BARK Environmental
Professional Consulting Services for Govt. / Mining / Private / Community
ABN: 98607090060

PO Box 1871
BUSSELTON WA 6280
E: barkenv@gmail.com
M: 0400 208 582

3 June 2015

City of Bunbury
PO Box 21
BUNBURY WA 6231

Att: Ben Deeley, Team Leader Sustainability

Lot 298 Winthrop Avenue, 938 Somerville Drive (in part) and Lot 790 Oriel Court
***Phytophthora* Dieback Assessment**

Dear Ben,

Thank you for commissioning BARK Environmental to assess the occurrence of *Phytophthora* Dieback within the Lots noted above. It is understood that these areas are potential development sites where typically vegetation clearing and earthworks can occur that present a risk of introducing and spreading Phytophthora – if hygiene is not managed. This assessment was completed in February 2015 by Bruno Rikli who is registered with the Department of Parks and Wildlife (DPaW) as a qualified Dieback Interpreter. The methodology was based on that described in the *Phytophthora Dieback Interpreter Procedures for lands managed by the department. Working Draft 2* (DPaW, 01 Jan 2015).

A desktop search revealed that Lots 298 and 938 were previously interpreted in 2008 by Glevan Consulting and at that time were classed largely as Dieback-Uninfested during a broader assessment of Manea Park. At that time, one area towards the SE corner of Lot 938 was found to be Dieback-Infested and was demarcated with flagging tape with remaining parts Uninfested. In 2012 a wildfire burnt much of the vegetation within these two Lots, including the Infested area field demarcation. A subsequent linear Dieback interpretation for the adjacent Somerville Drive road project extended into these areas and parts were identified as "Unmappable" because of the 2012 fire damage that did not enable interpretation (BARK Environmental, 2013). However, as a precautionary approach to managing Dieback in this area, during BARK Environmental's 2013 interpretation it was deemed necessary to re-demarcate the 2008 Infested area boundary largely within Lot 938 by extrapolating its location from the former mapping. This was undertaken as a precautionary approach to assist planning hygiene management for the adjacent road project activities. As discussed, Lot 790 has been excluded from this assessment primarily due to its small vegetated size (<1 ha), open perimeter and accessibility to public in a residential area that all present ongoing risks for disease spread into this Lot.

The following section presents the results from this 2015 assessment.

Results

Lot 298 Winthrop Avenue

- Mapped Assessment Result – the total area assessed is 2.28 ha of which 2.23 ha is Uninfested and 0.05 ha is Infested.

Lot 298 comprises a plant community type described as: *Eucalyptus marginata, Open Woodland over Banksia attenuata, Xylomlum occidentale Low woodland over Kunzea glabrescens Tall Open Shrubland over Melaleuca thymoides, Xanthorrhoea brunonis, Macrozamia riedlei, Stirlingia latifolia Shrubland over Hibbertia hypericoides Open Low Heath over white grey sand over pale yellow sand* per the *Draft Amended College Grove Joint Venture Project, Plant Community Descriptions* (City of Bunbury, 2015).

The vegetation condition within Lot 298 has been rated as Excellent according to the Keighery (2004) rating scale, except for a very small part in the SE corner where it is in Degraded condition due to clearing disturbance. The vegetation within Lot 298 had recovered adequately since the 2012 fire to enable this 2015 interpretation and was classed as Dieback-Uninfested, except the SE corner that was included in the buffer of the Infested boundary. There is no disease expression or impact within this area to report at this time. Two firebreak tracks traverse Lot 298 in the north from east-west. The southern-most track is gated at both ends and appears not to have been used recently that could present a risk of spreading the pathogen. The northern-most track is not gated and has been scrub-rolled estimated within the last 12 months with unknown hygiene. There is no evidence that this activity occurred in moist-soil conditions or of any new disease symptoms or spot infestations developing along the track in its adjacent vegetation. Therefore, it is reasonable to assume that no incipient disease is present along this track without further evidence and this conclusion is supported by the fact that vegetation along this track has remained in Excellent condition.

Lot 938 Somerville Drive (south part)

- Mapped Assessment Result – this total assessed area is 1.63 ha of which 0.30 ha is Infested in its SE corner and 1.33 ha is Uninfested in the remaining area.

Lot 938 has the same vegetation community type as described above for Lot 298 that includes plant and tree species highly susceptible to *Phytophthora* disease.

The vegetation condition is Excellent in the Uninfested area according to the Keighery (2004) rating scale. Vegetation within Lot 298 had recovered adequately since the 2012 fire to enable interpretation in 2015 and no recent evidence of soil-moving activities was noted other than that mentioned above along one track during firebreak maintenance. The two firebreak tracks traversing Lot 298 in the north that extend east-west continue through to Lot 938 and terminate at Somerville Drive's verge. There is also a gate situated at the SE corner of Lot 938 for fire emergency access marked "033"on the attached figure. None of these firebreak access tracks have been classed as a Disease Risk Road for the reasons given above in the results for Lot 298.

