

SYMATREE



Aleppo Pine Management Plan – Cormorant Drive Reserve, Hallett Cove

Report prepared for

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Introduction

Purpose of this Document

This plan is concerned with the Aleppo Pines located within the study area as identified on the aerial image referred to as Figure 1.



Figure 1. Cormorant Drive Reserve, study area is highlighted.

The purpose of the Aleppo Pine Management Plan is to provide Council with a clear management direction to guide the staged removal of the two stands of Aleppo Pines at Lower Field River.

This plan involves the review, collection, analysis of relevant environmental and aboriginal data so a succession plan can be developed to help guide the gradual replacement of the Aleppo Pines with local indigenous species,

Site Visit

I carried out site inspection on the 4 August 2020.

Limitations

This report is limited to the time and method of inspection. The trees were inspected from ground level only. Neither a climbing inspection or a below-ground investigation was performed. No soil or plant material samples were taken for laboratory analysis.

This report reflects the state of the trees as found on the day. Any changes to site conditions or surrounds, such as construction works undertaken after the inspection, may alter the findings of the report.

Due to data inaccuracies 26 has not been used as a unique identifier.

Date of Report

This report was written on the 6 August 2020.

Site

Cormorant Drive Reserve is in the suburb of Hallett Cove. The reserve is situated on either side of Cormorant Drive and is 7.27 hectares in size.

The reserve consists of the Field River's estuary at Hallett Cove Beach and nearby sand dunes (refer Figure 2). Coupled with the river, this area provides a cool natural setting for visitors in summer.

The current vegetation in the area is a mix of native, local indigenous and exotic with areas of the reserve having been restored by the Friends of Lower Field River. Some areas are quite degraded with a variety of weed species present.



Figure 2. Field River, facing west from Cormorant Drive Bridge.

Policy Context

There are several State Government and Council policies and strategies that inform the management of Aleppo Pines across the Council.

Aleppo Pine (*Pinus halepensis*) is a declared weed in South Australia as enforced by the Natural Resources Management Act 2004.

The following sections of the NRM Act apply to Aleppo Pine in the Adelaide and Mount Lofty Ranges region (not planted and maintained for amenity or commercial purposes):

- 175 (2) Cannot transport the plant, or any material or equipment containing that plant, on a public road
- 177 (1) Cannot sell the plant
- 182 (2) Landowner must control the plant on their land
- 185 (1) NRM authority may recover costs for control of weeds on roadsides from adjoining landowners

City of Marion's own policy documentation reflects the Natural Resources Management Act 2004 in respect of all declared woody weeds. Council's Remnant Native Vegetation Plan 2018 - 2023, 'Principles Underpinning our Remnant Native Vegetation Management:

The City of Marion will remove and actively manage pest plants declared by the minister with the Natural Resources management Act 2004. In revegetation and where possible in landscaping we will use local indigenous species. Where local indigenous plants are used they must be of local provenance to preserve genetic diversity

The City of Marion takes the approach of:

- *Protecting and maintaining landscapes and biodiversity that we already have.*
- *Enhancing areas that have become degraded, e.g. through revegetation.*
- *Control pest plants from spreading or becoming established.*

Council's Tree Management Framework 2018 also refers to the NRM Act 2004 and the Community Plan and Environment and Biodiversity Strategy. There is also specific principles within the Urban Tree Strategy:

Principle 1; Tree Removal, sub-section D4.3 which states:

Address trees classified as environmental weed species, considering the impacts removal will have on the overall aesthetic appearance of the park or reserve..

Principle 2. D10.3 Tree Removal, sub-section 4.3 which states:

Target weed species for removal when deemed to be inappropriately located or causing issues to public or private property.

Methodology

Tree Schedule

For each tree assessed the following information was collected. This information is recorded in the tree schedule (included as Appendix A).

Tree (Identifier Number - No) and Location

Each tree's location is identified using its unique identifier number. The identifier numbers used in the tree schedule correspond with those on the aerial images included as part of Figures 5 and 6.

Species

Tree names are provided as botanical names only.

Tree Height

Height is estimated and recorded as follows:

- Less than 5 metres
- 5 – 10 metres
- 10 – 20 metres
- Greater than 20 metres

Trunk Circumference

An actual measure of trunk circumference at 1 metre from ground was taken for each tree within the study area.

Structure

Overall structure is rated using one of the following categories:

- Good: Trees that are typical of the species with a structure that is free from notable defects fall within this category. Some maintenance pruning may be identified as required for subject trees/shrubs that fall within this category.
- Fair: This category includes those trees that may have one or more of the following structural defects: minor bark inclusions, co-dominant leaders, minor trunk wounding or decay, branches that are overextended or end weighted, poor pruning history, leaning trunk, unbalanced canopy, moderate epicormic growth or a history of minor branch failures. Remedial and/or maintenance pruning is typically identified as required to address these structural issues.
- Poor: This category includes those trees that may have one or more of the following structural defects: co-dominant leaders with major bark inclusions, major bark inclusions present within the canopy, dieback to a significant proportion of the canopy, a history of major branch failure, a severely leaning trunk, extensive decay or wounding, excessive end-weighted and over-extended branches, excessive epicormic growth, root damage or the tree instability. Remedial and/or maintenance pruning typically will not address these structural issues identified in this category. Generally, removal is the only available option.

