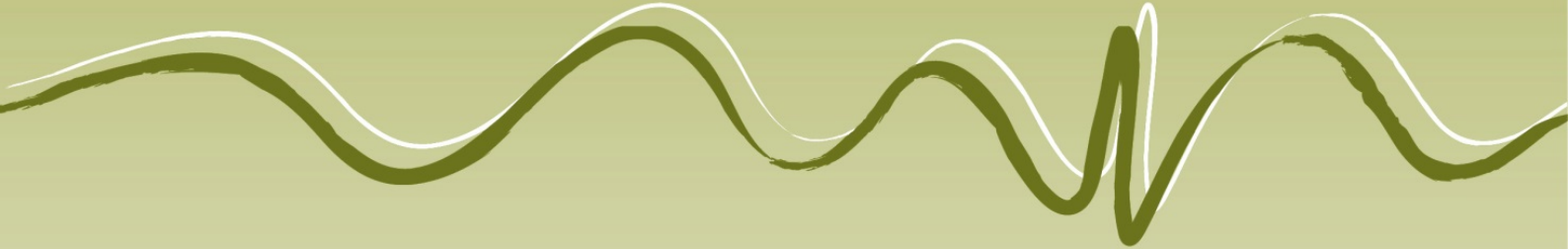


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- 10. H fYUñbYX'GdYWYg'HYgh'cZG| b|ZWUbWY'))
- 11. Gi a a UñmcZ-a dUWñ')*
- 12. 7cbWi qlcbg')+
- 13. Gi ddcfñ|b| '8cW a Ybññ|cb'),
- 14. : YYg')-
- 15. G| bñi fY'cZDfcdcbYbh' *\$

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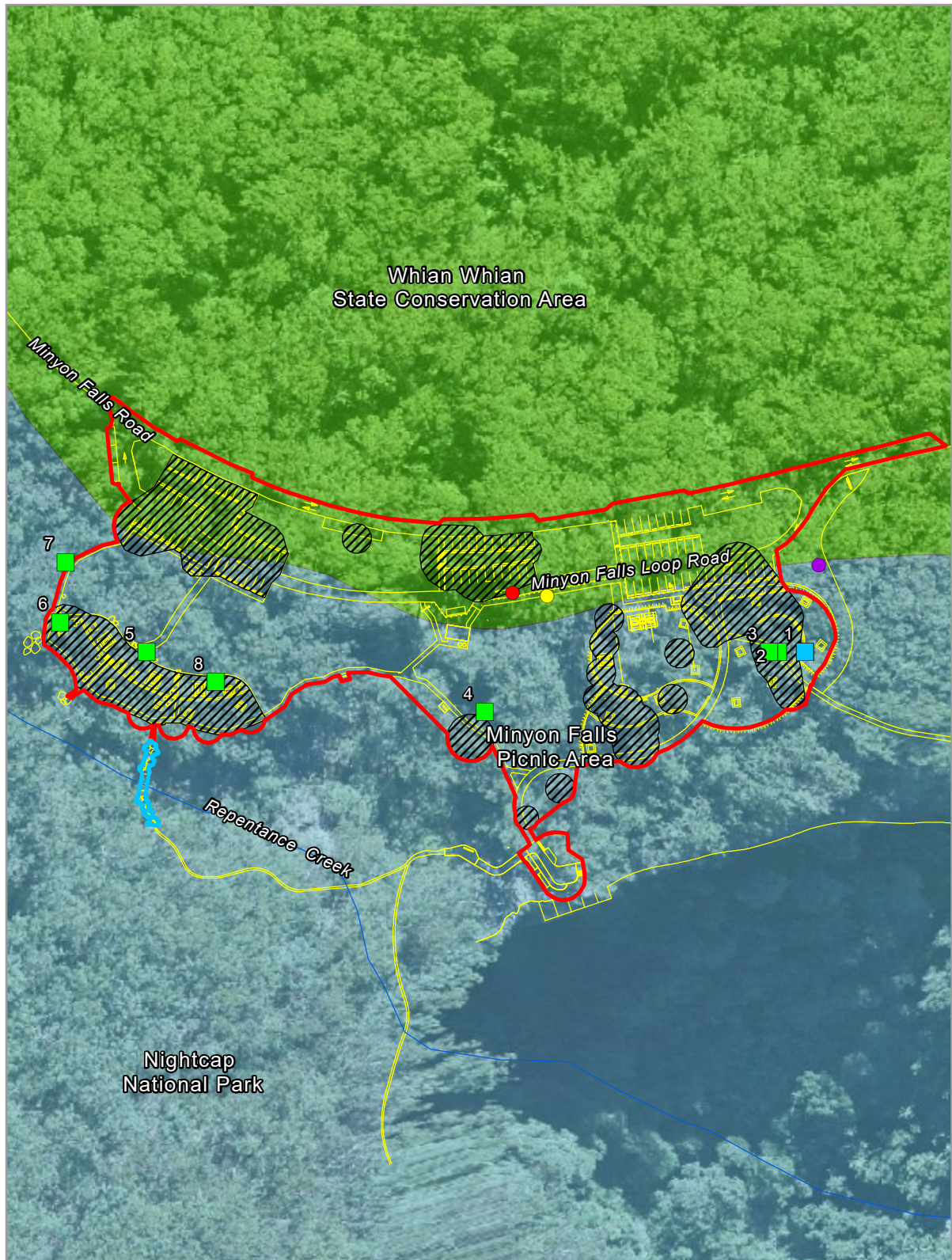
GeoLINK
environmental management and design

Review of Environmental Factors
Minyon Falls and Minyon Grass Upgrades
3408-1004

Locality Plan

Illustration 1.1

Information shown is for illustrative purposes only



LEGEND




- | | | | |
|--|---|--|---------------------------|
| | Indicative stepping stones replacement area | | Minyon Falls design |
| | Minyon Falls day - use area | | Hollow-bearing tree |
| | Tree removal | | Hollow-bearing fallen log |
| | Whian Whian State Conservation Area | | |
| | Nightcap National Park | | |
| | Waterway | | |



Site Plan



LEGEND

-  Minyon Grass day - use area
-  Nightcap National Park
-  Minyon Grass design



2. DfcdcbYbHg'8 YhUJ`g'

BDK G'DfcdcbYbHg'	
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3. DYfa [gg]V`]hmi

' '% @[U`DYfa [gg]V`]hmi

☒ **Á National Parks and Wildlife Act 1974 fBDK `5 WVL`**

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☒ Á Uàb&•Á Á@ÁBÁG ÈCEÁ

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☒ Á Ü•^!çÁf q æ^! { } ó!q &q |•Áq ÈÈÒ. HESDÁ

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☒ Á Vá|Áq áÁ^!çãf q Á&q } •Á-Á|q Á-Á q æ^! { } ó!Áæ^! { } ó!Á q æ^! { } ó!c } ÓÁ

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Note:Á

1. Car parks at the Minyon Falls day use area are partly located in Nightcap NP and partly located in Whian Whian State Conservation Area. The maximum car park limit above is a combined limit for

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+ III, •KÁ

- Á No Aboriginal objects were identified from the survey and it is unlikely that the Project Area would contain sub-surface archaeological sites.
- Á It was noted that Ms Liz Dargin had undertaken previous consultation with Aboriginal women and indicated that Mynyon Falls comprised part of a complex of women's 'intangible' heritage sites. This was supported by Mr James Roberts who had been told of the significance of the Mynyon Falls area to Aboriginal women prior to participating in the survey.
- Á It was generally noted that it is not common for archaeological sites, particularly those comprising stone tools and artefacts, to be located in close proximity to women's sites.

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+ III, á^Á^] [|çã } KÁ

- Á Specific details, including design drawings, of the concrete stepping blocks showing dimensions of blocks and spaces between blocks;
- Á An explanation of how the proposed works will be undertaken;
- Á Details of the impacts of the works on aquatic habitats including the permanent and temporary components of the construction footprint and the potential for the crossing to act as a barrier to fish passage; and
- Á Environmental impact mitigation measures to be implemented during the works. These are best explained through the development of an environmental work method statement that covers all aspects of the works.

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5.7 cbgi `hUhc b`E`BUhj Y`H]h`Y`

FĚÁ QÁ@Á@áá~ ab&ÁÁ Á@ÁbX] Ybci g`@UbX'I gY5[fYYa YbHÁÁ@&Á@ÁÖÜÖÁ^á•æÁ!Á ā@Á ÖÜÖÁ[!ā āÁ^!āē^Áē āÁÁ āÁ ē ē^ ^) óÁ^ē DÁ

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☒ Á Ÿ^•ÁÁ

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HĚÁ Pæ Á āāÁ^Áā!Á^} ÁM H]b[i]g\ YXNÁ

☒ Á p[Á!Á } &^āÁÇ [ÁÁ ÁŮ~^•ā } ÁDÁ

I ĚÁ QÁ āāÁ^Áā!Á^ [cÁ] } ā{ ^áÁā cā * ā @āĚÁ [^•Á@ÁBāāĚ Á@Á^ÁÁ] [\ `f]g_Á Áāç!•^ Á ā^&ā * Á āāÁ^Áā!Á^ Ě Ě ā!Á ^ā d`&c!^Á] [\ Ě^, Á āāā * Á!Á!āā * Á-Á^•ĚÁ

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Minyon Grass Day-use Area

- Á X^*^ceā} Á^ { [çæ]Á
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- Á Ô] · |æā} Á Á e] æ\ Áe^aeÁ Á ^·oÁ Á e] Áe] } oÁ Á [\ [~ DÁ æ] Á^, Á @|c'·Áe āÁ] æ' ^Á
- Á Þ^, Á^á·d æ] Á æ] æ·Áe & Áe·Áæ] Áe Áe āoÁ [& Á

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* "8" 5 bW`Ufmi: UW]h]Yg'

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* "8"(' DfcdcgYX'7 cbg]fi W]cb'AYh cXgZÁ Uhf]Ug'UbX'9ei]da Ybh

Y [|·Á [~ |áÁ & { { ^} & Áe Á ā [] Áe] Áe āÁ@} Á } & Á & { } |c' Á [|·Á [~ |áÁ^Á} ā^Á

Minyon Falls

- Á T æ\ Á^ oÁÁc} oÁ Á [|b&oÁ [~ } āæ^ Á
- Á Ò·ceā]ā @Á Á &{ } [[~] áÁ
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- Á Q·ceā]Á [·ā } Áe āÁ^ā ^} &] d [|·Áe &] |āā * Áe Áe] | ç^áÁÖ [·ā } Áe āÁ^ā ^} oÖ] d [|Á
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* " ' CV^Wj Yg'cZH Y'5 Wj]Im

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Ö Ä çæã Á ç Í H Á æ ç Á ç ç ç Á ç ^ Á ^ } Á & | á á á Á Á ç @æã Á Ú Á ç ç ç & | á • Á J Á] ^ &æ • Áæ ç á Á Á ç @ ^ æ } ^ á Á } á | Á @ Á Ö Ö Á ç ç Ö Ö Á ç Þ Á ç f J D Á V @ Á ç Á ç Á ç ^ } Á [á á á Á | { Á | ^ çã ~ Á] [! • Á ç ç á Á @ | ^ | ^ Á] | ^ • } Á ç ç ç | á á á Á ç ç ç Á | Á @ Á ç ç | ç Á - Áæ } æ Á V @ Á ç ç Á [oñ] • æ Á ^ á Á • ç } á ç ç ç Á ç ç Á | Á ç ^ Á @ ^ æ } ^ á Á] ^ &æ • Á ç Á @ Á] ç ç ç Á - Á | [] á ç * Á ç @æã Á Ú Á

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V@ÁU&@ä` |^ÁGá c`áÁ[ææ^á^áÁ] ^æ • E`Væ[, , [[áE &&` ! • Á ÷^` ^ } ç^ Áæ@ Á æ^Á • Á@ Áæ^Á d^• Á Á ÇæDæ áÁ@ } & Á[^• Á [ç] - [[Á Á@ Á æ^á } Á-Á [ç] çæ[ææ^áææ^á æ^á^áÁ } á^! Á ÒÓÓÁ | EÁV@Á` !! []` ää * Á^` ^ææ } Á &] • æ^! áÁ, Á` ææ Á[ææ^áææ^á ^ Á Á@ Á[{ ä æ & Á æ^ Á] E | ^•! :^áÁ^Á] ^æ • ÁÇæ æ` æV` !]` ç ^EÖ [[á, [[áDæ áÁ [^• Á [ç] {] | á^ Á | ^ Á [ææ^áææ^á@!^` | ^ ÁÓÓÓÁ | Á [^• Á [ç]] EÁ[ææ^áæ^á^] Á & | á^áÁ æ@ Á æ @æ Á ÓÁ } áÁ@ Á •` !! []` ää * Á @æ Á @æ ÁÓÇE@!^` | ^ Á } • æ^! ææ } Á-Á@ Á æ & ç^• Á } áÁ | ä & | ^• Á-ÁÓÓÓÁ | Á @æ^Á^ } Á] | á^ ÁUæ^* æá Á [^ | á^ Áæ [] ç áÁ Á ææ^ Á [ç] çæ[] æ & E

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- Á No Aboriginal objects were identified from the survey and it is unlikely that the Project Area would contain sub-surface archaeological sites.
- Á ...Minyon Falls comprised part of a complex of women's 'intangible' heritage sites.
- Á ...it is not common for archaeological sites, particularly those comprising stone tools and artefacts, to be located in close proximity to women's sites.

V@Á^] [| ç] & | á^áÁ@æ@ ÁÇæ æ Á [^ | áÁ [ç] æ &] ÁÇ [| ä ä æ^ á b & • EÇ, ^ç^ Á | ^ & æ ç } æ^ Á { æ æ^ { ^ } Á & [{ ^ } áææ } • Á ^! Á | [çæ^áÁ Ç^•! Á Á ddYbX] | `7 EÁ

