

Attachment Booklet Part 3

Monday 11 December 2017

EN1, CO1, EC6, EC7 & EC8



EN1 Attachment

1. Draft Stonequarry Creek Flying Fox Camp Management Plan
2. Community Survey responses

Monday 11 December 2017

EN1 – Public Consultation of the Draft Stonequarry Creek
Flying Fox Camp Management Plan

Stonequarry Creek Flying-fox Camp Management Plan 2016

Commented [JB1]: Can delete this box when formatting to Council style

Stonequarry Creek, Picton Flying-fox Camp Management Plan

September 2017

Wollondilly Shire Council

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When you use this template to create a Flying-fox Camp Management Plan, replace this OEH imprint page with your own publication details or approvals page.

Flying-fox Camp Management Plan – expanded template

A Camp Management Plan (the Plan) is an important document because it records the decisions a land manager has made about managing a flying-fox camp (or a number of camps). This expanded template has been developed by the Office of Environment and Heritage and consultants [Ecosure](#), in line with the [NSW Flying-fox Camp Management Policy 2015](#). The aim of the expanded template is to streamline Plan preparation and processing, reducing the level of resource input required by land managers, and time between development and implementation.

When preparing the Plan you should refer to available literature and expert opinions, and consider establishing an advisory committee to help guide its development and implementation.

It is recommended that the Plan is developed within the context of a community engagement strategy for flying-fox management (see Section 3) in order to build a shared understanding of the approach and ensure it is relevant to the local area. It is also recommended that the Plan be placed on public exhibition, and made available online and in hard copy at an appropriate location for at least 30 days. Stakeholder consultation, including community engagement, should pre-date the Plan's development, and continue through its development and implementation.

How to use this template

The intention is that land managers will work directly into a copy of this template.

Instructions and prompts are in grey text boxes (e.g. this text box). These should be deleted as you work through the template.






Lists of options are provided (e.g. objectives on page 1). Non-relevant options can be deleted, or you may need to input or adapt options if those provided are not directly suited to your camp.

Some sections of the template (e.g. flying-fox ecology) do not require further input unless you choose to add or change some information.

Some sections provide detailed guidance that may be reworked or moved to an appendix according to your needs. Note that in-text section references may need to be updated if sections are deleted or moved.

Other sections will be template paragraphs that can be left as provided, with some minor site-specific input. Where input is required from the land manager, prompts are in blue text enclosed in square brackets.

Input from stakeholders and suitably qualified experts will be required at points in the Plan's development. Symbols shown in the table below are used throughout the template to highlight a likely requirement.

Recommendation	Symbol
Expert assessment/input required (see Appendix 1 for minimum requirements)	
Stakeholder consultation / engagement required	
Further approvals may be required	
Mapping required	
Monitoring required	

Acknowledgements

Your Plan should acknowledge all stakeholders who had input into its development. The sentence below should also be retained in the acknowledgements section of your Plan.

We acknowledge input by the NSW Office of Environment and Heritage, and consultants Ecosure, in developing the template on which this Camp Management Plan was based. Peggy Eby also provided advice which was included in the template.

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Acronyms and abbreviations

ABLV	Australian bat lyssavirus
BFF	black flying-fox (<i>Pteropus alecto</i>)
DoE	Commonwealth Department of the Environment
DPI	Department of Primary Industries (NSW)
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i> (NSW)
EPA	Environment Protection Authority (NSW)
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i> (Commonwealth)
GHFF	grey-headed flying-fox (<i>Pteropus poliocephalus</i>)
the Guideline	Referral guideline for management actions in grey-headed and spectacled flying-fox camps 2015 (Commonwealth)
HeV	Hendra virus
LGA	local government area
LGNSW	Local Government NSW
LRFF	little red flying-fox (<i>Pteropus scapulatus</i>)
MNES	matters of national environmental significance
NPW Act	<i>National Parks and Wildlife Act 1974</i> (NSW)
NPWS	National Parks and Wildlife Service (NSW)
OEH	Office of Environment and Heritage (NSW)
PEPs	protection of the environment policies
the Plan	Camp Management Plan
POEO Act	<i>Protection of the Environment Operations Act 1997</i> (NSW)
the Policy	Flying-fox Camp Management Policy 2015 (NSW)
SEPPs	State Environmental Planning Policies
SIS	species impact statement
TEC	threatened ecological community
TSC Act	<i>Threatened Species Conservation Act 1995</i> (NSW)

1. Overview

1.1 Objectives

Objectives should be consistent with the objectives of the [NSW Flying-fox Camp Management Policy 2015](#) (the Policy) (OEH 2015b) and should capture the purpose of the management plan.



You may choose relevant objectives from the example list below, adapt them to suit your camp, or develop your own.

Stakeholder concerns should be considered when developing objectives.

Commented [JB2]: Suggest including some with following intent:

Provide a reasonable level of amenity for the community
Conservation of FFs within the Shire
Minimise the potential for splinter camps in undesirable locations
Protect the TEC

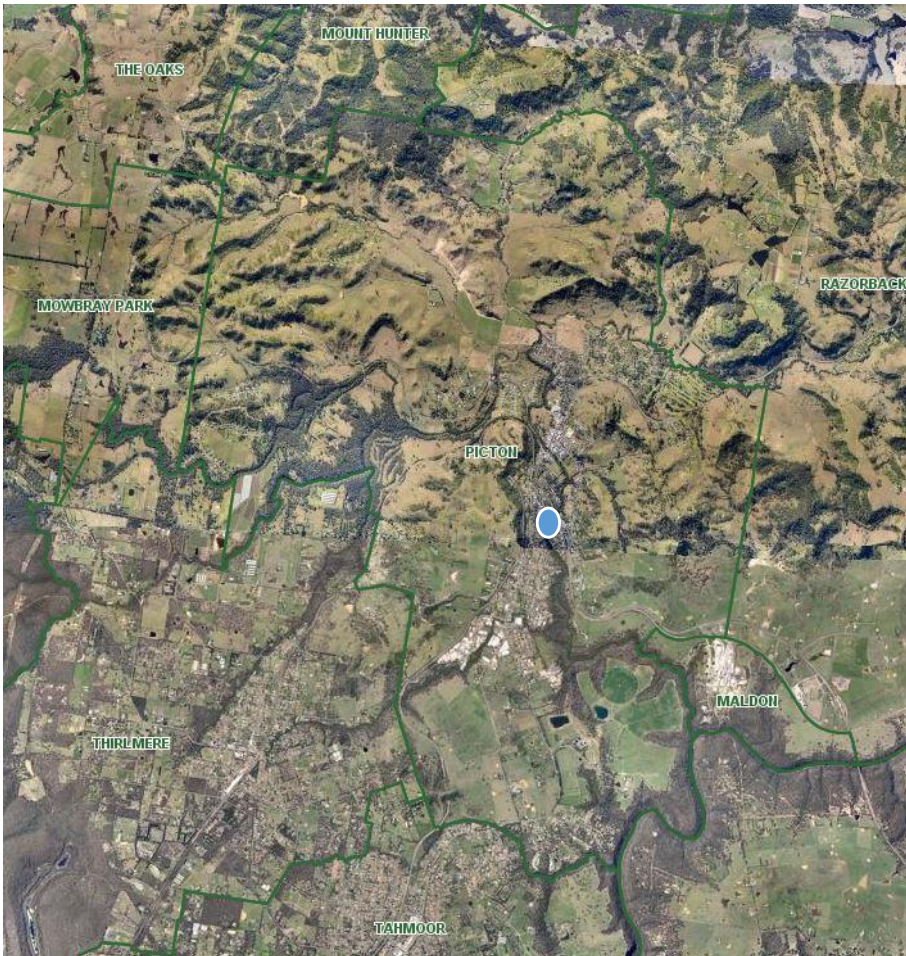
The objectives of this Camp Management Plan (the Plan) are to:

- minimise impacts to the community, while conserving flying-foxes and their habitat
- provide a reasonable level of amenity for the surrounding community
- manage public health and safety risks
- clearly define roles and responsibilities
- enable land managers and other stakeholders to use a range of suitable management responses to sustainably manage flying-foxes
- effectively communicate with stakeholders during planning and implementation of management activities
- enable long-term conservation of flying-foxes in appropriate locations
- ensure management is sympathetic to flying-fox behaviours and requirements
- improve community understanding and appreciation of flying-foxes, including their critical ecological role
- ensure flying-fox welfare is a priority during all works
- ensure camp management is consistent with broader conservation management strategies that may be developed to protect threatened species/communities
- ensure camp management does not contribute to loss of biodiversity or increase threats to threatened species/communities
- clearly outline the camp management actions that have been approved and will be utilised at the camp
- ensure management activities are consistent with the NSW Flying-fox Camp Management Policy (OEH 2015b)
- facilitate licence approval (where required) for actions at the camp
- implement an adaptive management approach to camp management based on evidence collected.

2. Camp Location

Map 1

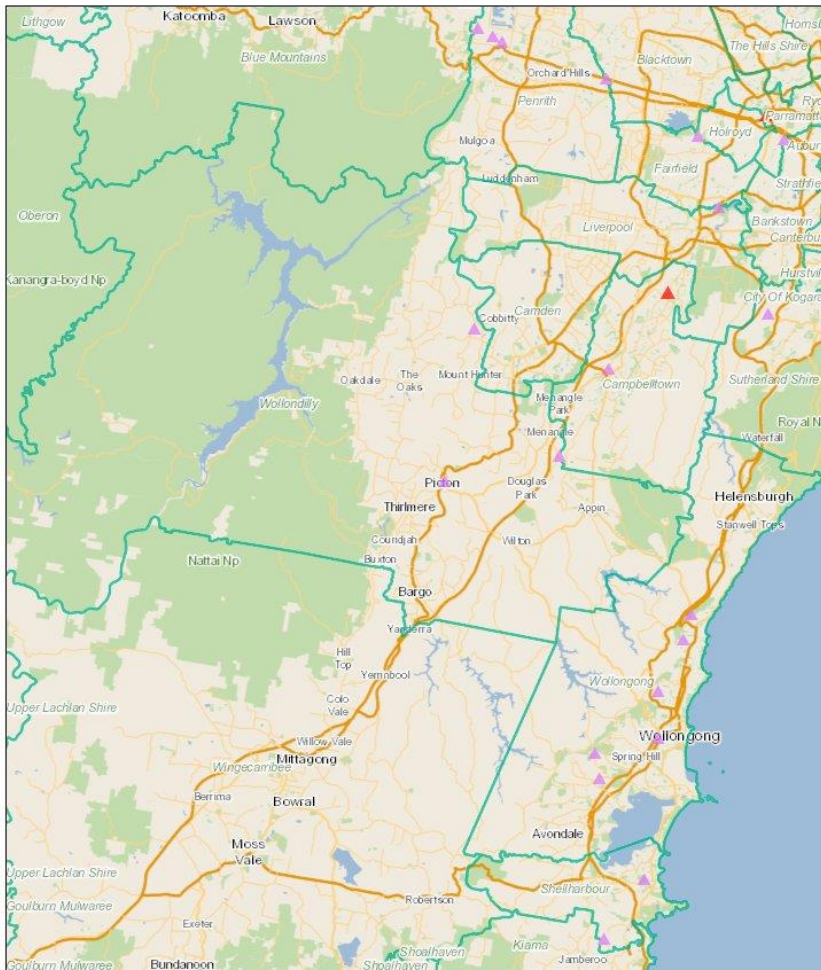
The Stonequarry Creek flying fox camp is located to the south of Picton town ship within the Wollondilly Shire, 90km south west of Sydney, NSW. The camp is located within a steep riparian corridor along the banks of Stonequarry Creek and the camp area crosses a number of private residential lots and crown water reserve.



Stonequarry Creek Flying-fox Camp Management Plan

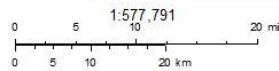
Map 2

Regional flying fox camp locations



December 12, 2016

- ▲ Nationally Important Flying-fox Camp
- ▲ Other Flying-fox Camp
- Local Government Areas



Map produced by the Department of the Environment
© Commonwealth of Australia (Geoscience Australia) 2013
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Stonequarry Creek Flying-fox Camp Management Plan

2.1 Camp area

The camp is located on Stonequarry Creek between the railway Viaduct, at the end of Webster St., and the Prince St. Bridge, Picton (refer to map 3 below).

The vegetation of the area is degraded sandstone gully forest with high levels of weed infestation primarily of privet, moth vine and honeysuckle.

The total camp area covers 2.1Ha however the extent of the camp varies seasonally and from year to year.

Map 3



2.1.1 History of the camp

The camp was first recorded in February 2014 and is seasonally occupied by the Grey Headed Flying Fox (GHFF). In 2014 when the camp was first sighted it was restricted to the northern half of the blue area noted in the map 3. The camp then expanded in 2015/2016 to cover the whole area and the maximum number of flying-foxes recorded at the camp was ~6,000 in February 2016. This then decreased to being empty in May 2016.

The camp is currently covering approximately .5Ha with ~ 1900 flying foxes as of November 2016.

Council staff undertake regular flying fox counts in accordance with the national monitoring methodology developed by the CSIRO and input the data collected into the national flying fox monitoring website.

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The reasons for the establishment of the camp are not clear. Anecdotally the Stonequarry Creek flying fox camp seemed to establish not long after the Halls Road Fire which occurred in October 2013. This fire was quite extensive and burnt out some 15,600 Ha of bushland between Balmoral, Bargo, Yanderra, Picton and Wilton and may have burnt out previously existing habitat.

Summer of 2013/2014 was quite hot and dry and the area where the camp established on Stonequarry Creek is quite sheltered in a steep gully with thick vegetation of Privet which provides for cooler temperature during the day.

As such there are very few food trees within the camp area so the colony must leave in the evenings to source food. This is likely causing issues in other areas within the shire particularly around orchard and farm lands.

The Office of Environment and Heritage have also reported a state wide shortage of food for the flying foxes which may be another factor that has driven them into the Picton area.

2.2 Land tenure

The camp area covers 26 privately owned residential lots which are zoned R2 Low Density Residential and also Crown water reserve along the creek. The site is bounded by a Transport NSW, rail corridor to the north and The Prince St. Bridge to the south. Council does not own any land within the camp area.

2.3 Reported issues related to the camp

Since the arrival of the camp in February 2014 the camp has at times swelled to over 6,000 triggering a number of concerns and issues raised by local residents who live near the camp.

Reported issues include:

- Noise of flying-foxes particularly when they fly out at dusk and return in the early hours of the morning.
- Faecal drop over residences, driveways, cars, clothes lines, outdoor furniture and play equipment.
- Odour from the camp noted being very strong April / May 2015 when camp numbers were in excess of 5,000.
- Fear of potential health risks and pets getting sick from contact with the flying foxes.
- Concern that drinking water could be contamination as a number of residents drink filtered rainwater captured from their roof.
- Health and/or wellbeing impacts (e.g. associated with lack of sleep, anxiety).

The majority of issues related to the camp are recorded later spring to late summer which tends to coincide with increase in numbers of flying-foxes, during hotter months.

At times of high occupation, there is potential for a dispersed impact across broad areas of the shire, used for foraging, and on residential land. This is primarily associated with faecal drop and feeding on residential properties.

It has also been reported that there has been an increased impact on local commercial orchards.

10 local residents have reported a number of issues / concerns about the camp in the past 2 years. This represents 15% of the total population living within 300m of the camp.

There has also been feedback from residents in the surrounding area who enjoy the camp and have expressed the difficulty in conserving the endangered GHFF whilst supporting the local community with their concerns.

Stonequarry Creek Flying-fox Camp Management Plan

Positive feedback has come from the community in the interests of:

- Recognise the landscape-scale benefits flying-foxes provide through seed dispersal and pollination
- Acknowledge the need to conserve flying-foxes as an important native species
- Appreciate the natural values of the camp and habitat
- Recognise the need for people and wildlife to live together.

2.4 Management response to date

What management of the camp has occurred to date? When assessed against Plan objectives, have management actions been successful or not, and why?

3. Community engagement

A variety of efforts have been made to engage with the community regarding the flying-fox camp to:

- understand the issues directly and indirectly affecting the community
- raise awareness within the community about flying-foxes
- correct misinformation and allay fears
- share information and invite feedback about management responses to date
- seek ideas and feedback about possible future management options

The types of engagement that have been undertaken include:

- promotion of contact details of responsible officers
- telephone conversations to record issues and complaints
- telephone calls with adjacent residents
- media (radio, television, print, social media)
- website pages and links
- direct contact with adjacent residents including letters, brochures and emails

3.1 Online survey

Wollondilly Shire Council undertook a community survey in January / February 2017. This time of year is generally when the camp is at its largest size. A flyer was delivered to over 50 residents neighbouring the Stonequarry Creek Flying Fox camp on Campbell St, Lumsdaine St, Webster St, Prince St and Picton Avenue.

The flyer contained information outlining the location of the camp, online links to the survey and other information including FAQ's, the fact sheet "Living near Flying Foxes" and the contact details for council officers who can answer enquiries about the camp.

We had a 15% response rate to the survey with the main concerns being noise, odour, the impact of droppings and potential health risks.

The key results from the survey were:

- 87% of the respondents identified that the odour from the camp had an important to extremely important impact on their household.
- 87% of the respondents identified that excrement had an important to extremely important impact on their household.
- Respondents identified the following direct impacts as follows.
 - Clothes line 71%
 - Disturbed sleep 57%
 - Car 57%
 - Rainwater Tanks 43%
 - Trees 43%
 - Driveway / Outdoor Area 29%
 - Swimming Pool 14%

Stonequarry Creek Flying-fox Camp Management Plan

- 67% of respondents identified the impacts of the camp were mainly during spring and summer.
-

3.2 Community feedback – management options

4. Legislation and policy

4.1 State

At the time of Plan development, a reform to conservation and land management in NSW was underway. This includes planned repeal of the *Threatened Species Conservation Act 1995* and *National Parks and Wildlife Act 1974*, which will be replaced by the consolidated *Biodiversity Conservation Act 2016*. The Office of Environment and Heritage (OEH) will be undertaking further consultation in the later part of 2017 to review and update the 2015 Flying-fox Camp Management Policy.

4.1.1 Flying-fox Camp Management Policy 2015

The Flying-fox Camp Management Policy 2015 (the Policy) has been developed to empower land managers, primarily local councils, to work with their communities to manage flying-fox camps effectively. It provides the framework within which OEH will make regulatory decisions. In particular, the Policy strongly encourages local councils and other land managers to prepare Camp Management Plans for sites where the local community is affected. The Policy outlines a hierarchical approach to management, where low impact management options (Level 1, and Level 2 if required) should be implemented before more invasive measures are considered (Level 3) (see Section 8).

4.1.2 Threatened Species Conservation Act 1995

The objects of the *Threatened Species Conservation Act 1995* (TSC Act) include to conserve biological diversity and protect the critical habitat of threatened species, populations and ecological communities. The GHFF is listed as threatened under the TSC Act (see also [Why the Grey-headed Flying-fox is listed as a threatened species](#)).

Section 91 of the TSC Act provides for the application of licences if the proposed action is likely to result in one or more of the following:

- a. harm to any animal that is of, or is part of, a threatened species, population or ecological community
- b. the picking of any plant that is of, or is part of, a threatened species, population or ecological community
- c. damage to critical habitat
- d. damage to habitat of a threatened species, population or ecological community.

Section 94 of the Act provides factors (the 7-part test) to assess whether the proposed action is likely to have a significant effect on any threatened species or their habitats, population or ecological community (note, this is therefore not just applicable to flying-foxes). If OEH determines that a significant effect is likely, it may require a [species impact statement](#) (SIS) to be prepared and publicly exhibited. If OEH assesses a section 91 licence application and determines that a significant impact is unlikely, a section 95 certificate will be issued (Appendix A in the Policy provides a flow chart for this process).

4.1.3 National Parks and Wildlife Act 1974

The *National Parks and Wildlife Act 1974* (NPW Act) provides for the conservation of nature, objects, places or features of cultural value and the management of land reserved under this Act. All native animals and many species of native plants are protected under the NPW Act. All native fauna, including flying-foxes, are specifically protected under section 98.

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Under this Act, licences can be issued for actions such as harming or obtaining any protected fauna for specified purposes, picking protected plants or damaging habitat of a threatened species, population or ecological community. Note that the definition of 'harm' includes to *hunt, shoot, poison, net, snare, spear, pursue, capture, trap, injure or kill*. The definition of 'pick' includes to *gather, pluck, cut, pull up, destroy, poison, take, dig up, crush, trample, remove or injure the plant or any part of the plant*.

4.1.4 Biodiversity Conservation Act 2016

Transition to the new bioreforms will see minimal change to the way licences are issued for managing flying-foxes. Existing licences will remain valid under savings, transitional and other provisions (Schedule 9) of the new Act. New Biodiversity Conservation licences will be issued that will apply specific conditions. Section 95 licences under the old TSC Act will no longer be required. GHFF will retain their vulnerable threat status under Schedule 1 of the new BC Act.

4.1.5 Local Government Act 1993

The primary purpose of this Act is to provide the legal framework for an effective, efficient and environmentally responsible, open system of local government. Most relevant to flying-fox management is that it also provides encouragement for the effective participation of local communities in the affairs of local government and sets out guidance on the use and management of community land which may be applicable to land which requires management of flying-foxes.

4.1.6 Prevention of Cruelty to Animals Act 1979

It may be an offence under this Act if there is evidence of unreasonable/unnecessary torment associated with management activities. Adhering to welfare and conservation measures provided in Section 10.3 will ensure compliance with this Act.

4.1.7 Environmental Planning and Assessment Act 1979

The objects of the *Environmental Planning and Assessment Act 1979* (EP&A Act) are to encourage proper management, development and conservation of resources, for the purpose of the social and economic welfare of the community and a better environment. It also aims to share responsibility for environmental planning between different levels of government and promote public participation in environmental planning and assessment.

The EP&A Act is administered by the NSW Department of Planning and Environment.

Development control plans under the Act should consider flying-fox camps so that planning, design and construction of future developments is appropriate to avoid future conflict.

Development under Part 4 of the Act does not require licensing under the TSC Act.

Where public authorities such as local councils undertake development under Part 5 of the EP&A Act (known as 'development without consent' or 'activity'), assessment and licensing under the TSC Act may not be required. However a full consideration of the development's potential impacts on threatened species will be required in all cases.

Where flying-fox camps occur on private land, land owners are not eligible to apply for development under Part 5 of the EP&A Act. Private land owners should contact Council to explore management options for camps that occur on private land.

Stonequarry Creek Flying-fox Camp Management Plan

4.2 Commonwealth

4.2.1 *Environment Protection and Biodiversity Conservation Act 1999*

The Commonwealth's *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) provides protection for the environment, specifically matters of national environmental significance (MNES). A referral to the Commonwealth DoE is required under the EPBC Act for any action that is likely to significantly impact on an MNES.

MNES under the EPBC Act that relate to flying-foxes include:

- world heritage sites (where those sites contain flying-fox camps or foraging habitat)
- wetlands of international importance (where those wetlands contain flying-fox camps or foraging habitat)
- nationally threatened species and ecological communities.

The GHFF is listed as a vulnerable species under the EPBC Act, meaning it is an MNES. It is also considered to have a single national population. DoE has developed the [Referral guideline for management actions in GHFF and SFF¹ camps](#) (DoE 2015) (the Guideline) to guide whether referral is required for actions pertaining to the GHFF. Referral is more likely required at camps that have been identified as nationally important to one of these threatened species. Management at these nationally important camps should follow mitigation standards in the Guideline to minimise the likelihood of a significant impact to the population.

The Guideline defines a nationally important GHFF camp as one that has either:

- contained $\geq 10,000$ GHFF in more than one year in the last 10 years, or
- been occupied by more than 2500 GHFF permanently or seasonally every year for the last 10 years.

Mitigation standards

- The action must not occur if the camp contains females that are in the late stages of pregnancy or have dependent young that cannot fly on their own.
- The action must not occur during or immediately after climatic extremes (heat stress event², cyclone event³), or during a period of significant food stress⁴.
- Disturbance must be carried out using non-lethal means, such as acoustic, visual and/or physical disturbance or use of smoke.
- Disturbance activities must be limited to a maximum of 2.5 hours in any 12 hour period, preferably at or before sunrise or at sunset.
- Trees are not felled, lopped or have large branches removed when flying-foxes are in or near to a tree and likely to be harmed.
- The action must be supervised by a person with knowledge and experience relevant to the management of flying-foxes and their habitat, who can identify dependent young and is aware of climatic extremes and food stress events. This person must make an assessment of the relevant conditions and advise the proponent whether the activity can go ahead consistent with these standards.

¹ spectacled flying-fox (*P. conspicillatus*)

² A 'heat stress event' is defined for the purposes of the Australian Government's [Referral guideline for management actions in GHFF and SFF camps](#) as a day on which the maximum temperature does (or is predicted to) meet or exceed 38°C.

³ A 'cyclone event' is defined as a cyclone that is identified by the Australian Bureau of Meteorology (www.bom.gov.au/cyclone/index.shtml).

⁴ Food stress events may be apparent if large numbers of low body weight animals are being reported by wildlife carers in the region.

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- The action must not involve the clearing of all vegetation supporting a nationally-important flying-fox camp. Sufficient vegetation must be retained to support the maximum number of flying-foxes ever recorded in the camp of interest.

At the time of writing, the Stonequarry Creek camp does not meet the criteria for a nationally important camps. However these standards have been incorporated into mitigation measures detailed in Section 10.3 where possible as best practice.

5. Other ecological values of the site

5.1 Desktop assessment

A search of the NSW Bionet database returned 25 threatened fauna and 15 threatened flora species confirmed within 5 km of Stonequarry Creek camp (Appendix XX).

A 10 km EPBC Act Protected Matters Search Tool (PMST) returned 46 species listed as threatened under the EPBC Act, including 15 migratory species (Appendix XX). The search also returned nine threatened ecological communities (TECs) as potentially occurring within 10 km of the site.

The NSW BioNet search provides actual records of threatened species, while the EPBC Act PMST returns all species possibly occurring. As a result, only the BioNet records have been discussed in relation to their likelihood of occurrence (see Appendix XX). Based on species ecology, plant community types at the site and urban location it was determined 15 fauna and nine flora species could possibly occur at the site (Appendix XX).

Aside from the GHFF, no threatened species were recorded during the field assessment (Section 5.2).

5.2 Field assessment

Flora

A flora assessment of the Picton flying-fox camp was undertaken on 25th July 2017, focussing on the area between the railway viaduct and Victoria Bridge (the camp extent). Searches were undertaken for the 15 threatened flora species based on the 5 km BioNet search, including the nine possibly occurring species. In total, 59 flora species were recorded. Of these, 23 were native species while the remaining 36 were exotic species (Table 4). Dominant native species across the site include Broad-leaved Apple (*Angophora floribunda*), Forest Red Gum (*Eucalyptus tereticornis*) and River Oak (*Casuarina cunninghamiana*). In places the mid-storey is dominated by Large-leaved Privet (*Ligustrum lucidum*) with small patches of Kanooka (*Tristaniopsis laurina*).

Vegetation is mapped as River Flat Eucalypt Forest, a NSW TEC dominated by Forest Red Gum (*Eucalyptus tereticornis*) and Rough-barked Apple (*Angophora floribunda*). The vegetation was ground-truthed during the site assessment and was found to be consistent with this TEC.

Table 1 Picton flying fox camp flora species recorded during site assessment

Family name	Scientific name	Exotic	Common name
Adiantaceae	<i>Adiantum aethiopicum</i>		Common Maidenhair
Apocynaceae	<i>Araujia sericifera</i>	*	Moth Vine
	<i>Gomphocarpus fruticosus</i>	*	Narrow-leaved Cotton Bush
	<i>Vinca major</i>	*	Periwinkle
Asparagaceae	<i>Asparagus aethiopicus</i>	*	Asparagus Fern
	<i>Asparagus asparagoides</i>	*	Bridal Creeper
Asteraceae	<i>Ageratina adenophora</i>	*	Crofton Weed
	<i>Bidens pilosa</i>	*	Cobbler's Pegs

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Family name	Scientific name	Exotic	Common name
	<i>Cirsium vulgare</i>	*	Spear Thistle
	<i>Conyza sumatrensis</i>	*	Tall fleabane
	<i>Delairea odorata</i>	*	Cape Ivy
	<i>Hypochaeris radicata</i>	*	Catsear
	<i>Onopordum acanthium subsp. acanthium</i>	*	Scotch Thistle
	<i>Senecio madagascariensis</i>	*	Fireweed
Basellaceae	<i>Anredera cordifolia</i>	*	Madeira Vine
Caprifoliaceae	<i>Lonicera japonica</i>	*	Japanese Honeysuckle
Casuarinaceae	<i>Allocasuarina littoralis</i>		Black She-Oak
	<i>Casuarina cunninghamiana subsp. cunninghamiana</i>		River Oak
Commelinaceae	<i>Tradescantia fluminensis</i>	*	Wandering Jew
Convolvulaceae	<i>Dichondra repens</i>		Kidney Weed
Crassulaceae	<i>Bryophyllum delagoense</i>	*	Mother of millions
Dennstaedtiaceae	<i>Pteridium esculentum</i>		Bracken
Euphorbiaceae	<i>Euphorbia peplus</i>	*	Petty Spurge
Fabaceae	<i>Glycine clandestina</i>		Twining glycine
	<i>Hardenbergia violacea</i>		False Sarsaparilla
	<i>Acacia decurrens</i>		Black Wattle
Juncaceae	<i>Juncus usitatus</i>		
Lauraceae	<i>Cinnamomum camphora</i>	*	Camphor Laurel
Lomandraceae	<i>Lomandra longifolia</i>		Spiny-headed Mat-rush
	<i>Lomandra multiflora subsp. multiflora</i>		Many-flowered Mat-rush
Luzuriagaceae	<i>Geitonoplesium cymosum</i>		Scrambling Lily
Myrsinaceae	<i>Lysimachia arvensis</i>	*	Scarlet Pimpernel
Myrtaceae	<i>Angophora floribunda</i>		Rough-barked Apple
	<i>Eucalyptus tereticornis</i>		Forest Red Gum
	<i>Lophostemon confertus</i>		Brush Box
	<i>Tristaniopsis laurina</i>		Kanooka
Oleaceae	<i>Ligustrum lucidum</i>	*	Large-leaved Privet
	<i>Ligustrum sinense</i>	*	Small-leaved Privet
	<i>Olea europaea subsp. cuspidata</i>	*	African Olive
Phytolaccaceae	<i>Phytolacca octandra</i>	*	Inkweed
Poaceae	<i>Bambusa sp.</i>	*	Giant bamboo
	<i>Cortaderia selloana</i>	*	Pampas Grass
	<i>Paspalum dilatatum</i>	*	Paspalum

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Family name	Scientific name	Exotic	Common name
	<i>Pennisetum clandestinum</i>	*	Kikuyu Grass
Proteaceae	<i>Grevillea robusta</i>		Silky Oak
Sapindaceae	<i>Dodonaea pinnata</i>		
Solanaceae	<i>Solanum mauritianum</i>	*	Wild Tobacco Bush
	<i>Solanum nigrum</i>	*	Black-berry Nightshade
Urticaceae	<i>Urtica incisa</i>		Stinging Nettle
Verbenaceae	<i>Lantana camara</i>	*	Lantana
	<i>Verbena quadrangularis</i>	*	
Poaceae	<i>Arundo donax</i>	*	Giant Reed
	<i>Briza maxima</i>	*	Quaking Grass
	<i>Chloris gayana</i>	*	Rhodes Grass
	<i>Chloris ventricosa</i>		Tall Chloris
	<i>Cynodon dactylon</i>		Common Couch
	<i>Imperata cylindrica</i>		Blady Grass
	<i>Microlaena stipoides</i>		Weeping Grass
Solanaceae	<i>Cestrum parqui</i>	*	Green Cestrum

At the time of the survey the flying-fox camp was located in a dense stand of Large-leaved Privet immediately south of Victoria Bridge. The majority of flying-foxes were roosting at the same level as the bridge or just below. Privet is the dominant roost tree, particularly along the middle and upper reaches of the creek banks.

There is a profusion of weeds, 36 species in total, along the banks of Stonequarry Creek where they dominate the lower, mid and upper storey stratum. Many of these exotics have outcompeted native regrowth following extensive tree clearing on both sides of the creek. There is some evidence of land slippage as a result of vegetation removal. There are a number of residential properties which back on to the banks of Stonequarry Creek, with the result that several garden plants have established on the western and eastern banks including Pampas Grass (*Cortaderia selloana*) and Giant Bamboo (*Bambusa sp.*). There are several mature eucalypts between Victoria Bridge and the railway viaduct along the upper banks of Stonequarry Creek, particularly on the upper banks on the eastern side. At the time of the survey these were not being used as camp habitat.

South of the viaduct the Stonequarry Creek Landcare Group have been actively removing weeds from the area and have been successful in restoring some native vegetation. Restoration will be challenging north of the viaduct due to the steep banks and numerous weeds. Existing patches of Kanooka could be restored to replace broad-leaved privet with this native species over time.

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Fauna

A list of fauna species observed on the site from the targeted habitat assessment survey and opportunistic sightings is provided in [Table 2](#). Twenty-eight species of bird were observed on the site, comprised mostly of common species found in urban environments. These included the Superb Fairy Wren (*Malurus cyaneus*), Red-browed Finch (*Neochmia temporalis*) and Australian Magpie (*Cracticus tibicen*). No threatened bird species were recorded.

There is a distinct lack of ground dead wood or hollow-bearing trees across the entire site. This poor quality habitat in the lower and mid-storey has created a reduced prey base for a range of insectivorous and nectivorous birds and may partly explain the low diversity of avian species at the site.

Sampling of fallen timber and undergrowth for reptiles revealed only two common skinks; the Dark-flecked Garden Skink (*Lampropholis delicata*) and Eastern Water-skink (*Eulamprus quoyii*). The site survey was undertaken in the middle of winter on a relatively cold day. Targeted surveys during the warmer periods of the year may reveal a range of other reptiles as they become more active.

With the exception of the GHFF, there was very little evidence of mammal activity. Further survey work may reveal a range of other urban species such as the Common Brush-tailed Possum (*Trichosurus vulpecula*) and Common Ringtail Possum (*Pseudocheirus peregrinus*), and potentially threatened species including microbats and Koala (*Phascolarctos cinereus*) use (see [Appendix XX](#)).

Table 2 All fauna species recorded during site assessment

Class name	Family name	Scientific name	Exotic	Common name
Amphibia	Myobatrachidae	<i>Crinia signifera</i>		Common Eastern Froglet
	Hylidae	<i>Litoria verreauxii</i>		Verreaux's Frog
Reptilia	Scincidae	<i>Eulamprus quoyii</i>		Eastern Water-skink
		<i>Lampropholis delicata</i>		Dark-flecked Garden Sunskink
Aves	Anatidae	<i>Anas superciliosa</i>		Pacific Black Duck
		<i>Chenonetta jubata</i>		Australian Wood Duck
	Columbidae	<i>Streptopelia chinensis</i>	*	Spotted Turtle-Dove
	Cacatuidae	<i>Cacatua galerita</i>		Sulphur-crested Cockatoo
	Psittacidae	<i>Alisterus scapularis</i>		Australian King-Parrot
		<i>Platycercus elegans</i>		Crimson Rosella
		<i>Platycercus eximius</i>		Eastern Rosella
	Alcedinidae	<i>Dacelo novaeguineae</i>		Laughing Kookaburra
	Climacteridae	<i>Cormobates leucophaea</i>		White-throated Treecreeper
	Maluridae	<i>Malurus cyaneus</i>		Superb Fairy-wren
Acanthizidae	<i>Acanthiza lineata</i>		Striated Thornbill	
Pardalotidae	<i>Pardalotus punctatus</i>		Spotted Pardalote	
Meliphagidae	<i>Manorina melanocephala</i>		Noisy Miner	
	<i>Manorina melanophrys</i>		Bell Miner	

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Class name	Family name	Scientific name	Exotic	Common name
		<i>Philemon corniculatus</i>		Noisy Friarbird
	Pachycephalidae	<i>Colluricincla harmonica</i>		Grey Shrike-thrush
	Artamidae	<i>Cracticus tibicen</i>		Australian Magpie
	Rhipiduridae	<i>Rhipidura albiscapa</i>		Grey Fantail
	Corvidae	<i>Corvus coronoides</i>		Australian Raven
	Sturnidae	<i>Sturnus vulgaris</i>	*	Common Starling
	Estrildidae	<i>Neochmia temporalis</i>		Red-browed Finch
Mammalia	Pteropodidae	<i>Pteropus poliocephalus</i>		Grey-headed flying-fox

6. Flying-fox ecology and behaviour

6.1 Ecological role

Flying-foxes, along with some birds, make a unique contribution to ecosystem health through their ability to move seeds and pollen over long distances (Southerton et al. 2004). This contributes directly to the reproduction, regeneration and viability of forest ecosystems (DoE 2016a).

It is estimated that a single flying-fox can disperse up to 60,000 seeds in one night (ELW&P 2015). Some plants, particularly *Corymbia* spp., have adaptations suggesting they rely more heavily on nocturnal visitors such as bats for pollination than daytime pollinators (Southerton et al. 2004).

Grey-headed flying-foxes may travel 100 km in a single night with a foraging radius of up to 50 km from their camp (McConkey et al. 2012), and have been recorded travelling over 500 km in two days between camps (Roberts et al. 2012). In comparison bees, another important pollinator, move much shorter foraging distances of generally less than one kilometre (Zurbuchen et al. 2010).

