriculum Vitae showing practical experience;
 - c. 3 recent good quality passport photos;
 - d. A copy of police conduct obtained within the last six months;
 - e. Payment of €50 fee.
- 2.5.7 The ERA will process the application within the timeframe stipulated by law provided all information is submitted.
- 2.5.8 In case of a request for further information by ERA is required, such as clarifications on experience or qualifications, the applicant has one week to provide the information, and should no reply be received, and following a one-time reminder, the application is withdrawn. Following receipt of all information, ERA will consider the request and reply to the applicant within one week with its decision to grant or refuse, quoting the reasons.
- 2.5.9 As part of the Registration, ERA will issue a letter with conditions to be followed and a license identification tag to the registered person. The tag is to be kept by the person during all works involving trees.
- 2.5.10 The conditions of registration include those related to duty of care to the environment, following of provisions of S.L. 549.123, informing ERA with respect to changes in details and the renewal process.
- 2.5.11 Registrations issued are valid for three years. However ERA may amend, suspend, withdraw the registration or conditions associated with it, for reasons deemed necessary. ERA issues the applications throughout the year, however for practical purposes all registrations expire on 31st June.
- 2.5.12 One month before expiry of the registration, ERA will send a one-time reminder. The registrant is responsible for following up the renewal accordingly as per below.

- 2.5.13 In order to **renew the license**, the form may be downloaded from the ERA website, which shall be duly infilled, with any changes to the original information supplied, signed and sent by email or by post together with:
- a. A copy of any updated courses (where applicable);
 - b. Payment of fee (€50/€30), depending whether the current license is expired or not).
- 2.5.14 The ERA will process the application within the timeframe stipulated by law. In case of a request for further information by ERA is required, the applicant has one week to provide the information, and should no reply be received and following a one-time reminder, the application is withdrawn by ERA.
- 2.5.15 Following receipt of all information, ERA will consider the request and reply to the applicant within one week with its decision to grant or refuse the renewal, quoting the reasons. A new registration letter and license tag is issued with every renewal.

3 Good Practice for Works involving trees

3.1 Pruning of Trees

- 3.1.1 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.

- 3.1.2 Pruning carried out on branches larger than 5 cm in diameter is considered as **hard pruning**. This form of pruning should be avoided by 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.

Principles of pruning

- 3.1.3 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:
- Each cut is made with a purpose since every cut made opens a wound in the tree and changes the growth of the tree;
 - If necessary, the intervention needs to be carried out in stages over several months; and
 - Removal of branches greater than 5 cm in diameter should be based on proper reasoning.
- 3.1.4 Proper pruning cuts shall be performed just outside the branch collar as shown in Figure 1. For small branches, the cut shall be:
- At a minimal distance from the main trunk and just beyond the branch collar;
 - Performed in an upwards motion; and
 - Perpendicular to the branch, ensuring the cut is clean and without any shearing.
- 3.1.5 For **cutting heavy branches** (hard pruning) the procedure as shown in Figure 1 is to be adopted as follows:
- At a distance of approximately 10 cm from the main trunk perform an upward cut until the centre of the branch to be removed;
 - 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;
- 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;

- c. The remaining part of the branch is cut just off the collar in a similar manner when cutting lighter branches; and
- d. If necessary larger wounds are treated with due aftercare to naturally close the cut, except for those species which rapidly close cuts.

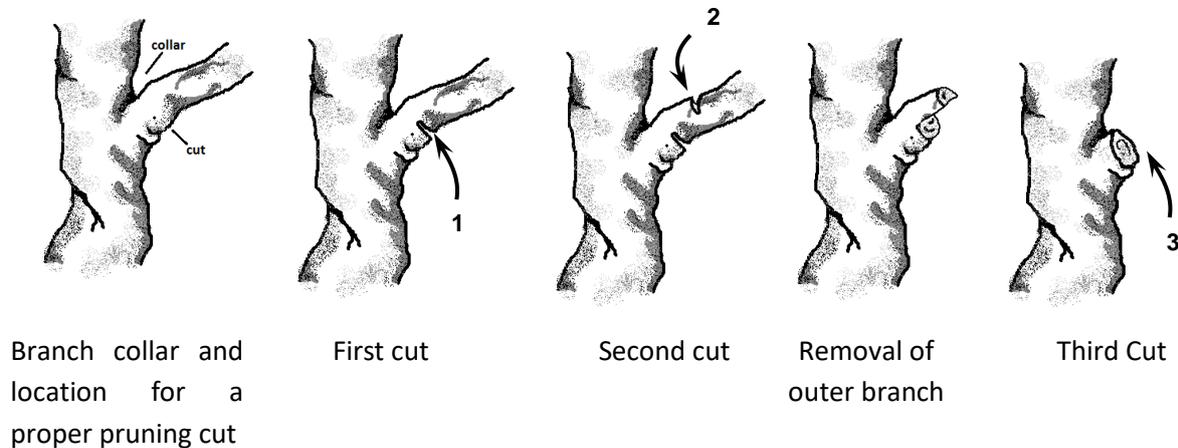


Figure 1: Making a proper branch cut

3.1.6 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.