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- Á ÞÚY ÁÚ`|ãÁ@Á^Á|çã^Á
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	5 dd'WU'Yi'	<p>@_Ym]a dUMH</p> <p>Q^* ã ã^E[, EÄ { ^ãã { Ä Ä @Ä } ^* ää^Ä Ä] [• ää^Ä Ä @Ä</p>	<p>FYUgcbg''</p> <p>Q^* & ã^Ä @Ä^ ^E[ää^Ä äÄ c^) dÄ Ä @Ä ä] ää^Ä @Ä ää^Ä Ä @Ä & ää^Ä * Ä ^) çä] { ^) ää^Ä äÄ ^ Ä [[• äÄ ää^Ä * ää^Ä , @Ä @Ä [^ äÄ ää^Ä] ää^Ä</p>	<p>GLZY[i UfXg#ä]h[U]cb'a YUgi fYg'</p>
			<p>Ä QÄ } ^c] ^c^ äÄ [c^ & äÄ Ä @Ä ää^Ä } ^äÄ ää^Ä ää^Ä & c^ ^ äÄ @Ä } Ä [Ä [^ äÄ d] Ä { ^ ää^Ä EÄ ää^Ä äÄ^ ää^Ä äÄ & [* äÄ [^ äÄ ^Ä] ää^Ä äÄ Ä V @Ä ^ { ää^Ä * ää^Ä äÄ [^ äÄ ^Ä } äÄ ^ Ä Ä @Ä ^ äÄ ää^Ä c^ ^ äÄ) Ä @Ä ää^Ä } ^ äÄ äÄ •] ^ äÄ • Ä Ä @Ä äÄ ää^Ä</p>	<p>ä { ^ ää^Ä Ä } dÄ ää^Ä d ^ ää^Ä • • • { ^) • Ä @Ä ^ äÄ } Ä] ää^Ä äÄ Ä</p>
<p>HÄ Ö ^ • Ä @Ä @Ä ää^Ä Ä ää^Ä c @Ä [c^] ää^Ä Ä ^) ää^Ä * ^ EÄ ää^Ä ää^Ä Ä ää^Ä c^ äÄ ää^Ä } äÄ Q & ää^Ä * Ä ää^Ä } äÄ Ä & [] • ^ çä ää^Ä } Ä • ää^Ä ää^Ä & ^ Ä Ä ää^Ä ää^Ä ää^Ä äÄ Ä @Ä äÄ { [c^ { ^ } dÄ</p>	<p>Ä S , Ä ää^Ä ää^Ä Ä Q @ äÄ { Ä Ä Ä</p>	<p>Q^* ää^Ä äÄ ää^Ä * Ä @Ä EÄ GÄ @Ä Ä Ä ÜVÄ J Ä Blackbutt - Turpentine open forest of the foothills of the NSW North Coast Bioregion , [^ äÄ ^Ä ^ ~ ää^Ä Ä] { ^) ää^Ä } Ä Ä @Ä @Ä ää^Ä EÄ @Ä Ä & äÄ • Ä @Ä [c^] ää^Ä [çä Ä Ä • ^ c^] Ä @Ä , EÄ ää^Ä * Ä ää^Ä äÄ ää^Ä * Ä ää^Ä } Ä @Ä , Ä * Ä Ä Ü c^] Ä @Ä , EÄ ää^Ä * Ä ää^Ä äÄ ää^Ä * Ä ää^Ä } Ä [* Ä] } ää^Ä * Ä ää^Ä c^ Ä Ä ^ ää^Ä { ää^Ä * Ä ää^Ä äÄ } \ Ä @Ä , • ää^Ä & ää^Ä ää^Ä Ä @Ä Ä T ää^Ä [] Ä ää^Ä EÄ ää^Ä äÄ [^ äÄ ^Ä ää^Ä & c^ äÄ ^ Ä @Ä ää^Ä EÄ Ä P [, EÄ ää^Ä * Ä ää^Ä [çä Ä Ä [c^] ää^Ä • @Ä [c^] ää^Ä [c^] ää^Ä * Ä ää^Ä Ä @Ä , Ä ää^Ä ää^Ä ää^Ä ää^Ä } ää^Ä ää^Ä ää^Ä ää^Ä } ää^Ä & ää^Ä Ä , EÄ * ää^Ä EÄ • • • { • ää^Ä äÄ ää^Ä ää^Ä Ä @Ä , EÄ ää^Ä ää^Ä * Ä ää^Ä ää^Ä ää^Ä } ää^Ä ää^Ä ää^Ä ää^Ä * ää^Ä ää^Ä ää^Ä ää^Ä Ä @Ä Ä ää^Ä EÄ Ä</p>	<p>Ä X^* ^ ää^Ä } Ä ää^Ä * Ä [^ äÄ ^Ä ää^Ä ää^Ä äÄ c @Ä { ^ ää^Ä Ä [d ää^Ä] EÄ Ä Ä Ö ää^Ä ää^Ä ää^Ä Ä @Ä [Ä äÄ Ä @Ä Ä { ää^Ä ^ EÄ @Ä ^ EÄ • [] } Ä] ää^Ä } Ä c^ * ^ ää^Ä } Ä Ä ää^Ä ^ • ää^Ä Ä @Ä [• Ä ää^Ä Ä Ü EÄ ää^Ä * Ä ää^Ä ^ c^ • Ä [^ äÄ ^Ä ^) ää^Ä } Ä ää^Ä & [* äÄ ää^Ä } ää^Ä äÄ { ää^Ä ää^Ä • Ä ää^Ä [c^ äÄ Ä] ää^Ä äÄ , ää^Ä ää^Ä ää^Ä ää^Ä • Ä & ää^Ä * Ä @Ä , • EÄ ää^Ä • Ä Ä • • EÄ EÄ ää^Ä * Ä c^ • Ä , [^ äÄ [& @Ä & Ä Ä @Ä • •] & Ä Ä S ää^Ä Ä @Ä ää^Ä ää^Ä äÄ ää^Ä ää^Ä ää^Ä ää^Ä } ää^Ä äÄ • • Ä ää^Ä Ä { [çä Ä { [ää^Ä } EÄ Ä Ö ää^Ä * Ä Ä @Ä , EÄ ää^Ä * Ä ää^Ä [^ äÄ ^Ä ää^Ä ää^Ä • • ää^Ä EÄ Ä W^* Ä ää^Ä ää^Ä • c^ • Ä [^ äÄ ^Ä & [] • ää^Ä äÄ Ä ää^Ä * Ä ää^Ä ää^Ä • EÄ ää^Ä ää^Ä • c^ • Ä ää^Ä ää^Ä Ä ää^Ä ää^Ä ää^Ä , ää^Ä ää^Ä ää^Ä ää^Ä } ää^Ä , ää^Ä Ä ää^Ä] [çä Ä } { ää^Ä ää^Ä ää^Ä } • Ä { • Ä</p>	



	5 dd'jwv'yi	<p>@_Ym]a dUMh</p> <p>G^* ā ā^Ē , Ē</p> <p>{ ^āā { Ā Ā @Ā</p> <p>}^* āā^Ā Ā</p> <p>][• āā^Ā Ā Ē</p>	<p>FYUgcbg''</p> <p>G^* & ā^Ā @ Ā^ Ē āā^Ā āĀ^Ā āĀ^Ā</p> <p>ā] āā^Ā @ Ā āā^Ā Ā @ Ā^Ā & āā^Ā *</p> <p>Ā^} cā] { ^} āā^Ā āā^Ā Ā] [• āā^Ā āā^Ā * āā^Ā</p> <p>, @Ā @Ā [^ āā^Ā āā^Ā] āā^Ā</p>	<p>GUZY[i UfXg#ā]h[U]cb'a YUgi fYg'</p>
				<p>āā^Ā āā^Ā , āā^Ā āā^Ā āā^Ā āā^Ā āā^Ā āā^Ā</p> <p>āā^Ā āā^Ā āā^Ā āā^Ā āā^Ā āā^Ā āā^Ā āā^Ā āā^Ā</p> <p>āā^Ā āā^Ā āā^Ā āā^Ā āā^Ā āā^Ā āā^Ā āā^Ā āā^Ā</p> <p>■ Ā āā^Ā āā^Ā , āā^Ā āā^Ā āā^Ā } \ • āā^Ā } āā^Ā *</p> <p>āā^Ā āā^Ā āā^Ā āā^Ā āā^Ā āā^Ā āā^Ā āā^Ā āā^Ā</p> <p>āā^Ā āā^Ā āā^Ā āā^Ā āā^Ā āā^Ā āā^Ā āā^Ā āā^Ā</p> <p>■ Ā āā^Ā āā^Ā , • āā^Ā āā^Ā āā^Ā āā^Ā āā^Ā āā^Ā</p> <p>āā^Ā āā^Ā āā^Ā āā^Ā āā^Ā āā^Ā āā^Ā āā^Ā āā^Ā</p> <p> , āā^Ā āā^Ā āā^Ā āā^Ā } āā^Ā</p> <p>■ Ā Uā } āā^Ā āā^Ā , āā^Ā āā^Ā * āā^Ā [^ āā^Ā</p> <p>āā^Ā āā^Ā āā^Ā āā^Ā āā^Ā āā^Ā āā^Ā āā^Ā āā^Ā</p> <p>][• āā^Ā āā^Ā āā^Ā] [cā āā^Ā āā^Ā } āā^Ā</p> <p>āā^Ā āā^Ā āā^Ā āā^Ā āā^Ā āā^Ā āā^Ā āā^Ā āā^Ā</p> <p>■ Ā āā^Ā āā^Ā * āā^Ā [^ āā^Ā āā^Ā āā^Ā] āā^Ā</p> <p>āā^Ā āā^Ā āā^Ā āā^Ā āā^Ā āā^Ā āā^Ā āā^Ā āā^Ā</p>
<p>í Ē QĀ @ Ā B c ā Ā ā ^ Ā Ā</p> <p>@ Ā Ā ā } āā^Ā ā</p> <p>^ ~ Ā & Ā } Ā @ Ā } ^ ā Ā</p> <p>- ā } āā^Ā ^ & ā • Ē</p> <p>][] āā^Ā • Ē Ā @ ā Ā</p> <p>@ āā^Ā Ē Ā āā^Ā</p> <p>@ āā^Ā Ā ^ Ā Ā</p> <p>@ Ā } ^ ā Ā] ^ & ā • Ā</p> <p>ā • Ā • { ^ } Ā Ā</p> <p>• ā } āā^Ā & Ā Ē āā^Ā</p> <p>ā • d Ē Ā</p>	<p>☒ Ā</p> <p>Š , Ā ^ * āā^Ā</p> <p>Q @ Ā { D</p> <p>Ā</p>	<p>Ā • Ā Ā } āā^Ā & Ā Ē Ē āā^Ā Ā</p> <p>& [] Ā Ā Ā ^ Ā Y W j c b % \$ D Ā @ Ā } ^ ā Ā</p> <p>•] ^ & ā • Ā āā^Ā [] } āā^Ā āā^Ā] āā^Ā āā^Ā</p> <p>B c ā Ā Ē V @ Ā • Ā • { ^ } Ā } & ^ ā ā Ā @ Ā [Ā</p> <p>• ā } āā^Ā āā^Ā] āā^Ā āā^Ā ^ Ā Ā & ^ Ē</p>	<p>Q Ā āā^Ā Ā Ē</p>	
<p>í Ē QĀ @ Ā B c ā Ā ā ^ Ā Ā</p> <p>ā] āā^Ā } āā^Ā</p> <p>^ & * āā^Ā [{ ^ } āā^Ā</p>	<p>☒ Ā</p> <p>Ē Ē Ē</p>	<p>Ā</p>	<p>Ā</p>	



	5 dd'jwv'Yi'	<p>@_Ym]a dUMh</p> <p>G^* ã ã^E[, EÄ</p> <p>{ ^ãã { A A@ @Ä</p> <p>}^* æã^A Ä</p> <p>] [•ãã^A Ä ÄE</p>	<p>FYUgcbg''</p> <p>G^* & ã^A@Ä^ ^E[æ' ^Äã áÄc') oÄ Ä@Ä</p> <p>ã] æãã@Ä æ' ^Ä Ä@Ä^ &ã *Ä</p> <p>^} çã[] { ^} oÄ áÄã ^Ä [] [•ããæ^* æã•Ä</p> <p>, @Ä [^ ããã äã@Ä] æãD</p>	<p>GUZY[i UfXg#a]h[U]cb'a YUgi fYg'</p>
<p>[-&[] •^ çæã } Á</p> <p>•ã } äãã &^NA</p>				
<p>í ÈÄ QÄ@ ÄBçãã Äã ^ ÄÄ Ä</p> <p>æã^Äã ä } äãã çÄ</p> <p>^~^&çã } ÄÄ Ä</p> <p>^} áãã *^ ^Ä&[] *æãã</p> <p>&[] { { ~ } æ Ä Ä Ä</p> <p>@ããã^Ä Ä Ä</p> <p>c@^æ } ^ãÄ] ^&ã •Ä</p> <p>æ •^•• { ^ } oÄ Ä</p> <p>•ã } äãã &^Ä Ä çãÄ</p> <p>ç •dÄÄ</p>	<p>☒ Ä</p> <p>P^* ã ã^A</p> <p>Ä</p>	<p>Á</p>	<p>Á</p>	<p>Á</p>
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- "(' BUh fU`FYgci fW`a dUWg'8 i f]b['7 cbglfi W]cb`UbX`CdYfU]cb`

	5 dd]WU'Yi'	@ Y mi=a dUW'i G^* ã ã^ É[, ÉÁ { ^ãã { Á!Á@ @Á }^* æã^ Á][•ãã^ Á!Á@É	FYUgcbg'' G^• & ã^ Á@Á]^É æ^ Áã áÁçç) ç^ Á@Á ã] æç@Á æ^ Á Á@Á&ãã *Á ^} çã[] { ^} çã áÁã ^Á!][•^áÁæ^* æá•Á , @ã, [^ ãÁã áÁ@Á] æç	GUZY[i UfXg#a]h[U]cb'a YUgi fYg'
FÉÁ @Á@ ÁBçã Áã ^ Á Á ^~ ã Á@Á á^* ããã } Á Á@Á] æ^ Áã ^Á @Á æ^æ^•^ ç^áÁ &[] •^ çã } Á] ^ [•^•NÁ	<input checked="" type="checkbox"/> Á	P^* ã ã^ Á	V@ÁBçã Á [^ ãÁ && Á Á@Á ç ãç Á { [áãã áÁã áÁ] æç^áãæ^Á@Á!][•^áÁ @Bçã Á@Á Á^ Á^ çã áÁç , á *Á æ^••{ ^} ç Á@Á ^ ã { Á ç æ^ ^} ç } ^á• Á Áã @ã Á UÉÁV@Á] * ã^ Á [^ ãÁ çç, Á!Á@Á Á^ Á ç æ^ ^} ç Á & ^æ^áÁ çã ç Á Á@Á áÁã áÁ^ çç] [ç^ { ^} ç Á ç@Á] áãã } Á Á@Á áÁã • ÉÁ	P[] ^Á^~ á^áÉÁ
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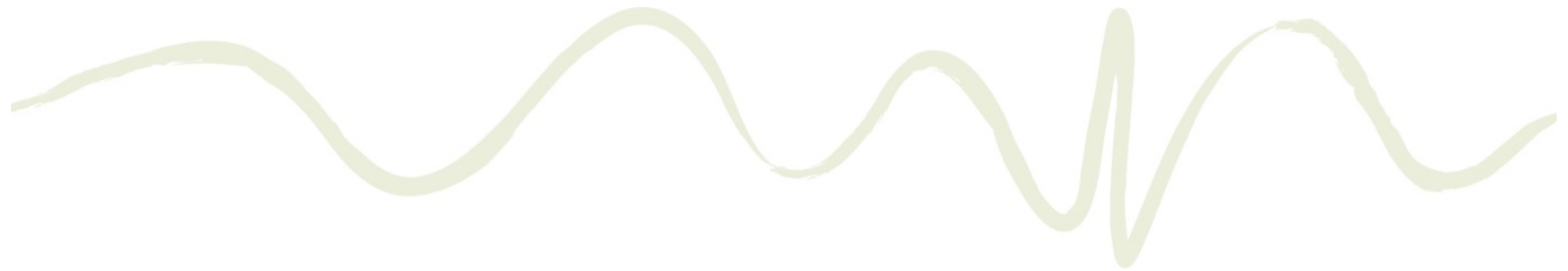
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- " * ' CH Yf'7 i `h i fU' < Yf]HJ Y =a dUWg'8 i f]b['7 cbgfi W]cb'cf' CdYfU]cb'

<p>5 dd]WUW Y'</p>	<p>@ Y mi-a dUW'i G ^* a a ^E[, EÄ { ^aa{ A A@ QÄ } ^* aä ^A A] [• aä ^A A @E</p>	<p>FYUgcbg'' G ^• & a ^A @ A ^ E[aä ^A a ^A c^) oÄ -Ä] aä dÄ aä * Ä q Ä aä ~) oÄ @ A ^ & aä * A } çä [] { ^) oÄ A] [] [• a ^A aä * ~ aä • A @ @ A [~ a Ä aä @ A ä] aä D</p>	<p>GUZY[i UfXg#a]H[U]cb'a YUgi fYg'</p>
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- "4" A UHf'g'cZBUj'cbU'9bj]f'cba YbH'G][b]Z'WU'W'i bXYf'H Y'9D67'5 W'i

	5 dd]WU'Y'	=a dUW'i Yj Y'	FYUgcbg''	GUZY[i UfXg#h]H[Uj'cb'a YUgi fYg'
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- Á V@Á : [c' & c' ā Á zōf' • Á ^ zōf' @ [| | & c' Á • zōf' Á & c' ā Á zōf' } zōf' } cā[] { ^ } cāf' ā } āāā & ^ Á
- Á Ü^• c' Á - Á ā } āāā & ^ Á @c' ^ Á ^ Á & [] | c' ā Á | Á @ ^ zē } ^ ā Á] ^ ā Á • Á ā @ Á c@ Á [c'] cāf' Á ^ Á] zōf' ā Á ^ Á @ Á Bcāc' Á ^ Á | GYWj'cb' % \$ D Á

10. H f YU h Yb YX' Gd YW Yg' HY ghg' c Z G][b]Z WUb WY'

V@^æ}^áÁ] ^8a•Á•••Á-Á} ääç &^ÁÇ^É æóÁ•••D^æ^Á^} Á[{]|^c^áÁ Áäç| äç &^Á æ@Úæó
i È^Á-Á@ÁÓÁÇBç|Á] ^8a•Á} áÁ[{ { } äá•Á ÇBç| æÁ çá ^Áçäæä æç Á@ÁÇBç| æ^æç^Á
ç Á ddYbX]I ; DÄV@Áæç|•Á^ç| çÁ Áæó È^Á-Á@ÁÓÁÇBç| ^Á^Á•^áÁ Á^ç|{ ç^Á @ç|Á@Á^Á
|ä^|^Á Á^Áá} ääç ç^Á-8ç| Á@^æ}^áÁ] ^8a•ÉÁ [| * çç| { { } äá•Á|Á@áÇäæ ÈÁ
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Ú[•ã]Á	Á Area Manager	Ú[•ã]Á	Á Senior Project Officer
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Ö{ { } æ				Subtropical Coastal Floodplain Forest of the New South Wales North Coast Bioregion		Ú áç [] æáÁÖ [æ çáÁ Ø [[á] æá ÁQ ^ • óÁ - Á@Á^, / Ú [^ çáY æ^ Á@ [: óÁÖ [æ óÁ Öá ^* á }	ÖH		S	
Ö{ { } æ				Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions		Ú, æ [] ÁU&^ [:] @ ÁQ ^ • óÁ } / Ö [æ çáÁ] [[á] æá • Á - Á@Á Þ^, ÁU [^ çáY æ^ Á@ [: óÁ Ö [æ çáÁ] á^ ÁÖæ á Áæ áÁ Ú [^ çáÖæ óÁ [:] ^!Á Öá ^* á } •	ÖH		S	
Ö{ { } æ				Themeda grassland on seacliffs and coastal headlands in the NSW North Coast, Sydney Basin and South East Corner Bioregions		V@ { ^ áæá : æ •] æ áÁ } Á • ^ æáá - Áæ áÁ [æ çáÁ @ æá] æ • Á@ Á@ÁUÝ Á@ [: óÁ Ö [æ çáÁ] á^ ÁÖæ á Áæ áÁ Ú [^ çáÖæ óÁ [:] ^!Á Öá ^* á } •	ÖH		Ú	
Ö{ { } æ				White Gum Moist Forest in the NSW North Coast Bioregion		Y @ÁÁÖ { Á [á óÁ] ^ • óá Á @ÁÁUÝ Á@ [: óÁÖ [æ óÁ Öá ^* á }	ÖH		S	

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An Aboriginal Cultural Heritage Due Diligence Assessment was carried out by Everick Heritage Consultants Pty Ltd in 2019. It has been redacted from this report for privacy reasons related to management of cultural heritage sites. The important findings are summarised on p.30 of the Review of Environmental Factors above.

