Samson Park Bush Fire Hazard Reduction Plan 2014

City of Fremantle

3/1/2014

SIR FREDRICK SAMSON PARK FIRE HAZARD REDUCTION PLAN

INTRODUCTION

The Samson Park Fire Hazard Reduction Plan is drawn from the current Sir Fredrick Samson Park Management Plan Revised 1995, current operations undertaken in the park by the City of Fremantle Natural Areas Unit and the advice given from both the City of Fremantle Fire Rangers and the Department of Fire Emergency Services (DFES). The aim of the Samson Park Fire Hazard Reduction Plan is firstly to protect lives and assets of the community using contemporary scientific best practice which in turn will assist in the conservation of the ecological values in Sir Fredrick Samson Park (Samson Park).

BACKGROUND

Samson Park is the largest (14 ha) bushland reserve in the City of Fremantle and is the only public open space in the suburb of Samson. Samson Park is comprised of remnant Jarrah/ Marri/ Tuart open forest and a portion of open reticulated turf with intermittent trees and shrubs. Samson Park is a declared Bush Forever site (2000) by the Western Australian Planning Commission (WAPC). The Bush Forever listing designates Samson Park as an Environmentally Sensitive Area (ESA) under the Environmental Protection Act of 1986.

Samson Park is an “ecological island” surrounded by residential development isolated from any linkages to other significant remnant bushlands. In addition, Samson Park receives considerable pedestrian pressure from the local community recreating in the park. This dynamic of isolation and high usage, puts pressure on the natural ecological functions in the park’s bushland, reducing the genetic fitness of the vegetation and the overall ecological resilience of the bushland (Yates and Hobbs 1997). As the climate changes and environmental pressures increase, so does the need for management of the pressures exerted on the park. With this in mind, the Samson Park Fire Hazard Reduction Plan will outline indentified fire hazards and management procedures that address the environmental pressures put upon the park in an attempt to reduce identified fire hazards and boost the parks overall ecological resilience.

MANAGEMENT PLAN REVIEW AND INTERPRETATION

A review was undertaken of the Sir Fredrick Samson Park Management Plan Revised 1995. The management plan review consisted of identifying bush fire hazards and mitigation measures that directly address fire hazards within the park. The plan identified that the fire hazard in the park is high loads of combustible fine fuels, in the form of weeds such as *Ehrharta calycina* (Veldt grass). Several scientific studies over the last 50 years recommend that fine fuel loads (<6mm diameter) located on the forest floor have the most significant effect on the behaviour

of eucalypt forest fires (Gould *et al.* 2011). However, linking particular fuel characteristics with certain fire behaviour is difficult, generally the rate of fire spread increases with the increase of fuel loads and the percentage of surface, near-surface and elevated fuel layers (See Figure 1)(McCaw *et al.* 2012).

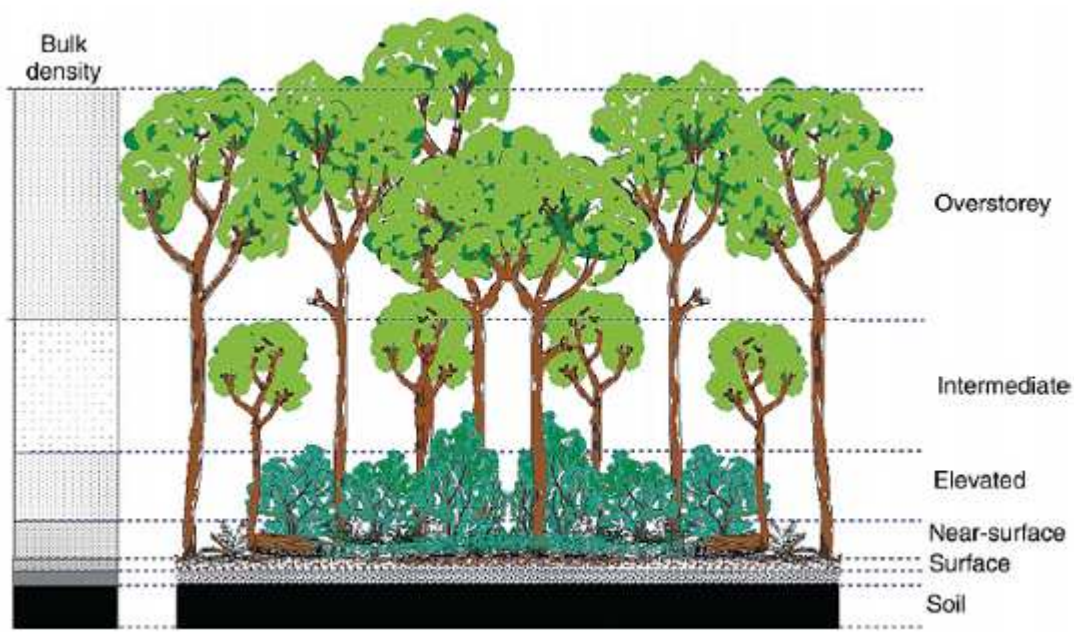

Figure 1. Different fuel layers within a dry eucalypt forest that can be identified visually. The grey scale on the left indicates the relative bulk density of each layer (Gould *et al.* 2011).

