

Eurobodalla Flying-fox Management Plan 2018-2022 Planned Management Actions and Evaluation

Strategy	Action	Details	Location	Timeframe	Evaluation measure	Actions update
Level 1 Manageme						
Community engagement and awareness programs	Ensure clear and up to date information available regarding legislation and human and animal health	 Follow a Communications (Comms) Strategy for education and awareness, and review for future management actions. Ensure the community is aware of legislation around flying-foxes, and that management affecting flying-foxes is illegal without relevant approvals. Education materials to mitigate risk of disease includes up to date information on simple measures that the community can implement. Education materials and updating of platforms (Council website, handouts, signage at camps) are developed, updated and relevant. Council will liaise with relevant government agencies (eg, NSW Health) to ensure information is available to the community. Continue to engage with the community to inform education and engagement programs. 	• Eurobodalla wide	Ongoing Comms Strategy continues to be implemented	 Education program: community informed and engaged. Evaluation 2018-2022 Communications Strategy completed in 2019 and revised in 2022. Fewer complaints are recorded when flyingfox numbers rise in comparison to previous years with similar or higher numbers. Feedback suggests impacted residents are (mostly) informed and understand Council's position as per the Eurobodalla Flying-fox Management Plan (EFFMP). 	 Action ongoing: Communications Strategy is revised five-yearly. Action comment: Run community stakeholder survey to assess level of understanding and engagement to compare with results of previous survey.

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	Keep community informed of flying-fox numbers, monitoring trials and upcoming management	Engagement platforms including Facebook, websites, media release and digital/hard copy mail utilised to maintain awareness and keep the community updated and informed.	• Eurobodalla wide	Ongoing	Up to date information readily available for the community. Evaluation 2018-2022 Information available and updated.	Action ongoing.
	Develop education material regarding odour masking plants.	Potentially suitable native species, which are unlikely to attract flying-foxes, are listed in Appendix 8. Council will also consult with the Regional Botanic Gardens to review this list.	All known camps. Eurobodallawide.	• Short term	List of locally suitable odour masking plants available for the community. Evaluation 2018-2022 See action update comments towards compiling such a list.	Action comment: • To be investigated further (ie, plant a trial hedge somewhere) for a more realistic indication of usefulness and to ensure we are not communicating a falsehood, considering: • How long does the fragrance last? • Ensure the flowers/fruits of suggested plants do not attract foraging flying-foxes. • Consideration of full growth parameters and maintenance required for hedging. • Plant potential to aggravate allergies. • Flammability.

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	Provide ongoing community engagement and support	Allocate annual budget for a dedicated Council Flying-fox Officer.	• Eurobodalla side	• Ongoing	Part-time Flying-fox Officer role continued. Evaluation 2018-2022 Role continued – some adaptation to encompass other NRM activities	 Approximation of cost. If successful, develop educational materials to distribute in suitable circumstances. Action ongoing: From 2017, the role and implementation of actions has been funded largely by DPE. By the end of 2022, Council will need to
					during periods of low flying-fox populations	provide further funding contribution to continue the role.
Impact mitigation	Investigate property modification/service subsidies.	Investigate distance scaled subsidies program for communities affected by flying-fox camps	All known camps	Ongoing	 Subsidies program investigated and implemented if feasible. Data showing a strong case for the continuation of successful programs (seek further funding). Evaluation 2018-2022 Cocos Palm Removal Project ran through 2021 and 2022 to remove 320 	Action ongoing: Programs should be evaluated and reviewed annually or as necessary to ensure feasibility/ research updates and maintain a list of successful programs so funding may be applied for when
					and 2022 to remove 320 Cocos Palms from suburbs near the Batemans Bay camps. Resident uptake of offer and feedback indicate	opportunities arise. • Continue input to subsidies data sheet. Record resident feedback - include in