Long-distance seed dispersal and pollination makes flying-foxes critical to the long-term persistence of many plant communities (Westcott et al. 2008; McConkey et al. 2012), including eucalypt forests, rainforests, woodlands and wetlands (Roberts et al. 2006). Seeds that are able to germinate away from their parent plant have a greater chance of growing into a mature plant (EHP 2012). Long-distance dispersal also allows genetic material to be spread between forest patches that would normally be geographically isolated (Parry-Jones & Augee 1992; Eby 1991; Roberts 2006). This genetic diversity allows species to adapt to environmental change and respond to disease pathogens. Transfer of genetic material between forest patches is particularly important in the context of contemporary fragmented landscapes.

Flying-foxes are considered 'keystone' species given their contribution to the health, longevity and diversity among and between vegetation communities. These ecological services ultimately protect the long-term health and biodiversity of Australia's bushland and wetlands. In turn, native forests act as carbon sinks, provide habitat for other fauna and flora, stabilise river systems and catchments, add value to production of hardwood timber, honey and fruit (e.g. bananas and mangoes; Fujita 1991), and provide recreational and tourism opportunities worth millions of dollars each year (EHP 2012; ELW&P 2015).

6.2 Flying-foxes in urban areas

Flying-foxes appear to be roosting and foraging in urban areas more frequently. There are many possible drivers for this, as summarised by Tait et al. (2014):

- loss of native habitat and urban expansion
- opportunities presented by year-round food availability from native and exotic species found in expanding urban areas
- disturbance events such as drought, fires, cyclones
- human disturbance or culling at non-urban roosts or orchards
- urban effects on local climate
- refuge from predation
- movement advantages, e.g. ease of manoeuvring in flight due to the open nature of the habitat or ease of navigation due to landmarks and lighting.

6.3 Under threat

Flying-foxes roosting and foraging in urban areas more frequently can give the impression that their populations are increasing; however, the grey-headed flying-fox is in decline across its range and in 2001 was listed as vulnerable by the NSW Government through the TSC Act.

At the time of listing, the species was considered eligible for listing as vulnerable as counts of flying-foxes over the previous decade suggested that the national population may have declined by up to 30%. It was also estimated that the population would continue to decrease by at least 20% in the next three generations given the continuation of the current rate of habitat loss and culling.

The main threat to grey-headed flying-foxes in NSW is clearing or modification of native vegetation. This threatening process removes appropriate roosting and breeding sites and limits the availability of natural food resources, particularly winter–spring feeding habitat in north-eastern NSW. The urbanisation of the coastal plains of south-eastern Queensland and northern NSW has seen the removal of annually-reliable winter feeding sites, and this threatening process continues.

There is a wide range of ongoing threats to the survival of the GHFF, including:

- habitat loss and degradation
- conflict with humans (including culling at orchards)
- infrastructure-related mortality (e.g. entanglement in barbed wire fencing and fruit netting, power line electrocution, etc.)
- predation by native and introduced animals
- exposure to extreme natural events such as cyclones, drought and heat waves.

Flying-foxes have limited capacity to respond to these threats and recover from large population losses due to their slow sexual maturation, small litter size, long gestation and extended maternal dependence (McIlwee & Martin 2002).

6.4 Camp characteristics

All flying-foxes are nocturnal, roosting during the day in communal camps. These camps may range in number from a few to hundreds of thousands, with individual animals frequently moving between camps within their range. Typically, the abundance of resources within a 20–50 kilometre radius of a camp site will be a key determinant of the size of a camp (SEQ Catchments 2012). Therefore, flying-fox camps are generally temporary and seasonal, tightly tied to the flowering of their preferred food trees. However, understanding the availability of feeding resources is difficult because flowering and fruiting are not reliable every year, and can vary between localities (SEQ Catchments 2012). These are important aspects of camp preference and movement between camps, and have implications for long-term management strategies.

Little is known about flying-fox camp preferences; however, research indicates that apart from being in close proximity to food sources, flying-foxes choose to roost in vegetation with at least some of the following general characteristics (SEQ Catchments 2012):

- closed canopy >5 metres high
- dense vegetation with complex structure (upper, mid- and understorey layers)
- within 500 metres of permanent water source
- within 50 kilometres of the coastline or at an elevation <65 metres above sea level
- level topography (<5° incline)
- greater than one hectare to accommodate and sustain large numbers of flying-foxes.

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Optimal vegetation available for flying-foxes must allow movement between preferred areas of the camp. Specifically, it is recommended that the size of a patch be approximately three times the area occupied by flying-foxes at any one time (SEQ Catchments 2012).

6.5 Species profiles

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

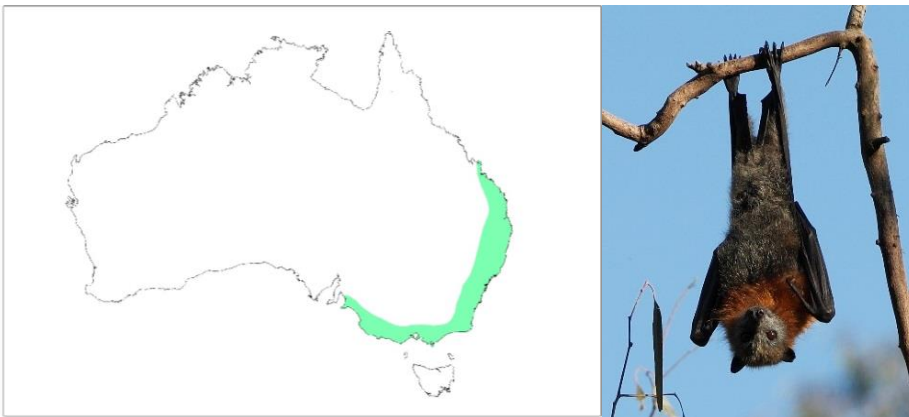


Figure 2: Grey-headed flying-fox indicative species distribution, adapted from OEH 2015a

The grey-headed flying-fox (GHFF) (Figure 2) is found throughout eastern Australia, generally within 200 kilometres of the coast, from Finch Hatton in Queensland to Melbourne, Victoria (OEH 2015d). This species now ranges into South Australia and has been observed in Tasmania (DoE 2016a). It requires foraging resources and camp sites within rainforests, open forests, closed and open woodlands (including melaleuca swamps and banksia woodlands). This species is also found throughout urban and agricultural areas where food trees exist and will raid orchards at times, especially when other food is scarce (OEH 2015a).

All the GHFF in Australia are regarded as one population that moves around freely within its entire national range (Webb & Tidemann 1996; DoE 2015). GHFF may travel up to 100 kilometres in a single night with a foraging radius of up to 50 kilometres from their camp (McConkey et al. 2012). They have been recorded travelling over 500 kilometres over 48 hours when moving from one camp to another (Roberts et al. 2012). GHFF generally show a high level of fidelity to camp sites, returning year after year to the same site, and have been recorded returning to the same branch of a particular tree (SEQ Catchments 2012). This may be one of the reasons flying-foxes continue to return to small urban bushland blocks that may be remnants of historically-used larger tracts of vegetation.

The GHFF population has a generally annual southerly movement in spring and summer, with their return to the coastal forests of north-east NSW and south-east Queensland in winter (Ratcliffe 1932; Eby 1991; Parry-Jones & Augee 1992; Roberts et al. 2012). This results in large fluctuations in the number of GHFF in NSW, ranging from as few as 20% of the total population in winter up to around 75% of the total population in summer (Eby 2000). They are widespread throughout their range during summer, but in spring and winter are uncommon in the south. In autumn they occupy primarily coastal lowland camps and are uncommon inland and on the south coast of NSW (DECCW 2009).

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There is evidence the GHFF population declined by up to 30% between 1989 and 2000 (Birt 2000; Richards 2000 cited in OEH 2011a). There is a wide range of ongoing threats to the survival of the GHFF, including habitat loss and degradation, deliberate destruction associated with the commercial horticulture industry, conflict with humans, infrastructure-related mortality (e.g. entanglement in barbed wire fencing and fruit netting, power line electrocution, etc.) and competition and hybridisation with the BFF (DECCW 2009). For these reasons it is listed as vulnerable to extinction under NSW and federal legislation (see Section 4).

7. Human and animal health

Flying-foxes, like all animals, carry pathogens that may pose human health risks. Many of these are viruses which cause only asymptomatic infections in flying-foxes themselves but may cause significant disease in other animals that are exposed. In Australia the most well-defined of these include Australian bat lyssavirus (ABLV), Hendra virus (HeV) and Menangle virus. Specific information on these viruses is provided in Appendix 5.

Outside of an occupational cohort, including wildlife carers and vets, human exposure to these viruses is extremely rare and similarly transmission rates and incidence of human infection are very low. In addition, HeV infection in humans apparently requires transfer from an infected intermediate equine host and direct transmission from bats to humans has not been reported. Thus despite the fact that human infection with these agents can be fatal, the probability of infection is extremely low and the overall public health risk is judged to be low (Qld Health 2016).

7.1 Disease and flying-fox management

A recent study at several camps before, during and after disturbance (Edson et al. 2015) showed no statistical association between HeV prevalence and flying-fox disturbance. However the consequences of chronic or ongoing disturbance and harassment and its effect on HeV infection were not within the scope of the study and are therefore unknown.

The effects of stress are linked to increased susceptibility and expression of disease in both humans (AIHW 2012) and animals (Henry & Stephens-Larson 1985; Aich et. al. 2009), including reduced immunity to disease.

Therefore it can be assumed that management actions which may cause stress (e.g. dispersal), particularly over a prolonged period or at times where other stressors are increased (e.g. food shortages, habitat fragmentation, etc.), are likely to increase the susceptibility and prevalence of disease within the flying-fox population, and consequently the risk of transfer to humans.

Furthermore, management actions or natural environmental changes may increase disease risk by:

- forcing flying-foxes into closer proximity to one another, increasing the probability of disease transfer between individuals and within the population
- resulting in abortions and/or dropped young if inappropriate methods are used during critical periods of the breeding cycle. This will increase the likelihood of direct interaction between flying-foxes and the public, and potential for disease exposure
- adoption of inhumane methods with potential to cause injury which would increase the likelihood of the community coming into contact with injured/dying flying-foxes.

The potential to increase disease risk should be carefully considered as part of a full risk assessment when determining the appropriate level of management and the associated mitigation measures required.

8. Camp management options

Below is an overview of commonly used management options to consider in the development of your Plan. These are categorised as Level 1, 2 or 3 in accordance with the Policy. The text can be tailored according to the needs of your Plan, or moved into an appendix to the Plan.

8.1 Level 1 actions: routine camp management

8.1.1 Education and awareness programs

This management option involves undertaking a comprehensive and targeted flying-fox education and awareness program to provide accurate information to the local community about flying-foxes.

Such a program would include managing risk and alleviating concern about health and safety issues associated with flying-foxes, options available to reduce impacts from roosting and foraging flying-foxes, an up-to-date program of works being undertaken at the camp, and information about flying-fox numbers and flying-fox behaviour at the camp.

Residents should also be made aware that faecal drop and noise at night is mainly associated with plants that provide food, independent of camp location. Staged removal of foraging species such as fruit trees and palms from residential yards, or management of fruit (e.g. bagging, pruning) will greatly assist in mitigating this issue.

Collecting and providing information should always be the first response to community concerns in an attempt to alleviate issues without the need to actively manage flying-foxes or their habitat. Where it is determined that management is required, education should similarly be a key component of any approach. See also Section 3 and incorporate an education and awareness program into any community engagement plan.



Figure 5: Possible components of an education program

An education program may include components shown in Figure 5.

The likelihood of improving community understanding of flying-fox issues is high. However, the extent to which that understanding will help alleviate conflict issues is probably less so. Extensive education for decision-makers, the media and the broader community may be required to overcome negative attitudes towards flying-foxes.

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It should be stressed that a long-term solution to the issue resides with better understanding flying-fox ecology and applying that understanding to careful urban planning and development.

8.1.2 Property modification without subsidies

The managers of land on which a flying-fox camp is located would promote or encourage the adoption of certain actions on properties adjacent or near to the camp to minimise impacts from roosting and foraging flying-foxes (note that approval may be required for some activities, refer to Section 4 for further information):

- Create visual/sound/smell barriers with fencing or hedges. To avoid attracting flying-foxes, species selected for hedging should not produce edible fruit or nectar-exuding flowers, should grow in dense formation between two and five metres (Roberts 2006) (or be maintained at less than 5 metres). Vegetation that produces fragrant flowers can assist in masking camp odour where this is of concern.
- Manage foraging trees (i.e. plants that produce fruit/nectar-exuding flowers) within properties through pruning/covering with bags or [wildlife friendly netting](#), early removal of fruit, or tree replacement.
- Cover vehicles, structures and clothes lines where faecal contamination is an issue, or remove washing from the line before dawn/dusk.
- Move or cover eating areas (e.g. BBQs and tables) within close proximity to a camp or foraging tree to avoid contamination by flying-foxes.
- Install double-glazed windows, insulation and use air-conditioners when needed to reduce noise disturbance and smell associated with a nearby camp.
- Follow horse husbandry and property management guidelines provided at the NSW Department of Primary Industries [Hendra virus web page](#) (DPI 2015a).
- Include suitable buffers and other provisions (e.g. covered car parks) in planning of new developments.
- Turn off lighting at night which may assist flying-fox navigation and increase fly-over impacts.
- Consider removable covers for swimming pools and ensure working filter and regular chlorine treatment.
- Appropriately manage rainwater tanks, including installing first-flush systems.
- Avoid disturbing flying-foxes during the day as this will increase camp noise.

The cost would be borne by the person or organisation who modifies the property; however, opportunities for funding assistance (e.g. environment grants) may be available for management activities that reduce the need to actively manage a camp.

8.1.3 Property modification subsidies

Fully funding or providing subsidies to property owners for property modifications may be considered to manage the impacts of the flying-foxes. Providing subsidies to install infrastructure may improve the value of the property, which may also offset concerns regarding perceived or actual property value or rental return losses.

The level and type of subsidy would need to be agreed to by the entity responsible for managing the flying-fox camp.

8.1.4 Service subsidies

This management option involves providing property owners with a subsidy to help manage impacts on the property and lifestyle of residents. The types of services that could be subsidised include clothes washing, cleaning outside areas and property, car washing or power bills. Rate reductions could also be considered.

Critical thresholds of flying-fox numbers at a camp and distance to a camp may be used to determine when subsidies would apply.

8.1.5 Routine camp maintenance and operational activities

Examples of routine camp management actions are provided in the Policy. These include:

- removal of tree limbs or whole trees that pose a genuine health and safety risk, as determined by a qualified arborist
- weed removal, including removal of noxious weeds under the *Noxious Weeds Act 1993*, or species listed as undesirable by a council
- trimming of understorey vegetation or the planting of vegetation
- minor habitat augmentation for the benefit of the roosting animals
- mowing of grass and similar grounds-keeping actions that will not create a major disturbance to roosting flying-foxes
- application of mulch or removal of leaf litter or other material on the ground.

Protocols should be developed for carrying out operations that may disturb flying-foxes, which can result in excess camp noise. Such protocols could include limiting the use of disturbing activities to certain days or certain times of day in the areas adjacent to the camp, and advising adjacent residents of activity days. Such activities could include lawn-mowing, using chainsaws, whipper-snippers, using generators and testing alarms or sirens.

8.1.6 Revegetation and land management to create alternative habitat

This management option involves revegetating and managing land to create alternative flying-fox roosting habitat through improving and extending existing low-conflict camps or developing new roosting habitat in areas away from human settlement.

Selecting new sites and attempting to attract flying-foxes to them has had limited success in the past, and ideally habitat at known camp sites would be dedicated as a flying-fox reserve. However, if a staged and long-term approach is used to make unsuitable current camps less attractive, whilst concurrently improving appropriate sites, it is a viable option (particularly for the transient and less selective LRFF). Supporting further research into flying-fox camp preferences may improve the potential to create new flying-fox habitat.

When improving a site for a designated flying-fox camp, preferred habitat characteristics detailed in Section 6.4 should be considered.

Foraging trees planted amongst and surrounding roost trees (excluding in/near horse paddocks) may help to attract flying-foxes to a desired site. They will also assist with reducing foraging impacts in residential areas. Consideration should be given to tree species that will provide year-round food, increasing the attractiveness of the designated site. Depending on the site, the potential negative impacts to a natural area will need to be considered if introducing non-indigenous plant species.

The presence of a water source is likely to increase the attractiveness of an alternative camp location. Supply of an artificial water source should be considered if unavailable naturally, however this may be cost-prohibitive.

Potential habitat mapping using camp preferences (see Section 6.4) and suitable land tenure can assist in initial alternative site selection. A feasibility study would then be required prior to site designation to assess likelihood of success and determine the warranted level of resource allocated to habitat improvement.

8.1.7 Provision of artificial roosting habitat

This management option involves constructing artificial structures to augment roosting habitat in current camp sites or to provide new roosting habitat. Trials using suspended ropes have been of limited success as flying-foxes only used the structures that were very close to the available natural roosting habitat. It is thought that the structure of the vegetation below and around the ropes is important.

8.1.8 Protocols to manage incidents

This management option involves implementing protocols for managing incidents or situations specific to particular camps. Such protocols may include 'bat watch' patrols at sites that host vulnerable people, management of pets at sites popular for walking dogs or heat stress incidents (when the camp is subjected to extremely high temperatures leading to flying-foxes changing their behaviour and/or dying).

8.1.9 Participation in research

This management option involves participating in research to improve knowledge of flying-fox ecology to address the large gaps in our knowledge about flying-fox habits and behaviours and why they choose certain sites for roosting. Further research and knowledge sharing at local, regional and national levels will enhance our understanding and management of flying-fox camps.

8.1.10 Appropriate land-use planning

Land-use planning instruments may be able to be used to ensure adequate distances are maintained between future residential developments and existing or historical flying-fox camps. While this management option will not assist in the resolution of existing land-use conflict, it may prevent issues for future residents.

8.1.11 Property acquisition

Property acquisition may be considered if negative impacts cannot be sufficiently mitigated using other measures. This option will clearly be extremely expensive, however is likely to be more effective than dispersal and in the long-term may be less costly.

8.1.12 Do nothing

The management option to 'do nothing' involves not undertaking any management actions in relation to the flying-fox camp and leaving the situation and site in its current state.

8.2 Level 2 actions: in-situ management

8.2.1 Buffers

Buffers can be created through vegetation removal and/or the installation of permanent/semi-permanent deterrents.

Creating buffers may involve planting low-growing or spiky plants between residents or other conflict areas and the flying-fox camp. Such plantings can create a visual buffer between the camp and residences or make areas of the camp inaccessible to humans.

Buffers greater than 300 metres are likely to be required to fully mitigate amenity impacts (SEQ Catchments 2012). The usefulness of a buffer to mitigate odour and noise impacts generally declines if the camp is within 50 metres of human habitation (SEQ Catchments 2012), however any buffer will assist and should be as wide as the site allows.

Buffers through vegetation removal

Vegetation removal aims to alter the area of the buffer habitat sufficiently so that it is no longer suitable as a camp. The amount required to be removed varies between sites and camps, ranging from some weed removal to removal of most of the canopy vegetation.

Any vegetation removal should be done using a staged approach, with the aim of removing as little native vegetation as possible. This is of particular importance at sites with other values (e.g. ecological or amenity), and in some instances the removal of any native vegetation will not be appropriate. Thorough site assessment (further to desktop searches,

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see Appendix 4) will inform whether vegetation management is suitable (e.g. can impacts to other wildlife and/or the community be avoided?).

Removing vegetation can also increase visibility into the camp and noise issues for neighbouring residents which may create further conflict.

Suitable experts (Appendix 1) should be consulted to assist selective vegetation trimming/removal to minimise vegetation loss and associated impacts.

The importance of under- and mid-storey vegetation in the buffer area for flying-foxes during heat stress events also requires consideration.

Buffers without vegetation removal

Permanent or semi-permanent deterrents can be used to make buffer areas unattractive to flying-foxes for roosting, without the need for vegetation removal. This is often an attractive option where vegetation has high ecological or amenity value.

While many deterrents have been trialled in the past with limited success, there are some options worthy of further investigation:

- Visual deterrents – Visual deterrents such as plastic bags, fluoro vests (GeoLINK 2012) and balloons (Ecosure 2016, pers. comm.) in roost trees have shown to have localised effects, with flying-foxes deterred from roosting within 1–10 metres of the deterrents. The type and placement of visual deterrents would need to be varied regularly to avoid habituation.
- Noise emitters on timers – Noise needs to be random, varied and unexpected to avoid flying-foxes habituating. As such these emitters would need to be portable, on varying timers and a diverse array of noises would be required. It is likely to require some level of additional disturbance to maintain its effectiveness, and ways to avoid disturbing flying-foxes from desirable areas would need to be identified. This is also likely to be disruptive to nearby residents.
- Smell deterrents – For example, bagged python excrement hung in trees has previously had a localised effect (GeoLINK 2012). The smell of certain deterrents may also impact nearby residents, and there is potential for flying-foxes to habituate.
- Canopy-mounted water sprinklers – This method has been effective in deterring flying-foxes during dispersals (Ecosure personal experience), and a current trial in Queensland is showing promise for keeping flying-foxes out of designated buffer zones. This option can be logistically difficult (installation and water sourcing) and may be cost-prohibitive. Design and use of sprinklers need to be considerate of animal welfare and features of the site. For example, misting may increase humidity and exacerbate heat stress events, and overuse may impact other environmental values of the site.

Note that any deterrent with a high risk of causing inadvertent dispersal may be considered a Level 3 action.

The use of visual deterrents, in the absence of effective maintenance, could potentially lead to an increase in rubbish in the natural environment.

The type, location and timing of deterrents need to be clearly described in your Plan so that OEH can assess whether there is a considerable risk of inadvertently dispersing some or all of the camp.

Measures to prevent inadvertent dispersal should also be detailed to allow this assessment. For example, active deterrents such as canopy-mounted sprinklers should not be turned on during fly-in or fly-out, but rather used in short intervals during the day to encourage flying-foxes away from the area.

8.2.2 Noise attenuation fencing

Noise attenuation fencing could be installed in areas where the camp is particularly close to residents. This may also assist with odour reduction, and perspex fencing could be investigated to assist fence amenity. Although expensive to install, this option could negate the need for habitat modification, maintaining the ecological values of the site, and may be more cost-effective than ongoing management.

8.3 Level 3 actions: disturbance or dispersal

8.3.1 Nudging

Noise and other low intensity active disturbance restricted to certain areas of the camp can be used to encourage flying-foxes away from high conflict areas. This technique aims to actively 'nudge' flying-foxes from one area to another, while allowing them to remain at the camp site.

Unless the area of the camp is very large, nudging should not be done early in the morning as this may lead to inadvertent dispersal of flying-foxes from the entire camp site. Disturbance during the day should be limited in frequency and duration (e.g. up to four times per day for up to 10 minutes each) to avoid welfare impacts. As with dispersal, it is also critical to avoid periods when dependent young are present (as identified by a flying-fox expert).

8.3.2 Dispersal

Dispersal aims to encourage a camp to move to another location, through either disturbance or habitat modification.

There is a range of potential risks, costs and legal implications that are greatly increased with dispersal (compared with in-situ management as above). See Appendix 6 for more details. These include:

- impact on animal welfare and flying-fox conservation
- splintering the camp into other locations that are equally or more problematic
- shifting the issue to another area
- impact on habitat value
- effects on the flying-fox population, including disease status and associated public health risk
- impacts to nearby residents associated with ongoing dispersal attempts
- excessive initial and/or ongoing capacity and financial investment
- negative public perception and backlash
- increased aircraft strike risk associated with changed flying-fox movement patterns
- unsuccessful management requiring multiple attempts, which may exacerbate all of the above.

Despite these risks, there are some situations where camp dispersal may be considered. Dispersal can broadly be categorised as 'passive' or 'active' as detailed below.

Passive dispersal

Removing vegetation in a staged manner can be used to passively disperse a camp, by gradually making the habitat unattractive so that flying-foxes will disperse of their own accord over time with little stress (rather than being more forcefully moved with noise, smoke, etc.). This is less stressful to flying-foxes, and greatly reduces the risk of splinter colonies forming in other locations (as flying-foxes are more likely to move to other known sites within their camp network when not being forced to move immediately, as in active dispersal).

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Generally, a significant proportion of vegetation needs to be removed in order to achieve dispersal of flying-foxes from a camp or to prevent camp re-establishment. For example, flying-foxes abandoned a camp in Bundall, Queensland once 70% of the canopy/mid-storey and 90% of the understorey had been removed (Ecosure 2011). Ongoing maintenance of the site is required to prevent vegetation structure returning to levels favourable for colonisation by flying-foxes. Importantly, at nationally important camps (defined in Section 4.2.1) sufficient vegetation must be retained to accommodate the maximum number of flying-foxes recorded at the site.

This option may be preferable in situations where the vegetation is of relatively low ecological and amenity value, and alternative known permanent camps are located nearby with capacity to absorb the additional flying-foxes. While the likelihood of splinter colonies forming is lower than with active dispersal, if they do form following vegetation modification there will no longer be an option to encourage flying-foxes back to the original site. This must be carefully considered before modifying habitat.

There is also potential to make a camp site unattractive by removing access to water sources. However at the time of writing this method had not been trialled so the likelihood of this causing a camp to be abandoned is unknown. It would also likely only be effective where there are no alternative water sources in the vicinity of the camp.

Active dispersal through disturbance

Dispersal is more effective when a wide range of tools are used on a randomised schedule with animals less likely to habituate (Ecosure pers. obs. 1997–2015). Each dispersal team member should have at least one visual and one aural tool that can be used at different locations on different days (and preferably swapped regularly for alternate tools). Exact location of these and positioning of personnel will need to be determined on a daily basis in response to flying-fox movement and behaviour, as well as prevailing weather conditions (e.g. wind direction for smoke drums).

Active dispersal will be disruptive for nearby residents given the timing and nature of activities, and this needs to be considered during planning and community consultation.

This method does not explicitly use habitat modification as a means to disperse the camp, however if dispersal is successful, some level of habitat modification should be considered. This will reduce the likelihood of flying-foxes attempting to re-establish the camp and the need for follow-up dispersal as a result. Ecological and aesthetic values will need to be considered for the site, with options for modifying habitat the same as those detailed for buffers above.

Early dispersal before a camp is established at a new location

This management option involves monitoring local vegetation for signs of flying-foxes roosting in the daylight hours and then undertaking active or passive dispersal options to discourage the animals from establishing a new camp. Even though there may only be a few animals initially using the site, this option is still treated as a dispersal activity, however it may be simpler to achieve dispersal at these new sites than it would in an established camp. It may also avoid considerable issues and management effort required should the camp be allowed to establish in an inappropriate location.

It is important that flying-foxes feeding overnight in vegetation are not mistaken for animals establishing a camp.

Maintenance dispersal

Maintenance dispersal refers to active disturbance following a successful dispersal to prevent the camp from re-establishing. It differs from initial dispersal by aiming to discourage occasional over-flying individuals from returning, rather than attempting to actively disperse animals that have been recently roosting at the site. As such, maintenance dispersal may have fewer timing restrictions than initial dispersal, provided that appropriate mitigation measures are in place (see Section 10).

8.4 Unlawful activities

8.4.1 Culling

Culling is addressed here as it is often raised by community members as a preferred management method; however, culling is contrary to the objects of the TSC Act and will not be permitted as a method to manage flying-fox camps.

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8.5 Site-specific analysis of management options

Table 3: Analysis of management options; definitions and descriptions of each management option are provided in Section 8

Management options	Relevant impacts	Cost \$-\$\$\$ Low-high	Advantages	Disadvantages	Suitability for the site
Level 1 options					
Education and awareness programs (Section 8.1.1)	Fear of disease Noise Smell Faecal drop	\$	Low cost, increasing awareness will help the community coexist with flying-foxes, providing options for landholders to reduce impacts is an effective long-term solution and can be undertaken quickly.	Education and advice itself will not mitigate all issues, and on its own would not be acceptable to the community. However education and engagement should form part of any management program.	Community engagement indicates the health and water tank hygiene. Education and engagement will help appease fears in relation to health risks and may generally improve perceptions of flying-foxes. Appraisal: Adopt
Property modification (Section 8.1.2)	Noise Smell Faecal drop Health/wellbeing Property devaluation Lost rental return	\$-\$\$	Property modification is one of the most effective ways to reduce amenity impacts of a camp without dispersal (and associated risks), relatively low cost, promotes conservation of flying-foxes, can be undertaken quickly, will not impact on the site, may add value to the property.	May be cost-prohibitive for private landholders, unlikely to fully mitigate amenity issues in outdoor areas.	Property modification, such as glazing windows or installing noise attenuating insulation, would greatly assist with noise impacts inside residences. External noise-attenuating fencing at property boundaries could be considered to reduce noise in outdoor areas if this is of concern. Clothesline covers, pool covers and/or subsidised water/electricity costs would assist mitigating faecal drop impacts. Free hire of pressure cleaners or service subsidies (e.g. for cleaning outdoor areas) may also assist. Rate reductions could also be investigated.
Fully-fund/subsidise property modification (Section 8.1.3)	Noise Smell Faecal drop Health/wellbeing Property devaluation Lost rental return	\$-\$\$\$	Potential advantages as per property modification, but also overcomes issue of cost for private landholders.	Costs to the land manager will vary depending on the criteria set for the subsidy including proximity to site, term of subsidy, level of subsidy. Potential for community conflict when developing the criteria, and may lead to expectations for similar subsidies for other issues.	Council will ensure the community is aware of options available for property owners to reduce amenity impacts. Appraisal: Adopt
Service subsidies including rate	Noise Smell	\$-\$\$	May encourage tolerance of living near a camp, promotes conservation of flying-foxes, can be undertaken quickly, will not impact on the site,	May be costly across multiple properties and would incur ongoing costs, may set	In consultation with affected landowners and residents, Council will investigate modification/service subsidies for members of the community in close proximity to the camp.

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Management options	Relevant impacts	Cost \$-\$\$\$ Low-high	Advantages	Disadvantages	Suitability for the site
rebates (Section 8.1.4)	Faecal drop Health/wellbeing Property devaluation Lost rental return		would reduce the need for property modification.	unrealistic community expectations for other community issues, effort required to determine who would receive subsidies.	Appraisal: Investigate further
Routine camp management (Section 8.1.5)	Health/wellbeing	\$	Will allow property maintenance, likely to improve habitat, could improve public perception of the site, will ensure safety risks of a public site can be managed. Weed removal has the potential to reduce roost availability and reduce numbers of roosting flying-foxes. To avoid this, weed removal should be staged and alternative roost habitat planted, otherwise activities may constitute a Level 3 action.	Will not generally mitigate amenity impacts for nearby landholders.	The majority XX of the Stonequarry Creek camp occurs on private property, and much of the habitat is comprised of weed species (e.g. privet). General maintenance of properties that are not intended to disturb the camp, such as mowing, can be done by residents without a licence. However, weed removal within the known camp extent (other than habitat restoration) should not be undertaken without OEH approval. Protocols should be developed for some activities (see below). Appraisal: Adopt
Alternative habitat creation (Section 8.1.6)	Noise Smell Faecal drop Health/wellbeing Property devaluation Lost rental return	\$\$-\$\$\$	If successful in attracting flying-foxes away from high conflict areas, dedicated habitat in low conflict areas will mitigate all impacts and helps flying-fox conservation. Rehabilitation of degraded habitat that is likely to be suitable for flying-fox use could be a more practical and faster approach than habitat creation. Improving potential alternative camp habitat on the island could be part of a medium-long term plan.	Generally costly, long-term approach so cannot be undertaken quickly, previous attempts to attract flying-foxes to a new site have not been known to succeed.	There is a large amount of similar habitat considered suitable for roosting flying-foxes along Stonequarry Creek. The majority of this habitat is privately owned and also surrounded by residences. As such, a camp at most alternative locations in the surrounds would cause similar levels of conflict. The extensive availability of suitable alternative habitat would almost certainly result in any attempts to create habitat elsewhere unsuccessful. Similarly any disturbance at the current camp would most likely result in them establishing at an equally problematic location. Appraisal: Not currently feasible The Stonequarry Creek Landcare Group is already working in areas of the site, and there may be potential for them to include in-situ flying-fox habitat management in their scope of

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Management options	Relevant impacts	Cost \$-\$\$\$ Low-high	Advantages	Disadvantages	Suitability for the site
Provision of artificial roosting habitat (Section 8.1.7)	Noise Smell Faecal drop Health/wellbeing Property devaluation Lost rental return	\$-\$\$	If successful in attracting flying-foxes away from high conflict areas, dedicated habitat in low conflict areas will mitigate all impacts, promotes flying-fox conservation.	Generally costly, previous attempts to attract flying-foxes to a new site have not been known to succeed.	works. Appraisal: Adopt Artificial roosting habitat is still in its trial stages. Trials are not considered a priority at this site as while vegetation on site is affected by flying-foxes, it is primarily weedy and the site can be managed without provision of additional roost space. Appraisal: Disregard
Protocols to manage incidents (Section 8.1.8)	Health/wellbeing Fear of disease	\$	Low cost, will reduce actual risk of negative human/pet-flying-fox interactions, promotes conservation of flying-foxes, can be undertaken quickly, will not impact the site. Protocols should be developed for staff and volunteers working in the creek-line and health information included on interpretative signage.	Will not mitigate amenity impacts, but will reduce fear of disease.	Council should develop safe work methods for staff working along the creek-line and under the camp. Council could share this with contractors and Landcare groups to ensure they are aware of appropriate risk management and their responsibilities under the Policy. Appraisal: Adopt
Research (Section 8.1.9)	Noise Smell Faecal drop Health/wellbeing Property devaluation Lost rental return	\$	Supporting research to improve understanding may contribute to more effectively mitigating all impacts, promotes flying-fox conservation.	Generally cannot be undertaken quickly, management trials may require cost input.	Not considered an urgent action at this site. Council will endeavour to stay up to date with contemporary research as it arises. Appraisal: Adopt (low priority)
Appropriate land-use planning (Section 8.1.10)	Noise Smell Faecal drop Health/wellbeing Property devaluation Lost rental return	\$	Suitable planning for future development will reduce potential for future conflict. Identification of degraded sites that may be suitable for long-term rehabilitation for flying-foxes could reduce impacts.	Will not generally mitigate current impacts, land-use restrictions may impact the landholder.	Council may consider including additional management buffer zones within their codes in future local environment plan updates if appropriate. Appraisal: Investigate further

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Management options	Relevant impacts	Cost \$-\$-\$ Low-high	Advantages	Disadvantages	Suitability for the site
Property acquisition (Section 8.1.11)	All for specific property owners Nil for broader community	\$\$\$	Will reduce future conflict with the owners of acquired property.	Owners may not want to move, only improves amenity for those who fit criteria for acquisition, very expensive.	This option is cost prohibitive with the number of properties surrounding the camp. Appraisal: Not feasible
Do nothing (Section 8.1.12)	Nil	Nil	No resource expenditure.	Will not mitigate impacts and would not be considered acceptable by impacted members of the community.	Not appropriate for this site. Appraisal: Disregard
Level 2 actions					
Buffers through vegetation removal (Section 8.2.1)	Noise Smell Health/wellbeing	\$-\$	Any vegetation removal should be done using a staged approach, with the aim of removing as little native vegetation as possible and only in vegetation directly behind affected residents.	Removing vegetation can also increase visibility into the camp and noise issues for neighbouring residents which may create further conflict.	No clearing of native vegetation will be permitted within the TEC. Buffers of less attractive habitat may be created by removing weeds, which may be suitable for properties that border the camp along Lumsdaine and Campbell Street. OEH approval required for weed removal in the camp area Appraisal: Investigate further
Buffers without vegetation removal – visual deterrents, canopy mounted sprinklers (Section 8.2.1)	Noise Smell Health/wellbeing Damage to vegetation	\$\$	Canopy-mounted water sprinklers – This method has been effective in deterring flying-foxes from designated buffer zones in Queensland (Ecosure pers comm.). Visual deterrents – Visual deterrents such as plastic bags, fluoro vests (GeoLINK 2012) and balloons (Ecosure 2016, pers. comm.) in roost trees have shown to have localised effects, with flying-foxes deterred from roosting within 1–10 metres of the deterrents.	This option can be logistically difficult (installation and water sourcing) and may be cost-prohibitive. Misting may increase humidity and exacerbate heat stress events, and overuse may impact other environmental values of the site. The type and placement of visual deterrents would need to be varied regularly to avoid habituation. Potentially lead to increase in rubbish in the natural environment.	While canopy sprinklers may be suitable for use in a desired buffer zone, it would be cost prohibitive for private landholders to install and maintain and has not been considered further at this stage. Appraisal: Not currently feasible
Noise attenuation fencing (Section 8.2.2)	Noise Smell Health/wellbeing	\$\$	Will eliminate/significantly reduce noise from the camp, will reduce other impacts, limited maintenance costs.	Noise attenuation fencing is costly. There are cheaper alternatives which can be	Due to the slope of the site, and that flying-foxes roost significantly lower than residential lots, even low-height noise attenuation should be effective. Council will ensure residents are

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Management options	Relevant impacts	Cost \$-\$\$\$ Low-high	Advantages	Disadvantages	Suitability for the site
	Property devaluation Lost rental return/income			attached to existing fencing.	aware of different fencing options, and consider in a potential subsidies scheme. Appraisal: Investigate further
Level 3 actions					
Nudging (Section 8.3.1)	All	\$\$-\$\$\$	Can encourage flying-foxes to shift away from high conflict areas next to residential areas.	May lead to inadvertent dispersal if not done at the correct time, frequency or duration.	As detailed above, there is no suitable alternative in the surrounds where the camp could be nudged to. Appraisal: Disregard
Dispersal (Section 8.3.2)	All at that site but not generally appropriate for amenity impacts only (see Section 8)	\$\$\$	If successful can mitigate all impacts at that site.	As detailed in Section 8.3.2, dispersal is rarely successful without significant vegetation removal (not appropriate at this location) or ongoing effort and excessive expenditure (e.g. several years and \$1M for Sydney Botanic Gardens). Flying-foxes will almost always continue to roost in the area (generally within 600m), and often splinter into several locations nearby (including many remaining at the original site) (e.g. a single camp permanently splintered to numerous sites as a result of dispersal in Maclean, including remaining at the original site).	As detailed above, the camp would almost certainly establish in an undesirable alternative location along Stonequarry Creek, which would cause similar levels of conflict. The site is also very steep and would not be safe to access at night for active dispersal. Appraisal: Not feasible

9. Planned management approach

Table 3 outlines actions planned over the five-year life of this Plan. These actions are based on community feedback during consultation, and site-specific analysis of available management options (Section 8.5).

