



Australian Government

Department of the Environment

Referral of proposed action

What is a referral?

The *Environment Protection and Biodiversity Conservation Act 1999* (the EPBC Act) provides for the protection of the environment, especially matters of national environmental significance (NES). Under the EPBC Act, a person must not take an action that has, will have, or is likely to have a significant impact on any of the matters of NES without approval from the Australian Government Environment Minister or the Minister's delegate. (Further references to 'the Minister' in this form include references to the Minister's delegate.) To obtain approval from the Environment Minister, a proposed action should be referred. The purpose of a referral is to obtain a decision on whether your proposed action will need formal assessment and approval under the EPBC Act.

Your referral will be the principal basis for the Minister's decision as to whether approval is necessary and, if so, the type of assessment that will be undertaken. These decisions are made within 20 business days, provided sufficient information is provided in the referral.

Who can make a referral?

Referrals may be made by or on behalf of a person proposing to take an action, the Commonwealth or a Commonwealth agency, a state or territory government, or agency, provided that the relevant government or agency has administrative responsibilities relating to the action.

When do I need to make a referral?

A referral must be made for actions that are likely to have a significant impact on the following matters protected by Part 3 of the EPBC Act:

- World Heritage properties (sections 12 and 15A)
- National Heritage places (sections 15B and 15C)
- Wetlands of international importance (sections 16 and 17B)
- Listed threatened species and communities (sections 18 and 18A)
- Listed migratory species (sections 20 and 20A)
- Protection of the environment from nuclear actions (sections 21 and 22A)
- Commonwealth marine environment (sections 23 and 24A)
- Great Barrier Reef Marine Park (sections 24B and 24C)
- A water resource, in relation to coal seam gas development and large coal mining development (sections 24D and 24E)
- The environment, if the action involves Commonwealth land (sections 26 and 27A), including:
 - actions that are likely to have a significant impact on the environment of Commonwealth land (even if taken outside Commonwealth land);
 - actions taken on Commonwealth land that may have a significant impact on the environment generally;
- The environment, if the action is taken by the Commonwealth (section 28)
- Commonwealth Heritage places outside the Australian jurisdiction (sections 27B and 27C)

You may still make a referral if you believe your action is not going to have a significant impact, or if you are unsure. This will provide a greater level of certainty that Commonwealth assessment requirements have been met.

To help you decide whether or not your proposed action requires approval (and therefore, if you should make a referral), the following guidance is available from the Department's website:

- the Policy Statement titled *Significant Impact Guidelines 1.1 – Matters of National Environmental Significance*. Additional sectoral guidelines are also available.

- the Policy Statement titled Significant Impact Guidelines 1.2 - Actions on, or impacting upon, Commonwealth land, and actions by Commonwealth agencies.
- the Policy Statement titled Significant Impact Guidelines: Coal seam gas and large coal mining developments—Impacts on water resources.
- the interactive map tool (enter a location to obtain a report on what matters of NES may occur in that location).

Can I refer part of a larger action?

In certain circumstances, the Minister may not accept a referral for an action that is a component of a larger action and may request the person proposing to take the action to refer the larger action for consideration under the EPBC Act (Section 74A, EPBC Act). If you wish to make a referral for a staged or component referral, read 'Fact Sheet 6 Staged Developments/Split Referrals' and contact the Referrals Gateway (1800 803 772).

Do I need a permit?

Some activities may also require a permit under other sections of the EPBC Act or another law of the Commonwealth. Information is available on the Department's web site.

Is your action in the Great Barrier Reef Marine Park?

If your action is in the Great Barrier Reef Marine Park it may require permission under the *Great Barrier Reef Marine Park Act 1975* (GBRMP Act). If a permission is required, referral of the action under the EPBC Act is deemed to be an application under the GBRMP Act (see section 37AB, GBRMP Act). This referral will be forwarded to the Great Barrier Reef Marine Park Authority (the Authority) for the Authority to commence its permit processes as required under the Great Barrier Reef Marine Park Regulations 1983. If a permission is not required under the GBRMP Act, no approval under the EPBC Act is required (see section 43, EPBC Act). The Authority can provide advice on relevant permission requirements applying to activities in the Marine Park.

The Authority is responsible for assessing applications for permissions under the GBRMP Act, GBRMP Regulations and Zoning Plan. Where assessment and approval is also required under the EPBC Act, a single integrated assessment for the purposes of both Acts will apply in most cases. Further information on environmental approval requirements applying to actions in the Great Barrier Reef Marine Park is available from <http://www.gbrmpa.gov.au/> or by contacting GBRMPA's Environmental Assessment and Management Section on (07) 4750 0700.

The Authority may require a permit application assessment fee to be paid in relation to the assessment of applications for permissions required under the GBRMP Act, even if the permission is made as a referral under the EPBC Act. Further information on this is available from the Authority:

Great Barrier Reef Marine Park Authority

2-68 Flinders Street PO Box 1379

Townsville QLD 4810

AUSTRALIA

Phone: + 61 7 4750 0700

Fax: + 61 7 4772 6093

www.gbrmpa.gov.au

What information do I need to provide?

Completing all parts of this form will ensure that you submit the required information and will also assist the Department to process your referral efficiently. If a section of the referral document is not applicable to your proposal enter N/A.

You can complete your referral by entering your information into this Word file.

Instructions

Instructions are provided in blue text throughout the form.

Attachments/supporting information

The referral form should contain sufficient information to provide an adequate basis for a decision on the likely impacts of the proposed action. You should also provide supporting documentation, such as environmental reports or surveys, as attachments.

Coloured maps, figures or photographs to help explain the project and its location should also be submitted with your referral. Aerial photographs, in particular, can provide a useful perspective and context. Figures should be good quality as they may be scanned and viewed electronically as black and white documents. Maps should be of a scale that clearly shows the location of the proposed action and any environmental aspects of interest.

Please ensure any attachments are below three megabytes (3mb) as they will be published on the Department's website for public comment. To minimise file size, enclose maps and figures as separate files if necessary. If unsure, contact the Referrals Gateway (email address below) for advice. Attachments larger than three megabytes (3mb) may delay processing of your referral.

Note: the Minister may decide not to publish information that the Minister is satisfied is commercial-in-confidence.

How do I pay for my referral?

From 1 October 2014 the Australian Government commenced cost recovery arrangements for environmental assessments and some strategic assessments under the EPBC Act. If an action is referred on or after 1 October 2014, then cost recovery will apply to both the referral and any assessment activities undertaken. Further information regarding cost recovery can be found on the [Department's website](#).

Payment of the referral fee can be made using one of the following methods:

- **EFT Payments can be made to:**

BSB: 092-009

Bank Account No. 115859

Amount: \$7352

Account Name: Department of the Environment.

Bank: Reserve Bank of Australia

Bank Address: 20-22 London Circuit Canberra ACT 2601

Description: The reference number provided (see note below)

- **Cheque** - Payable to "Department of the Environment". Include the reference number provided (see note below), and if posted, address:

The Referrals Gateway

Environment Assessment Branch

Department of the Environment

GPO Box 787

Canberra ACT 2601

- **Credit Card**

Please contact the Collector of Public Money (CPM) directly (call (02) 6274 2930 or 6274 20260 and provide the reference number (see note below).

Note: in order to receive a reference number, submit your referral and the Referrals Gateway will email you the reference number.

How do I submit a referral?

Referrals may be submitted by mail or email.

Mail to:

Referrals Gateway

Environment Assessment Branch

Department of Environment

GPO Box 787

CANBERRA ACT 2601

- If submitting via mail, electronic copies of documentation (on CD/DVD or by email) are required.

Email to: epbc.referrals@environment.gov.au

- Clearly mark the email as a 'Referral under the EPBC Act'.
- Attach the referral as a Microsoft Word file and, if possible, a PDF file.
- **Follow up with a mailed hardcopy including copies of any attachments or supporting reports.**

What happens next?

Following receipt of a valid referral (containing all required information) you will be advised of the next steps in the process, and the referral and attachments will be published on the Department's web site for public comment.

The Department will write to you within 20 business days to advise you of the outcome of your referral and whether or not formal assessment and approval under the EPBC Act is required. There are a number of possible decisions regarding your referral:

The proposed action is NOT LIKELY to have a significant impact and does NOT NEED approval

No further consideration is required under the environmental assessment provisions of the EPBC Act and the action can proceed (subject to any other Commonwealth, state or local government requirements).

The proposed action is NOT LIKELY to have a significant impact IF undertaken in a particular manner

The action can proceed if undertaken in a particular manner (subject to any other Commonwealth, state or local government requirements). The particular manner in which you must carry out the action will be identified as part of the final decision. You must report your compliance with the particular manner to the Department.

The proposed action is LIKELY to have a significant impact and does NEED approval

If the action is likely to have a significant impact a decision will be made that it is a *controlled action*. The particular matters upon which the action may have a significant impact (such as World Heritage values or threatened species) are known as the *controlling provisions*.

The controlled action is subject to a public assessment process before a final decision can be made about whether to approve it. The assessment approach will usually be decided at the same time as the controlled action decision. (Further information about the levels of assessment and basis for deciding the approach are available on the Department's web site.)

The proposed action would have UNACCEPTABLE impacts and CANNOT proceed

The Minister may decide, on the basis of the information in the referral, that a referred action would have clearly unacceptable impacts on a protected matter and cannot proceed.

Compliance audits

If a decision is made to approve a project, the Department may audit it at any time to ensure that it is completed in accordance with the approval decision or the information provided in the referral. If the project changes, such that the likelihood of significant impacts could vary, you should write to the Department to advise of the changes. If your project is in the Great Barrier Reef Marine Park and a decision is made to approve it, the Authority may also audit it. (See "*Is your action in the Great Barrier Reef Marine Park*," p.2, for more details).

For more information

- call the Department of the Environment Community Information Unit on 1800 803 772 or
- visit the web site <http://www.environment.gov.au/topics/about-us/legislation/environment-protection-and-biodiversity-conservation-act-1999>

All the information you need to make a referral, including documents referenced in this form, can be accessed from the above web site.

Referral of proposed action

Project title:

1 Summary of proposed action

1.1 Short description

The Department of Agriculture and Food Western Australia (DAFWA), on behalf of the agricultural and livestock industries in the Shires of Ravensthorpe and Esperance, proposes to extend the State Barrier Fence 660km east from its current termination point near Ravensthorpe, north around Salmon Gums and ending east of Esperance near Cape Arid National Park (Attachment 1). A map of the proposed fence alignment in relation to Western Australia's existing State Barrier Fence is at Attachment 2. The proposed extension is in response to socio-economic impacts on industry and communities in the region from emu and kangaroo damage to crops and pasture and the impact of wild dogs in limiting livestock enterprises.

The barrier fence will be erected under Regulation 47 of the *Biosecurity and Agriculture Management Regulations 2013* by DAFWA's Director General and remain the property of the State. With the exception of where the fence is located on freehold land, the fence will be positioned within a 15 to 20 metre wide barrier fence reserve vested the WA Agriculture Authority.

The 15 to 20m wide fence reserve will be cleared of vegetation (predominantly re-cleared) using a process called chaining. This involves two bulldozers pulling a heavy chain across vegetation to level vegetation to a low height. The barrier fence will then be located in the middle of a six metre wide, graded track cleared of all vegetation within the chained area. The graded track allows vehicle access to both sides of the fence for maintenance and the chained area reduces impacts from wildfires, prevents trees falling on the fence and provides a suitable distance for animals to avoid colliding with the fence. The total maximum clearing footprint for the project is 843 hectares (refer to clearing impact areas spreadsheet Attachment 3).

Of the 660km long fence 65% (432km) of the alignment is proposed in areas that have already been chained (cleared) by the Department of Parks and Wildlife (DPAW) in an existing 80-100 metre wide modified fire break at the interface of the agricultural land and woodlands. A further 7% (47km) will utilise existing tracks, but will require additional chaining of up to 9-14m wide (totalling an easement of 15-20m wide). Eighteen percent (112km) of the fence is proposed on private farm crop land replacing existing farm fences and no new clearing will be undertaken. Only about 10% (69km) of the fence is proposed in previously uncleared bushland.

The Project is being referred to the Commonwealth Department of Environment (DoE) as new vegetation clearing may result in the loss of potential foraging habitat for Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*; Endangered) and a low risk of collision by *Pezoporus flaviventris* (Western Ground Parrot; Critically Endangered). The project clearing may also impact on two threatened flora species, *Conostylis lepidospermoides* (Endangered) and *Eucalyptus merrickiae* (Vulnerable), in locations that were recently re-cleared by DPAW for fire breaks as part of the Esperance emergency fire response of November 2015. One hectare of previously cleared Proteaceae Dominated Kwongan Shrublands Threatened Ecological Community will also be impacted in an existing firebreak.