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Details of the Widjabul Wia-bal Native Title Determination Application have been redacted from this report for privacy reasons related to the management of cultural heritage sites. Refer to p.14 of the Review of Environmental Factors above for information on Native Title consultation undertaken.

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Blackbutt - Turpentine open forest of the foothills of the NSW North Coast Bioregion



Blackbutt - Turpentine open forest of the foothills of the NSW North Coast Bioregion



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EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about [Environment Assessments](#) and the EPBC Act including significance guidelines, forms and application process details.

Report created: 15/08/19 13:45:45

[Summary](#)

[Details](#)

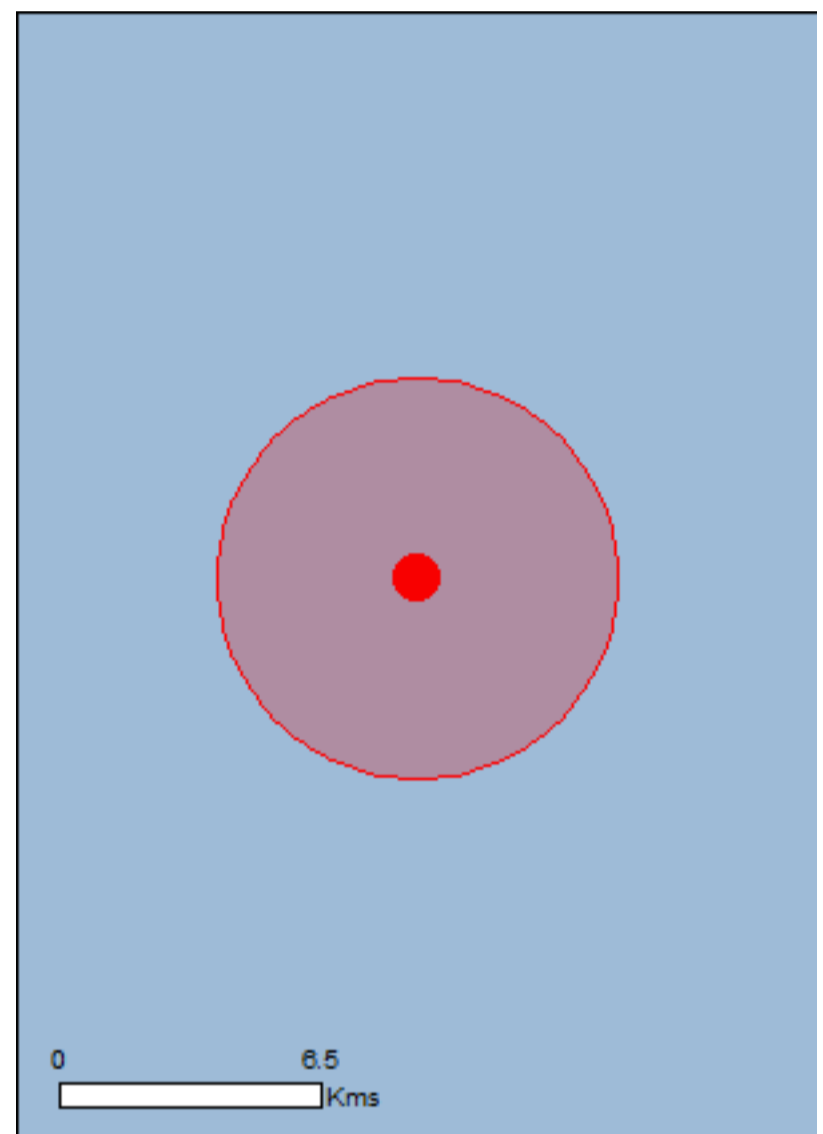
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[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

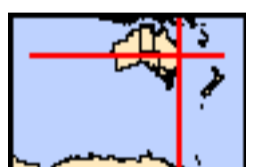
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This map may contain data which are ©Commonwealth of Australia (Geoscience Australia), ©PSMA 2010

[Coordinates](#)

Buffer: 5.0Km



Summary

Matters of National Environmental Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the [Administrative Guidelines on Significance](#).

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	4
Listed Threatened Species:	65
Listed Migratory Species:	16

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at <http://www.environment.gov.au/heritage>

A [permit](#) may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Land:	1
Commonwealth Heritage Places:	None
Listed Marine Species:	22
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

State and Territory Reserves:	4
Regional Forest Agreements:	1
Invasive Species:	36
Nationally Important Wetlands:	None
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

Listed Threatened Ecological Communities

[[Resource Information](#)]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Name	Status	Type of Presence
.	Critically Endangered	Community likely to occur within area
.	Critically Endangered	Community likely to occur within area
.	Endangered	Community may occur within area
.	Endangered	Community may occur within area

Listed Threatened Species

[[Resource Information](#)]

Name	Status	Type of Presence
Birds		
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Species or species habitat known to occur within area
Atrichornis rufescens Rufous Scrub-bird [655]	Endangered	Species or species habitat may occur within area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat likely to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Cyclopsitta diophthalma coxeni Coxen's Fig-Parrot [59714]	Endangered	Species or species habitat likely to occur within area
Dasyornis brachypterus Eastern Bristlebird [533]	Endangered	Species or species habitat likely to occur within area
Erythrorchis radiatus Red Goshawk [942]	Vulnerable	Species or species habitat known to occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area

Name	Status	Type of Presence
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Rostratula australis Australian Painted-snipe, Australian Painted Snipe [77037]	Endangered	Species or species habitat known to occur within area
Thinornis rubricollis rubricollis Hooded Plover (eastern) [66726]	Vulnerable	Species or species habitat may occur within area
Turnix melanogaster Black-breasted Button-quail [923]	Vulnerable	Species or species habitat likely to occur within area
Fish		
Maccullochella ikei Clarence River Cod, Eastern Freshwater Cod [26170]	Endangered	Species or species habitat known to occur within area
Frogs		
Mixophyes fleayi Fleay's Frog [25960]	Endangered	Species or species habitat known to occur within area
Mixophyes iteratus Giant Barred Frog, Southern Barred Frog [1944]	Endangered	Species or species habitat known to occur within area
Insects		
Argynnis hyperbius inconstans Australian Fritillary [88056]	Critically Endangered	Species or species habitat may occur within area
Phyllodes imperialis smithersi Pink Underwing Moth [86084]	Endangered	Breeding may occur within area
Mammals		
Chalinolobus dwyeri Large-eared Pied Bat, Large Pied Bat [183]	Vulnerable	Species or species habitat known to occur within area
Dasyurus maculatus maculatus (SE mainland population) Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat known to occur within area
Petauroides volans Greater Glider [254]	Vulnerable	Species or species habitat known to occur within area
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT) Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Vulnerable	Species or species habitat known to occur within area
Potorous tridactylus tridactylus Long-nosed Potoroo (SE Mainland) [66645]	Vulnerable	Species or species habitat known to occur within area
Pseudomys novaehollandiae New Holland Mouse, Pookila [96]	Vulnerable	Species or species habitat likely to occur within area
Pteropus poliocephalus Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Plants		

Name	Status	Type of Presence
Amyema plicatula [81879]	Endangered	Species or species habitat likely to occur within area
Arthraxon hispidus Hairy-joint Grass [9338]	Vulnerable	Species or species habitat likely to occur within area
Baloghia marmorata Marbled Baloghia, Jointed Baloghia [8463]	Vulnerable	Species or species habitat likely to occur within area
Bosistoa transversa Three-leaved Bosistoa, Yellow Satinheart [16091]	Vulnerable	Species or species habitat likely to occur within area
Bulbophyllum globuliforme Miniature Moss-orchid, Hoop Pine Orchid [6649]	Vulnerable	Species or species habitat may occur within area
Corokia whiteana [17820]	Vulnerable	Species or species habitat known to occur within area
Cryptocarya foetida Stinking Cryptocarya, Stinking Laurel [11976]	Vulnerable	Species or species habitat likely to occur within area
Cryptostylis hunteriana Leafless Tongue-orchid [19533]	Vulnerable	Species or species habitat may occur within area
Cynanchum elegans White-flowered Wax Plant [12533]	Endangered	Species or species habitat likely to occur within area
Davidsonia jerseyana Davidson's Plum [67219]	Endangered	Species or species habitat likely to occur within area
Davidsonia johnsonii Smooth Davidsonia, Smooth Davidson's Plum, Small-leaved Davidson's Plum [67178]	Endangered	Species or species habitat known to occur within area
Desmodium acanthocladum Thorny Pea [17972]	Vulnerable	Species or species habitat known to occur within area
Diospyros mabacea Red-fruited Ebony, Silky Persimmon, Ebony [18548]	Endangered	Species or species habitat may occur within area
Diploglottis campbellii Small-leaved Tamarind [21484]	Endangered	Species or species habitat known to occur within area
Eidothea hardeniana Nightcap Oak [76351]	Critically Endangered	Species or species habitat likely to occur within area
Elaeocarpus sedentarius Minyon Quandong [83093]	Endangered	Species or species habitat known to occur within area
Elaeocarpus williamsianus Hairy Quandong [8956]	Endangered	Species or species habitat known to occur within area
Endiandra floydii Floyd's Walnut [52955]	Endangered	Species or species habitat known to occur within area

Name	Status	Type of Presence
Endiandra hayesii Rusty Rose Walnut, Velvet Laurel [13866]	Vulnerable	Species or species habitat likely to occur within area
Floydia praealta Ball Nut, Possum Nut, Big Nut, Beefwood [15762]	Vulnerable	Species or species habitat likely to occur within area
Fontainea australis Southern Fontainea [24037]	Vulnerable	Species or species habitat known to occur within area
Gossia fragrantissima Sweet Myrtle, Small-leaved Myrtle [78867]	Endangered	Species or species habitat likely to occur within area
Hicksbeachia pinnatifolia Monkey Nut, Bopple Nut, Red Bopple, Red Bopple Nut, Red Nut, Beef Nut, Red Apple Nut, Red Boppel Nut, Ivory Silky Oak [21189]	Vulnerable	Species or species habitat known to occur within area
Isoglossa eranthemoides Isoglossa [16663]	Endangered	Species or species habitat may occur within area
Macadamia integrifolia Macadamia Nut, Queensland Nut Tree, Smooth-shelled Macadamia, Bush Nut, Nut Oak [7326]	Vulnerable	Species or species habitat may occur within area
Macadamia tetraphylla Rough-shelled Bush Nut, Macadamia Nut, Rough-shelled Macadamia, Rough-leaved Queensland Nut [6581]	Vulnerable	Species or species habitat known to occur within area
Ochrosia moorei Southern Ochrosia [11350]	Endangered	Species or species habitat known to occur within area
Owenia cepiodora Onionwood, Bog Onion, Onion Cedar [11344]	Vulnerable	Species or species habitat likely to occur within area
Phaius australis Lesser Swamp-orchid [5872]	Endangered	Species or species habitat may occur within area
Randia moorei Spiny Gardenia [10577]	Endangered	Species or species habitat likely to occur within area
Sarcochilus fitzgeraldii Ravine Orchid [19131]	Vulnerable	Species or species habitat likely to occur within area
Sarcochilus hartmannii Waxy Sarcochilus, Blue Knob Orchid [4124]	Vulnerable	Species or species habitat likely to occur within area
Sophora fraseri [8836]	Vulnerable	Species or species habitat likely to occur within area
Symplocos baeuerlenii Small-leaved Hazelwood, Shrubby Hazelwood [19010]	Vulnerable	Species or species habitat likely to occur within area
Syzygium hodgkinsoniae Smooth-bark Rose Apple, Red Lilly Pilly [3539]	Vulnerable	Species or species habitat likely to occur within area
Syzygium moorei Rose Apple, Coolamon, Robby, Durobby, Watermelon Tree, Coolamon Rose Apple [12284]	Vulnerable	Species or species habitat known to occur within area

Name	Status	Type of Presence
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat likely to occur within area
Uromyrtus australis Peach Myrtle [8830]	Endangered	Species or species habitat likely to occur within area
Reptiles		
Delma torquata Adorned Delma, Collared Delma [1656]	Vulnerable	Species or species habitat may occur within area
Saiphos reticulatus Three-toed Snake-tooth Skink [88328]	Vulnerable	Species or species habitat may occur within area
Listed Migratory Species		[Resource Information]
* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.		
Name	Threatened	Type of Presence
Migratory Marine Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Cuculus optatus Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat may occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area
Monarcha trivirgatus Spectacled Monarch [610]		Species or species habitat known to occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat likely to occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area
Migratory Wetlands Species		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat may occur within area

Other Matters Protected by the EPBC Act

Commonwealth Land [\[Resource Information \]](#)

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Name
Commonwealth Land - Telstra Corporation Limited

Listed Marine Species [\[Resource Information \]](#)

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Birds		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea alba Great Egret, White Egret [59541]		Species or species habitat known to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur

Name	Threatened	Type of Presence within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area
Monarcha trivirgatus Spectacled Monarch [610]		Species or species habitat known to occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat likely to occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Endangered*	Species or species habitat known to occur within area
Thinornis rubricollis rubricollis Hooded Plover (eastern) [66726]	Vulnerable	Species or species habitat may occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat may occur within area

Extra Information

State and Territory Reserves [\[Resource Information \]](#)

Name	State
Goonengerry	NSW
Nightcap	NSW
Snows Gully	NSW
Whian Whian	NSW

Regional Forest Agreements [\[Resource Information \]](#)

Note that all areas with completed RFAs have been included.

Name	State
North East NSW RFA	New South Wales

Invasive Species

[[Resource Information](#)]

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resources Audit, 2001.

