Heritage
VICTORIA

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31 March 2006

Mr Brian Walsh
22A Fellows Street
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Dear Mr Walsh

Re: Kew Residential Services Site – Bishops Pine

I write further to my letters of 22 January and 12 February 2006 in relation to the above matters, and also in response to your electronic communication 13 March 2006.

In response to the report and recommendation received from Ian Smith, Senior Forest Pathologist, and also the concerns raised by the Kew Cottages Coalition, Walkers sought further advice from Robert Galbraith & Associates on this matter.

The advice provided to Walkers on 15 March 2006 is set out below:

In order for the Phytophthora cinnamomi (P.c.) root rot fungus to cause a problem to trees, three conditions have to be satisfied:

Condition 1 The P.c. has to be present. P.c. appears to be present in most soils, although in a quiescent state. It may only establish and become a significant pathogen if the host tree is susceptible and the environment is right.

Condition 2 - Host Susceptibility. Some species are more susceptible to others in their resistance to P.c. Individuals within species differ significantly. Furthermore, if the tree is stressed it is more susceptible to infection as it has less ability to combat its proliferation within the root system. Little is known about the susceptibility of Bishops Pine here in Victoria. However it is apparent the tree is somewhat stunted and given the presence of old dead branches, well exposed to light, it is obvious the tree has been stressed for a long time. I understand 3 years ago Kew Residential Services called in an arboricultural consulting firm to examine the tree and provide recommendations, because the tree was looking stressed. The advice provided was to mulch and irrigate the tree. An irrigation system was constructed in the mulch around the tree. This advice is understandable given the drought conditions prevailing at the time. As is obviously apparent, the tree did not respond well. I am sure that its stressed state resulted in it being much more susceptible to attack by P.c.

The other species in the area are oaks, sheoakes and Monterey Pines. Of these, the Monterey Pine is the only species that is likely to be susceptible if the conditions are right. There is a dying pine nearby.

Condition 3 Soil Conditions. P.c. root rot is favoured by the following conditions, (according to Marks et al 1975 Forests Commission Vic):

(a) Saturation of soil for short periods of time, usually after heavy rain or as a result of run-off from hill slopes and drains

(b) Poor internal soil drainage caused by either poorly developed crumb structure or by clay rich layers close to the surface

(c) Soils of low fertility containing little organic matter

(d) Soil temperatures above 16C.

Certainly saturated soil conditions were discovered by Ian Smith at 90cm + depth.

It is probable this stressed tree has been triggered into this state over the last few years as a result of inadvertent over irrigation.

In terms of what action was required, the report recommended as follows:

- *The recommendation to cease all irrigation to this tree has been in place to the staff of the Kew Residential Services now for several weeks. This must stay in place.*

- *The application to the soil with the fungicide "Ridomil" as per the recommendations by Ian Smith has begun and will be repeated several times this autumn.*

- *Auguring of the soil to at least a metre depth near this tree, and near others in the vicinity, will take place on Thursday. This will be repeated fortnightly if necessary to monitor levels. If high water tables persist, plumbing contractors or experts in the field may have to be approached to help determine the source of the water and whether it is a normal phenomenon or not.*

In addition to this advice, Walkers stated that tree protection fencing would be placed around the tree.

Subsequent to the receipt of this advice a meeting was held on site on 16 March 2006 with an officer from Heritage Victoria to discuss the recommendations from Robert Galbraith & Associates. As a result of this meeting the following additional works were agreed:

1. Provide tree protection fencing to tree no. 331 [in addition to the Bishops Pine] and rake over mulch to determine if water runoff from car park remains evident.
2. Provide kerbing and or spoon drain to north edge of upper level car park along with drainage discharging to existing SEP to eliminate run off water.
3. Investigate and repair as necessary the existing underground water, sewer and stormwater services in the surrounding area.

I have been advised that works 1 and 2 have been undertaken and contractors are undertaking works in relation to item 3.