1.2 Latitude and longitude

Note: These points have been simplified to 50 pairs of coordinates. Refer to Attachment 1 for the full alignment or associated shapefiles.

Latitude	Longitude
-33.57862384310	120.38856414900
-33.51520056350	120.58562423000
-33.32218626280	120.70607916900
-33.36780563260	120.79160869000
-33.28445561560	120.87147094600
-33.27694329330	120.90456750600
-33.21483929940	120.99226617200
-33.28423471320	121.02802899000
-33.19017253910	121.10093908500
-33.12488590680	121.11501350900
-33.14830643480	121.30127194800
-33.14214646540	121.34021506600
-32.94702673160	121.39636013100

-32.92336807640	121.40869957700
-32.81209564450	121.44997060900
-32.72947251350	121.45261410500
-32.70666376010	121.52045727100
-32.70341185970	121.53822132700
-32.66726882580	121.71869924200
-32.69637104630	121.72581816400
-32.80310017720	121.92131686700
-32.83040495030	121.97856669300
-32.97603714680	121.97996275500
-32.97897815020	121.99685413300
-33.05886199750	121.92571185800
-33.13481128170	121.96100586200
-33.17484625870	121.98377627900
-33.27019453720	122.05488136800
-33.31680701470	122.08832476200
-33.36864476850	122.16263422300
-33.40342780400	122.21581399000
-33.41041654350	122.24814175200
-33.42414807470	122.33671025700
-33.38315721600	122.49292307000
-33.35729243740	122.65909717600
-33.31714447200	122.80015821300
-33.32448634140	122.97477275100
-33.31199243490	123.08112632600
-33.34846737000	123.09754370300
-33.40049748680	123.03584267000
-33.50892243000	122.98141828800
-33.56475493550	122.98499623000
-33.61040768120	122.99116484100
-33.74217629230	123.08822250200
-33.71097722040	123.13064032300
-33.71983761890	123.19739904300
-33.72670779870	123.24513820400
-33.79620652120	122.97845876000
-33.85714441580	122.95041528800

1.3 Locality and property description

The project is located in the Shires of Ravensthorpe and Esperance, Western Australia and extends from 25km east of Ravensthorpe, north around Salmon Gums and terminates east of Esperance near Cape Arid National Park (Attachment 1). A map of the proposed fence alignment in relation to the existing State Barrier Fence is at Attachment 2. A map of the alignment showing where the fence would be located on private land (replacing an existing farm boundary fence) is shown at Attachment 4.

1.4 Size of the development footprint or work area (hectares)

The total maximum clearing footprint for the project is 843ha. This can be broken down as follows (Attachment 1 and Attachment 3):

- Ten percent (69km) of the proposed fence alignment is in previously uncleared vegetation, mostly in Unallocated Crown Land (UCL) or other easements. These areas will require a 6m graded track and additional chaining between 9-14m wide. Total required clearing: 124ha.
 - Sixty six percent (432km) of the alignment was cleared/chained either recently during the November 2015
-

Esperance bush fires, will be before July 2016 or has been subject to historic and ongoing chaining/clearing for fuel management by DPaW. Chaining is typically repeated every four to six years in order to protect human life and property. Total required clearing: 648ha.

- Seven percent (47km) of the alignment includes existing tracks or graded areas, with an additional 9-14m of chaining required (total required clearing: 65ha).
- Eighteen percent (111km) of the alignment involves replacing existing fencing on private property where no clearing is required (pruning only, where necessary). Total required clearing: None.
- Six hectares over the total alignment will be cleared for erosion control. Controls will involve the construction of water diversion turnouts (10m long by 2.5m wide), alternating every 200m along the 6m wide cleared track in areas susceptible to erosion. This will result in an additional 5.5m x 2.5m (13.75m²) of clearing every 200m.

1.5 **Street address of the site**
N/A

1.6 **Lot description**
N/A

1.7 **Local Government Area and Council contact (if known)**
Shire of Ravensthorpe- CEO Mr Ian Fitzgerald
Shire of Esperance- CEO Mr Matthew Scott

1.8 **Time frame**
The project is expected to take approximately 18 months to two years to construct.

1.9	Alternatives to proposed action Were any feasible alternatives to taking the proposed action (including not taking the action) considered but are not proposed?		No
		X	Yes, you must also complete Section 2.2
1.10	Alternative time frames etc Does the proposed action include alternative time frames, locations or activities?	X	No
			Yes, you must also complete Section 2.3. For each alternative, location, time frame, or activity identified, you must also complete details in Sections 1.2-1.9, 2.4-2.7 and 3.3 (where relevant).
1.11	State assessment Is the action subject to a state or territory environmental impact assessment?		No
		X	Yes, you must also complete Section 2.5
1.12	Component of larger action Is the proposed action a component of a larger action?	X	No
			Yes, you must also complete Section 2.7
1.13	Related actions/proposals Is the proposed action related to other actions or proposals in the region (if known)?	X	No
			Yes, provide details:
1.14	Australian Government funding Has the person proposing to take the action received any Australian Government grant funding to undertake this project?	X	No
			Yes, provide details:
1.15	Great Barrier Reef Marine	X	No

Park

Is the proposed action inside the
Great Barrier Reef Marine Park?

☐

Yes, you must also complete Section 3.1 (h), 3.2 (e)

2 Detailed description of proposed action

NOTE: It is important that the description is complete and includes all components and activities associated with the action. If certain related components are not intended to be included within the scope of the referral, this should be clearly explained in section 2.7.

2.1 Description of proposed action

This should be a detailed description outlining all activities and aspects of the proposed action and should reference figures and/or attachments, as appropriate.

Location and extent

DAFWA, on behalf of the agricultural and livestock industries in the Shires of Ravensthorpe and Esperance, proposes to extend the State Barrier Fence 660km east from its current termination point near Ravensthorpe, north around Salmon Gums and ending east of Esperance near Cape Arid National Park (Attachment 1). The proposed extension is in response to socio-economic impacts on industry and communities in the region from emu and kangaroo damage to crops and pastures and the impact of wild dogs in limiting livestock enterprises.

The barrier fence will be erected under Regulation 47 of the *Biosecurity and Agriculture Management Regulations 2013* by DAFWA's Director General and remain the property of the State. With the exception of where the fence is located on freehold land, the fence will be positioned within a 15-20m wide barrier fence reserve vested the WA Agriculture Authority.

The total maximum clearing footprint for the project is 843ha. Of the 660km long fence 65% (432km and 648ha of clearing) of the alignment is proposed in areas that have already been chained (cleared) by DPaW in an existing 80-100 metre wide modified fire break on the interface of the agricultural land and woodlands. Vegetation along the fire break has been cleared by two bulldozers pulling a 15 tonne chain between them and grading two, six metre wide access tracks either side of the chain to achieve a low fuel buffer strip. This fire break has been re-chained approximately every 5-10 years since the 1980's and will be re-chained every four to six years in future to improve fire mitigation, irrespective of this barrier fence proposal. In response to emergency fires in the region in November 2015 and in subsequent DPaW fire hazard reduction activities funded during the 2015-16 financial year, extensive areas of the proposed alignment were very recently re-cleared.

A further 7% (47km) will utilise existing tracks, but will require additional chaining of up to 9-14m wide (totalling an easement of 15-20m wide accounting for 65ha). Eighteen percent (112km) of the fence is proposed on private farm crop land in agreement with the landholders, where potentially high environmental or cultural impacts were identified on UCL. For these freehold sections, an existing farm boundary fence will be replaced by a barrier fence and no additional clearing would be undertaken, only pruning of any overhanging branches where necessary.

Only about 10% (69km) of the fence is proposed in previously uncleared bushland (124ha) predominantly in the north of the alignment.

Infrastructure- Fence

Specifications for the proposed Esperance extension fence are summarised below.

- The fence is constructed of ten line fabricated wire netting with a height of approximately 1.35m. A single strand of 2.8mm high tensile plain wire is on top of the fabricated netting. No barbed wire is used in new design to reduce potential animal injury or entanglement.
- 1.8m high star pickets are placed every 7m with a ground penetration of approximately 45cm.
- The fence netting mesh size is approximately 102mm high by 152mm wide at the base of the fence and increases to 152mm by 152mm at the top of the fence. The mesh is big enough to allow snakes, lizards and small mammals etc. to pass through.
- Galvanised 2.4m drive-in angle strainers with 3.2m struts are used. The strut base plates and ground anchors are at 300m intervals with a maximum ground penetration of 90cm.
- 1.3m high visibility fluorescent orange droppers are attached to the fence 7m apart to increase the visibility of the fence in a colour spectrum that is brighter to animals, thereby reducing potential wildlife collisions. The number of florescent orange fence droppers would also be doubled for approximately 85km of fence near (two kilometres from) known Western ground parrot habitat in Cape Arid National Park where dispersing juvenile ground parrots could possibly encounter or cross the fence if they expand from their known range. Two florescent orange droppers would be installed in-between each 7m solid star picket (about 2.3m apart) to further minimise the low collision potential in this area.

- 400mm lap wire extends from the base of the fence along the ground under tension to prevent wild dogs and macropods burrowing under the fence.



Figure 1. Barrier fence showing lapwire extending at the base of the fence, fluorescent orange dropper, 10 wire fabricated fence and non-barbed single strand top wire.

Infrastructure- Fence Gates

Swinging access gates will be placed in line with the fence across minor access roads or at 10km intervals if there are no existing access roads.

Infrastructure- Road Grids

Stock grids of varying widths (generally 5-8m depending on the road they cross) will be set in existing roads to minimise macropod, emu and wild dog crossings.

Surveying and Clearing of Vegetation

The fence is proposed to be located within a 20m reserve on land vested with the WA Agriculture Authority. The reserve would have a total chained width of 15m-20m with the fence constructed down the middle of a 6m wide, graded track. Clearing of the fence reserve is required for maintenance vehicles to access the fence from both sides, to reduce damage to the fence from wild fires and falling trees, and to provide a cleared area so animals can see the fence to avoid collisions and entanglement. The fence reserve boundary would be pegged by a qualified surveyor providing accuracy to the limits of the allowable clearing lines.

The recommended reserve/track design has been modified to incorporate the following:

- chain all vegetation as close as possible to ground level over a 15m wide clearing footprint, with the exception of the previously unchained area north of Salmon Gums that will require a 20m chained area to minimise fire risk and tree damage to the fence. If cost effective, the vegetation would also be mulched on location;
- bulldoze (if necessary and there is no existing track) and then grade a 6m wide, flat maintenance track providing 3m of vehicle access to either side of the fence down the middle of the 15m or 20m chained area;
- spread the cleared vegetation from the 6m wide track across the remaining chained area on either side of the 6m wide graded track;
- where possible all tree stumps greater than 15cm in width on the 6m wide track will be removed;
- construct water diversion turnouts into the design to, alternating turnouts every 200m along the 6m wide cleared track (in areas susceptible to erosion). Water turnouts are to be 10m long by 2.5m wide and can be constructed through the chained area. This will result in an additional 5.5m x 2.5m (13.75m²) of clearing every 200m.

Clearing methods will aim to disturb the soil surface as little as possible to ensure the long term soil structure is maintained and maintain the seed bank. In time this will allow shorter-lived species such as grasses and sedges to re-grow, stabilise the soil and minimise soil erosion.

Machines used for pushing and heaping operations (typically bulldozers) would need to be fitted with root rakes or similar equipment and operated in a manner such that as little soil as possible is removed and heaped with the cleared vegetative material.

2.2 Alternatives to taking the proposed action

DAFWA and the agricultural industry in the Esperance region have considered and trialled the alternative options for wild dog, emu and kangaroo control over a long period of time and believe the best long-term, non-lethal option is to construct the Esperance extension to the SBF. The final fence alignment, fence structure and clearing practices proposed will minimise or avoid potential environmental or cultural impacts and the proposal has been significantly altered with these factors in mind. The Esperance extension will provide substantial socio-economic benefits to agriculture and have other associated positive impacts for the region, which have been endorsed by the agricultural industry in the Esperance community and the WA Government.

Alternatives to the SBF Esperance extension generally include shooting and poisoning as alternatives to barrier fencing for emu and kangaroo control, and for wild dog management, individual farmers constructing their own barrier fences, keeping wild dog management as it is, or the use of livestock guardian dogs. These are discussed in detail in the DAFWA (2016) report *Alternative options considered to the proposed Esperance extension*, provided as Attachment 5.