3.1.7 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.

3.1.8 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.

Timing of pruning

3.1.9 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. For deciduous trees, any pruning shall be carried out only when the tree is dormant (November to February).

3.1.10 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).

3.1.11 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.

Aftercare

3.1.12 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.

3.1.13 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.

Adequate tool use

3.1.14 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.

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

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

3.1.17 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

3.2.1 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.

3.2.2 Each tree species reacts differently to the transplanting process and for some specific species transplanting is not advisable, such as mature conifer trees and mature carob trees, whose rate of success would depend on age, health status and site specific constraints.

3.2.3 Transplanting shall be carried out as a last resort only when all the other project options have been exhausted.

Principles of transplanting

3.2.4 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 3**. 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 3 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.
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.

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

Table 3: Trunk/ root ball diameter ratio.

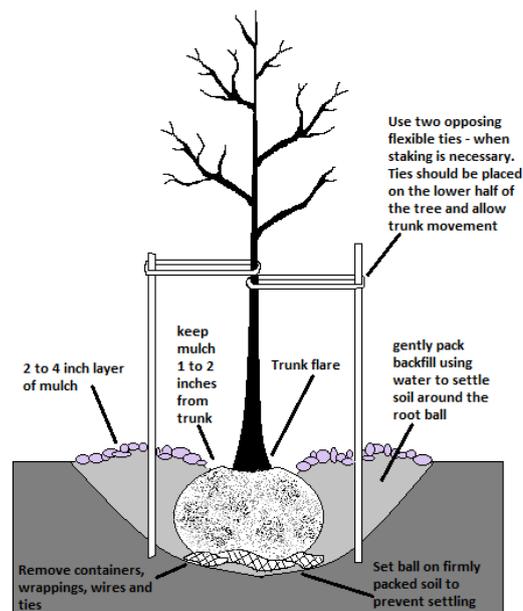


Figure 2: Replanting of a tree root ball.

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

When and Where to Transplant

3.2.6 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).

3.2.7 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.

3.2.8 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.

3.2.9 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.

3.2.10 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.

Aftercare

- 3.2.11 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.
- 3.2.12 **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

- 3.3.1 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.

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

General Principle

- 3.3.2 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.
- 3.3.3 Compensatory planting may also apply in cases in which severe pruning is carried out and severely mutilates or damages the tree.
- 3.3.4 The criteria for compensatory planting are to be approved by the Authority prior to issuance of a permit authorizing interventions on trees. The Authority may keep such issues as reserved matters or impose relevant bank guarantees as deemed fit.
- 3.3.5 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.

Quality and type of trees

3.3.6 The following replacement ratios apply as a **minimum requirement**. The Authority may apply more stringent measures in specific cases where this would be considered appropriate.

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
Non-protected trees including invasive alien tree species	1:1	1:2	
Dead tree specimens	1:1		

Table 4: Compensatory planting ratios

3.3.7 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 trees of the same species** as the tree removed.

3.3.8 In the case of dead tree specimens, the ratio mentioned in Table 4 is subject to clear provision of evidence that the tree died of natural causes. The higher ratios mentioned in Table 4 may apply in cases where such sufficient evidence is not provided to ERA's satisfaction.

3.3.9 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.

3.3.10 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.

3.3.11 Non-indigenous species located outside development zones are to be replaced by indigenous species which are context specific.

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

3.3.13 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.

Location and Timing

3.3.14 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.

- 3.3.15 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.

- 3.3.16 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.
- 3.3.17 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.
- 3.3.18 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.
- 3.3.19 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.
- 3.3.20 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.
- 3.3.21 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 in line with this Guidelines.

3.4 Avoiding Impacts of Construction Works on Trees

- 3.4.1 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.

Protecting trees against construction related damage

- 3.4.2 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.
- 3.4.3 It is critical that roots in the zone defined as per distances in Table 3 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.

General Steps to take to protect trees during construction

3.4.4 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 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.

3.4.5 Minimize the impact of construction activity

In addition to protecting the tree and its 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.

3.4.6 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 3). 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.

3.4.7 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. 3). 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.

3.4.8 Root barriers and root guidance

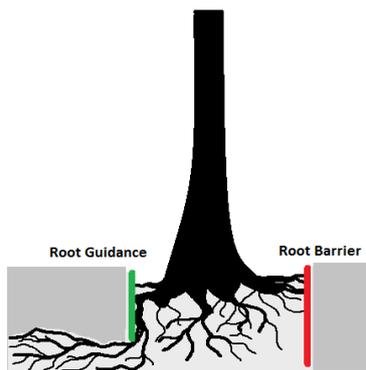


Figure 3: Root barrier vs. root

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.



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