Referral of proposed action

Project title: M31 - Northam to Cranbrook Road (325.9-347.4 SLK)

1 Summary of proposed action

1.1 Short description

Main Roads Western Australia (Main Roads) is proposing to widen the M31 Northam to Cranbrook Road between Straight Line Kilometres (SLKs) 325.9-347.4 (Figure 1 – Attachment 1). The project includes widening of between 4 to 8 meters (m) both sides of the road from the edge of the bitumen to the fence/boundary. The proposed works will improve the level of service and safety thereby reducing the frequency and severity of road crashes on the M31.

The Project is being referred to the Department of the Environment (DotE) as it may result in the loss of :

- Potential habitat for two Environment Protection and Biodiversity Conservation Act 1999 (EPBC) threatened fauna species:
  - Carnaby's Black Cockatoo (Calyptorhynchus latirostris) - Endangered
  - Red-tailed Phascogale (Phascogale calura) – Endangered
- Approximately 3.49 ha of the Critically Endangered Ecological Community, Eucalyptus Woodland of the Western Australian Wheatbelt.

1.2 Latitude and longitude

1	-34.13967	117.67422
2	-34.13969	117.67443
3	-34.14163	117.67415
4	-34.14270	117.67379
5	-34.14276	117.67416
6	-34.14289	117.67417
7	-34.14294	117.67373
8	-34.17339	117.66944
9	-34.17607	117.66933
10	-34.17849	117.66989
11	-34.19635	117.67417
12	-34.19823	117.67456
13	-34.20096	117.67402
14	-34.21213	117.66472
15	-34.21434	117.66277
16	-34.21585	117.66184
17	-34.23113	117.65253
18	-34.23325	117.65083
19	-34.23442	117.64915
20	-34.24224	117.63594
21	-34.24390	117.63430
22	-34.25403	117.62679
23	-34.25544	117.62569
24	-34.25684	117.62401
25	-34.28379	117.57599
26	-34.28438	117.57490
27	-34.28490	117.57362
28	-34.28892	117.56302
29	-34.28935	117.56186
30	-34.28923	117.56179
31	-34.28476	117.57354
32	-34.28368	117.57590
33	-34.25668	117.62397
34	-34.25489	117.62580
35	-34.24379	117.63410
36	-34.24212	117.63585
37	-34.23429	117.64907
38	-34.23315	117.65071
39	-34.23106	117.65237
40	-34.21578	117.66167
41	-34.21422	117.66266
42	-34.21186	117.66463
43	-34.20095	117.67383
44	-34.19824	117.67432
45	-34.19638	117.67398
46	-34.17857	117.66967
47	-34.17609	117.66910
48	-34.17337	117.66923
49	-34.14593	117.67301
50	-34.14285	117.67354

1.3 Locality and property description

The proposed works are located on the M31, also known as the Great Southern Highway between Newton Road and Hassel Road, for a length of approximately 21.5 km. The Project is located between Cranbrook and Tambellup and is in the Shires of Cranbrook and Broomehill-Tambellup. This section of the M31 is currently a single lane road (Figure 1 - Attachment 1).

1.4	Size of the development footprint or work area (hectares)	For the purpose of this referral the Project area is the maximum disturbance footprint and includes the clearing area for native vegetation and fauna habitat. The Project area includes clearing of 4.45 ha of native vegetation and fauna habitat and 32.96 ha of previously cleared area and disturbed areas including the road shoulder (Figure 2 – Attachment 1).
1.5	Street address of the site	M31 (the Great Southern Highway) - Northam to Cranbrook Road (325.9-347.4 SLK)

1.6 Lot description

Not applicable. The Project is located entirely within the road reserve.

1.7 Local Government Area and Council contact (if known)

This Project is located between two Local Government Areas, the Shire of Cranbrook in the south and the Shire of Broomehill-Tambellup in the north.

Shire of Cranbrook
Gathorne Street (PO Box 21), Cranbrook, WA 6321
Phone: (08) 9826 1008
Fax: (08) 9826 1090
E-mail: shire@cranbrook.wa.gov.au

Shire of Broomehill-Tambellup
46 - 48 Norrish St, Tambellup 6320
Phone: (08) 9825 3555
Fax: (08) 9825 1152
Email Enquiries: mail@shirebt.wa.gov.au

1.8 Time frame

Construction will be undertaken in the 2016/2017 and 2017/2018 financial years, subject to funding.

1.9	Alternatives to proposed action	▫	No
1.10	Alternative time frames etc	▫	No
1.11	State assessment	▫	No The Preliminary Environmental Impact Assessment (PEIA) report (GHD 2016a – Attachment 2) has determined the Project is unlikely to require referral to the WA Environmental Protection Authority under the Environmental Protection Act 1986 (EP Act). This is due to the low significance of its impacts to the surrounding environment except for impacts to native vegetation and fauna habitats. The potential impacts from the loss of native vegetation clearing and loss of fauna habitat for the Project may be effectively assessed through the Environmental Protection (Clearing of Native Vegetation) Regulations 2004 and bilateral assessment process between the state of Western Australia and the Commonwealth.
1.12	Component of larger action	▫	No
1.13	Related actions/proposals	▫	No

1.14	Australian Government funding	▫	No
1.15	Great Barrier Reef Marine Park	▫	No

2 Detailed description of proposed action

2.1 Description of proposed action

The proposed Project is located in the Shires of Cranbrook and Tambellup on the M31 Northam – Cranbrook Road between Newton Road (south) and Wansbrough Road (north), for a length of approximately 21.5 km between SLKs 325.9-347.4. The proposed works include widening of approximately between 4 to 8 m both sides of the road from the edge of the bitumen (the Project area). The Project area is shown in (Figure 2 – Attachment 1).

The Project will achieve a uniform seal width of 9 m on the carriageway and shoulders on a 10 m wide formation through seal widening, formation widening, and the installation of culverts and re-cutting of existing drains. It is expected the Project will improve the level of service and safety thereby reducing the frequency and severity of road run-off crashes on the M31.

The Project area includes the existing road shoulder and a mixture of planted and remnant vegetation that requires clearing. The proposed clearing for the Project includes vegetation present in both the road reserve and the adjoining privately owned land.

2.2 Alternatives to taking the proposed action

There are no practical alternatives to the Project. Due to the gradual and steady increases in traffic levels along the road the width of the existing road is no longer suitable. The proposed works are required to improve the level of service and safety thereby reducing the frequency and severity of road run-off crashes on the M31.

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

There are no alternative locations, timeframes or activities for the proposed project.

2.4 Context, planning framework and state/local government requirements

The Project area is located within the existing road reserve, as zoned within the Shire of Broomehill-Tambellup and Shire of Cranbrook town planning schemes. The road reserve is a designated State road reserve and is therefore managed by Main Roads and under the control of the Commissioner for Main Roads. State and Commonwealth Government requirements are detailed in Section 2.5.

2.5 Environmental impact assessments under Commonwealth, state or territory legislation

Biological assessments

A flora and fauna assessment including a Level 1 flora and fauna survey and targeted Black Cockatoo habitat assessment was completed by GHD for Main Roads (GHD 2016b – Appendix B in Attachment 2). The targeted Black Cockatoo habitat assessment assessments was undertaken to determine the extent and significance of Black Cockatoo habitat within the Project area and took into consideration the preferred roosting, breeding and foraging plant species outlined in the Department of the Environment's Referral guidelines for the three threatened species of Black Cockatoos (DSEWPaC 2012).

The flora and fauna assessment was undertaken in October 2013 for the Project area based on the preliminary Project design at the time of the survey. Since the completion of the flora and fauna survey the preliminary design has been refined and the clearing area has been reduced.

The assessment identified that the Project was likely to require referral under Commonwealth legislation due to potential impacts to fauna species listed under the Environment Protection and Biodiversity Conservation Act 1999, particularly Carnaby's Black Cockatoo and Red-tailed Phascogale.

Environmental Impact Assessment

In deciding whether a proposal will be subject to the formal environmental impact assessment process under the EP Act, the EPA takes into account the environmental significance of any potential impacts that may result from the implementation of the scheme or proposal.

The Preliminary Environmental Impact Assessment (EIA) report (GHD 2016a – Attachment 2) has determined the Project is unlikely to require referral to the WA Environmental Protection Authority. This is due to the low significance of its impacts to the surrounding environment except for impacts to native vegetation and fauna habitats. The potential impacts from the loss of native vegetation clearing and loss of fauna habitat for the Project may be effectively assessed through the Environmental Protection (Clearing of Native Vegetation) Regulations 2004. Therefore with consideration of the environmental values discussed in the EIA report including MNES, it is considered unlikely that the Project would require referral to the EPA under Section 38 of the EP Act.

The Environmental Impact Assessment process identified that the Project was likely to require referral under Commonwealth legislation due to potential impacts to fauna species listed under the Environment Protection and Biodiversity Conservation Act 1999, particularly Carnaby's Black Cockatoo and Red-tailed Phascogale.

Assessment bilateral agreement between Western Australia and the Commonwealth

The clearing of native vegetation in Western Australia requires a permit under Part V of the EP Act, unless an exemption applies. Main Roads has been granted a State-wide vegetation clearing permit (Clearing Permit CPS 818) which allows it to clear native vegetation for road realignment projects and associated construction activities (including preconstruction activities). The Main Roads Purpose Permit (CPS 818) requires an assessment of the Project clearing against the Ten Clearing Principles and, where at variance, an environmental offset is required. The Project will be assessed against the 'Ten Clearing Principles' as part of the Assessment Report undertaken by Main Roads for the Project.

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). Specifically, this agreement now includes the clearing permit assessment process under Part V Division 2 of the EP Act. 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 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) or Department of Mines and Petroleum (DMP) 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)

Consultation with key stakeholders has been undertaken for this project in accordance with Main Roads internal processes. Letters were sent to the following stakeholders:

- Department of the Environment (DER)
- Conservation Council
- Department of Water (DoW)
- Shire of Cranbrook
- Shire of Broomehill-Tambellup

An Aboriginal Heritage Assessment (Goode, 2014) was completed for the Project, therefore further consultation was not considered necessary.

2.7 A staged development or component of a larger project

The Project is not part of a staged development or a component of a larger project.

3 Description of environment & likely impacts

3.1 Matters of national environmental significance

3.1 (a) World Heritage Properties - There are no World Heritage Properties within the vicinity of the Project area.
Nature and extent of likely impact - Not applicable.

3.1 (b) National Heritage Places - There are no National Heritage Places within the vicinity of the Project area.
Nature and extent of likely impact - Not applicable.

