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Range Control
Department of Defence
PO Box 21
MILPO
PUCKAPUNYAL VIC 3662

Attention: Mr Andrew Walker

Dear Mr Walker

RE: REFERENCE S023/94
CONSERVATION MANAGEMENT PLAN, FORTUNA VILLA, BENDIGO

Please find enclosed a Draft Tree Report for the above property and a report on the immediate problem of the dying trees. Please note that there are a few removals with immediate priority and it would be useful to document these with photographs - colour slides and print film (preferable black and white)- before these are removed.

Could you please send a copy of these reports to garden staff and other relevant parties at Fortuna. I will continue to work on the management aspects of the conservation plan.

Yours sincerely

F. Gilfedder.

FRANCINE GILFEDDER
09 June 1995

FORTUNA GARDEN MANAGEMENT PLAN
REPORT ON THE DEATH OF TREES ON THE EAST FACING EMBANKMENT AT ENTRY TO 'FORTUNA' IN BENDIGO

Nature of Disease

There has been a number of tree deaths over the years on an embankment in the grounds of 'Fortuna'. This embankment faces east, overlooking the carpark and is viewed directly as you enter the property and, so, is an area of high visual impact. Another area of tree deaths is the south facing embankment located near the intersection of Chum and Streets.

Background

The tree deaths do not appear to be of more common causes such as old age, common pests or diseases, vandalism, etc. As the area is of fill from an old gold mine in the area it is thought the soil may contain contaminates such as cyanide and arsenic. This may be the case, and although these are dangerous to humans and animals, it is doubtful whether they will cause the death of trees.

The possibility of herbicide damage was also considered. However, herbicides used by gardening staff would not normally cause the death of mature trees. It is noted that the Department of Conservation, Forests and Lands did weed control with unknown herbicides on the south facing embankment outside the property line in 1974. While this may have caused tree decline, it is most unlikely that it would have spread into the property to the extent witnessed, especially considering the time scale. The embankment was sprayed with unknown herbicides in c1979 for poplar sucker control (Knoxfield Institute for Horticultural Development, pers.comm.).

Evidence of decay in trees could be seen in the site visit of early June 1995 by the fruiting bodies of a fungus of the *Gymnopilus* or *Armilleria* genus. These were found at the base of several live trees, notably the smooth-leaf elm (*Ulmus minor*) and peppercorn (*Schinus molle* var. *areira*), the latter tree showing signs of stress. Fungal fruiting bodies were also found growing out of the stumps of trees that have been removed, notably, the stump of the large Monterey Cypress which had died suddenly in the last 12 months.

Possible Causes of Disease

While *Gymnopilus* ssp. is a decay causing fungus, it is most likely to attack trees that have become stressed or died from some other cause, rather than cause the death itself. Also, it is not a rapid spreader, and rapid death has been one of the symptoms of the loss of the trees.

The strong possibility is that the decay causing fungus is *Armilleria* ssp., an aggressive root rotting pathogen which has the capacity to spread and is difficult to control. Unlike other pathogens, *Armilleria* doesn't infect the soil but requires a woody food base and resides in dead stumps and even relatively small fragments of infected root provide a food base from which infection may spread. *Armilleria* has a wide host range attacking many native and introduced plants.

Another likely cause is a root rotting fungus such as *Phytophthora cinnamomi* As this infects the soil, its presence can be fairly accurately detected by a 'bate' test of soil and root samples. Knoxfield Institute for Horticultural Development carried out tests in 1991 on foliage and soil but no *Phytophthora* was detected.

Control

Samples of soil and roots and fungi have been taken from the site for testing and identification. It is difficult to suggest control measures until the exact cause of disease is determined. Test results should be known in a few weeks.

In the meantime, basic good hygiene measures should be practised. It is recommended that the existing stumps be removed with as much root material as possible to reduce material for fungi to perpetuate. It is essential to ensure that root material is not spread to other areas of the grounds and disposal should be by burning. Basically until the cause of disease is clarified the embankment and surrounds should be treated as a quarantined area with no removal of plants, roots, stumps or soils to other sections of the property. Care should also be taken with the movement of soil on machinery such as mowers or tractors.

F. GILFEDDER
T. LAWRENCE
K. WALSH
08.06.95

FORTUNA TREE SURVEY
DRAFT 8.6.95

Tree No.	Plan No.	Botanical name	Age approx	Comments	Condition (S= Structure V = Vitality)	Recommendations
6	1	*Schinus molle* var. *areira*	80 - 100	Larger specimens in good health.	S = good V = good	Clean out
6	1	*Schinus molle* var. *areira*	30 - 50	Second and fourth tree from gate end appear to be younger specimens. Evidence of hollows. Leaning towards carpark. Cracks. Basal rots.	S = poor V = poor	Remove (1 - 5 years)
11	1	*Eucalyptus ficifolia* (*?calophylla*)	50 - 60	Multi-stemmed but well attched. Some frost damage.	S= good V = good	Clean out
18	1	*Fraxinus* 'Raywood'	60	Very heavily lopped.	S = poor V = poor	Remove (1 - 5 years)
25	1	*Ulmus minor*	30	Fungal fruiting bodies (*Gymnopilus* spp.or *Armillaria* sp.) at base of tree. Leaf margins appear scorched and leaves have spots.	S = good V = poor	Monitor tree over next 5 - 10 years.
27	1	*Populus canescens*	30 - 40	This group appear to be suckers, possibly from an earlier tree.	S = good V = good	Remove ivy from trunks
33	1	*Schinus molle* var. *areira*	80 - 100	Recent trench to about 400mm deep just north of tree. Fungal fruiting bodies at base of trunk. Location near main entry road and carpark and the tree's lean towards these mean it is no longer an acceptable risk.	S = fair V = poor	Remove ASAP
45	2	*Washingtonia filifera*	100 - 120	(The continuation of these are numbered 303 on plan 6)	S = good V = good	Remove ivy from trunks ASAP. Remove wire holding telphone line.
???	2	*Populus canescens*	50 - 60	Branch of poplar is rubbing on palm.	S = good V = good	Remove poplar higher up bank when practical (1 -5 years)
???	2	*Schinus molle* var. *areira*	50 - 60	Tree is dead and is covered in mature ivy.	S = very poor V = very poor	Urgent removal ASAP. Care will be needed not to damage palm.
???	2	*Populus canescens*	50 - 60	Interfering with palm. Has a co-dominant leader.	S = very poor V = good	Remove (1 - 5 years)