As detailed in Section 2.2, the camp is located on non-Council property (private and Crown). As such, Council is unable to take an active role in on-ground works, however will support the community wherever possible.

Any on-ground works must be in compliance with stop work triggers in Section 9.1 and measures to avoid impacts in Section 10.

Table 3 Management approach overview

Management aim and success measure	Actions	Action level under the Policy (see Sections 4 and 8)	Licence application required (see Section 4)
<p>Aim: Assist reducing amenity impacts (e.g. noise, faecal drop, etc) for the community adjacent the camp.</p> <p>Measure: A reasonable level of amenity maintained for surrounding community.</p>	<p>Continue to develop and implement education strategies ensuring affected landholders are aware of:</p> <ul style="list-style-type: none"> measures available to reduce amenity impacts, including options for noise attenuation fencing (see Sections 8.1 and 8.2.2) appropriate replacements for foraging trees which will assist with night time noise and faecal drop appropriate general hygiene measures for rain water tanks (e.g. first flush systems) what to do if a dead, injured or orphaned flying-fox is found, including relevant contact details. 	L1	N/A
	<p>Investigate a community subsidies program (see Table 3). Such a program, if feasible, should be scaled with proximity to the camp (up to 300 m). An ongoing subsidies program may also be scaled with numbers at the camp and camp extent so that the level of assistance reflects impacts.</p>	L1	N/A
	<p>Consult with odour management specialists (e.g. Odour Pro www.odours.com.au) to determine the feasibility and likely benefits of an odour neutralising system (see Appendix XX, retailing between \$5,500 and \$7,500 for up to 150 m). Such a system should not be used in the camp to avoid negatively impacting flying-foxes, but may be useful closer to residences.</p>	L1	✓
<p>Keep abreast of new research outcomes which may inform future impact mitigation measures, particularly the ability to 'attract' flying-foxes to low conflict locations or other ways to better mitigate community impacts.</p>	<p>Consult with the community regarding support for buffer zones (as shown on Map 4 and outlined in Section 10.2), which would be at individual landholder expense (subsidies may apply). Proposed buffer zones provide a minimum 10 m distance from residences, up to XX m where habitat is available. If of interest, Council will apply to OEH for a combined licence and oversee management to ensure compliance with legislation, licence conditions, and this Plan. If buffers are to progress, they should be included in a detailed plan (see below restoration plan action)</p> <p>Council will also investigate the option of providing residents with TEC-appropriate plants from the Council nursery to replace weeds removed from the buffer zone.</p>	L2	✓
	<p>Keep abreast of new research outcomes which may inform future impact mitigation measures, particularly the ability to 'attract' flying-foxes to low conflict locations or other ways to better mitigate community impacts.</p>	L1	N/A

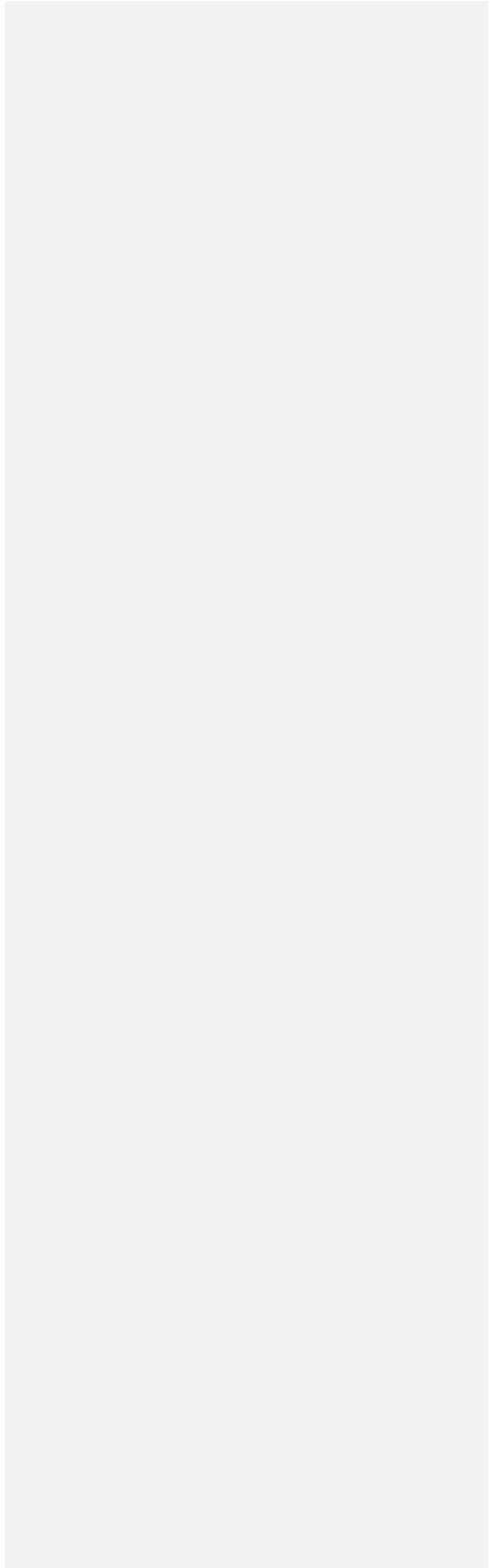
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Management aim and success measure	Actions	Action level under the Policy (see Sections 4 and 8)	Licence application required (see Section 4)
<p>Aim: Ensure risks are appropriately managed. Measure: Risk mitigation information readily available to the community.</p>	Develop and conduct relevant training for all staff/community involved in any flying-fox management action and those who will be dealing with complaints/inquiries.	L1	N/A
	Ensure appropriate risk mitigation strategies are communicated to the community adjacent the camp (see first action above), and are readily available to the shire-wide community.	L1	N/A
	Develop safe work methods for staff working under and around the camp, and provide to relevant groups and contractors.	L1	N/A
	Develop a heat stress event protocol detailing Council's role in managing such incidents, and planning the response to flying-fox mortality.	L1	N/A
	Arrange and fund collection of flying-foxes from private property during mass mortality events (if required).	L1	N/A
	Aim: Protect the TEC and camp habitat within low conflict locations Measure: Stonequarry Creek camp restoration plan developed and being implemented	In consultation with the Stonequarry Creek Landcare Group, a flying-fox expert, and relevant land managers of Crown land, develop a weed removal and restoration plan prior to any works additional to those currently being undertaken by the Landcare Group. The plan should focus on improving habitat on Crown land in identified lower conflict areas as well as conserving the TEC, and must be considerate of flying-fox (and other fauna) habitat requirements and welfare.	L1
<p>Aim: Assist impacts on primary producers in the community.</p>	Engage with orchardists so they are aware of the significant foraging distances flying-foxes travel each night (i.e. attempting to disperse the camp would not reduce foraging impacts).	L1	N/A
	Investigate potential sources of funding assistance which may be available to landholders through grant schemes and low-interest loans (e.g. farm innovation fund to assist primary producers), and communicate to relevant landholders.	L1	N/A
	Include, where appropriate (e.g. in low conflict locations), flying-fox foraging species when revegetating Council-owned open space, which will help reduce foraging pressure on orchards. There is a particular need to increase the availability of winter-flowering and fruiting foraging species (see Eby 2016 and Eby 1995 for further information).	L1	N/A
<p>Aim: Minimise the potential for future conflict and conserve flying-foxes in the Council area Measure: Controls in place for future development</p>	Support current and future planning controls through the addition of planning provisions. These should seek to minimise amenity impacts through design and siting of new developments, acoustic measures, covered outdoor spaces etc., whilst also minimising the impact of proposed new development on the flying-fox camp.	L1	N/A

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Map 4 Potential management areas



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9.1 Stop work triggers

Any management will cease and will not recommence or progress to subsequent levels without consulting OEH if:

- any of the animal welfare triggers occur on more than two days during the program, such as unacceptable levels of stress (see Table 5)
- there is a flying-fox injury or death
- a new camp/camps appear to be establishing
- impacts are created or exacerbated at other locations
- there appears to be potential for conservation impacts
- standard measures to avoid impacts (detailed in Section 10.3) cannot be met.

Management may also be terminated at any time if:

- unintended impacts are created for the community around the camp
- allocated resources are exhausted.

Table 5: Planned action for potential impacts during management. A person with experience in flying-fox behaviour (as per Appendix 1) will monitor for welfare triggers and direct works in accordance with the criteria below

Welfare trigger	Signs	Action
Unacceptable levels of stress	If any individual is observed: <ul style="list-style-type: none"> • panting • saliva spreading • located on or within 2 m of the ground 	Works to cease for the day.
Fatigue	In-situ management <ul style="list-style-type: none"> • more than 30% of the camp takes flight • individuals are in flight for more than 5 minutes • flying-foxes appear to be leaving the camp Dispersal <ul style="list-style-type: none"> • low flying • laboured flight • settling despite dispersal efforts 	In-situ management Works to cease and recommence only when flying-foxes have settled* / move to alternative locations at least 50 m from roosting animals. Dispersal Works to cease for the day.

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Welfare trigger	Signs	Action
Injury/death	<ul style="list-style-type: none"> • a flying-fox appears to have been injured/killed on site (including aborted foetuses) • any flying-fox death is reported within 1 km of the dispersal site that appears to be related to the dispersal • females in final trimester • dependent/crèching young present • loss of condition evident 	<p>Works to cease immediately and OEH notified</p> <p>AND</p> <p>rescheduled</p> <p>OR</p> <p>adapted sufficiently so that significant impacts (e.g. death/injury) are highly unlikely to occur, as confirmed by an independent expert (see Appendix 1)</p> <p>OR</p> <p>stopped indefinitely and alternative management options investigated.</p>

*maximum of two unsuccessful attempts to recommence work before ceasing for the day.

10. Assessment of impacts

Measures to avoid impacts during Plan implementation are provided in Section 10.3.

10.1 Regional context

Proposed Level 2 actions do not aim to disperse any individuals from the site and so potential habitat has not been modelled. There are only three known camp sites within 25 km (Table 4), with the closest being Menangle 13 km away. As this is a significant distance, and there are no camps within 25 km to the south, it is probable that any significant disturbance would result in the formation of a new camp in the local area. Actions in this Plan will ensure disturbance at the Stonequarry Creek camp are minimised, which will in turn minimise the:

- likelihood of splinter camps forming in undesirable locations within Wollondilly Shire
- potential to influence conflict around camps in the region.

Table 4 Known camps within 25km

Proximity and direction compared to Stonequarry camp	Camp name , suburb	Anticipated potential for conflict
13 km ENE	Menangle, Menangle	Low-moderate (previous health impacts with Menangle virus – see Appendix 5)
22 km NE	Campbelltown, Campbelltown	High (close proximity to residents)
17 km N	Camden, Brownlow Hill	Low

10.2 Flying-fox habitat to be affected

The potential buffer area includes 0.4 ha of the 2 ha known maximum camp area (Map 4). This buffer area assumes all residents will undertake weed removal on their own lots, which is highly unlikely. It is anticipated to be less than half this area (i.e. <0.2 ha). It is planned that the buffer will be made less attractive to roosting flying-foxes by gradually removing weeds (i.e. no native vegetation removal). From the edge of the bank, weeds will be replaced with low-growing native species (shrubs and ground-covers) suited to the TEC to ensure bank stability.

The flying-fox expert assessment as part of this Plan development suggests that creating a buffer will retain sufficient habitat for the peak number of flying-foxes. However, should additional roost space be needed to accommodate occasional influxes in the interim while remaining habitat is being improved through habitat restoration and natural regeneration, there is suitable habitat available south of Victoria Bridge. Given the height of Victoria Bridge the camp would remain visually connected, as generally preferred.

Ongoing restoration by the Stonequarry Creek Landcare Group will facilitate continual native canopy gain. Additional areas have also been identified for improvement to offset any remaining loss of camp habitat associated with weed removal. It is critical that all weed

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removal and restoration works are considerate of flying-fox habitat requirements, particularly maintaining sufficient mid-storey for protection in extreme weather (e.g. heat stress events). Retaining a complex structure is also important for other native fauna known to occur on site (e.g. fairy-wrens and finches, see Section 5). Initial works in identified improvement areas should be gap planting only to provide additional habitat. Weeds, particularly privet which is favoured by flying-foxes, should remain undisturbed in these improvement areas while gap plantings establish. This will avoid sudden change to vegetation structure and composition which may make the habitat unsuitable. As gap plantings establish, weedy mid-storey should be removed gradually in a mosaic pattern to allow natural regeneration. As per Table XX, a vegetation management plan will be developed for the site with input from a flying-fox expert.

Weed removal will result in a net biodiversity gain, and protect the long-term sustainability of the TEC with native species able to regenerate following weed removal.

10.3 Assessment of impacts to other threatened species or communities

As per Section 5 and Appendix XX, 40 threatened species and one TEC were assessed for their likelihood of occurrence (based on Bionet search results). Nine flora and 15 fauna species could possibly occur at the site (Appendix XX), and the TEC was confirmed.

The approach advocated for in this Plan consists entirely of weed removal, assisted regeneration and replanting native species suited to the TEC. A detailed restoration plan will ensure sufficient vegetation structure is retained at all times during restoration works to avoid impacting any fauna. As such it is anticipated there will be net benefits to the TEC and threatened species that may occur on site, and further assessment (such as an assessment of significance under the *Biodiversity Conservation Act 2016*, or Significant Impact Guidelines 1.1 – Matters of National Environmental Significance under the EPBC Act) is not considered necessary.

10.4 Measures to avoid impacts

The following mitigation measures will be complied with at all times during Plan implementation.

10.4.1 All management activities

- All personnel will be appropriately experienced, trained and inducted. Induction will include each person's responsibilities under this Plan.
- All personnel will be briefed prior to the action commencing each day, and debriefed at the end of the day.
- Works will cease and OEH consulted in accordance with the following 'stop work triggers' section of the Plan.
- Large crews will be avoided where possible.
- The use of loud machinery and equipment that produces sudden impacts/noise will be limited. Where loud equipment (e.g. chainsaws) is required they will be started away from the camp and allowed to run for a short time to allow flying-foxes to adjust.

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- Activities that may disturb flying-foxes at any time during the year will begin as far from the camp as possible, working towards the camp gradually to allow flying-foxes to habituate.
- Non-critical activities will ideally be scheduled when the camp is naturally empty. Where this is not possible they will be scheduled for the best period for that camp (e.g. when the camp is seasonally lower in numbers and breeding will not be interrupted, or during the non-breeding season, generally May to July).
- Any activity likely to disturb flying-foxes so that they take flight will be avoided during the day during the sensitive GHFF/BFF birthing period (i.e. when females are in final trimester or the majority are carrying pups, generally August – December) and avoided altogether during crècheing (generally November/December – February). If required during these periods a person experienced in flying-fox behaviour will monitor the camp for at least the first two scheduled actions (or as otherwise deemed to be required by that person) to ensure impacts are not excessive and advise on the most appropriate methods (e.g. required buffer distances, approach, etc.).
- OEH will be immediately contacted if LRFF are present between March and October, or are identified as being in final trimester / with dependent young.
- Works will not take place in periods of adverse weather including strong winds, sustained heavy rains, in very cold temperatures or during periods of likely population stress (e.g. food bottlenecks). Wildlife carers will be consulted to determine whether the population appears to be under stress.
- Works will be postponed on days predicted to exceed 35°C (or ideally 30°C), and for one day following a day that reached ≥35°C. If an actual heat stress event has been recorded at the camp or at nearby camps, a rest period of several weeks will be scheduled to allow affected flying-foxes to fully recover. See the OEH fact sheet on [Responding to heat stress in flying-fox camps](#).
- If impacts at other sites are considered, in OEH's opinion, to be a result of management actions under this Plan, assistance will be provided to the relevant land manager to ameliorate impacts. Details of this assistance are to be developed in consultation with OEH.
- Any proposed variations to works detailed in the Plan will be approved, in writing, by OEH before any new works occur.
- OEH may require changes to methods or cessation of management activities at any time.
- Ensure management actions and results are recorded to inform future planning. See the OEH fact sheet on [Monitoring, evaluating and reporting](#).

Human safety

- All personnel to wear protective clothing including long sleeves and pants; additional items such as eye protection and a hat are also recommended. People working under the camp should wash their clothes daily. Appropriate hygiene practices will be adopted such as washing hands with soap and water before eating/smoking.
- All personnel who may come into contact with flying-foxes will be vaccinated against Australian bat lyssavirus with current titre.
- A wash station will be available on site during works along with an anti-viral antiseptic (e.g. Betadine) should someone be bitten or scratched.
- Details of the nearest hospital or doctor who can provide post-exposure prophylaxis will be kept on site.

Post-works

- Reports for Level 1 actions will be provided to OEH annually. Reports for Level 2 actions will be submitted to OEH one month after commencement of works and then quarterly for

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the life of the Plan (in periods where works have occurred for Level 2 actions, up to five years). Each report is to include:

- results of pre- and post-work population monitoring
- any information on new camps that have formed in the area
- impacts at other locations that may have resulted from management, and suggested amelioration measures
- an assessment of how the flying-foxes reacted to the works, with particular detail on the most extreme response and average response, outlining any recommendations for what aspects of the works went well and what aspects did not work well
- further management actions planned including a schedule of works
- an assessment⁵ of how the community responded to the works, including details on the number and nature of complaints before and after the works
- detail on any compensatory plantings undertaken or required
- expenditure (financial and in-kind costs)
- Plan evaluation and review (see Section 12).

10.4.2 All Level 2 actions

Prior to works

- Residents adjacent to the camp will be individually notified one week prior to on-ground works commencing. This will include information on what to do if an injured or orphaned flying-fox is observed, a reminder not to participate in or interfere with the program, and details on how to report unusual flying-fox behaviour/daytime sightings. Relevant contact details will be provided (e.g. Program Coordinator). Resident requests for retention of vegetation and other concerns relating to the program will be taken into consideration.
- Where the Plan is being implemented by Council, information will be placed on Council's website along with contact information.
- OEHL will be notified at least 48 hours before works commence.
- A protocol, in accordance with the [NSW Code of Practice for Injured, Sick and Orphaned Flying-foxes](#) (OEHL 2012), for flying-fox rescue will be developed including contact details of rescue and rehabilitation organisations. This protocol will be made available to all relevant staff, residents and volunteers prior to the action commencing. See Appendix 8 for an example protocol.
- A licensed wildlife carer will be notified prior to beginning works in the event that rescue/care is required.

Monitoring

- A flying-fox expert (identified in section 13.3) will undertake an on-site population assessment prior to, during works and after works have been completed, including:
 - number of each species
 - ratio of females in final trimester
 - approximate age of any pups present including whether they are attached or likely to be crèched
 - visual health assessment
 - mortalities.
- Counts will be done at least:
 - once immediately prior to works

⁵ A similar approach should be taken to pre-management engagement (see Section 3) to allow direct comparison, and responses should be assessed against success measures (Section 9) to evaluate success.

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- daily during works
- immediately following completion
- one month following completion
- 12 months following completion.

During works

- A flying-fox expert will attend the site as often as OEH considers necessary to monitor flying-fox behaviour and ensure compliance with the Plan and the Policy. They must also be able to identify pregnant females, flightless young, individuals in poor health and be aware of climatic extremes and food stress events. This person will make an assessment of the relevant conditions and advise the supervisor/proponent whether the activity can go ahead.
- At least one flying-fox rest day with no active management will be scheduled fortnightly, preferably weekly.

10.4.3 Vegetation trimming/removal

- Dead wood and hollows will be retained on site where possible as habitat.
- Vegetation chipping is to be undertaken as far away from roosting flying-foxes as possible.
- No tree in which a flying-fox is roosting will be trimmed or removed. Works may continue in trees adjacent to roost trees only where a person experienced in flying-fox behaviour assesses that no flying-foxes are at risk of being harmed. A person experienced in flying-fox behaviour is to remain on site to monitor, when canopy trimming/removal is required within 50 metres of roosting flying-foxes.

10.4.4 Bush regeneration

- All works will be carried out by suitably qualified and experienced bush regenerators, with at least one supervisor knowledgeable about flying-fox habitat requirements (and how to retain them for Level 1 and 2 actions) and trained in working under a camp.
- Vegetation modification, including weed removal, will not alter the conditions of the site such that it becomes unsuitable flying-fox habitat for Level 1 and 2 actions.
- Weed removal should follow a mosaic pattern, maintaining refuges in the mid- and lower storeys at all times.
- Weed control in the core habitat area will be undertaken using hand tools only (or in the evening after fly-out while crèching young are not present).
- Species selected for revegetation will be consistent with the habitat on site, and in buffer areas or conflict areas should be restricted to small shrubs/understorey species to reduce the need for further roost tree management in the future.

11. Evaluation and review



Detail your Plan evaluation and review schedule, including triggers and timeframes. The suggested schedule below can be used if appropriate, or amended if required.

The Plan will have a scheduled review annually, which will include evaluation of management actions against measures shown in Section 8.

The following will trigger a reactive review of the Plan:

- completion of a management activity
- progression to a higher level of management
- changes to relevant policy/legislation
- new management techniques becoming available
- outcomes of research that may influence the Plan
- incidents associated with the camp.

Results of each review will be included in reports to OEH (as per reporting timing outlined in Section 10.3.1).

If the Plan is to remain current, a full review including stakeholder consultation and expert input will be undertaken in the final year of the Plan's life prior to being re-submitted to OEH.

12. Plan administration

Outline the administrative details of your Plan to establish a framework for implementation. The subheadings suggested below can be used to guide implementation of the Plan if appropriate, or amended if required.

12.1 Monitoring of the camp

Monitoring of the camp should establish a standard precedent for regular monitoring of the area, size and composition of the camp over the life of the Plan, as well as the results of any management actions undertaken (consolidating information from Sections 10.3.2 and 10.3.6, and making reference to the [monitoring fact sheet](#) associated with the Policy).

12.2 Reporting

Establish the reporting framework for the Plan, including any reporting obligations related to licences or certificates associated with proposed works.

12.3 Management structure and responsibilities

Identify in Table 6 who is responsible for what, including specific contractors and experts planned to be involved in management implementation. Where specific contractors are not provided in the Plan, you will need to detail them in relevant licence applications for OEH approval.

The recommended template is provided below with spaces for you to identify who will fill each role. Brief information demonstrating that each person has the required experience should also be provided in your Plan. When assessing the Plan, OEH will assess whether each proposed team member has the required skills and experience for the role.

A project health and safety plan that includes all relevant contact details should be developed prior to implementing the Plan, for team reference.

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Table 6: Roles and responsibilities

Role	Name	Required experience/approvals	Responsibilities/authority	Communication lines
Program Coordinator	[insert]	Project management Human resource management Community engagement Reporting	Inform and consult with stakeholders and interested parties Community engagement Evaluate program Submit reports to OEH/DoE Ensure all landowners have provided consent prior to works	Reports to: [insert] Direct reports: Project Manager
Project Manager	[insert]	Project management Team leadership and coordination Data management	Coordinate field teams and ensure all personnel are appropriately experienced and trained for their roles Induct all personnel to the program Collect and collate data Liaise with OEH and DoE Liaise with wildlife carers/veterinarians (for orphaned/injured wildlife only)	Reports to: Program Coordinator Direct reports: Supervisor, Contractor
Supervisor	[insert]	Knowledgeable in flying-fox biology, behaviour and camp management (see Appendix 1 for detail) ABL V-vaccinated and trained in flying-fox rescue Team training, leadership and supervision	Pre- and post-management monitoring Surrounding camp monitoring Coordinate daily site briefings Coordinate daily activities Monitor flying-fox behaviour Rescue flying-foxes if required (and no carer/vet on site) Determine daily works end point Participate in management activities	Reports to: Project Manager Direct reports: Team members, Observers/support
Team member	[insert]	Recommended ABL V-vaccinated (employer to assess risk) Ideally all team knowledgeable in flying-fox biology, behaviour and camp management however not required	Attend daily site briefings Participate in relevant management activities	Reports to: Supervisor Direct reports: Nil
Contractor [insert type e.g. arborist]	[insert]	Relevant licences and experience in field	Conduct specified activities (e.g. tree trimming) Adhere to all directions given by Supervisor	Reports to: Project Manager Direct reports: Nil
Observer/support	[insert]	Approval to access site	Provide care of injured/orphaned wildlife (under licence) if required	Reports to: Supervisor Direct reports: Nil
Flying-fox expert	[insert]	See Appendix 1	On-site population assessment, monitor flying-fox behaviour and ensure compliance with the Plan.	Reports to: Supervisor Direct reports: Nil

12.4 Adaptive management

Identify mechanisms for amending the Plan based on lessons from implementation, feedback from the community and any other feedback mechanisms.

12.5 Funding commitment

Identify how much the actions in the Plan would cost and the sources of funds to implement Plan actions.

13. References and additional resources

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Commented [JB5]: Added references

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Appendix XX Flora and fauna records (NSW Bionet)

Family	Scientific name	Common name	NSW Status	Comm Status	Habitat description	Likelihood of occurrence
Fauna						
Meliphagidae	<i>Anthochaera phrygia</i>	Regent Honeyeater	E4	CE	Box-Ironbark eucalypt woodland and dry sclerophyll forest associations in areas of low to moderate relief	Unlikely Site habitat quality too poor to support this species although this bird could be an itinerant vagrant taking advantage of the seasonal availability of nectar.
Ardeidae	<i>Ardea ibis</i>	Cattle Egret	P	C,J	The cattle egret occurs in tropical and temperate grasslands, wooded lands and terrestrial wetlands. It is commonly associated with the habitats of farm animals, particularly cattle, but also pigs, sheep, horses and deer. The cattle egret is known to follow earth-moving machinery and has been located at rubbish tips. It uses predominately shallow, open and fresh wetlands including meadows and swamps with low emergent vegetation and abundant aquatic flora. They have sometimes been observed in swamps with tall emergent vegetation	Unlikely The site does not support suitable habitat for this species as it prefers wide open spaces, woodlands and terrestrial wetlands.
Apodidae	<i>Hirundapus caudacutus</i>	White-throated Needletail	P	C,J,K	Although they occur over most types of habitat, they are probably recorded most often above wooded areas, including open forest and rainforest, and may also fly between trees or in clearings, below the canopy, but they are less commonly recorded flying above woodland.	Possible Likely to be observed overhead of the site and may rarely forage amongst the canopy.
Meropidae	<i>Merops ornatus</i>	Rainbow Bee-eater	P	J	Occurs mainly in open forest, woodlands and shrublands and partially cleared habitats.	Unlikely This migratory species prefers more open flatter environments than what is available at Stonequarry Creek.
Accipitridae	<i>Hieraaetus morphnoides</i>	Little Eagle	V	Not listed	Occupies open eucalypt forest, woodland or open woodland. Sheoak, Acacia woodlands and riparian woodlands of interior NSW are	Unlikely Site habitat is too degraded and within a semi-urban environment to support this

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Family	Scientific name	Common name	NSW Status	Comm Status	Habitat description	Likelihood of occurrence
Climacteridae	<i>Climacteris picumnus victoriae</i>	Brown Treecreeper (eastern subspecies)	V	Not listed	also used. Found in eucalypt woodlands (including Box-Gum Woodland) and dry open forest of the inland slopes and plains inland of the Great Dividing Range; mainly inhabits woodlands dominated by stringybarks or other rough-barked eucalypts, usually with an open grassy understorey, sometimes with one or more shrub species; also found in mallee and River Red Gum (<i>Eucalyptus carnaldulensis</i>) Forest bordering wetlands with an open understorey of acacias, saltbush, lignum, cumbungi and grasses; usually not found in woodlands with a dense shrub layer; fallen timber is an important habitat component for foraging; also recorded, though less commonly, in similar woodland habitats on the coastal ranges and plains.	raptor. Possible Limited habitat available but there is a chance that this bird could forage in the better quality habitat particularly on some of the rough barked eucalypts such as <i>Angophora floribunda</i> .
Neositidae	<i>Daphoenositta chrysoptera</i>	Varied Sittella	V	Not listed	Eucalypt forest and dry, open forest.	Possible Limited suitable habitat available on the banks and slopes of the creek.
Artamidae	<i>Artamus cyanopterus cyanopterus</i>	Dusky Woodswallow	V	Not listed	Primarily inhabit dry, open eucalypt forests and woodlands, including mallee associations, with an open or sparse understorey of eucalypt saplings, acacias and other shrubs, and ground-cover of grasses or sedges and fallen woody debris. It has also been recorded in shrublands, heathlands and very occasionally in moist forest or rainforest. Also found in farmland, usually at the edges of forest or woodland.	Possible May be an itinerant visitor to the site as it prefers a wide range of habitats.
Petroicidae	<i>Melanodryas cucullata cucullata</i>	Hooded Robin (south-eastern form)	V	Not listed	Usually occurs in open eucalypt woodland, acacia shrub and mallee, in or near clearings.	Possible Some limited habitat available for this species particularly along the mid to upper slopes where better quality habitat is available.

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Family	Scientific name	Common name	NSW Status	Comm Status	Habitat description	Likelihood of occurrence
	<i>Petroica boodang</i>	Scarlet Robin	V	Not listed	Dry eucalypt forest and woodland. Prefers understorey with few scattered shrubs and grassland.	Possible Some limited habitat available for this species particularly along the mid to upper slopes where better quality habitat is available.
Estrildidae	<i>Stagonopleura guttata</i>	Diamond Firetail	V	Not listed	Open eucalypt, forest woodlands, river redgums, mallee, buloke, cypress pine, acacia scrubs, citrus orchards.	Possible Some limited habitat available for this species particularly along the mid to upper slopes where better quality habitat is available.
Cacatuidae	<i>Calyptorhynchus lathami</i>	Glossy Black-Cockatoo	V	Not listed	Highly dependent on Allocasuarina species, Open forest and woodlands with stands of sheoak (especially <i>Allocasuarina littoralis</i> and <i>Allocasuarina torulosa</i>). They mostly roost in the canopy of live, leafy trees such as eucalypts but breed in a hollow stump or limb of living or dead trees as well as holes in trunks of tall trees	Possible <i>Allocasuarina littoralis</i> is present and so this species may forage on the site.
Accipitridae	<i>Lophoictinia isura</i>	Square-tailed Kite	V	Not listed	Inhabits a range of diverse habitats including woodland dominated by eucalypts, pandanus, gallery forest, heath.	Possible May utilise the site for foraging and can often be seen in urban and semi-urban environments.
Cacatuidae	<i>Callocephalon fimbriatum</i>	Gang-gang Cockatoo	V	Not listed	Tall mountain forests in spring and summer, heavily timbered and mature wet sclerophyll.	Unlikely Suitable habitat not available, the vegetation is too disturbed and dry to be considered suitable habitat for the gang-gang cockatoo.
Strigidae	<i>Ninox strenua</i>	Powerful Owl	V	Not listed	Open forests and woodlands, particularly in wet forests with dense understoreys and along watercourses	Possible Given the large home range of the Powerful owl it is likely that the site could be used for foraging .
Camaenidae	<i>Meridolum comeovirens</i>	Cumberland Plain Land Snail	E1	Not listed	Primarily inhabits Cumberland Plain Woodland which is a grassy open woodland with some dense shrubs.	Unlikely Site is too disturbed and modified to provide suitable habitat for the land snail.

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Family	Scientific name	Common name	NSW Status	Comm Status	Habitat description	Likelihood of occurrence
Pseudocheiridae	<i>Petauroides volans</i>	Greater Glider		V	Nest in hollows of tall trees, emerging at night to feed on eucalypt leaves and flower buds.	Unlikely Suitable hollows are not available to support a population of greater gliders and is not well connected to surrounding habitat.
Petauridae	<i>Petaurus australis</i>	Yellow-bellied Glider	V	Not listed	Occurs in tall, damp Eucalypt forest and mixed coastal forests.	Unlikely This small patch of forest in an urban environment is very unlikely to support the yellow-bellied glider. Poor connectivity, poor habitat quality in an urban environment provides minimal resources for this glider.
	<i>Petaurus norfolkensis</i>	Squirrel Glider	V	Not listed	Inhabits mature or old growth Box, Box-Ironbark woodlands and River Red Gum forest west of the Great Dividing Range and Blackbutt-Bloodwood forest with heath understorey in coastal areas.	Unlikely Highly disturbed young eucalypt forest provides limited denning and foraging opportunities for the squirrel glider.
Molossidae	<i>Mormopterus norfolkensis</i>	Eastern Freetail-bat	V	Not listed	This species inhabits dry sclerophyll forest, woodland, riparian vegetation, rainforest, wet sclerophyll forest, swamp forests and mangrove forests east of the Great Dividing Range. It is known to roost in tree hollows but will also roost under bark or in man-made structures. Occurs in moist eucalypt forest, rainforest, vine thicket, wet and dry sclerophyll forest, melaleuca swamps, dense coastal forests and banksia scrub.	Possible This bat could use the site for foraging along the creek and banks although it prefers wetter vegetation types. Possible roost sites under bark but there are no tree hollows available.
Vespertilionidae	<i>Miniopterus australis</i>	Little Bentwing-bat	V	Not listed	Diverse, including Moist Eucalypt forest, rainforest, coastal forest, Melaleuca swamp and wet and dry sclerophyll forest.	Possible This bat could use the site for foraging along the creek and banks although it prefers wetter vegetation types.
	<i>Miniopterus schreibersii oceanensis</i>	Eastern Bentwing-bat	V,P	Not listed	This species occurs in woodlands and forests where it hunts above the canopy. It roosts mostly in caves but will also use derelict mines, storm water tunnels, buildings and man-made structures. Maternity caves are	Possible This bat could use the site for foraging along the creek and banks although it prefers wetter vegetation types. There are very limited opportunities for roosting

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Family	Scientific name	Common name	NSW Status	Comm Status	Habitat description	Likelihood of occurrence
	<i>Myotis macropus</i>	Southern Myotis	V,P	Not listed	restricted to caves with specific temperature and humidity ranges. This species often roosts in colonies with up to 150,000 individuals.	with no obvious caves or shelters available.
	<i>Chalinolobus dwyeri</i>	Large-eared Pied Bat	V,P	V	Dry forests and woodlands, moist eucalypt forests, caves and mines	Unlikely This bat could use the site for foraging along the creek and banks. Suitable roosting sites are not present.
Phascolarctidae	<i>Phascolarctos cinereus</i>	Koala	V,P	V	The koala occurs in a range of temperate, sub-tropical and tropical forest, woodland and semi-arid communities dominated by eucalyptus trees. Koalas feed almost exclusively on a few preferred primary and secondary food tree species that may vary widely on a regional, local and possibly seasonal basis.	Possible There are scattered records in the vicinity of Picton so it is not unreasonable to assume that the species would use the site infrequently. There are enough scattered eucalypts to provide suitable food resources.
Flora						
Apocynaceae	<i>Cynanchum elegans</i>	White-flowered Wax Plant	E1	E	Occurs on a variety of soil types on steep slopes with a range of soil fertility (DoEE 2008)	Possible Suitable habitat is available for this climber amongst the rocky scree slopes.
Elaeocarpaceae	<i>Tetraheca glandulosa</i>		V	Not listed	Associated with shale-sandstone transition habitat, occupies ridgetops and upper slopes in generally shallow soils.	Possible This short spreading shrub grows in sandy or rocky heath, limited habitat available as a result of significant disturbance
Ericaceae	<i>Epacris purpurascens</i> var. <i>purpurascens</i>		V	Not listed	Found in a range of habitats mainly with strong shale soil influence.	Unlikely This plant is found a wide range of habitats with a strong shale influence, conditions not found at the subject site

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Family	Scientific name	Common name	NSW Status	Comm Status	Habitat description	Likelihood of occurrence
	<i>Leucopogon exolasius</i>	Woronora Beard-heath	V	V	Inhabits woodland on sandstone and prefers rocky hillsides along creek banks.	Unlikely Grows in woodland on sandstone conditions not found at the subject site
Myrtaceae	<i>Darwinia peduncularis</i>		V	Not listed	Found on or near rocky outcrops on sandy, well drained low nutrient soil over sandstone.	Possible This plant prefers dry sclerophyll forest on sandstone hillsides. Some habitat potentially available on the upper slopes.
	<i>Darwinia biflora</i>		V	V	Occurs on edges of weathered shale-capped ridges, integrated with Hawkesbury Sandstone.	Unlikely This erect shrub occurs on the edges of weathered shale-capped ridges, a habitat type not available at the subject site.
	<i>Eucalyptus camfieldii</i>	Camfield's Stringybark	V	V	This species occurs in poor coastal country in shallow sandy and poorly drained soils overlying Hawkesbury sandstone, associated with coastal heath mostly on exposed sandy ridges. It is found mostly in small scattered stands near the boundary of tall coastal heaths and low open woodland of the slightly more fertile inland areas (Robinson 2003).	Unlikely A mallee tree with restricted distribution on shallow sandy soils. Conditions not suitable at subject site.
	<i>Melaleuca deanei</i>	Deane's Paperbark	V	V	The species is endemic to the coastal areas of Greater Sydney and grows ridgetop woodland with a minor number occurring in heath on sandstone.	Unlikely This shrub occurs in ridgetop woodland with only 5% of sites in heath on sandstone. Suitable habitat not available.
	<i>Eucalyptus macarthurii</i>	Paddys River Box, Camden Woollybutt	E1	E	Occurs on grassy woodland on relatively fertile soils on broad cold flats.	Unlikely Suitable habitat not available, occurs on grassy woodland on relatively fertile soils
	<i>Syzygium paniculatum</i>	Magenta Lilly Pilly	E1	V	Only occurs in NSW: south coast – on grey soils over sandstone in mainly littoral rainforest, central coast – gravels, sands, silts and clays in littoral and gallery rainforests.	Possible Some of the cooler areas would have once supported patches of rainforest potentially providing suitable habitat for this species
Polygonaceae	<i>Persicaria elator</i>	Tall Knotweed	V	V	Found along streams and lakes and occasionally in swamp forest.	Possible This erect herb occurs in damp places, usually on the margin of standing water.