2.3 Alternative locations, time frames or activities that form part of the referred action

Alternative locations

An interdepartmental approach has been taken with DAFWA liaising with the Great Southern Region of DPaW to co-locate and maximize use of the chaining/clearing associated with DPaW's fuel management program. The current alignment has also been refined or modified to:

- entirely avoid the threatened underground orchid (*Rhizanthella gardneri*) habitat near the Oldfield River;
- reduce isolation of large sections of Great Western Woodlands from vegetated patches to the south;
- maximise the use of existing chained/cleared firebreak areas, adjacent to private agricultural land. Existing cleared tracks will be used for fence location wherever possible to avoid clearing duplication;
- reduce clearing width to 15m from the original 20m proposal for 460km of the fence (except for high fire risk previously uncleared land to the north of the alignment);
- avoid bulldozing and grading the entire 20m wide area, to only bulldozing/grading a 6m wide track. The remaining area adjacent to the track will be chained and potentially mulched (instead of bare earth cleared) to reduce erosion potential, maintain the seed bank, and to provide some ground habitat;
- avoid clearing in any A Class Reserves and Cape Arid National Park;
- realign the fence to private property to avoid impacts to approximately 7245 of 7900m of the Proteaceae Dominated Kwongkan Shrublands Threatened Ecological Community (TEC). The remaining TEC proposed to be impacted was recently re-chained for fire mitigation;
- to utilise private property for 112km by replacing existing farm fences with a barrier fence to avoid high environmental or cultural concerns identified. Only vegetation trimming in places where growth occurs on existing farm fence may be required in these areas. Additional clearing on private land is restricted to only 3ha over 1.5km to avoid a cultural place and crossing a deep salt lake.

Alternative timeframes or activities

No alternative timeframes or activities are proposed.

2.4 Context, planning framework and state/local government requirements

Explain the context in which the action is proposed, including any relevant planning framework at the state and/or local government level (e.g. within scope of a management plan, planning initiative or policy framework). Describe any Commonwealth or state legislation or policies under which approvals are required or will be considered against.

Biosecurity and Agriculture Management Act 2007 and Biosecurity and Agriculture Management Regulations 2013

Western Australia's *Biosecurity and Agriculture Management Act 2007* provides the authority for Regulations to be made for the erection and maintenance of barrier fences as a means of controlling animals that are declared pests. Emus, wild dogs, dingos and Western grey kangaroos are declared pests due to their adverse effects on agricultural activities.

Regulations 46 to 51 of the *Biosecurity and Agriculture Management Regulations 2013* authorise the Director General of DAFWA to erect, improve, alter, maintain, repair or renew a barrier fence and associated infrastructure on any land. A barrier fence is defined as a substantial fence under the control of the Director General which is used to impede the movement of animals that are declared pests. The barrier fence reserve is land reserved for the purpose of a barrier fence and for the protection and maintenance of the fence, vested with the WA Agriculture Authority.

State and Commonwealth environmental requirements are detailed in Section 2.5.

2.5 Environmental impact assessments under Commonwealth, state or territory legislation

If you have identified that the proposed action will be or has been subject to a state or territory environmental impact statement (in section 1.11) you must complete this section. Describe any environmental assessment of the relevant impacts of the project that has been, is being, or will be carried out under state or territory legislation. Specify the type and nature of the assessment, the relevant legislation and the current status of any assessments or approvals. Where possible, provide contact details for the state/territory assessment contact officer.

Describe or summarise any public consultation undertaken, or to be undertaken, during the assessment. Attach copies of relevant assessment documentation and outcomes of public consultations (if available).

Environmental assessments

Biological and other environmental impact assessments have been completed for the proposed fence alignment:

- *State Barrier Fence Biological Surveys*. Ecoscape Australia Pty Ltd. (2015) Level 1 fauna and Level 2 flora surveys for the proposed Esperance Extension alignment (Attachment 6). This report has been split into multiple parts to meet the Commonwealth's SMB project referral size limit requirements.
- *Biological Surveys of the State Barrier Fence – Merivale Road Reserve Realignment – Cape Arid*. Great Southern Bio Logic Sept 2015. Level 1 flora, Level 1 fauna and dieback surveys completed for an additional 1.6km section of UCL not surveyed by Ecoscape Australia Pty Ltd. (Attachment 7). This report has been split into multiple parts to meet the Commonwealth's SMB project referral size limit requirements.
- *Potential ecological footprint of the proposed Esperance extension to the State Barrier Fence on wildlife*. Department of Agriculture and Food WA (2016) Summary of the broader potential ecological impacts on wildlife and the mitigation strategies adopted to minimise impacts of the proposed barrier fence (Attachment 8).
- *State Barrier Fence Esperance Extension Assessment of the Eucalypt woodlands of the Western Wheatbelt Threatened Ecological Community*. Ecoscape Australia Pty Ltd. (2016) Assessment of the alignment for potential occurrence of Eucalypt Woodlands of the Western Wheatbelt federal listed Threatened Ecological Community (Attachment 9).
- *State Barrier Fence Esperance Extension. Phytophthora Dieback occurrence assessment*. Glevan Consulting (2015) Dieback assessment completed for the proposed alignment (Attachment 10).
- *Soil and Land Conservation Act reports- (1) desk top study; (2) subsequent field investigation and (3) final recommendations report*. Department of Agriculture and Food WA and Precision Technology Solutions, Esperance WA (2016) Research and field investigations undertaken on soil types and potential high risk erosion areas of the alignment and mitigation strategies adopted to minimise erosion potential (Attachment 11).
- Additional advice from DPaW with respect to the low potential for juvenile Western ground parrots extending out of their know range and colliding with the barrier fence in the south-eastern section of the proposed fence (Attachment 12).
- Risk assessment of the proposed extension to the State Barrier Fence on the Brush Wallaby. M.J. & A.R. Bamford Consulting Ecologists 2016 (Attachment 13).

The Environmental Impact Assessment process identified that the proposed barrier fence may require referral under Commonwealth legislation depending on the final alignment chosen due to potential impacts to Carnaby's Black Cockatoo foraging habitat, three threatened flora species and the presence of a Threatened Ecological Community listed under the *Environment Protection and Biodiversity Conservation Act 1999*.

The project is concurrently being referred to the WA Environmental Protection Authority (EPA) under Section 38 of the *Environmental Protection Act 1986* (EP Act). The EPA has 28 days following receipt of all information to decide whether to assess the proposal and if so, the level of assessment and to publish its decision. A seven day public comment period is included within this 28 day period and all referral documentation is provided on the EPA's website.

Office of the WA Environmental Protection Authority Contact Officer for the project is

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Assessment bilateral agreement between Western Australia and the Commonwealth

The Commonwealth of Australia and Western Australia governments have entered into a bilateral agreement under the EPBC Act relating to environmental assessment (assessment bilateral agreement). This agreement accredits the EPA's Public Environmental Review (PER) and Assessment on Proponent Information - Category A (API A) levels of assessment as well as the clearing permit assessment process under Part V Division 2 of the EP Act - the clearing of native vegetation in WA requires a permit under the Act, unless an exemption applies. Under the assessment bilateral agreement, if a native vegetation clearing permit is required and the clearing will have or is likely to have an impact on a Matter of National Environmental Significance (MNES), the assessment of the clearing application including the potential impacts to the MNES can be conducted by the Department of Environment and Regulation (DER) under delegation. If the project is deemed a Controlled Action, it is likely to be assessed under this agreement and a project specific clearing permit will be applied for.

2.6 Public consultation (including with Indigenous stakeholders)

Significant consultation, planning and biological studies have been undertaken to avoid or mitigate potential ecological and cultural heritage impacts of the proposed Esperance extension and to involve stakeholders in developing the project.

DAFWA has consulted broadly in an open, transparent manner about the proposal. DAFWA and the Esperance Extension Reference Group have considered the various stakeholders' views on the proposed alignment and significantly altered the proposal in response to concerns raised and advice provided (see Attachment 5 for alternative options that were considered). This has resulted in a revised final alignment, fence structure and clearing practice that minimises or avoids potential environmental impacts.

Refer to Attachment 14 for an overview of the key consultation events undertaken for the proposed SBF Esperance Extension involving the community, regulatory agencies and key stakeholders.

Two anthropological cultural heritage surveys have been completed and one archaeological survey for the entire Esperance extension alignment. The reports are not publicly available, but have been provided in confidence by Traditional Owners. They can be provided by DAFWA on request to the Commonwealth Department of Environment for decision making purposes if required.

- *Report of an Aboriginal Cultural Heritage Survey of the State Barrier Fence Proposed Extension, Esperance Shire, Western Australia* Applied Archaeology Australia Pty Ltd (2015) Comprehensive archaeological and ethnographic Aboriginal Heritage surveys completed for the Esperance Nyungar and Ngadju Determined Native Title lands for the proposal. Documents not publicly available, provided in confidence by Traditional Owners.
- *Anthropological Heritage Survey Work Area Clearance, Ngadju People DAFWA State Barrier Fence Esperance Extension*. Dr James Taylor, Consultant Anthropologist (2015) Ethnographic Aboriginal Heritage surveys completed for the Ngadju determined lands of the proposal.

2.7 A staged development or component of a larger project

N/A. The entire SBF Esperance extension proposal is being referred.

3 Description of environment & likely impacts

3.1 Matters of national environmental significance

Describe the affected area and the likely impacts of the proposal, emphasising the relevant matters protected by the EPBC Act. Refer to relevant maps as appropriate. The interactive map tool can help determine whether matters of national environmental significance or other matters protected by the EPBC Act are likely to occur in your area of interest.

Your assessment of likely impacts should refer to the following resources (available from the Department's web site):

- specific values of individual World Heritage properties and National Heritage places and the ecological character of Ramsar wetlands;
- profiles of relevant species/communities (where available), that will assist in the identification of whether there is likely to be a significant impact on them if the proposal proceeds;
- *Significant Impact Guidelines 1.1 – Matters of National Environmental Significance*; and
- associated sectoral and species policy statements available on the web site, as relevant.

Your assessment of likely impacts should consider whether a bioregional plan is relevant to your proposal. The Minister has prepared four marine bioregional plans (MBP) in accordance with section 176. It is likely that the MBP's will be more commonly relevant where listed threatened species, listed migratory species or a Commonwealth marine area is considered.

Note that even if your proposal will not be taken in a World Heritage area, Ramsar wetland, Commonwealth marine area, the Great Barrier Reef Marine Park or on Commonwealth land, it could still impact upon these areas (for example, through downstream impacts). Consideration of likely impacts should include both direct and indirect impacts.

3.1 (a) World Heritage Properties

Description

There are no World Heritage Properties within the vicinity of the Project area.

Nature and extent of likely impact

N/A

3.1 (b) National Heritage Places

Cheetup Rock Shelter

Description

The nearest National Heritage Place is the Cheetup Rock Shelter in Cape Le Grande National Park, over 40km from the closest point of the proposed barrier fence.

Nature and extent of likely impact

N/A

3.1 (c) Wetlands of International Importance (declared Ramsar wetlands)

Two wetlands of international importance, the Lake Gore and Lake Warden Systems, are located about 50km south of the Project area.

Description

Lake Warden System Ramsar site is located adjacent to Esperance on the south coast of Western Australia. The site is a system of saline lakes and marsh areas behind beach-front dunes. The Lake Gore Ramsar site is located 34km west of the town of Esperance, in Western Australia's south-east. The Ramsar site comprises of the near-permanent saline Lake Gore, and part of a downstream system of inter-connected lakes and swamps of various sizes which are intermittently inundated.

Nature and extent of likely impact

Both wetland systems are sufficiently far from the project area (50km) that they will not be impacted.

3.1 (d) Listed threatened species and ecological communities

The EPBC Act Protected Matters Report (2016; Attachment 15) identified 61 threatened species (24 plants, 12 fauna taxon that utilise terrestrial environments, 25 fauna species that mainly use marine environments) and two ecological communities. Note: The updated PMST (2016) list was similar to the 2013 list referred to in the Ecoscape report (2015; Attachment 6). The following additional species were however listed in the 2016 PMST report; they were addressed in the Ecoscape (2015) report and were not observed during the surveys:

- *Eucalyptus insularis* (Twin Peak Island Mallee) Endangered
- *Pezoporus occidentalis* (Night Parrot) Critically Endangered
- *Dasyornis longirostris* (Bristlebird Western) Vulnerable
- *Pseudomys shortridgei* (Heath Rat) Vulnerable

Description

FLORA

Four threatened flora occur within the Project Area based on Ecoscape (2015) surveys. They are discussed below.

Conostylis lepidospermoides - Sedge Conostylis. Listed as Endangered under EPBC Act.

Sedge Conostylis (*Conostylis lepidospermoides*) is a tufted sedge-like perennial herb to 35 cm high and 40 cm wide. It has flowering stalks 1-4 cm long with up to six yellow flowers and usually grows in yellow or grey sand over laterite (FloraBase, WAH 1998-2014). There are 47 records for this species listed on NatureMap (DPaW 2007-2014), all located to the west or northwest of Esperance; a north-south and east-west range of approximately 120 km. There is now considered to be 21 populations of *Conostylis lepidospermoides* outside the study area (J. Waters DPaW pers. comm. 2015) plus nine that were recorded in the present survey, therefore 30 in total.