3.1 (c) Wetlands of International Importance (declared Ramsar wetlands) - There are no Wetlands of International Importance within the vicinity of the Project area.
Nature and extent of likely impact - Not applicable.

3.1 (d) Listed threatened species and ecological communities

Description
A Flora and Fauna Assessment consisting of a Level 1 flora and vegetation assessment, Level 1 fauna assessment and targeted Black Cockatoo habitat assessment of the Project area was conducted by GHD in November 2013. The EPBC Act Protected Matters Search Tool (PMST) was used as part of the desktop assessment for the flora and fauna assessment (GHD 2014 – original flora and fauna report, updated May 2016) and again in March 2016. This report identified that, without field assessment, 11 EPBC listed fauna species that could potentially occur within 10 km of the Project area and 27 EPBC listed flora species could potentially occur within 10 km of the Project area. Based on the 2016 PMST two Threatened Ecological Communities (TEC) listed under the EPBC Act were considered to potentially occur within 10 km of the Project area (GHD 2016b – Appendix B in attachment 2).

Fauna species

No EPBC listed fauna species were recorded during the November 2013 GHD field survey, however potential habitat and/or evidence (e.g. chewed Banksia cones) supporting the possible occurrence of four EPBC listed fauna species was recorded including:

- Carnaby's Cockatoo (Calyptorhynchus latirostris) – Endangered under EPBC Act
- Forest Red-tailed Black Cockatoo (Calyptorhynchus banksii naso) – Vulnerable under EPBC Act
- Baudin's Cockatoo (Calyptorhynchus baudinii) – Vulnerable under EPBC Act
- Red-tailed Phascogale (Phascogale calura) – Vulnerable under EPBC Act.

A likelihood of occurrence assessment was undertaken for the species identified in the desktop search following the field survey and it was determined that no other EPBC listed fauna species is likely to occur within the Project area (GHD 2016b – Appendix B in Attachment 2).

Black Cockatoos
The field survey carried out by GHD was undertaken during the breeding season of all species of Black Cockatoo (November 2013), however no birds were sighted and there were no evidence of breeding or roosting recorded within the Project area. Evidence of Black Cockatoo occurrence within the Project area during the GHD 2013 surveys was recorded as follows:

- Foraging habitat and foraging evidence (e.g. chewed banksia cones)
- Suitable diurnal and sub-optimal night roosting habitat
- Potentially suitable breeding habitat in the form of hollow-bearing trees

During the survey, one observation was logged of Black Cockatoos heard calling approximately 200 - 300 meters south-east of the south end of the Project area. No other observations (sightings or aural) were recorded (GHD 2016b).

Approximately 3.87 ha of vegetation containing suitable foraging habitat for Black Cockatoos was identified in the Project area. Foraging habitat included Allocasuarina sp., Eucalyptus sp. and Banksia spp. Species and other proteaceous species, all of which are recognised foraging plants for the Black Cockatoos (DSEWPaC 2012). The Banksia spp. and other proteaceous species present throughout the Project area would provide high value foraging habitat for Carnaby's Black Cockatoo (Groom 2011).

A summary of the vegetation types deemed suitable foraging habitat for Black Cockatoo species within the Project area are provided in Table 7 – (GHD 2016b). The extent and type of foraging habitat was confirmed by the presence of known foraging species (DSEWPaC 2012 and Groom 2011) and foraging evidence on site (e.g. chewed Banksia cones).

The Project area occurs within the modelled distribution of the three Black Cockatoo species (DSEWPaC 2012). The Project area occurs within the known breeding range of Carnaby's Black Cockatoo, and just outside the known breeding range of Baudin's Black Cockatoo, although the species is known to breed north of the Project area near Kojonup and it is recognised that the species is breeding outside of this modelled distribution (DSEWPaC 2012). The Project area also occurs within the modelled distribution of where the Forest Red-tailed Black Cockatoo may occur and it is recognised that it may breed anywhere in its range (DSEWPaC 2012), however it is considered unlikely to breed in the Project area. The timing of the field survey (November 2013) was within the breeding season of all species of Black Cockatoos; however no records of breeding were noted during the field survey.

The habitat assessment identified a total of 64 significant trees of suitable DBH (Wandoo > 300 mm and other Eucalyptus > 500 mm) from within the Project area (see Table 10) Figure 6 from Appendix B in Attachment 2 (GHD 2016a) displays the distribution of significant trees within the Project area. Trees of this size are considered to have nesting potential now, or will develop hollows within 100 years. During the field survey an additional 223 significant trees were recorded in the road reserve (outside the Project area) that will be retained. Of the 64 trees, five (5) were identified with potentially suitable hollows or Black Cockatoo nesting.

Table 1 Summary of potential breeding habitat (significant trees) within and adjacent the Project area

Species	East		West		Total number within Project Area
	Road reserve (outside Project area)	Project area	Road reserve (outside Project area)	Project area	Both sides of road
Dead tree (potential nest hollow)	0	0	2	0	0
Eucalyptus decipiens	1	0	1	0	0
Eucalyptus decipiens (potential nest hollow)	1	1	1	2	3
Eucalyptus wandoo subsp. wandoo	125	31	72	28	59
Eucalyptus wandoo subsp. wandoo (potential nest hollow)	11	0	9	2	2
Total	138	32	85	32	64

Note: trees recorded within the road reserve outside the Project area will be retained.

Red-tailed Phascogale

The Red-tailed Phascogale is a small arboreal dasyurid that inhabits Wandoo (Eucalyptus wandoo) and dense Sheoak (Allocasuarina huegeliana) woodland associations with populations being most dense in the latter vegetation type (DotE 2015). The species is semelparous, that is, the males of the species die–off after the mating season in most populations and females have an age span of approximately two years (DotE 2015). The species is confined to remnant patches of vegetation containing suitable habitat in the central and southern Wheatbelt, where vegetation is long unburnt or burning is infrequent. This habitat type provides the continuous canopy cover to assist their arboreal habits. Trees need to be of a sufficient age to provide hollows for nesting in limbs or logs, and grass trees need to have ample skirts (which develop after longer periods of fire exclusion) to provide cover. The species can also be found inhabiting letter boxes, ceiling cavities and other opportunistic refuges. This suggests that although their habitat preference is clear, they will use other vegetation types and artificial refuges, in lower densities, as nesting sites where preferred habitat is not available (DotE 2015). Home ranges vary from 1.5 ha to 8 ha, depending on the breeding season (DEC 2007).

The Project is located at the southern extent of the Red-tailed Phascogale's currently known modelled distribution (DotE 2015). A search of DPaWs NatureMap database (DPaW 2007 -) was undertaken to assist with determining the local and regional distribution of records for the species. Of the 428 records for the species within the WA there are two records from within 5 km near the eastern end of the Project area in a remnant patch of woodland (DPaW 2007–).

There is up to 12.03 ha of potentially suitable habitat for this species throughout the immediate road reserve area with 3.86

ha within the Project area, particularly in areas of Wandoo woodland with nesting resources including tree hollows and cavities and continuous canopy connectivity. This habitat includes scattered roadside tree habitat including single tree and small clumps of trees which are generally separated (e.g. by greater than 10 m) from other remnant vegetation. This is also considered important habitat for the Red-tailed Phascogale as it contributes to local habitat connectivity. Furthermore, Allocasuarina occurs within the Project area. The areas that would provide the greatest value to the species include the patches of habitat (within the Project area) that are connected to larger areas of remnant habitat.

Flora species

A desktop likelihood of occurrence assessment for the 27 species of EPBC listed flora prior to the field investigation identified seven species (Conostylis misera, Darwinia wittwerorum, Caladenia dorrienii, Diuris drummondii, Diuris micrantha, Centrolepis caespitose, Roycea pycnophylloides) as possibly occurring in the Project area. All species were thoroughly searched for during the field survey however none were recorded, despite it being within the flowering period for most species. Therefore it is considered unlikely that any of the seven species would occur within the Project area (GHD 2016b – Appendix B in Attachment 2).

Flora communities

The EPBC Act: Protected Matters Search Tool (DotE 2016) identified the potential presence of two TECs within 10 km of the Project Area. These are:

— Eucalyptus woodlands of the Western Australian Wheatbelt
— Proteaceae dominated Kwongkan shrublands of the Southeast Coastal Floristic Province of Western Australia (only occurs in the Stirling Range National Park)

Areas of native vegetation corresponding to the Eucalyptus woodlands of the Western Australian Wheatbelt were identified along the Project Area. They corresponded to a range of vegetation types recorded by GHD in 2013, including VT3, VT4, VT5, VT7, VT8, VT10, VT12 and VT13. The DotE has provided a guideline on the assessment of this TEC, based on details of the tree species and their density, presence of understorey and condition of the vegetation. Based on this guidance GHD has calculated 3.49 ha of this TEC, of varying conditions, occurs within the Project Area. The details of this assessment are provided in Table 2.

Table 2 Assessment of the presence of the Eucalypt Woodlands of the Western Australian Wheatbelt Threatened Ecological Community