Name	Status	Type of Presence
Birds		
Acridotheres tristis Common Myna, Indian Myna [387]		Species or species habitat likely to occur within area
Anas platyrhynchos Mallard [974]		Species or species habitat likely to occur within area
Carduelis carduelis European Goldfinch [403]		Species or species habitat likely to occur within area
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Lonchura punctulata Nutmeg Mannikin [399]		Species or species habitat likely to occur within area
Passer domesticus House Sparrow [405]		Species or species habitat likely to occur within area
Pycnonotus jocosus Red-whiskered Bulbul [631]		Species or species habitat likely to occur within area
Streptopelia chinensis Spotted Turtle-Dove [780]		Species or species habitat likely to occur within area
Sturnus vulgaris Common Starling [389]		Species or species habitat likely to occur within area
Frogs		
Rhinella marina Cane Toad [83218]		Species or species habitat known to occur within area
Mammals		
Bos taurus Domestic Cattle [16]		Species or species habitat likely to occur within area
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Lepus capensis Brown Hare [127]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur

Name	Status	Type of Presence within area
Rattus norvegicus Brown Rat, Norway Rat [83]		Species or species habitat likely to occur within area
Rattus rattus Black Rat, Ship Rat [84]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Alternanthera philoxeroides Alligator Weed [11620]		Species or species habitat likely to occur within area
Anredera cordifolia Madeira Vine, Jalap, Lamb's-tail, Mignonette Vine, Anredera, Gulf Madeiravine, Heartleaf Madeiravine, Potato Vine [2643]		Species or species habitat likely to occur within area
Asparagus aethiopicus Asparagus Fern, Ground Asparagus, Basket Fern, Sprengi's Fern, Bushy Asparagus, Emerald Asparagus [62425]		Species or species habitat likely to occur within area
Asparagus plumosus Climbing Asparagus-fern [48993]		Species or species habitat likely to occur within area
Cabomba caroliniana Cabomba, Fanwort, Carolina Watershield, Fish Grass, Washington Grass, Watershield, Carolina Fanwort, Common Cabomba [5171]		Species or species habitat likely to occur within area
Chrysanthemoides monilifera Bitou Bush, Boneseed [18983]		Species or species habitat likely to occur within area
Chrysanthemoides monilifera subsp. rotundata Bitou Bush [16332]		Species or species habitat likely to occur within area
Dolichandra unguis-cati Cat's Claw Vine, Yellow Trumpet Vine, Cat's Claw Creeper, Funnel Creeper [85119]		Species or species habitat likely to occur within area
Eichhornia crassipes Water Hyacinth, Water Orchid, Nile Lily [13466]		Species or species habitat likely to occur within area
Genista sp. X Genista monspessulana Broom [67538]		Species or species habitat may occur within area
Hymenachne amplexicaulis Hymenachne, Olive Hymenachne, Water Stargrass, West Indian Grass, West Indian Marsh Grass [31754]		Species or species habitat likely to occur within area
Lantana camara Lantana, Common Lantana, Kamara Lantana, Large-leaf Lantana, Pink Flowered Lantana, Red Flowered Lantana, Red-Flowered Sage, White Sage, Wild Sage [10892]		Species or species habitat likely to occur within area
Pinus radiata Radiata Pine Monterey Pine, Insignis Pine, Wilding Pine [20780]		Species or species habitat may occur within area
Rubus fruticosus aggregate Blackberry, European Blackberry [68406]		Species or species habitat likely to occur within area
Sagittaria platyphylla Delta Arrowhead, Arrowhead, Slender Arrowhead		Species or species

Name	Status	Type of Presence
[68483]		habitat likely to occur within area
Salvinia molesta Salvinia, Giant Salvinia, Aquarium Watermoss, Kariba Weed [13665]		Species or species habitat likely to occur within area
Senecio madagascariensis Fireweed, Madagascar Ragwort, Madagascar Groundsel [2624]		Species or species habitat likely to occur within area

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species distributions have been derived through a variety of methods. Where distributions are well known and if time permits, maps are derived using either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc) together with point locations and described habitat; or environmental modelling (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where very little information is available for species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc). In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More reliable distribution mapping methods are used to update these distributions as time permits.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

Coordinates

-28.61189 153.39097

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

- [-Office of Environment and Heritage, New South Wales](#)
- [-Department of Environment and Primary Industries, Victoria](#)
- [-Department of Primary Industries, Parks, Water and Environment, Tasmania](#)
- [-Department of Environment, Water and Natural Resources, South Australia](#)
- [-Department of Land and Resource Management, Northern Territory](#)
- [-Department of Environmental and Heritage Protection, Queensland](#)
- [-Department of Parks and Wildlife, Western Australia](#)
- [-Environment and Planning Directorate, ACT](#)
- [-Birdlife Australia](#)
- [-Australian Bird and Bat Banding Scheme](#)
- [-Australian National Wildlife Collection](#)
- [-Natural history museums of Australia](#)
- [-Museum Victoria](#)
- [-Australian Museum](#)
- [-South Australian Museum](#)
- [-Queensland Museum](#)
- [-Online Zoological Collections of Australian Museums](#)
- [-Queensland Herbarium](#)
- [-National Herbarium of NSW](#)
- [-Royal Botanic Gardens and National Herbarium of Victoria](#)
- [-Tasmanian Herbarium](#)
- [-State Herbarium of South Australia](#)
- [-Northern Territory Herbarium](#)
- [-Western Australian Herbarium](#)
- [-Australian National Herbarium, Canberra](#)
- [-University of New England](#)
- [-Ocean Biogeographic Information System](#)
- [-Australian Government, Department of Defence Forestry Corporation, NSW](#)
- [-Geoscience Australia](#)
- [-CSIRO](#)
- [-Australian Tropical Herbarium, Cairns](#)
- [-eBird Australia](#)
- [-Australian Government – Australian Antarctic Data Centre](#)
- [-Museum and Art Gallery of the Northern Territory](#)
- [-Australian Government National Environmental Science Program](#)
- [-Australian Institute of Marine Science](#)
- [-Reef Life Survey Australia](#)
- [-American Museum of Natural History](#)
- [-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania](#)
- [-Tasmanian Museum and Art Gallery, Hobart, Tasmania](#)
- [-Other groups and individuals](#)

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the [Contact Us](#) page.



Appendix G
Five-part Tests

5 part tests (BC Act listed species/communities)

Tests of significance (5 part tests) under Part 7.3 of the *Biodiversity Conservation Act 2016* have been completed for the following threatened species and communities:

Flora

- Thorny Pea (*Desmodium acanthocladum*)
- Rusty Rose Walnut (*Endiandra hayesii*)
- Rusty Plum (*Niemeyera whitei*)

Fauna

Amphibians

- Pouched Frog (*Assa darlingtoni*)
- Fleay's Barred Frog (*Mixophyes fleayi*)
- Giant Barred Frog (*Mixophyes iteratus*)
- Loveridge's Frog (*Philoria loveridgei*)

Birds

- Regent Honeyeater (*Anthochaera phrygia*)
- White-eared Monarch (*Carterornis leucotis*)
- Albert's Lyrebird (*Menura alberti*)
- Rose-crowned Fruit-dove (*Ptilinopus regina*)
- Wompoo Fruit Dove (*Ptilinopus magnificus*)
- Superb Fruit-dove (*Ptilinopus superbus*)
- Glossy Black-cockatoo (*Calyptorhynchus lathamii*)
- Little Lorikeet (*Glossopsitta pusilla*)
- Powerful Owl (*Ninox strenua*)
- Marbled Frogmouth (*Podargus ocellatus*)
- Masked Owl (*Tyto novaehollandiae*)
- Sooty Owl (*Tyto tenebricosa*)

Mammals

- Rufous Bettong (*Aepyprymnus rufescens*)
- Spotted-tailed Quoll (*Dasyurus maculatus maculatus*)
- Long-nosed Potoroo (*Potorous tridactylus*)
- Red-legged Pademelon (*Thylogale stigmatica*)
- Eastern False Pipistrelle (*Falsistrellus tasmaniensis*)
- Little Bentwing-bat (*Miniopterus australis*)
- Southern Myotis (*Myotis macropus*)
- Eastern Long-eared Bat (*Nyctophilus bifax*)
- Golden-tipped Bat (*Phoniscus papuensis*)
- Greater Broad-nosed Bat (*Scoteanax rueppellii*)
- Yellow-bellied Glider (*Petaurus australis*)
- Squirrel Glider (*Petaurus norfolcensis*)
- Koala (*Phascolarctos cinereus*)
- Grey-headed Flying-fox (*Pteropus poliocephalus*)
- Eastern Tube-nosed Bat (*Nyctimene robinsoni*)

Reptiles

- Stephen's Banded Snake (*Hoplocephalus stephensii*)

- a) ***in the case of a threatened species, whether the proposed development or Activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,***

FLORA

Rusty Plum (*Niemeyera whitei*)

Rusty Plum occurs in the coast and adjacent ranges of northern NSW from the Macleay River into southern Queensland. Its distributional stronghold is on the mid north coast around Coffs Harbour. It is found in gullies, warm temperate or littoral rainforests and the adjacent understorey of moist eucalypt forest. It occurs on poorer soils in areas below 600 metres above sea level.

Threatening processes for this species include:

- Clearing of habitat for development.
- Timber harvesting activities.
- Clearing for agriculture.
- Invasion of habitat by introduced weeds, particularly Lantana.
- Inappropriate fire regime altering habitat and resulting in direct loss of individuals.
- Road work and track maintenance.
- Trampling by domestic stock.

Potential Impacts of the Activity

One Rusty Plum is located within the proposed works footprint adjacent to Minyon Falls Loop Road. This tree has been flagged and its location recorded. Proposed works would retain the Rusty Plum and it would be protected with temporary fencing during construction to mitigate construction impacts. Several other Rusty Plum occur proximate to the works indicating a small local population occurs. BioNet records indicate 41 known locations of the species within Nightcap NP and Whian Whian SCA (in combination). On this basis it would be highly unlikely that the Activity would have an adverse effect on the life cycle of Rusty Plum such that a viable local population of the species is likely to be placed at risk of extinction.

Thorny Pea (*Desmodium acanthocladum*)

Thorny Pea occurs only in north-east NSW. It is found in the Lismore area, and there are also records from near Grafton, Coraki, Casino and the Mount Warning area. It is found in dry rainforest and fringes of riverine subtropical rainforest, on basalt-derived soils at low elevations.

Threatening processes for this species include:

- Clearing and fragmentation of habitat for agriculture or development.
- Damage to plants and habitat by roadworks.
- Browsing and trampling by stock.
- Weed infestation, particularly by introduced vines such as Asparagus and Lantana.

Potential Impacts of the Activity

One Thorny Pea is located within the proposed works footprint adjacent to Minyon Falls Loop Road. This shrub has been flagged and its location recorded. Proposed works would retain the Thorny Pea and it would be protected with temporary fencing during construction to mitigate construction impacts. No other Thorny Pea occur proximate to the works and BioNet records indicate 1 known location of

the species within Nightcap NP and Whian Whian SCA (in combination). The local population of Thorny Pea likely extends outside the study area given the ability of pollination (insects) and dispersal methods (fauna distribution). The majority of BioNet records (55) within a 10 x 10 km area are located outside of National Park reserves. On this basis it would be highly unlikely that the Activity would have an adverse effect on the life cycle of Rusty Plum such that a viable local population of the species is likely to be placed at risk of extinction.

Rusty Rose Walnut (*Endiandra hayesii*)

Rusty Rose Walnut has a restricted distribution from Burleigh Heads in Queensland to the Richmond River in north-east NSW. It is locally abundant in some parts of its range in NSW. It is found in sheltered moist gullies in lowland subtropical and warm temperate rainforest on alluvium or basaltic soils. The species occurs in regrowth and highly modified forms of these habitats.

Threatening processes for this species include:

- Clearing and fragmentation of habitat for coastal development.
- Clearing and fragmentation of habitat for agriculture.
- Infestation of habitat by weeds.
- Clearing and fragmentation of habitat for roadworks.
- Frequent fire.
- Disturbance from recreational users in reserve areas.
- Forestry related activities within wet sclerophyll forest habitat.
- Damage from domestic stock.
- Habitat loss and fragmentation as a result of infrastructure development including powerline construction.

Potential Impacts of the Activity

One Rusty Rose Walnut is located proximate to the proposed works footprint south of Minyon Falls Loop Road. This sapling has been flagged and its location recorded. Proposed works would retain the Rusty Rose Walnut and it would be protected with temporary fencing during construction to mitigate construction impacts. BioNet records indicate 90 known locations of the species within Nightcap NP and Whian Whian SCA (in combination). On this basis it would be highly unlikely that the Activity would have an adverse effect on the life cycle of Rusty Rose Walnut such that a viable local population of the species is likely to be placed at risk of extinction.

FAUNA

AMPHIBIANS

Pouched Frog (*Assa darlingtoni*)

Pouched frogs live in cool, moist rainforest, including Antarctic Beech, or moist eucalypt forest in mountainous areas, mostly above 800 m but have been found as low as 300m. They spend most of the time in damp leaf litter, or under rocks and rotten logs.

Threatening processes for this species include:

- Timber harvesting.
- Road clearing.
- Weed invasion in productive environments

- Removal of fallen logs and leaf litter through frequent fire, particularly fire associated with grazing management.
- Anthropogenic climate change
- Infection by amphibian chytrid fungus
- Drought and climate change leading to increased temperatures.
- Habitat damage from trampling by domestic stock.

Loveridge's Frog (*Philoria loveridgei*)

Loveridge's Frog is restricted mainly to the Nightcap and Mt Warning areas, extending north-west to the Border Ranges-Lamington area on the border of NSW and Queensland. This frog is dependent on high moisture levels, occurring in the headwaters of small streams and about soaks where groundwater is continually present and close to the surface. It favours subtropical and warm temperate rainforest and wet eucalypt forest, but also occurs in moist eucalypt forest where rocky outcropping creates surface water.

Threatening processes for this species include:

- Risk of local extinction due to small, scattered populations.
- Isolation of populations through clearing and forest fragmentation associated with agricultural and forestry practices.
- Infection by amphibian chytrid fungus.
- Reduction of moisture levels and reduced water quality from roadworks, forestry activities, frequent burning associated with grazing management and trampling by domestic stock.
- Reduction of moisture levels caused by logging opening up the forest and drying out the ground litter, and forest management which changes old-growth forest to young even-aged stands, causing substantial water loss.
- Anthropogenic climate change altering microhabitat.
- Competition for habitat and other resources by the cane toad.
- Disturbance and degradation (e.g. substrate damage, turbidity) of habitat due to road/track maintenance.

Fleay's Barred Frog (*Mixophyes fleayi*)

Fleay's Barred Frog has a restricted distribution on the eastern side of the ranges in south-east Queensland (south from Conondale ranges) and northeast NSW. Recent records in NSW are from Nightcap National Park, Border Ranges National Park, Mt. Warning National Park, Tooloom National Park and Yabbra National Park. The species inhabits rainforest and wet eucalypt forest of the escarpment and foothills, usually close to gravelly streams. It occurs along stream habitats from first to third order streams but is not found in ponds or ephemeral pools. A nest is constructed in the shallow running water that occurs between pools in relatively wide, flat sections of the stream. Eggs are deposited in a shallow excavation in the stream bed or pasted directly onto bed rock. Individuals have been found hundreds of metres away from streams.

Threatening processes for this species include:

- Clearing and fragmentation of areas of habitat for agriculture or development.
- Sedimentation of creeks resulting from upstream activities and cattle access.
- Changes in water flow patterns, either increased or decreased flows.
- Chytrid fungal disease.
- Timber harvesting and other forestry practices.
- Use of herbicides near streams.

- Regular roadside slashing damaging critical breeding habitat and refugia.
- Reduction of leaf-litter and fallen log cover through burning.
- Cane toads use the same niche, competing for food and habitat; they may be a vector for disease and possibility predate on juveniles.
- Mistflower; causing changes in breeding habitat structure - clogging up gravel beds and constraining available space.
- Habitat disturbance and direct mortality from feral pigs.
- Habitat disturbance and trampling resulting from human visitation
- Trampling by domestic stock, particularly of oviposition sites.

Giant Barred Frog (*Mixophyes iteratus*)

Giant Barred Frogs are found along freshwater streams with permanent or semi-permanent water, generally (but not always) at lower elevation. Moist riparian habitats such as rainforest or wet sclerophyll forest are favoured for the deep leaf litter that they provide for shelter and foraging, as well as open perching sites on the forest floor. However, Giant Barred Frogs will also sometimes occur in other riparian habitats, such as those in drier forest or degraded riparian remnants, and even occasionally around dams. Breeding takes place from late spring to summer. Once eggs are laid and fertilised in the water, the female kicks them out of the water where they stick onto a suitable bank (e.g. overhanging or steeply sloped). Hatchlings drop or wriggle into the water. Tadpoles grow to about 11cm and it may take up to 14 months between egg laying and the completion of metamorphosis. Although generally found within about 20m of the stream, outside the breeding season, the Giant Barred Frog may disperse away from the stream (e.g. 50m or further). It is a generalist feeder, with large insects, snails, spiders and frogs included in its diet.

Threatening processes for this species include:

- Clearance or damage of riparian vegetation.
- Tall, dense weed infestations, particularly where there are canopy gaps in the riparian vegetation.
- Reduction in water quality or alterations to flow patterns.
- Inadequate protection of riparian habitat during forestry activities.
- Disease - chytrid fungus.
- Predation of individuals and disturbance of habitat or destruction of eggs by feral pigs.

Potential Impacts of the Activity to Pouched Frog, Fleay's Barred Frog, Giant Barred Frog and Loveridge's Frog

Potential direct impacts from the Activity include mortality or injury via disturbance / clearing works within foraging and dispersal habitat i.e. the riparian vegetation and associated leaf litter. Potential indirect impacts include water quality impacts during construction and the potential introduction or spread of pathogens via introduction from plant and equipment. Considerable preferential habitat areas exist adjacent to the site and in the locality. Implementation of safeguards would mitigate against the potential for spread of pathogens. On this basis it would be highly unlikely that the Activity would have an adverse effect on the life cycle of the Pouched Frog, Fleay's Barred Frog, Giant Barred Frog and Loveridge's Frog such that a viable local population of the species is likely to be placed at risk of extinction

BIRDS (NON-HOLLOW OBLIGATE)

Regent Honeyeater

The species inhabits dry open forest and woodland, particularly Box-Ironbark woodland, and riparian forests of River Sheoak. Every few years non-breeding flocks are seen foraging in flowering coastal Swamp Mahogany and Spotted Gum forests, particularly on the central coast and occasionally on the upper north coast.