The nine populations of *Conostylis lepidospermoides* were recorded intermittently between the westernmost end of the study area and Young River, extending across a total linear range of approximately 56 km (SLK 2-58). There were estimated to be almost 3 000 individual plants recorded within the study area. There was previously one historic record of this species within the study area (near SLK55), however this population could not be located despite a targeted search, potentially due to inaccurate location coordinates.

In 2014, searches were conducted to identify whether, and to what extent, populations occur outside of the study area. It was apparent that flowering of *Conostylis lepidospermoides* in 2014 was not as prolific as 2013, making it more difficult to locate the species. Six of the nine populations were observed to extend well beyond the boundary of the study area. It is considered likely that the other three populations extend into adjacent areas considering the vegetation types supporting *Conostylis lepidospermoides* are not restricted to the study area.

Anigozanthos bicolor subsp. minor - Listed as Endangered under EPBC Act.

Twenty seven plants were recorded from a single geographically restricted, previously unrecorded, population that extended for a length of approximately 200 m along the study area between Shao Lu and Fisheries Roads, in the eastern portion of the study area. Individuals were only observed to be growing on the old tracks associated with scrub rolling, indicating a preference for disturbed areas. The associated vegetation type (DcTp) was unique to this location and was not recorded elsewhere within the study area. A search of the surrounding area in 2014 did not identify additional individuals outside of the study area adjacent to the known population; however this species typically requires a disturbance event to promote germination.

Eucalyptus merrickiae - Listed as Vulnerable under EPBC Act.

Eleven populations of *Eucalyptus merrickiae* were recorded intermittently over 56 km of the study area alignment (SLK 330 to

386), none of which were previously known to occur. There were 412 individual plants estimated from all populations combined. Most populations were associated with, or in close proximity to, salt lakes. All populations are located in sections that are adjacent to agricultural land and correspond with the existing low fuel modified buffer strip. Plants occurring within the existing low fuel modified buffer strip were observed to be successfully resprouting from lignotubers.

Rhizanthella gardneri -Underground Orchid, Listed as Endangered under EPBC Act.

There are two records for this species from a single population along the study area alignment near the Oldfield River, recorded in 2004 (WAH 2014). This species grows underground and can only be located during its flowering period (May to July) when the flower bracts form a small opening at the soil surface, although this is often below the leaf litter layer (Brown et al. 2003). Targeted searches for this species were conducted in both 2013 and 2014, however all field surveys were conducted from September to November which is outside the recognised flowering period. *Rhizanthella gardneri* was not recorded during the field survey. It can only be readily detected during its flowering period (May to July) and even during that period it is highly cryptic. The records are considered reliable based on the location details, date of survey and presence of TF road markers at the site.

THREATENED ECOLOGICAL COMMUNITIES (TEC)

Proteaceae Dominated Kwongkan Shrublands Threatened Ecological Community (TEC), Listed as Endangered under EPBC Act

Two vegetation types mapped by Ecoscape (2015) along the alignment are considered likely or potentially matching the description of the recently listed 'Proteaceae Dominated Kwongkan Shrublands' TEC; BaMs and BsBeAl. This TEC is listed on the EPBC list of TECs as Endangered. BsBeAl has been confirmed by DPaW as likely to represent the 'Proteaceae Dominated Kwongkan Shrublands' TEC based on its proteaceous cover of 30% or greater. The BaMs vegetation assessed currently contains less than 30% proteaceous cover, though it has been impacted by previous disturbance including scrub-rolling (chaining) and wildfire. It is considered possible that this vegetation type could exceed the 30% proteaceous cover threshold if undisturbed and therefore should be treated as a potential TEC as a precaution.

Vegetation considered potentially representative of the 'Proteaceae Dominated Kwongkan Shrublands' TEC covers 79.22 ha (1.25%) of the study area, extending for a total linear length of eight kilometres across five separate occurrences. All locations of the potential TEC occur towards the eastern end of the study area, between SLK 604 and SLK 630. The locations of the BaMs and BsBeAl vegetation types are entirely adjacent to agricultural land and correspond with areas of the existing areas chained by DPaW. Therefore the vegetation has been subject to historical impacts from scrub rolling activities.

Eucalypt Woodlands of the Western Australian Wheatbelt TEC, Listed as Critically Endangered under EPBC Act

Eucalypt Woodlands of the Western Australian Wheatbelt was endorsed as a TEC under the EPBC Act on 26 November 2015. The proposed barrier fence intersects 14.2 km of the south-eastern extent of the Western Mallee subregion to the east of Ravensthorpe between Cheadanup Nature Reserve and Oldfield River.

FAUNA

From Ecoscape (2015) updated with a 2016 PMST (Attachment 15) search the following threatened fauna may occur along or in vicinity to the proposed Esperance extension of the barrier fence.

- *Dasyurus geoffroyi* (Western Quoll, Chuditch) Vulnerable
- *Parantechinus apicalis* (Dibbler) Endangered
- *Phascogale calura* (Red-tailed Phascogale) Endangered
- *Myrmecobius fasciatus* (Numbat, Walpurti) Vulnerable
- *Bettongia penicillata ogilbyi* (Brush-tailed Bettong, Woylie) Endangered
- *Pseudomys shortridgei* (Heath Mouse, Heath Rat, Dayang) Vulnerable
- *Leipoa ocellata* (Malleefowl) Vulnerable
- *Cereopsis novaehollandiae grisea* (Recherche Cape Barren Goose) Vulnerable
- *Botaurus poiciloptilus* (Australasian Bittern) Endangered
- *Pezoporus occidentalis* (Night Parrot) Critically Endangered
- *Calyptrorhynchus latirostris* (Carnaby's Black Cockatoo) Endangered
- *Pezoporus flaviventris* (Western Ground Parrot) Critically Endangered
- *Dasyornis longirostris* (Western Bristlebird) Vulnerable

Nature and extent of likely impact

Address any impacts on the members of any listed threatened species (except a conservation dependent species) or any threatened ecological community, or their habitat.

FLORA

Conostylis lepidospermoides - Sedge Conostylis. Listed as Endangered under EPBC Act.

Most populations of *Conostylis lepidospermoides* occur within the study area at relatively high density, with individual plants not usually separated by more than 5-10 m. Therefore the proposed fence construction is unlikely to be able to avoid impact to this species within the current alignment.

Since the Ecoscape (2015) surveys were completed, an 80-100m wide area was chained in the same area as the proposed barrier fence alignment. The clearing was undertaken for improved fire protection to protect human life and property in response to the November 2015 Esperance emergency fires. DPaW who are responsible for fire mitigation on UCL, applied for and were granted a permit to take approximately 300 *Conostylis lepidospermoides* individuals by the WA Minister for Environment prior to the chaining activities. The proposed barrier fence alignment and clearing is in the same location as this cleared fire break area and so very limited new impacts to these populations are expected.

Anigozanthos bicolor subsp minor - Listed as Endangered under EPBC Act.

The area near where this species is located was re-chained by DPaW during the November 2015 Esperance fires, however, a permit to take *Anigozanthos bicolor subsp minor* was not submitted as the species was avoided by only re-chaining the inner 60m strip of vegetation next to the farmers fence. The population is located outside of this inner 60m fire break buffer. DAFWA would also avoid this species by realigning the 15m fence reserve in this existing cleared area next to the private property fence. However, DAFWA may need to apply for a permit to take the species, noting the fence clearing would be less than 50m away. DPaW expects to erect Threatened Flora signs near where *Anigozanthos bicolor subsp minor* species is located (Stephen Butler, DPaW pers comm. 2016) and DAFWA would ensure any fence construction activities would have this population location clearly marked to avoid impact.

Eucalyptus merrickiae - Listed as Vulnerable under EPBC Act.

Since the Ecoscape (2015) surveys were completed for this species, an 80-100m wide area was re-cleared for improved fire protection to protect human life and property during the November 2015 Esperance emergency fires. DPaW, who are responsible for fire mitigation on UCL applied for and were granted a permit to take *Eucalyptus merrickiae* from the WA Minister for Environment. The proposed barrier fence alignment and clearing is in the same location as this cleared fire break area and so very limited new impacts to these populations are expected.

Rhizanthella gardneri - Underground Orchid, Listed as Endangered under EPBC Act.

The population of *Rhizanthella gardneri* is located adjacent to a 'gap' in the study area that corresponds with the Oldfield River. This population could be completely avoided if this gap is expanded by approximately 400 m to the north, which would effectively avoid impacting the vegetation type associated with *Rhizanthella gardneri* (EspMhLsp).

On the basis of this advice, DAFWA modified the fence alignment and increased the width of the fence gap at the Oldfield river to avoid impacting the vegetation type associated with *Rhizanthella gardneri*. No impacts to this species are expected.

THREATENED ECOLOGICAL COMMUNITIES (TEC)

Proteaceae Dominated Kwongkan Shrublands Threatened Ecological Community (TEC), Listed as Endangered under EPBC Act

Despite this TEC already being in a disturbed, chained condition, as a precautionary measure the fence was realigned onto private property to avoid impacts to the three major occurrences of BsBeAl or approximately 7245m of 7900m of Proteaceae Dominated Kwongkan Shrublands. The remaining two sections of TEC (about 655m in length) have recently been re-chained and will continue to be chained into future for fire management purposes, irrespective of a new barrier fence. A 15m wide chained barrier fence reserve will be located through the existing chained area in the two locations, over lengths of 480m and 175m including 6m wide grading (total 0.4ha) and re chaining an additional width of 9m (total 0.6ha).

Eucalypt Woodlands of the Western Australian Wheatbelt (TEC), Listed as Critically Endangered under EPBC Act

Vegetation dominated by Eucalypt woodlands has been mapped within this section. Ecoscape (2016) assessed mapped vegetation types to determine whether any are likely to represent this TEC (Attachment 9). The advice concluded that none of the vegetation types recorded within the section of the alignment that corresponds with TEC mapping (potential extent), or within 5 km, are considered to represent the 'Eucalypt Woodlands of the Western Australian Wheatbelt' TEC.

FAUNA

General impacts

Ecoscape (2015) indicated that impacts associated with the SBF Esperance Extension to native fauna and habitats are expected to be predominantly negative, but relatively minor in proportion to changes that have already been made in previous decades, while some potential benefits have also been identified.

The fence would not present a barrier to movement of birds, reptiles, or smaller mammals. Complete separation of populations of larger animals on either side of the fence (except for widely spaced breaks at creeks) may reduce effective population size and lead to a loss of genetic diversity, greater risk of population decline and local extinction on both sides, but particularly in the agricultural zone where remnant habitat patches are small and isolated. Considering the isolated, remnant nature of habitat within the agricultural zone, the SBF Esperance Extension construction would represent a hardening of a barrier to gene flow rather than a new barrier (refer to Section 9.3.6 in Ecoscape 2015 for further assessment in habitat fragmentation and loss of connectivity, 9.3.7 for entanglement and injury). These potential impacts are discussed further in Attachment 8 (DAFWA 2016) and specific assessment for the Western brush wallaby is provided at Attachment 13 (Bamford Consulting Ecologists 2016).

Negative impacts to fauna identified may include:

- collisions and entrapment: DAFWA (2015) has recorded low numbers of animals entangled in the existing SBF fence; 41 carcasses were identified and removed from its 1190 km length between 2007-2015, almost all of kangaroos and emus. Motion detecting cameras were also deployed along the existing SBF over a 14-month period from August 2014 to September 2015 for 2311 "camera trap days" (number of cameras multiplied by number of 24 hour days deployed) or 6.33 camera trap years. No impact of any animals with the fence was recorded over this period.
- prevention of dispersal and access to resources
- separation and isolation of populations
- changes to faunal communities within the fence
- alteration of predator behaviour such as preferential predation along fence lines
- long-term loss of anti-predator behaviour in prey species
- increase in invasive species number, abundance and distribution as the fence and road allow greater access to bushland
- restriction of animal movement in fires.

Potential positive impacts to fauna:

- reduced threat of 'wild dogs' to medium-sized macropods, possibly including Western Brush Wallaby
- access for fire fighting
- dingo conservation: The wild dogs in the proposed fenced area and immediately to the north have a relatively high degree of dingo purity. Maintenance of intact dingo pack structure within some areas in the Great Western Woodlands may have conservation benefits. A fence preventing movement of dingos/wild dogs into the Agricultural area could facilitate conflicting management approaches (wild dog control and dingo conservation) in the landscape."

Ecoscape (2015) noted in their assessment that the current evidence is insufficient to estimate the relative magnitudes of the many negative and few positive effects identified. The magnitude of key impacts (negative and positive) based on DAFWAs experience in managing other barrier fences over many decades and 14 months of motion detecting camera studies, however, are discussed in detail in Attachment 8 (DAFWA 2016).