Aspect for consideration	Risk of referral –survey area
Key diagnostic characteristics	
Distribution of the ecological community The distribution of the ecological community is limited to these IBRA bioregions and subregions: • Avon Wheatbelt – subregions AVW01 Merredin and AVW02 Katanning • Mallee – MAL02 Western Mallee • Jarrah Forest – outlying patches in the eastern parts of JAF01 Northern Jarrah Forests and JAF02 Jarrah Forests adjacent to the Avon Wheatbelt, that are off the Darling Range, and receive less than 600 mm mean annual rainfall. They are effectively an extension of the Avon Wheatbelt landscape in that they comprise areas subject to similar climate, landscape and threats.	The survey areas are within the Avon Wheatbelt (AW2) Katanning subregion.
Structure of the ecological community The structure of the ecological community is a woodland in which the minimum crown cover of the tree canopy in a mature woodland is 10% (crowns measured as if they are opaque).	The minimum crown cover of the tree canopy within the vegetation associations are 10% within the survey areas.
Key species of the ecological community The key species of the tree canopy are species of Eucalyptus as identified in Table 2a of the conservation advice (TSSC 2015). These are species that typically have a single trunk.	Key species from table 2a are identified within woodland vegetation associations within the survey area. They include: Eucalyptus loxophleba; E. wandoo, E. occidentalis and E. decipiens (the latter as a part of the community, not a dominant species).
A native understorey is present but is of variable composition, being a combination of grasses, other	The native understorey represents variable composition of grasses, herbs and shrubs in some

herbs and shrubs, as specified in section 2.3.2 and in Table A1 of Appendix A of the conservation advice (TSSC 2015)	areas.
Size of the bushland area Patch sizes must be > 2 ha (for Categories A and B and > 5 ha for Categories C and D or on roadsides must be > 5 m wide for strips of all Categories (see below).	Some roadside patches are > 5 m wide.
Minimum condition for patches of the WA Wheatbelt Woodlands ecological community within the Cranbrook to Tambellup Project Area	
Category A (condition 1-3, mature trees may be present or absent)	Planted trees of Eucalyptus and other species over shrubs (VT3): Condition 3 0.003 Eucalyptus wandoo/E.decipiens woodland (VT4): 2-3 0.074 Planted trees and shrubs of Melaleuca cuticularis, Melaleuca hamulosa and Actinostrobus arenarius over introduced herb species with scattered Eucalyptus occidentalis (VT5): 3 0.003 Tall woodland of Eucalyptus wandoo, Melaleuca cuticularis, Eucalytpus occidentalis, Eucalyptus wandoo, Melaleuca cuticularis, Eucalytpus occidentalis (VT7): 2-3 0.006 Scattered trees of Eucalyptus wandoo, E. loxophleba and Allocasuarina huegeliana (VT8): 3 0.005 Eucalyptus wandoo Eucalyptus wandoo tall open woodland (VT10): 2-3 0.079 Low forest/tall shrubland of seeded species including Melaleuca hamulosa, Hakea laurina, Eucalyptus loxophleba, Allocasuarina acutivalvis, (VT12): 2-3 0.125 Scattered clumps or individuals of mixed Eucalypt species (VT13): 3 0.032
Category B (condition 4, >5 mature trees per 0.5 ha)	Planted trees of Eucalyptus and other species over shrubs (VT3): 4 0.525 Eucalyptus wandoo/E.decipiens woodland (VT4): 4 0.880 Planted trees and shrubs of Melaleuca cuticularis, Melaleuca hamulosa and Actinostrobus arenarius over introduced herb species with scattered Eucalyptus occidentalis (VT5): 4 0.030 Low forest/tall shrubland of seeded species including Melaleuca hamulosa, Hakea laurina, Eucalyptus loxophleba, Allocasuarina acutivalvis, (VT12): 4 0.173
Category C	

(condition 4, mature trees absent or < 5 trees per ha)	Scattered trees of Eucalyptus wandoo, E. loxophleba and Allocasuarina huegeliana (VT8) 4 0.001
Category D (4-6, including mature trees of >5 per ha)	Planted trees of Eucalyptus and other species over shrubs (VT3) 5 0.020 Planted trees and shrubs of Melaleuca cuticularis, Melaleuca hamulosa and Actinostrobus arenarius over introduced herb species with scattered Eucalyptus occidentalis (VT5): 5 0.080 Scattered trees of Eucalyptus wandoo, E. loxophleba and Allocasuarina huegeliana (VT8): 5-6 0.25 Eucalyptus wandoo Eucalyptus wandoo tall open woodland (VT10): 5 0.056 Low forest/tall shrubland of seeded species including Melaleuca hamulosa, Hakea laurina, Eucalyptus loxophleba (VT12): 5 0.108 Scattered clumps or individuals of mixed Eucalypt species (VT13): 5-6 0.568

Nature and extent of likely impact

Black Cockatoo

The key potential impacts to Black Cockatoos resulting from the Project include:

- Loss of an estimated 3.87 ha of suitable foraging habitat
- Loss of potential breeding habitat including 64 significant trees of which five of these trees contain suitable hollows for breeding. The remaining 59 of these trees do not contain suitable breeding hollows at present but have a DBH greater than 300 mm or 500 mm and have the potential to develop a suitable nest hollows in the future

In addition, the other impacts to Black Cockatoo species for the Project include:

- Exacerbation of existing fragmentation and reduction in connectivity of habitats within the Wheatbelt region
- Death or injury when hit by cars or trucks during both the construction phase and operation phase of the Project
- Localised temporary disturbance to Carnaby's Black Cockatoo's from increased noise from the construction of the Project. This disturbance may deter the species from occupying adjacent areas, and is considered to be a temporary disturbance during the construction period. Main Roads won't be undertaking any construction at night.

Habitat loss is a key threat for Carnaby's Black Cockatoo. Approximately 56% (over 2 million hectares) of the species' habitat has been cleared since European settlement (DEC unpublished data 2010). As a result of historical and current threats, Carnaby's cockatoo has undergone a major decline in range, particularly in drier areas and the central wheatbelt (Saunders 1990; Johnstone and Storr 1998). In the Wheatbelt extensive clearing of native bush has led to a severe reduction in available nesting and feeding trees. In some cases, nesting and feeding areas are too far apart for the birds to successfully raise chicks (DotE 2015c). Furthermore, remaining nesting and feeding areas are becoming degraded due to grazing, water logging, salinity, weed invasion, storm damage, firewood collection and changes in fire management. There is also a lack of new eucalypt trees growing to replace dead trees in remaining nesting sites, and some existing nesting hollows are deteriorating (DotE 2015c).

Significance of potential impacts

In order to determine if the proposed Project will have a significant impact on the three Black Cockatoo species an assessment was undertaken against the Significant Impact Guidelines (DotE 2013), as presented in Table 3.

For the purpose of this assessment 'population of a species' in this case for the Carnaby's Black Cockatoo is the population

that occurs within the Shires of Broomehill-Tambellup and Cranbrook. These shires are predominantly rural with the dominant land use being agriculture (grazing and grain). It has been assumed that the habitats within the Project area are part of the breeding range of the species based on the location of the Project considering the modelled distribution of the species range (DSEWPaC 2012) and known breeding events in the Wheatbelt (DSEWPaC 2012 and DotE 2015c).

An 'important population of a species' for Baudin's and the Forest Red-tailed Black Cockatoos also include the population that occur in the Shires of Broomehill-Tambellup and Cranbrook, as they are near the eastern limit of the distribution for both species.

Outcome – The assessment concluded that the Project is likely to significantly impact Carnaby's Black Cockatoo but is unlikely to significantly impact the Baudin's Black Cockatoo or Forest Red-tailed Black Cockatoo.

Table 2 Significant Impact Criteria for Carnaby's Black Cockatoo, Baudin's Black Cockatoo or Forest Red-tailed Black Cockatoo

Significant Impact Criteria	Impact Outcome
An action is likely to have a significant impact on an endangered species if there is a real chance or possibility that it will:	
Lead to a long-term decrease in the size of a population / important population	Likely There is suitable foraging and potential breeding habitat for Black Cockatoos within the Project area and all three species has previously been recorded within 10 km of the Project area (DPaW 2007 -) <u>Foraging habitat</u> The proposed project is likely to result in removal of up to 3.87 ha of suitable foraging habitat. This 3.87 ha of foraging habitat represents approximately 0.01 % of the overall area of suitable foraging habitat within the Shire of Broomehill-Tambellup[1], and 0.003% of the Shire of Cranbrook. Therefore the loss of the foraging habitat within the Project area represents a very small proportion of the overall area of suitable foraging habitat within the Shires of Broomehill-Tambellup and Cranbrook, and clearing for the Project will reduce the availability of foraging habitat within each of these Shires by less than 0.01%. <u>Roosting habitat</u> There are no known roosting sites within the Project area and no roosting sites were recorded during the field survey. There is potential for the Black Cockatoos to roost in the Eucalyptus trees in the Project area and there is permanent water located within proximity to the Project area (e.g. farm dams) and watercourses intersected by the Project. Given the availability of foraging (as discussed above) and potential roosting habitat in the local and regional surrounding area (including within the Shire of Broomehill-Tambellup and Cranbrook), the loss of this potential night roosting habitat is not considered substantial. <u>Breeding habitat</u> The Project area is located within the known breeding range of Carnaby's Black Cockatoo, and just outside the known breeding range of Baudin's Black Cockatoo (although the species is known to breed north of the Project area near Kojonup). The Project area also occurs within the mapped distribution of where the Forest Red-tailed Black Cockatoo may occur, although it is considered unlikely to breed within the Project area. The proposed project is likely to result in removal of up to 64 potential breeding trees, including five containing potentially suitable breeding hollows. None of these hollows had evidence of recent use and there was no evidence of breeding recorded during the field survey. It is not possible to estimate the density of suitable breeding trees within each of the mapped Beard (1979) vegetation associations. Therefore, it is difficult to estimate the extent of the impact of removing 64 potential breeding trees will have on the populations of Black Cockatoos that occur in the Shires of Broomehill-Tambellup and Cranbrook. It is therefore considered that the loss of the 64 potential breeding trees for the Project with respect to similar potentially suitable breeding habitat in the local area is likely to be substantial. The extent of Vegetation Association 967 (containing Wandoo woodland mapped within the Project area) is less than 30% within both the Shire of Broomehill-Tambellup (GHD 2016a), and

[1] The area of suitable foraging habitat within the Shire of Broomehill-Tambellup is estimated at 36,170.21 ha, within the Shire of Cranbrook is estimated at 116,228.89 ha. This area calculation is based on the extent remaining of Beard (1979) vegetation associations which contain flora species suitable for Carnaby's Black Cockatoo foraging (based on Groom [2011]) and Baudin's and Forest Red-tailed Black Cockatoo foraging (based on DSEWPaC [2012]).