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					program provided substantial long-term benefits to participants. There were few requests for other subsidised items.	survey to assist in evaluation. Action comment: Continue Cocos Palm Removal Project if funding can be accessed. Keep up to date with subsidy trials and feedback happening elsewhere. Research (including in Appendix 10) shows residents favour long-term solutions.
	Maintain buffers where required on Council managed land.	Buffers through vegetation management on Council- managed lands to be maintained for affected residents (initial works completed under licence).	Water Gardens. Catalina	• Ongoing	 Buffers maintained when flying-foxes are absent. Evaluation 2018-2022 Buffers (and camp vegetation) have been maintained at a cost of around \$7000 per year. Buffers have succeeded in providing space between residences and the camps – even when in high numbers - the flying-foxes have not camped outside the buffer area. 	Action ongoing: • Action to continue, requires funding of around \$5,000-\$7,000 per year. This will be handed over to Parks and Gardens in 2022.
	Camp monitoring	Ensure regular (at least	All known	Ongoing	Regular monitoring	Action ongoing.
		quarterly) monitoring of all active flying-fox camps within	camps		undertaken at all Eurobodalla camps as	Action comments:

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		the Eurobodalla as part of the National Flying-fox Monitoring Program (NFFMP), including records of camp spatial extents. • Determine whether National Flying-fox Monitoring Program data could be expanded to inform the decision support tool.			part of the NFFMP managed by CSIRO and local counts undertaken by NSW DPE and used to inform management. Evaluation 2018-2022 Regular monitoring undertaken at all Eurobodalla camps as part of the NFFMP - and more regularly when populations are high or dynamic. Regular, long-term monitoring provides valuable information shire- wide and for the broader Australian context. Population and movement trends can be graphed and inform management and communications. Counts are undertaken by Council Flying-fox Officer.	 Regular monitoring requires ongoing commitment by Council to the Flyingfox Officer role. Council undertakes local NFFMP counts, with agreement by DPE. CSIRO national program monitoring data is slow (up to 12 months) to update. Have discussion with DPE/CSIRO as to how this could be sped up to be able to be useful to integration into Council decision support tools.
	Trial and refine the decision support tool.	 Consult with relevant experts and other land managers as required (eg, for camps outside the Eurobodalla) to refine the decision support tool. 	 Catalina Water Gardens Occupied camps outside the Eurobodalla 	Underway	Baseline monitoring locations and stakeholders identified.	 Action ongoing. Action comments: Continue refining the decision support tool by integrating new

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		Seek opportunities to enhance and improve the decision support tool.			 Support tool informed by monitoring data and refined as required. Evaluation 2018-2022 Decision support tool has been used but not refined as it is sufficient for the camps and populations experienced during the period. Information gathered during this time (both locally and from others' experiences) can be used to help inform refinement. 	information available and updating/defining the considerations of the tool. • Currently, the main advice on camp management from State and Federal level threatened species managers is to focus on education and communication. • Consider further refining of dispersal level 'trigger point' detail, such as: above a certain population; sustained for a period of how many weeks; combined with number of complaints; seriousness of complaints; frequency of events; potential of funding; proximity to sensitive receptors. • Refining of mitigation of any new urban camps – are there any actions we can do to mitigate

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						formation of a new camp? • Follow up on effectiveness of trials (in NSW and QLD) to move camps from town centres by creating an alternative attractive camp space nearby.
	Liaise with relevant authorities to provide advice and further research.	Consult with and seek further information from NSW and Commonwealth Governments on topics outlined in Section 7.1.	• Eurobodalla wide	• Underway	Updates on relevant topics shared with the community and incorporated into management, as relevant. Evaluation 2018-2022 Have liaised with relevant authorities and researchers and contributed with regard to topics in 7.1. Updates have been shared and incorporated into management, as relevant. Flying-fox Officer participated in the DPE coordinated flying-fox managers group and annual National Flying-fox Forum for	Action ongoing. Action comments: Complaints throughout 2016- 2022 high flying-fox populations reveal some people believe respiratory conditions are exacerbated by high numbers of flying-foxes — potential to seed some research on this (universities).