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Family	Scientific name	Common name	NSW Status	Comm Status	Habitat description	Likelihood of occurrence
Proteaceae	<i>Grevillea parviflora</i> subsp. <i>parviflora</i>	Small-flower Grevillea	V	V	Sandy or light clay soils over thin shales. In the Sydney region, usually on tertiary sands and alluvium.	Stonequarry creek may provide some suitable habitat Possible A low spreading erect shrub which grows in sandy or light clay soils usually over this shales. Small areas of suitable habitat available
	<i>Persoonia bargoensis</i>	Bargo Geebung	E1	V	Woodland or dry sclerophyll forest on sandstone and heavier well drained loamy soils.	Possible Some suitable habitat available
	<i>Persoonia hirsuta</i>	Hairy Geebung	E1	E	The hairy geebung is restricted to the Greater Sydney district and can be found on ridge tops in sandy soils in dry sclerophyll open forest, woodland and heath on sandstone. It is usually present as isolated individuals or very small populations in disturbed areas such as track edges.	Possible Suitable habitat available along the top of the ridges although highly modified habitat would limit occurrence
Thymelaeaceae	<i>Pimelea curviflora</i> var. <i>curviflora</i>		V	V	The species occurs on shaley/lateritic soils over sandstone and shale/sandstone transition soils on ridgetops and upper slopes amongst woodlands. It often grows amongst dense grasses and sedges and responds to disturbance such as fire or grazing. It has also been observed in heath and woodland on sandstone (Robinson 2003).	Possible This shrub grows in a range of habitats potentially available at the subject site. Significant modification of habitat would limit its chances of being detected.

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Appendix XX EPBC Act Protected Matters Search report

Appendix XX Odour neutralising information

Appendix 1: Expert assessment requirements

The Plan template identifies where expert input is required. The following are the minimum required skills and experience which must be demonstrated by each expert.

Flying-fox expert

Essential

- Knowledge of flying-fox habitat requirements.
- Knowledge and experience in flying-fox camp management.
- Knowledge of flying-fox behaviour, including ability to identify signs of flying-fox stress.
- Ability to differentiate between breeding and non-breeding females.
- Ability to identify females in final trimester.
- Ability to estimate age of juveniles.
- Experienced in flying-fox population monitoring including static and fly-out counts, demographics and visual health assessments.

Desirable

- It is strongly recommended that the expert is independent of the Plan owner to ensure transparency and objectivity. OEHL may be able to provide assistance with flying-fox experts.
- ABLV-vaccinated (N.B. This is often an essential requirement during management implementation as detailed within the template).
- Trained in flying-fox rescue (N.B. This is often an essential requirement during management implementation as detailed within the template).
- Local knowledge and experience.

Ecologist

Essential

- At least five years demonstrated experience in ecological surveys, including identifying fauna and flora to species level, fauna habitat and ecological communities.
- The ability to identify flora and fauna, including ground-truthing of vegetation mapping.
- Formal training in ecology or similar, specifically flora and fauna identification.

Desirable

- Tertiary qualification in ecology or similar.
- Local knowledge and experience.
- Accredited Biobanking Assessor under the *Threatened Species Conservation Act 1995*.
- Practising member of the Ecological Consultants Association of NSW.

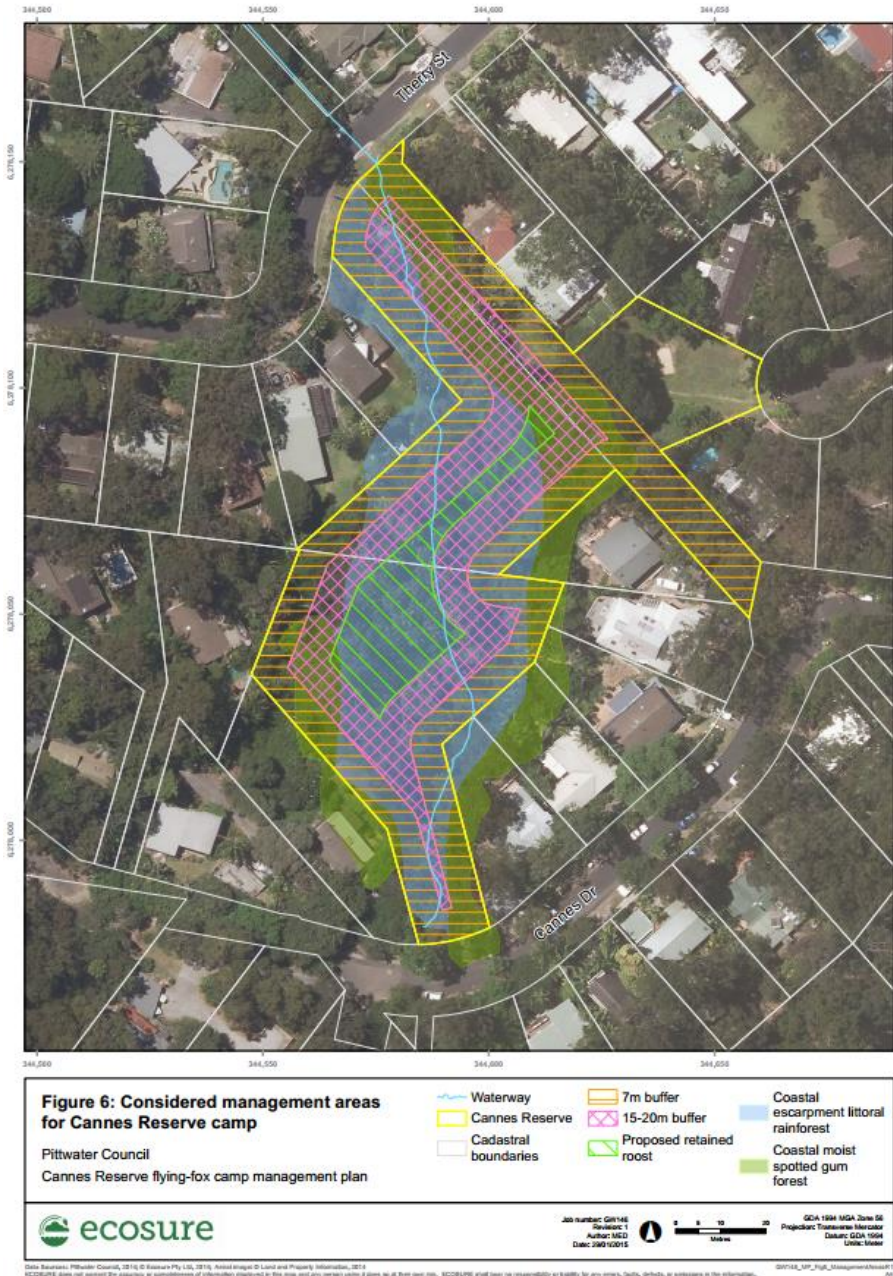
Depending on the site, for example when vegetation management is proposed for an endangered ecological community or an area with a high likelihood of containing other threatened flora and fauna species, a specialist in that field (e.g. specialist botanist) may be required.

Appendix 2: Stonequarry Creek Flying Fox Camp Extent



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Example management areas map
(used with permission from Pittwater Council)



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Example regional context map

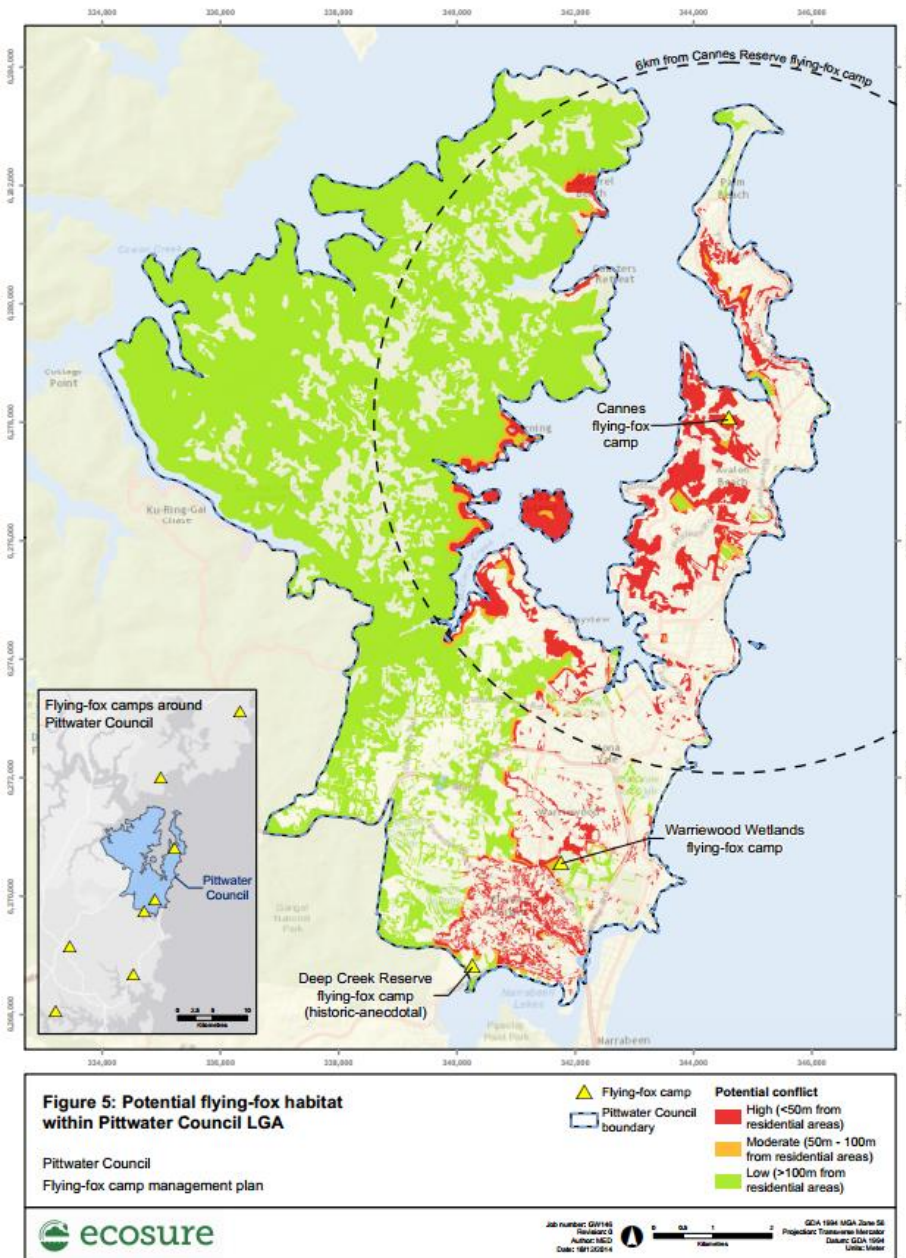
(used with permission from Pittwater Council)



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Example potential habitat map

(used with permission from Pittwater Council)



Appendix 3: Summary of other key legislation likely to apply at some camps

OEH recommends that councils and other land managers prepare a Camp Management Plan using this template, regardless of the legislation under which the proposed management activities are to be assessed. This will ensure that the land manager and surrounding communities are clear about the proposed management, and that appropriate consideration is given to the conservation and welfare of threatened species, the needs and interests of the surrounding community, and a range of other factors.

Local government legislation

Local government is required to prepare planning schemes (including Environmental Planning Instruments and Development Control Plans) consistent with provisions under the *Environmental Planning and Assessment Act 1979* (EP&A Act; see Section 4.1.5 of the template).

Local Environment Plans are environmental planning instruments that are legal documents and that relate to a local government area. Other environmental planning instruments, such as State Environmental Planning Policies (SEPPs), may relate to the whole or part of the state. A development control plan provides detailed planning and design guidelines to support the planning controls in a Local Environment Plan, but they are not legal documents.

Planning schemes enable a local government authority to manage growth and change in their local government area (LGA) through land use and administrative definitions, zones, overlays, infrastructure planning provisions, assessment codes and other administrative provisions. A planning scheme identifies the kind of development requiring approval, as well as zoning all areas within the LGA based on the environmental values and development requirements of that land. Planning schemes could potentially include a flying-fox habitat overlay, and may designate some habitat as flying-fox conservation areas.

State legislation

Rural Fires Act 1997

The objects of this Act are to prevent, mitigate and suppress bushfires and coordinate bush firefighting, while protecting persons from injury or death, and reduce property damage from fire. A permit is generally required from the Rural Fire Service for any fires in the open that are lit during the local Bush Fire Danger Period as determined each year. This may be relevant for fires used to disperse flying-foxes, or for any burning associated with vegetation management.

Protection of the Environment Operations Act 1997

The main object of the *Protection of the Environment Operations Act 1997* (POEO Act) is to set out explicit protection of the environment polices (PEPs) and adopt more innovative approaches to reducing pollution.

The use of smoke as a dispersal mechanism may constitute 'chemical production' under Schedule 1, clause 8 of the POEO Act, so this type of dispersal activity may require a licence under Chapter 3 of the Act.

The POEO Act also regulates noise including 'offensive noise'. The Protection of the Environment Operations (Noise Control) Regulation 2008 (Part 4, Division 2) provides information on the types of noise that can be 'offensive' and for which the Environment Protection Authority (EPA) can issue fines. This may include noise generated as a part of

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dispersal activities. It is best to discuss the types of noise makers and the sound levels and times these will be generated, along with identified noise receptors, with Council prior to any dispersal. Detailed advice and guidance on noise regulation can be found in the EPA's *Noise guide for local government* (EPA 2013).

Crown Lands Act 1989

The principles of Crown land management include the observance of environmental protection principles and the conservation of its natural resources, including water, soil, flora, fauna and scenic quality. Any works on land that is held or reserved under the Crown Lands Act 1989 (including vegetation management and dispersal activities) are an offence under the Act without prior authorisation obtained through the Department of Primary Industries (Lands).

Local Government Act 1993

The primary purpose of this Act is to provide the legal framework for an effective, efficient and environmentally responsible, open system of local government. Most relevant to flying-fox management is that it also provides encouragement for the effective participation of local communities in the affairs of local government and sets out guidance on the use and management of community land which may be applicable to land which requires management of flying-foxes.

State Environmental Planning Policies

SEPPs are environmental planning instruments which address specific planning issues within NSW. These SEPPs often remove power from local councils in order to control specific types of development or development in specific areas. SEPPs often transfer decision-making from Council to the Planning Minister. While there may be others, some of the SEPPs likely to apply at some flying-fox camps are outlined below.

SEPP 14 – Coastal Wetlands

This policy provides additional protection for coastal wetlands by requiring development consent to be obtained before any clearing, draining, filling or construction of levees can occur on a mapped wetland. Camps are unlikely to fall within the bounds of a SEPP 14 wetland, but additional restrictions for vegetation management in these areas may be required if they do.

SEPP 26 – Littoral Rainforests

SEPP 26 aims to protect coastal rainforests (littoral rainforests) by requiring development consent for activities within or adjacent to mapped coastal rainforest. It is unlikely that clearing for flying-fox management would be considered significant enough to trigger this SEPP but this should be confirmed if the site is within a mapped SEPP 26 area.

SEPP 19 – Bushland in Urban Areas

The aim of this policy is to protect and preserve bushland within urban areas which are defined in Schedule 1 of the SEPP. Broadly, this covers most LGAs within the Greater Sydney Region. It does not cover:

- land reserved or dedicated under the *National Parks and Wildlife Act 1974*
- state forests, flora reserves or timber reserves under the *Forestry Act 1916*
- land to which SEPP (Western Sydney Parklands) 2009 applies.

Bushland within the designated LGAs may not be disturbed without the consent of the council unless the disturbance is for: bushfire hazard reduction, facilitating recreational use of the bushland in accordance with a plan of management referred to in clause 8 of the policy and essential infrastructure such as electricity, sewerage, gas or main roads. If the land owned by the proponent is zoned as SEPP 19 bushland, council approval would be required under this SEPP. Council should be contacted to discuss any potential disturbance associated with camp management.

Appendix 4: Desktop ecological assessment guideline

Buffer

Desktop assessments should include the camp and a suitable buffer area. The suggested buffer for ecological assessments is 10 km, however this may be reviewed on a case by case basis.

Sources of information for database searches

Depending on the location and extent of the project, the following databases may provide information on flora and fauna species and ecological communities for the site and surrounds.

Sources of ecological information

Source	Description	Links
Atlas of Living Australia	Biodiversity knowledge contributed by Australia's academic, scientific, environmental and general communities	www.ala.org.au , page provides a link to a mapping and analysis page where you can view records within an area of interest
Protected Matters Search Tool	Used to generate a list of matters of national environment significance within an area of interest	www.environment.gov.au/epbc/protected-matters-search-tool
NSW BioNet	Contains government-held information about plants and animals in NSW. The following organisations provide data: Office of Environment and Heritage; National Parks and Wildlife Service; Royal Botanic Gardens and Domain Trust; Department of Primary Industries; Forests NSW; Australian Museum. Users can register for a log-in version which provides additional detail and functionality.	www.bionet.nsw.gov.au/
Critical Habitat Register – Office of Environment and Heritage	Declarations of critical habitat and maps of these sites for species listed under the TSC Act	www.environment.nsw.gov.au/criticalhabitat/criticalhabitatprotectionbydoctype.htm
Vegetation Information System: Maps	Statewide regional scale vegetation map, and for some areas, a local fine-scale map	www.environment.nsw.gov.au/research/PlantCommunityIDsoftware.htm
OEH – Spatial data portal	Spatial datasets available for download, supplied in GDA	data.nsw.gov.au/data/dataset/nsw-oeh-spatial-data-portal
SIX maps	Provides maps showing cadastral and topographic information	six.nsw.gov.au/wps/portal/
Threatened Species Profile Database	Provides a search tool for NSW threatened species including a description and indicative distribution	www.environment.nsw.gov.au/threatenedspecies/
SEPPs 14 & 26	Available on the OEH spatial data portal	data.nsw.gov.au/data/dataset/nsw-oeh-spatial-data-portal

Other sources of data

Depending on the type of project and location, the local council, or National Parks and Wildlife Service may hold more detailed vegetation mapping than publicly available. The relevant authority should be contacted to confirm if the most detailed mapping and data records have been obtained.

Appendix 5: Additional human and animal health information

The level of detail below may not be relevant to your Plan, however it may be useful to provide to the community to ensure they are aware of the actual (low) risk of disease transfer, and prevention measures. It should also be communicated to anyone working in and around the camp, and used to inform risk management protocols.

Australian bat lyssavirus

ABLV is a rabies-like virus that may be found in all flying-fox species on mainland Australia. It has also been found in an insectivorous microbat and it is assumed it may be carried by any bat species. The probability of human infection with ABLV is very low with less than 1% of the flying-fox population being affected (DPI 2013) and transmission requiring direct contact with an infected animal that is secreting the virus. In Australia three people have died from ABLV infection since the virus was identified in 1996 (NSW Health 2013).

Domestic animals are also at risk if exposed to ABLV. In 2013, ABLV infections were identified in two horses (Shinwari et al. 2014). There have been no confirmed cases of ABLV in dogs in Australia; however, transmission is possible (McCall et al. 2005) and consultation with a veterinarian should be sought if exposure is suspected.

Transmission of the virus from bats to humans is through a bite or scratch, but may have potential to be transferred if bat saliva directly contacts the eyes, nose, mouth or broken skin. ABLV is unlikely to survive in the environment for more than a few hours, especially in dry environments that are exposed to sunlight (NSW Health 2013).

Transmission of closely related viruses suggests that contact or exposure to bat faeces, urine or blood does not pose a risk of exposure to ABLV, nor does living, playing or walking near bat roosting areas (NSW Health 2013).

The incubation period in humans is assumed similar to rabies and variable between two weeks and several years. Similarly the disease in humans presents essentially the same clinical picture as classical rabies. Once clinical signs have developed the infection is invariably fatal. However, infection can easily be prevented by avoiding direct contact with bats (i.e. handling). Pre-exposure vaccination provides reliable protection from the disease for people who are likely to have direct contact with bats, and it is generally a mandatory workplace health and safety requirement that all persons working with bats receive pre-vaccination and have their level of protection regularly assessed. Like classical rabies, ABLV infection in humans also appears to be effectively treated using post-exposure vaccination and so any person who suspects they have been exposed should seek immediate medical treatment. Post-exposure vaccination is usually ineffective once clinical manifestations of the disease have commenced.

If a person is bitten or scratched by a bat they should:

- wash the wound with soap and water for at least five minutes (**do not scrub**)
- contact their doctor immediately to arrange for post-exposure vaccinations.

If bat saliva contacts the eyes, nose, mouth or an open wound, flush thoroughly with water and seek immediate medical advice.

Hendra virus

Flying-foxes are the natural host for Hendra virus (HeV), which can be transmitted from flying-foxes to horses. Infected horses sometimes amplify the virus and can then transmit it to other horses, humans and on two occasions, dogs (DPI 2014). There is no evidence that the virus can be passed directly from flying-foxes to humans or to dogs (AVA 2015). Clinical studies have shown cats, pigs, ferrets and guinea pigs can carry the infection (DPI 2015a).

Although the virus is periodically present in flying-fox populations across Australia, the likelihood of horses becoming infected is low and consequently human infection is extremely rare. Horses are thought to contract the disease after ingesting forage or water contaminated primarily with flying-fox urine (CDC 2014).

Humans may contract the disease after close contact with an infected horse. HeV infection in humans presents as a serious and often fatal respiratory and/or neurological disease and there is currently no effective post-exposure treatment or vaccine available for people. The mortality rate in horses is greater than 70% (DPI 2014). Since 1994, 81 horses have died and four of the seven people infected with HeV have lost their lives (DPI 2014).

Previous studies have shown that HeV spillover events have been associated with foraging flying-foxes rather than camp locations. Therefore risk is considered similar at any location within the range of flying-fox species and all horse owners should be vigilant. Vaccination of horses can protect horses and subsequently humans from infection (DPI 2014), as can appropriate horse husbandry (e.g. covering food and water troughs, fencing flying-fox foraging trees in paddocks, etc.).

Although all human cases of HeV to date have been contracted from infected horses and direct transmission from bats to humans has not yet been reported, particular care should be taken by select occupational groups that could be uniquely exposed. For example, persons who may be exposed to high levels of HeV via aerosol of heavily contaminated substrate should consider additional PPE (e.g. respiratory filters), and potentially dampening down dry dusty substrate.

Menangle virus

Menangle virus (also known as bat paramyxovirus no. 2) was first isolated from stillborn piglets from a NSW piggery in 1997. Little is known about the epidemiology of this virus, except that it has been recorded in flying-foxes, pigs and humans (AVA 2015). The virus caused reproductive failure in pigs and severe febrile (flu-like) illness in two piggery workers employed at the same Menangle piggery where the virus was recorded (AVA 2015). The virus is thought to have been transmitted to the pigs from flying-foxes via an oral-faecal matter route (AVA 2015). Flying-foxes had been recorded flying over the pig yards prior to the occurrence of disease symptoms. The two infected piggery workers made a full recovery and this has been the only case of Menangle virus recorded in Australia.

General health considerations

Flying-foxes, like all animals, carry bacteria and other microorganisms in their guts, some of which are potentially pathogenic to other species. Direct contact with faecal material should be avoided and general hygiene measures taken to reduce the low risk of gastrointestinal and other disease.

Contamination of water supplies by any animal excreta (birds, amphibians and mammals such as flying-foxes) poses a health risk to humans. Household tanks should be designed to minimise potential contamination, such as using first flush diverters to divert contaminants before they enter water tanks. Trimming vegetation overhanging the catchment area (e.g. the roof of a house) will also reduce wildlife activity and associated potential contamination.

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Tanks should also be appropriately maintained and flushed, and catchment areas regularly cleaned to remove potential contaminants.

Public water supplies are regularly monitored for harmful microorganisms, and are filtered and disinfected before being distributed. Management plans for community supplies should consider whether any large congregation of animals, including flying-foxes, occurs near the supply or catchment area. Where they do occur, increased frequency of monitoring should be considered to ensure early detection and management of contaminants.

Appendix 6: Dispersal results summary

Roberts and Eby (2013) summarised 17 known flying-fox dispersals between 1990 and 2013, and made the following conclusions:

1. In all cases, dispersed animals did not abandon the local area⁶.
2. In 16 of the 17 cases, dispersals did not reduce the number of flying-foxes in the local area.
3. Dispersed animals did not move far (in approx. 63% of cases the animals only moved <600 m from the original site, contingent on the distribution of available vegetation). In 85% of cases, new camps were established nearby.
4. In all cases, it was not possible to predict where replacement camps would form.
5. Conflict was often not resolved. In 71% of cases conflict was still being reported either at the original site or within the local area years after the initial dispersal actions.
6. Repeat dispersal actions were generally required (all cases except where extensive vegetation removal occurred).
7. The financial costs of all dispersal attempts were high, ranging from tens of thousands of dollars for vegetation removal to hundreds of thousands for active dispersals (e.g. using noise, smoke, etc.).

Ecosure, in collaboration with a Griffith University Industry Affiliates Program student, researched outcomes of management in Queensland between November 2013 and November 2014 (the first year since the current Queensland state flying-fox management framework was adopted on 29 November 2013). An overview of findings⁷ is summarised below.

- There were attempts to disperse 25 separate roosts in Queensland (compared with nine roosts between 1990 and June 2013 analysed in Roberts and Eby (2013)). Compared with the historical average (less than 0.4 roosts/year) the number of roosts dispersed in the year since the Code was introduced has increased by 6250%.
- Dispersal methods included fog⁸, birdfrite, lights, noise, physical deterrents, smoke, extensive vegetation modification, water (including cannons), paintball guns and helicopters.
- The most common dispersal methods were extensive vegetation modification alone and extensive vegetation modification combined with other methods.
- In nine of the 24 roosts dispersed, dispersal actions did not reduce the number of flying-foxes in the LGA.
- In all cases it was not possible to predict where new roosts would form.
- When flying-foxes were dispersed, they did not move further than 6 km away.
- As at November 2014 repeat actions had already been required in 18 cases.
- Conflict for the council and community was resolved in 60% of cases, but with many councils stating that they feel this resolution is only temporary.
- The financial costs of all dispersal attempts, regardless of methods used were considerable, ranging from \$7500 to more than \$400,000 (with costs ongoing).

⁶ Local area is defined as the area within a 20 km radius of the original site = typical feeding area of a flying-fox.

⁷ This was based on responses to questionnaires sent to councils; some did not respond and some omitted responses to some questions.

⁸ Fog refers to artificial smoke or vapours generated by smoke/fog machines. Many chemical substances used to generate smoke/fog in these machines are considered toxic.

Appendix 7: Section 91 licence application form

At the time the Plan is submitted to OEH for approval, it should include a completed section 91 licence application form. The form can include information already contained in the Plan. Alternatively, the land manager should inform OEH that the proposed works are to be assessed under Part 5 of the EP&A Act and will not require a licence application under the *Threatened Species Conservation Act 1995*.

Note that OEH is obliged to place licence application forms on its website, and the application, accompanying documentation and approval, form part of the public register for the TSC Act. The licence application is available at: [Section 91 Licence](#).

Appendix 8: Example flying-fox rescue protocol

Development of a flying-fox rescue protocol may be conditioned as part of a section 91 licence or section 95 certificate. The following may be used as a template, and this may be proactively submitted with your Plan.

Note that a protocol does not negate the requirement to have a licensed carer present at times specified above. When developing such a protocol you should seek input from the carer you plan to work with to ensure the protocol aligns with their preferred rescue approach.

Reference documents:

OEH 2012, [NSW Code of Practice for Injured, Sick and Orphaned Flying-foxes](#), Office of Environment and Heritage, Sydney.

OEH 2011, [NSW Code of Practice for Injured, Sick and Orphaned Protected Fauna](#), Office of Environment and Heritage, Sydney.

Purpose

These work instructions are intended for Australian bat lyssavirus (ABLV)-vaccinated fauna spotter catchers (FSCs) or wildlife rescue personnel on site during dispersal activities to monitor, capture or provide first aid treatment for sick or injured flying-foxes that may require human intervention for their survival. Flying-fox rescue must only be attempted by personnel trained and experienced in flying-fox rescue and handling.

This work instruction provides rescuers with information regarding capture and first aid until a flying-fox is in the specialist care of a veterinarian or person qualified in wildlife rehabilitation.

Requirements

FSC and wildlife rescue personnel involved in flying-fox rescue must:

- be trained and experienced in rescue and handling
- be vaccinated against ABLV (titre levels checked at least once every two years)
- be aware of the hazards and risks of coming into contact with all bats
- utilise appropriate PPE and equipment for capture, transport and treatment of flying-foxes
- undertake a risk assessment before carrying out a rescue – do not endanger yourself or others during a rescue
- have the contact details for a local veterinarian or bat carer who will accept the sick or injured flying-fox.

Human first aid

All bats in Australia should be viewed as potentially infected with ABLV. If bitten or scratched by a bat, immediately wash the wound with soap and water (do not scrub) and continue for at least five minutes, followed by application of an antiseptic with anti-viral action (e.g. Betadine), and immediate medical attention (post-exposure vaccinations may be required). Similarly medical attention should be immediately sought if exposed to an animal's saliva or excreta through the eyes, nose or mouth.

Stonequarry Creek Flying-fox Camp Management Plan

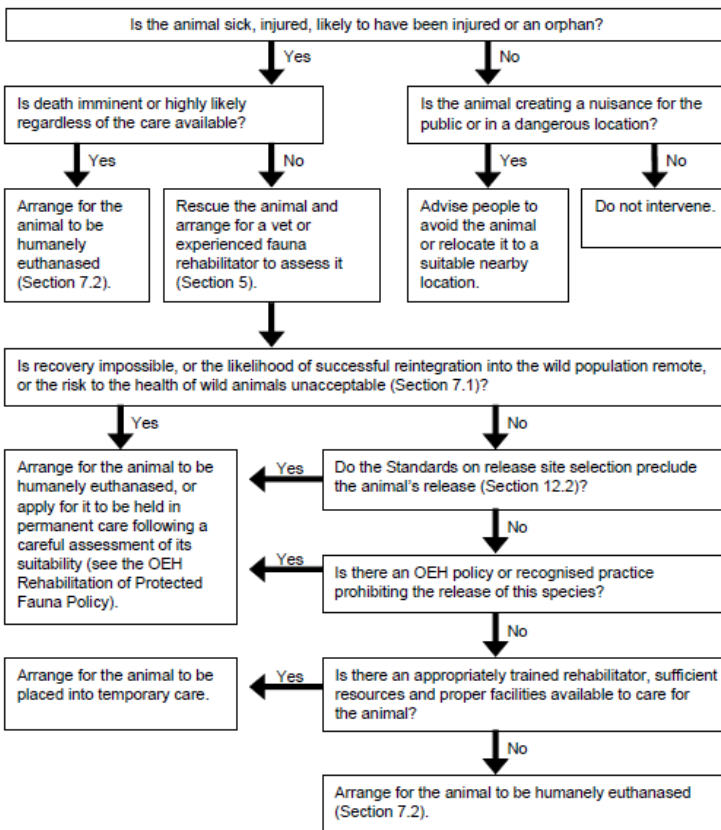
Equipment

- lidded plastic carry basket or 'pet-pack' with bedding (juveniles) / transport container with hanging perch, tall enough for bat to hang without hitting its head (in accordance with Section 5.1 of the NSW Code of Practice for Injured, Sick and Orphaned Flying-foxes (OEH 2012))
- warm water bottle / cold brick
- wraps /towels
- teats for small bottle
- extension pole or broom
- bat first aid kit – juice drink/glucose powder, syringes, cloths for wounds, Betadine/saline, dummy for baby bats. FFs only to be offered liquids under advice from a licensed wildlife carer.

Work instructions

Case assessment

Observe, assess and then determine if/what intervention is required using the decision tree in the NSW Code of Practice for Injured, Sick and Orphaned Protected Fauna (OEH 2011), included below.



Stonequarry Creek Flying-fox Camp Management Plan

Personnel should approach stressed flying-foxes cautiously. If flying-foxes panic or fly this will waste energy; retreat and continue to monitor behaviour.

1. Dehydration: Eyes dull or depressed in skull, change to skin elasticity, skin stays pinched, animal cold, wing membranes dry, mouth dry.
2. Heat stress: wing fanning, shade seeking, clustering/clumping, salivating, panting, roosting at the base of trees, on the ground, falling from tree.
3. Obvious injury: bleeding, broken bones.

Rescue instructions

As per Section 4 of the NSW Code of Practice for Injured, Sick and Orphaned Flying-foxes (OEH 2012):

- i. The objective is to rescue a flying-fox while minimising further stress and injury to the animal.
- ii. Before a rescue attempt, rescuers must assess the risks to the flying-fox from environmental hazards and from capture.
- iii. Rescuers must employ the correct rescue equipment for the condition and location of the flying-fox, and be trained in its use.

Example scenarios

1. Bat low in tree:
 - o quickly place towel around bat before it can move away
 - o grab hold of feet, toes may curl over rescuers fingers
 - o place in carry basket / transport container.
2. Bat high in tree:
 - o place pole wrapped in towel in front of bat
 - o coax bat onto towel
 - o once on towel, quickly move away from branches and lower to ground
 - o once on ground, cover with towel and place into carry basket / transport container.
3. A bat caught on barbed wire fence:
 - o two people only – one to restrain with towel, while the other untangles
 - o put towels on the wire strands under or around to avoid further entanglement
 - o if the membrane has dried onto wire, syringe or spray water onto wing
 - o use pliers or wire cutter if necessary.

Animal first aid

Physical assessment: Keep animal wrapped and head covered, only expose one part at a time. Examine head. Unwrap one wing and extend. Wrap and extend other wing. Check legs. Examine front and back of body.

Dehydration: Offer water/juice (low acid juice only, e.g. apple/mango) orally with syringe (under supervision/advice from licensed wildlife carer ONLY).

Heat stress: Reduce temperature in heat exhausted bats by spraying wings with tepid water.

Hypothermia: May be seen in pups separated from mother – keep head covered and warm core body temperature slowly by placing near (not on) warm water bottle covered by towel.

Bleeding: Clean wounds with room temperature saline or diluted Betadine.

Transport to veterinarian / wildlife carer

See Section 5 of the NSW Code of Practice for Injured, Sick and Orphaned Flying-foxes (OEH 2012) summarised below.

Stonequarry Creek Flying-fox Camp Management Plan

Objective

To transport a flying-fox so as to minimise further stress and injury to the animal.