	therefore the extent of similar potentially suitable breeding habitat within the Shire is considered to be low. Clearing of the 59 significant trees without hollows is likely to result in a loss of hollow recruitment for Black Cockatoos within the local area and Shires of Broomehill-Tambellup and Cranbrook. Outcome Therefore, it is considered that clearance of up to 3.87ha of habitat, in particular the potential breeding habitat (including 64 potential breeding trees, five with hollows suitable for breeding) is likely to result in a shortage of hollows in the local area, thus reducing the availability of breeding habitat in the future, particularly for the Carnaby's Black Cockatoo as it is most likely to breed within the Project area. This may in turn lead to a long-term decrease in the size of the local populations of Black Cockatoos, in particularly Carnaby's Black Cockatoo due to the lack of available breeding resources.
Reduce the area of occupancy of the species / important population	Unlikely The Project is unlikely to substantially reduce the area of occupancy of a population of Black Cockatoos within the local area or region. The three species of Black Cockatoos are known to occur throughout the greater Cranbrook and Broomehill-Tambellup localities, the Avon Wheatbelt Bioregion and the south-west region of Western Australia. The Project may reduce the overall area of potentially suitable habitat for Black Cockatoos within the Shires of Broomehill-Tambellup and Cranbrook as a result of direct loss of habitat from construction. There is an estimated area 36,170.21 ha within the Shire of Broomehill-Tambellup and 116,228.89 ha within the Shire of Cranbrook of potentially suitable habitat. Clearing for the Project will reduce the area of available habitat for Black Cockatoos in these Shires by less than 0.01%. Therefore removal of up to 3.87 ha of habitat (including foraging and potential breeding habitat) is not considered unlikely to substantially reduce the area of occupancy for the three species of Black Cockatoos, due to the availability of foraging and potential breeding habitat in the local and regional area (i.e. within the Shires of Broomehill-Tambellup and Cranbrook).
Fragment an existing population into two or more populations / or existing important population into two of more populations	Unlikely The Project is unlikely to fragment the population into two or more populations. The Project proposes the widening sections of the existing highway, and clearing of up to 4.45 ha of remnant vegetation which includes 3.87 ha of potential Black Cockatoo habitat within the Project area. The upgraded road is unlikely to impose a physical barrier to the movement of Black Cockatoos from one side of the road to the other, or between areas of remnant vegetation. The species is mobile and capable of traversing the gap (< 100 m) between patches of habitat. Based on the mobility of Black Cockatoos and the occurrence of habitat adjacent to the Project area, fragmentation of potential populations is considered unlikely.
Adversely affect habitat critical to the survival of a species	Unlikely The Project is unlikely to affect habitat critical to the survival any of the three species of Black Cockatoo. Up to 3.87 ha of Black Cockatoo habitat in the Project area would be cleared for this Project. The habitat located within the Project area does not consist of habitat described by a recovery plan critical for the survival of the Carnaby's Black Cockatoo (DPaW 2013) or Baudin's Black Cockatoo and Forest Red-tailed Black Cockatoo (Chapman 2008), nor is it habitat listed on the Register of Critical Habitat maintained by the minister under the EPBC Act (DotE 2013).
Disrupt the breeding cycle of a population / important population	Unlikely The works associated with the Project, are unlikely to disrupt the breeding cycle of the population of Black Cockatoos. Five hollow-bearing trees deemed potentially suitable for Black Cockatoo breeding were identified during the field survey. None of these hollows had evidence of recent use and there was no evidence of breeding recorded during the field survey. The field survey was conducted within the breeding season for all three species of Black Cockatoos. These trees are located within the documented breeding range for Carnaby's Black Cockatoo and just outside the known breeding range of Baudin's Black Cockatoo (although the species is known to breed north of the Project area near Kojonup). It is also likely that the breeding cycle of the local population occurs in other locations across the three shires and is not limited to this Project area. As such it is unlikely that the breeding cycle will be disrupted for any individual of the local population. Considering this information and that there has been no known Black Cockatoo breeding records

	within the Project area, there is a low likelihood that Black Cockatoos would utilise these hollows or the Project area for breeding.
Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	Unlikely The works associated with the Project, may modify and destroy a proportion of foraging habitat, potential breeding and potential roosting habitat for the three species of Black Cockatoos, but not to the point that a species would decline. The clearing of 3.87 ha of habitat for the Project consists of less than 0.01 % of the overall area of potentially suitable habitat within the Shire of Broomehill-Tambellup and less than 0.01% within the Shire of Cranbrook. Given the availability of foraging and potential breeding habitat in the Shires of Broomehill-Tambellup and Cranbrook, the impacts of this clearing are not considered significant to the species. The construction and operational phases of the Project may also reduce the functionality of the retained habitat alongside the road. Although difficult to estimate, the area of occupancy alongside the new road is likely to reduce, however the affected area is unlikely to be substantial reduced or modified to the extent that the species is likely to decline. However the loss of potential breeding habitat in the form of 64 significant trees may be substantial for the local populations of the Carnaby's Cockatoo. Despite these impacts the proposed Project is unlikely to modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.
Result in invasive species that are harmful to an endangered species becoming established in the endangered species' habitat	Unlikely The Project may potentially exacerbate existing invasive species (such as weeds and introduced honey bees) that already occur within the Project area. The Project may result in the establishment of an invasive weed species within the Project area. However, these weed species are unlikely to be harmful to Black Cockatoo individuals and probably already occur on land surrounding the Project area. The Project is unlikely to result in an invasive species becoming established in the Project area to the extent that any of the three Black Cockatoo would be substantially impacted.
Introduce disease that may cause the species to decline	Unlikely The Project is unlikely to introduce a disease (e.g. beak and feather disease virus) that may cause this species to decline. There are no known diseases that may be introduced to the area that may cause the any Black Cockatoo population to decline, and it is unlikely that any diseases already exist in the Project area that may be spread by the activities of the Project.
Interfere with the recovery of the species.	Unlikely The Project is unlikely to interfere substantially with the recovery of the three species of Black Cockatoo as it is unlikely to interfere with the recovery actions outlined in the recovery plan for of the Carnaby's Black Cockatoo (DPaW 2013) or Baudin's Black Cockatoo and Forest Red-tailed Black Cockatoo (Chapman 2008).

Legend for Table 2- For the purpose of this assessment,

'population of a species' is defined under the EPBC Act as an occurrence of the species in a particular area. In relation to an endangered species, occurrences include but are not limited to:

- a geographically distinct regional population, or collection of local populations, or
- a population, or collection of local populations, that occurs within a particular bioregion (DotE 2013b)

'invasive species; is an introduced species, including an introduced (translocated) native species, which out-competes native species for space and resources or which is a predator of native species. Introducing an invasive species into an area may result in that species becoming established. An invasive species may harm listed threatened species or ecological communities by direct competition, modification of habitat or predation (DotE 2013b).

'Habitat critical to the survival of a species or ecological community' refers to areas that are necessary:

- for activities such as foraging, breeding, roosting, or dispersal
- for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators)
- to maintain genetic diversity and long term evolutionary development, or
- for the reintroduction of populations or recovery of the species or ecological community.

Such habitat may be, but is not limited to: habitat identified in a recovery plan for the species or ecological community as habitat critical for that species or ecological community; and/or habitat listed on the Register of Critical Habitat maintained by the minister under the EPBC Act (DotE 2013).

Red-tailed Phascogale

The Red-tailed Phascogale has been identified as likely to occur within the Project area. Given that the Project is located within the known breeding range of the species, the occurrence of potential habitat within the Project area (e.g. in the form of hollow-bearing Wandoo) and nearby records of the species, it has been assumed that the species could utilise the habitat within the Project area for breeding and therefore likely to be impacted as a result of the Project.

The key potential impacts to Red-tailed Phascogale resulting from clearing of the Project area are:

- Loss of up to 3.87 ha of potential habitat including foraging and breeding habitat (i.e. hollow bearing trees). It is difficult to estimate the number of hollow-bearing trees within the Project area as counts for hollows suitable for Red-tailed Phascogale were not undertaken, however small hollows (less than 10 cm diameter) were frequently recorded in Eucalypts woodland habitats and the presence of larger hollows (e.g. 5 hollows of suitable size for breeding for Carnaby's Black Cockatoo) provides an indication that potentially suitable hollows for breeding are present within the Project area.
- Exacerbation of existing fragmentation and reduction in connectivity of key habitats within the local area.
- It's is also likely that the existing road creates a potential barrier to the movement of the species. It is likely that proposed Project will exacerbate these existing impacts including possible death or injury when hit by vehicles during the construction phase and operation phase of the project. Road kills have a localised impact where populations occur in close proximity to roads (DEC 2007).
- Localised temporary disturbance from increased noise from the construction of the Project.

The 3.87 ha of habitat represents approximately 0.01 % of the overall area of suitable foraging habitat within the Shire of Broomehill-Tambellup, and 0.003% of the Shire of Cranbrook[2].The Project may reduce the overall area of habitat by less than <0.1% within the Shires as a result of direct loss of habitat from clearing.

An assessment of impacts on Red-tailed Phascogale was undertaken against the Significant Impact Guidelines and presented in Table 4. The assessment includes criteria for Endangered species.

The Red-tailed Phascogale has a small home range (1.5 – 8 ha) and is not is not a highly mobile species. It is unlikely that there is a high level of immigration/emigration in the locality considering the level of fragmentation at the local and regional level. The amount of cleared agricultural land in combination with the network of roads, including major roads (i.e. the M31 and nearby Albany Highway) and railway are likely to impede dispersal for the Red-tailed Phascogale in the locality of the Project area. Therefore for the purpose of this assessment 'population of a species' in this case for the Red-tailed Phascogale is the population that occurs within the locality (an area general encompassing a 10 km radius of the Project area). Furthermore, given that there is potential breeding habitat within the Project area and the species probably breeds throughout its known range, it has been assumed that the species could utilise the habitat within the Project area for breeding.

Outcome – The Project is Likely to have a significant impact on Red-tailed Phascogale.

Table 4 Significant Impact Criteria for Red-tailed Phascogale

Significant Impact Criteria	Impact Outcome
An action is likely to have a significant impact on an endangered species if there is a real chance or possibility that it will:	
Lead to a long-term decrease in the size of a population	Likely The Project area is located within the known breeding range of the Red-tailed Phascogale (DotE 2015c) and there is suitable foraging, nesting and potential breeding habitat for Red-tailed Phascogale within the Project area. The species has been previously been recorded within 5 km of the Project area. Considering these factors and the size of the home range for the species (1.5 – 8 ha DEC 2007) it is possible that several individuals of a local population occupy the roadside vegetation of the Project area, particularly parts of the Project area including Wandoo woodlands in the adjoining and nearby Pootenup and Wansbrough Nature Reserves (and larger patches of remnant vegetation on private land. The proposed Project is likely to result in removal of up to 3.87 ha including trees that may include suitable breeding hollows. The species was not recorded in the Project area during the field survey, although the survey did not use methods to target this species. It is difficult to estimate the extent of the impact of removing 3.87 ha of habitat including potential breeding habitat will have on the population of Red-tailed Phascogale that occur in the Shire areas.

[2] The area of suitable foraging habitat within the Shire of Broomehill-Tambellup is estimated at 36,170.21 ha, within the Shire of Cranbrook is estimated at 116,228.89 ha. This area calculation is based on the extent remaining of Beard (1979) vegetation associations which contain potentially suitable habitat for Red-tailed Phascogale.