Methodology (cont)

Health

The health and condition of a tree/ shrub is determined by its overall appearance, foliage colour, density, vigour and the presence/ absence of pests and diseases within the crown. Specifically, tree health and condition is categorised as one of the following:

- Good: This category includes trees that are growing vigorously, have no or only minor pest or disease infestation, only a small amount of dead wood present within the canopy, and good aesthetic appeal.
- Fair: This category includes trees with moderate growth rate, foliage density and vigour, moderate pest or disease infestation, minor growing tip dieback, a moderate amount of dead wood, and where aesthetic appeal is lacking and other stress factors are present.
- Poor: This category includes trees with low growth rate, poor foliage density and vigour, dieback to a significant proportion of the canopy, a high level of pest or disease infestation, a large amount of dead wood within the canopy, and that lacks aesthetic appeal and/or have other signs of severe stress.

Removal Program

- Years 5 and 6: The tree is a mature specimen in fair to good condition with a useful life expectancy of at least 10 years is located such that its loss would have a significant impact on the landscape.
- Years 3 and 4: The tree is a semi-mature or mature specimen, in fair to good condition that is suitable for retention; however, is located such that its loss would not have a significant impact on the landscape.
- Year 2: The tree is likely to be juvenile or in structure decline or declining health and could be retained for a short period of time.
- Year 1: The tree should be removed as it is in severe decline, hazardous or dead.

Comments

The principle observations of the subject tree.

Findings

Study Area

The study area is located either side of Cormorant Drive, adjacent to the bridge, on the northern side of Field River. The trees are split into two clumps, twelve trees located on the western side (refer Figure 3) and Twenty-Two Trees on the eastern side (refer Figure 4). Total of 34 Trees.

The trees are planted in informal lawn areas or located within the clumps of Phragmites. Mixed plantings of local indigenous species can be found near the trees.



Figure 3. Study area looking southwest.



Figure 4. Study area looking southeast.

The approximately location of these trees is identified on the aerial image refer Figure 5. The main findings from the survey are as follows:



Figure 5. Aerial image indicating approximate location of the trees that are the subject of this management plan.

Findings (cont)

Tree Health and Structure

Trees 2, 3, 7, 14, 18, 19, 24, 25, 27 and 28 have been identified as being poor health. These trees have reached the end of their useful lives and are in decline. Moderate to high volumes of dead wood and /or leafless areas have been noted within their respective crowns.

Trees 5, 12, 15, 18, 19, 21, 23, 25, 27, 28 and 33 have been identified as being in poor structure. There are several causes of a decline in structure ratings including:

- Poorly formed branch unions
- Evidence of previous failure/s
- Overall poor form, top heavy, unbalanced crowns, due to overshadowing from adjacent trees

The remaining trees have been identified as being in fair health and structure.

Appraisal

Existing Trees

It appears most of these trees are self-sown that were left to mature and originate from either the two largest, trees 22 and 31 or external sources. Majority of these trees have trunk circumferences of less than 2 metres and have yet to achieve their full growth expectation.

These trees do provide a strong visual presences/appeal within the locality and are a prominent feature within the reserve. As a group their aesthetic value is high and they make an important contribution to the landscape character and amenity of the local area. This and other mature trees and vegetation within the reserve create a massing effect with the subject trees providing an impressive focal point as one enters the reserve from Cormorant Drive.

The health and/or structure of over half of the trees assessed have been rated as poor. The majority of these trees are poorly formed and or have defective branch unions. Of particular concern is many of these trees are in declining health with moderate level of dead wood. Aleppo Pines are a species that does not respond well to regeneration.

Action Plan – Removal Program

The removal program is identified on the aerial image below, refer Figure 6.



Figure 6. Removal program, years 1 – 6 indicated in various colours.

Stage 1

Remove in the first instance trees 2, 3, 7, 12, 14, 15, 18, 19, 25, 27, 28 and 33 have been assessed to be in poor health and/or structure or these trees are small and their removal will have limited impact to the visual amenity of the reserve. Stage 1 tree removals should occur within 12 months.

Stage 2

The next stage Trees 1, 5, 21, 23, 24, 29, 30, 34 and 35 have been assessed to be in fair health and fair to poor structure and do not pose an immediate risk at this time.

The retention of these trees will for a period soften the loss of stage 1 trees and allow the establishment of replacement plantings from an amenity and bank erosion perspective. Stage 2 tree removals should occur within 24 months.

Stage 3

The next stage Trees 4, 6, 9, 10, 11, 16, 17, 20 and 32 have been assessed to be in fair health and fair structure.

Tree retention, until years 3 and 4 will allow replacement species to mature and soften the loss of amenity once removal of these trees occur and reinforce the protection of the banks from erosion. Stage 3 tree removals should occur within 36 to 48 months.

Stage 4

The next stage Trees 13, 22 and 31 have been assessed to be in fair to good health and fair to good structure. In addition, Trees 22 and 31 are the largest trees within the immediate locality.

Tree retention, until years 5 and 6 will provide opportunity to allow replacement species to mature and soften the loss of amenity once removal of these trees occur. Stage 4 tree removals should occur within 60 to 72 months.

Tree Pruning

The MFS have advised the Aleppo Pines are not a fire risk, however it has been suggested the crowns be uplifted to reduce connectivity to the ground vegetation layer in year 1 of the removal program.

Therefore, trees identified for removal in years 2 – 6 should be crown lifted to at least 3 metres from ground. This work could be completed concurrently with the removal of Year 1 trees.

Conclusion

In total, 34 Aleppo Pines were identified within the study area. It is possible Trees 22 and 31 given their maturity and size were initially planting. I suggest the remaining trees are all self-sown, originating from either the initially planted trees or external sources and left to mature.

The health and structure of over half of the trees assessed has been rate as poor. Most of these trees are poorly formed and / or have defective branch unions. In addition, many of these trees are in declining health with moderate to high levels of dead wood with a history of branch failure.

Tree removal is recommended to occur in a staged process over a six-year period with most trees removed in Stages 1 and 2.

