

10 May 2019

Health Infrastructure
C/- Colliers International
Level 30 Grosvenor Place
225 George Street
SYDNEY NSW 2000



Attention: Ms Bonnie Custance

Dear Bonnie

**Re: Response to Biodiversity Development Assessment Report
comments from OEH for Wyong Hospital Expansion Planning
14-15, 664 Pacific Highway, Hamlyn Terrace**

I refer to correspondence received from OEH (16 April 2019) with respect to the Biodiversity Development Assessment Report (BDAR), our ref# 18COLL02BDAR for the proposed Wyong Hospital Expansion.

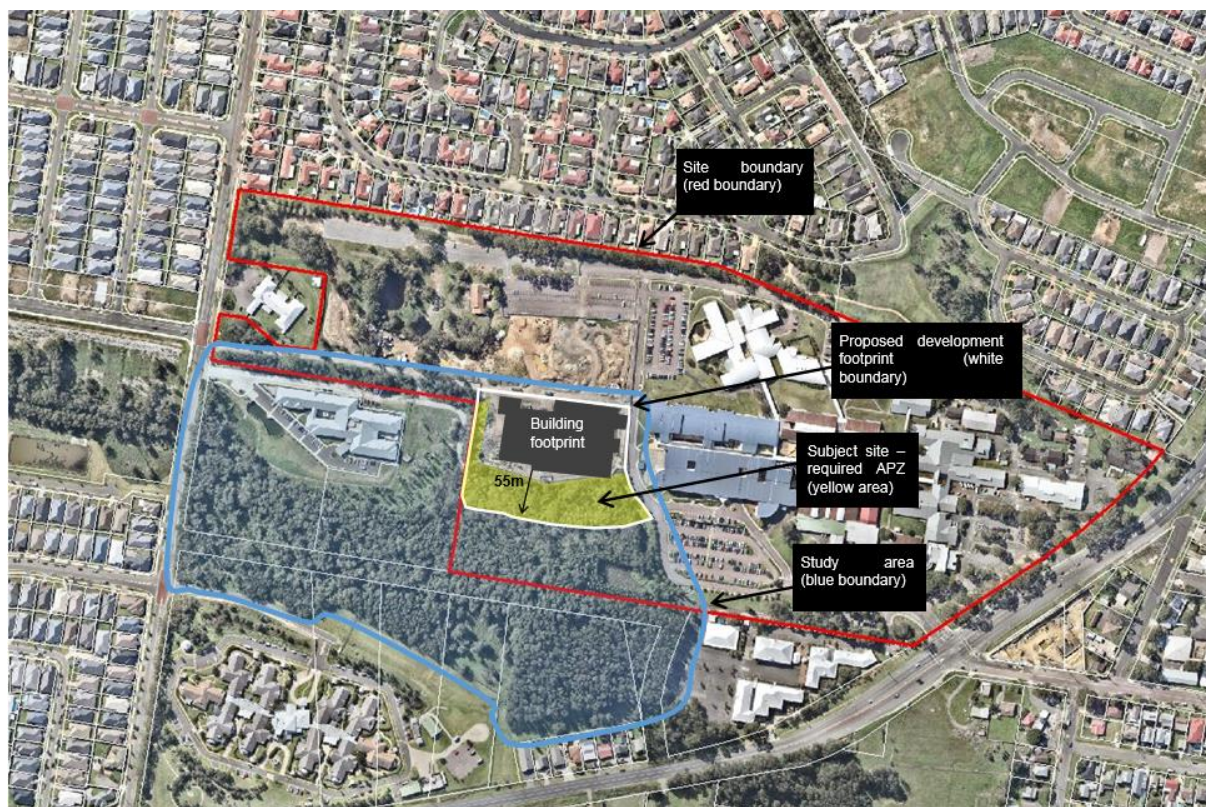


Figure 1 – Site boundary (red) and study area (blue)

Wyong Hospital Expansion

OEH's Recommendations

Biodiversity

OEH has reviewed the document titled '*Biodiversity Development Assessment Report – Wyong Hospital Redevelopment State Significant Development Application No. 9536*' (authored by Travers Bushfire & Ecology) and dated November 2018 with respect to biodiversity matters.