	The loss of the 3.87 ha of habitat containing potential breeding habitat for the Project with respect to similar potentially suitable breeding habitat in the local area is likely to be substantial. The extent of Vegetation Association 967 (containing Wandoo woodland mapped within the Project Area) is less than 15% within the Avon-Wheatbelt bioregion and less than 14% within the Shire of Broomehill-Tambellup. Within the Shire of Cranbrook approximately 48% of this vegetation type remains (GHD 2016b). Although it is not possible to estimate the extent of suitable habitat, including densities of hollow-bearing trees within each of the mapped Beard (1979) vegetation associations in the locality of the Project area it is reasonable to assume that the extent of similar potentially suitable breeding habitats within the locality and Shires is low and declining due to agricultural and development pressures. Given the semelparous (male die-off) biology of this species, it is considered more susceptible to local extinction due to stochastic events or threats (DotE 2015). The Project area and the vegetation in the road reserve is likely to support occasional dispersal given the linear nature of the road reserve and it's partial connectivity to patches of remnant vegetation through a highly cleared landscape. It is likely that clearing in the Project area will reduce the functionality of the road reserve vegetation as dispersal habitat and cause increased fragmentation in the landscape which may reduce the capacity of the population to disperse and further isolate individuals in the population. <u>Outcome</u> The Project is considered likely to lead to a long-term decrease in the size of a local population of Red-tailed Phascogale. It is considered that clearance of up to 3.87 ha of habitat, in particular the potential breeding habitat is likely to result in a shortage of hollows in the local area, thus reducing the availability of breeding habitat in the future. This may in turn lead to a long-term decrease in the size of the local population of Red-tailed Phascogale due to the lack of available breeding resources. Furthermore the road reserve (including the Project area) is likely to support some dispersal of the species in a highly cleared and fragmented landscape. The clearing associated with the Project is likely to reduce the functionality of this habitat for dispersal which may contribute to local population decline.
Reduce the area of occupancy of the species	Unlikely The Project is unlikely to substantially reduce the area of occupancy of a population of Red-tailed Phascogale within the local area or region. The Project may reduce the overall area of potentially suitable habitat for Red-tailed Phascogale within the Shires as a result of direct loss of habitat from construction. There is an estimated area of 152,399 ha within the Shires (combined) of potentially suitable habitat (including foraging and breeding habitats). Clearing for the Project will reduce the area of available habitat for Red-tailed Phascogale in these Shires by less than 0.02%. The removal of this habitat could be considered substantial for a local population of the species, however the removal of up to 3.87 ha of habitat is not considered to be significant for the species, due to the availability of potential habitat (e.g. in nearby Pootenup and Wansbrough Nature Reserves Nature Reserves) in the regional area (i.e. within the Shires) and small extent of removal compared to the extent of available habitat throughout the species range.
Fragment an existing population into two or more populations	Unlikely Red-tailed Phascogales can and do occur in isolated patches of remnant vegetation which are not contiguous and restrict recolonisation or movement between populations (DotE 2015c). However, the local population considered for this assessment extends over a large area and likely persists as a semi-connected, though highly dispersed, series of smaller localised populations that occasionally disperse though the broader landscape. The population considered here persist in this highly fragmented location and there are likely to be other habitat corridors that occur outside the Project area. The Project is unlikely to fragment the population into two or more populations as dispersal though the population may be supported through habitat not impacted by the Project. However the Project could impact the local population of the species. At a local scale, the vegetation within the Project area retains limited to moderate connectivity to other areas of habitat, and is surrounded by a predominately cleared agricultural landscape. As a result, due to the high degree of habitat fragmentation in the surrounding area, there are places where the strip of roadside vegetation within the Project area provides the only link to other bushland remnants. In these areas the habitat fragments are poorly connected, which presents barriers to the dispersal of fauna species, in addition to the barrier effects of the existing road.

	The Project will potentially increase the gap for Red-tailed Phascogale to move from one side of the road to the other, and in some sections along the roadside, which could potentially increase the rate of vehicle strike and expose individuals to greater risk of predation. However these impacts will be limited to the Project area which is unlikely to represent the only means of dispersal for the population in the locality.
Adversely affect habitat critical to the survival of a species	Unlikely The Project is unlikely to affect habitat critical to the survival the Red-tailed Phascogale species. Currently there is no recovery plan for this species in Western Australia. The habitat located within the Project area does not consist of habitat described by a recovery plan critical for the survival of the Red-tailed Phascogale, nor is it habitat listed on the Register of Critical Habitat maintained by the minister under the EPBC Act (DotE 2013, pp10).
Disrupt the breeding cycle of a population	Likely There has been no known breeding records within the Project area, however there were no targeted surveys, thus breeding status within the Project area cannot be confidently described as part of this assessment. It is therefore assumed that based on the habitat requirements of the species that one or more individuals could occur within the Project area and that these individuals could breed within the Project area. The Dote (2013) MNES 1.1 Significant Impact Guidelines state that if there is scientific uncertainty about the impacts of the Project actions and potential impacts are serious or irreversible, the precautionary principle is applicable. Accordingly, a lack of scientific certainty about the potential impacts of an action will not itself justify a decision that the action is not likely to have a significant impact on the environment. Therefore it cannot be confidently determined that the Project is unlikely to disrupt the breeding cycle of a local population of the species.
Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	Unlikely The works associated with the Project, may modify and destroy a proportion of foraging habitat and potential breeding habitat for Red-tailed Phascogale, but not to the point that the species would decline. Whilst all known populations are considered essential for the species recovery and long-term survival (Maxwell, Burbidge and Morris 1996), any impacts on a particular population are unlikely to occur to all populations across the species distribution (DotE 2015c). The clearing of 3.87 ha of habitat for the Project consists of less than 0.02% of the overall area of potentially suitable habitat within the Shires. Given the availability of potential foraging and to a lesser extent potential breeding habitat in the Shires, the impacts of this clearing are not considered significant to the species. The construction and operational phases of the Project may also reduce the functionality of the retained habitat alongside the road. Although difficult to estimate, the area of occupancy alongside the new road is likely to reduce, however the affected area is unlikely to be substantial reduced or modified to the extent that the species is likely to decline. Despite these impacts the proposed Project is unlikely to modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.
Result in invasive species that are harmful to an endangered species becoming established in the endangered species' habitat	Unlikely The Project may potentially exacerbate the impacts of existing invasive species (such as weeds and introduced predators) that already occur within the Project area. The Project may result in the establishment of an invasive weed species within the Project area. However, these weed species are unlikely to be harmful to the Red-tailed Phascogale. The Project is unlikely to result in an invasive species becoming established in the Project area to the extent that Red-tailed Phascogale are substantially impacted.
Introduce disease that may cause the species to decline	Unlikely The Project is unlikely to introduce a disease that may cause this species to decline. There are no known diseases that may be introduced to the area that may cause the Red-tailed Phascogale population to decline, and it is unlikely that any diseases already exist in the Project area that may be spread by the activities of the Project.
Interfere with the recovery of the	Unlikely

species.	The Project is unlikely to interfere substantially with the recovery of Red-tailed Phascogale as it is unlikely to interfere with the recovery actions outlined in the SPRAT profile for this species (DotE 2015).

Legend for Table 2- For the purpose of this assessment,

'population of a species' is defined under the EPBC Act as an occurrence of the species in a particular area. In relation to an endangered species, occurrences include but are not limited to:

- a geographically distinct regional population, or collection of local populations, or
- a population, or collection of local populations, that occurs within a particular bioregion (DotE 2013b)

'invasive species; is an introduced species, including an introduced (translocated) native species, which out-competes native species for space and resources or which is a predator of native species. Introducing an invasive species into an area may result in that species becoming established. An invasive species may harm listed threatened species or ecological communities by direct competition, modification of habitat or predation (DotE 2013b).

'Habitat critical to the survival of a species or ecological community' refers to areas that are necessary:

- for activities such as foraging, breeding, roosting, or dispersal
- for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators)
- to maintain genetic diversity and long term evolutionary development, or
- for the reintroduction of populations or recovery of the species or ecological community.

Such habitat may be, but is not limited to: habitat identified in a recovery plan for the species or ecological community as habitat critical for that species or ecological community; and/or habitat listed on the Register of Critical Habitat maintained by the minister under the EPBC Act (DotE 2013b).

Wheatbelt Woodlands Threatened Ecological Community

The vegetation of the Wheatbelt Woodlands Threatened Ecological Community (Wheatbelt TEC) is represented by at least one pre-European (Beard 1979) vegetation association in the Shires of Cranbrook and Broomhill-Tambellup, as indicated in the published mapping for the area and the remnant vegetation remaining (Government of Western Australia, 2015). The vegetation association 967 (Medium woodland; wandoo & yate) is calculated to have a total of 30,779 ha remaining in the two Shires and 28,224 ha remaining in the Katanning IBRA sub-region. These vegetation associations are analogous with a number of the vegetation types mapped by GHD (2016) although some have been altered by revegetation in amongst native vegetation remnants. The loss of 3.49 ha of vegetation which has been considered to be the Wheatbelt TEC represents a loss of approximately 0.01% of remnant vegetation within the Shires and the IBRA subregion and a similar amount within the corresponding IBRA region.

The loss of approximately 3.49 ha of this vegetation community is therefore not likely to be significant in respect of the quality of the vegetation being impacted and the remaining vegetation adjacent to the Project Area and in the region.

The majority of the vegetation to be cleared is moderate to poor quality (Categories B and D), with only 0.337 ha in Category A (condition 2 or 3).

- 0.337 ha of Category A TEC
- 1.692 ha of Category B TEC
- 0.001 ha of Category C TEC
- 1.461 ha of Category D TEC

In addition, three of the vegetation types used in the assessment (1.615 ha) include primarily planted/seeded species, some of which are not native to the immediate area.

3.1 (e) Listed migratory species

Description

The EPBC Act Protected Matters Search Report identified six migratory species as potentially occurring within a 10 km radius of the Project area (GHD 2016b), including:

- Apus pacificus (Fork-tailed Swift) – migratory marine
- Ardea alba (Great Egret, White Egret) – migratory wetland
- Ardea ibis (Cattle Egret) – migratory wetland
- Haliaeetus leucogaster (White-bellied Sea-Eagle) – migratory terrestrial
- Leipoa ocellata (Malleefowl) – migratory terrestrial
- Merops ornatus (Rainbow Bee-eater) – migratory terrestrial

A likelihood of occurrence assessment of these migratory fauna species undertaken as part of the GHD (2016b) determined that one migratory fauna species is likely to within the Project area, the Rainbow Bee-eater. No observations or evidence of the Rainbow Bee-eaters were found during the GHD November 2013 field survey.