Pruning to crown lift to at least 3 metres from ground the remaining trees should occur concurrently in year 1 for those trees identified for removal in subsequent years.

Recommendation

The following tree removal action plan be adopted:

- Stage 1 – Remove trees 2, 3, 7, 12, 14, 15, 18, 19, 25, 27, 28 and 33. Tree removals should occur within 12 months.
- Stage 2 – Remove trees 1, 5, 21, 23, 24, 29, 30, 34 and 35. Tree removals should occur within 24 months.
- Stage 3 - Remove trees 4, 6, 9, 10, 11, 16, 17, 20 and 32. Tree removals should occur within 48 months.
- Stage 4 - Remove trees 13, 22 and 31. Tree removals should occur within 72 months.

Trees identified for removal in years 2 – 6 should be crown lifted to at least to 3 metres from ground. This work could be completed concurrently with the removal of Year 1 trees.



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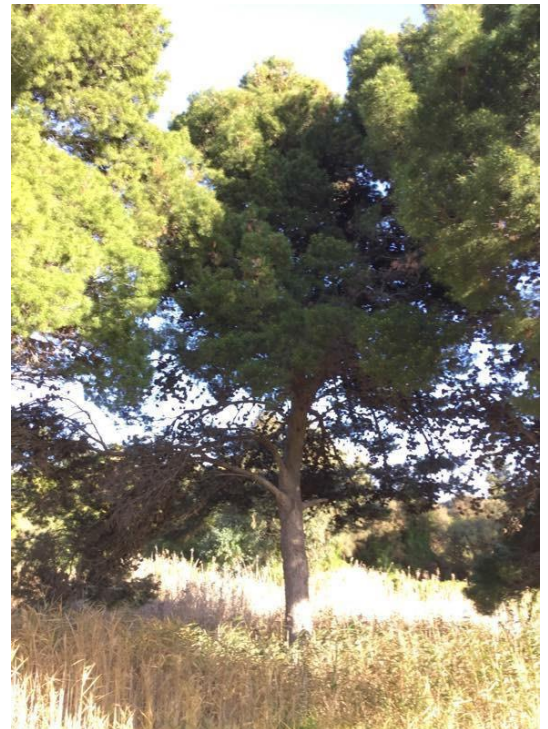
Appendix A

Tree Schedule

Tree ID	1
Species	Pinus halepensis
Height	10-20m
Health	Fair
Structure	Fair
Circumference	1.75 & 1.64m
Removal Program	2 yr
Comments	Die back due overshadowing southern side, crown in contact ground, crown requires lifting. 30% overall crown is dead.



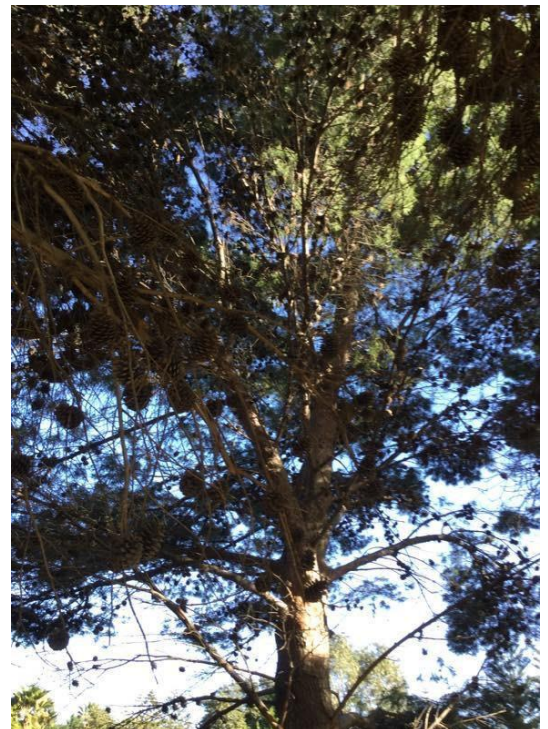
Tree ID	2
Species	Pinus halepensis
Height	10-20m
Health	Poor
Structure	Fair
Circumference	1.52m
Removal Program	1 yr
Comments	History of branch failure. Die back southwest side due overshadowing.



Tree ID	3
Species	Pinus halepensis
Height	10-20m
Health	Poor
Structure	Fair
Circumference	1.25m
Removal Program	1 yr
Comments	Approximately 50% crown dieback apparent. Crown bias west.



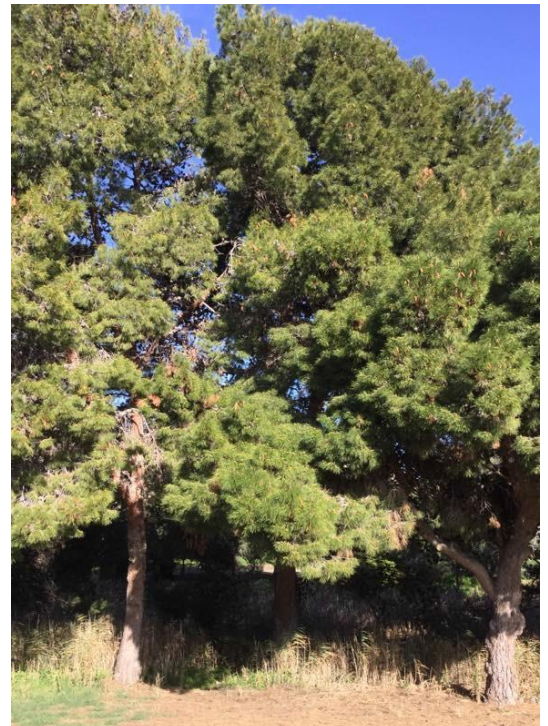
Tree ID	4
Species	Pinus halepensis
Height	10-20m
Health	Fair
Structure	Fair
Circumference	1.75m
Removal Program	3 yr
Comments	Crown lift required to 3 metres.