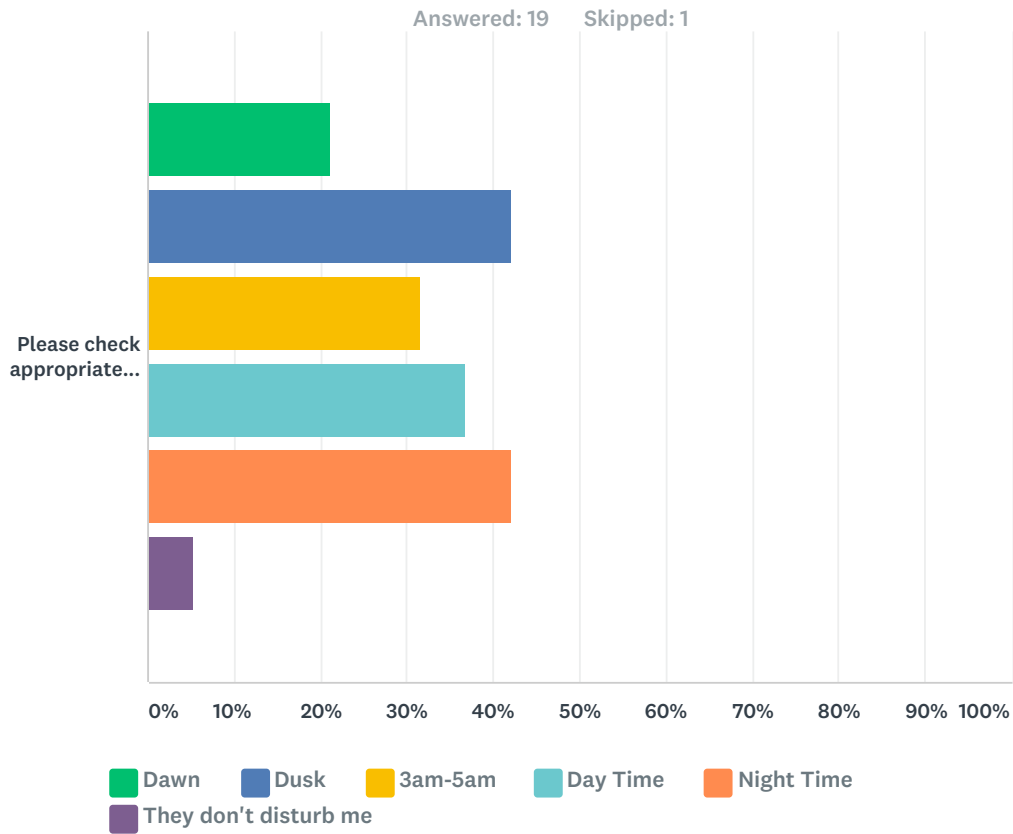
Standards

- a. The transport container must be tall enough for the flying-fox to hang by its feet without hitting its head on the floor.
- b. The container must be designed, set up and secured to prevent injuries to the flying-fox. The sides of the container must prevent the flying-fox from poking its head or wings out.
- c. The container must be designed to prevent the flying-fox from escaping.
- d. The flying-fox must be allowed to hang by its feet from the top of the container or if it is unable to hang, wrapped in material (e.g. sheet or flannel) and placed in a sling so its feet are higher than its head.
- e. The container must be kept at a temperature which is appropriate for the age and condition of the flying-fox. A range of 25–27°C is appropriate for an adult. A temperature of 28°C is appropriate for an orphan. A cool or warm water bottle may be required.
- f. The container must be ventilated so air can circulate around the flying-fox.
- g. The container must minimise light, noise and vibrations and prevent contact with young children and pets.
- h. During transport, a container holding a flying-fox must have a clearly visible warning label that says 'Warning – live bat'.
- i. A flying-fox must not be transported in the back of an uncovered utility vehicle or a car boot that is separate from the main cabin.

Guidelines

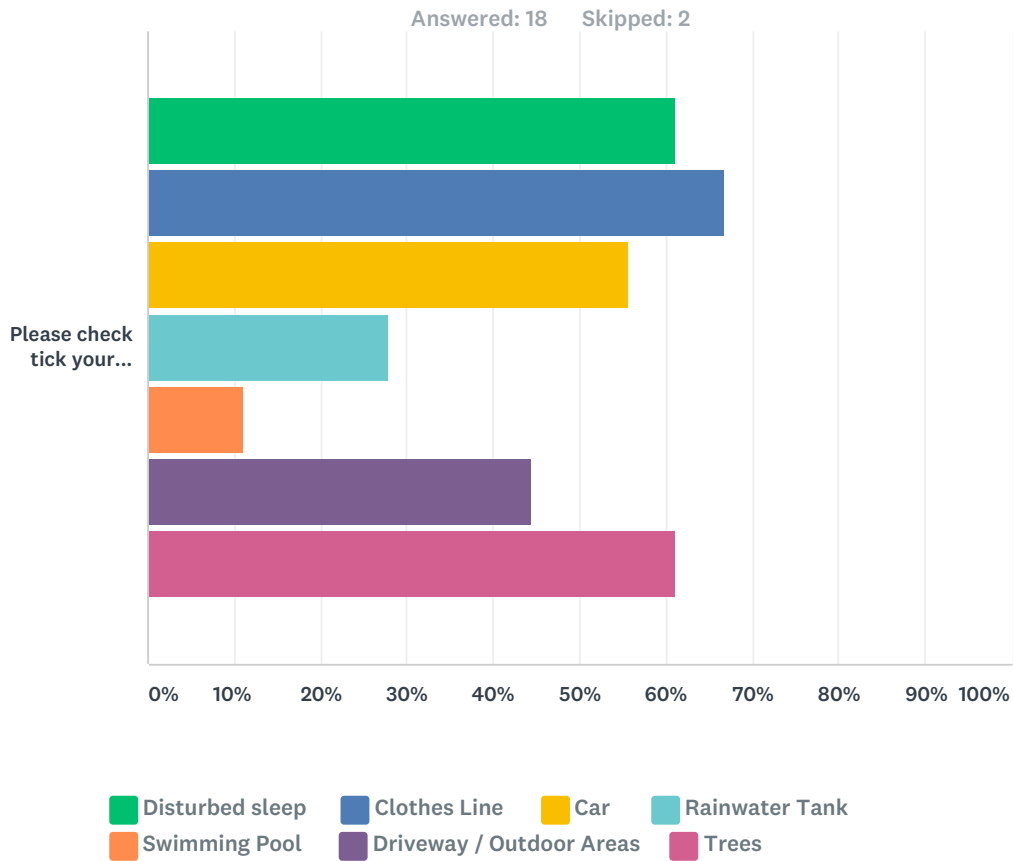
- Flying-fox transport should be the sole purpose of the trip and undertaken in the shortest possible time.
- The fauna rehabilitation group's contact details should be written on the transport container in case of an emergency.

Q1 At what time/s of the day is the noise most prevalent?



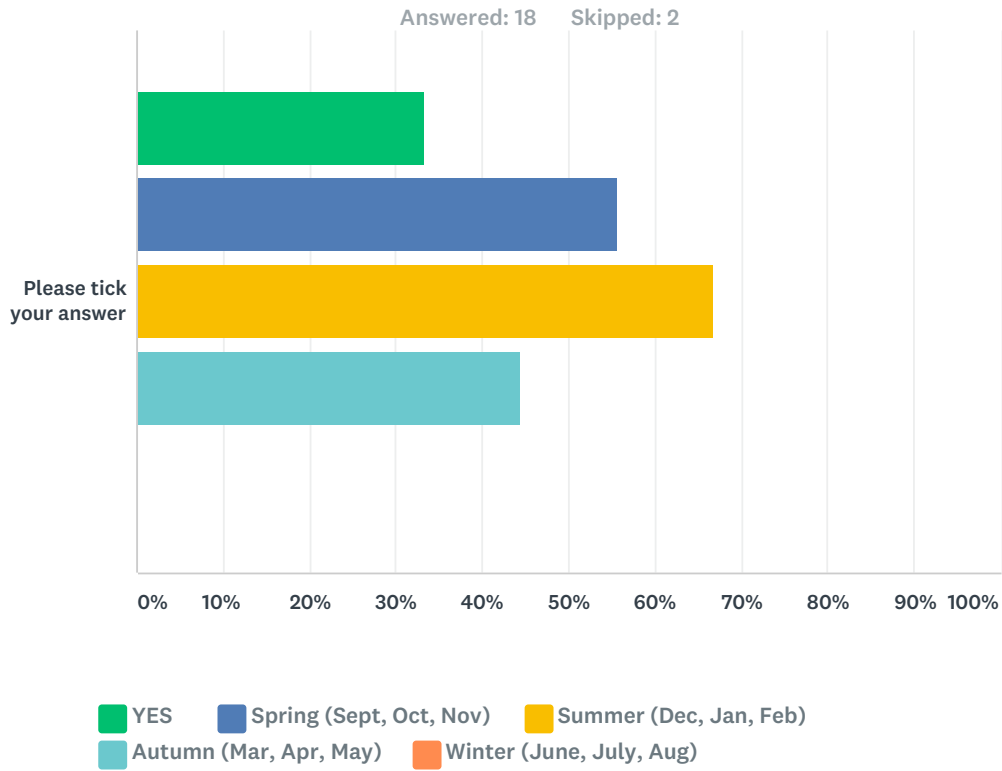
	Dawn	Dusk	3am-5am	Day Time	Night Time	They don't disturb me	Total Respondents
Please check appropriate answer	21.05% 4	42.11% 8	31.58% 6	36.84% 7	42.11% 8	5.26% 1	19

Q2 How are you impacted?



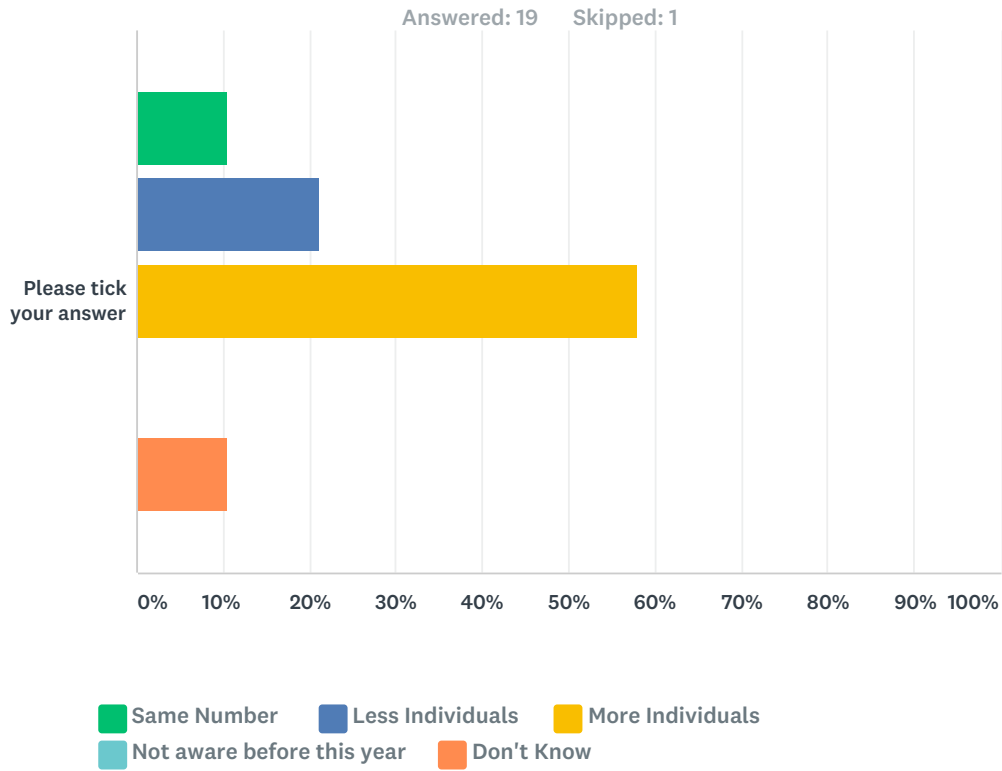
	Disturbed sleep	Clothes Line	Car	Rainwater Tank	Swimming Pool	Driveway / Outdoor Areas	Trees	Total Respondents
Please check tick your answer/s	61.11% 11	66.67% 12	55.56% 10	27.78% 5	11.11% 2	44.44% 8	61.11% 11	18

Q3 Does the Stonequarry Creek GHFF camp impact you all year round or is it seasonal.



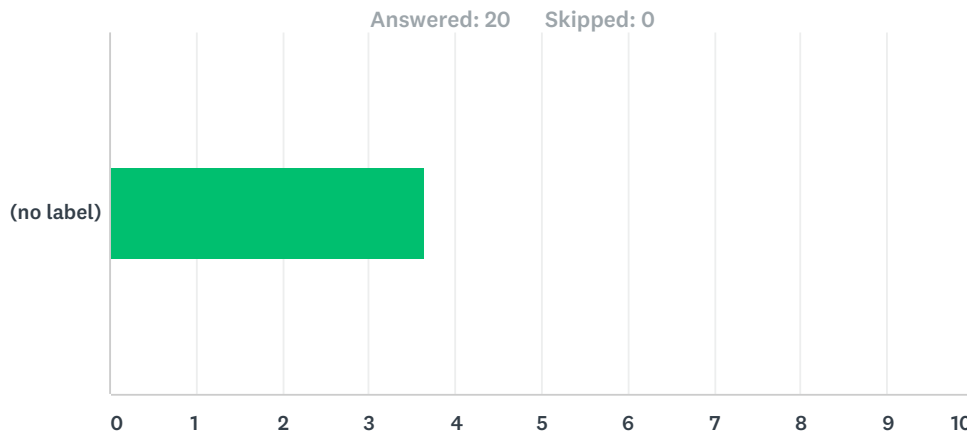
	YES	Spring (Sept, Oct, Nov)	Summer (Dec, Jan, Feb)	Autumn (Mar, Apr, May)	Winter (June, July, Aug)	Total Respondents
Please tick your answer	33.33% 6	55.56% 10	66.67% 12	44.44% 8	0.00% 0	18

Q4 This year how did the flying fox numbers compare to previous years?



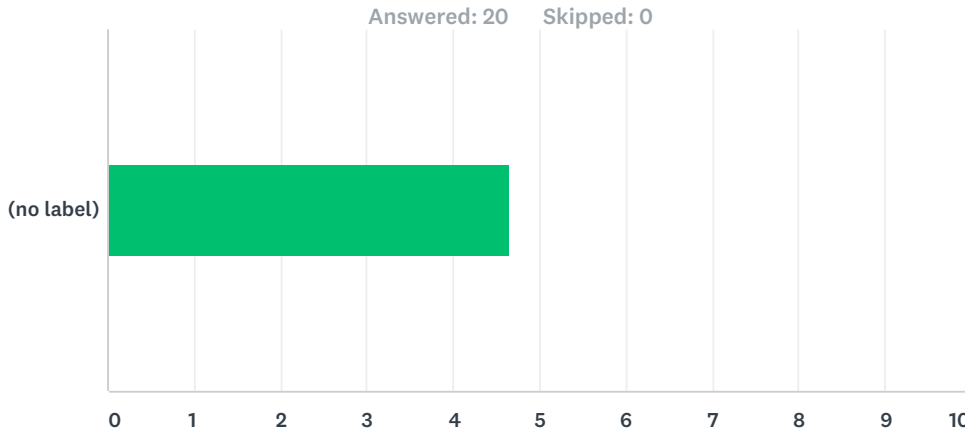
	Same Number	Less Individuals	More Individuals	Not aware before this year	Don't Know	Total
Please tick your answer	10.53% 2	21.05% 4	57.89% 11	0.00% 0	10.53% 2	19

Q5 Noise of the GHFF's when they are roosting or leaving and returning to the camp?



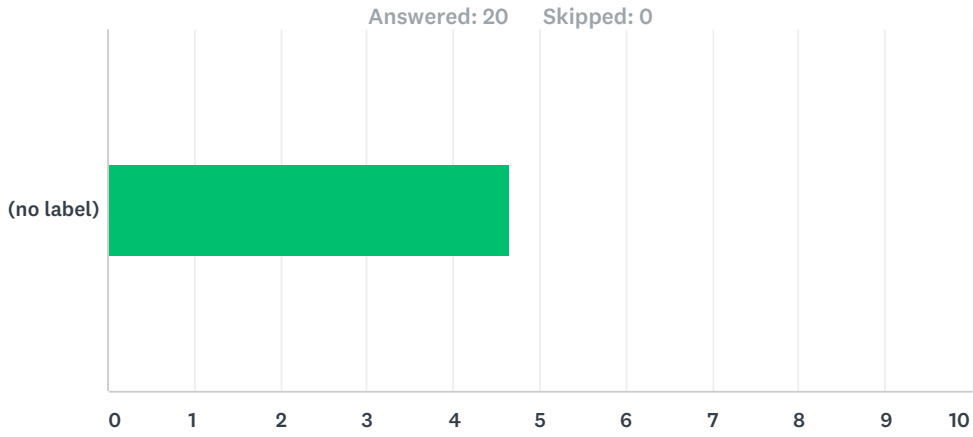
	1 - Not Important	(no label)	3 - Moderately Important	(no label)	5 - Extremely Important	Total	Weighted Average
(no label)	10.00% 2	5.00% 1	35.00% 7	10.00% 2	40.00% 8	20	3.65

Q6 The odour emitted from the camp?



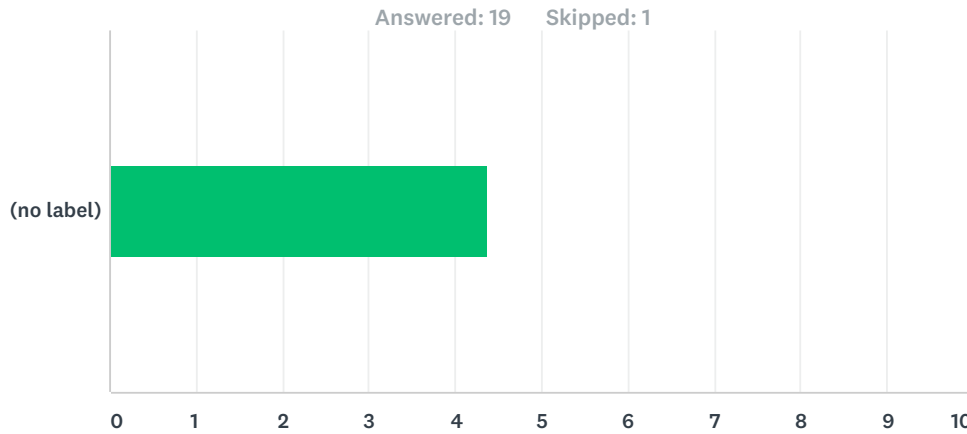
	1 - Not Important	(no label)	3 - Moderately Important	(no label)	5 - Extremely Important	Total	Weighted Average
(no label)	0.00% 0	5.00% 1	5.00% 1	10.00% 2	80.00% 16	20	4.65

Q7 The impact of their excrement / faeces?



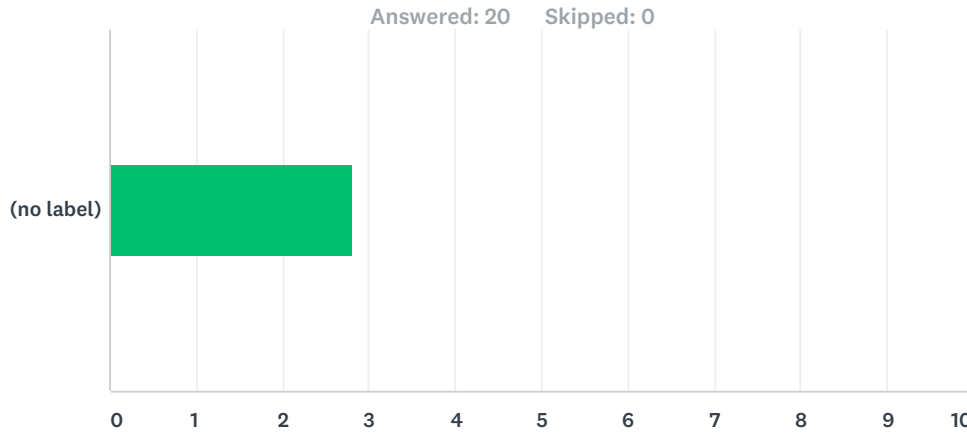
	1 - Not Important	(no label)	3 - Moderately Important	(no label)	5 - Extremely Important	Total	Weighted Average
(no label)	5.00% 1	0.00% 0	0.00% 0	15.00% 3	80.00% 16	20	4.65

Q8 Ensure that the risk of transmitting diseases associated with flying foxes remains low?



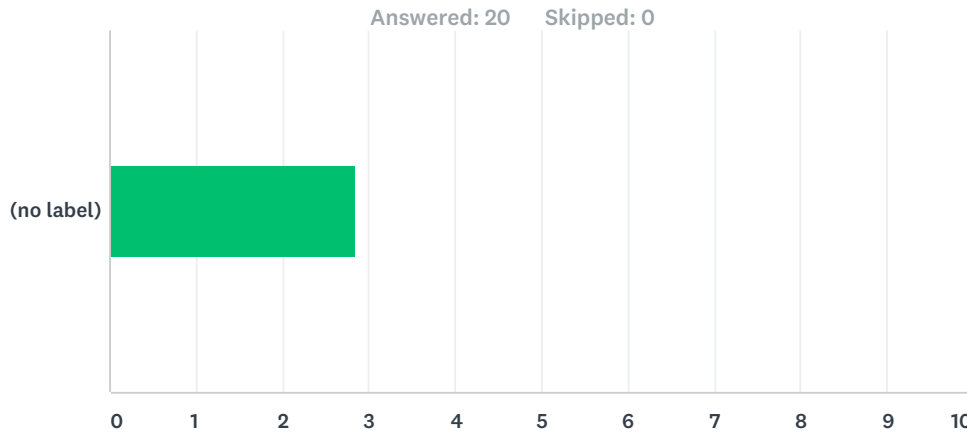
	1 - Not Important	(no label)	3 - Moderately Important	(no label)	5 - Extremely Important	Total	Weighted Average
(no label)	10.53% 2	0.00% 0	5.26% 1	10.53% 2	73.68% 14	19	4.37

Q9 Does not harm the flying foxes!



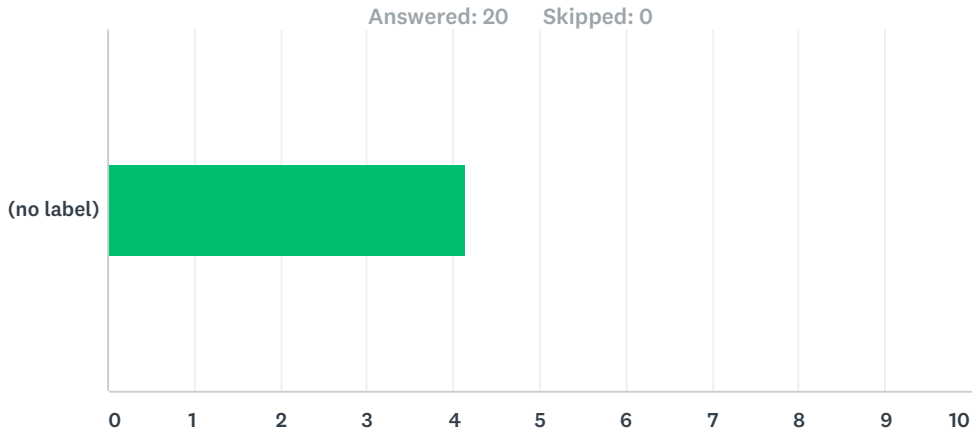
	1 - Not Important	(no label)	3 - Moderately Important	(no label)	5 - Extremely Important	Total	Weighted Average
(no label)	30.00% 6	15.00% 3	25.00% 5	5.00% 1	25.00% 5	20	2.80

Q10 Has low financial cost to local residents, businesses and council ratepayers.



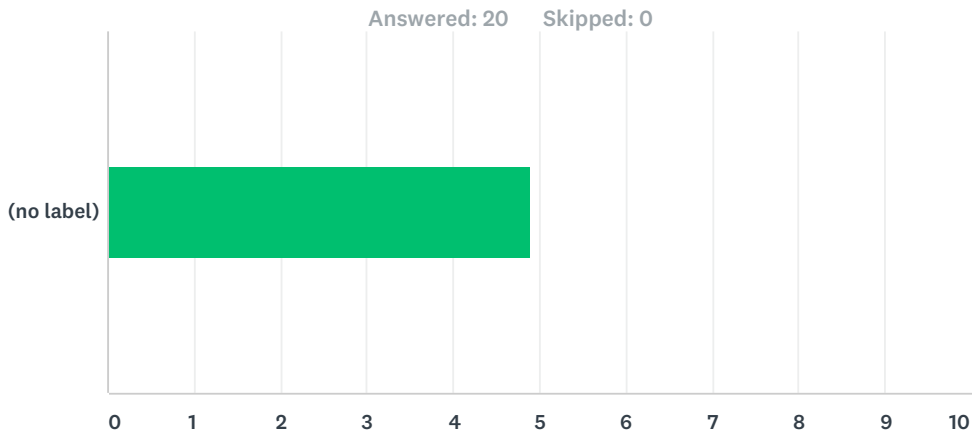
	1 - Not Important	(no label)	3 - Moderately Important	(no label)	5 - Extremely Important	Total	Weighted Average
(no label)	35.00% 7	0.00% 0	30.00% 6	15.00% 3	20.00% 4	20	2.85

Q11 Can be implemented quickly?



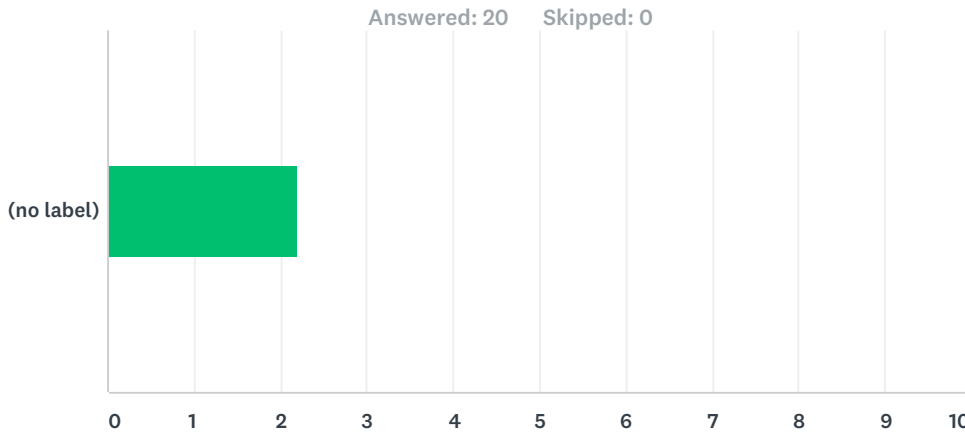
	1 - Not Important	(no label)	3 - Moderately Important	(no label)	5 - Extremely Important	Total	Weighted Average
(no label)	5.00% 1	0.00% 0	20.00% 4	25.00% 5	50.00% 10	20	4.15

Q12 Has a long term solution?



	1 - Not Important	(no label)	3 - Moderately Important	(no label)	5 - Extremely Important	Total	Weighted Average
(no label)	0.00% 0	0.00% 0	0.00% 0	10.00% 2	90.00% 18	20	4.90

Q13 Does not disturb residents and businesses during the implementation?

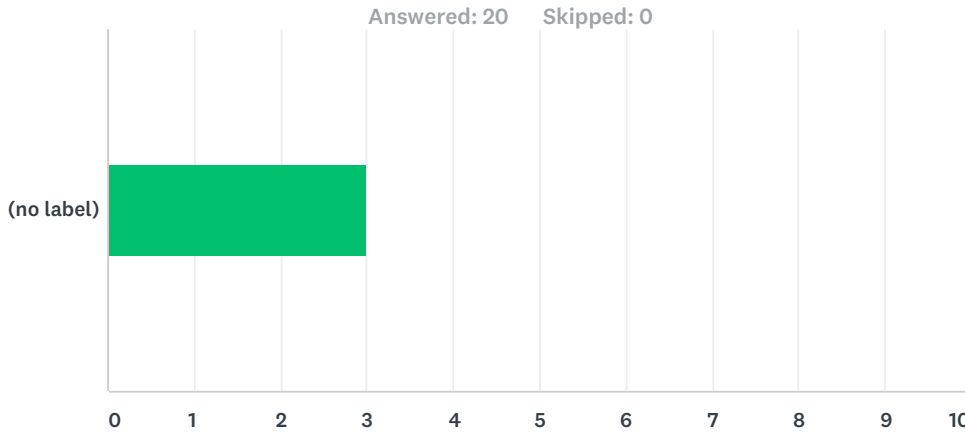


	1 - Not Important	(no label)	3 - Moderately Important	(no label)	5 - Extremely Important	Total	Weighted Average
(no label)	35.00% 7	20.00% 4	40.00% 8	0.00% 0	5.00% 1	20	2.20

Q14 Which street do you live in?

Answered: 20 Skipped: 0

Q15 How long have you lived there?



	0-1 Year	1-5 Years	6-10 Years	10+ Years	Total	Weighted Average
(no label)	15.00% 3	15.00% 3	25.00% 5	45.00% 9	20	3.00

Q16 Considering your biggest area of concern, and the questions above, what steps do you think Council could take to address these issues?

Answered: 19 Skipped: 1

Q17 Are you happy for council to contact you for further information or to be updated about the plan?

Answered: 15 Skipped: 5

Answer Choices	Responses	
Name:	100.00%	15
Address:	93.33%	14
Phone:	86.67%	13
Email:	80.00%	12

CO1 Attachments

1. Investigation Report and Recommendations from Nemesis Consultants
2. Recommendation Summary Table
3. Community Resilience Committee Terms of Reference
4. DRAFT Emergency Management Guide

Monday 11 December 2017

CO1 – Activate Wollondilly Project Update

INVESTIGATION REPORT

“Report on the Community Resilience Innovation Program, Wollondilly Shire Council arising from a significant storm event at Picton in June 2016”.

CAVEAT

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1. RECOMMENDATIONS

- 1 In consultation with the NSW SES, Council expedite its review its risk management strategies in relation to the flood Risk Mitigation Plan and explore if the flood card system can be administered across both organisations as a means of identifying properties in risk precincts of High, Medium and Low water heights (page 17)
- 2 That Council through its website, encourage residents and business operators to visit the NSW SES website with a view to developing personal or organisational disaster response plans (page 19)
- 3 That Council considers the web model utilised by Goulburn City Council and the all-hazards emergency information located on their website as a further potential safety and emergency guide to residents and business proprietors (page 18)
- 4 That Council creates a web link disaster management tab to list all of the combat agency links and the proposed toolkit (page 18)
- 5 That Council continues to liaise with the NSW Police and advocates for the continued implementation of the 'Living Alone' policy as developed by the NSW Police Force and consider its application to vulnerable residents (Page 19)
- 6 That Council includes in its community newsletter and Emergency Management Guide links to all combat agencies information regarding emergency management issues including Neighbourhood Safer Places (Page 19)
- 7 That Council raises the issue of spontaneous volunteering with the State Government and the application of insurance coverage and provision of PPE (Page 20)
- 8 That Council liaise with NGO and volunteer groups in the Wollondilly LGA and include a brief description of their available services on Council's website. As important, NGO and volunteer groups should consider and develop more effective communication strategies within the community (Page 20)
- 9 That Council continues to liaise with the Commonwealth and State Governments on the adequacy of health services during times of emergency

- response and recovery with a view to developing a more holistic and integrated approach to the delivery of those services (Page 20)
- 10 In Consultation with the South-Western Sydney Primary Health Network and South-Western Sydney Local Health District, Council assess the overall effectiveness of the Wollondilly Health Alliance to ensure requirements are contemporary and meet community mental health care support needs (Page 21)
 - 11 That Council continues its discussions with relevant parties and stakeholders regarding the cleaning and maintenance of Stonequarry Creek (pp 21)
 - 12 That Council continues with its maintenance program (Page 22)
 - 13 That the Wollondilly Chamber of Commerce considers the development of a central register of the location of all gas cylinders that identifies the owners of property where the gas cylinder is located, together with the owner's contact and storage details within the property (Page 22)
 - 14 That Council meet with telecommunications providers and Endeavour Energy to advocate for improved communication and power supply during emergency situations, so as to ensure effective communications and power supply are maintained during times of emergency (Page 23)
 - 15 That Wollondilly Chamber of Commerce promotes the importance of adequate insurance coverage with local businesses (Page 23)
 - 16 That Council advocates to the State Government and the Insurance Council of Australia the need for a comprehensive marketing campaign outlining the difficulties of non-insuring or under insuring homes and businesses and their contents (Page 23)
 - 17 That Council continues to take a lead role and be the reference point for financial contributions at times of disaster, so as to ensure the receipt, accounting and equitable distribution of funds (Page 24)
 - 18 That Council continues to make representations to lobby the NSW government regarding the streamlining of development application and planning processes with a view to a speedier resumption of business activity following a natural disaster event (Page 24)
 - 19 That Council assists the SES to undertake an audit program of all storm water outlets to ensure they are serviceable and maintained. Further, that in

- consultation with the NSW SES, Council examines the issue of the supply and distribution of sandbags at a time of major flood crisis (Page 25)
- 20** That Council continues to support Local and Regional SES Controllers on the issue of recruitment of new members within the Wollondilly LGA (Page 25)
- 21** That Council continues to appoint a Community Liaison Officer to work the NGOs and charities at times of disaster and major crisis recovery events (Page 26)
- 22** That Councils' Community Resilience Committee annually co-ordinates a review and update of the Wollondilly Community Services Directory (Page 26)
- 23** That Councils' Community Resilience Committee considers the issue of a Recovery Framework (Page 27)
- 24** In consultation with the South-Western Sydney Primary Health Network and South Western Local Health District, Council refer to the Wollondilly Health Alliance the issue of well-being assessments and long-term needs identification for community mental health care support with a focus on significant disaster events (Page 27)
- 25** That council continue to utilise local media outlets where appropriate (radio and newspapers) as a means of effective communications with the local community at times of emergencies or disasters (Page 28)
- 26** That Council continues to give due consideration to the welfare of personnel during periods of emergency, crisis or disasters and review its existing HR policies (Page 28)
- 27** That Council supports the LEOCon to establish and position signage for the evacuation and emergency assembly points during the time of an emergency (Page 29)
- 28** That Council continue to work in collaboration with the commissioners NSW SES and Rural Fire Service to promote those services in the community and with a view to localised recruitment (Page 30)
- 29** That Council review an integrated mapping layer that includes information relevant to gas and electricity plants, schools, hospitals, aged care (including persons with special needs), special needs facilities and emergency service locations – police, ambulance, fire brigade, SES and RFS personnel (Page 31)

- 30 That Council in consultation with the State Emergency Management Committee's Working Group, further considers the effectiveness of the current allocation of communications equipment and related protocols within the Local Emergency Management Centre (Page 32)
- 31 That Council seeks the final written After-Action Report by the LEOCon, in respect of the storm event of 4-6 June 2016 (Page 33)
- 32 That Council consider the budgetary implications and related matters arising as a result of this Report and where appropriate seek funding through Federal and State agency partnerships and opportunities (Page 30)

2. EXECUTIVE SUMMARY

- 2.1 In June 2016, a significant weather event impacted on the east coast of Australia. This event, known as an east coast low, went over several days and saw hundreds of millimetres of rainfall across metropolitan Sydney. This was not the first time that metropolitan Sydney had experienced such an event, however on this occasion the impact of the event spread to the Wollondilly Shire Council LGA, most notably, in the township of Picton.
- 2.2 The topography of Picton saw its CBD quickly inundated with storm water. Long-time residents noted that they had not seen that volume of rain in such a short period of time for many decades. Consequently, homes and businesses were inundated and significant damage occasioned to property. Fortunately, no lives were lost nor persons physically injured.
- 2.3 Communities in Australia who have experienced natural disasters are noted for their ability to respond to the disaster and focus on the requirements for effective response and recovery. Most notably whilst physical assets can mostly be recovered or replaced, the mental resilience of the community may take a lot longer to recover. Consistent disasters over time have the ability to erode personal and community resilience and confidence and it is on these occasions that the community looks for strong and decisive leadership.
- 2.4 In accepting its leadership role, Wollondilly Shire Council determined that if it were to provide better planning and greater preparation leading to more effective response and recovery arrangements, then it needed to turn to the community for its views – views that informed the Council's proposed Community Resilience Innovation Program (CRIP) and disaster response and recovery strategies for the future. Consequently, Council facilitated four community-based forums consisting of the general community, the business

community, the not-for-profit and school's community, and, as important, the emergency services. This report outlines the issues emerging in each forum and the consistent themes across each forum. It is this approach that forms the basis of our recommendations.

- 2.5 It is not a defeatist view to acknowledge that no plan can future-proof any community from natural or man-made disasters. Our expanding population and greater use of local facilities for residential living, recreation, sport, shopping or employment, sees greater use of local land. As Council engages in its planning arrangements for the best and most appropriate use of the land, so, too, it has a concomitant responsibility to plan for those occasions when a disaster strikes.
- 2.6 To this end, the work of federal and state-based agencies is useful, but local government, the closest of the three tiers of government to the people, needs to not only take account of the community's concerns and expectations, but as important, educate and prepare the community for the role that they too must play in the effective and timely response to disasters. It is a partnership that must be enduring and one that is critical to the survival of the community in the event of a disaster.

3. THE GENESIS OF THIS REPORT

- 3.1 Between 4 and 6 June 2016 an intense east coast low (ECL) was located along the entire NSW Eastern Sea Board. As a consequence of this significant weather event, heavy rain and damaging winds enveloped the northern and southern coastal areas of New South Wales, Sydney's northern beaches and the South-West metropolitan regions¹.
- 3.2 At a state level, the storm event resulted in more than 11,000 requests for assistance to the NSW State Emergency Services (SES). There were 310 flood rescues and 17 general rescues performed over this period. Unfortunately, two citizens lost their lives and considerable damage was occasioned to both private dwellings and businesses, and a consequent loss of personal property, assets and infrastructure. The Insurance Council of Australia (ICA) estimated the costs of the storm in excess of \$300M in NSW, to which is added the estimated cost of infrastructure repairs at \$17.5M².

¹ The Bureau of Meteorology report that here had been only two other east coast lows with a not dissimilar impact this decade, namely, 2007 and 2015 ("About East Coast Lows").

² Report of the State Recovery Co-Ordinator, January 2017, p5.