Disturbed edges or patches with in bushlands often encourage weeds to colonise the area, allowing the rapid establishment of the weeds after fire (Brown and Brooks 2002). Grass invasions increase fine fuel loads that indirectly influence the native ecosystem by changing fire frequency, intensity and size (Brown and Brooks 2002). The relationship between *E. calycina* and fire is alarming, significantly increasing fire risk by adding large quantities of fine fuel loads which dry over summer (Parks and Recreation Department City of Fremantle, 1995). Since the adoption of the Samson Park Management Plan Revised 1995 additional weeds with similar effects as *E. calycina* have become more abundant, or have aided the spread of *E. calycina.* Species such as *Lachenalia reflexa* (Yellow Soldier) and *Watsonia meriana* (Watsonia), and *Ferraria crispa* (Black Flag) have the ability to establish in undisturbed bushlands (Brown and Brooks 2002). *L. reflexa* indirectly forms fire hazards by successfully competing with native species during the spring then dying back during the summer, allowing for an open area which is then seeded with *E. calycina*.

The management of weed loads in an urban bushland such as Samson Park requires intensive management of several vectors which cause disturbances that facilitate the colonisation of invasive weeds which in turn contribute to high loads of combustible fine fuels (see Figure 2).

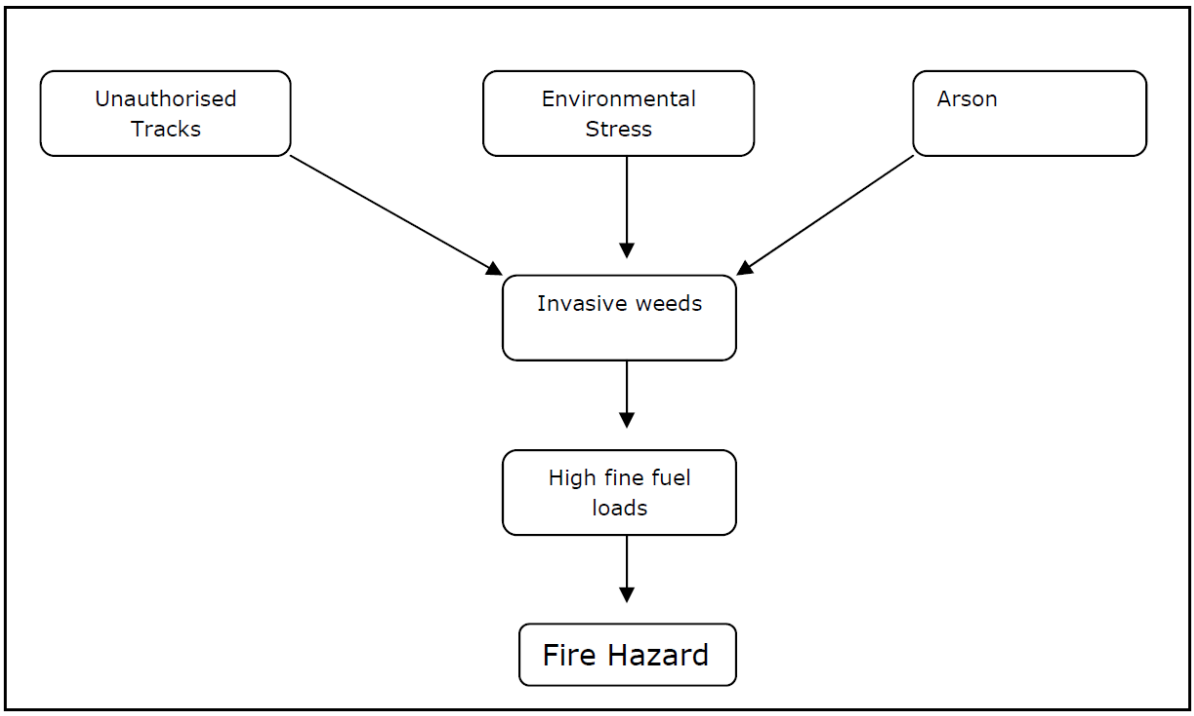

Figure 2. Vectors of fine fuel hazards

TRACKS

The proliferation of “unauthorised” tracks through the bushland area in Samson Park caused by “off-track” pedestrian traffic has created large areas of degraded vegetation. These tracks support weedy vegetation along the edges which require revegetation with indigenous species (Parks and Recreation Department City of Fremantle, 1995). The rationalisation and reduction in these unwanted tracks in Samson Park is required to address the fragmentation of the bushland areas and the degradation of natural vegetation (Parks and Recreation Department City of Fremantle, 1995).

