

27 May 2015

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Matthew Stadler
Manager, R4R State Barrier Fence and Wild Dog Management
Biosecurity and Regulation
Department of Agriculture and Food, Western Australia
444 Albany Hwy
ALBANY WA 6330

Dear Matthew

SUBJECT: State Barrier Fence Weed Hygiene Plan

Attached is a weed hygiene plan for the construction and ongoing maintenance of the proposed State Barrier Fence Esperance Extension. This plan is designed to provide an overview of the Declared Pest plants known to occur within the proposed alignment and suitable hygiene measures to reduce the potential for the spread of these and other weeds in general.

Yours sincerely

Ecoscape (Australia) Pty Ltd



DR MARKUS MIKLI
Associate Environmental Scientist/ Restoration Ecologist



STATE BARRIER FENCE WEED HYGIENE PLAN

Department of Agriculture and Food Western Australia

ecoscape

INTRODUCTION

The State Barrier Fence (SBF) currently extends from the Zuytdorp Cliffs, north of Kalbarri, and terminates approximately 25 km to the east of Ravensthorpe, approximately 1 170 km in length. The Department of Agriculture and Food Western Australia (DAFWA) proposes to extend the SBF to protect the more-recently developed land east of Ravensthorpe from major emu migration events and wild dogs. The proposed Esperance extension will be approximately 663 km in length (**Map 1**), based on the latest alignment. The majority of the proposed Esperance extension occurs on the boundary between agricultural land and Unallocated Crown Land (UCL), broadly extending from east of Ravensthorpe, north around the Salmon Gums region and terminating east of Esperance at Cape Arid National Park (NP).

Biological surveys, which included flora, fauna and dieback assessments, were conducted within a 100 m wide easement following the SBF proposed alignment (Ecoscape 2015; Glevan 2015). At the time of survey the proposed alignment totalled 640 km in length (including one optional section), this has since been modified slightly, the current proposed alignment is outlined in **Map 1**. Approximately 3 km of this corresponds with the intersections of drainage lines (Oldfield, Young and Lort Rivers) and has been excluded from the study area.

The flora survey of the proposed SBF alignment (Ecoscape 2015) identified that the weed invasion is typically minor. Twenty six introduced flora (weed) species were recorded during this survey, including three species which are Declared Pest plants under the *Biosecurity and Agricultural Management (BAM) Act 2007*:

- Bridal Creeper (*Asparagus asparagoides*)
- Saffron Thistle (*Carthamus lanatus*)
- Stemless Thistle (*Onopordum acaulon*).

All three Declared Pest Plants are listed as C3 Category (management) for control. Under this category, land owners and managers are required to manage these species in order to limit their damage and spread to the natural environment and agricultural lands.