- 3.3 As a consequence of this storm event, Natural Disaster Declarations were issued for 41 Local Government Areas, including Wollondilly Shire Council. The provision of these Declarations allowed the Commonwealth and State Governments to provide disaster assistance through the jointly funded Commonwealth-State Natural Disaster Relief and Recovery Arrangements (NDRRA), to individuals, primary producers, small business and not-for-profit organisations³.
- 3.4 As a further consequence of the storm, the Prime Minister, the Hon. Malcolm Turnbull MP and the (then) Premier of NSW, the Hon. Mike Baird MP, visited Picton to gauge at first hand the impact on the local community.

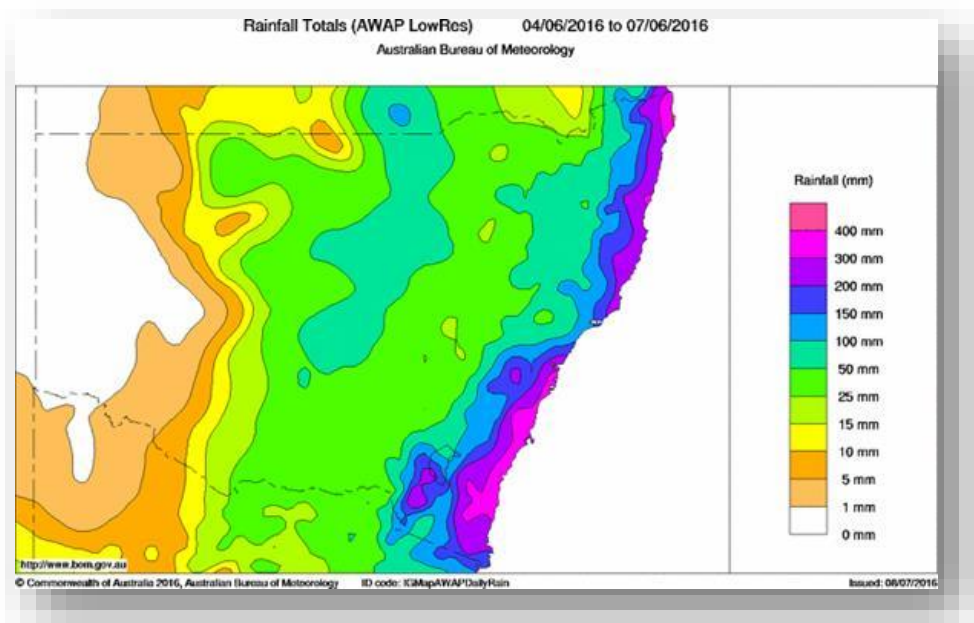


Figure 1: Rainfall totals between 4/6/16 – 7/6/16

- 3.5 On the 5 June 2016, the average rainfall across NSW was calculated to be the wettest day on record with a regional average of 73.11mm, surpassing the previous NSW-averaged record of 68.89 mm set on 19 January 1950. Also notable was the fact that previous extreme daily rainfall totals approaching this volume over eastern NSW all occurred in summer months and were all associated with tropical cyclones or former tropical cyclones⁴.
- 3.6 At a local level, significant damage to the central business district of Picton and adjoining residential properties was occasioned as a direct result of this weather event. Picton and its environs were heavily inundated with storm water with levels reported to be as high as 1.8 metres in some buildings. These levels, it has been said, exceeded the 1% Annual Exceedance

³ *Ibid*, p5.

⁴ *Opcit*, p11 (citing the Bureau of Meteorology as its authority).

Probability (1 in 100-year flood levels)⁵. It was reported that in a one-hour period to 6pm on the 5 June 2015, Picton (Stonequarry Creek) received 332mm of rain for the duration of the storm event with 245mm recorded at the Picton Council Depot over three days⁶.

- 3.7 It has also been reported that 144 businesses in Argyle Street, Picton were directly affected by the storm with many closed indefinitely whilst renovations and refurbishments were undertaken. Similarly, 128 residents were also impacted with many residents losing all or a significant proportion of their possessions and personal effects⁷.
- 3.8 Beyond the town limits significant damage was also encountered on Wilton Road at Broughton Pass, between the townships of Wilton and Appin. As a result, Broughton Pass was closed due to a retaining wall failure that occurred on the 5 June 2016. Whilst the Broughton Pass reopened on 30 June 2017 the closure of the Broughton Pass (Cataract River) Bridge created an immediate and long-term impact on road users travelling to and from Appin via the Broughton Pass and across the Bridge.



Figure 2: Picton IGA store (Photo: News.com.au) and Broughton Pass damage (Photo: dailytelegraph.com.au)

4. RESPONDING TO THE EVENT OF 4-6 JUNE 2016

- 4.1 The overall effect of the storm event has been assessed against a number of indices including its social, economic, infrastructure and environmental impact.

⁵ 'Activate Wollondilly Discussion Paper 2017', Wollondilly Shire Council, January 2017, p7.

⁶ Report of the State Recovery Co-Ordinator, *ibid*, p10

⁷ 'Activate Wollondilly Discussion Paper 2017', *ibid*, p7.

- 4.2 The **social** impact of this event saw approximately 128 houses impacted in Picton and its immediate environs. The nature of the damage centred on storm damage, wind damage, leaking roofs and water inundation.
- 4.3 In Picton, the Menangle Street (a major route to and from Campbelltown) was significantly impacted with 20 homes receiving over the floor inundation. St Anthony's Catholic School, Picton also received significant damage due to water inundation. The school was temporarily closed and alternate accommodation found for teachers and students.
- 4.4 The **economic** impact of the storm event in Picton estimated that 81 out of a total 144 businesses in the CBD, including not-for-profit agencies, were directly impacted and significantly damaged.
- 4.5 The economic impact across the state was of no less significance with areas of agriculture and aquaculture, including crop and stock losses, estimated to have cost \$38 million. Added to these figures must be the cost of re-establishment of those businesses, loss productivity and man-hours.
- 4.6 The **infrastructure** costs across the state were estimated to be in the order of \$10.580 million with significant losses to bridges, rail and road infrastructure.
- 4.7 The infrastructure damage in the Picton area was no less damaging and added to these costs is the cost experienced by businesses and families in maintaining near-to-normal routines in getting to and from various locations (work, school and business needs) through extended travel times. The closure of the Wilton Road Broughton Pass (Cataract River) Bridge, which carries a reported annual average daily traffic flow of 2,400 vehicles, was a major blow to the community.
- 4.8 The **environmental** costs were most noticeable in the coastal areas of the state, whilst the Picton area sustained damage due to soil erosion and the clean-up of debris in major areas, including the river area, as a result of various objects being washed down from properties due to the storm event⁸.
- 4.9 It must also be noted that the issue of insurance (adequacy and coverage) arose almost as quickly as the storm waters. The State Government appointed Mr David Owens APM as the State Recovery Co-Ordinator in respect of the storm event that had impacted on the state. His task was, amongst other things, to liaise with the Insurance Council of Australia (ICA) regarding insurance-related matters. This matter is further outlined a paragraphs 4.16; 5.17.5; 5.18 and 5.19 of this report.

⁸ Report of the State Recovery Co-Ordinator, Mr David Owens APM on the East Coast Low Event, June 2016.

- 4.10 Against this background and whilst the combat agencies and Council focused on the response arrangements, so then the Wollondilly Shire Council moved to quickly establish its Local Recovery Committee on 6 June 2016. Subsequently Council established the Broughton Pass Task Force and the Picton Economic Task Force both of which were designed, amongst other things, to restore community confidence and resilience.
- 4.11 Further, Council established the Wollondilly Recovery Information Point whose primary role was to provide much needed advice and reassurance to the affected community. A Social Recovery Committee (SRC) was also established to oversee the Mayor's Relief Fund. The purpose of the SRC was *"to provide specialised support and advice to the Wollondilly Local Recovery Committee in relation to social issues such as health, welfare, housing, transport, education and employment"*. Wollondilly Shire Council provided chairmanship and secretarial services to the SRC. (**Annexure 8**)
- 4.12 As well, Council established the Wollondilly Hotline for affected residents and during its operation some 146 calls were received⁹.



Figure 3: Wollondilly Information Centre

- 4.13 As combat agencies and the community moved to respond to the events of 4-6 June 2016, a further east coast low hit many of the same areas some 7 days after the initial event. This latter event impacted on the response and recovery effort, but did not daunt the resilience of the agencies or the community to maintain their focus toward restoring their respective communities to a level of normalcy. Very much then the lead in the effective response and recovery arrangements was that of a number of relevant Local Governments and in this regard Wollondilly Shire Council responded quickly to community expectations and needs.

⁹ The Hotline and Recovery Information Point continued until 24 June 2016, after which residents still had access to advice, information and assistance through Council and as it was needed. A series of web pages are available from Council's website to provide advice and information at <http://www.wollondilly.nsw.gov.au/resident-services/storm-information/>.

- 4.14 Whilst this weather event and its aftermath has been the subject of other formal reports¹⁰ and agency-based reviews, the Wollondilly Shire Council sought to extend its understanding of what had occurred in its community and the social, familial, business and opportunity costs associated with the storm. Beyond the services provided by Council it also established Disaster Welfare Services to co-ordinate outreach in affected residential areas to provide personal support, information and referral to other agencies¹¹.
- 4.15 The Council provided a number of other essential recovery-based activities, including the engagement of the Office of Small Business Commissioner and its Advisors to assist the 144 damaged businesses in the Picton CBD. Anecdotal reports indicated that 60% of businesses in Picton reported 100% losses and it was critical to assist owners and business operators in the recovery process.
- 4.16 As noted, the State Recovery Coordinator, Mr David Owens APM met with the General Manager, Risk, Insurance Council of Australia (ICA) to discuss, amongst other things, the contentious issue of storm -viz- flood debate. Subsequent advice from the ICA indicated that in Picton, all residential claims had been accepted and all but two of the commercial property claims had been accepted. Following public concern, on the 7 July 2016 representatives of the ICA, individual insurance company representatives, the NSW Ombudsman and Legal Aid held an information night for residents and business owners to speak directly to those representatives¹².
- 4.17 The traumatic nature of an event of this type had a predictable impact on the health and well-being of many people within the Wollondilly Shire and this was no more so than in the area of mental health. Given the occurrence of natural weather events of this type in NSW, it is encouraging to know that the Department of Health (NSW) conduct the Access to Allied Psychological Services (ATAPS) program whereby people who are in possession of a Health Care Card can be referred by their general practitioner to contracted mental health professionals and receive up to 12 sessions per calendar year free of charge.
- 4.18 Commendably, Wollondilly Shire Council also run the Wollondilly Health Alliance (WHA) program for its residents who, amongst other things, may be at low to moderate risk of suicide. Access to healthcare professionals is provided for unlimited sessions over a two-month period.

¹⁰ Report of the State Recovery Co-Ordinator, *opcit*, p5.

¹¹ *Ibid*, p45.

¹² *Ibid*, p45.

- 4.19 For postcodes 2571 to 2574 (all within the Wollondilly Shire Council area) between April and May 2016, there were 19 ATAPS referrals, of which 5 related to suicide prevention. By contrast, post the June 2016 storm event in the Wollondilly Shire Council area, there were 30 referrals to ATAPS, of which 16 related to suicide prevention¹³. Both initiatives at state and local level are welcome and supportive programs (**Annexure 7**).
- 4.20 The closure of Broughton Pass and the impact of the overall storm event remained an issue not only for residents, but Council as well. Council kept residents and businesses informed of progress toward the reopening of the bridge and related issues via its webpage at <http://www.wollondilly.nsw.gov.au/resident-services/infrastructure/current-projects/broughton-pass-wilton-road/>¹⁴.
- 4.21 Two community-based appeals were established to assist local residents and businesses at this critical time in their personal and professional lives. By 6 July 2016, the Mayor's Relief Appeal had been activated and within a month of the flood \$137,000.00 had been raised¹⁵. Equally, Mr. Jai Rowell MP (Member for Wollondilly) established a Flood Relief Appeal, which was administered by the Lions Club.
- 4.22 As important, other community-based activities were generated to support friends, neighbours and colleagues at this critical time. And, whilst each of the abovementioned activities is commendable, Wollondilly Shire Council felt that from the perspective of community education, preventative action plans and a community-based general awareness perspective, they, as the elected representatives together with Council's staff, needed to do more.
- 4.23 The 'need to do more' is not solely focused on significant storm events such as that which impacted on the Wollondilly Shire over the 4-6 June 2016. Disasters may be caused due a range of factors including natural disasters (flood, bushfire, earthquake, landslide or storm), significant accidents involving human error (air, road or workplace), or, lamentably by the actions of criminal activity (terrorism). Planning and preparation at all levels are a critical requirement as to how the community, its representatives (combat agencies and governments at all levels), react and respond to those emergencies, and how those arrangements focus on individual and organisational resilience and recovery, and as important, the recovery of the wider community.

¹³ Report of Mr Rob Moran, Team leader, Community projects and Events, Wollondilly Shire Council, 12 July 2017.

¹⁴ Report of the State Recovery Co-Ordinator, opcit, p46.

¹⁵ The Mayor's Relief Fund ultimately distributed \$232,000 in direct support of those affected by the storm event of 5 June 2016.

- 4.24 It is Wollondilly Shire Council's 'need to do more' that is the primary focus of this report.

5. ACTIVATE WOLLONDILLY – DEVELOPING A COMMUNITY RESILIENCE INNOVATION PLAN

The Community Resilience Innovation Program (CRIP).

- 5.1 Having discussed the broad parameters of future emergency and crisis response and recovery planning, Wollondilly Shire Council endorsed a Grant Application to the Office of Emergency Management (OEM), Justice NSW. This task was referred to Mr Luke Johnson, General Manager, Ms Ally Dench, Executive Director, Community Services and Corporate Support, and Mr Rob Moran, Team Leader, Community Projects and Events for submission of the application.
- 5.2 On 26 September 2016, Council submitted a comprehensive application to OEM (**Annexure 1**) for funding under the Community Resilience Innovation Program (CRIP). This Program “*supports a range of locally-based projects designed to increase all-hazard disaster preparedness and build community capacity and resilience. CRIP projects are based on collaboration and partnership between local community organisations and emergency services agencies*”¹⁶.
- 5.3 The aims of CRIP are to:
- 5.3.1 Encourage local communities to engage in creative, community-focused activities that will enhance disaster resilience
 - 5.3.2 Develop effective partnerships and build networks between local community organisations, councils and emergency service agencies
 - 5.3.3 Foster ways to effectively engage the local community in emergency management and resilience building
 - 5.3.4 Share knowledge and lessons learnt about new approaches and models through project evaluation, and
 - 5.3.5 Support initiatives that can be integrated into current business and maintained in the longer term¹⁷.

¹⁶ Annexure 1, page 1 – “About the program”.

¹⁷ Opcit.

5.4 The CRIP is administered by the OEM and funded jointly by the Commonwealth and NSW Governments through the National Partnership Agreement on Natural Disaster Resilience (NPANDR) arrangements. Approval for funding rests with the Minister for Police and Emergency Services. On 24 January 2017 Council's application was approved.

Implementing the CRIP at a local level.

5.5 To give practical effect to the approval for funding through the OEM, Wollondilly Shire Council developed the 'Activate Wollondilly Discussion Paper 2017' (**Annexure 2**).

5.6 In her foreword to the Discussion Paper, Cr Judith Hannan, Mayor, Wollondilly Shire Council, flagged the importance of how Council, in collaboration with the residents and business community, should move forward. She proposed the conduct for four targeted Community Forums involving residents, the business community, non-government organisations (including schools and charities), and the emergency services (NSW State Emergency Services, NSW Police Force, Fire and Rescue NSW, Ambulance Service and Rural Fire Service NSW)¹⁸.

5.7 The overall benefit of Council's approach was to develop "...a more co-ordinated approach to disaster recovery that meets the unique needs of the community, its topography and geographic spread". As well, Council proposes to develop "...a toolkit...that includes information, resources and strategies that will equip Council, stakeholders and residents with information that will guide them through steps or sequences that may save lives, protect their property and develop cohesiveness after a natural disaster". Very much then and in the spirit of co-operation, Council saw the issues arising from the events of 4-6 June 2016 as a further opportunity to strengthen its partnership with all elements of the Wollondilly Local Government Area.

5.8 Ahead of the Forum meetings, Council circulated its 'Discussion Paper' (**Annexure 2**) to and within the community. In circulating the paper, Council sought community feedback on a number of key questions, including –

5.8.1 The community's appreciation of response and recovery arrangements

5.8.2 The role of non-Government agencies in disaster recovery

5.8.3 The role of the Wollondilly Local Emergency Management Committee

¹⁸ Annexure 2, Mayor's Foreword, p3.

- 5.8.4 The Wollondilly Local Disaster Recovery (LDR) Plan and knowledge of the Plan
 - 5.8.5 The role of the private sector in supporting disaster recovery
 - 5.8.6 The role of Council's sub-committees in disaster recovery
 - 5.8.7 Awareness of the Mayor's Relief Fund
 - 5.8.8 Effective communications at time of an emergency
 - 5.8.9 How well did Council perform as a result of the 2016 storm event
 - 5.8.10 What were the strengths and weaknesses of the LDR Plan, and
 - 5.8.11 What modification might be necessary to the Plan.
- 5.9 These questions sought to build on Council's appreciation of the community's initial feedback following the 4-6 June 2016 storm event¹⁹. Apart from the importance of the responses, Council sought to link those responses and its forward planning to the Wollondilly Shire '*Community Strategic Plan 2033*', in particular, Strategy IN4, "*Emergency Management: Plan for and assist in the community's response to emergencies such as bushfires and floods*"²⁰ and the Wollondilly '*Disaster Recovery Plan*'.

The Community Forums

- 5.10 A total of four 'Activate Wollondilly' community forums were held on –
- 5.10.1 7 February 2017 (residents)
 - 5.10.2 15 February 2017 (business community)
 - 5.10.3 21 February 2017 (community-based organisations and charities), and
 - 5.10.4 1 March 2017 (emergency services – first responders).
- 5.11 In total, 120 community members and agency representatives attended and there was a strong engagement within each group. Representatives of Nemesis Consultancy Group independently facilitated the forums²¹. Each

¹⁹ *Ibid*, pp17-19 inclusive.

²⁰ *Ibid*, p19.

²¹ Mr Ken Moroney AO APM, former Commissioner and Mr David Owens APM, former Deputy Commissioner, NSW Police Force, respectively. At different time both occupied the position of State Emergency Operations

session was open by the Mayor, Cr Hannan, and Council's senior staff²² actively participated in the discussions and responded to issues raised.

- 5.12 In her address to each forum, Cr Hannan welcomed participants and encouraged both their participation in the discussions as well providing a response to the questions posed in the Discussion Paper (**Annexure 2**).
- 5.13 Each Forum meeting was conducted at the Picton Bowling Club.
- 5.14 In reporting on each meeting, it is important to remember that the observations of various participants are but that, their opinions, observations and constructive comments. They must be viewed in that light and responses built into Council's forward planning arrangements as appropriate. Importantly, there are reoccurring themes across the various Forums and Council should be cognizant of those reoccurring or interrelated themes. Of equal note is the fact that Council is not responsible for every issue raised. There are clearly defined roles and responsibilities in response and recovery and they do not all fall under the rubric of Council's charter.

Community Forum – 7 February 2017

- 5.15 The key issues emerging from the Community Forum were identified as –

5.15.1 **Identification of residents at risk.**

A number of residents raised their belief that Council's employees and emergency service responders did not know or did not appear to know where the high-risk residences were located. This belief was based on their observation that affected residents did not see relevant personnel in the two days post the initial flood event. It was suggested that Council endorse a zoning concept with high-risk areas clearly identified and actioned at times of emergency response. The application of NSW SES "Flood Cards" as a model was considered appropriate. Questions were posed as to whether or not Council can make changes to its zoning laws so as to not allow buildings in flood affected areas or impose such reasonable restrictions as may be necessary, e.g. building heights. Equally, Council's ability to resume properties in flood prone areas to prevent development was also raised.

RECOMMENDATION 1: In consultation with the NSW SES, Council expedite its review its risk management strategies in relation to the flood Risk Mitigation Plan and explore if the flood card system can be

Controller, whilst Mr Owens has been appointed on a number of occasions as the State Recovery Co-Ordinator with emphasis on natural disasters.

²² *General Manager Luke Johnson, Ms Ally Dench, Mr Rob Moran and Mr Michael Malone.*

administered across both organisations as a means of identifying properties in risk precincts of High, Medium and Low water height (page 17)

5.15.2 **Roadways.**

Community representatives commented on their observations that water in Argyle Street (the main street) was unable to run off and as a result, it washed back along the street and inundated properties. The sheer volume of rain falling at the time and increasing water levels compounded the situation. As well, a heavy volume of water descended from Margaret Street into the CBD area. The community representatives opined that in their view gutters and drains had not been adequately prepared in the eventuality of such an event. Council's representatives noted that gutters had been cleared before 4 June 2016 and the extraordinary weather event had exacerbated the situation.

The views expressed were noted.

5.15.3 **Development of a toolkit for residents.**

Community representatives expressed support for the provision of a 'toolkit' for residents and business operators wherein there were clear and unambiguous messages as to how to react in the event of a disaster or emergency. Similar information sheets are provided by the NSW RFS (Fire Safety and Evacuation Plan) and NSW SES (Storm Safe Guide).

RECOMMENDATION 2: That Council through its website, encourage residents and business operators to visit the NSW SES website with a view to developing personal or organisational disaster response plans (page 19)

RECOMMENDATION 3: That Council considers the web model utilised by Goulburn City Council and the all-hazards emergency information located on their website as a further potential safety and emergency guide to residents and business proprietors (page 18)

5.15.4 **Communications and media coverage.**

Community representatives raised their belief that compared to, say, a major bushfire period when there was adequate information flowing to the public by authorities and the media, this, they believed, was not the case over the 4-6 June 2016 period. They did not feel as though they were adequately informed as to the status of the storm event. Equally, they believed that key messages had to turn on the dual requirements of quality

of information and its timeliness. The use of portable signs and Variable Message Boards was raised.

It was noted that the NSW SES (the lead combat agency in this situation) now have a Bureau of Meteorology expert in their Operations Centre during significant events of this type. Consequently, the SES webpage, including Bureau of Meteorology (BoM) maps, are updated. Council has the ability to link its webpage to the SES webpage as a means of frequent updates and ensure adequacy of information flow to the community.

RECOMMENDATION 4: That Council creates a web link disaster management tab to list all of the combat agency links and the proposed toolkit (page 18)

5.15.5 **Information format.**

Whilst community representatives were appreciative of the various information technology sources available to update their knowledge, they acknowledged that in this instance there were periods of no power and consequently, no Internet access. As well, one of the major Telco's, Telstra appeared to have suffered damage to its site and there was no ability to make calls or access information. Further, whilst residents were appreciative of the Council's initiative in establishing the Council Recovery Information Kiosk, a number of them were not aware of this important communications and information asset. As well, views were expressed regarding the desirability of having a Council or Emergency Services representative attend their property for a welfare check on residents, in particular, those who may be in ill health or infirmed. Information could then be provided to residents of all relevant services and how to access those services.

RECOMMENDATION 5: That Council continues to liaise with the NSW Police and advocates for the continued implementation of the 'Living Alone' policy as developed by the NSW Police Force and consider its application to vulnerable residents (Page 19)

5.15.6 **Evacuation and Assembly points.**

Community representatives expressed their frustration at not being aware of emergency evacuation and assembly points and asked that Council closely examine this matter. In the event that the closest evacuation or assembly was cut off, residents sought advice as to alternate points where they might attend in their immediate area.

RECOMMENDATION 6: That Council includes in its community newsletter and Emergency Management Guide links to all combat agencies information regarding emergency management issues including Neighbourhood Safer Places (Page 19)

5.15.7 **Volunteers.**

Whilst the attendance of many volunteers from various locations to assist the response and recovery arrangements was commendable, the issue of their coverage under Public Liability insurance was raised. Council advised that volunteers were covered under the auspices of its Public Liability insurance policies. As well, residents raised the attendance of volunteers who assisted in clearing properties and whilst equally commendable, there was a need for greater co-ordination of effort and the need for the property or business owner being present when clean-ups were occurring. Instances of personal or sentimental property being thrown out by accident were mentioned.

RECOMMENDATION 7: That Council raises the issue of spontaneous volunteering with the State Government and the application of insurance coverage and provision of PPE (Page 20)

5.15.8 **NGO and volunteer agencies.**

Community representatives praised the actions of the various NGO and volunteer agencies at the time of and immediately post the storm event. This point further raised the issue that many residents were unaware of the role and functions that these organisations and agencies performed. They felt that the community would benefit from a wider awareness and appreciation of the roles that these groups fulfil in times of emergency.

RECOMMENDATION 8: That Council liaise with NGO and volunteer groups in the Wollondilly LGA and include a brief description of their available services on Council's website. As important, NGO and volunteer groups should consider and develop more effective communication strategies within the community (Page 20)

5.15.9 **Resource sharing and access to the Tip.**

Community representatives expressed their appreciation to Council on the prompt removal of rubbish and debris and the free access they were provided to Council's tip. They also commended the City of Sydney and Camden Councils for the assistance rendered to both the Wollondilly Shire Council, its residents and business outlets.

The views expressed were noted.

5.15.10 **Welfare Services.**

Whilst there was an understandable focus on the recovery arrangements, anecdotal evidence was that there were some residents who did not cope as well from a psychological point of view. There is an obvious need for the resources of the commonwealth and the state governments to work in close liaison with the Council to provide for both the short and long-term physical and psychological needs of the community in matters of this type. It was acknowledged that Council did provide relevant services, but a review of the effectiveness of those services was, they believed, necessary.

RECOMMENDATION 9: That Council continues to liaise with the Commonwealth and State Governments on the adequacy of health services during times of emergency response and recovery with a view to developing a more holistic and integrated approach to the delivery of those services (Page 20)

RECOMMENDATION 10: In Consultation with the South-Western Sydney Primary Health Network and South-Western Sydney Local Health District, Council assess the overall effectiveness of the Wollondilly Health Alliance to ensure requirements are contemporary and meet community mental health care support needs (Page 21)

5.15.11 **Emergency Services response.**

Community representatives expressed a view that whilst they were appreciative of the responses provided by the emergency services (SES and Police), some were of the view that their visibility (which goes to reassurance of the community) could have been better. They were of the view that roads were not closed as quickly as they might thereby permitting vehicles, including sightseers, access to areas thereby hindering the response arrangements. They were also of the view that priority was given to businesses in Argyle Street, when there were equal priorities within the residential areas that had been heavily impacted by the storm. The issue of the adequacy of warning from the SES was further raised.

The facilitators of this Forum undertook to discuss the community's observations at the forthcoming Emergency Services Forum. (This action was subsequently completed).

5.15.12 **The cleaning of Stonequarry Creek.**

The issue of who bore responsibility for the general maintenance of Stonequarry Creek was raised and whose responsibility it was to maintain the creek to an appropriate standard. It was stated that the poor state of the creek prior to the storm event was a major contributing factor to the resultant flooding of the southern area of Argyle Street, and that the overall physical state of the creek along its length contributed to the position. Council officers acknowledged the complexity of establishing ownership of the creek which included, government, residents and council, and the resultant obligations that individual and collective groups carried in this matter.

RECOMMENDATION 11: That Council continues its discussions with relevant parties and stakeholders regarding the cleaning and maintenance of Stonequarry Creek (pp 21)

5.16 The briefing notes relevant to this Forum are attached at **Annexure 3**.

Business Community Forum – 15 February 2017

5.17 The key issues emerging from the Business Community Forum were identified as-

5.17.1 **Water blockages.**

As part of the beautification of the main street, Council had erected sandstone blocks or cement borders around a number of trees. In the storm event of 4-6 June 2016, these blocks or borders acted as a 'dam' and impeded the flow of water away from the area. Further, there was anecdotal comment that Council's officers had difficulty in locating storm water drains to check on possible blockages. These drains need to be more clearly highlighted or defined.

RECOMMENDATION 12: That Council continues with its maintenance program (Page 22)

5.17.2 **Electricity and gas issues.**

Some present expressed the view that power was unable to be restored as quickly as it might due to reports of allegedly leaking gas cylinders in some locations. It was reported that FRNSW were unable to enter a private property where reports had been received that gas was leaking from an unknown device (cylinder) and that owners of the property were not readily available.

It is understood that FRNSW has no real power to enter and inspect unless there is an actual or suspected leak and they have been called. The expansive or widespread nature of LP gas tanks may make it impractical to develop and maintain a centralised register of owners and users.

RECOMMENDATION 13: That the Wollondilly Chamber of Commerce considers the development of a central register of the location of all gas cylinders that identifies the owners of property where the gas cylinder is located, together with the owner's contact and storage details within the property (Page 22)

5.17.3 **Communications.**

It was reported that the Telstra network failed during the storm event, whilst the Optus network maintained capacity. Business owners reported that residents received status reports via SMS messages from the SES and RFS, however business proprietors did not²³. Further, there were understandable losses of electricity over a sustained period of time, which resulted in additional difficulties for local businesses.

RECOMMENDATION 14: That Council meet with telecommunications providers and Endeavour Energy to advocate for improved communication and power supply during emergency situations, so as to ensure effective communications and power supply are maintained during times of emergency (Page 23)

5.17.4 **The cleaning of Stonequarry Creek.**

As with the community-based discussions on this issue, the business community expressed their concern and their perceptions of the impact that the state of Stonequarry Creek prior to the storm event had on the overall flooding situation.

This issue has been covered in recommendation 9.

5.17.5 **Insurance issues.**

Business operators reported difficulty in contacting their insurers, whilst others advised that the response from insurance companies varied from Company to Company. Most notably, this occurred where business abutted each other, but had different insurance providers. Reportedly, a number of businesses were underinsured. Business owners were encouraged to undertake an annual stock take and secure their records

²³ If this reported observation is correct it may have been due to the fact that residents were on the Council's register, whilst business owners, who resided outside of the area, were not on the register.

offsite to avoid loss of those records at a time of disaster. At the time of the Forum it was reported that 98% of businesses had been compensated and 4 were awaiting advice on settlement. Further, concern was expressed at the perceived inordinate delay of 13 weeks before Centrelink paid relief to employees.

It was agreed that businesses should maintain an asset register of stock, equipment and capital items.

RECOMMENDATION 15: That Wollondilly Chamber of Commerce promotes the importance of adequate insurance coverage with local businesses (Page 23)

RECOMMENDATION 16: That Council advocates to the State Government and the Insurance Council of Australia the need for a comprehensive marketing campaign outlining the difficulties of non-insuring or under insuring homes and businesses and their contents (Page 23)

5.17.6 **Charities and fundraising.**

There was reported confusion over access to funds such as the Mayor's Relief Fund and the monies raised by Mr Jai Rowell MP, by the business community. Advice to the business community was that funds raised in these and other charities were for residents and not businesses. It was felt that the rules around access to charitable funds donated in times of disaster, needed to be better explained. Similarly, observations were made regarding the operation of a number of well-intended charities, and it was felt that ideally only one charity should exist for this purpose.

RECOMMENDATION 17: That Council continues to take a lead role and be the reference point for financial contributions at times of disaster, so as to ensure the receipt, accounting and equitable distribution of funds (Page 24)

5.17.7 **DA approval process.**

Business owners expressed frustration at the processes associated with development applications and the expeditious approval of same post a disaster event. Perceptions existed of discrimination within Council as to how matters were dealt with and approved or rejected. Business proprietors expressed their belief that there was a bias in favour of prioritising the preservation of heritage-listed buildings. Concern was expressed with delays in the post disaster period when businesses were seeking to return to a level of normality.

RECOMMENDATION 18: That Council continues to make representations to lobby the NSW government regarding the streamlining of development application and planning processes with a view to a speedier resumption of business activity following a natural disaster event (Page 24)

5.17.8 **Council's letter drop.**

The business community expressed its appreciation to Council for the letter drop on day 2 of the crisis. The letter and its advice were well received.

The supportive comments were noted.

5.17.9 **Preparedness.**

Concern was expressed regarding the size and capacity of the current storm water outlets. Those present emphasised the need for Council to strengthen its focus on the state of the outlets and ensure that they remain free of grass, undergrowth and debris. Further, sandbags were seen as an issue both in terms of supply and distribution. An appropriate plan needs to be developed for such contingencies.

RECOMMENDATION 19: That Council assists the SES to undertake an audit program of all storm water outlets to ensure they are serviceable and maintained. Further, that in consultation with the NSW SES, Council examines the issue of the supply and distribution of sandbags at a time of major flood crisis (Page 25)

5.17.10 **NSW State Emergency Services.**

Business representatives complimented the NSW SES on the role they played over the 4-6 June 2016 and in ensuing days. They noted however, that the SES Unit, Picton is located on the opposite side of the creek and there were reports of the Unit being isolated and unable to access the CBD, or return to the Unit Headquarters. Comment was made regarding the numerical size of the Wollondilly Unit and more needed to be done to foster and promote the SES with a view to recruiting additional personnel.

RECOMMENDATION 20: That Council continues to support Local and Regional SES Controllers on the issue of recruitment of new members within the Wollondilly LGA (Page 25)

5.17.11 **Appreciation.**

The business community extended a vote of appreciation to Mr Rob Moran and his team for the advice, guidance and assistance rendered during and post the storm event. This, together with the emotional support that was provided, was most welcome.

The congratulatory remarks of the community were noted.

The Forum notes of the 7 February 2017 are at **Annexure 4**.

- 5.18 It is important to note that one of the key issues for the business community forum was the delay experienced in resolving insurance claims. Whilst challenging for the general community who were similarly affected, but whose claims were resolved in a reasonable period of time, the business community experienced delays in resolving their claims. In such cases the timely resolution of claims had a direct bearing on business continuity and, as important, the livelihood and income of business proprietors and their staff.
- 5.19 The comments regarding the expeditious resolution of insurance claims and, where relevant, development applications, are matters that need to be addressed by government and the insurance industry generally because of the observation of the impact that such delays have not only on business continuity or the resumption of business, but, perhaps more importantly, the physical and mental health well-being of those affected. Doubtless, this is and will continue to be a case where Council should continue to champion the cause of those whose life and livelihood are impacted in such circumstances.

The NGO and Charities Forum – 21 February 2017

- 5.20 The key issues emerging from the non-government organisations and charities forum were identified as –

5.20.1 **Council and Non-Government Organisations.**

Those attending this Forum were drawn from a cross-section of NGOs and charities based in and around the Picton area. They expressed their understanding that in a crisis such as that which occurred on 4-6 June 2016, the Council's immediate priorities were understandable. However, they felt that Council should consider the appointment of a Liaison Officer who could work with the NGOs and charities to facilitate a wider and better co-ordinated relief and recovery effort. They posed the question of the desirability of having a central register of support and charitable agencies where Council could call on them at times of need.

RECOMMENDATION 21: That Council continues to appoint a Community Liaison Officer to work the NGOs and charities at times of disaster and major crisis recovery events (Page 26)

5.20.2 **Services Directory.**

The Forum encouraged Council to consider the development of a community-based Services Directory that could be updated by all participating agencies and organisations, and maintained in hardcopy or electronic form.

RECOMMENDATION 22: That Councils' Community Resilience Committee annually co-ordinates a review and update of the Wollondilly Community Services Directory (Page 26)

5.20.3 **Council Recovery Plan.**

Forum participants sought access to Council's Recovery Plan. They were advised that the Plan is available on the Council's webpage.

The views expressed were noted.

5.20.4 **27. Recovery Registration Card.**

Forum participants reported that victims of the storm expressed frustration and angst at having to repeat their individual stories a number of times to different support agencies. This, the victims found was emotionally draining as well. The question of a Recovery Registration Card (similar to a Disaster Victim Identification Card) with all relevant particulars recorded therein should be developed for distribution to relevant agencies.

RECOMMENDATION 23: That Councils' Community Resilience Committee considers the issue of a Recovery Framework (Page 27)

5.20.5 **Co-Ordination of NGO and Charity Services.**

In the immediate aftermath of the storm it was reported that a number of NGOs and charities assisted impacted families or victims of the storm, but this activity was not co-ordinated to any degree between these groups. Whilst the issues of privacy were acknowledged, it was the express view of Forum participants that information exchange across agencies would have been useful. In some instances, there were reported instances of 'service hopping'.

The discussions were noted and this matter is covered in recommendation 18.

5.20.6 **Longer term recovery strategies.**

Whilst there was an understandable focus on the immediate needs of the general and business communities and the restoration of services, longer term planning was required when the support of Federal and State government agencies moved on from the community, but the residual issues remained for some time thereafter. The very nature of a significant crisis like that of the 4-6 June 2016 saw issues such as physical needs addressed, whilst infrastructure, accommodation and the psychological impact on individuals and the community remained for some time. Long-term recovery plans needed to acknowledge this point and Council were encouraged to liaise with the Office of Emergency Management, NGOs and charities to develop relevant initiatives.

RECOMMENDATION 24: In consultation with the South-Western Sydney Primary Health Network and South Western Local Health District, Council refer to the Wollondilly Health Alliance the issue of well-being assessments and long-term needs identification for community mental health care support with a focus on significant disaster events (Page 27)

5.20.7 **Disaster Victim Registration.**

Information was sought as to organisational responsibility for disaster victim identification (DVI). This was discussed and whilst this issue was not a critical issue on the 4-6 June 2016, or in subsequent days, the importance of the issue was acknowledged. Participants were advised that in such situations this was a functional responsibility of the NSW Police Force working in close collaboration with other agencies and that existing policies and procedures regarding DVI were deemed appropriate.

The views expressed were noted and covered by recommendation 20.