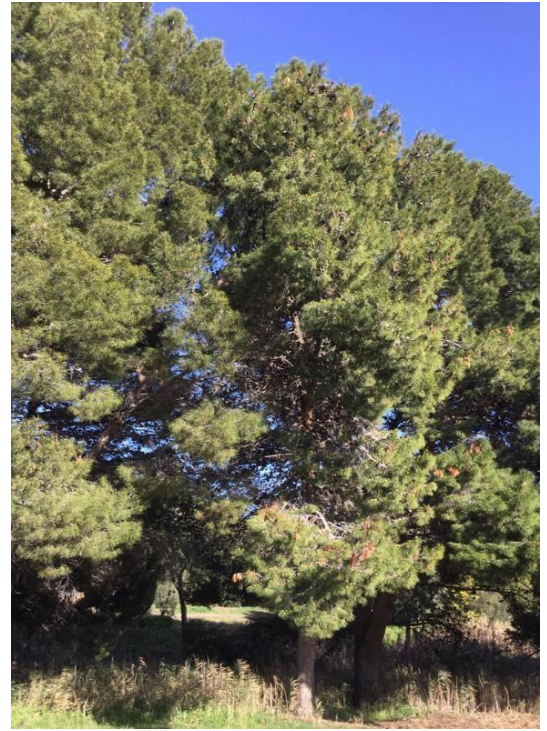
Tree ID	5
Species	Pinus halepensis
Height	5-10m
Health	Fair
Structure	Poor
Circumference	1.56m
Removal Program	2 yr
Comments	History branch failure, 50% crown dieback southern side. Tree stunted overshadowed by larger tree to southeast.



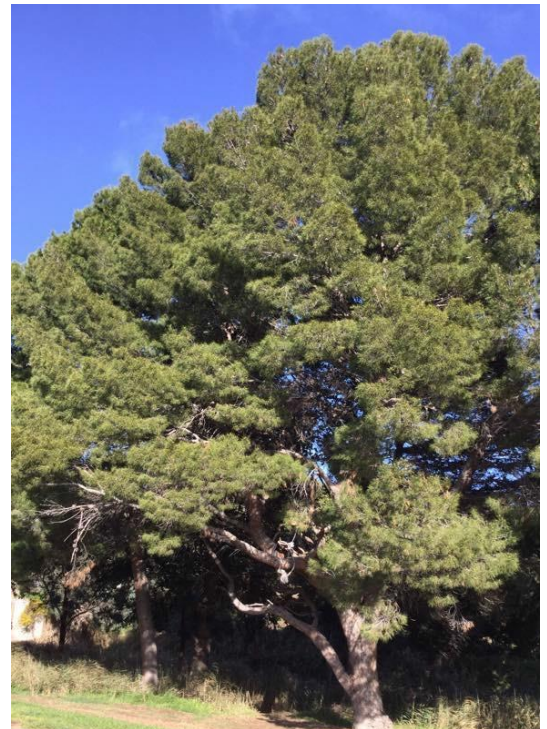
Tree ID	6
Species	Pinus halepensis
Height	10-20m
Health	Fair
Structure	Fair
Circumference	2.42m
Removal Program	4 yr
Comments	Approximately 20% crown dieback due to overshadowing. Crown lift to 3 metres.



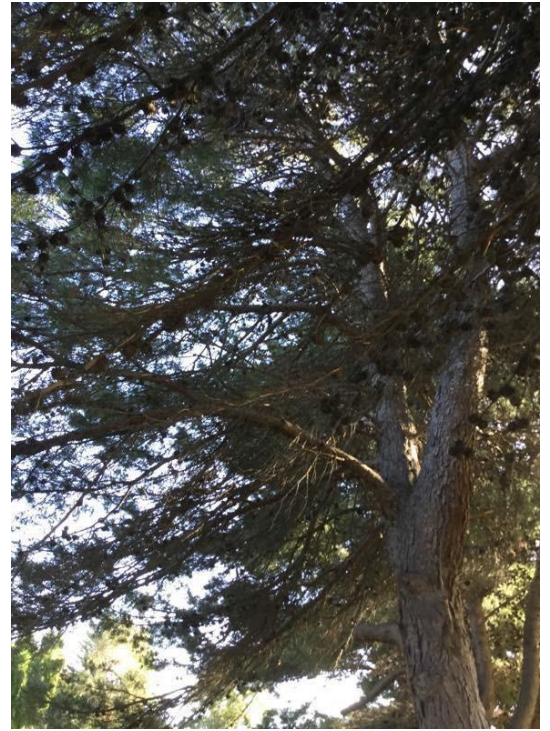
Tree ID	7
Species	Pinus halepensis
Height	10-20m
Health	Poor
Structure	Fair
Circumference	1.33m
Removal Program	1 yr
Comments	Approximately 50% crown dieback due overshadowing. Crown bias northeast. Crown lift to 3 metres required.