I further advise, that in response to the local media reporting on this issue, Ian Smith, who provided the initial report on *Phytophthora cinnamomi* wrote to Walkers to clarify the situation in relation to the Bishops Pine. He wrote:

"There are three aspects on the development of any disease and which together are what pathologists call the 'Disease Triangle'. Without any of these there can't be disease:

1. **The presence of a pathogen and its virulence**. In this case *Phytophthora cinnamomi* is a proven primary pathogen of many species of trees and shrubs. It is widespread across Melbourne with records from the City of Melbourne to the Shire of Yarra Ranges and beyond. The pathogen has been listed as a threatening process subject to a National Threat Abatement Plan (http://www.deh.gov.au/biodiversity/threatened/publications/tap/phytophthora/index.html) and a corresponding draft State Strategy http://www.dpi.vic.gov.au/DSE/nrenpa.nsf/LinkView/9806CA9BCCA6CD68CA2570DE001D13E5FD09C49CA6D3A758CA25705900128933 which is currently open for comment. This strategy provides a rough map showing locations of the pathogen across Victoria.

2. **The presence of a susceptible host**. Species vary considerably in their susceptibility to the pathogen. To my knowledge most woody trees and shrubs can support the pathogen to some degree within their fine roots systems and so the pathogen can be present in a soil without the host showing disease symptoms. This is one reason why many nurseries are the cause of distribution of the pathogen. It is only in some species where the pathogen invades the major roots and stem leading to tree death. The degree to which the pathogen can invade is controlled by the inherent resistance in the tree, its physiological health and the environment in which it is growing (3rd aspect). Unfortunately I could find little in the literature regarding the susceptibility of Bishop Pine to *Phytophthora cinnamomi* and so we can only say that the pathogen was associated with the tree decline unless there is someone willing to support some research to test this species. The tree's physiological health and resistance would also be affected by its age.

3. **The presence of an environment conducive to a compatible interaction between host and the environment.** For disease development, *Phytophthora's* generally require soils that are low in organic matter (high organic matter soils contain organisms which compete strongly against *Phytophthora* species in the soil), are intermittently waterlogged (Phytophthora's require free water for their tadpole like microscopic zoospores to swim through the soil to attack the fine root systems) and have soil temperatures that exceed 10-15°C (optimum 22-25°C) but not above 35°C. This part of disease development is the main reason why we don't see a lot more disease across Victoria. For example the Central Highland's of Victoria is too cold and soils well drained and high in organic matter. Areas of North-west Victoria are too dry etc. In the case of this Bishop Pine, soils at depth (60-90 cm) were wet (reasons why are currently unknown to me but could be either leaking pipes or over watering), which would have provided conditions suitable for disease development. However the fact that the surface soils were dry would have led to a conclusion that the cause of the dieback could be drought stress and thus the reason for the mulch and I believe the watering regime instituted. This still may be the reason why the tree was initially dying and that the presence of the pathogen is only incidental.

In this case we have a tree of unknown susceptibility, possibly predisposed by physiological age and environmental parameters. It's also probable that the pathogen may have been on the site for a long time given that pathogen was mainly isolated from depth in the soil, and that usually, even with sensitive species, trees can take 1-5 years (or even longer) to die.

The potential for it to spread from this current location is considered low if the water issues are dealt with, simple hygiene is undertaken on works surrounding the tree and the mulch is maintained to prevent surface movement. There is little further risk to the Yarra Bend Park as there are several known infested sites feeding into the Yarra that provide opportunity for the vegetation within the Park to become infected. In any case, the majority of vegetation communities within the park are considered tolerant of the pathogen."

The recommendation that works on site should incorporate some hygiene requirements is actively being addressed by Walkers.

From the information received and discussions with various parties on this matter, including the Biodiversity and Natural Resources section of the Department of Sustainability and Environment, which produced the *Draft Strategic Plan for the management of Phytophthora cinnamomi in Victoria*, I am satisfied that the appropriate measures required are taking place to deal with this issue.

In relation to the Bishops Pine, unfortunately it is likely that the tree is beyond saving. A replacement tree will be required to be planted in due course.

I trust this additional information on the current situation on site is of assistance, but do not hesitate to contact Ray Osborne on 9637 9495.

Yours sincerely

RAY OSBORNE
ACTING EXECUTIVE DIRECTOR

cc:

- Helen Lardner, HLCD Pty Ltd
- John Ball, Walker Corporation
- Peter Anderson, DSE Regional Office, Box Hill
- National Trust of Victoria
- City of Boroondara