5.21 **Social Media.**

Forum participants noted the vast amount of information that was circulated via social media sites, most notably Facebook, regarding the storm and its aftermath. Some of this information was useful and informative, however a significant amount of the information was misleading and in part, incorrect. Participants noted the challenges of policing these social media sites. The greater use of local radio stations serving the Macarthur area were thought to be a better option and more reliable. The authoritative voice of a Council representative on local radio was deemed more factual than, say, speculative, questionable and unauthorised comments on social media.

RECOMMENDATION 25: That council continue to utilise local media outlets where appropriate (radio and newspapers) as a means of effective communications with the local community at times of emergencies or disasters (Page 28)

5.22 **Welfare of Council's staff.**

Whilst commending the actions of Council's staff under the direction of General Manager, Mr Luke Johnson, Forum participants noted the exceptional hours that many worked (reportedly up to 17 hours or more at a time) and Council were encouraged to develop appropriate human resource management practices that operated in support of staff in difficult and trying circumstances such as those during and post the June 2016 storm event.

RECOMMENDATION 26: That Council continues to give due consideration to the welfare of personnel during periods of emergency, crisis or disasters and review its existing HR policies (Page 28)

5.23 **Evacuation Points.**

Concern was expressed at the lack of signage relating to evacuation points and emergency assembly points, and as important, alternate sites. This was a view also expressed at the Community Forum of 7 February 2017. Both groups were of the same opinion that signage need to be enhanced both as these signs relate to their strategic location and their visibility.

RECOMMENDATION 27: That Council supports the LEOCon to establish and position signage for the evacuation and emergency assembly points during the time of an emergency (Page 29)

5.24 **Elderly and People with a Disability.**

Concern was expressed by the Forum regarding at risk groups within the community, namely, the elderly, or, say, people with a disability or the infirmed. Council noted the existence of Registers and encouraged their ongoing development where in times of emergency or crisis, checks could be made on the safety and well-being of vulnerable persons. The 'Living Alone' Register developed by the NSW Police Force and a Risk Register developed by NSW Health may serve as templates for such a document. The NGOs and Charities undertook to assist Council in the development and maintenance of an appropriate register.

The views expressed were noted and this issue is covered by Recommendation 4.

5.25 **NSW State Emergency Services.**

The NSW SES were encouraged to become more actively engaged in community education programs including active participation at sporting and cultural events, school liaison, service clubs and community-based activities, whereby the importance of safety, security and resilience in disasters or related events could be more effectively communicated. To this end, the Forum noted the small size of the Wollondilly SES Unit (some 8 in all) and encouraged NSW SES Headquarters to actively engage with the Council and the community with a view to facilitating community education awareness and recruitment.

The issues raised were noted and this matter is covered by recommendation 17.

The Forum notes of 21 February 2017 are at **Annexure 5**.

The Emergency Services Forum – 1 March 2017

5.26 The key issues emerging from the Emergency Services Forum were identified as-

5.26.1 **Growth patterns in the Wollondilly LGA.**

The Facilitators referred to available and public data that indicated that the Wollondilly LGA, like much of the Macarthur area, was undergoing extensive growth. Consequently, it was appropriate that Council and the Emergency Services engage in open dialogue to review disaster planning, preparation, and response and recovery arrangements. The events of the 4-6 June 2016 were a catalyst for this review, however the unpredictability of disasters or crisis issues reinforced the need for Council and the Emergency Services to constantly review and plan in order that its overall preparation, response and recovery arrangements were consistent with best practice.

The comments were noted.

5.26.2 **Ready access to qualified emergency service personnel.**

A number of agencies commented on the fact that the quick and developing nature of the storm event of 4-6 June 2016 and the subsequent inundation, took the community, including the emergency services community by surprise. Consequently, staffing numbers were not at an optimum level and agencies struggled to cope in the initial response period.

The broad notion of a reserve group of experienced and qualified personnel was raised and supported in principle, however, this is an issue for the state government to consider in terms of recruitment, retention, entitlements, uniforms, education and training and the unresolved issue that such employment may have on, say, superannuation entitlements for some. In the interim, recruitment to the Wollondilly SES Unit and RFS Unit was seen as a priority and Council is encouraged to work in liaison with the Commissioner, NSW SES and Commissioner, RFS on volunteer recruitment to local emergency services organisations. It was acknowledged that on the 4-6 June 2016 the nature of the storm event was geographically widespread across the Wollondilly LGA, and the local SES Unit did their very best to respond in the overall circumstances.

RECOMMENDATION 28: That Council continue to work in collaboration with the commissioners NSW SES and Rural Fire Service to promote those services in the community and with a view to localised recruitment (Page 30)

5.26.3 **Council's mapping system.**

Discussion turned to the issue of Council's mapping system and proposed enhancements that would support its functionality. This could be done by inputting additional information into 'Intramaps' and would include information relevant to gas and electrical plants, schools, hospitals, aged-care (including persons with special needs), special need facilities and emergency service locations (police, ambulance, fire brigade et al).

RECOMMENDATION 29: That Council review an integrated mapping layer that includes information relevant to gas and electricity plants, schools, hospitals, aged care (including persons with special needs), special needs facilities and emergency service locations – police, ambulance, fire brigade, SES and RFS personnel (Page 31)

5.26.4 **Agency awareness and effective communications.**

Whilst the Bureau of Meteorology (BoM) had provided advice regarding the pending and subsequent impact of the east-coast low on the coastal areas of NSW, there appeared to be a paucity of information regarding the movement of the low inland and into the Wollondilly catchment area. The speed of the low coupled with sheer rain volume would appear to have initially overwhelmed the responding agencies (including the local community), before they were able to marshal all available resources and implement response arrangements. Questions were posed as to the

adequacy of information flow to the local SES Unit (as the lead combat agency).

Mr Owens advised that a BoM expert has now been deployed to NSW SES HQ Operations (Wollongong) during major events or operations of significance and this would ensure an enhanced and timelier information flow at times of significant weather-related incidents.

The comments were noted.

5.26.5 **Effectiveness of communications.**

It was agreed that at the time of the storm event there were communications difficulties, which, at times, might be described as conflicting. With misinformation and the geography of the area involved, it took time to resolve and determine the true facts of a number of matters. Isolation of people was a key issue as were the overwhelming number of calls for assistance. It was acknowledged that the ability to marshal human resources impacted on the speed with which the Emergency Operations Centre (OEC) was stood up. Technical communications were impacted when power was lost and the Telstra facilities were temporarily lost.

The LEOCon, Superintendent Hansen observed that there was a loss of communications at one point between the State Emergency Management Centre, Sydney and the Region Emergency Management Centre, Liverpool.

Co-ordination and maintenance of communications was seen as critical to successful outcomes. Equally, the effectiveness of communications at the time of major disasters was critical to how agencies responded to calls for assistance and as important, across and between each other. The relevance of a state-of-the-art Communications Centre was discussed in order that the EOC effectively discharge its responsibilities, including the management of the disaster or crisis.

RECOMMENDATION 30: That Council in consultation with the State Emergency Management Committee's Working Group, further considers the effectiveness of the current allocation of communications equipment and related protocols within the Local Emergency Operations Centre (Page 32)

5.26.6 **After action assessment by the LEOCon.**

The LEOCon, Superintendent Hansen, raised a number of issues, which he believes require attention as part of effective forward planning and preparation arrangements. His observations were that –

- The Emergency Services and Council's officers responded in a highly effective manner
- Whilst some of the response issues could have been actioned in a more timely manner, the overall circumstances of the weather event had to be considered
- Council responded in a most effective and timely manner in the way it directed and facilitated the recovery arrangements. Its acquisition of satellite phones was fortuitous and they provided welcome telecommunications assistance. The extension of these phones to the wider Emergency Services would be worthy of further consideration (Council and Police have been issued with them)
- The recovery processes were challenging given the amount of rubbish and debris that had accumulated or was placed on roadways or footpaths. Council responded quickly and health issues were avoided
- The issue of road closures viz road openings was a challenge with the need to balance Council's requirement to clean the affected area ASAP, and the need to prevent sightseers
- Whilst volunteers are well intentioned there is a need to both manage and know who is undertaking such work, their contact details and where they have been deployed. This is as much for their safety as anything else
- Media management was and always will be a challenge
- The 'Living Alone' Register was a concept worthy of reintroduction and expansion to include vulnerable members of the community
- Following the visit of prominent politicians, Natural Disaster Declarations were forthcoming. Whilst welcome in terms of the services that flow from such Declarations, this happened before Council were notified
- The use of the SES flood intelligence cards was most helpful, in particular, in determining appropriate evacuations sites

- Whilst there is a need to gauge the overall effectiveness of response and recovery arrangements during and post the storm event, future planning needs also to occur. To this end, in consultation with the Emergency Management Course Co-Ordinator, School of Public Health, Charles Sturt University, the LEOCon had designed an Operational Debrief Template (**Annexure 3**), and
- His analysis of the responses was not to hand at the time of the Emergency Services debrief, but will be reported by him to a future meeting of the LEMC.

RECOMMENDATION 31: That Council seeks the final written After-Action Report by the LEOCon, in respect of the storm event of 4-6 June 2016 (Page 33)

5.27 The Forum notes relevant to the 1 March 2017 are at **Annexure 6**.

6. AN OVERALL ANALYSIS OF ISSUES RAISED ACROSS THE FORUMS

- 6.1 The conduct of each of the Forums was useful for a range of reasons, nonetheless of which was the fact that it allowed the participants to highlight issues or concerns, acknowledge the appropriateness of actions taken or those actions that they believe might have been taken in a more expeditious manner. The Forums were never intended to be a 'blame exercise', rather, how might the community and its agencies better plan, be better prepared, respond as the circumstances permit and, as important, recover the community.
- 6.2 Importantly, Wollondilly Shire Council's actions in facilitating the Forums allowed the community a voice in reviewing what occurred at the time of and post the storm event of 4-6 June 2016. Equally, it gave a voice to the residential and business communities and the agencies that serve them. By any measure that level of community and local representative government interaction is to be acknowledged for what it is and should serve as a model for community-based co-operation.
- 6.3 In no order of priority there were some reoccurring themes across the Forums. These and other matters have been more widely touched on in this report,

however key observations of participants are worth reiteration. Indeed, they form the basis of the recommendations of this report.

- 6.4 The reoccurring themes included the need for –
- 6.4.1 Council to develop an Awareness Register of people at risk, most notably isolated, aged, infirmed or handicapped persons, in particular, those living alone
 - 6.4.2 The clear marking of evacuation and assembly points and as important, alternate sites
 - 6.4.3 Ongoing Council-sponsored community education and awareness programs of what to do in times of disaster or significant crisis
 - 6.4.4 Clearly defined roles and parameters for volunteers who attend to assist the community in times of crisis or disaster
- 6.5 Council to develop an integrated management plan for NGOs and Volunteer Agencies in order to deliver a more effective and co-ordinated response to recovery arrangements
- 6.5.1 Council to consider the appointment of a Community Liaison Officer to work with NGOs and Volunteer Agencies at times of disaster and major crisis
 - 6.5.2 Council to make representations to Telecommunications Carriers regarding the provision of ongoing services at times of disaster or major crisis. Further, that such discussions include the relocation of the Carriers' Base Stations and related equipment to higher and more secure grounds
 - 6.5.3 Council to make representations to the utility companies regarding the provision and restoration of emergency gas and electricity supplies at times of disaster and major crisis
 - 6.5.4 Council to make representations to the Insurance Council of Australia regarding the physical presence of Insurance Companies within the community at a time of disaster or major crisis
 - 6.5.5 Greater co-ordination of charitable events (Mayor's Appeal etc) which seek to aid the recovery of the community. Further, that Council work with the NGOs and Volunteer Agencies on longer term strategies which continue long after the disaster has past

- 6.5.6 Council to make greater use of local media and radio as an information base to the community on issues impacting on the disaster or crisis, and those arrangements that Council and other relevant agencies have implemented in response to the incident and the recovery of the community
- 6.5.7 Council to consider the refinement of its DA processes with a view to expediting applications following a disaster
- 6.5.8 Council to closely consider the health and welfare needs of its personnel who are called upon to assist in the response and recovery arrangements impacting on the wider community
- 6.5.9 Council and the Emergency Services to work in close collaboration in the development or renewal of their emergency planning, preparation and response arrangements
- 6.5.10 Council to review the effectiveness of its Mapping System (Intramaps), and whether there is a need to redevelop the system in light of the events of 4-6 June 2016
- 6.5.11 Council to examine the operational effectiveness of its Emergency Operations Centre (EOC) and whether it is feasible for Council and the Emergency Services to make an approach to the State Government to refurbish its EOC
- 6.5.12 Council make representations to the Commissioners, NSW State Emergency Service and Rural Fire Service, to review the effectiveness of their operations within the Wollondilly LGA and with a particular emphasis on recruitment and retention of staff, facilities and equipment
- 6.5.13 Consultation between the Local Emergency Operations Controller and Council to review the 'Operational Debrief' arising from the storm event of 4-6 June 2016 and seek to implement all relevant and practical solutions, and
- 6.5.14 Council renews its efforts to negotiate with land owners and the State Government on the need to maintain Stonequarry Creek to a standard that is acceptable to Council.

7. THE IMPORTANCE OF COMMUNITY ENGAGEMENT.

- 7.1 There can be no doubt about the importance of effective planning, preparedness, response and recovery arrangements when responding to disasters or events of major significance. We are fortunate in NSW that the agencies of government are actively engaged in a dialogue which ensures that as agencies they are individually and collectively able to respond at times of greatest need.
- 7.2 Of equal importance to these arrangements, is the requirement for timely and effective engagement of the community as to the role that they must play as part of the overall arrangements, and most importantly, their personal safety, well-being and protection. The most effective tool with which to engage the community is that of open and transparent communications. Knowledge is the key to an informed community; knowledge is key to survival in periods of natural or man-made disaster.
- 7.3 Informed knowledge allows the agencies of government, organisations, businesses and individuals to assess the risks, develop and implement an agreed response plan and, importantly, take such measures as are appropriate. In the case of federal, state and local agencies there rests a cadre of knowledge and skill which, when required, is able to be implemented not only on the basis of risk management strategies, but on the basis of strong and effective partnerships. This may not always be the case with organisations, businesses or individuals who do not normally operate in this environment and it behoves agencies to build the body of knowledge in the broader community so important to response, recovery and resilience.
- 7.4 Depending on the nature of the disaster, so then agencies of the state have a lead role to play. That said, no one agency has a lead role when it comes to effective communications with the community in preparedness and resilience. Indeed, it is a matter of leadership and to this end local government has a critical leadership role to play in the context of community education and community engagement. Notably, this important requirement is what led Wollondilly Shire council to engage in this review.
- 7.5 Why then engage in community disaster awareness at local government level? Is this not, say, the role of state and federal agencies? The answer it may be argued is obvious in that people at the local level feel a greater affinity with their local Council than they do, say, with state and federal-based agencies. A comparative observation may be made of local newspapers viz-a-viz metropolitan or national media outlets, whereby anecdotal comment is that the local community place a higher level of trust in their local newspaper

then they do in other media outlets. So, too, it may be said that the community have a higher trust in their local Council.

- 7.6 What emerged in the various forums conducted by Wollondilly Shire Council is that individuals, businesses and organisations want to be informed in the most expeditious way possible. Decisions at all levels will be made on the timeliness or immediacy of the information they receive and this may involve, preventing death or serious injury. Effective and informed community engagement therefore is critical to the way forward both as it relates to planning and response arrangements.
- 7.7 What then are the key elements of an informed Community Engagement Plan that both engage the community and enhance their knowledge and preparedness?
- 7.8 The key elements of such a Plan might include, but are not limited to –
- 7.8.1 Providing consistent messages to the community through Council’s outlets (website, newsletters, community education programs, media communications etc)
- 7.8.2 Engaging in ongoing evaluation so as to gauge the effectiveness of Council’s community awareness and education programs, and
- 7.8.3 Determining the focus of community-based awareness programs based on historical factors such as floods, bushfires etc.
- 7.9 Such plans are not new. Indeed, in its progress toward developing localised community awareness programs or initiatives, Wollondilly Shire Council should have recourse to existing complementary programs or initiatives.
- 7.10 These include –
- 7.10.1 **National Strategy for Disaster Resilience Community Engagement Framework Handbook** (a nationally agreed framework)
- 7.10.2 **Behavioural Insights Community of Practice** (organised through the Behavioural Insights Unit, Department of Premier and Cabinet)
- 7.10.3 **Get Ready Initiative** (a co-ordinated approach by the Office of Emergency Management, Department of justice and combat agencies on preparedness messaging to the community)

- 7.10.4 **Hazard Specific Targeted Programs** (eg risk mitigation strategies such as the NSW SES Storm Safe Plan and NSW RFS Bush Fire Survival Plan – programs designed to enhance community awareness and resilience)
- 7.10.5 **Council Initiated Consultative Forums** (designed to provide the local community with both ongoing education on disaster awareness and preparedness, and as important, to provide community feedback to Council on those strategies that are most effective). Such Forums need clearly defined, roles and functions on the one hand, and as important, a defined purpose with clear Terms of Reference, and
- 7.10.6 **Community Engagement Mandate** (arising from the community-based forums and its own initiatives, Council should develop key and inter-related proposals or a mandate that ensures that it is best placed to respond to the communities needs and expectations at times of disaster. Further, that they act as the voice of the community in emergency management preparedness, response, recovery and resilience initiatives by developing strong networks with key federal and State agencies).
- 7.11 At the time of the preparation of this report, we are aware that the Office of Emergency Management, Department of Justice, is finalising the ‘*State-Level Emergency Risk Assessment 2017*’. We are sure that the document when approved for circulation will assist Council in the development of the various initiatives it has proposed through its *Community Resilience Innovation Plan* or those that are recommended by this report.
- 7.12 Finally, there are a number of complementary policy documents that Council needs to consider in the finalisation of any proposals arising from this report and its recommendations. These include the Wollondilly Resource Recovery Toolkit - “*A Plan for the Wollondilly Local Community Recovering from an Emergency (May 2016)*”, and Council’s “*Create Wollondilly 2033 Community Strategic Plan, Delivery Program and Operational Plan*”.
- 7.13 **RECOMMENDATION 32:** That Council consider the budgetary implications and related matters arising as a result of this Report and where appropriate seek funding through Federal and State agency partnerships and opportunities (Page 30)

8. CONCLUSION

- 8.1 It is a matter of fact that disasters can occur at any time. They may be as a consequence of a natural disaster (flood, bushfire, earthquake or similar

- occurrence), or man-made act (criminal or accidental). As critical as it is to plan for such contingencies, so, too, it is as critical to prepare the response and recovery arrangements should such an event or events occur.
- 8.2 It is also accepted that the one characteristic that communities look for at times of major disasters or significant events, is demonstrable leadership. The leadership to which we refer is to be found in the work of the combat agencies (Police, Fire and Rescue, Ambulance, SES, RFS Volunteer Coastal Patrol etc.) and how they respond to the particular emergency. Doubtless, their role is one of clear leadership that goes to reassure and provide confidence. As important as the work of the combat agencies is, so, too is the work of key support agencies such as Councils, in this case Wollondilly Shire Council.
- 8.3 The work of Councils in the emergency response and recovery environment must be based on the potential of what might occur. Doubtless, this is important, but, just as important are the practical lessons to be drawn from those disasters in which Councils have a hands-on role. In June 2016 Wollondilly Shire Council found itself in such a position when storms inundated the township of Picton and its environs. Fortunately, there was no loss of life, however, significant trauma, stress and loss of property was occasioned.
- 8.4 With a sense of community responsibility, Wollondilly Shire Council sought to understand what had occurred in its local government area, why it had occurred, the social, economic, business and personal impact the event had on its community, and, as important, what actions need to be taken to minimise the impact that such events have should, lamentably, such an event occur in the future.
- 8.5 It is accepted that adequate planning and preparation for natural or man-made disasters are key to the future. Equally, when such events occur it is necessary that such planning and preparation is reflected in timely responses by the combat agencies (including Council). Of further importance is how the same planning, preparation and response lead to the effective short and long-term recovery of the community. These four key inter-related factors – planning, preparation, response and recovery are germane to reassurance in the community and its resilience to move forward.
- 8.6 There is an accepted maxim that *'in order to look forward, one has to stop and look back over one's shoulder to see where it is we have come from'*. Wollondilly Shire Council, led by its Mayor, Cr Judith Hannan, fellow Councillors and senior staff, initiated four forums to engage with the community and *'look back over their collective shoulders'* to the events of 4-6 June 2016. Those forums were constructive, focused and provided the

opportunity to enhance emergency planning and preparation requirements for the future. The deliberations of those forums have been reported and proposals or recommendations outlined to Council. Indeed, there were a number of reoccurring themes that emerged from these forums.

- 8.7 It is a matter for Council as to how it adopts the recommendations arising from the various Forums and its Community Resilience Innovation Plan. Equally, and due to the unpredictability of natural and man-made disasters there is important and complementary work being done by the agencies of government that should assist Council in the ongoing development of its plans.
- 8.8 Such plans can never be finite. Indeed, in the case of the Wollondilly Shire Council, with its expanding population and business development potential, so then its planning in the area of emergency and disaster response management will need to be based on enhanced risk management principles and strategies. The solutions are to be found in enhanced technology, agency co-operation, planning and preparation. Of these requirements, it will be the issue of community engagement that really goes to the heart of awareness, response, recovery and resilience. The community of the Wollondilly LGA should expect no less.
- 8.9 We commend our report and its recommendations to Council for further consideration.

K E Moroney AO APM
22 August 2017

D Owens APM

12. ANNEXURES

1.	Application for CRIP Grant
2.	Activate Wollondilly Discussion paper

3.	Community Forum 7 February 2017
4.	Business Community Forum 15 February 2017
5.	Not-for-Profit and Schools Forum 21 February 2017
6.	Emergency Services Forum 1 March 2017
7.	Wollondilly Health Alliance
8.	Wollondilly Social Welfare Recovery Sub-Committee
9.	
10	
11.	

Wollondilly Community Resilience Innovation Program Key Recommendations

Recommendations	Strategy	Person Responsible	Time Frame	Status
<p>1. In consultation with the NSW SES, Council expedite its review its risk management strategies in relation to the flood study and explore if the flood card system can be administered across both organisations as a means of identifying properties in risk precincts of High, Medium and Low water heights (page 17)</p> <p>2. That Council through its website, encourage residents and business operators to visit the NSW SES website</p>	<p>Review the flood study</p> <p>Explore a system to be administered across both organisations that identifies properties at risk</p>	<p>Michael Malone Mike Nelson</p>		
<p>3. That Council through its website, encourage residents and business operators to visit the NSW SES website</p>	<p>Information and education campaign to develop disaster response plans</p> <p>This to be incorporated into the development of an</p>	<p>Peter Wright Tina Britton</p>		

<p>with a view to developing personal or organisational disaster response plans (page 19)</p>	<p>Emergency Management tool</p>			
<p>4. That Council considers the web model utilised by Goulburn City Council and the all-hazards emergency information located on their website as a further potential safety and emergency guide to residents and business proprietors (page 18)</p>	<p>Review document and incorporate disaster management responses for residents into an accessible table / format</p>	<p>Peter Wright Rob Moran Community Resilience Committee</p>		
<p>5. That Council creates a web link disaster management tab to list all of the combat agency links and the proposed toolkit (page 18)</p>	<p>Communications Team to create management tab and web link to emergency services sites</p>	<p>Peter Wright Tina Britton</p>		
<p>6. That Council continues to liaise with the NSW police and advocates for the continued implementation of the 'Living Alone'</p>	<p>Council continues to liaise with the NSW Police to assist in the implementation and promotion of the Living alone Policy</p>	<p>Peter Wright Rob Moran</p>		

<p>policy as developed by the NSW Police Force and consider its application to vulnerable residents (Page 19)</p>				
<p>7. That Council includes in its community newsletter links to all combat agencies information regarding emergency management issues including Neighbourhood Safer Places (Page 19)</p>	<p>Councils newsletter promotes links to combat agency information</p>	<p>Peter Wright Tina Britton</p>		
<p>8. That Council raises the issue of spontaneous volunteering with the State Government and the application of insurance coverage and provision of PPE (Page 20)</p>	<p>Council continues to promote volunteering opportunities with local combat agencies Council to identify the appropriate State or Federal body for the provision and distribution of appropriate resources including PPE for volunteers</p>	<p>Matthew Toro Rick Hunt</p>		
<p>9. That Council liaise with NGO and volunteer groups in</p>	<p>Council establish the Community Resilience Committee</p>	<p>Peter Wright</p>		<p>Website</p>

<p>the Wollondilly LGA and include a brief description of their available services on Council's website. As important, NGO and volunteer groups should consider and develop more effective communication strategies within the community (Page 20)</p>	<p>Council and Community Resilience Committee update the community directory and include all relevant details of services and resources available</p> <p>Update the community directory and this be accessible on Council's webpage</p>			
<p>10. That Council continues to liaise with the Commonwealth and State Governments on the adequacy of health services during times of emergency response and recovery with a view to developing a more holistic and integrated approach to the delivery of those services (Page 20)</p>	<p>Council continues advocating through the Wollondilly Health Alliance the need for adequate health service provision particularly during times of emergency response.</p> <p>A representative from the Wollondilly Health Alliance be invited to sit on the Community Resilience Committee</p>	<p>Peter Wright Public Health LEMC</p>		
<p>11. In Consultation with the South-Western Sydney Primary</p>	<p>Council continues advocating through the Wollondilly Health Alliance</p>	<p>Peter Wright</p>		

<p>Health Network and South-Western Sydney Local Health District, Council assess the overall effectiveness of the Wollondilly Health Alliance to ensure requirements are contemporary and meet community mental health care support needs (Page 21)</p>	<p>the need for adequate health service provision particularly during times of emergency response.</p> <p>A representative from the Wollondilly Health Alliance be invited to sit on the Community Resilience Committee</p>			
<p>12. That Council continues its discussions with relevant parties and stakeholders regarding the cleaning and maintenance of Stonequarry Creek (pp 21)</p>	<p>Consultation with all relevant stakeholders who have responsibility for the Stonequarry Creek</p>	<p>Michael Malone</p>		
<p>13. That Council examines the issues raised by community members regarding the blockage of drains on the 4-6 June 2016 and continues with its</p>	<p>Council continues to put in place a maintenance schedule for its drains and water tributaries and place this document on the Council website</p>	<p>Michael Malone</p>		

<p>maintenance program (Page 22)</p>				
<p>14. That the Wollondilly Chamber of Commerce considers the development of a central register of the location of all gas cylinders that identifies the owners of property where the gas cylinder is located, together with the owner's contact and storage details within the property (Page 22)</p>	<p>Council facilitates interaction BETWEEN Chamber of Commerce and the Fire & Rescue NSW on the development of appropriate register of gas cylinders</p>	<p>Michael Malone Fire and Rescue NSW LEMC</p>		
<p>15. That Council meet with telecommunications providers and Endeavour Energy to advocate for improved communication and power supply during emergency situations, so as to ensure effective communications and power supply are maintained during</p>	<p>Council facilitate a meeting with Telecommunication and power supply companies</p>	<p>LEMC</p>		

times of emergency (Page 23)				
16. That Wollondilly Chamber of Commerce promotes the importance of adequate insurance coverage with local businesses (Page 23)	Council liaise with the Insurance Council of NSW to create an awareness and education campaign. Council's ED&T team facilitates workshops highlighting the importance of adequate insurance coverage	Rob Moran		
17. That Council advocates to the State Government and the Insurance Council of Australia the need for a comprehensive marketing campaign outlining the difficulties of non-insuring or under insuring homes and businesses and their contents (Page 23)	Council liaise with the Insurance Council of NSW to create an awareness and education campaign. Council's ED&T team facilitates workshops highlighting the importance of adequate insurance coverage	Rob Moran		
18. That Council continues to take a lead role and be the reference point for financial contributions at times of disaster, so	The Mayors Relief Fund is reviewed to adequately respond to the needs of the community	Governance		

<p>as to ensure the receipt, accounting and equitable distribution of funds (Page 24)</p>	<p>19. That Council continues to make representations to lobby the NSW government regarding streamlining of development application and planning processes with a view to a speedier resumption of business activity following a natural disaster event (Page 24)</p>		<p>As part of Council's continual improvement process Disaster Response the assessment of Development Applications be considered a high priority.</p>	<p>Chris S</p>						
<p>20. That Council assists the SES to undertake an audit program of all storm water outlets to ensure they are serviceable and maintained. Further, that in consultation with the NSW SES, Council examines the issue of the</p>	<p>Council works with the SES to coordinate the distribution of sandbags</p> <p>That Council continues storm water outlet inspections as part of the area maintenance schedule</p>	<p>Michael Malone Mike Nelson</p>								

<p>supply and distribution of sandbags at a time of major flood crisis (Page 25)</p>				
<p>21. That Council continues to support Local and Regional SES Controllers on the issue of recruitment of new members within the Wollondilly LGA (Page 25)</p>	<p>That Council provides the contact details of the Sector Connect Volunteering Program to the SES local and regional controllers</p>	<p>Justin Nyholm Peter Wright</p>		
<p>22. That Council continues to appoint a Community Liaison Officer to work the NGOs and charities at times of disaster and major crisis recovery events (Page 26)</p>	<p>Council's Executive Director Community Services and Corporate Support is the appointed Community Liaison Officer during emergency events</p>	<p>Ally Dench</p>		
<p>23. That Councils' Community Resilience Committee annually co-ordinates a review and update of the Wollondilly Community Services Directory (Page 26)</p>	<p>The Community Resilience Committee schedules the annual review and update of the Community Services Directory</p>	<p>Ally Dench Community Resilience Committee</p>		

<p>24. That Councils' Community Resilience Committee considers the issue of a Recovery Framework (Page 27)</p>	<p>The Community Resilience Committee explores a framework to assist in coordinating services to individuals during the time of an emergency in line with privacy guidelines and legislative requirements</p>	<p>Community Resilience Committee</p>		
<p>25. In consultation with the South-Western Sydney Primary Health Network and South Western Local Health District, Council refer to the Wollondilly Health Alliance the issue of well-being assessments and long-term needs identification for community mental health care support with a focus on significant disaster events (Page 27)</p>	<p>The WHA takes a lead role in the provision of mental health support and services to the community in times of emergency. It is recommended the ATAP program continue to provide community care during emergency events</p>	<p>Peter Wright</p>		
<p>26. That council continue to utilise local media outlets where appropriate (radio and newspapers) as a means of effective</p>	<p>The recovery plan be reviewed to incorporate a clear communications plan with local media</p>	<p>Peter Wright Tina Britton</p>		

<p>communications with the local community at times of emergencies or disasters (Page 28)</p>				
<p>27. That Council continues to give due consideration to the welfare of personnel during periods of emergency, crisis or disasters and review its existing HR policies (Page 28)</p>	<p>Rostering considerations be outlined within the BCP.</p>	<p>Matthew Toro</p>		
<p>28. That Council supports the LEOCon to establish and position signage for the evacuation and emergency assembly points during the time of an emergency (Page 29)</p>	<p>Signage is identified and positions as required during periods of emergency management</p>	<p>Justin Nyholm</p>		
<p>29. That Council continue to work in collaboration with the commissioners NSW SES and Rural Fire Service to promote those services in the community and with</p>	<p>Council liaise with SES and RFS to access volunteer programs through the Sector Connect Volunteering Program and assist in the development of a volunteer recruitment strategy</p>	<p>Justin Nyholm</p>		

<p>a view to localised recruitment (Page 30)</p>				
<p>30. That Council review an integrated mapping layer that includes information relevant to gas and electricity plants, schools, hospitals, aged care (including persons with special needs), special needs facilities and emergency service locations – police, ambulance, fire brigade, SES and RFS personnel (Page 31)</p>	<p>The CRC work with Councils GIS team to establish an integrated mapping layer that identifies utilities and service locations through the information obtained from local community agencies</p>	<p>Matthew Toro John Sproule GIS Team</p>		
<p>31. That Council in consultation with the State Emergency Management Committee's Working Group, further considers the effectiveness of the current allocation of communications equipment and related protocols within the Local Emergency</p>	<p>The local emergency management committee reviews the effective of current communications equipment between emergency response agencies</p>	<p>Ally Dench Justin Nyholm</p>		

Management Centre (Page 32)				
32. That Council seeks the final written After-Action Report by the LEOCon, in respect of the storm event of 4-6 June 2016 (Page 33)	Council to request a copy of the final report from the LEOCon	Ally Dench		
33. That Council consider the budgetary implications and related matters arising as a result of this Report and where appropriate seek funding through Federal and State agency partnerships and opportunities (Page 30)	Council considers the budgetary requirements and seek funding where appropriate	Ashley Christie		

Wollondilly Community Resilience Committee Terms of Reference (ToR)

The Wollondilly Community Resilience Committee has been established by Wollondilly Shire Council in response to the 5 June 2016 Wollondilly Storm Event.

The Committee responds to the ongoing need to resource and educate the broader community in regards to recovery and resilience issues. The Committee provides support and advice following a natural/manmade disaster or crisis in line with the strategies of the Community Resilience Innovation Program funded through the Office of Emergency Management.

Purpose

To provide specialised support and advice to Wollondilly Shire Council which informs the Wollondilly Local Emergency Management Committee in relation to: disaster recovery, community resilience, social issues such as health, welfare, housing, transport, education and employment and to review local recovery management systems, processes and documentation.

To work collaboratively with The Wollondilly Local Emergency Services Management Committee in supporting the broader community in disaster recovery to build resilience.

Functions

The Wollondilly Community Resilience Committee will:

- Report regularly to Wollondilly Shire Council
- Make recommendations to the Wollondilly Shire Council in relation to:
 - Recovery efforts to build resilience
 - Health and wellbeing
 - Socioeconomic Impacts of Disaster Management / Recovery
 - Financial Welfare
 - Employment issues
 - Housing
 - Transport
 - Education
 - Community Development and Resilience long-term
- Review and update the Local Recovery Plan and Local Emergency Management Plan
- Undertake an annual review and update of the Wollondilly Community Directory
- Develop, implement and review Disaster Recovery toolkit components

Chair

The Chair of the Sub-committee is The Executive Director Community Services and Corporate Support who is also a member of the Local Emergency Management Committee.

Membership

As determined by the Wollondilly Shire Council.

Secretariat

Secretariat support will be provided by Wollondilly Shire Council.

Frequency of meetings

The Wollondilly Community Resilience Committee will meet quarterly on the 1st Friday of the month at 9.30am in the Benbullen room. Meetings will be held in the months of November, February, May and August.

Reporting

The Wollondilly Community Resilience Committee will report to:

- Wollondilly Shire Council on an annual basis
- The Wollondilly Local Emergency Management Committee through the Executive Director Community Services and Corporate Support as required
- Community – through the Wollondilly Community Newsletter and Mayor's column.

Reporting will occur in the months of March, June, September and December.



Wollondilly
EMERGENCY

MANAGEMENT
guide



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Look after...

you, your family, your neighbours and community. For the first 48hrs look after your mate.

Acknowledgements - This booklet is based on the design and concept developed by Goulburn Council and used with permission.

ARE YOU PREPARED FOR AN EMERGENCY?

Disasters can happen at any time, with or without warning.

Talk to family and neighbours now about what you would do in an emergency. Following are some ideas:

An emergency may be caused by natural events such as flooding, a bushfire or major storm. A disaster may be man-made such as a motor vehicle accident or the release of hazardous materials.

An emergency may cause power outages, loss of telephone services, and road closures which may last several days or even weeks.

Along with emergency services, the community shares responsibility for preventing and responding to a disaster. To do this the community should be prepared for any type of emergency, anytime and anywhere. You could sometimes be asked to evacuate with no opportunity to take any personal items with you.

Actively planning and being prepared for an event before it happens helps to protect life and property. Having an emergency plan in place will reduce the physical and emotional stress that a disaster can cause. So does the surety of knowing what to do, where to go and who to contact when a warning sounds.

This brochure contains some helpful hints to plan and prepare. It contains a checklist of the items to have ready in an emergency kit and safety tips for your home or business.

Pages 17-19 provide contact numbers and websites for all emergency service agencies as well as the local council, hospital and energy providers. Local radio frequencies are also listed so you know who to listen to for warnings and updates during an event.

Think about...

Get to know your local flood and bushfire disaster plans.



EMERGENCY WARNING SIGNAL

The Standard Emergency Warning Signal (SEWS) is a wailing siren sound used throughout Australia for emergency events such as bushfire, flooding and major storms.

This signal is broadcast by radio, telephone and television during an emergency.



If you hear the siren, pay careful attention to the message that follows and act immediately on the advice that is given.



Tune into your local radio station or television station or log on to an emergency services website (see page 17 and 19).



Emergency alerts may be sent by message to your landline or a text to your mobile.



Emergency services personnel may also door knock to alert you to the threat.



Think about...

Trim branches that overhang your building. Keep your yard free from clutter.

WHAT TO DO

Prepare an emergency plan for when an emergency takes place and be prepared to evacuate early.

Keep this brochure and a copy of the emergency plan on display in your home or business, make sure all family members or employees are familiar with the plan and practice once every year.

Know your neighbourhood and look out for your neighbours.