Samson Park has 1km of designated fire access tracks that are maintained to accommodate fire fighting units. The fire access track network is shown in Figure 3, and is regularly inspected for any obstacles (fallen trees, etc.) that could obstruct fire response vehicles. In addition to the Fire access tracks Samson Park has approximately 850m of pedestrian access tracks that form a comprehensive track network with the fire access tracks. Samson Park has approximately 1km of unauthorised tracks that break away from the designated access tracks. A majority

of the unauthorised tracks are 1-1.5 metres in width, resulting in an area approximately 1000m² that has been completely denuded of native vegetation, creating an increase in fine fuel loads. See Figure 3 for location of access tracks.

Figure 3. Access Tracks in Samson Park

ENVIRONMENTAL STRESS

Episodic environmental stresses can directly affect the structure and ecological functions of forests and ultimately individual trees (Mandre *et al.* 2011). The native vegetation across the Perth region is being effected by a variety of threatening processes such as *Phytophthora cinnamomi*, decreased rainfall as a result of a changing climate, altered fire regimes, and increased ground water extraction (DEC 2009). As a result, a majority of Perth's urban native bushland trees are predisposed to crown decline from environmental factors, such as exposure to air pollution,

altered drainage, climate change and extreme weather events (Barber & Hardy 2012). The *Eucalyptus gomphocephala* and *E. marginata* that form the dominant over-storey in Samson Park have poor seedling recruitment and show signs of crown dieback (Parks and Recreation Department City of Fremantle, 1995). A reduction in canopy cover increases the amount of available light to the under-storey, which is a condition that favours the undesirable grass weeds (Brown and Brooks 2002).

The Perth Region has experienced declining rainfall and runoff over the past 30 years which has had a significant impact on both water availability and the ecosystems that depend on it (DEC 2009). Generally, extended drought conditions have a positive correlation with the outbreaks of pathogenic biotic organisms, resulting in tree mortality (McDowell *et al.* 2008). Additionally, wildfires indirectly have the same effect by causing structural damage that predisposes the trees to susceptibility to pathogenic organisms, resulting in tree mortality (McDowell *et al.* 2008). This dynamic feeds into the cyclical affect that causes increased fine fuel loads, further exacerbating the ecological resilience of the bushland.

FIRE HISTORY

Samson Park has incurred several arson events over the years. The City of Fremantle has endeavoured to map areas of arson since 2001. Significant fires have occurred in 2002, 2007 and 2013 resulting in a total burn area of 17,038 m² over 12 years (see Figure 4).

Figure 4. Diagram showing fire events in Samson Park by location, year, and area (m²)

FIRE AUTHORITY

The content in this document was reviewed by both City of Fremantle Rangers and DEFS. DEFS did not provide comment on this plan (See correspondence in Appendix B). The City regularly meets with the Murdoch Metropolitan Fire and Rescue Service team to review fire response plans, ensure access is adequate and that any observe fire risks are addressed.

BUSH FIRE HAZARD REDUCTION ACTIONS

Weed Control

- Annually undertake weed mapping and documentation via GIS of bushland area, specifically targeting weeds contributing to fine fuel loads
- Continue seasonal (winter, spring, summer, autumn) weed control
- Undertake double application of fusillade (July & August) to identified *E. calycina* populations
- Undertake routine testing for pathogens such as *Phytophthora cinnamomi*

Revegetation

- Revegetation of areas comprised of degraded or non-existent indigenous vegetative components including closed unauthorised tracks.

Fire

- Continue mapping and documentation of arson events via GIS of burned areas
- Investigate undertaking prescribed burns throughout the park

Rationalisation and rehabilitation of unwanted Tracks

- Map out and quantify all of the existing tracks
- Allow Management Plan and DFES officials to identify essential fire access track networks
- Begin a staged approach of fencing essential track networks and rehabilitating unauthorised track networks

Education

- City of Fremantle staff to undergo visual fuel load estimation training.