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Impact mitigation and conservation	Alternate habitat creation.	Identify suitable camp locations and protect/improve/restore these sites to avoid future conflict.	• All known camps	• Medium term	information sharing and discussion. Council contributes monitoring data to the NFFMP. Council contributes to DPE written papers. Council continues to contribute research on odour neutralising. Alternative habitat locations identified. Evaluation 2018-2022 A mapping exercise was completed in 2019 to define all likely habitat areas suitable for camp locations close to urban areas. Results showed there are many potential alternative camp locations close to urban areas. Some less desirable than others. To add to this are the considerations of fire and flood damage, temporary camps (have) forming in unlikely locations, and the funding resources needed to enact this	• Action completed (can be removed)

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	Notify Moruya Airport	Moruya Airport is aware of the Moruya camps and manages strike risk. The DPE will ensure airport managers are aware of any changes that may change the flying-fox strike hazard (eg, Eurobodalla influxes, camp management).	All camps within 13km	Ongoing	 Airport managers notified by the NSW DPE. Evaluation 2018-2022 Council notified DPE when necessary. Airport managers are on the camp monitoring report email list, so they are aware of relevant camp population changes. 	Action ongoing
Avoiding future conflict	Appropriate land-use planning	 Measures to avoid future conflict between camps and the community will be considered when assessing development applications. Identify potential buffer areas to zone as flying-fox management areas to mitigate impacts to residents. Consider habitat protection measures (zoning, Biodiversity Agreements) for flying-fox camps. 	All known camps and Eurobodalla wide	• Long term	 Flying-fox camp management areas incorporated into planning instruments. Evaluation 2018-2022 Buffers have been created and zoning has been investigated. Discussions with Flying-fox managers network and Council's Planning Department have made clear that implementing development/policy actions for the known camp zones is not a simple process, however there would be some positive outcomes to be gained for residents and flying-foxes in the long- 	 Action ongoing. Action comment: Investigate measures that could be integrated to mitigate (known) camp impacts during building or renovations process; zoned information packages for residents. Comment from Council Planning: Council can only enforce design requirements that are in a policy, Code of Practice (CoP), planning legislation etc,. Discuss with

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					term, which make this action worth pursuing both with Council and State planning instruments. If camps cannot be dispersed, the people in the impact zone need a clear understanding of this and the long-term implications. This mitigation/ transparency would benefit Council through reduced complaints/expectations.	Strategic Planning and see if mitigation measures can be incorporated via a Development Control Plan or a CoP where they can be enforced.
	Participate in flying- fox monitoring and research	 Support research, particularly projects which will assist in understanding local flying-fox movements and ways to mitigate impacts on the community. See Section 7.1 for priority research projects to assist flying-fox management in Eurobodalla. 	• Eurobodalla wide	Ongoing	Council up to date on contemporary research and relevant outcomes incorporated into the management framework. Evaluation 2018-2022 Flying-fox Officer participates in the DPE coordinated flying-fox managers group for information sharing and discussion. Flying-fox Officer participates in the National Flying-fox Forum annually, which addresses latest research	Action comments: Consider revising Section 7.1 in the next update of EFFMP to remove what has been done, is not relevant and any new focus

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					on some of the Section 7.1 topics. Council contributes monitoring data to the NFFMP. Council contributes to DPE written papers. Council contributes to research, for example odour neutralising trial, how to remove bat poo advice. New learnings have been integrated into education, advice, and operations, where possible.	
	Identify areas with high potential for future conflict.	Ground-truth and refine mapped favourable flying-fox camp habitat and sensitive receptors across the Eurobodalla to identify areas with high potential for future conflict.	• Eurobodalla wide	Medium term	Results used to inform proactive management / engagement / preparation, where required (but not native vegetation removal), and to identify low conflict locations nearby, suitable for flying-fox camps, if required. Evaluation 2018-2022 A desktop mapping exercise was completed in 2019 to ascertain all likely habitat areas suitable for camp	• Remove action