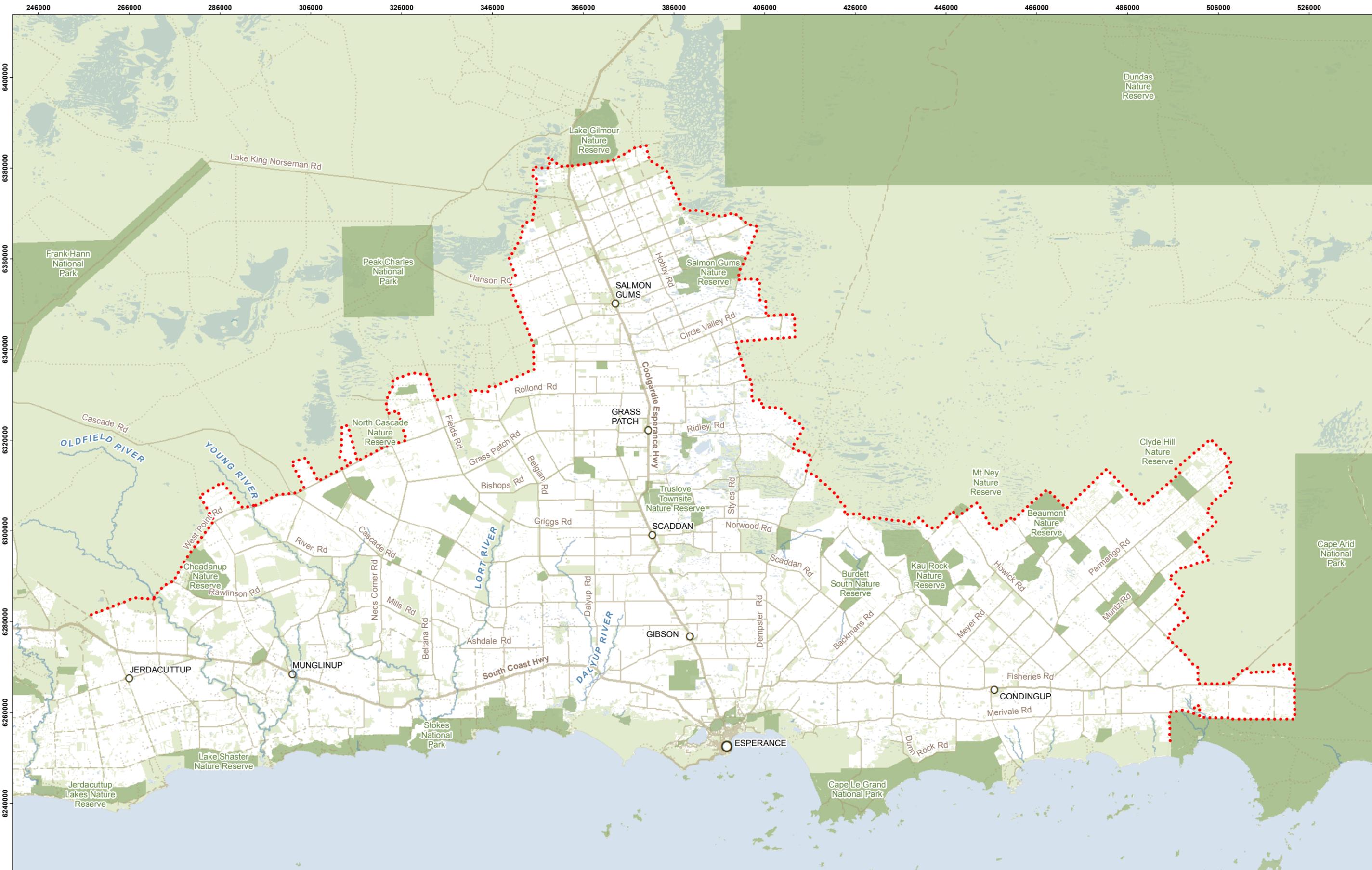
Fence construction requires the clearing of vegetation within a 20 m wide easement. The fence will have a height of approximately 1.35 m using 1.8 m star pickets with a ground penetration of approximately 45 cm and ground anchors with a maximum ground penetration of 90 cm. Fence construction activities and ongoing maintenance have the potential to introduce or spread weeds due to disturbance of soil and movement between locations.

The biological surveys (Ecoscape 2015) recommended that DAFWA develop and implement a weed hygiene plan to reduce the potential for the spread of weeds, particularly Declared Pest plants. This document addresses this recommendation.

The biological surveys did not include the easternmost end of the proposed alignment (south of Fisheries Road along the boundary of Cape Arid National Park), and several minor sections which have since been modified. Therefore there is no data available regarding Declared Pest plants for these sections.

AIMS AND OBJECTIVES

This document outlines hygiene procedures to be carried out by any DAFWA personnel and contractors entering or leaving the site during construction of the proposed fence and ongoing maintenance. The procedures are designed to prevent the introduction or spread of weeds, particularly known Declared Pest plant species along the proposed fence alignment. Weed hygiene procedures are likely to be compatible with dieback hygiene measures.



AUTHOR: JN
DATE: MAY-15

CHECKED: SB
PROJECT NO: 3432-15

SCALE: 1:750,000 @ A3

STATE BARRIER FENCE ESPERANCE EXTENSION
WEED HYGIENE PLAN

CLIENT: DAFWA

FENCE ALIGNMENT
MAP 1

GDA 1994 MGA Zone 51

SIGNIFICANT WEEDS

BRIDAL CREEPER (*ASPARAGUS ASPARAGOIDES*)

Appearance

Bridal Creeper is perennial herb and climber, growing between 1 m and 5 m in height. Leaves are fleshy, green and up to 2 cm long. Bridal Creeper has small cream-white flowers in spring and produces red fleshy berries to about 1 cm in diameter before dying back in summer and surviving underground until the following autumn.



Ecoscape file images

Preferred Habitat

Bridal Creeper grows in a wide variety of habitats, including coastal areas, woodlands, shrublands, riparian areas and plantations. It is extremely invasive and can penetrate and dominate undisturbed bushlands.