Nature and extent of likely impact

No important habitat for any of the migratory terrestrial species including the Rainbow Bee-eater would be substantially removed or modified as part of the proposed works. The proposed works are unlikely to disrupt the lifecycle of an ecologically significant proportion of a population of listed migratory species. The Project is unlikely to result in an invasive species that is harmful to a listed migratory species becoming established in an area of important habitat for listed migratory species. It is unlikely that listed migratory species would be significantly impacted by the proposed works.

3.1 (f) Commonwealth marine area - The Project area is not located within or in proximity to a Commonwealth marine area.

Nature and extent of likely impact - Not applicable.

3.1 (g) Commonwealth land - The Project area will not impact on Commonwealth land.

Nature and extent of likely impact - Not applicable.

3.1 (h) The Great Barrier Reef Marine Park - The Project Area is not located within or in proximity to a Commonwealth marine area.

Nature and extent of likely impact - Not applicable.

3.1 (i) A water resource, in relation to coal seam gas development and large coal mining development
The Project will not impact upon a water resource, in relation to coal seam gas development and large coal mining development.

Nature and extent of likely impact - Not applicable.

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

3.2 (a)	Is the proposed action a nuclear action?	▫	No
3.2 (b)	Is the proposed action to be taken by the Commonwealth or a Commonwealth agency?	▫	No
3.2 (c)	Is the proposed action to be taken in a Commonwealth marine area?	▫	No
3.2 (d)	Is the proposed action to be taken on Commonwealth land?	▫	No
3.2 (e)	Is the proposed action to be taken in the Great Barrier Reef Marine Park?	▫	No

3.3 Other important features of the environment

3.3 (a) Flora and fauna

A biological assessment including a Level 1 flora and fauna survey and targeted Black Cockatoo habitat assessment was completed by GHD for Main Roads (GHD 2016b – Appendix B in Attachment 2). This assessment investigated the ecological aspects of the Project area through a detailed desktop review of the area and through a Level 1 field investigation for flora and fauna. For the purpose of this assessment it is assumed that the entire Project Area will be cleared. The key flora and fauna aspects of the Project included:

- Removal of up to 4.45ha of remnant vegetation including potential habitat for 31 flora species of conservation significance.
- The Beard (1979) vegetation association 967 is below the 30 % threshold level at state, Interim Biogeographic Regionalisation of Australia (IBRA) bioregion, subregion and the Shire of Broomehill-Tambellup levels.
- The Beard (1979) vegetation association 697 is below the 30 % threshold level at the IBRA bioregion, subregion and local government authority LGAs level.
- The presence of 3.49 ha of the TEC, Eucalyptus woodlands of the Western Australian Wheatbelt.
- One Department of Parks and Wildlife (DPaW)-listed Priority 2 flora species, Conostylis seorsiflora subsp. Nyabing, recorded in the Project Area during the field survey.
- One DPaW Priority 4 species, Banksia porrecta, recorded adjacent to the Project area during the field survey.
- One Weed of National Significance (WoNS) species, Asparagus asparagoides (Bridal Creeper), recorded within the Project Area.
- The likely or possible presence of 11 fauna species of conservation significance within the Project area including the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)-listed Baudin's Black Cockatoo, Carnaby's Black Cockatoo, Forest Red-tailed Black Cockatoo, and the Red-tailed Phascogale
- Loss of up to 3.87 ha of fauna habitat including potential habitat for 11 fauna species of conservation significance. Clearing or modification of this habitat, is likely to reduce the overall area of habitat available to fauna species at a local level and regional level.
- Loss of up to 3.87 ha of potential Black Cockatoo foraging habitat including suitable diurnal and sub-optimal night roosting habitat.

3.3 (b) Hydrology, including water flows

The Project Area is located in the Albany Coast and Nornalup surface water allocation areas. No rivers or surface water bodies listed under the RIWI Act were identified within 10 km of the Project area (DOW 2013). The nearest RIWI River is approximately 32 km south east of the Project area.

Wetlands of International Significance are listed under the Ramsar Convention, which is an International treaty that covers the conservation of internationally important wetlands. The PMST did not identify any Ramsar listed sites within 10 km of the Project area.

Although no geomorphic wetlands are present within the Project area, four are present within 10 km of the Project area. The nearest is approximately 1 km to the east of the Project area.

During the field survey, a number of saltlakes and small Melaleuca damplands were noted within and adjacent to the Project area. There may be minor short term impacts (i.e. modified runoff and sedimentation) on these wetlands and damplands during construction with these able to be managed under an Environmental Management Plan (EMP).

3 (c) Soil and Vegetation characteristics

The Project area is situated in the Avon Wheatbelt (AVW) bioregion described by the Interim Biogeographic Region of Western Australia (IBRA; DotE 2014b). The Avon Wheatbelt is an area of active drainage dissecting a Tertiary plateau in the Yilgarn Craton. The Avon Wheatbelt is a gently undulating landscape of low relief with Proteaceous scrub-heaths, rich in endemics on residual lateritic uplands and derived sandplains, mixed Eucalypt, Allocasuarina huegeliana and Jam-York Gum woodlands on Quaternary alluvials and eluvials (Beecham 2001).

The Project area is located within the Katanning (AVW02) IBRA subregion. The Katanning subregion is an erosional surface of gently undulating rises to low hills with abrupt breakaways. In this area continuous stream channels flow in most years and colluvial processes are active. The soil of the Katanning subregion has been formed in colluvium or in-situ weathered rock. The vegetation of this area includes woodland of Wandoo, York Gum and Salmon Gum with Jam and Casuarina (Beecham 2001). Dominant land uses for the subregion include: cultivation (dry land agriculture) and grazing with small areas retained for conservation, as crown reserves and rural residential (Beecham 2001). The majority of ecosystems in the Katanning subregion have been extensively cleared and are under threat from competing land use, weeds, rising water tables and altered fire regimes.

3.3 (d) Outstanding natural features

There are no outstanding natural features within the Project area.

3.3 (e) Remnant native vegetation

The Project area is dominated by mixed eucalypt/melaleuca woodlands, scattered eucalypts and shrublands. At a broad scale, changes in upper story dominance are generally associated with changes in topography, geology and soil type. In general, the Project area comprised of scattered patches of vegetation, isolated trees and cleared areas.

The field assessment confirmed the presence of 16 vegetation types within the Project area. Four vegetation types contained planted or seeded species and one was degraded and contained no native vegetation. The Project area's eastern road reserve is generally wider and contains a greater amount of vegetation than the western road reserve. The western road reserve was generally narrower and the Project area extended into the adjacent land. The eastern road reserve has a greater floristic diversity and the vegetation, in general, was in better condition than the western road reserve.

GHD acknowledges that considerable variation exists within these broad associations and that refined mapping may result in a mosaic of fine-scale vegetation units reflecting changes in soil type, geology, slope, aspect and growth stages.

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

The vegetation condition of the Project area was mapped during the GHD (2016b) Spring Flora Survey using the Keighery (1994) vegetation condition rating. The Keighery (1994) vegetation condition rating across the whole project varies between Excellent (in sections adjoining conservation areas) and Completely Degraded. The majority of the Project area outside of the reserves being Degraded. However, this Degraded vegetation buffers the vegetation of the road reserve which is in 'Good' (in the revegetated areas) or Good/Degraded (in the other remnants or planted areas).

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

Desktop searches conducted by GHD (2016a) were used to identify European Heritage Sites within 5 km of the Project area. No Commonwealth heritage-listed places or National Heritage Places were identified within 5 km of the Project area.

3.3 (i) Indigenous heritage values

A search of the Department of Aboriginal Affairs (DAA) Aboriginal Heritage Inquiry System (DAA 2013) showed one 'Registered Site' and one 'Other Site' within the Project Area.

The 'Registered Site' is 'Salt Lake', Site ID5732, and is related to 'Artefacts / Scatter'. Only a corner of the buffer of this site intersects the Project Area.

The 'Other Site' is 'Wansborough', Site ID 5742 and is related to 'Skeletal material/Burial'. "Other Heritage Sites" are sites that have insufficient evidence to be considered for classification as "Registered Heritage Sites" and are therefore not protected under the Aboriginal Heritage Act 1972. These sites may still be afforded protection under the Act if heritage artefacts are found within them.

A further three "Other Heritage Sites': and two 'Registered Aboriginal Sites' are present within 10 km of the Project Area.

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

The Pootenup Reserve is located approximately 10 m to the west of the Project area. The Pootenup Reserve consists of two lots with a combined area of 47.03 ha.

The Wansbrough Reserve is located to the north east of the Project area and consists of a group of three lots with a combined area of 126.29 ha. This reserve is located approximately 4.8 m from the Project Area at its nearest point.

Three other conservation areas managed by DPaW have been identified within 10 km of the Project area. The nearest of these three DPaW estates is the Stirling Ranges National Park which is approximately 6 km to the east of the Project area.

A search of DPaW's online Native Vegetation Viewer (DPaW 2013a) identified eight ESAs within 10 km of the Project area. No ESAs were identified within the Project area, with the nearest ESA (889) located approximately 4.8 k m to the south and is associated with rare flora.

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

The existing land use of the Project Area is roads.

3.3 (l) Existing land/marine uses of area

The Project will not change the land use, and is compatible with the existing land use within the road reserve it is not likely to impact on the surrounding land use.

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

The Project will not change the land use, and is compatible with the existing land use within the road reserve it is not likely to impact on the surrounding land use.

4 Environmental outcomes

Based on the biological assessment the Project will include the following environmental outcomes:

- Clearing of no more than 3.49 ha of the Critically Endangered Ecological Community, Eucalypt Woodlands of the Western Australian Wheatbelt within the Project area
- Clearing of no more than 3.87 ha of Red-tailed Phascogale habitat
- Clearing of no more than 3.87 ha of Black Cockatoo habitat
- Removal of no more than 64 potential habitat trees, including up to five trees containing suitable hollows for breeding
- No clearing outside the Project area and minimal indirect impacts outside the Project area.

5 Measures to avoid or reduce impacts

The aim of these species specific avoidance and management measures are to minimise the environmental impacts associated with the proposed works to the Red-tailed Phascogale and Carnaby's Black Cockatoo as well as to identify areas of responsibilities required for the implementation of management measures.

5.1 Avoidance measures

Fulton Hogan on behalf of Main Roads commissioned GHD to undertake the preliminary environmental impact assessment for the Project area. The key environmental issues within the Project area were identified and mapped, including the location and extent of native vegetation and conservation significant flora species. These environmental issues as well as other key aspects (including Aboriginal heritage sites) were considered by Main Roads during the detailed design phase in order to avoid or minimise, wherever possible, impacts on environmental and heritage aspects.

