



Fuel Management and Tree Hazard Collector Apps

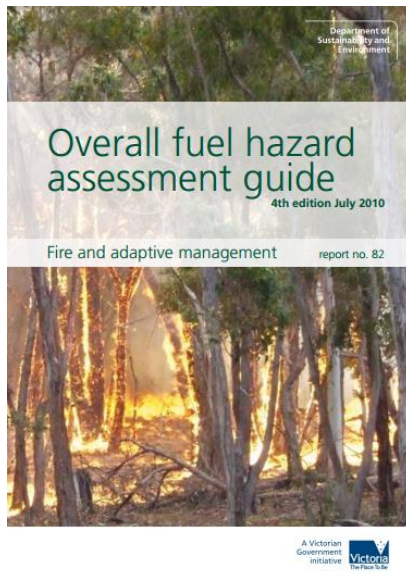
Sam Hillman and John Towt

Overview

- Build process – understanding user story
- Bushfire Prevention Patrol Application
- Burn Reccie/Fuel Management Integration
- Hazardous Tree integration

Build Process

Understanding the current user story



Appendix 2. Sample fuel assessment field work form

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|-----------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Date Assessed: | | | | | | | | | | | | | | | | Assessor: | | | | | | | | | | | | | | | |
| Sampling Location: | | | | | | | | | | | | | | | | Veg Type: | | | | | | | | | | | | | | | |

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Plot Information | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Plot No. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Zone: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Easting (GDA94 MGA UTM): | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Northing (GDA94 MGA UTM): | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|----------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|---|
| Canopy (20m radius) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Canopy Ave Height to Top: | | | | | | | | | | | | | | | | m | | | | | | | | | | | | | | | | m | | | | | | | | | | | | | | | | m |
| Canopy Ave Height to Base: | | | | | | | | | | | | | | | | m | | | | | | | | | | | | | | | | m | | | | | | | | | | | | | | | | m |

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Bark fuel (20m radius) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Stringybark Fuel Hazard: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ribbon Bark Fuel Hazard: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Other Bark Fuel Hazard: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Note: NP is bark type not present. Use the highest bark hazard rating to determine Overall Fuel Hazard.

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|---|
| Elevated fuel layer (10m radius) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Elevated % Cover: | | | | | | | | | | | | | | | | % | | | | | | | | | | | | | | | | % | | | | | | | | | | | | | | | | % |
| Elevated % Dead: | | | | | | | | | | | | | | | | % | | | | | | | | | | | | | | | | % | | | | | | | | | | | | | | | | % |
| Elevated Fuel Ave Height (m): | | | | | | | | | | | | | | | | m | | | | | | | | | | | | | | | | m | | | | | | | | | | | | | | | | m |
| Elevated Fuel Hazard: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|----|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|----|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|----|
| Near-surface fuel layer (10m radius) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Near-surface % Cover: | | | | | | | | | | | | | | | | % | | | | | | | | | | | | | | | | % | | | | | | | | | | | | | | | | % |
| Near-surface % Dead: | | | | | | | | | | | | | | | | % | | | | | | | | | | | | | | | | % | | | | | | | | | | | | | | | | % |
| NS Ave Height (cm): | | | | | | | | | | | | | | | | cm | | | | | | | | | | | | | | | | cm | | | | | | | | | | | | | | | | cm |
| NS Fuel Hazard: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|----|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|----|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|----|
| Surface fuel layer (10m radius) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Surface Litter % Cover: | | | | | | | | | | | | | | | | % | | | | | | | | | | | | | | | | % | | | | | | | | | | | | | | | | % |
| Ave Litter Depth (mm): | | | | | | | | | | | | | | | | mm | | | | | | | | | | | | | | | | mm | | | | | | | | | | | | | | | | mm |
| Surface Fuel Hazard | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Combined Surface and Near-surface Fine Fuel Hazard calculation (refer Section 7) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Combined Hazard | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Overall Fuel Hazard calculation (refer Section 8) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Overall Fuel Hazard | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|-----|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|----|
| Are the plots representative of the average fuels across the sampling location? | | | | | | | | | | | | | | | | Yes | | | | | | | | | | | | | | | | No |
|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|-----|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|----|

If no, explain any significant difference between plots. For example, wet gully runs through the sampling area, no plots were located in this gully.