OEH's Detailed Comments	Travers bushfire & ecology response
1. <i>Threatened flora targeted surveys have not been undertaken</i> Section 2.5 (survey limitations) of the Biodiversity Development Assessment Report (BDAR) states '<i>Threatened flora survey was limited to opportunistic searches during the random meander transect and did not involve detailed targeted searches</i>'. This is not in accordance with the Biodiversity Assessment Method (BAM), as random meanders are not considered targeted searches. Random meanders may result in not all potential habitat areas being surveyed and therefore individuals of threatened flora species could be missed during surveys. OEH's requires (as per OEH 2016) spaced parallel transects across all suitable habitat, with the spacing of the parallel transects determined by the species growth habitat. The BAM requires targeted surveys (not opportunistic searches) to be undertaken for all candidate species, unless the species is assumed present or an expert report is provided. These surveys are to be conducted when a species is detectable, such as flowering or fruiting, given that flowering material or fruits are often required for positive identification. OEH recommends that targeted surveys are to be undertaken for all candidate species. These surveys are to be undertaken, in accordance with OEH '<i>NSW Guide to Surveying Threatened Plants</i>' (OEH 2016) and at their appropriate seasonal survey times as specified in the Threatened Biodiversity Data Collection. Additional seasonal information is provided below for each species. Any variation in the survey time from that identified by the Threatened Biodiversity Data Collection should be justified in the BDAR. • Bynoe's wattle (<i>Acacia bynoeana</i>) – flowering mainly in the summer (Harden 2002) from September until March and the fruit matures November to January with the peak fruit maturation occurring in November (Driscoll 2006)	The BDAR has been updated to show the approximate location of belt transects in September 2018. The limitations that describe the following, "<i>Threatened flora survey was limited to opportunistic searches during the random meander transect and did not involve detailed targeted searches.</i>" However, we confirm that <i>Travers bushfire & ecology</i> undertook belt transects during the botanical survey and were conducted over one (1) day. Additional floristic survey has been undertaken in the past by Abel Ecology and RPS. The survey data is less than 5 years old and <i>Travers bushfire & ecology</i> believes this is informative and valid survey for this BDAR. OEH advise that all species that are not surveyed during their respective survey period should be considered as present unless an expert report is supplied. For the species listed by OEH we confirm: • <i>Acacia bynoeana</i> – Survey is recommended to be conducted between the months of September and March, however, not necessary as <i>Acacia bynoeana</i> can be identified without flowers. Survey was conducted in September, as such was surveyed in the recommended period.

• Charmhaven apple (<i>Angophora inopina</i>) – flowers principally between mid-December and mid-January, and also sporadically at other times outside of this period (Bell 2001a); <i>Angophora inopina</i> has been confused and probably wrongly determined in many cases as <i>Angophora floribunda</i>, principally due to both species possessing rough, fibrous bark, and appearing superficially similar in flower and fruit morphology (Bell 2001a), vegetatively it may be distinguished by its broad, coriaceous leaves with short, broad petioles, whilst its fruit tends to be larger and cup-shaped to pyriform and not as prominently ribbed (Bell 2001a) • Thick-leaf star-hair (<i>Astrotricha crassifolia</i>) – flowers spring (Harden 1992), generally September to December, with non-winged fruits appearing November to December (sometimes later) (Benson & McDougall 1993) • Netted bottle brush (<i>Callistemon Linearifolius</i>) – flowers spring to summer (Harden 2002) with Benson & McDougall (1998) specifically noting October to November in the Greater Sydney Region. • Leafless tongue orchid (<i>Cryptostylis hunteriana</i>) – in NSW flower occurs from December to February (Nicholls 1938, Jones 1993, Harden 1993) through Bell (2001b) states that the Central Coast populations (i.e. Freeman's Waterhole, Vales Point and Wyee) flower in November. • Rough doubletail (<i>Diuris praecox</i>) – has a short flowering season, restricted to August to September, and usually no more than 2 weeks (Benson & McDougall 2005), but Espallargas (2005) has recorded 3-4 weeks on Tomaree Peninsular; in the Newcastle area tend to flower from last week in July to early August (first two weeks) • Camfield's stringybark (<i>Eucalyptus camfieldii</i>) – flowering period November to December (Booker & Kleinig 1999)	• <i>Angophora inopina</i> – Survey is recommended to be conducted between the months of January to December (all year). Survey was conducted in September, as such was surveyed in the respective period. Experienced botanists can accurately identify outside of the preferred period. • <i>Astrotricha crassifolia</i> - Survey is recommended to be conducted between the months of January to December (all year). Survey was conducted in September, as such was surveyed in the recommended period. However, this species can be accurately identified outside of this season by experienced botanists. • <i>Callistemon linearifolius</i> – Survey is recommended to be conducted between the months of September through to March. Survey was conducted in September, as such was surveyed in the recommended period. • <i>Cryptostylis hunteriana</i> - A survey needs to be conducted between the months of November to January, otherwise assumed present. As such, survey has not been conducted in the recommended period and this species has been assumed present. • <i>Diuris praecox</i> - Survey is recommended to be conducted between the months of July to September. Survey was conducted in September, as such was surveyed in the required period. • <i>Eucalyptus camfieldii</i> - Survey is recommended to be conducted between the months of January to December (all year). Survey was conducted in September, as such was surveyed in the respective period. This species can be easily identified outside the recommended period.
--	---