The primary purpose of the design is to improve the level of service and safety thereby reducing the frequency and severity of road run-off crashes on the M31. The final project design was chosen based on the need for the project to meet Australian Standards with consideration of the environmental and heritage constraints. The following measures have been implemented to avoid or minimise clearing wherever possible during the design process:

- Existing material pits will be used instead of developing new pits.
- The Project area construction footprint was developed to avoid clearing vegetation in good condition located in the Wansbrough and Pootenup Reserves adjacent to the Project area.
- The site office, materials storage areas, construction vehicles/machinery and access tracks will be located on previously disturbed or cleared areas to avoid clearing.
- The road alignment was altered during the detailed design phase to reduce the number of significant cockatoo habitat trees to be cleared from 73 in the original design to 64 in the current design. This also assisted in reducing the amount of the Eucalyptus woodlands of the Western Australian Wheatbelt TEC to be cleared.

Incorporation of fauna sensitive road design elements

Main Roads will install signage at least two points along (one along each of the north and south bound lanes) to alert drivers to the presence of flying Black Cockatoos. The signage will be incorporated in to the final design plan of the road and will be implemented permanently.

Delineation of disturbance footprint

One of the key strategies to avoid impacts to native vegetation, fauna and habitat during the construction phase of the Project is to strictly adhere to clearing and disturbance boundaries. The clearing area will be established by a surveyor and pegged and then checked by a member of the Main Roads environment team before clearing is approved and then it will be checked again after clearing. These measures have been outlined in Table 4 below.

Timing of construction

As far as practical clearing and disturbance of Black Cockatoo and Red-tailed Phascogale habitat will be timed to prevent coinciding with the breeding season (July – January[3]). Where this is not possible additional mitigation measures will be implemented.

[3] For Carnaby's Cockatoo July is the beginning of the move back out to the Wheatbelt in search of suitable nesting hollows. The nesting season lasts from late winter through spring and into early summer - http://www.environment.gov.au/biodiversity/threatened/publications/carnabys-black-cockatoo-calyptorhynchus-latirostris
For Red-tailed Phascogale – the mating period ends during winter with young generally born during August with young remaining dependent through to the end of summer when young are weaned and start to disperse http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=316#life_cycle

5.2 Mitigation measures

The mitigation measures proposed in Table 5 have been designed to assist all parties involved in the Project to manage the identified potential impacts that may result from the Project actions, particularly during the construction phase of the Project. The mitigation measures will be included in the project EMP, which will be complied with by all staff and contractors.

Objectives and performance

The two key objectives of the avoidance and mitigation management measures are to:

1. Avoid, then minimise the clearing of Carnaby's Black Cockatoo and Red-tailed Phascogale habitats (thus also minimising impacts to the Western Australian Wheatbelt TEC
2. Avoid direct impacts (e.g. injury or death) to individual Carnaby's Black Cockatoos and Red-tailed Phascogale during the construction process

In order to gauge the success of these key objectives, relevant management targets and key performance indicators have been identified (Table 4).

Table 4 Objectives & Key Performance Indicators for avoidance and mitigation measures

Objective	Target	Key Performance Indicator
Avoid, then minimise the clearing of habitat	No clearing or disturbance to habitat during construction outside of the disturbance footprint, as delineated in the field and outlined in detailed design plans.	Presence of delineating fencing or tape and signage around areas of retained habitat outside the approved clearance area. The clearing area will be established by a surveyor and pegged and then checked by a member of the MR environment team before clearing is approved and then it will be checked again after clearing. Number of reported incidents of delineating fencing or tape missing or not installed around fauna habitat outside the approved clearance area. Number of reported incidents of clearing or disturbance exceeding area marked in field and design plans. Ongoing construction area inspections and reports to assess clearing operations.
	No damage has occurred to habitat outside of approved clearing areas during construction.	Number of reported incidents (including the area of) habitat or feeding area damaged, or number of potential nesting trees lost or damaged during construction.
Avoid direct impacts (e.g. injury or death) to individual Carnaby's Black Cockatoo and Red-tailed Phascogale during the construction process	Occurrence of nesting Black Cockatoos and breeding Red-tailed Phascogale to be clearly identified and marked. Information to be gained from pre-clearance survey	Nesting trees identified in mapping and marked on site.
	No trees outside the approved disturbance footprint to be disturbed.	Number of reported incidents of disturbance to trees outside the approved area.
	No individuals injured or killed during construction.	Fauna encounter records – number of injured or killed as a result of construction activities.

Implementation

The avoidance and mitigation measures listed in Table 5 will be implemented by Main Roads and /or the construction contractor(s) during the design, construction and post construction phases of the Project. Areas of responsibility are likely to include the following organisations and/or personnel:

- Main Roads (MR) Project management team - will provide the necessary information needed regarding the implementation of the mitigation measures.
- Construction contractor(s) and their staff – the construction contractor will provide the necessary information needed regarding the timing of the project and/or implementation of the mitigation measures.
- Environmental Officer- the Wheatbelt Environment Officer will ensure all record keeping is maintained and provided to Main Roads and the relevant authorities where appropriate
- Ecologist – suitably qualified ecologist with experience undertaking pre-clearance fauna surveys, fauna relocation, and handling of Black Cockatoos. The ecologist would hold all appropriate licences with Department of Parks and Wildlife (DPaW) (Ethics approval, regulation 15 and/or regulation 17) and be able to operate safely with the construction team. The ecologist would be the only person responsible for the handling of any fauna.

Table 5 identifies the person/s responsible for implementing the avoidance and mitigation measures during the various phases of the Project. The responsibility of particular measures can be delegated, though overall responsibility will remain with the listed person. The proposed measures assume two scenarios:

- Scenario 1 - Clearing to be undertaken during the breeding season (non-preferred)
- Scenario 2 - Clearing to be undertaken outside the breeding season (preferred)

If clearing or disturbance of Carnaby's Black Cockatoo and Red-tailed Phascogale habitat is required during the breeding season (July – January considering both species) the following mitigation will be applied:

- Each section of the project will be surveyed by a qualified ecologist prior to clearing to identify if any Carnaby's Black Cockatoo or Red-tailed Phascogale are breeding within the area proposed to be cleared
- A relocation protocol will be established including relocation procedures for when eggs are found and / or young and adults are found
- Any trees where breeding Carnaby's Black Cockatoos are identified will be left until the chick has vacated the nest, where possible

The construction phase measures listed in Table 6 are relevant regardless of the assumed scenario, however, relocation protocols will only be applied if species are found.

Reporting, review and updates

Reporting of incidents which are considered non-compliant or for monitoring purposes will be completed pursuant to the CEMP or equivalent environmental management plan developed by Main Roads and/or the Construction Contractor.
Any relevant changes or updates to knowledge, standards, policies and procedures will be incorporated wherever possible prior to the commencement of construction.

Table 5 Avoidance and mitigation measures

Project phase	Objective	Avoidance and mitigation measure	Timing	Responsibility
Scenario 1 - Construction to be undertaken during the breeding season				
Pre-construction (planning)	Avoid direct impacts to individuals during the construction process	Development and implementation of a DPaW approved handling and relocation protocol.	Approved protocol at least two months prior to construction of first section	Ecologist and Environmental Officer
Pre-construction (prior to construction)	Avoid direct impacts to individuals during the construction process	Undertake pre-clearance surveys of trees identified as having hollows suitable for Carnaby's Black Cockatoo and Red-tailed Phascogale 4.	Surveys to be undertaken one week prior to commencement of construction using approved protocols.	Ecologist and Environmental Officer
Scenario 2 - Construction to be undertaken outside the breeding season				
Pre-construction (prior to construction)	Avoid direct impacts to individuals during the construction process	Check all trees identified as having suitable hollows for both species to remove any fauna in the hollows prior to clearing.	Immediately prior to construction	Main Roads and/or Construction Contractor Ecologist
Construction	Avoid, then minimise the clearing of habitat	Clearly delineate the extent of the disturbance footprint (clearing footprint) with coloured pegs. Prior to clearing/ construction operations the surveyor will mark out the clearing line and this will be checked by Main Roads Environment Officer to determine that it is clearly defined and compliant with permits. The extent of this clearing will be clearly communicated in documentation and accurately demarcated on-ground.	Prior to construction	Main Roads Site Supervisor Construction Contractor Environmental Officer
		All project construction personnel will be inducted prior to the commencement of works. The induction program will include communication about the 'No Go Areas', importance and consequences of entering/disturbing these areas.	Prior to construction and during construction (at first toolbox meeting of each week)	Main Roads Site Supervisor Construction Contractor Environmental Officer
		Regular review of the disturbance footprint boundary to ensure 'No Go Areas' are clearly delineated	During construction – checked each day prior to commencement of construction	Main Roads Site Supervisor Construction Contractor
		Restrict construction personnel to	Entire construction	Main Roads

[4] See GHD 2014 for trees identified as having suitable hollows for Black Cockatoo species within the Project area.

		the disturbance footprint including designated access routes and parking areas.	phase	and/or Construction Contractor
		Fauna encountered during the construction process shall be given the chance to move on if there is no threat to the person's safety in doing so. The Ecologist will be suitably experienced and licensed and will be available at all times during the clearing phase to interact with fauna that cannot move away freely.	Entire construction phase	Main Roads and/or Construction Contractor Site Environmental Officer
Post construction	Avoid direct impacts to individuals during the construction process	Monitoring of relocated individuals including young and / or adults according to the approved protocols where found.	During and post construction according to the approved protocols	Ecologist and Environmental Officer

Assessment of residual impacts

Residual impacts are those unavoidable impacts that remain after avoidance and mitigation measures have been implemented. The avoidance and mitigation measures outlined in Section 5 aim to minimise the potential impacts to the Carnaby's Black Cockatoo and Red-tailed Phascogale as a result of the Project, however, it is unlikely that the level of impact will be reduced so as to avoid a significant impact. Therefore it is still considered likely that the loss of the potential breeding trees for the Project with respect to similar potentially suitable breeding habitat in the local area is substantial. The clearance of up to habitat for the Red-tailed Phascogale and Carnaby's Black Cockatoo, in particular the potential breeding habitat is likely to reduce the availability of breeding habitat in the future. This may in turn lead to a long-term decrease in the size of the local populations of Carnaby's Black Cockatoos and Red-tailed Phascogale due to the lack of available breeding resources; therefore the Project is likely to have significant residual impacts to the Carnaby's Black Cockatoos and Red-tailed Phascogale.