Build Process

Understanding the environment in which we work



Bushfire Prevention Patrol

- Users wanted to digitise current form during Forest Patrol.
- Built for OCFO as a trial
- Successfully implemented
- Future developments to make changes to Compliance Application

Burn Reccie - Fuel Management

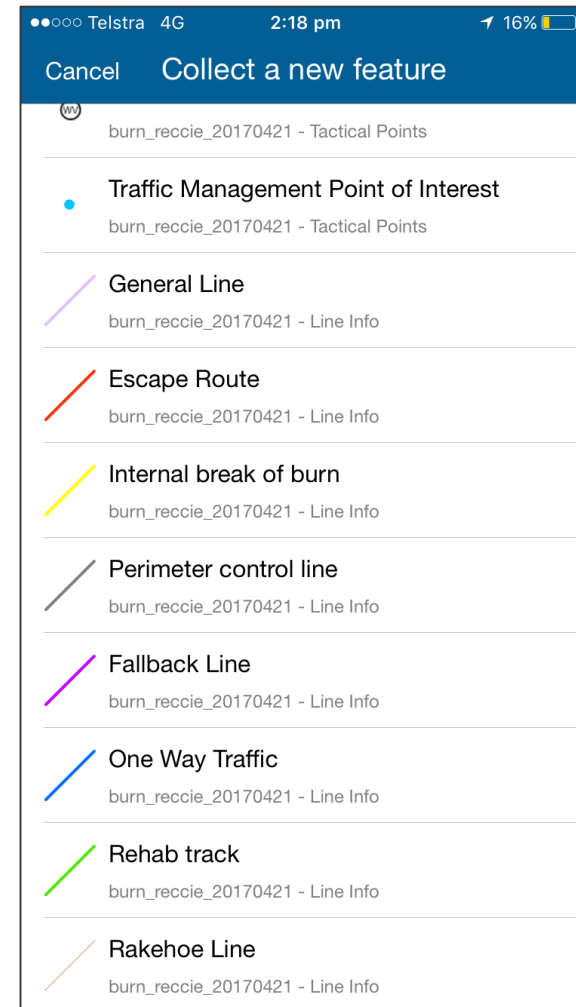
- Current method:
 - Burn reccie sheet
 - Handheld GPS
 - Digital Camera
- Labour intensive
- Still important to maintain this process
- Arc Collector – brings all existing tools into one

| PLANNED BURN RECONNAISSANCE RECORD | | |
|--|---|--|
| START DATE: | FINISH DATE: | PERSON DAYS: |
| BURN NAME: | RECCE COMPLETE: | |
| BURN NUMBER: | BURN DIVISION: | |
| PERSON/S CONDUCTING RECCE: | | |
| EQUIPMENT CHECKLIST | | |
| <input type="checkbox"/> GPS / BATTERIES | <input type="checkbox"/> MAPS | <input type="checkbox"/> CAMERA / BATTERIES |
| <input type="checkbox"/> PORTABLE RADIO / BATTERIES | <input type="checkbox"/> COMMUNICATIONS PLAN | <input type="checkbox"/> 1 st AID KIT |
| <input type="checkbox"/> APPROP. NO. AND TYPE OF VEHICLES | <input type="checkbox"/> OHS DOCUMENTATION (SW/PS, SSS) | <input type="checkbox"/> PRE VALUES CHECK |
| 1. PERIMETER / CONTROL LINE (Aim for minimum 3m mineral earth) | | |
| Prompts: | | |
| 1. Have ALL control line options been considered? What's the preferred option? | | |
| GPS track entire external perimeter of burn and potential internal breaks. | | |



Burn Reccie - Fuel Management

- Burn Reccie Collector tool
- Replicates symbology in eMap
 - Points
 - Lines
 - No polygons at this stage
 - FMC
- Data to feed back into eMap
- Distributed via workcentre accounts



