

## Ecological Values

Source	Category/Type	Site verification and comments										
TVMS Vegetation Mapping (Update 2009)	Vegetation Type 208 – Tallowwood Open Forest	Mapped to the south of the site forming part of a heterogeneous tract of remnant vegetation and remaining as two isolated units.										
	Vegetation Type 202 – Grey Ironbark / White Mahogany/ Grey Gum Forest Complex	Mapped as forming part of a heterogeneous tract of remnant vegetation occurring mid-slope.										
	Vegetation Type 1004 – Camphor Laurel Dominant Closed to Open Forest	This unit is mapped adjacent to the northern boundary of the site associated with Bilambil Creek. The vegetation type has a closer affinity to Vegetation Type 102 – Sub-tropical / Warm Temperate Rainforest as verified during contemporary field evaluation during assessment of DA03/0445.03 and DA15/0664 (road upgrade works associated with water extraction). This community is representative of an Endangered Ecological Community listed under the <i>Biodiversity Conservation Act 2016</i>										
	N/A Not Assessed	Several units have been assigned Not Assessed. From previous site inspection those units supported regrowth consistent with Vegetation Type 1003 Acacia / Other Sclerophyll Regrowth Forest to Woodland										
Koala Habitat Category 2011 mapping	<table border="1"> <thead> <tr> <th>Vegetation Type</th> <th>Koala Habitat Category</th> </tr> </thead> <tbody> <tr> <td>VT 208 - Tallowwood Open Forest</td> <td>Secondary (B)</td> </tr> <tr> <td>VT - 202 – Grey Ironbark / White Mahogany/ Grey Gum Forest Complex</td> <td>Secondary (B)</td> </tr> <tr> <td>102 Sub-tropical / Warm Temperate Rainforest</td> <td>Other</td> </tr> <tr> <td>1003 Acacia / Other Sclerophyll Regrowth Forest to Woodland</td> <td>Other</td> </tr> </tbody> </table>	Vegetation Type	Koala Habitat Category	VT 208 - Tallowwood Open Forest	Secondary (B)	VT - 202 – Grey Ironbark / White Mahogany/ Grey Gum Forest Complex	Secondary (B)	102 Sub-tropical / Warm Temperate Rainforest	Other	1003 Acacia / Other Sclerophyll Regrowth Forest to Woodland	Other	<ul style="list-style-type: none"> <li>The site occurs outside the Tweed Coast Area under the <i>Tweed Coast Comprehensive Koala Plan of Management 2015</i></li> <li>Tweed Shire Council koala sightings database (using the Australian Living Atlas platform) includes 2 records within 1 km of the subject site (22/08/2017 and 06/09/2017). The vegetation where those records were made is not mapped as Preferred Koala Habitat under the TCKHS 2011 mapping. Based on site inspection the vegetation was determined to be representative of a Brush Box Open Forest (TVMS Code 207) classified as Secondary (B) Koala Habitat</li> </ul>
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Corridors UNE&LNE Fauna Corridors 2001	The site does not occur within a regional or sub-regional corridor	-																		
Threatened Flora and Fauna Mapping	<ul style="list-style-type: none"> <li>• 587 records of 43 threatened flora and fauna species were identified within a 5 km radius of the subject site using NSW Bionet database after 1980.</li> <li>• This included 74 records of 15 fauna species and 513 records of 28 flora species.</li> <li>• The most frequently recorded fauna species was Koala (<i>Phascolarctos cinereus</i>) (33 individual records).</li> <li>• The most frequently recorded flora species was <i>Lepiderema pulchella</i> (Fine-leaved Tuckeroo – 90 individual records) and <i>Macadamia tetraphylla</i> (Rough-shelled Bushnut – 76 individual records)</li> <li>• No threatened flora or fauna have been recorded on the subject site.</li> <li>• Those fauna species considered to have a moderate to high likelihood of occurrence on the subject site based on records and habitat suitability include:</li> </ul> <table border="1" data-bbox="450 874 1167 1315" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;">Scientific Name</th> <th style="width: 30%;">Common Name</th> <th style="width: 40%;">TSC Act Status</th> </tr> </thead> <tbody> <tr> <td>Eastern Freetail-bat</td> <td><i>Mormopterus norfolkensis</i></td> <td>Vulnerable</td> </tr> <tr> <td>Little Bentwing-bat</td> <td><i>Miniopterus australis</i></td> <td>Vulnerable</td> </tr> <tr> <td>Eastern Bentwing-bat</td> <td><i>Miniopterus schreibersii oceanensis</i></td> <td>Vulnerable</td> </tr> <tr> <td>Koala</td> <td><i>Phascolarctos cinereus</i></td> <td>Vulnerable</td> </tr> <tr> <td>Grey-headed Flying-fox</td> <td><i>Pteropus poliocephalus</i></td> <td>Vulnerable</td> </tr> </tbody> </table>	Scientific Name	Common Name	TSC Act Status	Eastern Freetail-bat	<i>Mormopterus norfolkensis</i>	Vulnerable	Little Bentwing-bat	<i>Miniopterus australis</i>	Vulnerable	Eastern Bentwing-bat	<i>Miniopterus schreibersii oceanensis</i>	Vulnerable	Koala	<i>Phascolarctos cinereus</i>	Vulnerable	Grey-headed Flying-fox	<i>Pteropus poliocephalus</i>	Vulnerable	<ul style="list-style-type: none"> <li>• Listed threatened flora species <i>Lepiderema pulchella</i>, <i>Macadamia tetraphylla</i> and <i>Syzygium moorei</i> have been recorded within the road reserve immediately to the north of the subject site</li> <li>• Tweed Shire Council koala sightings database (using the Australian Living Atlas platform) includes 2 records within 1 km of the subject site (22/08/2017 and 06/09/2017)</li> </ul>
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<b>Drainage Lines / Stream Order /</b>	<ul style="list-style-type: none"> <li>Bilambil Creek crown riverine corridor forms the northern boundary of the site and bisects the title tied Lot.</li> <li>Two first order waterways forming a second order waterway is mapped traversing the site (1:25000). The waterway/s occur to the south of the site and drain to Bilambil Creek.</li> </ul>	<ul style="list-style-type: none"> <li>Limited riparian vegetation remains along the section of Bilambil Creek immediately adjacent to the site. Lowland rainforest occurs on the northern bank of Bilambil Creek yet this occurs within the Urliup Road reserve and/or crown waterway corridor.</li> <li>A single mature remnant <i>Ficus sp.</i> remains onsite associated with Bilambil Creek.</li> </ul>

