

Application for a



Office of
Environment
& Heritage

Section 91 Licence

under the *Threatened Species Conservation Act 1995* to harm or pick a threatened species, population or ecological community* or damage habitat.

1. Applicant's Name ^: <i>(if additional persons require authorisation by this licence, please attach details of names and addresses)</i>	Ruth Stuart	
2. Australian Business Number (ABN):	NA	
3. Organisation name and position of applicant ^: <i>(if applicable)</i>	Landowner	
4. Postal address ^:	██████████ ██████████ East Tamworth 2340	Telephone ^: ██████████
5. Location of the action <i>(including grid reference and local government area and delineated on a map).</i>	Tamworth Regional LGA ██████████ ██████████ ██████████ See Maps 1-3	
6. Full description of the action and its purpose <i>(e.g. environmental)</i>	This proposal aims to reduce the continuing conflicts between Grey-headed Flying-foxes (GHFF) and human residents whilst recognising	

* A threatened species, population or ecological community means a species, population or ecological community identified in Schedule 1, 1A or Schedule 2 of the *Threatened Species Conservation Act 1995*.

^The personal details of all Section 91 licences will be displayed in the register of Section 91 licences required under Section 104 of the *Threatened Species Conservation Act 1995*. See notes.

assessment,
development, etc.)

that the large population will continue to persist in the area. The bat colony will be nudged away from trees encircling the proponent's house, with the objective being to maintain a buffer on the property where bats do not consistently roost.

The area being targeted is on the edge of the core flying-fox camp, and is used by a relatively low density of bats compared to the core area of the camp. The action will create a narrow buffer of sonic disturbance on the western boundary of the camp in order to discourage flying-foxes from roosting in the immediate proximity of the proponent's house. The purpose is to reduce the level of odour, noise and faecal deposits so as to ameliorate the continuous stress being placed on the proponent.

The buffer created may also discourage the regular occupation of several old River Red Gums west of the house. These trees were defoliated during the last camp occupation in 2012 and have not fully recovered, with their canopies currently about half the leaf density that was present prior to use as a roost site. The flying-foxes are again inhabiting these trees and it is possible that another long period of intensive roost occupancy will cause one or more of these trees to die. In addition, wildlife that typically occupy the house garden which have been displaced may return.

The strategy is to use intermittent noise under the roost sites located near the house to convince the flying-foxes to use other roosts in the core area of their camp.

Disturbance timing will be targeted when bats are moving naturally at dawn and dusk. Follow-up noise will be used intermittently throughout the day at a maximum of 9 minutes per 1 hour (see below) as a deterrent to re-establishing the roosts. The taped noises to be applied are a percussive compilation and bat distress calls developed and tested at the Royal Botanic Gardens Melbourne and Royal Botanic Gardens Sydney.

Because the proponent is unable to walk without severe pain, the sonic disturbance will be conducted at least in part by automated speaker systems. These will be placed at strategic points on the property underneath potential roost trees, and will be optimally re-allocated to new locations on the property depending on the response of the bats.

The volume of all noise will be regulated by continuous modifications so as to achieve a localised effect on the flying-foxes without disturbing the larger camp. This effect will be measured in four ways:

- 1) How far do the relocated bats fly before landing again to roost?
- 2) How long does it take before relocated bats land? [Observed response to human presence under trees on the camp periphery suggests that very short distance shifts are to be expected with animals resettling quickly nearby.]
- 3) Do bats outside the targeted area fly from their roosts in response to the sound?
- 4) Do bats outside the targeted area awaken and become agitated when the sound is played.