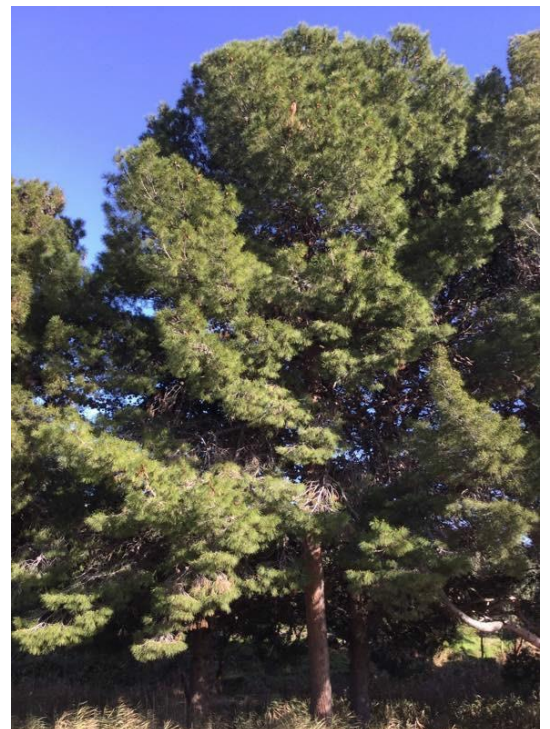
Tree ID	8
Species	Pinus halepensis
Height	10-20m
Health	Fair
Structure	Fair
Circumference	2.26m
Removal Program	4 yr
Comments	Crown bias towards the northeast. Broad spreading. 30% crown dieback due to overshadowing. Used as swing. Remove lower southeastern dead lateral to main branching framework.



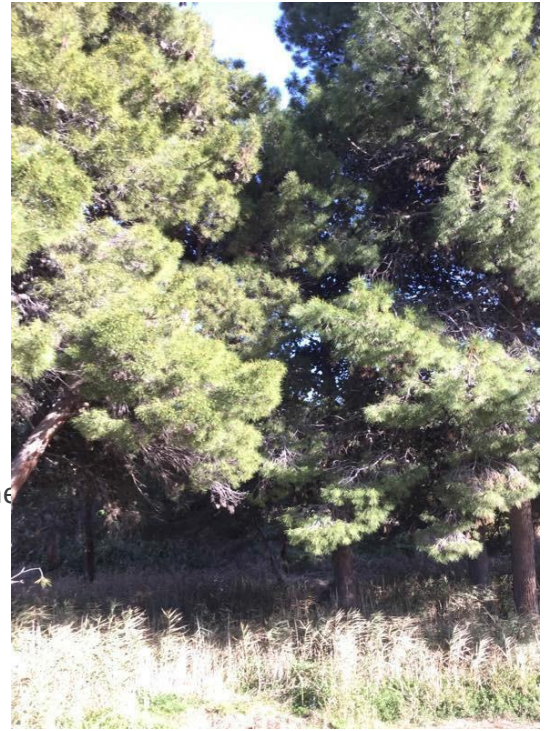
Tree ID	9
Species	Pinus halepensis
Height	10-20m
Health	Fair
Structure	Fair
Circumference	1.96m
Removal Program	4 yr
Comments	Approximately 40% dieback by overshadowing. Crown lift to 3 metres. Crown bias south.



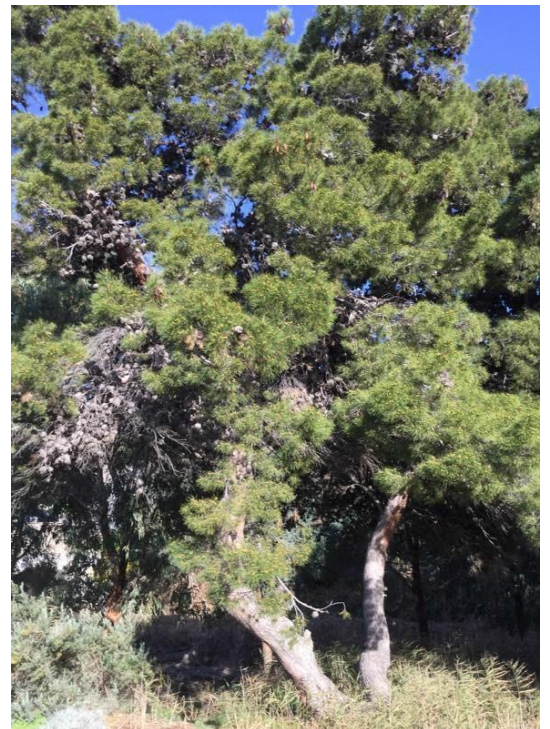
Tree ID	10
Species	Pinus halepensis
Height	10-20m
Health	Fair
Structure	Fair
Circumference	1.45m
Removal Program	3 yr
Comments	Approximately 50% overall crown is dead southern side due to overshadowing. Crown bias towards northeast. Minor history of branch failure.



Tree ID	11
Species	<i>Pinus halepensis</i>
Height	10-20m
Health	Fair
Structure	Fair
Circumference	1.89m
Removal Program	3 yr
Comments	Approximately 50% crown dieback, northern exposure. Crown lift to 3 metres.



Tree ID	12
Species	<i>Pinus halepensis</i>
Height	10-20m
Health	Fair
Structure	Poor
Circumference	1.51, & 1.45 m
Removal Program	1 yr
Comments	Poor form 50% crown dieback.