## Potential Impact Analysis

Element	Particulars	NRM Comment
Proximity of the helipad to a waterway or vegetation	<ul style="list-style-type: none"> <li>The proposed helipad is positioned a minimum of 85 m from any waterway either occurring on or adjacent the subject site.</li> <li>The helipad has been positioned in an area dominated by pasture grass devoid of any woody vegetation.</li> <li>The closest remnant unit occurs approximately 125 m north of the helipad associated with Bilambil Creek.</li> <li>To the south of the helipad a separation distance of approximately 230 m is provided between the helipad and mapped remnant vegetation</li> </ul>	<ul style="list-style-type: none"> <li>No native vegetation is required to be removed to facilitate establishment of the proposed helipad</li> <li>The position of the helipad is setback an adequate distance from remnant vegetation and waterways. It would not be expected that the development would result in adverse impact on those values during construction and maintenance of the helipad.</li> <li>It is expected that hazards (handling of fuels and oils) associated with the operation and maintenance of the aircraft would be appropriately managed in accordance with aviation legislation and NSW Work Safe storage requirements.</li> </ul>
Adverse impact on waterways and vegetation to facilitate use of the proposed flightpath	<ul style="list-style-type: none"> <li>The flight path below 800 m shown on Figure 1 occurs over maintained paddock devoid of woody vegetation</li> <li>The flight path avoids alignment over Bilambil Creek at low altitude (below 800 m)</li> </ul>	<ul style="list-style-type: none"> <li>No native vegetation would require removal to enable approach and take-off of the aircraft</li> <li>It is expected that hazards (handling of fuels and oils) associated with the operation of the aircraft would be appropriately managed in accordance with aviation legislation</li> <li>It would not be expected that the operation and maintenance of the flight path would result in adverse impact on the integrity of native vegetation or waterway health</li> </ul>

Element	Particulars	NRM Comment
Effect of the proposed use on fauna behaviour	<ul style="list-style-type: none"> <li>• The flight path is not aligned to directly fly over moderate to high value threatened fauna habitat (being native units of remnant vegetation and Bilambil Creek) at an elevation of less than 800m.</li> <li>• Mapped Preferred Koala Habitat occurs approximately 110 m from the flight path. It is noted that: <ul style="list-style-type: none"> <li>○ The habitat closest to the flight path occurs as a series of smaller isolated units (approximately 1000m<sup>2</sup>)</li> <li>○ Those units occur close to the western boundary of the site where the aircraft it to reach a minimum 800 m in height extending the vertical separation distance between the aircraft and the habitat</li> <li>○ More contiguous mapped Preferred Koala Habitat occurs approximately 230 m to the south of the flight path onsite</li> </ul> </li> <li>• The closest Koala record occurs within approximately 190 m of the flight path and helipad.</li> <li>• It is understood that the Noise Impact Assessment Report prepared by Craig Hill Acoustics Ref: 151117/1 and dated 15 November 2017 indicates that noise generated by the proposed development does not exceed the noise limit required in the criteria at nearby residences. The closest residence is within 221 m of the site, a similar distance to contiguous Preferred Koala Habitat to the south.</li> </ul>	<p>Based on the following reasons, it is considered unlikely that the proposed use of an aircraft undertaken in accordance with appropriate operational protocol would result in significant impact on threatened fauna species (of moderate to high likelihood of occurrence) or their habitats:</p> <ul style="list-style-type: none"> <li>• The flight path avoids the flyover of moderate-high value potential threatened fauna habitat at low altitude (less than 800m)</li> <li>• Adequate separation has been provided from moderate to high value potential threatened fauna habitat to limit any indirect impact from noise and/or lighting (potentially in winter months) associated with the proposed development</li> <li>• It is understood that a recommendation for flight times to be altered to 7:00am to 6:30pm (Mondays to Saturdays) and 8:00am to 6:30 pm (Sunday) has been made by the Environmental Health Unit. This is supported by NRM to limit the operation to times outside the high activity period of those threatened fauna species considered to have a moderate to high likelihood of occurrence on site</li> <li>• The operation is proposed to be limited to 7 trips per week. At this frequency it is not considered that breeding, roosting or threatened fauna movement behaviour would be interrupted or adversely affected by the operation</li> </ul>