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					locations close to urban areas, and particularly sensitive receptors. It was found there are many alternative camp locations flying-foxes could inhabit close to urban areas, some less desirable than others. Results have been incorporated into management to some degree, such as removal of flying-fox attracting Cocos Palms, specifically from areas where favourable flying-fox camp habitat areas and sensitive receptors intercept.	
Avoiding future conflict, conservation	Protocols to manage incidents.	 Continue to build on current protocols (Appendix 12 and 13). Collaborate with wildlife rescue and care organisations to monitor potential heat stress events during predicted hot weather. Encourage wildlife groups to adopt industry recognised best practices during heat stress events (Appendix 14). 	All known camps	Every summer	Heat Stress Event Response Plan finalised. Evaluation 2018-2022 A Heat Stress Action Plan has been completed (with WIRES) defining roles, responsibilities, and actions. A heat stress kit has been compiled to go with. Supported (financially) the ABLV vaccination of four local vets.	 Action ongoing, as necessary. Action comment: The Heat Stress Plan should be reviewed and updated before every summer, as this is a field where there is new research occurring, so latest advice should be integrated.

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						 Participants and locations need reviewing/ updating for plan to remain relevant in an emergency. Contact DPE for their input. They were developing a generic best practice manual (in 2021).
	Consult with energy and telecommunication's providers, as required	Council will continue to consult with energy and telecommunication providers when required to implement measures as required to minimise the potential for flying-foxes to strike infrastructure.	• All known camps	Medium term	Flying-fox mortality and associated interruptions to power/mobile reception maintained at a low level. Evaluation 2018-2022 Known flying-fox mortality from this cause has been at a low level from 2017 to 2022.	 Action as needed. Action comment: Usually only an issue when there are many (>60,000) flying-foxes in the urban camps. Maintain relevant contacts for energy providers and procedures for when this action needs enactment. Communicate to the public information on what to do should you find an injured or dead flying-fox. Liaison with energy/ telecommunications providers and wildlife

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						carers necessary for informed evaluation.
Conservation	Undertake routine camp management with consideration to flying-fox habitat and welfare	Ensure all management actions at camps is considerate of flying-fox habitat and welfare requirements (including midstorey for protection during extreme weather, weed treatment and removal, and appropriate mowing regimes when flightless young are present).	All known camps	• Ongoing	All camps to have midstorey vegetation for protection during extreme weather and flying-fox welfare is maintained during works. Evaluation 2018-2022 All camps are monitored regularly for vegetation health and weed maintenance needs and actions implemented where and when necessary. Weed maintenance in the camp is done when flying-foxes are absent. Camp monitoring includes assessment of weeds and camp vegetation health, as well as welfare of flying-foxes and noting activity occurring around the camps adheres to Council protocol — infrastructure works and flying-fox camps (Appendix 12).	Action comment: Toolbox talks with staff/contractors who work near the camps should be undertaken periodically to refresh protocol content (seasonally/every two years/on change of staff)?

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Level 2 Managem	ent					
Impact mitigation	Buffers through vegetation management (trimming/removal)	Liaise with landholders regarding the potential for buffers on Council-managed land, or support in obtaining approval for activities on private land. Arborist advice for tree trimming on private land.	Any camp creating conflict	As soon as possible and then determined by decision support framework	 Advice provided to affected residents. Evaluation 2018-2022 No camp buffer clearing has occurred or has been necessary since 2015/16. Weed maintenance in the camp buffer zones has occurred annually. 	 Action ongoing. Action comments: It is necessary to undertake weed control in the existing buffer zones annually, as there are no trees or other native vegetation to fill the (weed) space. If new camps are formed, it may be necessary to implement the creation of new buffer zones (pending legislative approvals). Requires one-off funding source to implement formation of new buffer zones. Requires ongoing funding source to manage weeds post-clearing.
	Canopy mounted sprinklers	Continue trial of canopy- mounted sprinklers at the Water Gardens and assess the feasibility for use at other camps.	Water Gardens	Underway	Trial completed and feasibility for other camps assessed as required.	 Action ongoing. Action comments: A useful tool to give residents some relief at the beginning of