The Regent Honeyeater is a generalist forager, although it feeds mainly on the nectar from a relatively small number of eucalypts that produce high volumes of nectar. Key eucalypt species include Mugga Ironbark, Yellow Box, White Box and Swamp Mahogany. Flowering of associated species such as Thin-leaved Stringybark (*Eucalyptus eugenioides*) and other Stringybark species, and Broad-leaved Ironbark (*E. fibrosa*) can also contribute important nectar flows at times. Nectar and fruit from the mistletoes *Amyema miquelii*, *A. pendula* and *A. cambagei* are also utilised. Insects make up about 15% of the total diet and are important components of the diet of nestlings.

There are three known key breeding areas, two of them in NSW - Capertee Valley and Bundarra-Barraba regions. The species breeds between July and January in Box-Ironbark and other temperate woodlands and riparian gallery forest dominated by River Sheoak. Regent Honeyeaters usually nest in horizontal branches or forks in tall mature eucalypts and Sheoaks. Also nest in mistletoe haustoria.

An open cup-shaped nest is constructed of bark, grass, twigs and wool by the female. Two or three eggs are laid and incubated by the female for 14 days.

Threatening processes for this species include:

- Historical loss, fragmentation and degradation of habitat from clearing for agricultural and residential development, particularly fertile Yellow Box-White Box-Blakely's Red Gum Woodlands.
- Continuing loss of key habitat tree species and remnant woodlands from major developments (mining and agricultural), timber gathering and residential developments.
- Lack of recruitment of key forage species and loss of paddock trees and small remnants increasingly fragmenting available habitat.
- Suppression of natural regeneration of overstorey tree species and shrub species from overgrazing.
- Competition from larger aggressive honeyeaters, particularly noisy miners, noisy friarbirds and red wattlebirds.
- The small population size and restricted habitat availability make the species highly vulnerable to extinction via stochastic processes and loss of genetic diversity, and reduced ability to compete, increased predation and reduced fledging rates.
- Egg and nest predation by native birds and mammals.
- Inappropriate forestry management practices that remove large mature resource-abundant trees. Firewood collection and harvesting in Box-Ironbark woodlands can also remove important habitat components.
- Disturbance at nesting sites leading to reduced nesting success.

White-eared Monarch (*Carterornis leucotis*)

In NSW, White-eared Monarchs occurs in rainforest, especially drier types, such as littoral rainforest, as well as wet and dry sclerophyll forests, swamp forest and regrowth forest. They appear to prefer the ecotone between rainforest and other open vegetation types or the edges of rainforest, such as

along roads. They eat insects, but their diet is not well studied. They breed from about September to March, usually nesting high in the canopy, and often at the edge of patches of rainforest.

Threatening processes for this species include:

- Clearing and increasing fragmentation and isolation of habitat, especially low-elevation subtropical rainforest, littoral rainforest and wet sclerophyll forest, through agricultural, tourist and residential development or forestry activities.
- Forest management that results in conversion of multi-aged forests to young, even-aged stands.
- Invasion of forests by weeds.
- Inappropriate fire regimes that degrade habitat or allow invasion by weeds.
- Degradation or loss of habitat through grazing of stock.
- Changes to rainforest habitat with climate change including drying and increased fire frequency.
- Lack of information on the species habitat requirements in NSW, particularly breeding habitat.
- Easily disturbed by the presence of people.

Albert's Lyrebird (*Menura alberti*)

Albert's Lyrebirds mainly occur in the wettest rainforests or wet sclerophyll forests with a wet understorey, often of rainforest plants. Higher densities of Albert's Lyrebirds occur in association with a canopy of eucalypts compared with rainforest lacking eucalypts (for equivalent climate), and in wet sclerophyll forest with greater weights of litter and logs and slower rates of litter decomposition. This species feed on the ground, usually where there is a deep, moist layer of leaf-litter, and fallen logs. In NSW they usually forage in rather open areas without a dense layer but with a well-developed taller stratum. They eat invertebrates that live in soil and leaf-litter, particularly insects and their larvae. Albert's Lyrebird breed over winter, with clutches found between late May and mid-August. The nest is built on a rocky ledge, in fissures in rocks, between rocks, or occasionally in caves on steep rock faces or cliffs.

Threatening processes for this species include:

- Clearing of rainforest and wet eucalypt forest habitat, and subsequent, fragmentation and isolation of remnant patches.
- Intensive management of forests, especially loss of optimal wet sclerophyll forest habitat to plantations of eucalypts or Hoop Pines (*Araucaria cunninghamii*).
- Invasion of logged or otherwise damaged habitat by weeds, especially Lantana (*Lantana camara*).
- Damage to habitat by grazing stock.
- Encroachment of urban or rural development.
- Fire may be a threat in exceptionally dry years, particularly isolated outlying populations.
- Predation by Red Foxes (*Vulpes vulpes*), and feral or, close to settlements, domestic dogs and cats may pose some threat.
- Anthropogenic climate change, and potential changes to habitat and further restrictions of range linked to such change.

Rose Crowned Fruit-dove, Wompoo Fruit-dove and Superb Fruit-dove

These three threatened Fruit-doves (Rose-crowned, Wompoo and Superb) occupy similar habitat niches in moist sclerophyll and rainforests, predominantly along the east coast of NSW. They feed on ripe fruits from a diverse range of fruit bearing species including figs, palms, trees, shrubs and vines. These birds are thought to be effective medium to long distance vectors for seed dispersal due their

locally nomadic behavior. Breeding takes place from spring to summer within a stick nest where typically a single egg is laid. Both parent birds take turns to incubate the egg.

Threatening processes for this species include:

- Clearing and fragmentation of low to mid-elevation rainforest due to coastal development and grazing.
- Logging and roading in moist eucalypt forest with well-developed rainforest understorey.
- Burning, which reduces remnant rainforest habitat patches.
- Infestation of rainforest habitat by invasive weeds.
- Removal of Camphor Laurel food source without appropriate mitigation measures.

Potential Impacts of the Activity to Regent Honeyeater, White-eared Monarch, Albert's Lyrebird, Rose Crowned Fruit-dove, Wompoo Fruit-dove and Superb Fruit-dove

The Activity would result in the removal of approximately 0.623 ha of moist sclerophyll forest with a rainforest midstorey comprising potential foraging (fruit bearing plants, invertebrates that live in soil and leaf-litter) and nesting habitat (vegetated canopy). The subject vegetation comprises a small amount of potential foraging or nesting habitat for these mobile birds in a local context. Given the occurrence of extensive forested habitat within the locality, the Activity represents a minor reduction of foraging or nesting habitat which may be utilised by Regent Honeyeater, White-eared Monarch, Albert's Lyrebird, Rose Crowned Fruit-dove, Wompoo Fruit-dove and Superb Fruit-dove. On this basis it would be highly unlikely that an adverse effect on the life cycle of Regent Honeyeater, White-eared Monarch, Albert's Lyrebird, Rose Crowned Fruit-dove, Wompoo Fruit-dove and Superb Fruit-dove could occur such that a viable local population of the species is likely to be placed at risk of extinction.

BIRDS (HOLLOW - OBLIGATE)

Glossy Black-cockatoo

Glossy Black Cockatoo inhabits open forest and woodlands of the coast and the Great Dividing Range where stands of sheoak occur. Black Sheoak (*Allocasuarina littoralis*) and Forest Sheoak (*A. torulosa*) are important foods. Inland populations feed on a wide range of sheoaks, including Drooping Sheoak, *Allocasuarina diminuta*, and *A. gymnathera*. Belah is also utilised and may be a critical food source for some populations. In the Riverina, birds are associated with hills and rocky rises supporting Drooping Sheoak, but also recorded in open woodlands dominated by Belah (*Casuarina cristata*). The species feeds almost exclusively on the seeds of several species of she-oak (*Casuarina* and *Allocasuarina* species), shredding the cones with the massive bill. Dependent on large hollow-bearing eucalypts for nest sites. A single egg is laid between March and May.

Threatening processes for this species include:

- Reduction of suitable habitat through clearing for development.
- Decline of hollow bearing trees over time due to land management activities.
- Excessively frequent fire which eliminates sheoaks from areas, prevents the development of mature sheoak stands, and destroys nest trees.
- Firewood collection resulting in loss of hollow bearing trees, reduced recruitment of hollow bearing trees, and disturbance of breeding attempts.
- Decline in extent and productivity of sheoak foraging habitat due to feral herbivores.
- Reduced access to surface water near foraging and nesting habitat.
- Limited information on the location of nesting aggregations and the distribution of high-quality breeding habitat.

- Disturbance from coal seam gas and open cut coal mining causing loss of foraging and breeding habitat as well as disturbing reproductive attempts.
- Decline in extent and productivity of sheoak foraging habitat caused by moisture stress due to climate change.
- Forestry activity resulting in loss of hollow bearing trees, reduced recruitment of hollow bearing trees, degradation of foraging habitat, and disturbance of breeding attempts.
- Degradation of foraging habitat and reduced regeneration of sheoak stands due to grazing by domestic stock.
- Loss of foraging habitat due to slashing/under scrubbing.
- Change in the spatial and temporal distribution of resources due to global warming.
- Illegal bird smuggling and egg-collecting.
- Habitat infestation by weeds such as African boxthorn, *Gazania*, buffel grass and other invasive grasses.

Potential Impacts from the Activity

The Activity would result in potential impacts to the Glossy Black-cockatoo associated with clearing of the feed tree species Forest Oak (*Allocasuarina torulosa*) and seven hollow-bearing trees within the project footprint. Considerable stands of Forest Oak and hollow-bearing trees exist within the surrounding Nightcap National Park and Whian Whian State Conservation Area. While the hollow-bearing trees onsite provide potential nesting opportunities for Glossy-black Cockatoo the potential loss of the subject trees are unlikely to be considered significant when considering the large extent of habitat surrounding the Activity. On this basis it would be highly unlikely that the Activity would have an adverse effect on the life cycle of the Glossy Black Cockatoo such that a viable local population of the species is likely to be placed at risk of extinction.

Little Lorikeet

The Little Lorikeet mostly forages in the canopy of open eucalypt forest and woodland, utilising *Eucalyptus*, *Angophora*, *Melaleuca* and other tree species. Nomadic movements are common, influenced by season and food availability, although some areas retain residents for much of the year. Riparian habitats are particularly used, due to higher soil fertility and hence greater productivity. The species feeds mostly on nectar and pollen, but occasionally also on native fruits such as mistletoe. Nests are generally located (within hollows) in proximity to feeding areas if possible and entrances are small (three centimetres) and usually high above the ground (two to 15 metres). Nest sites are often used repeatedly for decades, suggesting that preferred sites are limited. Riparian trees are often chosen, including species like *Allocasuarina*. The nesting season extends from May to September.

Threatening processes for this species include:

- Clearing of woodlands for agriculture
- Loss of old hollow-bearing trees
- Competition with the introduced Honeybee
- Infestation of habitat by invasive weeds
- Inappropriate fire regimes
- Aggressive exclusion from forest and woodland habitat by over abundant Noisy Miners
- Climate change impacts including reduction in resources due to drought
- Degradation of woodland habitat and vegetation structure due to overgrazing.

Powerful Owl

The Powerful Owl inhabits a range of vegetation types, from woodland and open sclerophyll forest to tall open wet forest and rainforest. The Powerful Owl requires large tracts of forest or woodland habitat but can occur in fragmented landscapes as well. The species breeds and hunts in open or closed sclerophyll forest or woodlands and occasionally hunts in open habitats. The main prey items are

medium-sized arboreal marsupials, particularly the Greater Glider, Common Ringtail Possum and Sugar Glider. Flying foxes are important prey in some areas; birds comprise about 10-50% of the diet depending on the availability of preferred mammals. Powerful Owls nest in large tree hollows (at least 0.5 m deep), in large eucalypts (diameter at breast height of 80-240 cm) that are at least 150 years old. Nesting occurs from late autumn to mid-winter but is slightly earlier in north-eastern NSW (late summer - mid autumn). Clutches consist of two dull white eggs and incubation lasts approximately 38 days.

Threatening processes for this species include:

- Historical loss and fragmentation of suitable forest and woodland habitat from land clearing for residential and agricultural development.
- Inappropriate forest harvesting practices that have changed forest structure and removed old growth hollow-bearing trees.
- Disturbance around the nest site, particularly during pre-laying, laying and downy chick stages. Disturbance during the breeding period may affect breeding success.
- High frequency hazard reduction burning may also reduce the longevity of individuals by affecting prey availability.
- Road kills.
- Secondary poisoning.
- Predation of fledglings by foxes, dogs and cats.

Masked Owl

Masked Owls live in dry eucalypt forests and woodlands from sea level to 1100 m. While forest owls, they often hunt along the edges of forests, including roadsides. The typical diet consists of tree-dwelling and ground mammals, especially rats. Pairs have a large home-range of 500 to 1000 hectares. They roost and breed in moist eucalypt forested gullies, using large tree hollows or sometimes caves for nesting.

Threatening processes for this species include:

- Loss of mature hollow-bearing trees and changes to forest and woodland structure, which leads to fewer such trees in the future.
- Clearing of habitat for grazing, agriculture, forestry or other development.
- A combination of grazing and regular burning is a threat, through the effects on the quality of ground cover for mammal prey, particularly in open, grassy forests.
- Secondary poisoning from rodenticides.
- Being hit by vehicles.

Sooty Owl

The Sooty Owl occurs in rainforest, including dry rainforest, subtropical and warm temperate rainforest, as well as moist eucalypt forests. It roosts by day in the hollow of a tall forest tree or in heavy vegetation (typically in gullies); hunts by night for small ground mammals or tree-dwelling mammals such as the Common Ringtail Possum (*Pseudocheirus peregrinus*) or Sugar Glider (*Petaurus breviceps*). Sooty Owl nest in very large tree-hollows more than 30 cm wide and up to 10 m deep. The breeding season of the Sooty Owl is variable, with a clutch of one or two eggs laid in autumn to winter or spring. A single brood per year is raised in the wild. The incubation period is five to six weeks, the nestling period three months, and the post-fledging dependence period lasts up to five months.

Threatening processes for these species include:

- Loss of mature hollow-bearing trees and changes to forest and woodland structure, which leads to fewer such trees in the future.
- Clearing of habitat for grazing, agriculture, forestry or other development.
- A combination of grazing and regular burning is a threat, through the effects on the quality of ground cover for mammal prey, particularly in open, grassy forests.
- Secondary poisoning from rodenticides.

Marbled Frogmouth (*Podargus ocellatus*)

Marbled Frogmouths prefer subtropical rainforest, particularly in deep, wet, sheltered gullies along creek lines and often containing stands of Bangalow Palms or ferns. In NSW, it is most often found in moist, lowland, mesophyll vine forest. Less often, they are found in the ecotone between rainforest and wet Eucalyptus forests, or occasionally in cool rainforest and higher elevation temperate rainforests. Rarely in wet eucalypt forest. The diet consists mainly of large nocturnal insects. They hunt from large perches, such as stumps or low branches, and sallying out to take their prey from the ground or from the foliage of plants. Birds breed from about August to December. The usual clutch is one but is sometimes two eggs.

Potential Impacts from the Activity to Little Lorikeet, Powerful Owl, Masked Owl, Sooty Owl & Marbled Frogmouth

The Activity would result in the removal of approximately 0.623 ha of moist sclerophyll forest with a rainforest midstorey including seven hollow-bearing trees within the project footprint. The subject vegetation comprises a relatively minor amount of potential foraging and dispersal habitat for Little Lorikeet, Powerful Owl, Masked Owl, Sooty Owl and Marbled Frogmouth in the context of the site and adjacent areas of suitable habitat within Nightcap National Park and Whian Whian State Conservation Area. The site is unlikely to be a significant source of prey. While the hollow-bearing trees onsite provide potential nesting opportunities for Little Lorikeet, Powerful Owl, Masked Owl, Sooty Owl and Marbled Frogmouth, the potential loss of the subject trees are unlikely to be considered significant when considering the large extent of habitat surrounding the Activity. On this basis it would be highly unlikely that an adverse effect on the life cycle of the Little Lorikeet, Powerful Owl, Masked Owl, Sooty Owl and Marbled Frogmouth would occur such that a viable local population of the species is likely to be placed at risk of extinction.

MAMMALS (GROUND DWELLING)

Rufous Bettong (*Aepyprymnus rufescens*)

Rufous Bettongs inhabit a variety of forests from tall, moist eucalypt forest to open woodland, with a tussock grass understorey. A dense cover of tall native grasses is the preferred shelter. They sleep during the day in cone-shaped nests constructed of grass in a shallow depression at the base of a tussock or fallen log. At night they feed on grasses, herbs, seeds, flowers, roots, tubers, fungi and occasionally insects.

Threatening processes for this species include:

- Changes to the grassy understorey by inappropriate burning and grazing.
- Competition from rabbits.
- Predation by feral cats and foxes, whose numbers appear to increase when dingoes are reduced through baiting.
- Loss of habitat through clearing, logging and collection of fallen timber.
- Poor knowledge of the species' abundance and distribution in the western parts of its range.