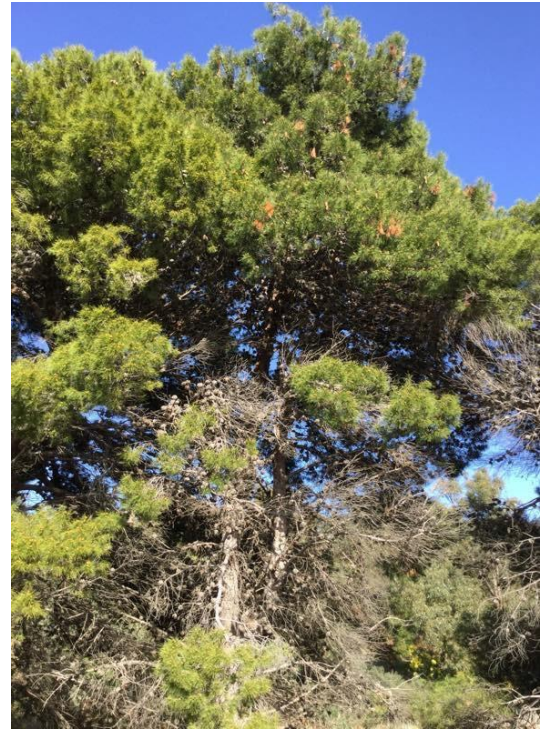
Tree ID	13
Species	Pinus halepensis
Height	10-20m
Health	Good
Structure	Good
Circumference	1.36m
Removal Program	5 yr
Comments	Moderate volumes of dead wood inner crown. Crown lift to 3 metres all sides.



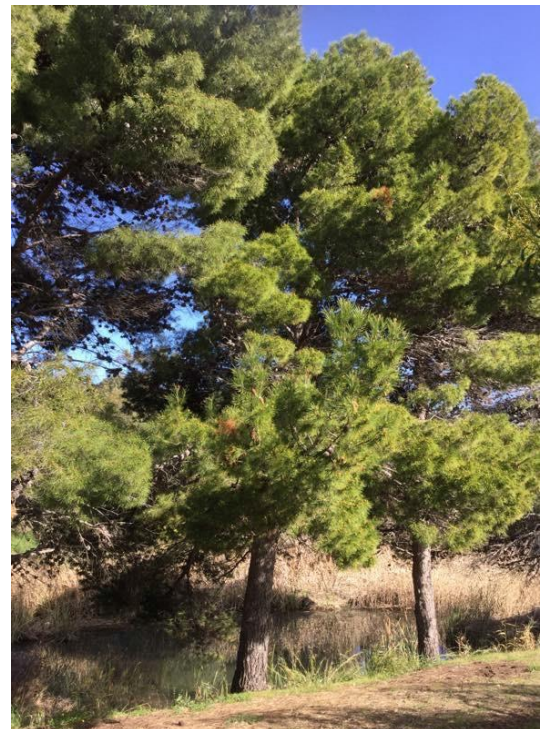
Tree ID	14
Species	Pinus halepensis
Height	10-20m
Health	Poor
Structure	Fair
Circumference	1.32m
Removal Program	1 yr
Comments	80% overall crown is dead.



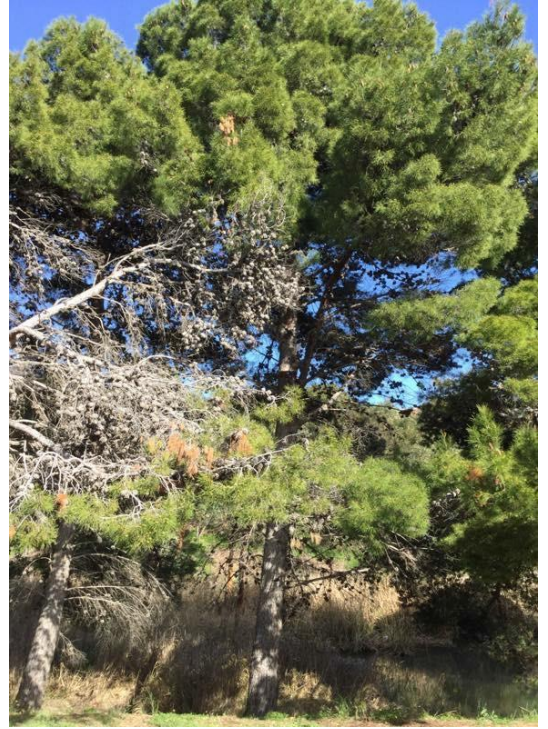
Tree ID	15
Species	<i>Pinus halepensis</i>
Height	10-20m
Health	Fair
Structure	Poor
Circumference	1.33m
Removal Program	1 yr
Comments	Twin leader poor form, 30% overall crown dieback.



Tree ID	16
Species	<i>Pinus halepensis</i>
Height	10-20m
Health	Fair
Structure	Fair
Circumference	1.66m
Removal Program	4 yr
Comments	Crown lift to 3 metres. Crown bias towards the west.



Tree ID	17
Species	Pinus halepensis
Height	10-20m
Health	Fair
Structure	Fair
Circumference	1.66m
Removal Program	3 yr
Comments	Poor form, no canopy 3/4 trunk northeastern side. Crown lift 3 metres.



Tree ID	18
Species	Pinus halepensis
Height	10-20m
Health	Poor
Structure	Poor
Circumference	1.55m
Removal Program	1 yr
Comments	Tall upright form no canopy majority of the northeastern side. poor tree



Tree ID	19
Species	Pinus halepensis
Height	10-20m
Health	Poor
Structure	Poor
Circumference	2.14m
Removal Program	1 yr
Comments	Approximately 50% crown dieback, poor form crown bias west, heavily pruned in past.