Method of propagation and potential dispersion

Bridal Creeper mostly spreads by seed and is readily spread by birds and potentially foxes eating the fruit. Seeds can also be spread by animals and water movement. The species may also propagate from fragments of its modified roots (rhizomes), which can grow into thick mats under the soil. Any soil disturbance, such as digging or grading the soil, can cause rhizome fragments to be spread.

Reason for Declaration

Bridal Creeper is listed as a C3 organism (Declared Pest) for the whole of Western Australia and also as a Weed of National Significance (WONS) listed species (Weeds Australia 2012). The species is one of the State's most urgent environmental weed problems. It is extremely invasive, spreading rapidly over other vegetation, eventually smothering and possibly killing the plants. It can grow a thick tuberous root mat which inhibits growth of other plants and prevent overstorey plants from regenerating.

More information on Bridal Creeper can be found at the following websites:

http://www.weeds.org.au/WoNS/bridalcreeper/docs/Asparagus_Weeds_BPMM-2.pdf

<http://florabase.dpaw.wa.gov.au/browse/profile/8779>

SAFFRON THISTLE (*CARTHAMUS LANATUS*)

Appearance

Saffron Thistle is an erect spiny annual herb usually between 0.15 m and 0.7 m in height. The leaves are rigid, green and with spiny lobes. In autumn and winter the plant is a rosette of dark green lobed leaves up to 15 cm in diameter. The whitish-green ribbed stalk appears in spring and often branches at around half height. It has yellow flowers, typically between December and April.



Image courtesy of DAFWA (2014a)

Preferred Habitat

Saffron Thistle can grow in a variety of soils. It often occurs in crops, pastures and disturbed bushland, and is widespread in cereal growing districts, the Goldfields and other pastoral areas.

Reason for Declaration

Saffron Thistle listed as a C3 organism (Declared Pest) for the whole of Western Australia. Seeds can persist in the soil for up to eight years, making it difficult to eradicate in areas once populations have established. It is also a serious weed in most states of Australia and in New Zealand, the United States and South America.

Saffron Thistle competes with crops and can reduce crop yield. Its spiny leaves can injure the mouths and eyes of grazing stock. It can also contaminate hay and chaff, making it unusable as fodder. The thistles may also get lodged in wool, reducing its value. As seeds can remain dormant in the soil for up to eight years, plants can re-emerge in areas controlled in previous years.

Method of propagation and potential dispersion

Saffron Thistle's barbed seeds are relatively heavy so are not readily wind dispersed. The main methods of dispersal are by becoming attached to animal fur and being washed along water channels. They can also get lodged on clothing, shoes and in car wheels, tyres and undersides.

More information on Saffron Thistle can be found at the following websites:

<https://www.agric.wa.gov.au/declared-plants/saffron-thistle-what-you-should-know>

<http://florabase.dpaw.wa.gov.au/browse/profile/7911>

STEMLESS THISTLE (*ONOPORDUM ACAULON*)

Appearance

Stemless Thistle is a woolly annual to biennial herb that is usually prostrate. The leaves are a rosette of grey prickly woolly leaves that can grow over 60 cm in diameter. As its name suggests, the plant does not produce any stems. It has white or purple flowers of 4-6 cm diameter surrounded by sharp spines, between October and December, sometimes in July.



Image courtesy of DAFWA (2014b)

Preferred Habitat

Stemless Thistle occurs in pastures, roadsides, disturbed areas and cultivated lands. It grows in a variety of soils, including sand, heavy clay and calcareous loams and stony slopes. It tolerates a range of soil moisture conditions, from mostly dry to moderately wet. This species is found mainly in the southern cereal growing areas near Esperance.

Reason for Declaration

Stemless Thistle is listed as a C3 organism (Declared Pest) for a number of south-western local government areas, including the Shires of Ravensthorpe and Esperance within which the study area occurs. This weed species can greatly reduce the carrying capacity of pastures, reducing crop yields. It is also generally unpalatable to stock and can cause stomach ailments and occasionally liver and kidney damage.

The distribution, ecological impact and rate of dispersal of this species in the South Coastal Region is currently unknown. Seeds are known to lay dormant in the soil for up to several years, making it difficult to eradicate in areas once a population is established.

Method of propagation and potential dispersion

Stemless Thistles disperse their barbed seeds mostly by wind, although they can also get lodged in animal fur and feet and may be dispersed along water channels. They can also get lodged on clothing, shoes and in car wheels, tyres and undersides.