Impacts of vegetation clearing and fence construction to fauna (including all species, not only conservation listed) are likely to be mostly negative but minor. The nature and extent of clearing is described in the vegetation section above (also see Attachment 1 and 3).

Impacts to EPBC listed fauna

Potential impacts to conservation significant fauna were assessed by Ecoscape (2015) as minor to none for all EPBC listed fauna taxon, by:

- the fence acting as a barrier (e.g. macropods), or
- collision/entanglement hazard (some birds, possibly including Western Ground Parrot, Malleefowl)
- loss of habitat area by clearing (some mammals, birds, reptiles)
- loss of habitat connectivity (some mammals, small birds, reptiles), or
- increased exposure to feral predators using the fence and associated clearing as a corridor.

From Ecoscape (2015) updated with a 2016 PMST search, the following threatened fauna may be impacted albeit at a minor level by the project:

- *Dasyurus geoffroii* (Western Quoll, Chuditch) Vulnerable - The fence does not represent a significant barrier or entanglement hazard for Western Quoll. Due to the low density and large individual ranges in this species, direct impacts of associated clearing on individuals are likely to be minor.
- *Leipoa ocellata* (Malleefowl) Vulnerable - No nesting mounds occur in the study area so no resident birds are likely to be affected directly, but clearing will result in marginal reduction of available foraging habitat. The fence may present a collision hazard during flights, but not a significant barrier to movement (adults can easily fly above fence height, juveniles can pass through the mesh) and also provide a corridor facilitating access to occupied habitat by feral predators.
- *Calyptorhynchus latirostris* (Carnaby's Black Cockatoo) Endangered- Minor impact to foraging habitat may occur near the eastern and western ends of the study area, but no impact on roosts or nesting habitat is likely. The majority, if not all of the alignment is well outside of the modelled breeding range. The sections of the proposed alignment north of Salmon Gums where the majority of the previously uncleared vegetation is found are well outside of the modelled non-breeding range of Carnaby's Black Cockatoo (<http://www.environment.gov.au/resource/epbc-act-referral-guidelines-three-threatened-black-cockatoo-species-carnabys-cockatoo>).
- *Pezoporus flaviventris* (Western Ground Parrot) Critically Endangered - The South Coast Threatened Birds Recovery Plan identifies that the south eastern extent of the site (near Merivale Rd 1.6 km of chaining) site is within the Management Area for the species. The south eastern section of the alignment has potential for (minor) impact on individuals, limited to a low risk of collision for juvenile birds dispersing beyond the currently occupied range (GS Biologic 2015). The Ecoscape (2015) report supports this by noting mortality from fence and vehicle collisions are documented in the closely related Night Parrot *Pezoporus occidentalis*. Whilst flights are most likely to be above treetop level, actual flight trajectories and heights have never been documented. Risk of impact on populations cannot be quantified but is considered low, particularly because young birds dispersing long distances are likely to be lost to the breeding population in any case, due to the low probability of encountering suitable habitat and mates. Also, any additional risk would be marginal relative to existing agricultural clearance, roads and fences. Effects on fire regimes due to clearing, scrub rolling and controlled burns associated with fence construction and maintenance also have potential to impact quality of (currently unoccupied) habitat in the vicinity, including both negative and positive effects. Dingoes have already been excluded for some decades, so that no initial effect due to mesopredator release of cats and foxes can be expected; unregulated cat and fox populations may fluctuate significantly, and locally or temporarily high mesopredator abundance would entail significant risk to the parrot.

Existing private farm fences are currently located where the barrier fence would be located in this area, so the risk of collision is not new. It is expected that visibility enhancement features (fluorescent orange droppers at regular intervals) and chaining will reduce the potential for bird collisions with the fence to an acceptable level. The number of fluorescent orange fence droppers would also be doubled for approximately 85km of fence near (two kilometres from) known Western ground parrot habitat in Cape Arid National Park where dispersing juvenile ground parrots could possibly encounter or cross the fence if they expand from their known range. Two fluorescent orange droppers would be installed in-between each 7m solid star picket about 2.3m apart to further minimise collision risk in this area.

The following species will not be impacted as they are likely to be locally extinct in the vicinity of the project

- *Myrmecobius fasciatus* (Numbat, Walpurti) Vulnerable
- *Pseudomys shortridgei* (Heath Mouse, Heath Rat, Dayang) Vulnerable.
- *Pezoporus occidentalis* (Night Parrot) Critically Endangered

Impacts to the remaining fauna species listed above are considered to negligible to none.

3.1 (e) Listed migratory species

The EPBC PMST report (2016) (Attachment 15) identified 41 migratory species that may occur within 20km of the alignment. Most of these are marine species or birds that will not be impacted by the proposed fence.

Description

Migratory species that have potential to occur near the alignment are listed below:

- *Apus pacificus* (Fork-tailed Swift)
- *Ardea ibis* (Cattle Egret)
- *Plegadis falcinellus* (Glossy Ibis)
- *Haliaeetus leucogaster* (White-bellied Sea-eagle)
- *Pluvialis fulva* (Pacific Golden Plover)
- *Pluvialis squatarola* (Grey Plover)
- *Charadrius mongolus* (Lesser Sand Plover)

- *Charadrius leschenaultii leschenaultii* (Greater Sand Plover (Mongolian))
- Family SCOLOPACIDAE – Species of Gallinago, Limosa, Numenius, Actitis, Tringa, Arenaria, and Calidris
- *Onychoprion anaethetus* (Bridled Tern)
- *Hydroprogne caspia* (Caspian Tern)
- *Merops ornatus* (Rainbow Bee-eater)

Nature and extent of likely impact

From Ecoscape (2015) no impacts are likely to occur during the construction and operation of the proposed SBF extension, apart from very minor impacts to species under the family Scolopacidae and Rainbow Bee-eaters.

Species in the family Scolopacidae are wetland dependant and it is noted that there are large numbers of equally suitable salt lakes to which birds can easily relocate if disturbed, and no ongoing impacts are likely.

Merops ornatus (Rainbow Bee-eater) utilises sites such as sand banks of creeks and drainage lines used to burrow to create nesting chambers, which if disturbed may have some impact on the breeding success on individuals. However, historical disturbance does not represent a major issue to this species and it is common in cleared and semi-cleared habitats (DoE 2014b). No significant impact is likely to result from the proposed SBF extension.

3.1 (f) Commonwealth marine area

(If the action is in the Commonwealth marine area, complete 3.2(c) instead. This section is for actions taken outside the Commonwealth marine area that may have impacts on that area.)

Description

N/A

Nature and extent of likely impact

N/A

3.1 (g) Commonwealth land

(If the action is on Commonwealth land, complete 3.2(d) instead. This section is for actions taken outside Commonwealth land that may have impacts on that land.)

N/A. The alignment does not occur on any Commonwealth land.

Nature and extent of likely impact

N/A

3.1 (h) The Great Barrier Reef Marine Park

Description

N/A

Nature and extent of likely impact

N/A

3.1 (i) A water resource, in relation to coal seam gas development and large coal mining development

Description

N/A

Nature and extent of likely impact

N/A

3.2 Nuclear actions, actions taken by the Commonwealth (or Commonwealth agency), actions taken in a Commonwealth marine area, actions taken on Commonwealth land, or actions taken in the Great Barrier Reef Marine Park

N/A

3.2 (a)	Is the proposed action a nuclear action?	X	No
			Yes (provide details below)

If yes, nature & extent of likely impact on the whole environment

3.2 (b)	Is the proposed action to be taken by the Commonwealth or a Commonwealth agency?	X	No
			Yes (provide details below)

If yes, nature & extent of likely impact on the whole environment

3.2 (c)	Is the proposed action to be taken in a Commonwealth marine area?	X	No
			Yes (provide details below)

If yes, nature & extent of likely impact on the whole environment (in addition to 3.1(f))

3.2 (d)	Is the proposed action to be taken on Commonwealth land?	X	No
			Yes (provide details below)

If yes, nature & extent of likely impact on the whole environment (in addition to 3.1(g))

3.2 (e)	Is the proposed action to be taken in the Great Barrier Reef Marine Park?	X	No
			Yes (provide details below)

If yes, nature & extent of likely impact on the whole environment (in addition to 3.1(h))

3.3 Other important features of the environment

Provide a description of the project area and the affected area, including information about the following features (where relevant to the project area and/or affected area, and to the extent not otherwise addressed above). If at Section 2.3 you identified any alternative locations, time frames or activities for your proposed action, you must complete each of the details below (where relevant) for each alternative identified.

3.3 (a) Flora and fauna

Ecoscape (2015) identified

- 860 vascular flora taxa from 266 genera and 69 families were identified from the study area from 189 relevés, 52 quadrats, opportunistic observations in the Level 2 flora survey areas and conservation significant flora searches. 60 of these were Priority Flora taxa (11 P1, 13 P2, 26 P3 and 10 P4) predominantly located in the existing chained fire break areas.
- 405 species of vertebrates and 11 invertebrates were identified from desktop assessment as potentially occurring within the study area. This is likely being an overestimate.

Habitat has been modified over most of the alignment due to chaining/clearing. New clearing (up to 120ha) will occur through 69km of previously uncleared vegetation, i.e. along 10% of the alignment, consisting of a 15-20m chained area (including a graded 6m track) located on the edge of agricultural land.

Vegetation associations and locally occurring flora are generally well represented in the area. The alignment is also located on the southern edge of 16 million hectares of the Great Western Woodlands. Existing disturbed areas, which will include areas to be chained, will still provide some level of flora/fauna habitat value as well as connectivity to the surrounding bushland.

Sensitivity of impact to most fauna is considered low: Peter Mawson (Department of Environment and Conservation, in Ecoscape 2015) suggests *there is little adverse impact on non-target native species. None of the larger terrestrial species are migratory, and smaller local species such as reptiles have no difficulty in passing through the fence.* Impacts of vegetation clearing and fence construction to fauna (including all species, not only conservation listed) are likely to be mostly negative but minor. The nature and extent of clearing is described in the vegetation section above (also see Attachments 1 and 3).

***Macropus fuliginosus* (Western Grey Kangaroo)** No listing at Commonwealth level, WA Biosecurity and Agriculture Management (BAM) Act 2007 'Declared Pest' throughout WA

Because of the relatively sedentary nature of this species (at least in the western part of its range) no mass population movements normally occur, and only individuals locally resident in the vicinity of the barrier are likely to be directly affected. Similarly, only those animals resident within or in close proximity to the area to be enclosed can impact on agricultural productivity. Initially, clearing of vegetation and construction of the fence will impact individuals that previously utilised or regularly crossed the fence corridor, and may force a shift to less suitable habitat or result in injury while attempting to cross the fence between regular feeding and resting sites. After an initial period of adjustment to the new conditions, interactions with the fence are most likely to occur when kangaroos are pursued or otherwise disturbed by humans or wild dogs. Refer to page 381 of Ecoscape (2015) for further detail.

***Canis dingo* (Dingo)**, No listing at Commonwealth level, BAM Act 2007 'Declared Pest' throughout WA

A primary intended function (impact) of the fence extension is to exclude free-ranging dogs including dingoes from sheep-grazing areas; in addition to fence construction and maintenance, proposals include monitoring and continued lethal control to maintain absence south of the fence and a 10-20 km dog-free buffer to the north (URS 2007). Continued exclusion of the dingo foregoes potential benefits of its ecological functions in regulating kangaroo and emu abundance in the agricultural zone, leading to ongoing and potentially increasing costs of controlling these species (alternatively, they could be sustainably and profitably harvested rather than culled). Feral cats and foxes are also unregulated except by costly baiting and trapping programs, with high abundance of these mesopredators leading to intense predation on critical-weight-range mammals, reptiles, and birds including threatened species. Refer to page 389 of Ecoscape (2015) for a detailed discussion on dingoes.

***Dromaius novaehollandiae* (Emu)** No listing at Commonwealth level, BAM Act 2007 'Declared Pest' throughout WA

One of the main intended functions of the State Barrier Fence is to prevent or limit natural movement of emus from the arid shrubland towards near-coastal croplands during times of peak population pressure and/or drought-induced food and water stress. Potential environmental impacts of restricting natural emu movements include effects on seed dispersal reducing population connectivity of emu-dispersed plants, leading to local extinction and failure to adapt to climate change (Lau & Driscoll 2013). Prevention of dingo establishment south and west of the fence, another of its primary intended functions, has the potential to affect the size and stability of emu populations within the agricultural areas (Pople et al. 2000), and could lead to increased crop damage and/or necessitate other control measures. Refer to page 396 of Ecoscape (2015) for a detailed discussion on emus.

3.3 (b) Hydrology, including water flows

The Oldfield River (southwest of Cheadanup Nature Reserve (NR)), Young River (northeast of Cheadanup NR) and Lort River (west of Field Road) are the most significant drainage lines that intersect the overall study area; however these correspond with 'gaps' in the fence at these crossings. There are also several unnamed, minor, ephemeral or seasonally inundated drainage lines that intersect the study area that the proposed fence will cross.