• Variable midge orchid (<i>Genoplesium insigne</i> [listed as <i>Corunastylis insignis</i> under the EPBC Act]) – Benson & McDougall (2005) state flowering occurs between August and November. • Small-flower grevillea (<i>Grevillea parviflora</i> subsp. <i>Parviflora</i>) – flowers from July to December (Benson & McDougall 2000, Makinson 2000, Harden 2002, Farley 2004); in the Lower Hunter, Lake Macquarie / Newcastle area flowering normally occurs annually between late September and early December (Falding 2013). • Biconvex paperbark (<i>Melaleuca biconvexa</i>) – flowering occurs over just 3-4 weeks in September and October (OEH – threatened species profile database, accessed October 2010), through Harden (2002) notes generally summer. • Tall knot-weed (<i>Persicaria askania</i>) – flowers January to February (February to April for fruiting) (Benson & McDougall 1999); inflorescence required to separate species in genus (i.e. small clusters / individual flowers cf. dense spikes, elongated [as in <i>Persicaria elatior</i>] or sub-globose spike-like racemes [Harden 2001]). • Tranquillity mintbush (<i>Prostanthera askania</i>) – flowering usually occurs in spring, however, it is known that the timing of both flowering and fruiting can be variable (OEH – threatened species profile database, accessed September 2015; Conn (1997) states flowering (June-) September-December. • Heath Wrinklewort (<i>Rutidosis heterogama</i>) – Harden (1993) notes that it flowers chiefly in autumn, through Bell & Driscoll (2004) note flowering can occur earlier from November to December (in the Lower Hunter and Central coast); while DECC (2009) recorded it flowering in late March on coastal headlands in the Newcastle area. • A Black-eyed susan (<i>Tetradthea glandulosa</i>) – flowers mostly July to November (Harden 1992). • Black-eyed susan (<i>Tetradthea juncea</i>) flowers predominantly November to February, though known to flower early from June onwards (Harden 1992, Driscoll 2003); noted	• <i>Genoplesium insigne</i> - Survey is recommended to be conducted between the months of September to November. Survey was conducted in September, as such was surveyed in the recommended period • <i>Grevillea parviflora</i> subsp. <i>parviflora</i> - Survey is recommended to be conducted between the months of January to December (all year). Survey was conducted in September, as such was surveyed in the recommended period. • <i>Melaleuca biconvexa</i> - Survey is recommended to be conducted between the months of January to December. Survey was conducted in September, as such was surveyed in the recommended period. • <i>Persicaria elatior</i> - A survey needs to be conducted between the months of December to May. Otherwise assumed present. As such, survey has not been conducted in the recommended period and this species has been assumed present. • <i>Prostanthera askania</i> - Survey is recommended to be conducted between the months of September to December. Survey was conducted in September, as such was surveyed in the recommended period • <i>Rutidosis heterogama</i> - Survey is recommended to be conducted between the months of January to December (all year). Survey was conducted in September, as such was surveyed in the recommended period • <i>Tetradthea glandulosa</i> - Survey is recommended to be conducted between the months of July to November. Survey was conducted in September, as such was surveyed in the recommended period • <i>Tetradthea juncea</i> - Survey is recommended to be conducted between the months of July to December. Survey was conducted in September, as such
--	---

infrequently all year under suitable conditions, recorded in late autumn to winter in some sub-coastal populations (e.g. Awabakal NR). If surveys are not undertaken, an expert report must be prepared in accordance with Section 6.5.2 of the BAM guidelines (OEH 2017) or the species must be assumed to be present. In determining the suitability of an expert, OEH takes the following into account: • The expert's qualifications such as relevant degrees, post graduate qualifications • Their history of experience in the ecological research and survey method, for the relevant species. • A resume detailing projects pertaining to the survey of the relevant species (including the locations and dates of the work) over the previous 10 years • Relevant peer reviewed publications • Evidence that the person is a well-known authority on the relevant species to which the survey relates. If candidate species are identified, the BAM Credit Calculator will need to be re-run and the BDAR amended. <u>Recommendation 1</u> Targeted surveys should be undertaken for candidate flora species in accordance with OEH 'NSW Guide to Surveying Threatened Plants' OEH 2016 and at their appropriate seasonal survey times. If surveys are not undertaken, an expert report should be prepared in accordance with Section 6.5.2 of the BAM guidelines (OEH 2017) or the species should be assumed to be present.	was surveyed in the recommended period Therefore, only two species - <i>Persicaria elatior</i> and <i>Cryptostylis</i>; either require target survey, a specialist report or assumed present for the purposes of credit determination. Surveying for <i>Persicaria elatior</i> and <i>Cryptostylis hunteriana</i> needs to be surveyed at particular periods of the year. <i>Persicaria elatior</i> surveying needs to occur between the months of December to May and <i>Cryptostylis hunteriana</i> surveying needs to occur between the months of November to January. <i>Persicaria elatior</i> and <i>Cryptostylis hunteriana</i> have been added to the calculator to determine the species credit requirements.
2. <i>Little bent-wing bat 'species credits' should be removed from the assessment</i> The assessor has incorrectly applied the criteria for generating 'species credits' under the BAM. The assessor has added Little Bent-wing bat, as 'species credits' on the basis they were either recorded during previous field studies or their habitat (for which a 'species credit' is based on) has been incorrectly identified for the site. 'Species credit' species are identified in OEH's Threatened Species Profile Database on the basis of specific breeding and foraging habitat requirements. They are not based on the presence of a species during a field survey. Little Bent-wing Bats are listed as a 'species credit' where breeding habitat is present, such as caves, tunnels, mine, culvert or other structure known or suspected to be used for breeding. These features do not occur on site and as such any species credits generated on the BDAR and credit calculation for Little Bent-wing Bats should be removed. OEH concurs with BDAR that <i>Southern Myotis</i> and <i>Eucalyptus camfieldii</i> are species that generate 'species credits'.	Noted and agreed. Breeding habitat of Little Bentwing-bat not impacted therefore has been removed as requiring species credits.