	<p>Manually created noise (<i>e.g.</i> hand-clanging of metal tools) as practiced at other sites where nudging of bat colonies has been attempted (<i>e.g.</i> Albury Botanic Gardens) will be conducted on an intermittent basis within the property boundaries. The intent is to associate the noise with a human presence and thus further discourage flying-foxes from roosting near the house.</p> <p>All actions proposed here will be initiated prior to the birthing season as documented at this site in 2012 (births first seen in late September). OEH staff experienced with flying-foxes will be monitoring the camp at weekly intervals during 2014 in order to confirm the timing of births. If sonic disturbance is noted by OEH staff as causing insignificant agitation to the core camp it may be continued on the targeted property intermittently during the reproductive period at a carefully modulated level.</p>
<p>7. Details of the area to be affected by the action (<i>in hectares</i>).</p>	<p>The target area for the action comprises Lot A DP 161615 which is 0.15 ha in total. About 1/3 of this area is vegetated with trees and shrubs which provide potential roost sites.</p> <p>The noise created may be heard by one set of neighbours in close proximity who have given their consent and encouragement to this action (Brennan household 30 m from proposed noise source). Depending on the volume required to successfully achieve the objective, the cabin residents at the caravan park across the Peel River (70 m) may hear low level sounds. The park managers have been advised of the project and understand that volumes will be decreased if their patrons complain. The caravan park also provides for camping 30 m directly across the river from the target property and those choosing to use this area will be advised of the purpose of the noise.</p> <p>Using a two-dimensional areal estimate of roosting habitat in the target area and that in the currently occupied core camp site, the disturbance will affect less than an eighth of the overall roost area (12%). Based on the larger area of roost occupancy demonstrated in 2012, the target area represents about 4% of the potential area considered by the flying-foxes as suitable for use in the area. Given that bat densities are typically lower on the periphery of this camp, the percentage of animals affected will be much less than these values.</p>
<p>8. Duration and timing of the action (<i>including staging, if any</i>).</p>	<p>The action will be initiated upon application approval, with three Stages. Prior to August, Stage 1 will entail relatively intensive sonic disturbance to create an initial learning response by the bats. Disturbance will focus on dawn and dusk, with hourly noise on the property during daylight. A maximum of 9 minutes of sonic disturbance will be played per hour per automated speaker unit as a single session or at 20 minute intervals with 3 minutes maximum sound duration. Three speaker units will be distributed on the proponent's property targeted under specific roosts, and set up to play simultaneously (some asynchrony may gradually occur and units will be re-adjusted). If volume is decreased to a very localised level (<i>i.e.</i> influence of 8 m or less) a maximum of 6 speaker units may be deployed on the property.</p> <p>During August and early September, the volume and frequency of</p>

	<p>sonic disturbance will be reduced in Stage 2 to ensure that only very localised effects occur on the property, which will be carefully assessed. A maximum of 6 minutes of sonic disturbance will be played per hour, either as a single session once per hour or at 30 minute intervals with 3 minutes sound duration.</p> <p>In Stage 3, a reassessment of the success of the actions will be made in light of the sensitive reproductive period from late Sept to February. Any sonic disturbance during this time will be limited to short-durations with very localised actions targeted at specific roost sites being re-occupied on the property. Volume will be carefully assessed so as to not affect bats distant from trees on the property. A maximum of 4 minutes of sonic disturbance will be played per hour as a single session.</p>			
<p>9. Is the action to occur on land declared as critical habitat? (tick appropriate box)</p>	<p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>			
<p>10. Threatened species, populations or ecological communities to be harmed or picked.</p> <p>[the Little Red Flying-fox <i>Pteropus scapulatus</i>, a protected species, has been recorded as occupying portions of the core camp area 100 m from the proposed action for short intervals over the past year. This species has never been seen roosting in the proposed target area]</p>	<p><u>Scientific name</u></p> <p><i>Pteropus poliocephalus</i></p>	<p><u>Common name</u></p> <p>Grey-headed Flying-fox</p>	<p><u>Conservation status</u></p> <p>Vulnerable</p>	<p><u>Details of no. of individual animals,</u></p> <p>~200</p> <p>(0 – 400 intermittent occupancy)</p>
<p>11. Species impact: (please tick appropriate box)</p> <p>a) For action proposed on land declared as critical habitat;</p> <p>or</p> <p>b) For action proposed on land <u>not</u> declared as critical habitat.</p>	<p>an SIS is attached <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Items 12 to 25 have been addressed <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>			
<p>* Critical habitat means habitat declared as critical habitat under Part 3 of the <i>Threatened Species Conservation Act 1995</i>.</p>				

N.B; Provision of a species impact statement is a statutory requirement of a licence application if the action is proposed on critical habitat.
 The provision of information addressing items 12 to 17 is a statutory requirement of a licence application if the action proposed is not on land that is critical habitat. Information addressing any of the questions below must be attached to the application.