Red-legged Pademelon (*Thylogale stigmatica*)

Red-legged Pademelon inhabits forest with a dense understorey and ground cover, including rainforest, moist eucalypt forest and vine scrub. It is found in wet gullies with a dense, shrubby ground cover providing shelter from predators. It is rarely found outside forested habitat in NSW. They disperse from dense shelter areas to feed from late afternoon to early morning, favouring native grasses and herbs on the edge of the forest. It is also known to feed on fruits, young seedling leaves and stems, fungi and ferns.

Threatening processes for these species include:

- Loss or fragmentation of habitat due to land clearing and under scrubbing.
- Predation by domestic and wild dogs/dingos and foxes.
- Inappropriate fire regime reducing or degrading habitat, especially as a result of overly frequent or intense fires and regular burning of forest margins.
- Habitat degradation and grazing competition by feral horses, cattle, pigs, and rabbits.
- Predation by feral cats.
- Habitat degradation and grazing competition by domestic stock.
- Climate change altering habitat and increasing risks associated with fire.
- Intensive forestry practices resulting in, or exacerbating, habitat loss and fragmentation.
- Broad scale lantana removal resulting in habitat loss.
- Lack of information about disease prevalence and susceptibility

Spotted-tailed Quoll

Spotted-tailed Quoll is recorded across a range of habitat types, including rainforest, open forest, woodland, coastal heath and inland riparian forest, from the sub-alpine zone to the coastline. Individual animals use hollow-bearing trees, fallen logs, small caves, rock outcrops and rocky-cliff faces as den sites. It is a generalist predator with a preference for medium-sized (500g-5kg) mammals consuming a variety of prey, including gliders, possums, small wallabies, rats, birds, bandicoots, rabbits, reptiles and insects. The average litter size is five; both sexes mature at about one year of age and life expectancy in the wild is approximately 3-4 years.

Threatening processes for these species include:

- Loss, fragmentation and degradation of habitat.
- Competition with introduced predators such as cats and foxes.
- Deliberate poisoning, shooting and trapping, primarily in response to chicken predation.
- Roadkill.
- Competition for habitat and other resources by the cane toad.

Long-nosed Potoroo

Long-nosed Potoroo inhabit coastal heaths and dry and wet sclerophyll forests. Dense understorey with occasional open areas is an essential part of habitat, and may consist of grasstrees, sedges, ferns or heath, or of low shrubs of tea-trees or melaleucas. A sandy loam soil is also a common feature. The fruit-bodies of hypogeous (underground-fruiting) fungi are a large component of the diet of the Long-nosed Potoroo. They also eat roots, tubers, insects and their larvae and other soft-bodied animals in the soil. This species is mainly nocturnal, hiding by day in dense vegetation - however, during the winter months animals may forage during daylight hours. Individuals are mainly solitary,

non-territorial and have home range sizes ranging between 2-5 ha. Breeding peaks typically occur in late winter to early summer and a single young is born per litter. Adults are capable of two reproductive bouts per annum.

Threatening processes for these species include:

- Habitat loss and fragmentation from land clearing for residential and agricultural development.
- Predation from foxes, wild dogs and cats.
- Too frequent fires or grazing by stock that reduce the density and floristic diversity of understorey vegetation.
- Logging or other disturbances that reduce the availability and abundance food resources, particularly hypogeous fungi, and ground cover.
- Unplanned clearing in areas where the species occurs on private property is likely to degrade the species' habitat.
- Removal of wild dogs and dingoes potentially exposes potoroos to other threats (competition from other species of wallaby / fox predation) due to removal of top order predator.

Potential Impacts from the Activity to Rufous Bettong, Red-legged Pademelon, Spotted-tailed Quoll and Long-nosed Potoroo

The Activity would result in the removal of approximately 0.623 ha of moist sclerophyll forest with a rainforest midstorey including one large hollow-bearing log within the project footprint. These impacts are a very small portion of the greater residual land where high quality habitat for the species occurs and which is available to any flushed animals. Given the short-term nature of the works and the occurrence of forested habitat retained within the site and in the broader locality (Nightcap National Park and Whian Whian State Conservation Area), the Activity would be highly unlikely to adversely impact Rufous Bettong, Red-legged Pademelon, Spotted-tailed Quoll and Long-nosed Potoroo such that a viable local population of the species is likely to be placed at risk of extinction.

MAMMALS (MICROBATS)

Eastern False Pipistrelle

The Eastern False Pipistrelle prefers moist habitats, with trees taller than 20 m. The species generally roosts in eucalypt hollows but has also been found under loose bark on trees or in buildings. It hunts beetles, moths, weevils and other flying insects above or just below the tree canopy. Eastern False Pipistrelle hibernates in winter and females are pregnant in late spring to early summer.

Threatening processes for these species include:

- Disturbance to winter roosting and breeding sites.
- Loss of roosting habitat, primarily hollow-bearing eucalypts.
- Loss and fragmentation of foraging habitat, particularly extensive areas of continuous forest and areas of high productivity.

Little Bentwing-bat

Bentwing-bats occur in moist eucalypt forest, rainforest, vine thicket, wet and dry sclerophyll forest, Melaleuca swamps, dense coastal forests and banksia scrub. Roosting occurs in caves, tunnels, tree hollows, abandoned mines, stormwater drains, culverts, bridges and sometimes buildings during the day, and at night forage for small insects beneath the canopy of densely vegetated habitats. Little Bentwing-bats often share roosting sites with the Common Bentwing-bat and in winter, the two species may form mixed clusters.

In NSW, the largest maternity colony is in close association with a large maternity colony of Eastern Bentwing-bats and appears to depend on the large colony to provide the high temperatures needed to rear its young. Maternity colonies form in spring and birthing occurs in early summer. Males and juveniles disperse in summer. Only five nursery sites/maternity colonies are known in Australia.

Threatening processes for these species include:

- Disturbance of colonies, especially in nursery or hibernating caves, may be catastrophic
- Destruction of caves that provide seasonal or potential roosting sites
- Changes to habitat, especially surrounding maternity/ nursery caves and winter roosts
- Pesticides on insects and in water consumed by bats bio accumulates, resulting in poisoning of individuals
- Predation from foxes, particularly around maternity caves, winter roosts and roosts within culverts, tunnels and under bridges
- Predation from feral cats, particularly around maternity caves, winter roosts and roosts within culverts, tunnels and under bridges
- Introduction of exotic pathogens such as the White-nosed fungus
- Hazard reduction and wildfire fires during the breeding season
- Large scale wildfire or hazard reduction can impact on foraging resources
- Poor knowledge of reproductive success and population dynamics.
- Climate change and reduction in resources due to drought.

Southern Myotis (*Myotis macropus*)

The Southern Myotis occurs close to bodies of water, rainforest streams, large lakes and reservoirs where they feed on fish and aquatic macroinvertebrates by skimming or trawling the surface of the water with their large feet to catch prey. They generally roost in groups of 10 - 15 close to water in caves, mine shafts, hollow-bearing trees, storm water channels, buildings, under bridges and in dense foliage. Within the region females typically have one young each year usually in November or December.

Threatening processes for this species include:

- Loss or disturbance of roosting sites.
- Clearing adjacent to foraging areas.
- Application of pesticides in or adjacent to foraging areas.
- Reduction in stream water quality affecting food resources

Eastern Long-eared Bat

The Eastern Long-eared Bat is insectivorous and occupies Lowland subtropical rainforest, swamp Eucalypt forest extending into adjacent moist Eucalypt forest. Coastal rainforest and patches of coastal scrub are particularly preferred habitat types. The species uses a variety of roosting sites including tree hollows, amongst the hanging foliage of plants, amongst epiphytes, under bark and within cracks, fissures or depressions on trunks and branches and within the roots of strangler figs. Occasionally they will roost in buildings. Eastern Long-eared Bats mate in May and give birth to twins in October. The young are carried on the mother/s body for the first few days and they left behind at the roost while the mother forages. Churchill says that in Northern NSW the species is restricted to rainforest.

Threatening processes for this species include:

- Clearing, fragmentation and isolation of lowland subtropical rainforest, wet and swamp eucalypt forest and coastal scrub, particularly forest and scrub close to the coast, for agricultural, residential and other development.

- Loss of hollow-bearing trees and stands of palms and rainforest trees used for roosting and maternity sites.
- Invasion of habitat by weeds, particularly by Bitou Bush on the coast.
- Use of pesticides.
- Climate change and reduction in resources due to drought.

Golden-tipped Bat (*Phoniscus papuensis*)

Golden-tipped Bats are found in rainforest and adjacent wet and dry sclerophyll forest up to 1000m. The species is also recorded in tall open forest, Casuarina-dominated riparian forest and coastal Melaleuca forests. It will fly up to two kilometres from roosts to forage in rainforest and sclerophyll forest on mid and upper slopes. Golden-tipped Bats roost mainly in rainforest gullies on small first- and second-order streams in usually abandoned hanging Yellow-throated Scrub-wren and Brown Gerygone nests modified with an access hole on the underside. It may also roost under thick moss on tree trunks, in tree hollows, dense foliage and epiphytes and will use multiple roost and change roosts regularly. The species roost individually or in small colonies which can contain up to approximately 20 bats of both males and females or just a single sex. Maternity roosts may occur away from water sources with one maternity roost found 450m upslope of the nearest water course. They are a specialist feeder on small web-building spiders.

Threatening processes for this species include:

- Loss of riparian rainforest for roosting and foraging habitat.
- Loss of understorey habitat on upper slopes for foraging.
- Forestry operations that fragment habitat or result in loss of roosting habitat.
- Habitat fragmentation.
- Lack of knowledge of the threats to the species.
- Burning rainforest habitat.
- Loss of hollow bearing trees.
- Pesticides and other chemicals used in or adjacent to habitat areas.
- Exotic weeds, particularly lantana and vines, that degrade habitat and alter the structure of rainforest and adjacent wet and dry sclerophyll forest vegetation communities.

Greater Broad-nosed Bat

The Greater Broad-nosed Bat utilises a variety of habitats from woodland through to moist and dry eucalypt forest and rainforest, though it is most commonly found in tall wet forest. Although usually roosting in tree hollows, the species has also been found in buildings. Open woodland habitat and dry open forest suits the direct flight of this species as it searches for beetles and other large, slow-flying insects; this species has been known to eat other bat species. Little is known of the reproductive cycle, however a single young is born in January; prior to birth, females congregate at maternity sites located in suitable trees, where they appear to exclude males during the birth and raising of a single young.

Threatening processes for this species include:

- Disturbance to roosting and summer breeding sites
- Foraging habitats are being cleared for residential and agricultural developments, including clearing by residents within rural subdivisions
- Loss of hollow-bearing trees
- Pesticides and herbicides may reduce the availability of insects or result in the accumulation of toxic residues in individuals' fat stores
- Changes to water regimes are likely to impact food resources, as is the use of pesticides and herbicides near waterways.

- Climate change and reduction in resources due to drought.

Potential Impacts from the Activity to Eastern False Pipistrelle, Little Bentwing-bat, Southern Myotis, Eastern Long-eared Bat, Golden-tipped Bat and Greater Broad-nosed Bat.

The Activity would result in the removal of approximately 0.623 ha of moist sclerophyll forest with a rainforest midstorey comprising roosting and foraging habitat for microbats. No impacts to Repentance Creek (foraging habitat) associated with the Activity is expected. The subject vegetation comprises a relatively minor amount of potential foraging and dispersal habitat for the subject microbats in the context of the site and adjacent areas of suitable habitat. While foraging and dispersal habitat will be removed, the Activity is unlikely to result in significant impacts to dispersal foraging resources for this species. Seven hollow-bearing trees hollows with potential suitable breeding or roosting habitat will be impacted. Due to the relatively minor amount of hollow loss and remaining quality habitat adjacent to the site (Nightcap National Park and Whian Whian State Forest), it would be highly unlikely that an adverse effect on the life cycles of Eastern False Pipistrelle, Little Bentwing-bat, Southern Myotis, Eastern Long-eared Bat, Golden-tipped Bat and Greater Broad-nosed Bat would occur such that a viable local population of the species is likely to be placed at risk of extinction.

MAMMALS (GLIDERS)

Yellow-bellied Glider

Yellow Bellied Gliders predominantly occur in tall mature Eucalypt Forest in areas typically with high rainfall and nutrient rich soils. Forest type preferences include tall montane, mixed coastal and dry escarpment forests, moist gullies and creek flats and tend to vary depending on latitude and elevation. Yellow-bellied Gliders feed primarily on plant and insect exudates including nectar from flowers, sap, honeydew and manna. Protein is acquired from pollen and insects. Distinctive V shaped scars indicate Yellow-bellied Glider feed trees where the animal bites or incises the trunk or limbs of preferred trees to encourage the edible sap to flow. This highly mobile species occupies a large home range between 20 to 85 hectares dispersing to find seasonally variable food resources. They depend on large hollow-bearing trees for denning and breeding where family groups of two to six individuals have been recorded.

Threatening processes for this species include:

- Loss and fragmentation of habitat.
- Loss of hollow-bearing trees.
- Loss of feed trees
- Climate change and reduction in resources due to drought.

Squirrel Glider

Along the eastern side of the Great Dividing Range the Squirrel Glider inhabits mature or old growth eucalypt forest where Blackbutt-Bloodwood forest with a heathy understorey exists. Mixed species forest stands with a shrub and Acacia understorey are preferred. They require abundant tree hollows for refuge and den sites where family groups consisting of a single adult male with a minimum of one adult female and offspring. Squirrel Gliders feed primarily on plant and insect exudates including nectar from flowers, Acacia gum, Eucalyptus sap, honeydew and manna. Protein is acquired from pollen and insects.

Threatening processes for this species include:

- Habitat loss and degradation.
- Fragmentation of habitat.
- Loss of hollow-bearing trees.
- Loss of understorey food resources.
- Inappropriate fire regimes.
- Reduction in food resources due to drought.

- Mortality due to entanglement on barbed wire.
- Occupation of hollows by exotic species.
- Mortality due to collision with vehicles.
- Predation by exotic predators.
- Changes in spatial and temporal distribution of habitat due to climate change.

Potential Impacts of the Activity on Yellow-bellied Glider and Squirrel Glider

The Activity would result in the removal of approximately 0.623 ha of moist sclerophyll forest with a rainforest midstorey comprising denning and foraging habitat for Yellow-bellied Glider and Squirrel Glider. The subject vegetation comprises a comparatively minor amount of potential foraging and dispersal habitat for Yellow-bellied Glider and Squirrel Glider in the context of the site and adjacent areas of suitable foraging and denning habitat. While native potential food trees and vegetation for dispersal would be removed, the Activity is unlikely to result in significant impacts to foraging or dispersal resources which may be utilised by Yellow-bellied Glider and Squirrel Glider in a local context. Seven hollow-bearing trees hollows with potential suitable breeding or denning habitat will be impacted. Due to the relatively minor amount of hollow loss and remaining quality habitat adjacent to the site (Nightcap National Park and Whian Whian State Forest), it would be highly unlikely that an adverse effect on the life cycles of Yellow-bellied Glider and Squirrel Glider would occur such that a viable local population of the species is likely to be placed at risk of extinction.

MAMMALS (OTHER)

Koala (*Phascolarctos cinereus*)

Koala habitat consists of eucalypt woodlands and forests, in which the Koala feeds on more than 70 eucalypt species and 30 non-eucalypt species. Preferred browse species differ across regions. Koalas are inactive for most of the day and do most of their feeding and moving during the night. Although predominantly arboreal, Koalas would descend and traverse open ground to move between trees. Home range size varies with quality of habitat, ranging from less than 2 hectares to several hundred hectares in size. Generally solitary, the Koala has complex social hierarchies based on a dominant male with a territory that overlaps that of several females, with sub-ordinate males on the periphery. Females breed at two years of age and produce one young per year.

In the Northern Rivers, preferred food trees include Forest Red Gum (*Eucalyptus tereticornis*), Swamp Mahogany (*E. robusta*) and Tallowwood (*E. microcorys*), with Small-fruited Grey Gum (*E. propinqua*), Red Mahogany (*E. resinifera*) and several other species recognised as secondary feed trees.

Threatening processes for this species include:

- Loss, modification and fragmentation of habitat.
- Predation by feral and domestic dogs.
- Intense fires that scorch or kill the tree canopy.
- Road-kills.
- Human-induced climate change, especially drought.

Potential Impacts of the Activity

The Activity would not result in the loss of any key Koala habitat and one primary feed tree (Tallowwood) would require removal to accommodate the Activity, which is negligible in the broader local context. The Activity would not increase the risk of Koala roadkill during construction as plant and vehicles would be operational during daytime hours. On this basis it would be highly unlikely that an adverse effect on the life cycle of the Koala would occur such that a viable local population of the species is likely to be placed at risk of extinction.