More information on Stemless Thistle can be found at the following websites:

<https://www.agric.wa.gov.au/declared-plants/stemless-thistle-declared-pest>

<http://florabase.dpaw.wa.gov.au/browse/profile/8154>

INFRASTRUCTURE

SIGNAGE

Recommended signage points of known Declared Pest plant populations are indicated on **Map 2a** and **Map 2b**. Signage should be designed to:

- mark the entry/exit points of known Declared Pest plant infestations
- outline appropriate hygiene measures.

In the case of known infestations, cleaning methods (as outlined below) should be conducted when exiting the area to reduce the potential for spread of weeds.

WASH DOWN FACILITIES

Wash down facilities are not specifically recommended to be installed as part of the weed hygiene plan. Vehicles and equipment can be cleaned before entry to the general area using facilities available at Esperance or alternative nearby population centres. However, wash down facilities should be used if installed as part of a dieback management plan.

HYGIENE PROCEDURES

Weed hygiene procedures are likely to be aligned with dieback hygiene procedures.

WHAT TO CLEAN

The following items require cleaning to remove all soil and plant material:

- **Vehicles and machinery** – particularly tyres, floor mats, wheel rims, radiator and any other locations likely to accumulate soil or plant material
- **Equipment and tools** – particularly equipment associated with earth movement/digging or vegetation removal
- **Clothing and footwear.**

WHEN TO CLEAN

DAFWA staff and contractors should undergo weed cleaning activities before:

- entering general site – to reduce the potential for the introduction of new weed species to the area
- leaving areas of known Declared Pest plant infestations (see **Map 2a** and **Map 2b**) – to reduce the potential of spreading these to other areas
- transferring between different sections of the fence alignment – as a precautionary measure to avoid transporting soil and plant material.

HOW TO CLEAN

If cleaning before entering the general site, utilise wash down and cleaning facilities (e.g. car wash, laundry) as available at Esperance or other population centres.

OR

If cleaning before leaving areas of known Declared Pest plant infestations or before transferring between different sections of the alignment:

- clean down within 'risk' zone just worked, on formed and impervious surface if possible
- remove clumps of soil & plant material with scrub mat, brushes and scrapers
- remove remaining soil & plant material from the scraper, brush and footwear with stiff brushing or compressed air (if available).

REPORTING NEW INFESTATIONS

If new populations of the Declared Pest plants are observed by DAFWA personnel or contractors, they should report the following information to The Pest and Disease Information Service (PaDIS):

- date of observation
- person and company who observed the new population
- which weed species
- location of population (position along fence, preferably GPS co-ordinates)
- approximate size of infestation (e.g. 10, 20, 50, 100)
- photos (if possible).

PaDIS can be contacted by phone (1800 084 881) or email (info@agric.wa.gov.au).

Flagging tape can be used to mark locations of new Declared Pest plant populations. Confirmed new populations can be signed as outlined above and mapping updated.



GDA 1994 MGA Zone 51

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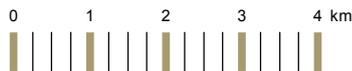
S.B.F. ESPERANCE EXTENSION - WEED HYGIENE PLAN