<p>12. Describe the type and condition of habitats in and adjacent to the land to be affected by the action.</p>	<p>The property being targeted is a small block (0.15 ha) dominated by exotic garden plants. Black Locust <i>Robinia pseudoacacia</i> is the main roost tree used by flying-foxes, with secondary use of Broad-leaf Privet <i>Ligustrum lucidum</i>, other exotics and three non-indigenous eucalypts. Adjacent land is mostly cleared or comprises lightly vegetated urban blocks. The core flying-fox camp uses a mixture of native and exotic trees and shrubs along the Peel River, sometimes expanding to use nearby trees, including an orchard of mature Paulownia on the Brennan property.</p>
<p>13. Provide details of any known records of a threatened species in the same or similar known habitats in the locality (include reference sources).</p>	<p>Grey-headed Flying-foxes occupied the Peel River riparian corridor in 2000 for the first time in the recent memory of neighbours, with a small camp of several hundred animals staying for a few months. There are mixed reports of occupancy during the following decade, but general agreement that few or no flying-foxes were present at the site until 2012. In winter 2012 a camp formed which eventually numbered over 40,000 GHFF. In 2014 the camp started to expand during autumn and in July 2014 numbers over 14,000 individuals.</p> <p>The NSW Wildlife Atlas has no records of threatened species within 1 km of the locality, which is now a predominantly cleared area. No threatened species have been recorded amongst the birds observed in the proponent's garden over recent years. Occupancy of the property by GHFF has driven most birds from the area.</p>
<p>14. Provide details of any known or potential habitat for a threatened species on the land to be affected by the action (include reference sources).</p>	<p>The flying-fox camp intermittently expands into roost sites on exotic garden plants surrounding the house, in particular Black Locust. Three mature non-indigenous eucalyptus trees exist near the house, which sometimes serve as roost sites. Large indigenous River Red Gum and Kurrajong exist northwest of the target locality which have been used in the past as a roost site, being occupied intensively enough that they were defoliated. The eucalypts would potentially provide nectar for threatened species if not defoliated.</p>
<p>15. Provide details of the amount of such habitat to be affected by the action proposed in relation to the known distribution of the species and its habitat in the locality.</p>	<p>Approximately 30 trees or sites (e.g. a patch of tall bamboo) on the target area are potentially usable as roost sites in the area being affected by this action.</p> <p>The GHFF population that occupies Tamworth is known – based on radio-telemetry results – to move widely across NSW. Thus, flying-foxes in this local camp comprise a portion of the GHFF interacting meta-population extending from Bundaberg to Melbourne.</p>
<p>16. Provide an assessment of the likely nature and intensity of the effect of the action on the lifecycle and habitat of the species.</p>	<p>Based on observations made during 2012 when over 40,000 GHFF occupied the camp, the creation of a buffer will deny roost sites to up to 400 bats.</p> <p>The action may limit extension of the camp to the west from its core area of occupancy, and potentially discourage flying-foxes from expanding their camp to occupy the tall red gums and Kurrajongs.</p> <p>The action will be initiated prior to the birthing period, and so is</p>