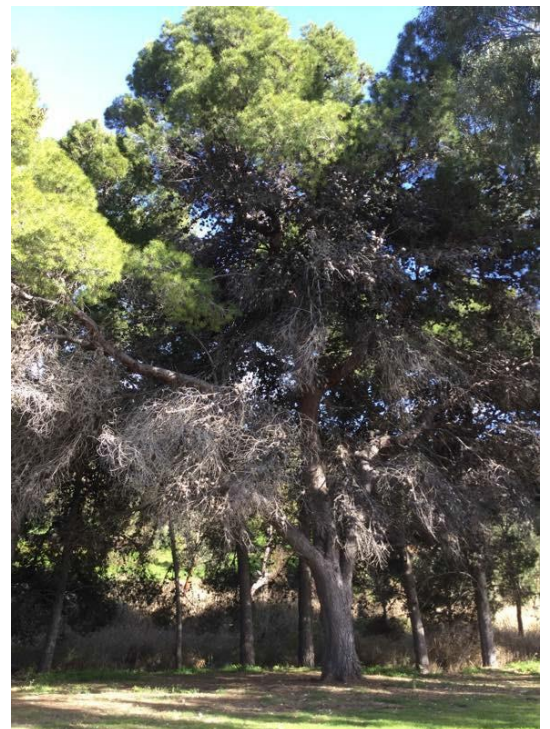
Tree ID	20
Species	Pinus halepensis
Height	10-20m
Health	Fair
Structure	Fair
Circumference	1.65m
Removal Program	3 yr
Comments	Approximately 40% dieback northeastern side due to overshadowing. Crown lift to 3 metres.



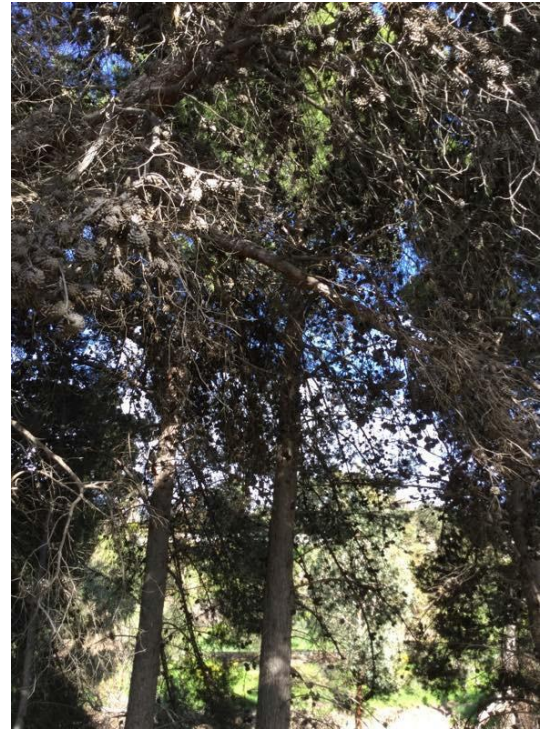
Tree ID	21
Species	Pinus halepensis
Height	10-20m
Health	Fair
Structure	Poor
Circumference	1.7m
Removal Program	2 yr
Comments	Approximately 50% of overall crown dieback. Trunk leans towards the southwest.



Tree ID	22
Species	Pinus halepensis
Height	10-20m
Health	Fair
Structure	Fair
Circumference	3.18m
Removal Program	5 yr
Comments	Entire lower crown approximately 50% dead. Prune lower dead branches to 5 metres.



Tree ID	23
Species	<i>Pinus halepensis</i>
Height	10-20m
Health	Fair
Structure	Poor
Circumference	1.83m
Removal Program	2 yr
Comments	Approximately 50% overall crown is dead due to overshadowing.



Tree ID	24
Species	<i>Pinus halepensis</i>
Height	10-20m
Health	Poor
Structure	Fair
Circumference	1.8m
Removal Program	2 yr
Comments	Approximately 60% overall crown is dead due to overshadowing. Crown bias towards the southeast.



Tree ID	25
Species	<i>Pinus halepensis</i>
Height	5-10m
Health	Poor
Structure	Poor
Circumference	0.65m
Removal Program	1 yr
Comments	Only a tuft of foliage end of trunk.



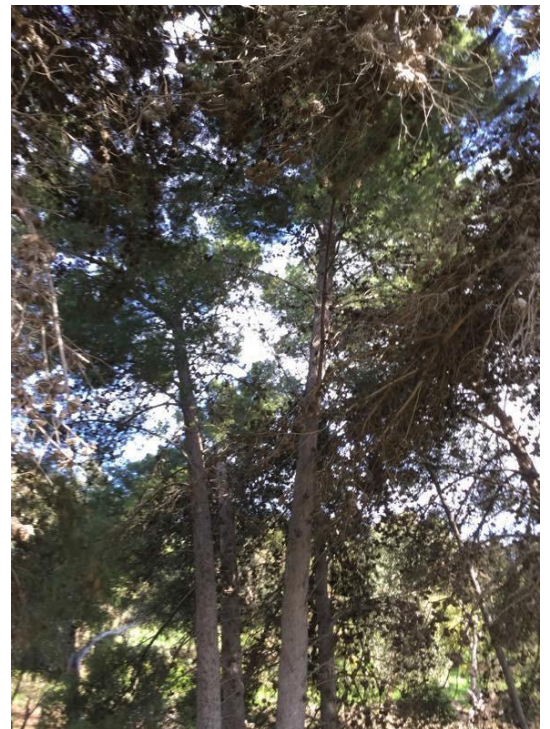
Tree ID	27
Species	<i>Pinus halepensis</i>
Height	5-10m
Health	Poor
Structure	Poor
Circumference	1.2m
Removal Program	1 yr
Comments	Approximately 80% overall crown is dead, crown bias towards southwest. Stunted growth.