The fence may also cross the Thomas River on private property where an existing farm fence crosses the river. No additional clearing would be undertaken. This small section of fence would be subject to considerations under the *Aboriginal Heritage Act 1972*

The EPBC Act Protected Matters search (2016) identified the study area to be upstream from the Lake Gore and Lake Warden System RAMSAR wetlands. Both are close to the coast near Esperance and 65 km and 50 km (respectively) from the nearest point of the study area. There are no significant drainage lines that discharge from the study area into either of these RAMSAR wetlands. Oldfield River discharges into Oldfield Estuary whilst Young and Lort River discharge into Stokes Inlet (west of Lake Gore).

The study area intersects extensive areas containing salt lake systems, particularly in the central portion. These lakes are periodically inundated and remain dry for most of the year. The only named lake that intersects the proposed alignment is Exclamation Lake (northwest of Salmon Gums). Whilst the study area occurs within a region of extensive salt lakes, there are few that actually intersect the study area. The majority of lakes that do extend into the study area do not span the entire 100 m width and are likely to be avoided by the fence construction.

3.3 (c) Soil and Vegetation characteristics

Soil landscape mapping produced by DAFWA (2012b) determined that the study area contains the 31 soil subsystems outlined in Table 26 in Appendix Two of Ecoscape (2015). The DAFWA (2012b) Soil-landscape spatial dataset does not extend to the far eastern north-south portion of the study area (Cape Arid National Park, 0.35% of the study area).

3.3 (d) Outstanding natural features

Numerous granite outcrops occur throughout the study area. These may contain suitable habitat for many threatened flora, often have cultural significance and are often uncleared (consist of remnant vegetation). For these reasons and due to the difficulty in effectively installing a fence in these areas, they have been avoided.

3.3 (e) Remnant native vegetation

Vegetation condition ranges from Degraded to Pristine, with 98% of sites within the study area classified as Very Good or better (Ecoscape 2015). Since the Ecoscape fieldwork many areas of remnant vegetation have been chained and condition in those areas is likely to only be in a Good condition. Most of the remaining alignment has been previously chained by DPaW or occurs in private property crop land along exiting fence lines. Subsequently undisturbed remnant vegetation over the alignment is now mostly restricted to the area north of Salmon Gums (Attachment 1).

Vegetation impacts will be as follows will include a total disturbance footprint of 843ha of native vegetation, broken down as follows (see Attachments 1 and 3 for the final alignment):

- Ten percent (69km) of the proposed fence is in previously uncleared remnant vegetation. This will require a 6m graded track and additional chaining between 9-14m wide. Total required clearing: 124ha.
- Sixty five percent (432km,) of the alignment was cleared/chained either recently during the November 2015 Esperance bush fires, will be before July 2016 or has been subject to historic and ongoing chaining/clearing for fire management by DPaW. Total required clearing: 648ha.
- Seven percent (47km) of the alignment includes existing tracks or graded areas, with an additional 9-14m of chaining required (total required clearing: 65ha).
- Eighteen percent (111km) of the alignment involves replacing existing fencing on private property where no clearing is required (pruning only). Total required clearing: None.
- Six hectares over the total alignment will be cleared for erosion control.

Great Western Woodlands

The Great Western Woodlands is the largest remaining area of intact Mediterranean-climate woodland on Earth, occupying almost 16 million ha from the edge of the Western Australian Wheatbelt to Kalbarrie- Boulder in the north, the edge of the inland deserts to the northeast and Nullarbor Plain to the east. Approximately 20 per cent of Australia's known flora species

and a significant portion of Australia's fauna species occur within these woodlands (DEC 2010a). DPaW has developed a strategy to protect the biodiversity, cultural values and economic and social benefits of the Great Western Woodlands (DEC 2010a).

The study area largely corresponds with the southern edge of the Great Western Woodlands. The alignment has been significantly modified to minimise isolation of pockets of the Great Western Woodlands and to locate the fence within existing disturbed/cleared fire breaks where possible.

3.3 (f) Gradient (or depth range if action is to be taken in a marine area)

N/A

3.3 (g) Current state of the environment

Include information about the extent of erosion, whether the area is infested with weeds or feral animals and whether the area is covered by native vegetation or crops.

The proposal is being developed specifically to manage WA 'Declared Pests' *Macropus fuliginosus* (Western Grey Kangaroo), dingo or wild dogs (*Canis lupus dingo*, *Canis lupus dingo* x *Canis lupus familiaris*, *Canis lupus familiaris* feral), and *Dromaius novaehollandiae* (Emu). These species are not listed at a Commonwealth level. They are addressed in Section 3.3(a). GHD (2012) notes that the proposed fence extension may also be of benefit in limiting movements of large feral mammals including horses and camels (present in low numbers in the UCL to the north of the agricultural area), and helping to prevent any future incursions of pigs and goats, which are not currently present to a significant extent.

Ecoscape (2015) identified 20 introduced species including the Declared Pest plants **Asparagus asparagoides* (Bridal Creeper), **Carthamus lanatus* (Saffron Thistle) and **Onopordum acaulon* (Stemless Thistle). A State Barrier Fence Weed Hygiene Plan prepared by Ecoscape Australia Pty Ltd (2015) will be adopted (Attachment 16). In addition a Clearing and construction works contract terms will have requirements for strict adherence to this plan and a Construction Management Plan is to be developed if construction is approved.

A Phytophthora Dieback Management Plan will be prepared in consultation with DPaW and South Coast Natural Resource Management Inc. prior to any construction works. It will be based on the Dieback assessment for the SBF Esperance Extension carried out by Glevan Consulting (2015) (Attachment 10). Clearing and construction works contract terms will have requirements for strict adherence to the plan (e.g. clean on entry points). Compliance with the plan will be enforced by DAFWA construction supervisors.

Research and field investigations undertaken on potential high risk erosion areas of the alignment and mitigation strategies adopted to minimise erosion potential (refer to the Department of Agriculture and Food WA and Precision Technology Solutions, Esperance WA (2016) Soil and Land Conservation Act reports- (1) desk top study; (2) subsequent field investigation and (3) final recommendations report – Attachment 11). Six hectares over the total alignment will be cleared for erosion control. Controls will involve the construction of water diversion turnouts (10m long by 2.5m wide), alternating every 200m along the 6m wide cleared track in areas susceptible to erosion. This will result in a maximum additional 5.5m x 2.5m (13.75m²) of clearing every 200m.

As noted, 18% (111km) of the alignment involves replacing existing fencing on private property where no clearing is required (pruning over-hanging branches only, where necessary).

3.3 (h) Commonwealth Heritage Places or other places recognised as having heritage values

N/A

3.3 (i) Indigenous heritage values

Comprehensive archaeological and ethnographic Aboriginal Heritage surveys were completed for both the Esperance Nyungar and Ngadju determined lands of the proposed Esperance extension. The alignment and fence clearing practice have been modified to avoid or minimize impacts on Aboriginal Heritage places identified. The Department of Aboriginal Affairs and Traditional Owners have been consulted extensively. Two anthropogenic cultural heritage studies and one archaeological study of the proposed alignment were completed by the Ngadju and Esperance Nyungar Traditional Owners in 2015 (reports are not publicly available).

3.3 (j) Other important or unique values of the environment

The majority of the study area occurs within UCL or road reserve adjacent to agricultural land. The study area is located adjacent to seven Nature Reserves and Cape Arid National Park. No clearing will be undertaken in the six local A-Class Nature Reserves and a 15m wide clearing along an existing chained fire break will potentially occur on the edge of a C-class Nature Reserve depending on the width of the Shire road reserve at that location.

3.3 (k) Tenure of the action area (eg freehold, leasehold)

Approximately 113km of the proposed fence will be located on freehold crop land in agreement with the private property owners. The remainder of the alignment will be located on UCL or Shire road reserve and acquired by the WA Agriculture Authority prior to any construction.

3.3 (l) Existing land/marine uses of area

Existing land uses are farmed freehold crop land/pastures or generally unmanaged (apart from clearing for fuel management and access) UCL or Shire road reserve

3.3 (m) Any proposed land/marine uses of area

N/A

4 Environmental outcomes

Provide descriptions of the proposed environmental outcomes that will be achieved for matters of national environmental significance as a result of the proposed action. Include details of the baseline data upon which the outcomes are based, and the confidence about the likely achievement of the proposed outcomes. Where outcomes cannot be identified or committed to, provide explanatory details including any commitments to identify outcomes through an assessment process.

If a proposed action is determined to be a controlled action, the Department may request further details to enable application of the draft *Outcomes-based Conditions Policy 2015* and *Outcomes-based Conditions Guidance 2015* (<http://www.environment.gov.au/epbc/consultation/policy-guidance-outcomes-based-conditions>), including about environmental outcomes to be achieved, details of baseline data, milestones, performance criteria, and monitoring and adaptive management to ensure the achievement of outcomes. If this information is available at the time of referral it should be included.

General commitments to achieving environmental outcomes, particularly relating to beneficial impacts of the proposed action, CANNOT be taken into account in making the initial decision about whether the proposal is likely to have a significant impact on a matter protected under the EPBC Act. (But those commitments may be relevant at the later assessment and approval stages, including the appropriate level of assessment, and conditions of approval, if your proposal proceeds to these stages).

The proposed action will result in the following environmental outcomes to matters of NES:

- Minor but unavoidable impacts to some ***Conostylis lepidospermoides*** (Endangered) and ***Eucalyptus merrickiae*** (Vulnerable) plants. Impacts will involve grading a 6m wide track and re chaining an additional 9m (for a total 15m wide easement) of existing areas that that were recently re-chained by DPaW in 2015-2016.
- Clearing/chaining of approximately 655m (1ha) - 6m wide grading (total 0.4ha) and re-chaining of an additional of 9m (total 0.6ha) - of **Proteaceae Dominated Kwongkan Shrublands TEC** (Endangered) within existing areas that are subject to existing ongoing fuel management (chaining) by DPaW.
- Minor loss of chained potential foraging habitat in a narrow band over an extensive distance at the eastern and western sections of the alignment for ***Calyptorhynchus latirostris* (Carnaby's Black Cockatoo)** Endangered. No loss of breeding or roosting habitat likely.
- A low risk collision by ***Pezoporus flaviventris* (Western Ground Parrot)** (Critically Endangered) for birds dispersing beyond the currently occupied range (in the south eastern extent of the site near Merivale Rd, which occurs within the Management Area for the species).

Ecoscope (2015) note that the current evidence is insufficient to estimate the relative magnitudes of the negative/positive effects identified. The magnitude of key impacts (negative and positive) on matters of NES in the fauna group, based on DAFWAs experience in managing other barrier fences, are discussed in detail in Attachment 8 and are not considered significant (DAFWA 2016). A summary of both reports indicate a general impacts to matters of NES (fauna) as being minor to none. Also refer to Section 3.1(d) of this referral for detailed assessment.

5 Measures to avoid or reduce impacts

Note: If you have identified alternatives in relation to location, time frames or activities for the proposed action at Section 2.3 you will need to complete this section in relation to each of the alternatives identified.

Provide a description of measures that will be implemented to avoid, reduce, manage or offset any relevant impacts of the action. Include, if appropriate, any relevant reports or technical advice relating to the feasibility and effectiveness of the proposed measures.

For any measures intended to avoid or mitigate significant impacts on matters protected under the EPBC Act, specify:

- what the measure is,
- how the measure is expected to be effective, and
- the time frame or workplan for the measure.

Examples of relevant measures to avoid or reduce impacts may include the timing of works, avoidance of important habitat, specific design measures, or adoption of specific work practices.

Provide information about the level of commitment by the person proposing to take the action to achieve the proposed environmental outcomes and implement the proposed mitigation measures. For example, if the measures are preliminary suggestions only that have not been fully researched, or are dependent on a third party's agreement (e.g. council or landowner), you should state that, that is the case.

Note, the Australian Government Environment Minister may decide that a proposed action is not likely to have significant impacts on a protected matter, as long as the action is taken in a particular manner (section 77A of the EPBC Act). The particular manner of taking the action may avoid or reduce certain impacts, in such a way that those impacts will not be 'significant'. More detail is provided on the Department's web site.

For the Minister to make such a decision (under section 77A), the proposed measures to avoid or reduce impacts must:

- clearly form part of the referred action (eg be identified in the referral and fall within the responsibility of the person proposing to take the action),
- be must be clear, unambiguous, and provide certainty in relation to reducing or avoiding impacts on the matters protected, and
- must be realistic and practical in terms of reporting, auditing and enforcement.