Grey-headed Flying-fox (*Pteropus poliocephalus*)

Grey-headed Flying-foxes are generally found within 200km of the eastern coast of Australia, from Rockhampton in Qld to Adelaide in South Australia. They occur in subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops. Roosting camps are generally located within 20km of a regular food source and are commonly found in gullies, close to water, in vegetation with a dense canopy. They feed on the nectar and pollen of native trees, in particular *Eucalyptus*, *Melaleuca* and *Banksia*, and fruits of rainforest trees, vines and cultivated gardens and crops.

Threatening processes for this species include:

- Loss of roosting and foraging sites.
- Electrocuting on powerlines, entanglement in netting and on barbed wire.
- Heat stress.
- Conflict with humans.
- Incomplete knowledge of abundance and distribution across the species' range.

Eastern Tube-nosed Bat (*Nyctimene robinsoni*)

Eastern Tube-nosed Bat is found in coastal areas of north-eastern Australia from Cape York south to the far north-east corner of NSW. There are few records from NSW, including the Nightcap, Tweed and Burringbar Ranges and in the vicinity of Mt Warning. The species favour streamside habitats within coastal subtropical rainforest and moist eucalypt forests with a well-developed rainforest understorey. They feed mainly on fruit and nectar from trees in the rainforest canopy and sometimes come close to human settlement to visit flowering or fruiting trees.

Threatening processes for this species include:

- Clearing and fragmentation of rainforest and wet eucalypt forest for agriculture and residential development.
- Degradation from weeds including lantana and vines suppressing regeneration of food trees.
- Destruction of Black Bean, an important food tree, because the seeds are toxic to cattle.
- Predation by cats particularly while foraging on low hanging fruit and flowers.
- Disturbance due to agricultural development, individuals getting caught on barbed wire fences near feeding and drinking areas (e.g. near orchards and dams).
- Alteration of habitat from climate change including structure, floristic composition, resource availability (water and food trees and palms), rainforest drying including gullies and streams.

Potential Impacts of the Activity on Grey-headed Flying Fox and Eastern Tube-nosed Bat

The Activity would result in the removal of approximately 0.623 ha of moist sclerophyll forest with a rainforest midstorey comprising foraging habitat for Grey-headed Flying-fox and Eastern Tube-nosed Bat. The subject vegetation does not include any areas identified as being significant roosting habitat and comprises a comparatively minor amount of potential foraging habitat in the context of the site and adjacent areas of suitable foraging habitat. It would be highly unlikely that an adverse effect on the life cycles of Grey-headed Flying-fox and Eastern Tube-nosed Bat would occur such that a viable local population of the species is likely to be placed at risk of extinction.

REPTILES

Stephen's Banded Snake (*Hoplocephalus stephensii*)

Stephen's Banded Snake is found on the coast and ranges from Southern Queensland to Gosford in NSW. It inhabits rainforest and eucalypt forests and rocky areas up to 950 m in altitude. Stephen's Banded Snake is nocturnal and shelters between loose bark and tree trunks, amongst vines, or in hollow trunks limbs, rock crevices or under slabs during the day. At night it hunts frogs, lizards, birds and small mammals.

Threatening processes for this species include:

- Clearing and fragmentation of habitat.
- Forestry practices which result in loss of old or dead trees.
- Too frequent burning for fuel reduction or grazing management which destroys old and dead trees and removes understorey vegetation.
- Illegal collection of snakes from the wild.
- Poor knowledge of the species' habitat preferences.

Potential Impacts of the Activity on Stephen's Banded Snake

The Activity would result in the removal of approximately 0.623 ha of moist sclerophyll forest with a rainforest midstorey comprising shelter and foraging habitat for Stephen's Banded Snake. The subject vegetation comprises a comparatively minor amount of potential foraging and shelter habitat for Stephen's Banded Snake in the context of the site and adjacent areas of suitable foraging and shelter habitat. Seven hollow-bearing trees and a hollow-bearing log providing potential suitable shelter will be impacted. Due to the relatively minor amount of hollow loss and remaining quality habitat adjacent to the site (Nightcap National Park and Whian Whian State Forest), it would be highly unlikely that an adverse effect on the life cycle of Stephen's Banded Snake would occur such that a viable local population of the species is likely to be placed at risk of extinction.

b) in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or Activity:

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,

No endangered ecological communities or critically endangered ecological communities occur at either site.

c) in relation to the habitat of a threatened species or ecological community:

(i) the extent to which habitat is likely to be removed or modified as a result of the proposed development or Activity,

The extent of habitat to be removed is approximately 0.623 ha. The majority of the impacted habitat is already highly modified and currently disturbed from human use. The Activity would not result in the removal of any significant habitat. Additionally, there is substantial quality habitat for threatened species within the locality in both Nightcap NP and Whian Whian SCA. The Activity is therefore unlikely to adversely impact any threatened species or ecological community.

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or Activity, and

The Activity would not further fragment available habitat in the locality for any of the subject species.

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality,

Amphibians

- Pouched Frog (*Assa darlingtoni*) - Repentance Creek is known habitat for Pouched Frog.
- Loveridge's Frog (*Philoria loveridgei*), Fleay's Barred Frog (*Mixophyes fleayi*) and Giant Barred Frog (*Mixophyes iteratus*) - riparian zone and leaf litter habitat.

Birds

- Albert's Lyrebird (*Menura alberti*), Rose-crowned Fruit-dove (*Ptilinopus regina*), Wompoo Fruit Dove (*Ptilinopus magnificus*), White-eared Monarch (*Carterornis leucotis*), Superb Fruit-dove (*Ptilinopus superbis*) and Regent Honeyeater (*Anthochaera phrygia*) - removal of potential foraging and dispersal habitat.
- Glossy Black-cockatoo (*Calyptorhynchus lathamii*) - clearing of Forest Oak (*Allocasuarina torulosa*) feed tree species.
- Little Lorikeet (*Glossopsitta pusilla*), Powerful Owl (*Ninox strenua*), Masked Owl (*Tyto novaehollandiae*), Sooty Owl (*Tyto tenebricosa*) and Marbled Frogmouth (*Podargus ocellatus*) - removal of potential foraging and dispersal habitat and hollow-bearing tree nesting habitat.

Mammals

- Red-legged Pademelon (*Thylogale stigmatica*), Rufous Bettong (*Aepyprymnus rufescens*), Spotted-tailed Quoll (*Dasyurus maculatus maculatus*) and Long-nosed Potoroo (*Potorous tridactylus*) - removal of potential foraging, dispersal and breeding habitat.
- Eastern False Pipistrelle (*Falsistrellus tasmaniensis*), Greater Broad-nosed Bat (*Scoteanax rueppellii*), Little Bentwing-bat (*Miniopterus australis*), Southern Myotis (*Myotis macropus*) Eastern Long-eared Bat (*Nyctophilus bifax*)
- *bifax*), Eastern False Pipistrelle (*Falsistrellus tasmaniensis*) and Golden-tipped Bat (*Phoniscus papuensis*) - removal of potential foraging habitat and hollow-bearing tree roosting habitat.
- Yellow-bellied Glider (*Petaurus australis*) and Squirrel Glider (*Petaurus norfolcensis*) - removal of foraging resources and hollow-bearing tree refuge and denning habitat.
- Koala (*Phascolarctos cinereus*) - removal of eucalypt forest habitat and Koala feed trees (Tallowwood x 1).
- Grey-headed Flying-fox (*Pteropus poliocephalus*) and Eastern Tube-nosed Bat (*Nyctimene robinsoni*) - minor reduction in potential foraging habitat.

Reptiles

- Stephen's Banded Snake (*Hoplocephalus stephensi*) - minor reduction in habitat.

The scale of habitat removal is minor in context to quality habitat available for threatened species in both Nightcap NP and Whian Whian SCA. The Activity is therefore unlikely to adversely impact the long-term survival of the subject species.

d) whether the proposed development or Activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly),

The Activity would not have an adverse effect on any declared area of outstanding biodiversity value.

e) whether the proposed development or Activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.

A threatening process is a process that threatens, or may have the capability to threaten, the survival or evolutionary development of species, populations or ecological communities. The current list of key threatening processes under the BC Act, and whether the Activity is recognised as a threatening process is shown in **Table F.1**.

Table F.1 Key Threatening Processes

Listed Key Threatening Process	Is the development or Activity proposed of a class of development or Activity that is recognised as a threatening process?		
	Likely	Possible	Unlikely
Aggressive exclusion of birds by noisy miners			✓
Alteration of habitat following subsidence due to longwall mining			✓
Alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands			✓
Anthropogenic climate change			✓
Bush rock removal			✓
Clearing of native vegetation	✓		
Competition and grazing by the feral European Rabbit			✓
Competition and habitat degradation by feral goats			✓
Competition from feral honeybees			✓
Death or injury to marine species following capture in shark control programs on ocean beaches			✓
Entanglement in or ingestion of anthropogenic debris in marine and estuarine environments			✓
Forest Eucalypt dieback associated with over-abundant psyllids and bell miners			✓
High frequency fire resulting in the disruption of life cycle processes in plants and animals and loss of vegetation structure and composition			✓
Herbivory and environmental degradation caused by feral deer			✓
Importation of red imported fire ants			✓
Infection by <i>Psittacine circoviral</i> (beak and feather) disease affecting endangered psittacine species and populations			✓
Infection of frogs by amphibian chytrid causing the disease chytridiomycosis			✓
Infection of native plants by <i>Phytophthora cinnamomi</i>			✓
Introduction and Establishment of Exotic Rust Fungi of the order Pucciniales pathogenic on plants of the family Myrtaceae			✓
Introduction of the large earth bumblebee			✓
Invasion and establishment of exotic vines and scramblers			✓
Invasion and establishment of Scotch broom			✓
Invasion and establishment of the Cane Toad			✓
Invasion, establishment and spread of <i>Lantana camara</i>			✓
Invasion of native plant communities by African Olive			✓
Invasion of native plant communities by <i>Chrysanthemoides monilifera</i> (bitou bush and boneseed)			✓
Invasion of native plant communities by exotic perennial grasses			✓
Invasion of the yellow crazy ant into NSW		✓	
Loss and degradation of native plant and animal habitat by invasion of escaped garden plants, including aquatic plants			✓
Loss of hollow-bearing trees	✓		
Loss or degradation (or both) of sites used for hill-topping by butterflies			✓

Listed Key Threatening Process	Is the development or Activity proposed of a class of development or Activity that is recognised as a threatening process?		
	Likely	Possible	Unlikely
Predation and hybridisation of feral dogs			✓
Predation by the European red fox			✓
Predation by the feral cat			✓
Predation by <i>Gambusia holbrooki</i>			✓
Predation by the Ship Rat on Lord Howe Island			✓
Predation, habitat degradation, competition and disease transmission by feral pigs			✓
Removal of dead wood and dead trees	✓		

The Activity is characteristic of four listed KTPs as follows:

- Clearing of native vegetation
- Invasion of the yellow crazy ant into NSW
- Loss of hollow-bearing trees
- Removal of dead wood and dead trees

Clearing of native vegetation proposed is unlikely to be considered significant considering the modified habitat of impacted vegetation and the large extent of preferable habitat surrounding the Activity. This also applies to dead trees and logs/woody debris which require removal or relocation.

The loss of seven hollow-bearing trees and one hollow-bearing log is unlikely to be considered significant considering the large extent of preferable habitat surrounding the Activity.

Yellow Crazy Ant (*Anoplolepis gracilipes*) is confirmed in the Lismore CBD and Terania Creek, north of Lismore (DPI, 2019). Contractors would ensure all machinery is cleaned prior to entering the Empire Vale area to ensure that soil, vegetation and Yellow Crazy Ant is not imported to the site. Any observations of Yellow Crazy Ant would be reported to the Biosecurity Hotline, the DPI website, or via the Local Lands Services office.

The degree that the Activity would contribute to any threatening process is not considered likely to place the local population of any of the subject species or communities at significant risk of extinction.

Conclusion

It is considered unlikely that the local population of any of the subject species/communities would be placed at significant risk of extinction as a result of the Activity.



NSW NATIONAL PARKS & WILDLIFE SERVICE

Addendum Report

Modification of a Determined Review of
Environmental Factors

Minyon Falls and Minyon Grass Upgrades on Nightcap National Park

Original (Current) Review of Environmental Factors

SF	REF title	Determined by	Date determined
SF18/31596 DOC19/1027964	3408-1007 NPWS Minyon Falls and Minyon Grass Upgrades REF v2	Russell Madeley, Director North Coast Branch	2 January 2020

Addendum Report

Stage	NPWS position	Contact person	Date finalised
Prepared by		Ian Colvin (GeoLINK)	19/10/2020
Reviewed by	Senior Project Officer	Daryl Moncrieff	24/9/2020
Referred by	Area Manager	Damien Hofmeyer	20/10/2020
Approved by	Director	Russell Madeley	20/10/2020

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1. Overview

Current activity as determined under the EP&A Act

The determined REF comprises the following elements:

Minyon Falls

- Expansion and upgrade to main carpark area
- Expansion and upgrade to main picnic areas
- New concrete walking tracks (includes sections of ramps that would require handrails)
- New boardwalk and lookout structure comprised of three viewing platform levels
- Replacement of existing concrete blocks with stepping-stones over Repentance Creek
- Visitor interpretation
- Wayfinding signage.

Minyon Grass

- Upgrade to existing carpark area
- Consolidation of picnic area to west of the site (adjacent to lookout) with new shelters and furniture
- New pedestrian pathways and access ramp to the toilet block.

The REF was determined by NPWS on 2 January 2020.

Proposed modification to activity

This addendum only applies to key changes to the car park at Minyon Falls. While the upgrade to the Minyon falls day use area is also in the process of being redesigned, this will be subject to a separate addendum if deemed necessary.

The revised car park design allows for the upgrade of existing facilities to a total carparking capacity of 93 vehicles, while minimising native tree loss.

Justification for the modification

The revised car park design addresses a key objective with regard to minimising the removal of mature trees at the Minyon Falls day use site. This is the major amendment to the previous design which required extensive vegetation removal and the loss of numerous mature native trees. A revised engineering design supports the revised upgrade (refer to Appendix A). No other aspects of the carpark design are substantially different from that in the determined REF.

2. Modification of Minyon Falls Carpark

2.1 The current review of environmental factors

The current (determined) REF included the following activities at Minyon Falls as part of overall works (day-use area and car park):

- Mark out the extent of project boundary.
- Establish site compound.
- Erect traffic management as per approved Traffic Control Plan (TCP). Minyon Falls Road would be closed between Rummery Park (immediately south of the turnoff to Rummery, allowing access from the north) and the last private driveway south of Minyon Grass.
- Install erosion and sediment controls according to an approved Erosion and Sediment Control Plan.
- Install temporary barrier mesh fences on walking track to prevent people from walking in from Minyon Grass.
- Undertake tree removal, vegetation clearing and grubbing using a professional tree-feller. Felled trees would be retained where possible for milling on-site and re-use internally as park furniture. Remaining timber would be mulched and stockpiled for use across the site. Additional mulch would be sent to Broadwater mill as biofuel and used in the surrounding bush as necessary. Root balls would be used as vehicle barriers adjacent to gates.
- Pre-fabricated lookout structure to be installed with crane utilising access from the current day-use area. The new lookout would be constructed first to avoid damage to the proposed upgraded grassed areas and resealed carpark.
- Install balustrade on falls side to deter people from venturing to falls edge.
- Upgrade main carpark with screen plantings and new access ways – including 44 existing and 60 new parking bays. The carpark would be largely sealed with some smaller bays surfaced with local crushed granite. Cut and fill would be undertaken as necessary with compaction before surface treatment.
- Install secondary entry sign and primary directional sign.
- Park furniture, rock wall and surface treatments to be developed. Stepped grass terraces with curved stone retaining walls would be utilised to allow seating and direct views to lookout. This would include a low, curved bridge structure access to walking tracks and pools experience at the top of the waterfall, an upgrade to the viewing platform with seating and a wider boardwalk structure to replace existing to upgrade entry and manage capacity. Install the winding main path with storytelling points and the information board with a map of walking tracks.
- A large picnic shelter as focal point and gathering space would be installed and furniture in the day-use area would be standard Parks and Wildlife furniture out of the Park Facilities Manual.
- Upgrade the group picnic areas adjoining pools, install stepped natural rock water entries to pools, open passive recreation area overlooking the creek and develop biofiltration beds and rockeries to filter water runoff from the new turf area.
- Replace stepping stones crossing Repentance Creek. Large stones would be moved into place with a tirlor winch. Works will be undertaken during construction of the nearby day use area when there is machinery on site. The size of the stone needed for the stepping stones is defined by the width of the creek, and the force of water flowing down it. Stones used for the purpose need to be larger than the stones present within the creek. The dimensions of the new, natural stepping stones will be approximately 600 (length) x 400 (width) x 200 (height). Stepping stones will be engineered to ensure they remain in place, most likely using dynabolts (NPWS would follow engineer's advice on this).
- Upgrade the existing toilet block with upgraded access and a renovated building.