CLIENT: DAFWA

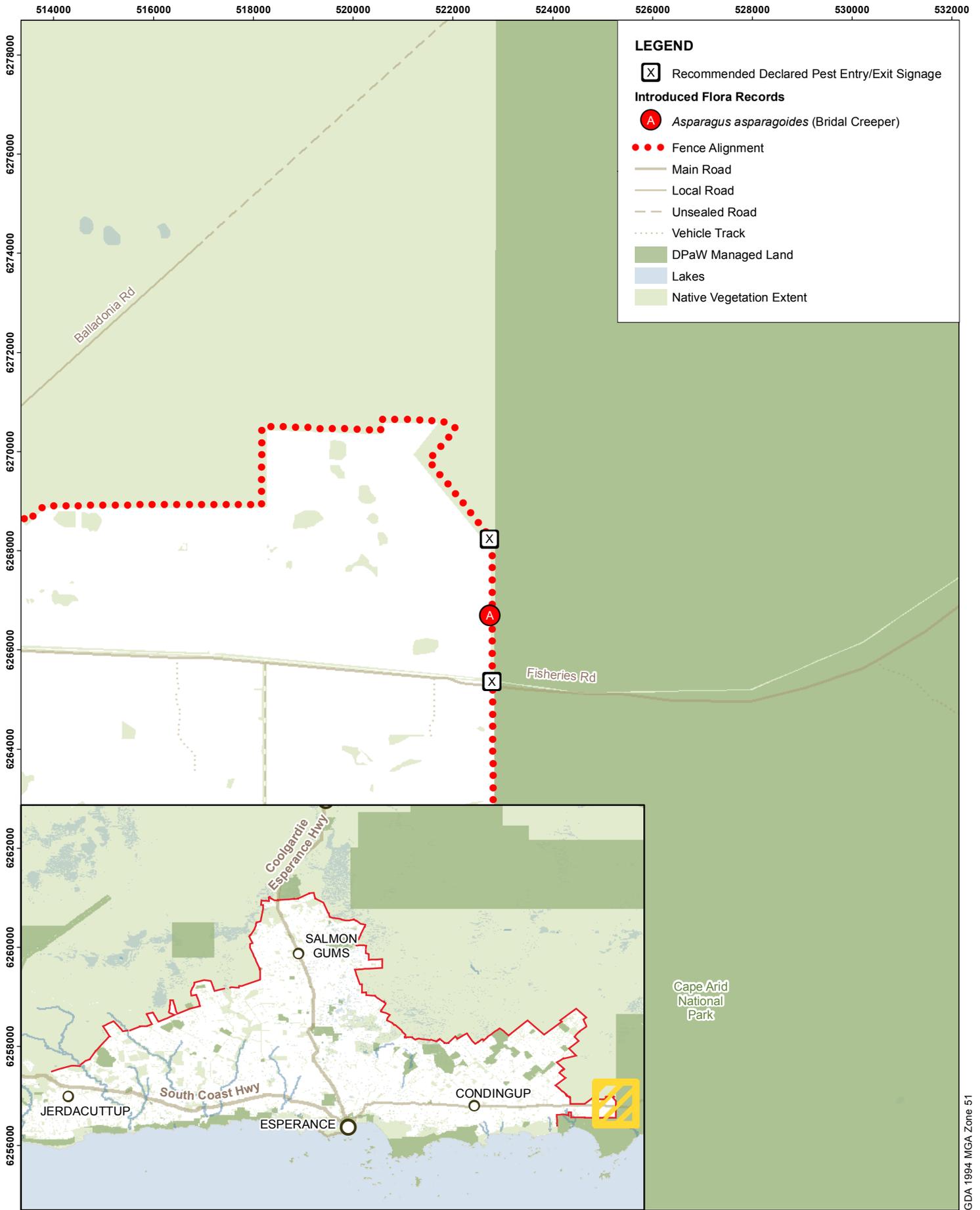
DECLARED PEST AREAS



Scale 1:100,000 @ A4



MAP 2a

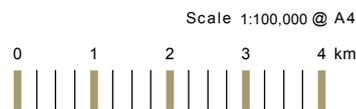


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S.B.F. ESPERANCE EXTENSION - WEED HYGIENE PLAN

CLIENT: DAFWA

DECLARED PEST AREAS



MAP 2b

SIGN OFF FORM

To be completed by staff and contractors involved in construction and maintenance of the State Barrier Fence.

I have read and understood the Weed Hygiene Plan for the State Barrier Fence (10172-3242-15R).

Signature:	
Name:	
Position:	
Company:	
Date:	

This Sign Off Form has been received by DAFWA.

Name:	
Position:	
Date:	

REFERENCES

- Department of Agriculture and Food Western Australia. 2014a. *Saffron Thistle: What you should know*. Available from: <https://www.agric.wa.gov.au/declared-plants/saffron-thistle-what-you-should-know>.
- Department of Agriculture and Food Western Australia. 2014b. *Stemless Thistle: Declared Pest*. Available from: <https://www.agric.wa.gov.au/declared-plants/stemless-thistle-declared-pest>.
- Ecoscope (Australia) Pty Ltd 2015, *State Barrier Fence Biological Surveys*, Unpublished report for Department of Agriculture and Food, Western Australia.
- Glevan Consulting Pty Ltd 2015, *State Barrier Fence Esperance Extension- Phytophthora Dieback occurrence assessment*, unpublished report.
- Weeds Australia. 2012. *Weeds of National Significance*. Available from: <http://www.weeds.org.au/WoNS/>.