- Continue researching and trialling new methods of weed control and fuel reduction
- The City undertakes a mail-out of bush fire awareness education material to surrounding residents of Samson Park on an annual basis prior to bushfire season.
- Invite local fire responders to the annual Children's Fiesta

Fire Authorities

- Continue regular reviews of fire response plan, access requirements, and fire risks with the Murdoch Metropolitan Fire and Rescue Service.

REFERENCES

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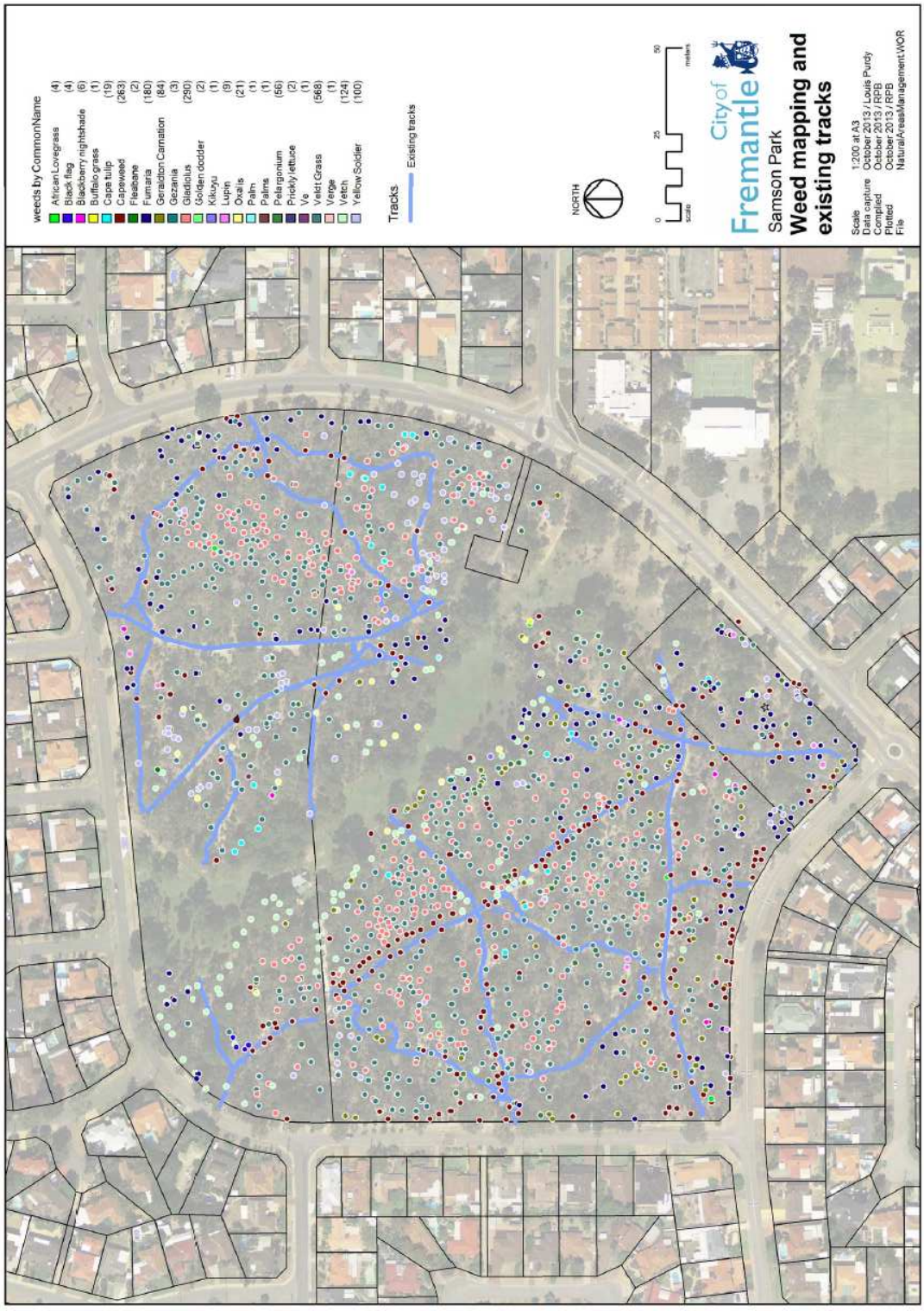
APPENDIX A

Weed Mapping

Map indicating existing track network and distribution of weed species in Samson Park as of September 2013



APPENDIX B

Department of Fire and Emergency Services Correspondence

Jake Tanner

From: Jake Tanner
Sent: Tuesday, 11 February 2014 1:13 PM
To: 'SMITH Ralph'
Cc: Michael Leers
Subject: (DWS Doc No 2044372) FW: (DWS Doc No 2025115) FW: (DWS Doc No 2009268) RE: Samson Park Bush Fire Hazard Reduction Plan

Hi Ralph,
I hope all is well. We are finalising the Samson Park Bush Fire Hazard Reduction Plan. As we have not received any comment from DFES we have to assume that DFES approve of the Samson Park Bush Fire Hazard Reduction Plan submitted in 6th November 2013.