	<p>unlikely to impede the lifecycle of bats in the camp significantly if the response is as anticipated. It will relocate the bats occupying the buffer area to other portions of the core camp rather than displace them from the River corridor.</p> <p>The noise created may disturb the remainder of the camp in proximity to the buffer. However, to provide perspective on that effect, in September 2012 an extremely loud Council woodchipper operating for an hour at midday less than 100 m from the camp caused only one-fifth of the bats to fly, and these simply circled before landing again within the core camp.</p>
<p>17. Provide details of possible measures to avoid or ameliorate the effect of the action.</p>	<p>Nudging of flying-foxes with noise will be conducted at the lowest level and frequency that proves successful in retaining a buffer around the proponent's house. Initially this will involve the presence of humans in an effort to concurrently use visual cues to discourage bats from roosting in the buffer. Thereafter, automated noise will be the primary disturbance technique, which will be carefully monitored and reduced to minimal levels and frequency that achieves the aim. Monitoring will be conducted by the proponent on a daily basis.</p> <p>Sonic disturbance will not be conducted when the broader camp is potentially under heat stress exceeding 38°C.</p> <p>An experienced OEH ecologist will monitor the progress of this action on a weekly basis and document results. OEH may cease operations if they are judged to be causing excessive stress to the flying-foxes. The trigger points will be observation of consistent flight of bats well outside the buffer area (>20 m) in response to the noise or young bats found on the ground in the buffer area at a more than natural rate (estimated at >2/week based on observations in 2012). A local WIRES wildlife carer with flying-fox experience will be on call in the unlikely event of injury to a bat during sonic disturbance or for care of young recovered from the ground.</p> <p>The project will cease if it proves ineffective; <i>i.e.</i> immediate re-occupation of the buffer zone by disturbed bats following the end of a sonic disturbance session. If the project is successful this application requests rapid deployment of the technique (following OEH assessment) to establish a buffer in the subsequent 3 years if flying-foxes again start roosting in proximity of the house.</p>
<p><i>N.B: The Director-General must determine whether the action proposed is likely to significantly affect threatened species, populations or ecological communities, or their habitats. To enable this assessment the Applicant is required to address items 18 to 24. Any additional information referred to in addressing these items must be attached to the application.</i></p>	
<p>18. In the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population</p>	<p>The flying-fox camp at this site represents a temporary population reliant on unpredictable short-term nectar resources in the region. Although the use of this area as a roost site by a small number of flying-foxes occurred previously last decade, a large camp only formed for the first time in 2012 when an extensive White Box flowering event in the Tamworth region coincided with poor coastal food resources. It is uncertain whether this camp site will remain a traditionally used area over the next decades. The creation of a</p>

<p>of the species is likely to be placed at risk of extinction.</p>	<p>narrow buffer area on one extremity of the camp is unlikely to greatly affect use of the core area in a manner that reduces the occupant's reproduction significantly or puts a temporary local population at risk of extinction.</p>
<p>19. In the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction.</p>	<p>NA</p>
<p>20. In the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:</p> <p>(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</p> <p>(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.</p>	<p>NA</p>
<p>21. In relation to the habitat of a threatened species, population or ecological community:</p> <p>(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and</p> <p>(ii) whether an area of</p>	<p>(i) Approximately 4% of the overall suitable roost area, as documented in 2012, will be discouraged from use by sonically nudging the GHFF away from the house. The reduction will affect potential roost habitat for up to 400 bats based on 2012 observations.</p> <p>(ii) Flying-foxes will still fly over the target area readily. It is uncertain whether creating a narrow buffer zone will discourage the camp from extending to use tall eucalypts to the west of the proponent's house.</p> <p>(iii) The roosting habitat being targeted is a minor component of the overall camp area available at this site, as demonstrated in 2012.</p>

<p>habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and</p> <p>(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.</p>	
<p>22. Whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly).</p>	<p>No</p>
<p>23. Whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan.</p>	<p>The proposed low-intensity, localised action designed to ameliorate conflicts between humans and flying-foxes is consistent with Objective 6 of the Draft GHFF National Recovery Plan: "To reduce negative public attitudes toward Grey-headed Flying-foxes and reduce conflict with humans."</p> <p>The proposed action conflicts with Objective 4: "To protect and enhance roosting habitat critical to the survival of Grey-headed Flying-foxes" under the assumption that the small area being affected may be important component of the much larger core camp area first used extensively by GHFF during late 2012.</p> <p>According to the NSW Flying-fox Camp Management Policy, OEH does not generally support disturbing flying-fox camps, but acknowledges that there may be circumstances in which a relocation attempt may be warranted. This proposal is for nudging the boundaries of a camp as opposed to relocation.</p>
<p>24. Whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.</p>	<p>The action proposed is not listed a key threatening process.</p>

Important information for the applicant

Processing times and fees

The *Threatened Species Conservation Act 1995* provides that the Director-General must make a decision on the licence application within 120 days where a species impact statement (SIS) has been received. No timeframes have been set for those applications which do not require a SIS. The Director-General will assess your application as soon as possible. You can assist this process by providing clear and concise information in your application.