More general commitments (eg preparation of management plans or monitoring) and measures aimed at providing environmental offsets, compensation or off-site benefits CANNOT be taken into account in making the initial decision about whether the proposal is likely to have a significant impact on a matter protected under the EPBC Act. (But those commitments may be relevant at the later assessment and approval stages, including the appropriate level of assessment, if your proposal proceeds to these stages).

Specific mitigation measures have been incorporated into the design and location of proposed SBF Esperance extension alignment, as outlined in Section 2.3 of this referral. DAFWA has also liaised closely with the Great Southern Region of DPaW to co-locate and maximize use of the chaining/clearing associated with DPaW's fuel management program. Key measures to avoid impacts on matters of NES (and other environmental factors) are outlined below:

- entirely avoiding the threatened underground orchid (*Rhizanthella gardneri*) habitat near the Oldfield River;
- reduced isolation of large sections of Great Western Woodlands from vegetated patches to the north compared to the original scoping studies. The alignment predominantly follows the existing cleared agricultural/woodland interface;
- minimise the use of acute angles in the fence line to minimise the potential for aggregations of emus and kangaroos from the woodlands/rangelands;
- the alignment has provided for connectivity of larger animals with the adjacent woodlands by leaving the three main river systems in the west and the coastal corridor in the east open to animal movement. Gaps in the fence at the Oldfield River (about 1km wide) the Young River (about 400m wide) and the Lort River (about 2km wide) will leave these waterways and riparian areas open to animal movement on the western side of the alignment. On the eastern side of the EE a 3.2km wide gap in the fence from the agricultural land to the coast adjacent to Cape Arid National Park will allow fauna movement to continue through this coastal corridor. Some connectivity will always remain due to imperfect fence maintenance, the ability of animals to jump or fly over the fence and where fence grids cross roads.
- modifying clearing practices to retain some ground cover. No longer bulldozing and grading the entire 20m wide fence reserve as per the existing State Barrier Fence, and only bulldozing/grading a 6m wide track. The remaining area adjacent to the track will be chained and potentially mulched (instead of bare earth cleared) to reduce erosion potential, maintain the seed bank, and to provide ground habitat;
- maximise the use of existing chained/cleared firebreak areas, adjacent to private agricultural land. Existing cleared tracks will be used for the fence wherever possible to avoid clearing duplication;
- reduce clearing width to 15m from original 20m proposal for 460km of the fence (except in high fire risk previously uncleared land);
- avoid clearing in any A Class Reserves and Cape Arid National Park;
- realign the fence to private property to avoid impacts to approximately 7245 of 7900m of the Proteaceae Dominated Kwongan Shrublands Threatened Ecological Community (TEC). The remaining TEC proposed to be impacted was recently re-chained for fire mitigation (cleared);
- utilise cleared private property crop land for 112km by replacing existing farm fences with a barrier fence to avoid high environmental or cultural concerns identified. Only vegetation trimming in places where growth occurs over existing farm fences may be required in these areas. Additional clearing on private land is restricted to only 3ha over 1.5km to avoid a cultural place and deep salt lake;
- Ecoscape (2015) note that fence design can have a major influence on how it affects particular species, including the height, mesh size, underground extent, and presence of barbed wire strands and foot netting. The current

fence design has taken these and other design aspects into consideration to minimise impacts to fauna (see also Attachment 8: DAFWA, 2016).

- The fence mesh dimensions are large enough (minimum 152mm x 102mm increasing to 152mm x 152mm at the top of the fence) to allow the majority of fauna species including snakes, lizards and small to mid-sized (or juvenile) mammals to pass through.
 - No barbed wire is used to reduce entanglement or injury potential.
 - A relatively low fence height of 1.35m will reduce collision potential with bats or birds.
 - Electrical wires will not be used as they can cause mortality of some smaller native species.
 - Fence specifications have been modified from the original State Barrier Fence design to include fluorescent orange droppers every 7m to increase the visibility of the fence in a colour spectrum that is more visually obvious than conventional fencing. The number of fluorescent orange fence droppers will be doubled along approximately 85km of fence near (though several kilometres from) known Western ground parrot habitat. Two fluorescent orange droppers would be installed and spaced in-between each 7m star picket (i.e. about 2.3m apart) to further minimise collision potential;
-
- In addition, regular inspections of the fence will be conducted by DAFWA staff and contractors during construction and particularly during the first year of operation, while wildlife gets used to the fence.
 - wild dog trapping and wild dog/fox baiting will continue in a 10-20km buffer area from the fence and particularly at gaps in the fence reducing potential impacts from these predators on species such as mallee fowl and Western brush wallaby;
 - avoiding high value environmental and cultural heritage locations (e.g. granite outcrops).

- 6 Conclusion on the likelihood of significant impacts

Identify whether or not you believe the action is a controlled action (ie. whether you think that significant impacts on the matters protected under Part 3 of the EPBC Act are likely) and the reasons why.

6.1 Do you THINK your proposed action is a controlled action?

X	No, complete section 5.2
	Yes, complete section 5.3

6.2 Proposed action IS NOT a controlled action.

Specify the key reasons why you think the proposed action is NOT LIKELY to have significant impacts on a matter protected under the EPBC Act.

Impacts to Matters of NES as outlined in Attachment 15, assessed through the various environmental reports (see Attachments), indicate that with the mitigation measures proposed above (Section 5), impacts to matters of NES will generally be minor to none (threatened fauna, threatened flora and ecological communities).

Some impacts will occur to individual or groups of plants *Conostylis lepidospermoides* (Endangered) and *Eucalyptus merrickiae* (Vulnerable) plants and a one hectare section of **Proteaceae Dominated Kwongkan Shrublands TEC** (Endangered) – the affected plants and TEC are all located within existing areas recently cleared/chained by DPaW and will continue to be impacted for ongoing fuel management, irrespective of the barrier fence.

No other impacts to matters of NES are proposed. The proposed action is therefore not likely to be considered to have significant impacts on any matters protected under the EPBC Act.

6.3 Proposed action IS a controlled action

Type 'X' in the box for the matter(s) protected under the EPBC Act that you think are likely to be significantly impacted. (The 'sections' identified below are the relevant sections of the EPBC Act.)

Matters likely to be impacted

<input type="checkbox"/>	World Heritage values (sections 12 and 15A)
<input type="checkbox"/>	National Heritage places (sections 15B and 15C)
<input type="checkbox"/>	Wetlands of international importance (sections 16 and 17B)
<input type="checkbox"/>	Listed threatened species and communities (sections 18 and 18A)
<input type="checkbox"/>	Listed migratory species (sections 20 and 20A)
<input type="checkbox"/>	Protection of the environment from nuclear actions (sections 21 and 22A)
<input type="checkbox"/>	Commonwealth marine environment (sections 23 and 24A)
<input type="checkbox"/>	Great Barrier Reef Marine Park (sections 24B and 24C)
<input type="checkbox"/>	A water resource, in relation to coal seam gas development and large coal mining development (sections 24D and 24E)
<input type="checkbox"/>	Protection of the environment from actions involving Commonwealth land (sections 26 and 27A)
<input type="checkbox"/>	Protection of the environment from Commonwealth actions (section 28)
<input type="checkbox"/>	Commonwealth Heritage places overseas (sections 27B and 27C)

Specify the key reasons why you think the proposed action is likely to have a significant adverse impact on the matters identified above.

7 Environmental record of the responsible party

NOTE: If a decision is made that a proposal needs approval under the EPBC Act, the Environment Minister will also decide the assessment approach. The EPBC Regulations provide for the environmental history of the party proposing to take the action to be taken into account when deciding the assessment approach.

	Yes	No
<p>7.1 Does the party taking the action have a satisfactory record of responsible environmental management?</p> <p>Provide details</p> <p>DAFWA has erected, managed and maintained thousands of kilometres of existing State Barrier Fence throughout Western Australia over a very long period of time, including the 2014 construction of the Yilgarn Gap barrier fence. DAFWA is authorised under State legislation enacted by the WA Parliament to erect barrier fences to manage declared pests. Significant time, effort and additional cost have gone into ensuring any adverse environmental and cultural impacts of the proposal are avoided or minimised. If the proposal is approved, DAFWA will continue to manage and implement the project in an environmentally and culturally responsible manner.</p>	X	
<p>7.2 Has either (a) the party proposing to take the action, or (b) if a permit has been applied for in relation to the action, the person making the application - ever been subject to any proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources?</p> <p>If yes, provide details</p>		X
<p>7.3 If the party taking the action is a corporation, will the action be taken in accordance with the corporation's environmental policy and planning framework?</p> <p>If yes, provide details of environmental policy and planning framework</p>		X
<p>7.4 Has the party taking the action previously referred an action under the EPBC Act, or been responsible for undertaking an action referred under the EPBC Act?</p> <p>Provide name of proposal and EPBC reference number (if known)</p>		X

8 Information sources and attachments

(For the information provided above)

8.1 References

Attachment	Title	Author	Document Description
(1)	Proposed State Barrier Fence Esperance Extension map.	Department of Agriculture and Food WA (2016)	Map depicting vegetation treatments and proposed impact types. Shape files included for DoE use.
(2)	Current State Barrier Fence and Proposed Esperance Extension map	Department of Agriculture and Food WA (2016)	Map of the proposed Esperance extension in relation to existing State Barrier Fence.
(3)	Clearing impact areas spreadsheet.	Department of Agriculture and Food WA (2016)	Summary table of existing vegetation treatments, proposed impact types and impact areas.
(4)	Proposed Esperance extension alignment on private property.	Department of Agriculture and Food WA (2016)	Map of the proposed Esperance extension where located on private property.
(5)	Alternative Options Considered to the Proposed Esperance Extension	Department of Agriculture and Food WA (2016)	Discussion of alternatives options to fence considered but not preferred.
(6)	State Barrier Fence Biological Surveys.	Ecoscape Australia Pty Ltd. (2015)	Level 1 fauna and Level 2 flora surveys for the proposed Esperance Extension alignment.
(7)	Biological Surveys of the State Barrier Fence – Merivale Road Reserve Realignment – Cape Arid.	Great Southern Bio Logic Sept 2015.	Level 1 flora, Level 1 fauna and dieback surveys completed for an additional 1.6km section of UCL not surveyed by Ecoscape Australia Pty Ltd.
(8)	Potential ecological footprint of the proposed Esperance extension to the State Barrier Fence on wildlife.	Department of Agriculture and Food WA (2016)	Discussion of the broader potential ecological impacts on wildlife and the mitigation strategies adopted to minimise impacts of the proposed barrier fence.
(9)	State Barrier Fence Esperance Extension Assessment of the	Ecoscape Australia Pty Ltd. (2016)	Assessment of the alignment for potential occurrence of Eucalypt Woodlands of the Western Wheatbelt Commonwealth listed

	Eucalypt woodlands of the Western Wheatbelt Threatened Ecological Community (TEC).		TEC.
(10)	State Barrier Fence Esperance Extension. Phytophthora Dieback occurrence assessment.	Glevan Consulting (2015)	Dieback assessment completed for the proposed alignment. Dieback Management Plan to be prepared if proposal is approved.
(11)	Soil and Land Conservation Act 1945 reports- (1) desk top study; (2) subsequent field investigation and (3) final recommendations report.	Department of Agriculture and Food WA and Precision Technology Solutions, Esperance WA (2016)	Research and field investigations undertaken on potential high risk erosion areas of the alignment and mitigation strategies adopted to minimise erosion potential.
(12)	Additional advice on Western Ground parrot.	Department of Parks and Wildlife 2016	Potential risk to dispersing juvenile Western ground parrots colliding with the fence if they extend beyond known habitat. Shape file included for DoE use.
(13)	Risk assessment of the proposed extension to the State Barrier Fence on the Brush Wallaby.	M.J. & A.R. Bamford Consulting Ecologists (2016).	Additional advice and risk assessment for the brush wallaby (<i>Macropus irma</i>) related to potential for population fragmentation and changes in the abundance of predators and competitors due to the construction of the fence.
(14)	Esperance extension to the State Barrier Fence consultation timeline	Department of Agriculture and Food WA (2016)	Summary of key consultations undertaken in developing the proposal.
(15)	EPBC Act Protected Matters updated 2016 report	Department of Environment 2016	EPBC Act Protected Matters updated 2016 report
(16)	State Barrier Fence Weed Hygiene Plan	Ecoscope Australia Pty Ltd. (2015)	Weed management plan prepared for contractors if proposal is approved.

8.2 Reliability and date of information

For information in section 3 specify:

- source of the information;
- how recent the information is;
- how the reliability of the information was tested; and
- any uncertainties in the information.