6 Conclusion on the likelihood of significant impacts

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

	No, complete section 5.2
X	Yes, complete section 5.3

6.2 Proposed action IS NOT a controlled action.

N/A

6.3 Proposed action IS a controlled action

	Matters likely to be impacted
	World Heritage values (sections 12 and 15A)
	National Heritage places (sections 15B and 15C)
	Wetlands of international importance (sections 16 and 17B)
X	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)
	Protection of the environment from actions involving Commonwealth land (sections 26 and 27A)
	Protection of the environment from Commonwealth actions (section 28)
	Commonwealth Heritage places overseas (sections 27B and 27C)

The desktop and field assessments have assessed potential impacts on Matters of National Environmental Significance and determined that there are two EPBC Act-listed species, and one EPBC Act-listed community that will be impacted by this Project:

- Carnaby's Black Cockatoo – Endangered
- Red-tailed Phascogale – Endangered
- Eucalyptus woodlands of the Western Australian Wheatbelt – Critically Endangered

The Project area provides foraging, potential breeding and roosting habitat for Carnaby's Black Cockatoo. The key potential impacts to Carnaby's Black Cockatoo resulting from clearing of the Project area is the loss of 3.87 ha habitat including 65 potential habitat trees (tree with a DBH of greater than 300 mm or 500 mm) of which five of these trees contains suitable hollows for breeding (see GHD 2016b , Appendix B in Attachment 2).

It is considered that clearance of this habitat, in particular the potential breeding habitat (including 65 potential breeding trees, five with hollows suitable for breeding) is likely to result in a shortage of hollows in the local area, thus reducing the availability of potential breeding habitat in the future. This may in turn lead to a long-term decrease in the size of the local population of Carnaby's Black Cockatoo due to the lack of available breeding resources.

The Project area provides potential foraging, nesting breeding and dispersal habitat for the Red-tailed Phascogale. The key potential impacts to Red-tailed Phascogale resulting from clearing of the Project area is the loss of an estimated 3.87 ha of suitable habitat including potential breeding habitat (i.e. hollow bearing trees).

The Project is considered likely to lead to a long-term decrease in the size of a local population of Red-tailed Phascogale. It is considered that clearance of up to 3.87 ha of habitat, in particular the potential breeding habitat is likely to result in a shortage of hollows in the local area, thus reducing the availability of breeding habitat in the future. This may in turn lead to a long-term decrease in the size of the local population of Red-tailed Phascogale due to the lack of available breeding resources. Furthermore the road reserve (including the Project area) is likely to support dispersal of the species in a highly

cleared and fragmented landscape. The clearing associated with the Project is likely to reduce the functionality of this habitat for dispersal which may contribute to local population decline.

7 Environmental record of the responsible party

		Yes	No
7.1	Does the party taking the action have a satisfactory record of responsible environmental management? Main Roads are a State agency and have a sound record of responsible environmental management and environmental management systems. Main Roads seeks to achieve balanced and sustainable outcomes for the community with responsible environmental stewardship in developing and maintaining the road network critical to its success. Main Roads is committed to: • Protecting and enhancing the environmental values of road reserves • Minimising the impact on the natural environment of roads and road use • Conserving natural resources and minimising energy consumption and waste. A corporate Environmental Management System facilitates management of environmental risks and performance improvement. The independently certified and audited system is integrated into all key processes including planning, delivery, maintenance, network operations and supporting services. Main Roads holds Certificate No. EMS 530437 and operates an Environmental Management System which complies with the requirements of ISO 14001:2004 for the following scope: Main Roads Total Management System comprising Planning, Delivery, Maintenance, Network Operations and Supporting Services. Officially registered since 14 July 2005 under Certificate 149459.	✓	
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?		✓

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? Although not a corporation Main Roads operates under an Environment Policy and Sustainability Policy, as well as an Environmental Assessment and Approvals Guideline. Main Roads also has an ISO 14001 accredited Environmental Management System. Main Roads Environmental Policy Statement (2004): Main Roads manages the State's road network to provide safe and efficient road access that will enhance community lifestyles and support economic prosperity. Main Roads seeks to achieve balanced and sustainable outcomes for the community. Responsible environmental stewardship in developing and maintaining the road network is critical to the success of Main Roads. <u>Principles</u> Main Roads is committed to:) Protecting and enhancing the environmental values of road reserves;) Minimising the impact on the natural environment of roads and road use; and) Conserving natural resources and minimising energy consumption and waste. <u>Objectives</u> In applying these principles, Main Roads aims to:) Fully satisfy all environmental legislation, Government Policy and, where specific legislation is lacking, uphold the spirit of the law;) Implement, maintain and continually improve an effective environmental management system across Main Roads planning, business, project and management processes;) Apply an approach of "avoid, minimise and mitigate", in order of preference, to the management of environmental impacts associated with road construction projects;) Develop awareness of environmental management processes, standards and responsibilities among Main Roads' employees and contractor partners;) Listen and be responsive to community and stakeholder views on environmental issues; and Set specific environmental objectives and targets relating to the key environmental aspects of Main Roads' activities, and measure and report progress in achieving these targets.	✓	
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?	✓	

The table below provides the ten most recent referrals to the Department of the Environment:

Reference Number	Title of referral	Date received
2014/7171	Main Roads Western Australia/Transport - land/555.85 - 560.4 SLK Great Eastern Highway/WA/Focus, Greenfields and Carins Intersection Upgrade	2 April 2014
2014/7149	Main Roads Western Australia/Transport - land/ between Maida Vale Rd & Buttercup Cres, High Wycombe/WA/Roe Highway Noise Wall	5 March 2014
2014/7141	Main Roads Western Australia/Transport - land/Reserve 30 088, Karridale/WA/Vlam Road Gravel Pit, Vlam Road, Karridale, WA	27 February 2014
2014/7129	Main Roads Western Australia/Transport - land/Great Northern Hway (GNH) 200km north of Perth/WA/to upgrade & realign a section of GNH between Batty Bog Rd & Walebing	10 February 2014
2013/7094	Main Roads Western Australia/Transport - land/Albany Highway, 30 km north of Albany, WA/WA/Construct passing lanes on Albany Hwy btwn Settlement Rd & Jackson Rd 30km N of Albany	19 December 2013
2013/7091	Main Roads Western Australia/Transport - land/Mitchell Fwy -Burns Beach Rd to Hester Av Neerabup/WA/Mitchell Freeway Extension between Burns Beach Rd and Hester Av, Neerabup	13 December 2013
2013/7082	Main Roads Western Australia/Transport - land/Ravensthorpe/WA/Ravensthorpe Heavy Haulage Route Project, WA	6 December 2013
2013/7073	Main Roads Western Australia/Transport - land/City of Stirling/WA/Reid Highway duplication project (ErindaleRd-Duffy Rd) WA	29 November 2013
2013/7062	Main Roads Western Australia/Transport - land/City of Cockburn/WA/Kwinana Fwy southbound widening Roe Hwy to Armadale Rd and construction of Farrington Rd off-ramp	22 November 2013
2013/7042	Main Roads Western Australia/Transport - land/Btwn Tonkin Hway & Reid Hway junction to Muchea/WA/Perth-Darwin National Highway alignment (Swan Valley Section)	31 October 2013
2014/7257	York Merredin Road Widening SLK 51-66 and Dangin Mears Intersection Upgrade	19/6/2014

8 Information sources and attachments

8.1 References

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8.2 Reliability and date of information

The flora and vegetation field survey was undertaken by a qualified and experienced botanist and the fauna survey was undertaken by a qualified and experienced ecologists at the Project area.

The flora survey involved an assessment of the vegetation types and condition of the vegetation, noting or collecting all flora species visible at the time of survey. The survey methodology GHD (2016b – Appendix B in Attachment 2) employed was consistent with the EPA guidelines for flora surveys as outlined in Guidance Statement No. 51: Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in Western Australia and Terrestrial Biological Surveys as an Element of Biodiversity Protection, Position Statement No. 3.

The flora field assessment methodology involved a combination of sampling in representative vegetation types and meandering transects of the Project area on foot to record plant species present (visible) at the time of the survey. The field survey was conducted within the appropriate spring survey period. The GHD fauna assessment (GHD 2016) was consistent with the EPA Guidance Note for the Assessment of Environmental Factors for Terrestrial Fauna Surveys for Environmental Impact Assessment in Western Australia (Guidance Statement No. 56).

8.3 Attachments

		✓ attached	Title of attachment(s)
You must attach	figures, maps or aerial photographs showing the project locality (section 1)	✓	Attachment 1 – Figure 1. Location of Project area
	GIS file delineating the boundary of the referral area (section 1)	✓	Attachment 1 – Figure 2. Project area
	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)	x	
If relevant, attach	copies of any state or local government approvals and consent conditions (section 2.5)	✓	N/A
	copies of any completed assessments to meet state or local government approvals and outcomes of public consultations, if available (section 2.6)	✓	Attachment 2 – GHD 2016a - Preliminary Environmental Impact Assessment GHD 2016b – Flora and Fauna Assessment (Appendix B in Attachment 2) Attachment 3 – PMST March 2016
	copies of any flora and fauna investigations and surveys (section 3)	✓	Attachment 2 – GHD 2016b – Flora and Fauna Assessment (Appendix B of GHD 2016a) Attachment 3 – PMST March 2016
	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 2 – GHD 2016b – Flora and Fauna Assessment (Appendix B of GHD 2016a) Attachment 3 – PMST March 2016

report(s) on any public consultations undertaken, including with Indigenous stakeholders (section 3)	x	N/A

9 Contacts, signatures and declarations

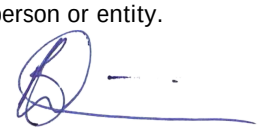
Project title:

9.1 Person proposing to take action

1. Name and Title:	Brad Williams A/Senior Project Manager
2. Organisation	Main Roads Western Australia Organisation name should match entity identified in ABN/CAN search
3. EPBC Referral Number	
4: ACN / ABN	50 860 676 021
5. Postal address	PO Box 503, Albany WA 6331
6. Telephone:	08 9892 0555
7. Email:	gsreg@mainroads.wa.gov.au
8. Name of designated proponent (if not the same person at item 1 above:	
9. ACN/ABN of designated proponent (if not the same person named at item 1 above):	

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  25/5/16

9.2 Person preparing the referral information (if different from 9.1)

Name	Craig Grabham
Title	Senior Ecologist
Organisation	GHD Pty Ltd
ACN / ABN (if applicable)	N/A
Postal address	999 Hay Street, Perth WA 6000
Telephone	08 62228081
Email	craig.grabham@ghd.com

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 24.5.16

Attachment 1