Applicants may be charged a processing fee. The Director-General is required to advise prospective applicants of the maximum fee payable before the licence application is lodged. Therefore, prospective applicants should contact the Office of Environment and Heritage (OEH) prior to submitting a licence application.

A \$30 licence application fee must accompany a licence application.

Protected fauna and protected native plants^{*}

Licensing provisions for protected fauna and protected native plants are contained within the *National Parks and Wildlife Act 1974*. However, a Section 91 Licence may be extended to include protected fauna and protected native plants when these will be affected by the action.

If you are applying for a licence to cover both threatened and protected species please provide the information requested in Item 10 *as well as* a list of protected species and details of the number of individuals animals or proportion and type of plant material which are likely to be harmed or picked.

Request for additional information

The Director-General may, after receiving the application, request additional information necessary for the determination of the licence application.

Species impact statement

Where the application is not accompanied by a SIS, the Director-General may decide, following an initial assessment of your application, that the action proposed is likely to have a significant effect on threatened species, populations or ecological communities, or their habitats. In such cases, the *Threatened Species Conservation Act 1995* requires that the applicant submit a SIS. Following initial review of the application, the Director-General will advise the applicant of the need to prepare a SIS.

Director-General's requirements for a SIS

Prior to the preparation of a SIS, a request for Director-General's requirements must be forwarded to the relevant OEH Office. The SIS must be prepared in accordance with section 109 and 110 of the TSC Act and must comply with any requirements notified by the Director-General of OEH.

^{*} Protected fauna means fauna of a species not named in Schedule 11 of the *National Parks and Wildlife Act 1974*.

Protected native plant means a native plant of a species named in Schedule 13 of the *National Parks and Wildlife Service 1974*.

Disclosure of Personal Information in the Public Register of s91 Licences

The Public Register provides a list of licence applications and licences granted. A person about whom personal information is contained in a public register may request that the information is removed or not placed on the register as publicly available.

Copies of all applications and licences issued under section 91 and certificates issued under section 95 of the Act are available on the OEH website at

www.environment.nsw.gov.au/threatenedspecies/S91TSCaRegisterByDate.htm

or in hardcopy form from The Librarian, OEH, 59 Goulburn St, Sydney.

Certificates

If the Director-General decides, following an assessment of your application, that the proposed action is not likely to significantly affect threatened species, populations or ecological communities, or their habitats, a Section 91 Licence is not required and the Director-General must, as soon as practicable after making the determination, issue the applicant with a certificate to that effect.

N.B: An action that is not required to be licensed under the Threatened Species Conservation Act 1995, may require licensing under the National Parks and Wildlife Act 1974, if it is likely to affect protected fauna or protected native plants.

I confirm that the information contained in this application is correct. I hereby apply for a licence under the provisions of Section 91 of the *Threatened Species Conservation Act 1995*.

Ruth Stuart

Applicant's name
(Please print)

Affected Landowner

Applicant's Position &
Organisation (if relevant)
(Please print)

Ruth Stuart

Applicant's signature

Date *23 July 2014*

For more information or to lodge this form, contact the nearest branch of OEH's Conservation and Regulation Division:

North West Branch
P: 02 6883 5330
F: 02 6884 8675
PO Box 2111
Dubbo
NSW 2830

Office of Environment and Heritage (NSW)
PO Box A290, Sydney South NSW 1232
Phone: 131 555 (Environment Line) Fax: 9995 5999
Email: info@environment.nsw.gov.au

Map 1: The proponent's property in East Tamworth. Other nearby lots are outlined including the Brennan house and property to the south and southeast. A caravan park camping area exits to the northeast and cabins to the north.



Map 2: The proponent's property on the periphery of the currently occupied flying-fox camp area (blue line; July 2014). Roosting in trees on the northern bank was common in 2012 and has occurred intermittently during winter 2014.