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49	2	*Cupressus ?funebris*	50 - 60	Appears to be a a weeping golden cultivar of *Cupressus macrocarpa* that is reverting. Not *C. funebris.*	S = good V = ?good	Prune out reversion. ?Replace with *C. funebris*
62	2	*Cedrus deodara*	60 - 70	Showed golden tips so may be *C. deodara* 'Aurea'	S = good V = good	Deadwood. Lift canopy.
65	2	*Sequioadendron giganteum*	?120+	Top cut out of tree. Bitumen road over root zone.	S = fair V = good	Clean out.
97	2	*Araucaria heterophylla*	?120+	Basal wound. Concrete over root zone.	S = good V = good	Clean out.
98	2	*Araucaria bidwillii*	?120+	Basal wound. Concrete over root zone.	S = good V = good	Clean out
99	2	*Brachychiton acerifolium*	?120+	Concrete over root zone.	S = good V = good	Prune to clear building.
172	3	*Araucaria heterophylla*	80+	Older trees on higher ground. Planted in row. (Refer also to No. 335)	S = good V = good	Deadwood
178	3	*Lagunaria patersonia*	80 - 100	Substantial specimen for this species.	S = poor V = good	Cable brace. Deadwood. Leave wall as is;removal would damage tree.
192	3	*Fraxinus* 'Raywood'	60	Lopped. Co-dominant leaders.	S = poor V = fair	Remove (1 - 5 years)
???	3	*Quercus palustris*	30 - 40	Co-dominant leaders.	S = poor V = good	Canopy raise. Cable brace. Deadwood
204	3	*Pinus pinaster*	80 - 100	Fill over part of root zone. Recent trenching has resulted in root damage. Some signs of stress.	S = good V = good	Clean out. Monitor for affects of root damage. Reassess in five years time.
205	3	*Pinus pinea*	80 - 100	Fill over part of root zone. Recent trenching has resulted in root damage. Some signs of stress.	S = good V = good	Clean out. Monitor for affects of root damage. Reassess in five years time.
213	3	*Cupressus macrocarpa* 'Horizontalis Aurea'	40 - 50	Powerlines right through canopy.	S = fair V = good	Prune for clearance of powerline and nearby building.
216	3	*Eucalyptus globulus* subsp. *globulus*	100+	Growing on embankment.	S = good V = good	Remove seedling beside. Deadwood.
217	3	*Eucalyptus globulus* subsp. *globulus*	100+	Growing on embankment. Evidence of decay (bracket fungus) at 4 metres.	S = ?good V = good	Remove (1 - 5 years) because of unacceptable risk in proximity to buildings. Remove seedlings but retain larger one.

336 x 4	7	*Populus canescens*	50 - 60	Group of trees. Excessive lean, particularly into Norfolk Island Pines. Light competition.	S = poor V = good	Remove group (1 - 5 years)
338	7	*Cupressus lusitanica*	80 - 100	-	S = good V = good	Deadwood. Remove stubs.
339	7	*Cupressus lusitanica*	80 - 100	Has a very broad canopy.	S = good V = good	Deadwood. Remove stubs.
340	7	*Fraxinus* 'Raywood'	60	Lopped. Root damage from mowers.	S = fair V= good	Clean out. Remove limb over tennis court fence ASAP. Remove tree in long term (10 years +).
358	7	*Populus deltoides*	30 - 40	Root damage and decay. Bifurcated main stem.	S = poor V = good	Remove in 5 - 10 years.
374	7	*Populus canscens*	80 - 100	Some evidence of Poplar Canker in canopy but generally OK.	S = good V = good	Clean out.
376	7	*Quercus ?robur Q. ?canariensis*	40 - 60	Lopped. Fill over root system and trunk. Root stress.	S = fair V = fair	Clean out
383	8	*Ficus macrophylla*	100+	Growing very close to fenceline	S = good V = good	Clean out. Remove *Pittosporum* sp. seedling ASAP.
???	8	*Grevillea robusta*	80 +	Growing through canopy of 383.	S = good V = good	Clean out
386	8	*Schinus molle* var. *areira*	?50	Basal decay. Beehive in cavity.	S = very poor V = fair	Remove ASAP
388	8	*Cupressus lusitanica*	60 - 80	Fill over part of root zone. Possible root damage. Possibly new trench through root zone. XXX FRANCINEPLEASE CHECK XXX	S = poor V = fair	Remove tree (5 - 10 years).

NOTES:

1. All tree works should be supervised and performed by suitably qualified arborists to recognised industry standards.

2. 'Clean Out' means remove deadwood, remove stubs, storm damage, rubbing branches etc.

3. Removals have been prioritised as ASAP (as soon as possible), 1 - 5 years and 5 - 10 years and 10 years plus.

4. The survey was carried out by Trevor Lawrence assisted by Kevin Walsh on 2 June 1995.