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					Three years of sprinkler trials in the Water Gardens have been conducted and data collected, showing some success at delaying flying-fox seasonal settlement, but ultimately not stopping the flying-foxes from camping. Not feasible or necessary at other camp locations, requires funds to set up and implement, and only appropriate at certain times of the flying-fox season.	the season and when the camp extends beyond the core camp area. Requires funding to maintain regular presence of staff in the early mornings and maintenance of sprinkler system. Only able to be utilised at certain times of the season, as per flying-fox protocols. Once the camp has already spilled beyond the reach of the sprinklers, not able to be used with success. Pre-empting that point is not very easily done.
	Odour neutralising trial	 Investigating odour neutralising system with experts. Misting systems such as those used at landfills and abattoirs allow for the control of large or diffuse odours. Odour management systems work by diluting an active ingredient, then either misting or 	Water Gardens	Medium term	Trial undertaken. Evaluation 2018-2022 Council worked with consultants Ecosure to run a trial in a Sunshine Coast Council (camp) over 2020/2021. Although the trial was completed, results were ultimately not	 Action ongoing. Action comments: Council owns the odour neutralising machine but have so far not used it in Council camps. Running the above trial has been approved

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		vaporising the solution into the air to reach the nuisance odour. • Untested and innovative trials may constitute Level 2 actions, so licence from DPE required.			definitive with regards to effectiveness odour reduction of residents near the camp. • Managers of odour neutralising company have been contacted and they are investigating the feasibility of a smaller, more individualised machine designed for the specific purpose.	(DPE/ethics/scientific licensing) and could be run in 2022/23 if flying-fox populations/resident participation permits. If odour neutralisation is feasible (according to the second trial at Council camp), work with odour neutralising company to explore development of a smaller, more individualised machine. If feasible, develop a plan for use of the machine in Eurobodalla camps to help provide odour relief around Council camps.
	Determine whether camp fly in/out can be influenced to reduce faecal drop	 Investigate whether flying- foxes route of transiting in and out of a camp can be slightly altered to avoid high conflict areas eg, by trialling lights or other deterrents at sensitive receptors. 	Vater Gardens	Medium term	 If considered feasible, trial undertaken. Evaluation 2018-2022 Preliminary investigation suggests this is not worth 	 Remove action. Action comment: Is this really feasible? Nothing in preliminary investigation/

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					pursuing at this time for Council.	• consideration suggests this is feasible for Council.
Conservation	Consider the values of a site prior to undertaking Level 2 or Level 3 management.	An up to date assessment of all values of a site (cultural, ecological and amenity) will be undertaken prior to any camp management, and results will be used to inform appropriate management options.	All known camps	Prior to any Level 2 or Level 3 management action	 Cultural, ecological and amenity values of camp sites are protected. Evaluation 2018-2022 Not actioned as has not been necessary. 	Action remains. Action comments: This should be actioned if Level 2 or 3 management is to be considered. It would be best not to be doing this at the last minute should, for example, a dispersal be decided to action.
Level 3 Managen	nent					
Impact mitigation	Nudging	 Nudging may be considered, as informed by the decision support tool. Level 3 management options require State, and potentially Commonwealth, approval and will be dependent on sufficient Council resources being available. 	Eurobodalla wide	As required	 Nudging assessed if required. Evaluation 2018-2022 Not required 	 As required Action comments: Refine decision support tool Is sufficient funding available
	• Dispersal	 Dispersal may be considered, as informed by the decision support tool. Early intervention dispersal may also be considered if a new camp appears to be 	• Eurobodalla wide	As required	 Dispersal assessed if required. Evaluation 2018-2022 Not required 	 As required. Action comments: Refine decision support tool. Is sufficient funding available?

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		forming in an undesirable location. • Level 3 management options require State, and potentially Commonwealth, approval, and will be dependent on sufficient Council resources being available.				Update Dispersal Action Plan.