Burn Reccie - Fuel Management

●●○○ Telstra 4G 8:11 am 56%

Cancel Collect a new feature

- ☒ **Asset - Not Defendable**
burn_reccie_20170421 - Tactical_Points_General
- ☐ **Tower**
burn_reccie_20170421 - Tactical_Points_General
- ☐ **Helipad**
burn_reccie_20170421 - Tactical_Points_General
- ☐ **Significant Flora**
burn_reccie_20170421 - Tactical_Points_General
- ☐ **Water Point**
burn_reccie_20170421 - Tactical_Points_General
- ☐ **Air Strip**
burn_reccie_20170421 - Tactical_Points_General
- ☒ **Asset - Defendable**
burn_reccie_20170421 - Tactical_Points_General
- ☐ **Asset**
burn_reccie_20170421 - Tactical_Points_General
- ☒ **Retardant Air Base**
burn_reccie_20170421 - Tactical_Points_General
- ☐ **Wash Down Point**

●●○○ Telstra 4G 8:08 am 56%

Cancel Submit

Location
X: 2,522,937.55 Y: 2,410,033.51
Tactical_Points_General: Asset - Not Defendable 5 m

Category
Asset - Not Defendable >

Label >

Description >

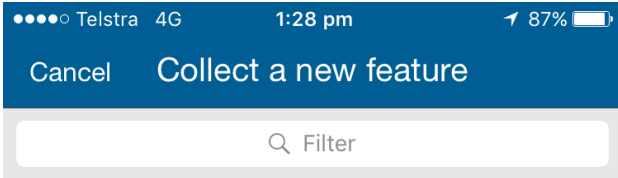
Fuel Management – Tree Hazard










- Tree hazard is a primary safety concern for FFM
- Integration of forms in burn reccie.
- Stand alone map can also be used during post ignition - Tree Impact
- Incorporates with new tool development
 - Tree Hazard Contingency Plan
- Export to multiple formats