Thank you

Kind Regards

Jake Tanner
Senior Environment and Projects Officer
Parks and Landscape
T (08) 9432-9814
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E jaket@fremantle.wa.gov.au

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From: Jake Tanner
Sent: Friday, 10 January 2014 3:52 PM
To: 'SMITH Ralph'
Cc: Michael Leers
Subject: (DWS Doc No 2025115) FW: (DWS Doc No 2009268) RE: Samson Park Bush Fire Hazard Reduction Plan

Hi Ralph,
Hope you holidays were enjoyable and that you are well. Can you advise if you will be providing any feedback on the Samson Park Bush Fire Hazard Reduction Plan we sent through in November, and if so when we can expect it?

Please let me know if you require further information.

Thank you

Regards

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From: LIA Jodie [mailto:Jodie.Lia@dfes.wa.gov.au]
Sent: Tuesday, 10 December 2013 7:37 AM
To: Jake Tanner
Subject: (DWS Doc No 2009268) RE: Samson Park Bush Fire Hazard Reduction Plan

Hi Jake,

I sincerely apologise that Ralph has not got back to you regarding this.

Unfortunately I will be unable to provide you feedback – Ralph has indicated that it'll be him providing feedback (and to be honest, I thought he would have done so by now).

Hopefully you hear from him soon.

Kind Regards,

Jodie Lia

From: Jake Tanner [mailto:jaket@fremantle.wa.gov.au]
Sent: Monday, 9 December 2013 8:47 AM
To: LIA Jodie
Cc: SMITH Ralph; Melanie Bainbridge
Subject: RE: Samson Park Bush Fire Hazard Reduction Plan

Hi Jodie and Ralph,
I hope that you are all going well. Do you have any feedback regarding the Samson Park Bush Fire Hazard Reduction Plan, or know when you would be providing any? There was an approximate 1.5ha fire in the park last week, which will add to the overall burn area in the park…

Happy to discuss.

Thank you

Kind Regards

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From: LIA Jodie [mailto:Jodie.Lia@dfes.wa.gov.au]
Sent: Wednesday, 6 November 2013 8:36 AM
To: Jake Tanner
Subject: (DWS Doc No 1987381) RE: Rocky Bay Heritage Trail & Samson Park Bush Fire Hazard Reduction Plan

Hi Jake,

As mentioned yesterday, there is an Urban Bushland Plan for Samson Park, as attached. This plan is a response plan for Murdoch Fire Station that is required to be updated annually however, they have not done so for a couple of years. In this regard, it is out of date and I have encouraged Murdoch to rectify this asap by contacting the stakeholders (such as Fremantle Council) to review contact information and other details so that I can update the plan.

Thanks,

Jodie

From: Jake Tanner [mailto:jaket@fremantle.wa.gov.au]
Sent: Wednesday, 6 November 2013 7:37 AM
To: LIA Jodie; SMITH Ralph; Dave White
Cc: Michael Leers
Subject: Rocky Bay Heritage Trail & Samson Park Bush Fire Hazard Reduction Plan

Hi Ralph, Jodie ad Dave,
Thank you for catching up with us on-site yesterday to have a look at the proposed Rocky Heritage Trail Project and discuss the Samson Park Bush Fire Hazard Reduction Plan. I just wanted to confirm the discussion.

Rocky Bay Heritage Trail Project:

The City intended to construct either a fire access track or a "modified" fire access track along the Rocky Bay Heritage Trail aiming to improve safe fire response access capabilities as well as for pedestrians using the trail. To achieve a 3m wide fire access track or even a modified fire access track, the environmental and aesthetic assets along the cliff top would incur considerable damage resulting in destabilisation of the limited area along the cliff top. This will result in the overall loss of foreshore amenity and environmental values. As such the City now intends to construct a more formal pedestrian only access track, compliant with the community's expectations and also preserving the existing environmental and amenity values. This track may also be used to assist on-ground pedestrian fire response personnel, if required.

Samson Park Bush Fire Hazard Reduction Plan:

DFES will review the draft plan and provide feedback. (Draft plan is attached)

Please to add any aspects that are not captured above.

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Thank you

Regards

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