- Topsoil and seed verge material and other disturbed areas.
- Remove site compound.
- Remove traffic and pedestrian controls.
- Remove temporary erosion and sediment controls (when site stabilised).
- Final site clean-up.
- Revegetate, maintain and monitor.

Ancillary facilities including a vehicle parking and laydown area, storage shed/ lunchroom and portable toilet would be established within the existing closed sections of the Minyon Falls day-use area for the duration of the Activity.

The Activity would require use of the following plant, vehicles and tools: crane; excavator, grader, roller, positrack, mulcher, watercart, dump truck, various hand tools (chainsaw, mattock, shovels etc). Vegetation removal would be undertaken by a combination of excavators (with harvesting heads for hollow-bearing tree removal) and felled by experienced operators.

Materials required for the Activity would be transported to the site via the existing road network (ie. Minyon Falls Road).

Material stockpile locations are proposed within each closed work footprint as required. Materials would be deposited on-site during the construction period with limited on-site storage required. Any remaining materials would be removed from the site once the Activity is completed.

The car park component of the upgrade would require the removal of numerous mature trees (15 x Blackbutt *Eucalyptus pilularis*; 4 x Turpentine *Syncarpia glomulifera*). Various safeguards were proposed to minimise impacts on the environment from the works.

2.2 The scope of the modification

2.2.1 Modification description

The Activity will change only with regard to the proposed car park upgrade under this modification addendum. On this basis, the car park design (refer to Appendix A) has been reconfigured to reduce the removal of native vegetation, in particular large mature trees. As per the previous REF, public access to the Minyon Falls day use area will be restricted during the Activity and Rummery Park campground will remain open and accessible from the western portion of Minyon Falls Road.

The proposed upgrade is scheduled to be completed before the end of 2020, with the tender awarded within six weeks of acceptance of this addendum modification.

Field assessment of the revised design indicates that up to five mature trees would require removal (4 x Blackbutt, 1 x Turpentine), in addition to minor regrowth and small trees such as Forest Maple (*Cryptocarya rigida*) and Rose Walnut (*Endiandra discolor*). Two small Tree Ferns (*Cyathea leichhardtiana*) at the eastern end of Bay 4 and Bay 5 (refer Appendix A) are recommended for translocation and have been marked with orange flagging tape.

Category of modification

The modified carpark design is characteristic of a Category B ‘negligible’ modification as it is substantially the same activity with only a minor variation to the activity description relating to the scope, timing and extent of works.

2.2.2 Scope of modification to REF

All required changes to the REF and the REF Determination Notice and Schedule of Conditions are summarised in **Table 1** (below).

Table 1 – Modification table

Reference [section]	Current provision	Modified provision	Environmental Value [Impact]
6.2.6	<i>Native vegetation loss</i>	<i>Reduction in native vegetation loss</i>	Biodiversity impacts reduced
Conclusion/Justification provided The modified design will reduce impacts on native vegetation and mature trees.			
Conclusion/Justification provided			
Conclusion/Justification provided			

2.2.3 Substantially the same activity

The modification remains substantially the same development due to minor changes to the carpark design and a reduction on impacts of native vegetation. All previous safeguards remain relevant.

2.2.4 Statutory concurrence and consultation requirements

Consultation for the REF was completed as follows:

- As part of the REF indigenous heritage assessment was undertaken and included consultation with Mr Warren Phillips and Mr Maurice Gannon from Tweed Byron Local Aboriginal Land Council (LALC), and Mr James Roberts from Ngulingah LALC in collaboration with relevant NPWS staff. The modification is unlikely to change any of the conclusion of the heritage assessment.
- Consultation was undertaken with DPI Fisheries with regards to replacement of existing concrete blocks with stepping stones over Repentance Creek. The modification has no impacts on Repentance Creek and no further consultation is required.
- Notice of the intention to carry out the original Activity (together with a scope of works) was provided to Lismore Shire Council and Byron Shire Council by NPWS on 30 September 2019 (additional phone conversations were undertaken prior to this and a reminder was provided to both Councils on 17 October 2019). Consultation outlined the requirement for closure of Minyon Falls Road between Minyon Grass and Peates Mountain Road whilst works are being undertaken at Minyon Falls for a duration of 3-4 months. As noted, under Clause 13(2) of ISEPP, a public authority must give written notice of the Activity and take into consideration any response to the notice that is received from the council within 21 days after the notice is given. No responses were received from Lismore Shire Council or Byron Shire Council within 21 days after the notice was given. As a courtesy, both Councils will be notified of the modification once this modification is approved.

2.2.5 Statutory approvals affected by the modification

The modification does not change any of the statutory approvals associated with the current REF and the activity.

2.2.6 Economic viability of the modification

The modification will reduce costs for the car park construction due to reduced clearing impacts and the need for engagement of plant and personal over a greater length of time.

3. Statutory considerations

3.1 *National Parks & Wildlife Act 1974*

The modification and the resulting variation to the activity are permissible under the NPW Act, as follows:

- The modification is consistent with the Objects of the NPW Act (S.2A) as it will enhance opportunities for fostering public appreciation, understanding and enjoyment of nature and cultural heritage and their conservation.
- The modification is consistent with the Reserve management principles for national parks [s.30E(2)(e) *provision for sustainable visitor or tourist use and enjoyment that is compatible with the conservation of the national park's natural and cultural values*] and state conservation areas [s.30(2)(d) *provision for sustainable visitor or tourist use and enjoyment that is compatible with the conservation of the state conservation area's natural and cultural values and with uses permitted under other provisions of this Act in such areas*].
- The modification is consistent with the *Parks and Reserves of the Tweed Caldera Plan of Management* (2004) and the *Whian Whian State Conservation Area Plan of Management* (2010) and subsequent amendments. Specifically, Table 3 and Section 3.2 outcomes of the *Parks and Reserves of the Tweed Caldera Plan of Management* (as amended), provide for:
 - Carparks at designated day-use areas have improved traffic flow and parking patterns whilst protecting adjoining vegetation and maintaining existing carpark capacities.
 - Provide adequate car parking facilities at Minyon Falls day use area in Nightcap NP as part of a visitor facilities upgrade, subject to compliance with any applicable native title or ILUA procedures (see also *Whian Whian State Conservation Area Plan of Management*, NPWS 2010).

3.2 *Environmental Planning & Assessment Act 1979*

The modification and resulting variation to the activity will still comply with the EP&A Act as the Activity may be undertaken without development consent as it is on reserved land and is for a purpose authorised under the NPW Act (cl.65 Infrastructure SEPP). No other State Environmental Planning Policies (SEPPs) are relevant. The modification will reduce environmental impacts by retaining native vegetation. It is understood, this matter was raised by submissions on the Master Plan which the REF supported.

3.3 Other State or Commonwealth legislation considered

Section 3 of the determined REF addressed the following legislation:

- *Biodiversity Conservation Act 2016*
- *Rural Fires Act 1997*
- *Fisheries Management Act 1994*
- *Environment Protection and Biodiversity Conservation Act 1999* (Cwealth)

The modification will not affect the application of any of these statutory instruments.

4. Impact assessment

4.1 Natural values

4.1.1 Biodiversity

Modification

The extent of impacts has been reduced from that documented in the determined REF, where the total upgrade of Minyon Falls (inclusive of the car park and day use area) required removal of approximately 0.623 ha of PCT 697 *Blackbutt - Turpentine open forest of the foothills of the NSW North Coast Bioregion* and loss of 19 mature trees for the car park works. As noted, the loss of mature trees has now been reduced to five for the modification and there has been a consequent reduction of impacts on areas of PCT 697. The modification is unlikely to result in any additional adverse risks to biodiversity that have not already been considered.

Tests of Significance ('5-part tests' under s7.3 of the *Biodiversity Conservation Act 2016*) were completed for numerous threatened species in the determined REF based on a clearing threshold of 0.623 ha of PCT 697 and removal of seven hollow-bearing trees. The Tests of Significance concluded that no significant biodiversity impacts would occur as a result of the Activity. For the modification, clearing of PCT 697 has now been reduced and no loss of hollow-bearing trees is required for the car park. This is a considerably reduced impacts and hence unlikely to significantly impact habitat for threatened species.

Mitigation measures

The mitigation measures in Section 9 of the determined REF remain valid; one modification is prescribed:

- Two small Tree Ferns (*Cyathea leichhardtiana*) at the eastern end of Bay 4 and Bay 5 (refer Appendix A) are recommended for translocation and have been marked with orange flagging tape. The Tree Ferns should be relocated into adjacent undisturbed habitat and watered in at the time of translocation, and then watered daily for the next 4 consecutive days.

4.1.2 Environmental quality

Modification

The modification requires no substantial variation to the proposed works, location or methods compared to the approved proposal, other than the revised design for the car park. As noted, this modification is concerned with the car park only. Other modifications for the day-use area will be addressed in a separate addendum modification, where more substantial changes may occur.

There is little likelihood of any additional risks to air quality, ambient noise, water quality, visual amenity and pollution which were not already considered in the determined REF. No additional residual impacts apply.

Mitigation measures

The mitigation measures in Section 9 of the determined REF require no modification.

4.1.3 Geodiversity, landform, soils and hydrology

Modification

The modification requires no substantial variation to the proposed works, location or methods compared to the approved proposal which would affect geodiversity, landform, soils and hydrology, other than the revised design for the car park. As noted, this modification is concerned with the car park only. Other modifications for the day-use area will be addressed in a separate addendum modification, where more substantial changes may occur.

There is little likelihood of any additional risks (adverse or otherwise) to significant landscape features, soils and watercourses which were not already considered in the determined REF. No additional residual impacts apply.

Mitigation measures

The mitigation measures in Section 9 of the determined REF require no modification.

4.2 Cultural values

4.2.1 Aboriginal cultural heritage

Modification

The modification requires no substantial variation to the proposed works, location or methods compared to the approved proposal which would affect Aboriginal cultural heritage (as determined via specialist assessment), other than the revised design for the car park. As noted, this modification is concerned with the car park only. Other modifications for the day-use area will be addressed in a separate addendum modification, where more substantial changes may occur.

As previously noted, consultation with the local Aboriginal community was completed for the REF and no substantial issues were raised. As the modification is of a minor nature and a reduction in scale, no additional consultation is required.

Mitigation measures

The mitigation measures in Section 9 of the determined REF require no modification.

4.2.2 Historic heritage

Modification

The modification requires no substantial variation to the proposed works, location or methods compared to the approved proposal which would affect historic heritage, other than the revised design for the car park. As noted, this modification is concerned with the car park only. Other modifications for the day-use area will be addressed in a separate addendum modification, where more substantial changes may occur.

Mitigation measures

The mitigation measures in Section 9 of the determined REF require no modification.

4.3 Social values

Modification

The modification requires no substantial variation to the proposed works, location or methods compared to the approved proposal which may impact on property rights and values, amenity (due to noise, deposited dust, visual impacts, lights and traffic), reduction or degradation of primary resources (e.g. water access, use or quality), impacts on tourism or reduced benefits for the broader community. As noted, this modification is concerned with the car park only. Other modifications for the day-use area will be addressed in a separate addendum modification, where more substantial changes may occur.

Mitigation measures

The mitigation measures in Section 9 of the determined REF require no modification.

4.4 NPWS functions and operations

Modification

The proposed modification of the car park would not negatively affect any NPWS infrastructure or critical operations in the locality with respect to the current level of impact.

Mitigation measures

No specific mitigation measures are necessary to avoid disruption to NPWS operations or damage to internal infrastructure.

5. Conclusion

In conclusion, the proposed modification will achieve the same initial objective of improving car park facilities at Minyon Falls, but with substantially reduced loss of native vegetation. All mitigation measures prescribed in the determined REF remain valid, however no additional approvals, permits or licences are required, and no additional statutory consultation is necessary.

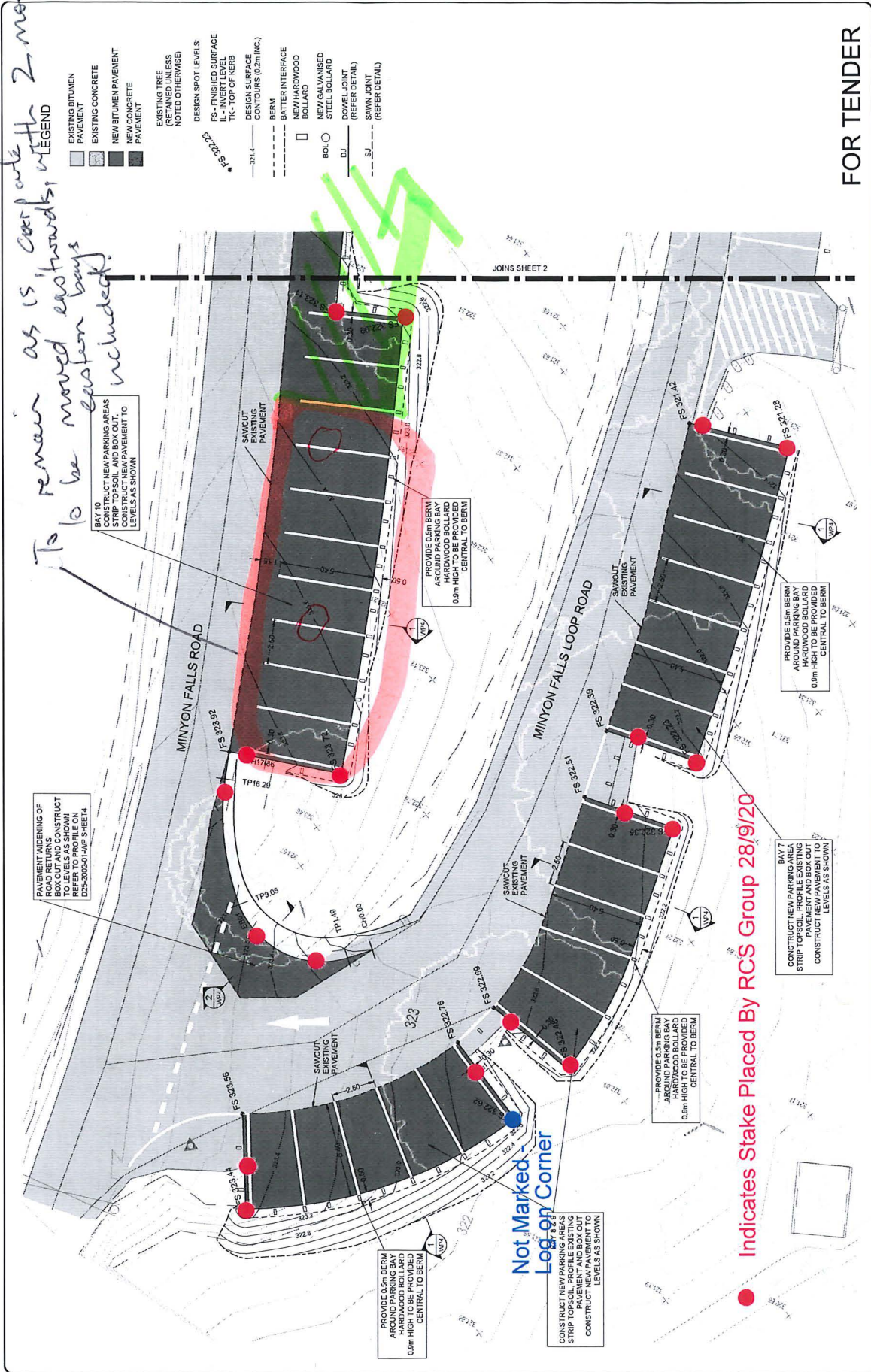
As a courtesy, liaison with Lismore and Byron Councils should be completed when a firm timeframe for the works are known so they can provide appropriate advice as required. At this time, adjacent private residents along Minyon Falls Road should also be advised when the works are commencing.

6. Revised technical reports, plans or designs

Attached as	Revised Document Title	Prepared by	Date
Appendix 1	Minyon Falls Lookout Car Park Upgrade Civil Works Drawings Minyon Falls Road, Whian Whian Drawing set D25-2002-01-T1	Willow + Sparrow	2/9/2020

APPENDIX A - Modification plan - civil works

To remain as is car park with 2 marked to be moved eastwards, with eastern bays included.



TITLE
CIVIL WORKS DETAIL PLAN
BAYS 7, 8, 9, AND 10
Drawing No. D25-2002-01-WP
Sheet 1 of 5
A1

CLIENT
NATIONAL PARKS AND WILDLIFE SERVICE
PROJECT
CAR PARK UPGRADE
MINYON FALLS LOOKOUT
MINYON FALLS ROAD, WHIAN WHIAN

Issue	Description	Date	By
C	ISSUED FOR TENDER	18/09/20	PJB
B	REVISED CLIENT COMMENTS	15/09/20	PJB
A	PRELIMINARY	29/02/20	PJB

Author AHD (m)

Checked	Survey
PJB	RCS
Date	2/9/2020

APPROVED - PRINCIPAL

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