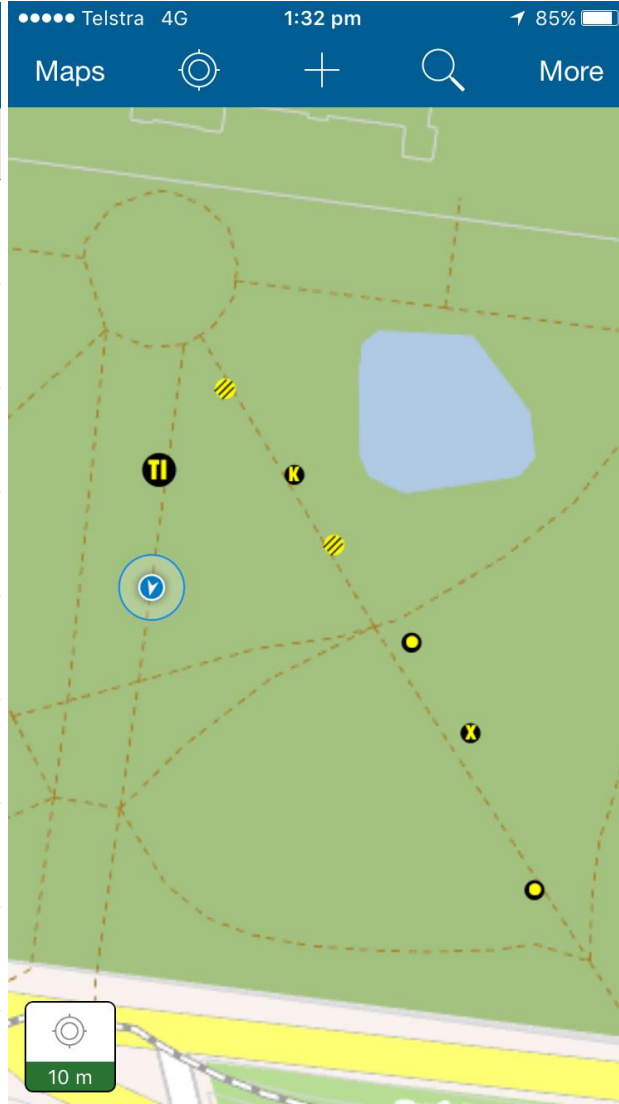



Tree Hazard – Arc Collector App – Project Snapshot

Project Status: In Progress



-  **Tree Impact Collection**
burn_reccie_20170421 - Tree Impact Collection
-  **Dot tree**
burn_reccie_20170421 - Tree Hazard Collection
-  **Exclusion Zone**
burn_reccie_20170421 - Tree Hazard Collection
-  **K Tree or CPD Tree**
burn_reccie_20170421 - Tree Hazard Collection
-  **X Tree**
burn_reccie_20170421 - Tree Hazard Collection
-  **Asset - Not Defendable**
burn_reccie_20170421 - Tactical_Points_General
-  **Tower**
burn_reccie_20170421 - Tactical_Points_General
-  **Helipad**
burn_reccie_20170421 - Tactical_Points_General
-  **Significant Flora**
burn_reccie_20170421 - Tactical_Points_General



 **Location**
X: 2,497,479.87 Y: 2,410,555.17

Tree Impact Collection:

Location (track name) >

TIME_LOG >

Area impacted >

Distance of tree stump (m) from work area (if tree feel fr... >

Diameter of impact area (m)
0.00 >

Impact type >

Cause or defect type contributing to impact >

Further explanation of cause >

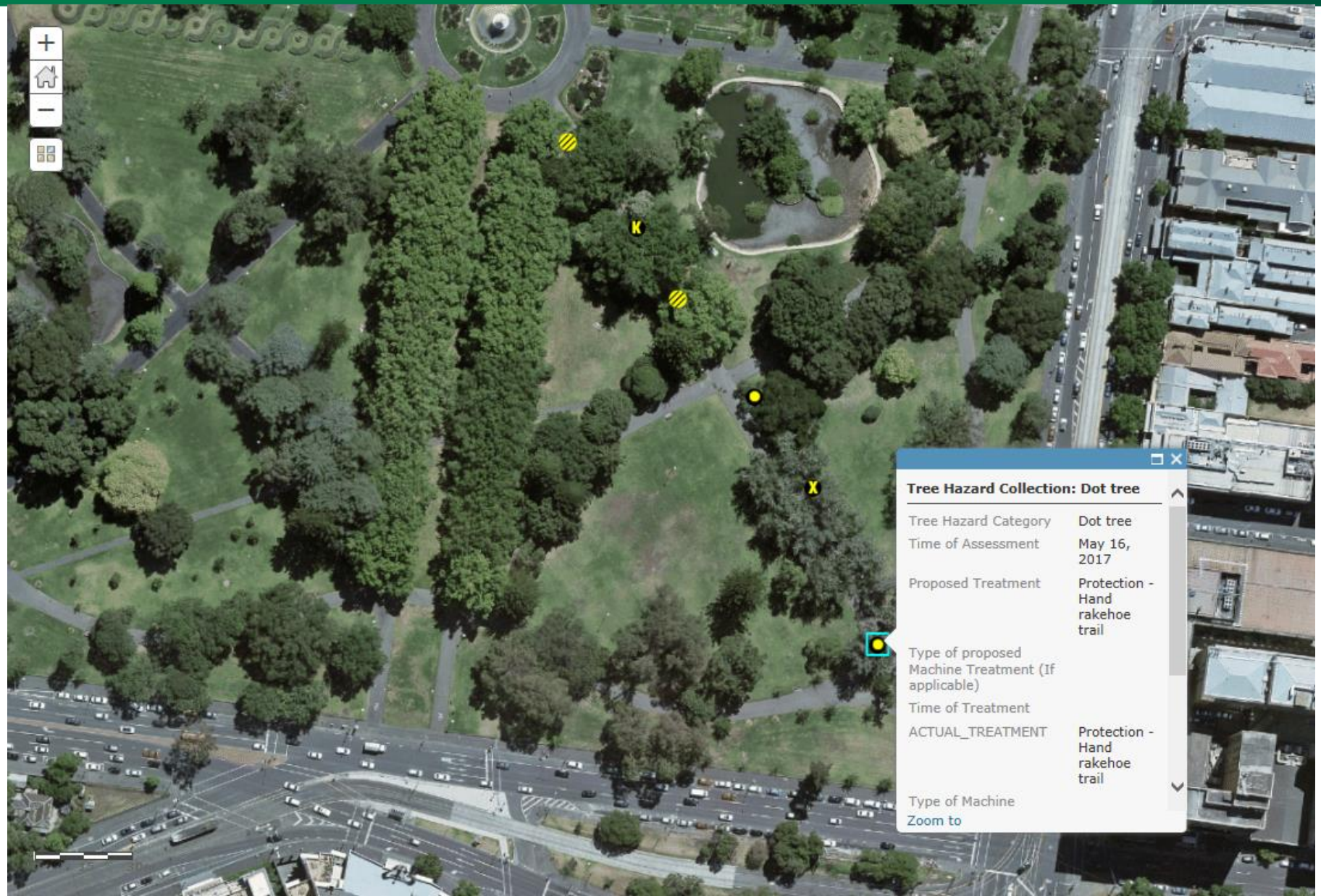
Diameter of tree / limb section (cm)
0.00 >