Map 3: The proponent's property and current camp in the context of roost habitat occupied in 2012 (red line). Large River Red Gums and Kurrajongs on Tamworth Regional Council crown land to the northwest of the proponent's house were occupied consistently in 2012.

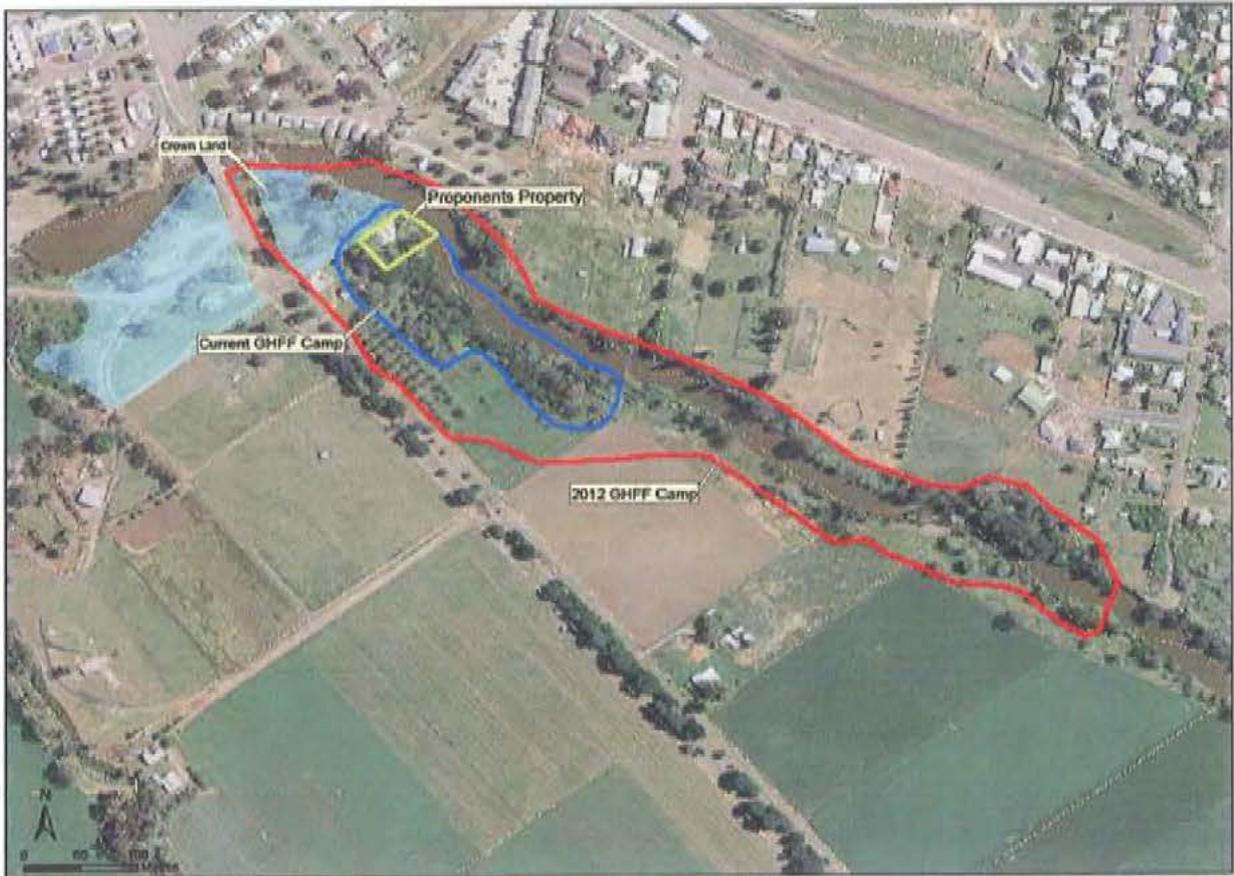


Figure 1: Black Locust trees near the proponent's house to be targeted with sonic disturbance to roosting Grey-headed Flying-foxes, which are visible on the upper branches.