Reference	Date	Reliability	Uncertainties
Clearing impact areas spreadsheet.	March 2016	Reliable	Based on aerial flyovers, ground surveys and historic aerial imagery. DPaW fire mitigation clearing activities still underway until end of 2015/16 financial year.
SBF Esperance extension maps, prepared by DAFWA (2016)	March 2016	Reliable	Mapping was based on assumptions including approximate alignment on the 'inside' of the 100m wide survey corridor.
State Barrier Fence Biological Surveys. Ecoscape Australia Pty Ltd. (2015)	2015, based on fieldwork in 2013 and 2014 and PMST search from 2013. The PMST search was carried out again in March 2016 by DAFWA and additional species where considered relevant.	Reliable, additional species and communities were considered by DAFWA based on a current PMST search (March 2016).	The biological surveys did not include the easternmost end of the proposed alignment (south of Fisheries Road on private farm property across the road from Cape Arid National Park).
Biological Surveys of the State Barrier Fence – Merivale Road Reserve Realignment – Cape Arid. Great Southern Bio Logic Sept 2015.	2015	Reliable	This included the UCL area over 1.6km near Merivale Road, omitted by Ecoscape (2015). Private property was not surveyed here but is cleared/crop land with existing fence.
Potential ecological footprint of the proposed Esperance extension to the State Barrier Fence on wildlife. Department of Agriculture and Food WA (2016)	2016	Reliable.	Based on general desktop assessment, staff maintenance experience of the barrier fence over many decades and 2015 camera monitoring in other areas of the SBF in WA.
State Barrier Fence Esperance Extension Assessment of the Eucalypt woodlands of the Western Wheatbelt Threatened Ecological Community. Ecoscape Australia Pty Ltd. (2016)	2016	Reliable	-

State Barrier Fence Esperance Extension. Phytophthora Dieback occurrence assessment. Glevan Consulting (2015)	2015	Reliable	-
Soil and Land Conservation Act reports- (1) desk top study; (2) subsequent field investigation and (3) final recommendations report. Department of Agriculture and Food WA and Precision Technology Solutions, Esperance WA (2015).	2015	Reliable	-
State Barrier Fence Weed Hygiene Plan (Ecoscape Australia Pty Ltd. 2015)	2015	Reliable as a general plan of management	-
Alternative Options Considered to the Proposed Esperance Extension Department of Agriculture and Food WA (2016)	2016	Reliable	-
Protected Matters Search Tool report (carried out on 9/03/2016)	2016	Generally reliable for identifying potential species habitats (not records)	-
Western Ground Parrot additional potential impact advice.	2016	Reliable.	
Risk assessment of the proposed extension to the State Barrier Fence on the Brush Wallaby. M.J. & A.R. Bamford Consulting Ecologists (2016).	2016		Desk top assessment of major remaining habitats within agricultural area near fence.

8.3 Attachments

Indicate the documents you have attached. All attachments must be less than three megabytes (3mb) so they can be published on the Department's website. Attachments larger than three megabytes (3mb) may delay the processing of your referral.

		✓ attached	Title of attachment(s)
You must attach	figures, maps or aerial photographs showing the project locality (section 1)	Attachment 1	<i>SBF Esperance extension maps DAFWA (2016) and Shapefiles</i>
	GIS file delineating the boundary of the referral area (section 1)		
	figures, maps or aerial photographs showing the location of the project in respect to any matters of national environmental significance or important features of the environments (section 3)		
If relevant, attach	copies of any state or local government approvals and consent conditions (section 2.5)		
	copies of any completed assessments to meet state or local government approvals and outcomes of public consultations, if available (section 2.6)		
	copies of any flora and fauna investigations and surveys (section 3)	Attachment 6	<i>State Barrier Fence Biological Surveys. Ecoscape Australia Pty Ltd. (2015). Full size document versions and Shape files previously provided to Pablo Shopen at DoE via thumbdrive.</i>
		Attachment 7	<i>Biological Surveys of the State Barrier Fence – Merivale Road Reserve Realignment – Cape Arid. Great Southern Bio Logic Sept 2015.</i>
		Attachment 8	<i>Potential ecological footprint of the proposed Esperance extension to the State Barrier Fence on wildlife. Department of Agriculture and Food WA (2016)</i>
		Attachment 9	<i>State Barrier Fence Esperance Extension Assessment of the Eucalypt woodlands of the Western Wheatbelt Threatened Ecological Community. Ecoscape Australia Pty Ltd. (2016)</i>
		Attachment 10	<i>State Barrier Fence Esperance Extension. Phytophthora Dieback occurrence assessment. Glevan Consulting (2015)</i>

	Attachment 11	<i>Soil and Land Conservation Act reports- (1) desk top study; (2) subsequent field investigation and (3) final recommendations report.</i> Department of Agriculture and Food WA and Precision Technology Solutions, Esperance WA (2016).
	Attachment 16	State Barrier Fence Weed Hygiene Plan (Ecoscape Australia Pty Ltd. 2015)
	Attachment 13	Risk assessment of the proposed extension to the State Barrier Fence on the Brush Wallaby.
technical reports relevant to the assessment of impacts on protected matters that support the arguments and conclusions in the referral (section 3 and 4)	Attachment 5	<i>Alternative Options Considered to the Proposed Esperance Extension</i> Department of Agriculture and Food WA (2016)
	Attachment 12	Western Ground Parrot additional potential impact advice from DPaW.
	Attachment 13	Risk assessment of the proposed extension to the State Barrier Fence on the Brush Wallaby. M.J. & A.R. Bamford Consulting Ecologists (2016).
	Attachment 15	Protected Matters Search Tool report (carried out on 9/03/2016)
report(s) on any public consultations undertaken, including with Indigenous stakeholders (section 3)	Attachment 14	<i>Esperance extension to the State Barrier Fence consultation timeline</i> Department of Agriculture and Food WA (2016) Cultural heritage ethnographic and archaeological reports can be provided to DoE on request (provided in confidence by Traditional Owners). Not to be made publicly available as per and as per the confidentiality clauses of the Esperance Nyungar Government Standard Heritage Agreement.

9 Contacts, signatures and declarations

NOTE: Providing false or misleading information is an offence punishable on conviction by imprisonment and fine (s 489, EPBC Act).

Under the EPBC Act a referral can only be made by:

- the person proposing to take the action (which can include a person acting on their behalf); or
- a Commonwealth, state or territory government, or agency that is aware of a proposal by a person to take an action, and that has administrative responsibilities relating to the action¹.

Project title: **State Barrier Fence Esperance Extension**

9.1 Person proposing to take action

This is the individual, government agency or company that will be principally responsible for, or who will carry out, the proposed action.

If the proposed action will be taken under a contract or other arrangement, this is:

- the person for whose benefit the action will be taken; or
- the person who procured the contract or other arrangement and who will have principal control and responsibility for the taking of the proposed action.

If the proposed action requires a permit under the Great Barrier Reef Marine Park Act², this is the person requiring the grant of a GBRMP permission.

The Minister may also request relevant additional information from this person.

If further assessment and approval for the action is required, any approval which may be granted will be issued to the person proposing to take the action. This person will be responsible for complying with any conditions attached to the approval.

If the Minister decides that further assessment and approval is required, the Minister must designate a person as a proponent of the action. The proponent is responsible for meeting the requirements of the EPBC Act during the assessment process. The proponent will generally be the person proposing to take the action³.

1. Name and Title: Mark Webb, Director General
2. Organisation (if applicable): Department of Agriculture and Food, Western Australia
3. EPBC Referral Number (if known):
4. ACN / ABN (if applicable): 18951343745
5. Postal address Locked Bag 4, Bentley Delivery Centre WA 6983
6. Telephone: (0)8 9368 3333
7. Email: mark.webb@agric.wa.gov.au
8. Name of designated proponent (if not the same person at item 1 above and if applicable):
9. ACN/ABN of designated proponent (if not the same person

¹ If the proposed action is to be taken by a Commonwealth, state or territory government or agency, section 8.1 of this form should be completed. However, if the government or agency is aware of, and has administrative responsibilities relating to, a proposed action that is to be taken by another person which has not otherwise been referred, please contact the Referrals Gateway (1800 803 772) to obtain an alternative contacts, signatures and declarations page.

² If your referred action, or a component of it, is to be taken in the Great Barrier Reef Marine Park the Minister is required to provide a copy of your referral to the Great Barrier Reef Marine Park Authority (GBRMPA) (see section 73A, EPBC Act). For information about how the GBRMPA may use your information, see http://www.gbrmpa.gov.au/privacy/privacy_notice_for_permits.

³ If a person other than the person proposing to take action is to be nominated as the proponent, please contact the Referrals Gateway (1800 803 772) to obtain an alternative contacts, signatures and declarations page.

named at item 1 above):

COMPLETE THIS SECTION ONLY IF YOU QUALIFY FOR EXEMPTION FROM THE FEE(S) THAT WOULD OTHERWISE BE PAYABLE

I qualify for exemption from fees under section 520(4C)(e)(v) of the EPBC Act because I am:

- ☐ an individual; OR
- ☐ a small business entity (within the meaning given by section 328-110 (other than subsection 328-119(4)) of the *Income Tax Assessment Act 1997*); OR
- ☒ not applicable.

If you are small business entity you must provide the Date/Income Year that you became a small business entity:

Note: You must advise the Department within 10 business days if you cease to be a small business entity. Failure to notify the Secretary of this is an offence punishable on conviction by a fine (regulation 5.23B(3) *Environment Protection and Biodiversity Conservation Regulations 2000* (Cth)).

COMPLETE THIS SECTION ONLY IF YOU WOULD LIKE TO APPLY FOR A WAIVER

I would like to apply for a waiver of full or partial fees under Schedule 1, 5.21A of the EPBC Regulations. Under sub regulation 5.21A(5), you must include information about the applicant (if not you) the grounds on which the waiver is sought and the reasons why it should be made:

☒ not applicable.

Declaration

I declare that to the best of my knowledge the information I have given on, or attached to this form is complete, current and correct.
I understand that giving false or misleading information is a serious offence.
I agree to be the proponent for this action.
I declare that I am not taking the action on behalf of or for the benefit of any other person or entity.

Signature



Date 8/6/16

9.2 Person preparing the referral information (if different from 8.1)

Individual or organisation who has prepared the information contained in this referral form.

Name Matt Stadler

Title Manager, R4R State Barrier Fence and Wild Dog Management

Organisation Department of Agriculture and Food, Western Australia

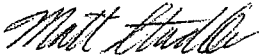
ACN / ABN (if applicable)

Postal address 444 Albany Hwy, Albany WA 6330

Telephone 08 9892 8446

Email Matthew.Stadler@agric.wa.gov.au

Declaration I declare that to the best of my knowledge the information I have given on, or attached to this form is complete, current and correct.
I understand that giving false or misleading information is a serious offence.

Signature 

Date 19/05/2016

REFERRAL CHECKLIST

NOTE: This checklist is to help ensure that all the relevant referral information has been provided. It is not a part of the referral form and does not need to be sent to the Department.

HAVE YOU:

- X Completed all required sections of the referral form?
- X Included accurate coordinates (to allow the location of the proposed action to be mapped)?
- X Provided a map showing the location and approximate boundaries of the project area?
- X Provided a map/plan showing the location of the action in relation to any matters of NES?
- X Provided a digital file (preferably ArcGIS shapefile, refer to guidelines at Attachment A) delineating the boundaries of the referral area?
- X Provided complete contact details and signed the form?
- X Provided copies of any documents referenced in the referral form?
- X Ensured that all attachments are less than three megabytes (3mb)?
- X Sent the referral to the Department (electronic and hard copy preferred)?

Geographic Information System (GIS) data supply guidelines

If the area is less than 5 hectares, provide the location as a point layer. If the area greater than 5 hectares, please provide as a polygon layer. If the proposed action is linear (eg. a road or pipeline) please provide a polyline layer.

GIS data needs to be provided to the Department in the following manner:

- Point, Line or Polygon data types: ESRI file geodatabase feature class (preferred) or as an ESRI shapefile (.shp) zipped and attached with appropriate title
- Raster data types: Raw satellite imagery should be supplied in the vendor specific format.
- Projection as GDA94 coordinate system.

Processed products should be provided as follows:

- For data, uncompressed or lossless compressed formats is required - GeoTIFF or Imagine IMG is the first preference, then JPEG2000 lossless and other simple binary+header formats (ERS, ENVI or BIL).
- For natural/false/pseudo colour RGB imagery:
 - If the imagery is already mosaiced and is ready for display then lossy compression is suitable (JPEG2000 lossy/ECW/MrSID). Prefer 10% compression, up to 20% is acceptable.
 - If the imagery requires any sort of processing prior to display (i.e. mosaicing/colour balancing/etc) then an uncompressed or lossless compressed format is required.

Metadata or 'information about data' will be produced for all spatial data and will be compliant with ANZLIC Metadata Profile. (http://www.anzlic.org.au/policies_guidelines#guidelines).

The Department's preferred method is using ANZMet Lite, however the Department's Service Provider may use any compliant system to generate metadata.

All data will be provide under a Creative Commons license (<http://creativecommons.org/licenses/by/3.0/au/>)