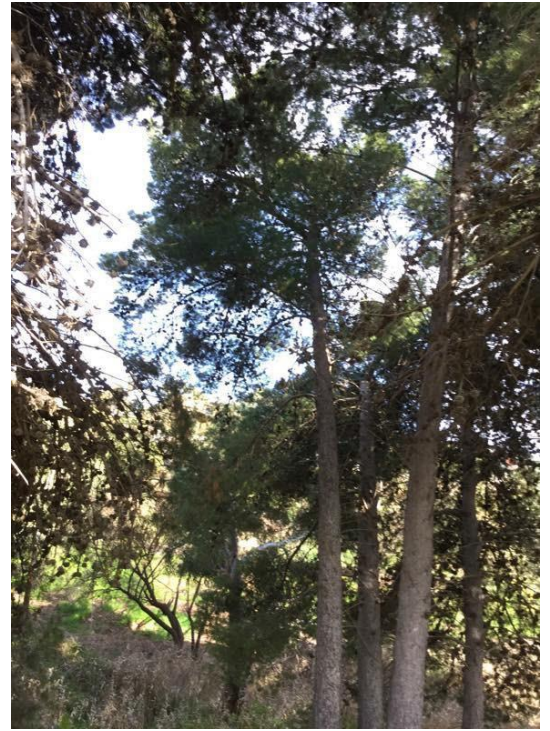
Tree ID	28
Species	<i>Pinus halepensis</i>
Height	5-10m
Health	Poor
Structure	Poor
Circumference	1.25m
Removal Program	1 yr
Comments	Poor form 80% overall crown is dead. Crown bias towards the southwest.



Tree ID	29
Species	<i>Pinus halepensis</i>
Height	10-20m
Health	Fair
Structure	Fair
Circumference	1.36m
Removal Program	2 yr
Comments	Upright crown, approximately 50% crown dieback.



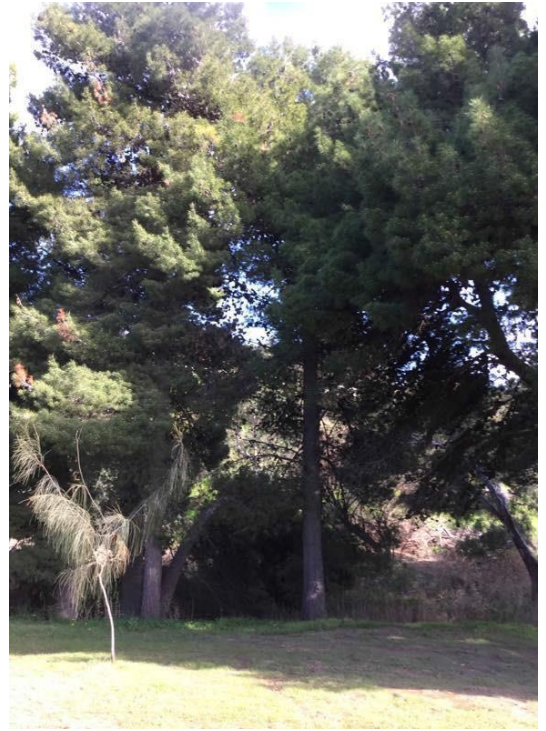
Tree ID	30
Species	<i>Pinus halepensis</i>
Height	10-20m
Health	Fair
Structure	Fair
Circumference	1.23m
Removal Program	2 yr
Comments	Crown bias towards the southeast 50% overall crown is dead.



Tree ID	31
Species	<i>Pinus halepensis</i>
Height	10-20m
Health	Fair
Structure	Fair
Circumference	3.83m
Removal Program	6 yr
Comments	Largest tree, moderate volumes of dead wood inner crown. Crown lift to 3 metres all sides.



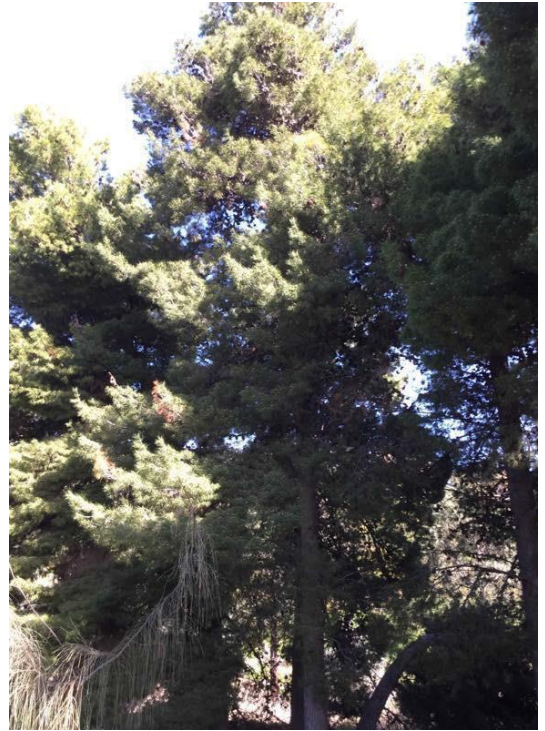
Tree ID	32
Species	<i>Pinus halepensis</i>
Height	10-20m
Health	Fair
Structure	Fair
Circumference	1.95m
Removal Program	3 yr
Comments	Some deadwood inner crown, crown lift 3 metres



Tree ID	33
Species	<i>Pinus halepensis</i>
Height	10-20m
Health	Fair
Structure	Poor
Circumference	1.95, 1.32m
Removal Program	1 yr
Comments	Heavy bias to west, in contact with creek, bifurcation primary union.



Tree ID	34
Species	Pinus halepensis
Height	10-20m
Health	Fair
Structure	Fair
Circumference	1.45m
Removal Program	2 yr
Comments	Crown dieback southern southwestern sides approximately 50%.



Tree ID	35
Species	Pinus halepensis
Height	10-20m
Health	Fair
Structure	Fair
Circumference	1.93m
Removal Program	2 yr
Comments	Approximately 50% crown dieback western side, removed earlier due to prevailing winds.