Disease expression was not obvious and at the time of this assessment and was masked somewhat by regeneration post a fire. Impact was observed in *Banksia attenuata* deaths of various ages and the occasional *Xanthorrhoea brunonis* death, but the later species appears to have been affected more by a form of leaf rust disease so could not be relied on as a key indicator species during this assessment. In addition, a phosphite spray treatment was applied along the eastern boundary of Lot 938 in 2013 that may have successfully suppressed the disease reducing its impact in this area. The Infested boundary has been demarcated with 25mm wide fluoro orange flagging tape with the knots facing the Infested area that aligns closely to the demarcation line of 2008. Immediately south of Lot 938 the vegetation has been cleared with scattered *B. attenuata* saplings growing over sand and introduced weeds.

One sample was collected during this 2015 interpretation within Lot 938 from a *X. brunonis* with some yellowing leaves within the Uninfested area but in proximity to the demarcated Infested boundary. This sample (S1) was collected at MGA Z50 reference 50H 375159 6306513 and tested negative for *Phytophthora* and its affected leaf discolouration was attributed to some form of leaf disease. Sufficient evidence has been found in this locality to confirm that *Phytophthora* is however present. Positive sample results for *Phytophthora cinnamomi* were previously recorded within 100m north east and 30m south east of this infestation, plus there is a high-impact infestation situated at the proximate entrance to the Pultanea Loop walk trail that extends to within Manea Park (BARK, 2013).

790 Oriel Court

- Mapped Assessment Result – this entire area of 0.62 ha is "Excluded".

Lot 790 comprises a plant community type described as: *Eucalyptus marginata and Banksia attenuata Open Forest over Banksia attenuata and Xylomelum occidentalis Low Woodland over Melaleuca thymoides, Jacksonia horrida and Stirlingia latifolia Shrubland over Hibbertia hypericoides, Xanthorrhoea brunonis and Dasypogon bromelifolius and Phlebocarya ciliata Open Herbland* per the *Draft Amended College Grove Joint Venture Project, Plant Community Descriptions* (City of Bunbury, 2015).

In consultation with the City of Bunbury the total assessed area within Lot 790 was allocated the Excluded category (0.62 ha) based on a longer-term management perspective and the intended land use. It is also narrow in shape, contains a small area of fragmented vegetation (<1 ha), is exposed to vectoring such as not fenced to limit public access, community-plantings are present with unknown hygiene along its southern boundary and there is disturbance along parts of its perimeter. Note, should no development occur within this area, phosphite treatment can assist protecting this remnant vegetation, some of which has been rated to be in Excellent condition (City of Bunbury, 2015).

Recommendations

It is widely documented that the spread of *Phytophthora* is facilitated by the movement of soil, plant material or water that can carry inoculum. It can spread via human vectoring such as from footwear, vehicle tyres and machinery carrying and depositing infected soil or vegetation. To assist minimising the risk of spread and maintaining vegetation health in the abovementioned Lots and adjoining vegetated areas, the following is recommended.

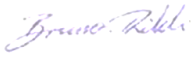
1. Protectable and Unprotectable areas should be determined when the future development within each Lot is known.
2. A Hygiene Management Plan should be developed for any clearing, earthworks and/or utilities operations within the assessed areas herein.
3. Prior to working in these areas, all site personnel should be inducted in appropriate Dieback Hygiene.
4. Ideally schedule clearing/earthworks in summer dry-soil conditions to minimise the clean-down effort otherwise needed to remove wet-soil/mud at any hygiene management points on site.
5. If clearing/earthworks must occur in wet soil conditions, separate these activities between Protectable and Unprotectable areas i.e. clean-down before entering Uninfested Protedctable areas and when exiting the construction site to avoid cross-contamination.
6. It is best-practice for all machinery, vehicles and equipment to arrive at construction sites already cleaned free of soil, weed seeds and organic material.
7. If any vegetation / soil is cleared within the Dieback-Infested area or "Excluded" area it should be recycled in-situ where possible or be carted to an approved area where it does not present a disease risk to any surrounding vulnerable vegetation.

8. Although Lot 790 was “Excluded” from this assessment, it does contain in-tact native vegetation that may have some ecological values. This should be considered when planning any future developments or activities in this area, including any phosphite treatment (refer item 9 below).
9. For all Lots consider phosphite treatment in any retained areas of native vegetation, particularly adjacent to any clearing/disturbance activity, including within Lot 790.
10. Please note, according to current DPaW methodology, the attached map has age limitations as *Phytophthora* disease can spread autonomously over time. Therefore, the map prepared herein expires after one year (February 2016). However, this map can be revalidated (rechecked) for up to three years for use after interpretation (February 2018).

If you have any questions regarding this interpretation, please contact Bruno Rikli on 0400 208 582.

Thank you for your interest and participation in managing this significant biological issue.

Yours sincerely,



Bruno Rikli
Managing Director
BARK Environmental
B.Sci, Cert CALM, Dieback Interpreter

BARK Environmental

Figure 1: Lot 298, 790 and 938 (South), College Grove
Phytophthora Occurrence Map

MAP AGE LIMITS
This map expires after 1 yr (Feb 2016) and can be revalidated (rechecked) annually for up to 3 yrs after interpretation (Feb 2018)

0 10 20 30 40 50
Meters

SCALE: 1:1,500 @A4

Interpreted by B. Rikli (Feb 2015)
Method: Transect Assessment.
Drawn G. Harewood (Feb 2015)