The BAM Credit Calculator will be to be re-run and the BDAR amended <u>Recommendation 2</u> OEH recommends the removal of Little Bent-wing Bat entered as species credit species from the biodiversity assessment report and the credit calculator.	
3. <i>The BDAR needs to provide adequate justification why the pale-headed snake should not generate species credits</i> Table 6.5 (Species Credit Summary) of the BDAR has a note (Note 1) appended to the pale-headed snake which states: <i>'Pale-headed Snake is not likely to have suitable habitat. Therefore, species credit requirements for Pale-headed Snake may be discounted in the final report'</i>. Apart from this broad statement, the BDAR does not assess the species. The OEH Threatened Species Profile Database states that the pale-headed snake is a highly cryptic species, which is found mainly in dry eucalypt forests and woodlands, cypress forest and occasionally in rainforest or moist eucalypt forest, where it shelters during the day between loose bark and tree-trunks, or in hollow trunks and limbs of dead trees. It can spend weeks at a time hidden in tree hollows. OEH considers suitable vegetated habitat is present on the subject site given the recorded Plant community Types and the presence of tree hollows (as transcribed on the data sheets). OEH recommend that the BDAR assess whether the proposal will impact on the pale-headed snake and provided suitable justification as to why suitable habitat is not present. If suitable habitat is present appropriate targeted searches may be required. If the species of not considered present, BAM Credit Calculator will need to be re-run and the BDAR amended. <u>Recommendation 3</u> OEH recommends that the BDAR assess whether the proposal will impact on the pale-headed snake and provided suitable justification if it is determined that there is no suitable habitat present.	BDAR has been updated to justify reason for excluding Pale-headed Snake. OEH require survey to be conducted between November and March, with our survey being undertaken in September, and the RPS report also stating survey in August and September. The Pale-headed Snake is known to various dry forest and woodland types however the species has never been recorded in coastal areas east of the M1 Motorway between Sydney and Newcastle, hence the species is not likely to occur. RPS advised also that the study area does not support preferred habitat for the species and is unlikely to be impacted by the proposal. No test of significance was undertaken for the species given lack of suitable habitat. This species has not been recorded in close proximity to the site, or in recent times.
4. <i>Table 6.2 (Requirement for species credits) be corrected</i> Table 6.2 (Requirement for species credits) in the BDAR incorrectly stated the area for PCT 1728 as 1.1 hectares. Table 3.2 (PCT's) states that 0.106 hectares of PCT 1728 <i>'Swamp Oak – Prickly Paperbark – Tall Sedge swamp forest on coastal lowlands of the Central Coast and Lower North Coast'</i> will be impacted upon. OEH recommends that Table 6.2 be amended with the correct area of 0.1 hectare. The BDAR will need to be amended.	This was a typographic area and has been amended to 0.1ha.

<u>Recommendation 4</u> Table 6.2 (Requirement for species credits) be corrected with the correct are of 0.1 hectares for PCT 1728 'Swamp Oak – Prickly Paperbark – Tall Sedge swamp forest on coastal lowlands of the Central Coast and Lower North Coast'.	
--	--

The BDAR and calculations have been updated in accordance with the above issues as of 7 May 2019.

If you require any further information please do not hesitate to contact the undersigned on (02) 4340 5331 or at info@traverseecology.com.au

Yours faithfully



Michael Sheather-Reid
Managing Director - **Travers bushfire & ecology**
BAM Accredited Assessor (BAAS17085)

Travers bushfire & ecology employs
Bushfire Planning and Design (BPAD) Accredited
Practitioners

Travers bushfire & ecology employs
Accredited BioBanking and Biodiversity Assessors