Further details for tree section >

Was the impacted area part of an exclusion zone? >

Were personnel patrolling or working in area at time of t... >

Tree Hazard – Arc Collector App – Project Snapshot



Tree Hazard – Arc Collector App – Project Snapshot

| Tree Hazard Collection (6 features, 0 selected) | | | | | | | | | | |
|---|----------------------|----------------------|---------------------------------|--|----------------------|---------------------------------|-------------------|--------------------|-----------------|-------------------------------------|
| OBJEC... | Tree Hazard Cat... | Time of Assess... | Proposed Treat... | Type of propos... | Time of Treatment | ACTUAL_TREA... | Type of Machin... | Tree type | Tree diam... | |
| 1 | Dot tree | 5/16/17, 1:19 PM | Protection - Hand rakehoe trail | | | Protection - Hand rakehoe trail | | Stringy | | |
| 2 | X Tree | 5/16/17, 1:21 PM | Hand falling | | | | | | 80 | |
| 3 | Dot tree | 5/16/17, 1:22 PM | Protection - Machine Clear | | | | | | 60 | |
| 4 | K Tree or CPD Tree | 5/16/17, 1:25 PM | Exclusion zone | | 5/16/17, 1:25 PM | Exclusion zone | | | | |
| A | B | C | D | E | F | G | H | I | J | K |
| OBJECTID | Tree Hazard Category | Time of Assessment | Proposed Treatment | Type of proposed Machine Treatment (If applicable) | Time of Treatment | ACTUAL_TREATMENT | Tree type | Tree diameter (cm) | Tree Height (m) | Comments (Eg: hazards when falling) |
| 1 | Dot_tree | 5/16/2017 3:19:26 AM | Protect_hand_rake | | | Protect_hand_rake | Stringy | | | |
| 2 | X_tree | 5/16/2017 3:21:09 AM | HandFall | | | | Stringy | 80 | | |
| 3 | Dot_tree | 5/16/2017 3:22:42 AM | Protect_machine_rake | D4 | | | Bluegum | 60 | | |
| 4 | CPD_Tree | 5/16/2017 3:25:01 AM | Exclude | | 5/16/2017 3:25:18 AM | Exclude | Peppermint | 70 | 28 | On top of batter, very unstable |
| 5 | Exclusion_Zone | | Exclude | | | Exclude | | | | |
| 6 | Exclusion_Zone | | Exclude | | | Exclude | | | | |

Tree Hazard – Integration with new tools

Planned Burning - Planning Support Tools



Step One: Select the Burn to Work On

Region

BARWON_SOUTH_WEST

District

OTWAY

Burn Name

Aireys Inlet - Loves Track

Step Two: Select Plan Type

Contingency Plan

Tree Hazard

Traffic Managment

Update Burn List

If the burn you are looking for does not appear in step one please update the burn list

Update Burn List

About

Version

1.1

Get More Info on the Go FireFighter Website

Credits / Support

Tree Hazard SME and support:

[Felicity Wardlaw](#)

Contingency SME and support:

[Nicholas Purss](#)

Design and Development Allyn Norman

Update Burn List Code Phil Pringuer

Map and QR Geneartion Stephen Salathiel

Future

- Testing
- Tool to assist not to replace
- Communication
- Keeping users centric to development
 - Increased functionality:
 - Active symbology
 - Tracks
 - Smoother one-to-many work flows
- Opportunity to engage with Field Tech Reference Group