Your plan may include these steps:

- Pick two meeting places in safe locations and plan how you would get to each place.
- Choose a household or business member to take control during an emergency event and to act as the contact person.
- Prepare an emergency kit and store the kit in a waterproof container in a safe place - see checklist page 13.
- Listen for warnings - tune into a local radio station, television station or monitor the bureau of meteorology website.
- Dial **000** if you are in a life-threatening emergency, 112 if there is no mobile phone coverage, or 106 if you have a speech or hearing impairment (www.Tripleszero.Gov.Au).
- Secure your premises and turn off gas, electricity and water connections.
- Act on the advice of emergency personnel and evacuate immediately if instructed to do so.
- List the household or business members who have not been contacted.

Think about...

*Clean your gutters, downpipes and drains regularly.
Fix roof damage.*



CONTACT DETAILS

Contact Details of Household, Business, Friends and Neighbours

Name: _____
Phone: _____
Mobile: _____
Email: _____

Name: _____
Phone: _____
Mobile: _____
Email: _____

Name: _____
Phone: _____
Mobile: _____
Email: _____

Your Agreed Meeting Point (A safe place you will head)

Location: _____
Address: _____
Number: _____
Email: _____

Location: _____
Address: _____
Number: _____
Email: _____

Important Contacts

Doctor: _____ Phone: _____
Insurer: _____ Phone: _____
High School: _____ Phone: _____
Primary School: _____ Phone: _____
Child Care: _____ Phone: _____
Nursing Home: _____ Phone: _____
Workplace: _____ Phone: _____
Workplace: _____ Phone: _____
Gas Supplier: _____ Phone: _____
Other: _____ Phone: _____

CHECK LISTS

Emergency Kit

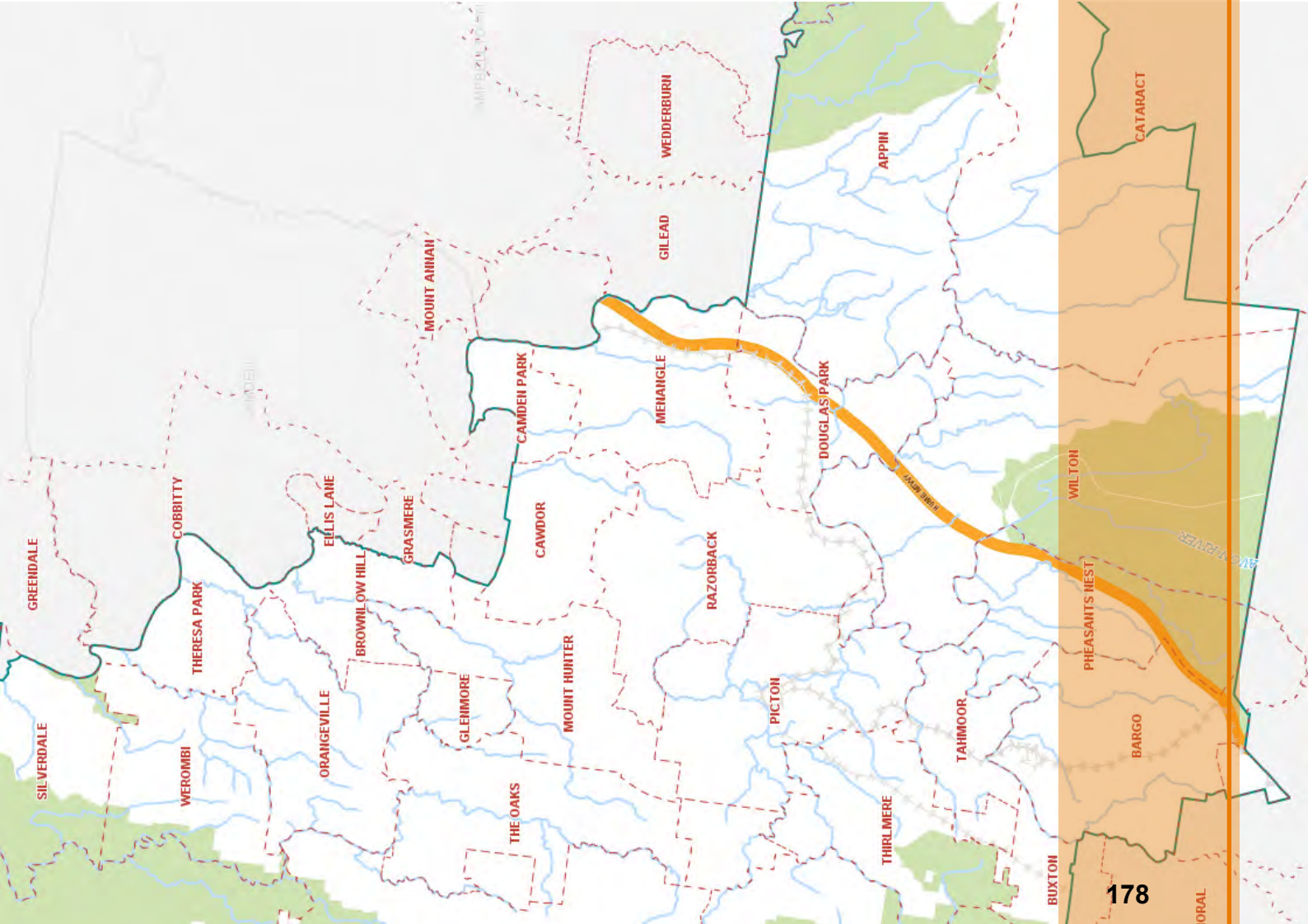
- Portable radio
- Torch
- Spare batteries
- First aid kit
- Candles
- Waterproof matches
- Spare house keys
- Insect repellent
- Suncream
- Utility knife
- Copy of emergency plan
- Local map

Evacuation Kit

- Important documents, e.g. driver's license, passports and insurance papers
- Mobile phone and charger
- Reading glasses
- Valuable items, such as jewellery and watches
- Clothing and footwear
- Photos or disk with photos
- Computer data back-up disk or flash drive
- Food and water including special needs
- Regular medicines and prescriptions
- Pets and pet food
- Toiletries
- Box of Iodine Tablets

Think about...

maintaining building, contents and car insurances.



PREPARE TO GO

If your home or business is in immediate danger act on your emergency plan, grab your emergency kit and evacuation kit and go to one of your chosen meeting places.

Let your neighbours know where you are going and take your pets with you.

If an official evacuation is necessary, an emergency services person may contact and advise you about:

- When you will need to evacuate
- Where the evacuation centres are located and which one you are to go to (Register at the evacuation centre if advised to do so even if you do not intend to stay there). These evacuation centres will be determined based on the current emergency and it's location.
- How to get to the evacuation centre
- Who is able to assist you
- Where you can access more information about the event
- For how long you are likely to be affected by the emergency.

Think about...

Keep listening to your local radio station and stay calm.

WHO TO CONTACT IN AN EMERGENCY

Injury Or Health Crisis Ambulance Service	000	ambulance.nsw.gov.au
Motor Vehicle Accident NSW Police	000	police.nsw.gov.au
Household Fire/Hazmat Incident Fire and Rescue	000	fire.nsw.gov.au
Bushfire Rural Fire Service	000	rfs.nsw.gov.au
Storm/Flood SES	123 500	ses.nsw.gov.au
Bushfire Management plan Survival Plan	rfs.nsw.gov.au/plan-and-prepare/ bush-fire-survival-plan	
Local Government Wollondilly Shire Council	4677 1100	wollondilly.nsw.gov.au

Think about...

Know how to disconnect water, power and gas.





WHERE TO GET INFORMATION

Flood, Storm Warnings			
Bureau of Meteorology		bom.gov.au	
SES	132 500	ses.nsw.gov.au	
Bushfire			
Rural Fire Service	1800 679 737	rfs.nsw.gov.au	
Power Outages			
Endeavor Energy	131 003	endeavorenergy.com.au	
Main Road Closures			
Roads & Maritime	132 701	rms.nsw.gov.au	
Local Road Closures			
Wollondilly Shire Council	4677 1100*	wollondilly.nsw.gov.au	
Radio Stations			
2MCR - 100.3 FM	C91.3 FM	Vintage FM 87.6	
ABC - 97.3 FM	102.9 2ST		
Health Services			
Campbelltown Hospital	4634 3000	Therry Road	
Bowral Hospital	4861 0200	97-103 Bowral St	
Camden Hospital	4634 3000	61 Menangle Rd	
Disaster Plans and Recourses			
Wollondilly Shire Council	4677 1100*	wollondilly.nsw.gov.au	

8 SIMPLE THINGS

1

Yard Maintenance

Maintain your yard and balcony. Secure or store items that could blow around in strong winds. Strong winds can pick up even large items such as outdoor furniture, trampolines and roofing iron causing damage to windows, roofs and cars. Try to keep items around your property tidy.

Identify things which you may need to secure or put away if strong wind or a severe storm is forecast. You may like to include this information in your plan. Storms can affect your home even if you're on holiday, so if you are going away consider securing these items and following other relevant steps before leaving.


2

Gutter Maintenance

Clean your gutters, downpipes and drains regularly to prevent blockages. It is important to keep your gutters and downpipes clear as blockages can cause the water to overflow under the eaves into the roof cavity.

Clear leaves from the valleys of your roof as these will make their way into the gutters in heavy rain.

Keep the drains around your property clear to help surface water move away and prevent water from pooling and entering your property. Pot plants in courtyards and around houses are often used to hide drainage grates. Make sure to move these if heavy rain is likely. Remember to park away from low lying areas and drains if heavy rainfall is expected.

A close-up photograph of a person's hands using a chainsaw to cut through a thick tree branch. The chainsaw is red and white, and the person is wearing a pink and white striped shirt. The background shows a lush green forest.

*Things you can do
NOW to prepare
for a storm*

Tree Maintenance

Trim trees and branches that could potentially fall on your home or property. Check with your local council about any guidelines or required consent applications.

Remember, your safety is important so contact a qualified (and insured) arborist or tree surgeon for advice if necessary. Have a qualified arborist inspect trees every 2-3yrs to identify any preventative action necessary.

Root damage is a major cause of tree failure so take care when digging or excavating around trees. Remember to park your car away from trees if strong winds and severe storms are predicted. When planting trees and shrubs, consider the mature size of the tree and use this to guide the planting location. Select healthy (self-supporting, not girdled) specimens and use good techniques when planting. Speak with a trusted nursery or garden centre for more information.

Media Warnings

Listen to your local radio station and other media for weather warnings. Your local radio station will broadcast information specific to your area.

This information can help you identify things such as flash flooding locations to avoid, road closures, evacuation and recovery centres. Power often goes out during storms and water can affect electricity outlets within your house so make sure you have battery operated torches and radios with spare batteries.

Insurance Check

Check your insurance policy is current and adequate. Consider things like the type of cover (building insurance for home owners and mortgagees, contents insurance however is applicable for everyone).

Consider also what level of cover you are insured for. Make sure that your insurance policy provides cover for the types of events specific to your location, these may include: flash flood, storm water runoff, associated landslip (or landslide) and damage to properties by trees and fire.

Home Emergency Plan

Make a Home Emergency Plan for your family that outlines what you would do in an emergency. Consider where you'll go and how you'll get in contact with each other along with any special circumstances or considerations for your household.

Remember that storms and other emergencies can happen at any time of day so think about where members of your household may be (school, work, commuting), how you'll get in touch with them and where you can meet up. Try to identify how you will manage in these circumstances and who you may be able to get additional support from.

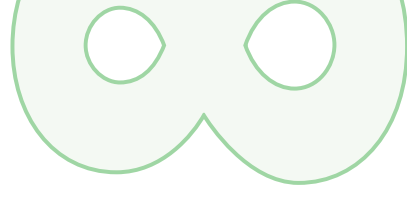
Make sure that everyone knows what the emergency plan is.

Emergency Kit

Prepare an emergency kit with essential items in case you lose power or need to leave home in an emergency. Think about the sorts of things you'd need in an emergency. It can be difficult to find these items in a power outage if you need to leave home in a hurry.

An emergency kit contains most of these items in a sturdy, waterproof container.

Remember to keep it in an easy to access location. See the NSW SES website for more information on other items you'd include in an emergency kit - see checklist on page 13. Remember to include items such as any essential medications and prescriptions, important documents and your emergency plans.





“
Before anything else,
PREPARATION
is key to success”

EC6 Attachments

1. Summary of Changes to Investment Policy
2. Revised Investment Policy (GOV0024)

Monday 11 December 2017

EC6 – Revised Investment Policy

SUMMARY OF CHANGES – INVESTMENT POLICY – GOV0024

Location	Previous Wording	New Wording	Reasoning
Page 2, Item 4.2 (e)	An Hour Glass investment facility of the New South Wales Treasury Corporation	NSW TCorpIM Fund	Name change for the NSW TCorp managed funds product
Page 4, Item 4.5.1	Portfolio Credit Limits refer 4.5.1 Portfolio Credit Limits (a) Previous Table (attached)	Portfolio Credit Limits refer 4.5.1 Portfolio Credit Limits (b) New Table (attached)	The table has been revised to reflect the name change for the TCorp managed fund product
Page 5, Item 4.5.2	Individual Counterparty Limits refer 4.5.2 (a) Previous Table (attached)	Individual Counterparty Limits refer 4.5.2 (b) New Table (attached)	The table has been revised to reflect the name changes for the NSW TCorpIM investment products
Page 5, Item 4.6.2	The independent advisor is required to provide written confirmation that they do not have any actual or potential conflicts of interest in relation to the investments they are recommending or reviewing including that they are not receiving any commissions and other benefits in relation to the investments being recommended	The independent advisor is required to provide written confirmation that they do not have any actual or potential conflicts of interest in relation to the investments they are recommending or reviewing. Any commissions paid to the advisor by banks/product providers will be rebated, or otherwise onforwarded, to Council as per ASIC requirements for an independent investment advisor.	Change of wording per ASIC guidelines for an independent investment advisor.
Page 6 Item 5.1	5.1 The General Manager or delegated representatives have authority to invest surplus funds, subject to regular review. (No previous table)	5.1 Authority for implementation of the Investment Policy is delegated by Council to the General Manager in accordance with the Local Government Act 1993. See table 5.1 (Attached)	To specify who has delegated authority to invest funds on behalf of Council.

4.5.1 Overall Portfolio Credit Framework

(a) Previous Table

Portfolio Credit Limits		
Long Term Credit Ratings	Short Term Credit Ratings	Maximum
AAA	A-1+	100%
AA	A-1	100%
A	A-2	60%
BBB	A-3	30%
Specific Ministerial Approved Forms of Investment		
NSW Treasury Corp Deposits and Hour Glass Facility		100%

(b) New Table

Portfolio Credit Limits		
Long Term Credit Ratings	Short Term Credit Ratings	Maximum
AAA	A-1+	100%
AA	A-1	100%
A	A-2	60%
BBB	A-3	30%
Specific Ministerial Approved Forms of Investment		
NSW Treasury Corp Deposits and NSW TCorpIM Funds		100%

4.5.2 Institutional Credit Framework

(a) Previous Table

Individual Counterparty Limits		
Long Term Credit Ratings	Short Term Credit Ratings	Maximum
AAA	A-1+	45%
AA	A-1	35%
A	A-2	20%
BBB	A-3	10%
NSW Treasury Corp Deposits and Hour Glass Facilities		
11am, Term Deposits or Bonds		45%
Hour Glass Facilities (managed funds)		
Cash Facility		45%
Strategic Cash Facility		35%

(b) New Table

Individual Counterparty Limits		
Long Term Credit Ratings	Short Term Credit Ratings	Maximum
AAA	A-1+	45%
AA	A-1	35%
A	A-2	20%
BBB	A-3	10%
NSW Treasury Corp Deposits and TCorpIM Funds		
11am, Term Deposits or Bonds		45%
TCorpIM (managed funds)		
NSW TCorpIM Cash Fund		45%
NSW TCorpIM Strategic Cash Fund		35%

5.1 New table

Authorised Officer	Roles and Responsibilities
General Manager	Authority to invest surplus funds and authority to delegate this function in accordance with the councils adopted investment policy.
Executive Director – Community Services & Corporate Support	Per Delegation
Chief Financial Officer	Per Delegation
Management Accounting Team Leader	Per Delegation
Accounting Services Team Leader	Per Delegation
Revenue Team Leader	Per Delegation

1. POLICY OBJECTIVES

- 1.1 To provide a framework for the investing of Council's funds at the most favourable return available to it at the time whilst having due consideration of risk and security for that investment type and ensuring that its liquidity requirements are being met.

2. BACKGROUND

- 2.1 This policy has been developed in accordance with Investment Policy Guidelines issued by the Office of Local Government. The policy will assist Council with the prudent and appropriate management of surplus funds.

3. APPLICABILITY

- 3.1 Authority for the implementation of the Investment Policy is delegated by Council to the General Manager in accordance with the Local Government Act 1993.
- 3.2 Officer's delegated authority to manage Council's investments shall be recorded and required to acknowledge they have received a copy of this policy and understand their obligations in this role.
- 3.3 The investment will be managed with the care, diligence and skill that a prudent person would exercise. As trustees of public monies, officers are to manage Council's investment portfolios to safeguard the portfolio in accordance with the spirit of this Investment Policy, and not for speculative purposes.
- 3.4 Officers shall refrain from personal activities that would conflict with the proper execution and management of Council's investment portfolio. This policy requires officers to disclose and conflict of interest to the General Manager.
- 3.5 Independent advisors are also required to declare that they have no actual or perceived conflicts of interest.

4. GUIDELINES

While exercising the power to invest, consideration is to be given to the preservation of Capital, liquidity and the return of investment.

- (a) Preservation of capital is the principal objective of the investment portfolio. Investments are to be placed in a manner that seeks to ensure security and safeguarding of the investment portfolio. This includes managing credit and interest rate risk within identified thresholds and parameters.
- (b) Investments should be allocated to ensure there is sufficient liquidity to meet all reasonably anticipated cash flow requirements, as and when they fall due, without incurring the risk of significant costs due to the unanticipated sale of an investment.
- (c) Investments are expected to achieve a market average rate of return in line with Council's risk tolerance.

- (d) After taking into consideration the returns and the associated risk with each of the available investments on offer, then if there are equally favourable options, preference will be given to those investments offered by financial institutions that have followed the Reserve Bank of Australia's directions by adjusting mortgage interest rates in line with RBA adjustments to the official cash rate.
- 4.1 All investments are to comply with the following:
- (a) Local Government Act 1993
 - (b) Local Government (General) Regulation 2005
 - (c) Ministerial Investment Order
 - (d) Local Government Code of Accounting Practice and Financial Reporting
 - (e) Australian Accounting Standards
 - (f) Office of Local Government Circulars.
- 4.2 Authorised investments are limited to those allowed by the Ministerial Investment order and include:
- (a) Any public funds or securities issued by or guaranteed by, the Commonwealth, any State of the Commonwealth or Territory.
 - (b) Any debenture or securities issued by a Council (within the meaning of the Local Government Act 1993 (NSW)).
 - (c) Interest bearing deposits with, or any debentures or bonds issued by, an authorised deposit-taking institution (as defined in the Banking Act 1959 (Cwth)), but excluding subordinated debt obligations.
 - (d) Any bill of exchange which has a maturity date of not more than 200 days; and if purchased for value confers on the holder in due course a right of recourse against a bank which has been designated as an authorised deposit-taking institution by the Australian Prudential Regulation Authority.
 - (e) A deposit with the New South Wales Treasury Corporation or investments in a NSW TCorpIM Fund.
 - (f) Investments grandfathered under the previous Ministerial Order.
- 4.3 This Investment Policy prohibits but is not limited to any investment carried out for speculative purposes, including:
- (a) Derivative based instruments.
 - (b) Principal only investments or securities that provide potential nil or negative cash flow.
 - (c) Stand alone securities issued that have underlying futures, options, forwards contracts and swaps of any kind.

- (d) Mortgage of Land.
- (e) Deposits with Local Government Financial Services Pty Ltd (LGFS).
- (f) This policy also prohibits the use of leveraging (borrowing to invest) of an investment.

4.4 Risk Management Guidelines

4.4.1 Investments obtained are to be considered in light of the following key criteria:

- (a) Preservation of Capital - the requirement for preventing losses in an investment portfolio's total value.
- (b) Diversification - the requirement to place investments in a broad range of products so as not to be overexposed to a particular sector of the investment market.
- (c) Credit risk - the risk that the product that a council has invested in fails to pay the interest and or repay the principal of the investment.
- (d) Market Risk - the risk that the fair value or future cash flows of an investment will fluctuate due to changes in market prices.
- (e) Liquidity Risk - the risk that the investor is unable to redeem the investment at the fair price and within a timely period.
- (f) Maturity Risk - the risk relating to the length of term to maturity of the investment. The larger the term, the greater the length of exposure and risk to market volatilities.
- (g) Leverage Risk - the magnification of an investor's risk and return that occurs when the investor takes on financial leverage through an investment product.

4.5 Credit and Maturity Guidelines

4.5.1 Overall Portfolio Credit Framework

To control the credit quality on the entire portfolio, the following credit framework limits the percentage of the portfolio exposed to any particular credit rating category. Credit ratings are based upon the Standard & Poor's Investment Rating, or equivalent, where a Standard & Poor's Investment Rating does not exist.

Portfolio Credit Limits		
Long Term Credit Ratings	Short Term Credit Ratings	Maximum
AAA	A-1+	100%
AA	A-1	100%
A	A-2	60%
BBB	A-3	30%
Specific Ministerial Approved Forms of Investment		
NSW Treasury Corp Deposits and NSW TCorpIM Funds		100%

4.5.2 Institutional Credit Framework

Exposure to an individual institution will be restricted by their credit rating so that single entity exposure is limited, as detailed below:

Individual Counterparty Limits		
Long Term Credit Ratings	Short Term Credit Ratings	Maximum
AAA	A-1+	45%
AA	A-1	35%
A	A-2	20%
BBB	A-3	10%
NSW Treasury Corp Deposits and NSW TCorpIM Funds		
11am, Term Deposits or Bonds		45%
TCorpIM (managed funds)		
NSW TCorpIM Cash Fund		45%
NSW TCorpIM Strategic Cash Fund		35%

4.5.3 Term to Maturity Framework

The investment portfolio is to be invested within the following maturity constraints:

Category Description	Minimum	Maximum
Portfolio % < 1 Year	40%	100%
Portfolio % > 1 Year <= 5 Years	0%	60%
Portfolio % > 3 Years <= 5 Years	0%	30%

4.5.4 If any of Council's investments (not covered under the grandfathering clause of the Ministerial Investment Order) are downgraded so that they no longer fall within the investment policy, they will be divested as soon as practicable. The short-term credit rating limit will apply in the case of discrepancies between short and long- term ratings.

4.6 Investment Advisor

4.6.1 Council's Investment advisor must be approved by Council and be licensed by the Australian Securities and Investment Commission. The advisors must be an independent person who has no actual or potential conflict of interest in relation to investment products being recommended and is free to choose the most appropriate product within the terms and conditions of the investment policy.

4.6.2 The independent advisor is required to provide written confirmation that they do not have any actual or potential conflicts of interest in relation to the investments they are recommending or reviewing. Any commissions paid to the advisor by banks/product providers will be rebated, or otherwise onforwarded, to Council as per ASIC requirements for an independent investment advisor.

4.7 Measurement

4.7.1 As Council continues to hold grandfathered investments such as Mortgage Backed Securities (MBS), the investment returns for the portfolio is to be regularly reviewed by an independent financial advisor by assessing the market value of the portfolio. The market value is to be assessed at least once per month to coincide with monthly reporting.

4.8. Benchmarking

4.8.1 The performance of the investment portfolio shall be measured against the industry standard Bloomberg AusBond Bank Bill Index.

4.9 Reporting and Reviewing of Investments

4.9.1 Documentary evidence must be held for each investment and details thereof maintained in an investment register.

4.9.2 The documentary evidence must provide Council legal title to the investment.

4.9.3 For audit purposes, certificates must be obtained from the banks/fund managers confirming the amounts of investment held on Council's behalf at 30 June each year and reconciled to the Investment Register.

4.9.4 All Investments are to be appropriately recorded in Council's financial records and reconciled at least on a monthly basis.

4.9.5 A monthly report will be provided to Council, detailing the investment portfolio in terms of performance, percentage exposure of total portfolio, maturity date and changes in market value.

4.10 Variation to Policy

4.10.1 This policy is to be reviewed annually. Any amendments to the Investment Policy are to be adopted by way of Council resolution.

5. RESPONSIBILITY/ACCOUNTABILITY

5.1 Authority for implementation of the Investment Policy is delegated by Council to the General Manager in accordance with the Local Government Act 1993.

Authorised Officer	Roles and Responsibilities
General Manager	Authority to invest surplus funds and authority to delegate this function in accordance with the councils adopted investment policy.
Executive Director – Community Services & Corporate Support	Per Delegation
Chief Financial Officer	Per Delegation
Management Accounting Team Leader	Per Delegation
Accounting Services Team Leader	Per Delegation
Revenue Team Leader	Per Delegation

6. RELATED POLICIES

- 6.1 Code of Conduct

7. RELATED PROCEDURES

- 7.1 Nil

8. RELATED LEGISLATION

- 8.1 Local Government Act 1993
- 8.2 Local Government (General) Regulation 2005
- 8.3 Ministerial Investment Order;
- 8.4 Trustee Act 1925
- 8.5 Australian Accounting Standards

9. ATTACHMENTS

- 9.1 Standard and Poor's Ratings Description
- 9.2 Instrument Description
- 9.3 Definitions

10. RESOURCES

The following resources were used in the development of this policy:

- 10.1 Local Government Act 1993 (NSW)
- 10.2 Local Government (General) Regulation 2005 (NSW)
- 10.3 Ministerial Investment Order
- 10.4 Office of Local Government Investment Policy Guidelines

11. IMPLEMENTATION STATEMENT

11.1 To ensure this policy is implemented effectively, Council will employ a variety of strategies involving awareness, education and training. These strategies will be aimed at Councillors, staff and council representatives and will involve:

- 11.1.1 The policy has been discussed with Council's Executive Committee.
- 11.1.2 Information sessions have been conducted with relevant staff regarding the requirements of the policy.

12. POLICY HISTORY

12.1	Date First Adopted	26 February 2001
12.2	Most Recent Adoption	19 December 2016
12.3	Next Review Date	19 December 2019
12.4	Responsible Officer	Manager Financial Services

Wollondilly Shire Council
PO Box 21 Picton NSW 2571
62-64 Menangle St Picton NSW 2571
Tel: 02 4677 1100 Fax: 02 4677 2339
Email: council@wollondilly.nsw.gov.au
Rural Living www.wollondilly.nsw.gov.au

ATTACHMENT 9.1

APPENDIX A
Standard & Poor's Ratings Description

Credit Ratings

Standard & Poor's (S&P) is a professional organisation that provides analytical services. An S&P rating is an opinion of the general creditworthiness of an obligor with respect to particular debt security or other financial obligation — based on relevant risk factors.

Credit ratings are based, in varying degrees, on the following considerations:

- Likelihood of payment.
- Nature and provisions of the obligation.
- Protection afforded by, and relative position of, the obligation in the event of bankruptcy, reorganisation or other laws affecting creditors' rights.

The issue rating definitions are expressed in terms of default risk.

Short-Term Obligation Ratings are:

A-1

This is the highest short-term category used by S&P. The obligor's capacity to meet its financial commitment on the obligation is strong. Within this category, certain obligations are designated with a plus sign (+). This indicates that the obligor's capacity to meet its financial commitment on these obligations is extremely strong.

A-2

A short-term obligation rated A-2 is somewhat more susceptible to the adverse effects of changes in circumstances and economic conditions than obligations in higher rating categories. However, the obligor's capacity to meet its financial commitment on the obligation is satisfactory.

A-3

A short-term obligation rated A-3 exhibits adequate protection parameters. However, adverse economic conditions or changing circumstances are more likely to lead to a weakened capacity of the obligor to meet its financial commitment on the obligation.

Long-Term Ratings are:

AAA

An obligation/obligor rated AAA has the highest rating assigned by S&P. The obligor's capacity to meet its financial commitment on the obligation is extremely strong.

AA

An obligation/obligor rated AA differs from the highest rated obligations only in a small degree. The obligor's capacity to meet its financial commitment on the obligations is very strong.

A

An obligation/obligor rated A is somewhat more susceptible to the adverse effects of changes in circumstances and economic conditions than obligations/obligor in higher rated categories. However, the obligor's capacity to meet its financial commitment on the obligation is still strong.

BBB

An obligation/obligor rated BBB exhibits adequate protection parameters. However, adverse economic conditions or changing circumstances are more likely to lead to a weakened capacity to the obligor to meet its financial commitment on the obligation.

Plus (+) or minus (-): The ratings from “AA” to “CCC” may be modified by the addition of a plus or minus sign to show relative standing within the major rating categories.

CreditWatch highlights an emerging situation, which may materially affect the profile of a rated corporation and can be designed as positive, developing or negative. Following a full review the rating may either be affirmed or changed in the direction indicated.

A Rating **Outlook** assesses the potential direction of an issuer’s long-term debt rating over the intermediate-to-long term. In determining a Rating Outlook, consideration is given to possible changes in the economic and/or fundamental business conditions. An outlook is not necessarily precursor of a ratings change or future CreditWatch action. A “Rating Outlook – Positive” indicates that rating may be raised. “Negative” means a rating may be lowered. “Stable” indicates that ratings are not likely to change. “Developing” means ratings may be raised or lowered.

ATTACHMENT 9.2

APPENDIX B
Instrument Description

At Call Deposits

Cash invested on an overnight basis.

Term Deposit

Funds invested with a financial institution at a predetermined rate that applies to the duration of the deposit. The principal is held on deposit for a fixed term with interest payable at maturity. It is not a tradeable security and the investor is penalised when funds are prepaid.

Bank Bill

Bank-accepted bills are bills of exchange drawn by a company or individual (borrower) usually for periods between 30 and 180 days. The bill is accepted by the bank, which in turn accepts the liability for payment at maturity. It is a short-term investment issued at a discount to the face value and is of a very high credit standing, consequently trades at the lowest yields of all commercially issued bills.

Negotiable Certificate of Deposit (NCD)

Short-term bearer securities issued by banks for up to 180-days. They are sold at a discount to face value and are highly liquid discount securities, representing the bank's debt, therefore trade at similar yields to bank bills. Creditworthiness of the bank will determine where the bank's NCD trades, relative to the BBSW.

Covered Bonds

These are bonds issued by an Authorised Deposit taking institution which are backed by a specific pool of the issuing institution's assets. If the cover assets are not sufficient to meet the bond payments in full, covered bondholders also have an unsecured claim on the issuer to recover any shortfall. Covered bonds rank above depositors and senior unsecured bond holders in a claim on bank assets. Because of strict regulations and the two-fold protection of investors' interests, covered bonds are considered to be the safest form of bank debt, typically carrying a higher credit rating than their issuer.

Floating Rate Note (FRN)

The FRN is a longer-term security issued for a fixed period of time but has a variable (floating) coupon on a monthly or quarterly basis. The coupon reflects current interest rates, which is determined as a margin over the BBSW rate set. FRN's appeal to investors who are reluctant to commit funds to fixed interest investments for longer periods in times of fluctuating interest rates. Typical issuers are banks, corporate, financial institutions and securitised vehicles.

Floating Rate Negotiable Certificate of Deposit

An NCD which is issued by a bank for a set period of time with a variable rate set on a quarterly or monthly basis over the fixed term. The interest rate is set against the BBSW reference rate reflecting the current market rate at each interval. These are issued as a rolling discount security.

Mortgage Backed Securities (MBS)

These are a specific type of securitised asset that are typically backed by a pool of residential mortgages. These securities are structured or tranching into different bond classes with varying security characteristics. The majority of MBS are "pass throughs" where the cash flows (principal and interest) received from the underlying mortgages that make up the pool are passed through to the holders of the MBS. MBS can be floating or fixed rate securities.

Fixed Interest Securities (Bonds)

Securities issued by Commonwealth, State or corporate institutions that pay a fixed rate of interest (coupon) and mature at a fixed point in time. The interest (coupon) is paid at regular intervals (semi-annually, but can be paid monthly, quarterly, or annually). These securities are generally issued for a period of greater than one year.

ATTACHMENT 9.3

APPENDIX C

Definitions

ADI

Authorised Deposit Taking institutions (ADI) are corporations that are authorised under the Banking Act 1959 to take deposits from customers.

Bank Bill Index

The Bank Bill Index, compiled by Bloomberg, is published daily in the Financial Review under the name AusBond Bank Bill Index and widely used as a benchmark for historical mark-to-market performance of investment portfolios. The index is comprised of 13 bank bills each with a maturity 7 days apart. As each bill in the index matures, it is reinvested into a new 91 day bank bill. All the bank bills are then marked-to-market each day to provide the AusBond Bank Bill Index figure. (Importantly, the index is not a compilation of the 13 yields, it is a marked-to-market valuation of the underlying pool of securities).

For Council's purposes, the AusBond Bank Bill Index is primarily used as a benchmark return for historical performance of its investment portfolio.

Bank Bill Swap Interest Rate (BBSW)

BBSW is the borrowing rate among the country's top financial institutions, and is widely use as the benchmark interest rate for the pricing of financial instruments. When a new security is priced, or its interest rate resets, additional basis points above BBSW are typically added depending upon the credit quality of the borrowing institution.

BBSW rates are published for a range of time periods, but the most widely referenced rate for securities in Council's portfolio is the 90 day (or 3mth) BBSW rate.

Bill of Exchange

A bill of exchange is an unconditional order in writing, addressed by one person to another, signed by the person giving it, requiring the person to whom it is addressed to pay on demand, or at a fixed or determinable future time, a sum certain in money or to the order of a specified person, or to bearer.

Credit Risk

Credit risk is the risk of loss to an investor due to the failure of the institution/entity with which an investment is held to pay the interest and/or repay the principal of an investment.

Debentures

A debenture is a document evidencing an acknowledgement of a debt, which a company has created for the purposes of raising capital. Debentures are issued by companies in return for medium and long term investment of funds by lenders.

OLG

NSW Office of Local Government, Department of Premier and Cabinet.

Grandfather Clause

Grandfather Clause is a legislative clause, which, in prohibiting a certain activity, exempts those who were engaged in the activity at the time the legislation was passed.

Interest Rate Risk

Interest rate risk is the risk that the fair value or future cash flows of an investment will fluctuate because of changes in market interest rates.

Investment Portfolio

This is the total pool of all of the council's investments.

LGGR

Local Government (General) Regulation 2005 (NSW)

Liquidity Risk

Liquidity Risk is the risk an investor is unable redeem the investment at a fair price within a timely period.

Market Risk

Market risk is the risk that the fair value or future cash flow of an investment will fluctuate due to changes in market prices.

Maturity Risk

Maturity Risk is the risk relating to the length of term to maturity of the investment. The larger the term, the greater the length of exposure and risk to market volatilities.

Preservation of Capital

Preservation of capital refers to an investment strategy with the primary goal of preventing losses in an investment portfolio's total value.

Prudent person standard

Prudent person standard is a legal standard restricting the investing and managing of a client's account to what a prudent person seeking reasonable income and preservation of capital might exercise for his or her own investment.

Responsible Accounting Officer

The Responsible Accounting officer (RAO) of Council means a member of staff of the council who has been designated by the General Manager, or if no such member has been designated, the General Manager. (LGGR< clause 196)

Securities

For financial markets these are the many types of financial instruments (ie documents) that are traded in financial markets (except futures contracts), eg, bonds and shares.

EC7 Attachment

1. Investment Summary Report as at 31 October 2017

Monday 11 December 2017

EC7 – Investment of Funds as at 31 October 2017



Wollondilly
Shire Council

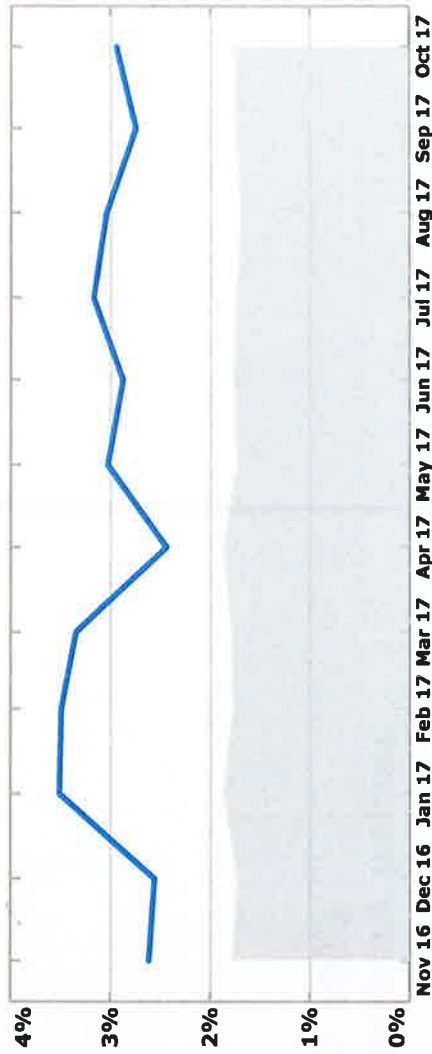
**Investment Summary Report
October 2017**



Investment Holdings

By Product	Face Value (\$)	Current Value (\$)	Current Yield (%)
Bonds	2,000,000.00	1,989,240.00	7.1692
Cash	4,506,000.00	4,506,000.00	1.5500
Floating Rate Note	15,000,000.00	15,192,831.31	2.8307
Mortgage Backed Security	1,629,895.21	1,100,831.03	2.2075
Term Deposit	37,000,000.00	37,424,043.84	2.7441
	60,135,895.21	60,212,946.18	2.8088

Investment Performance

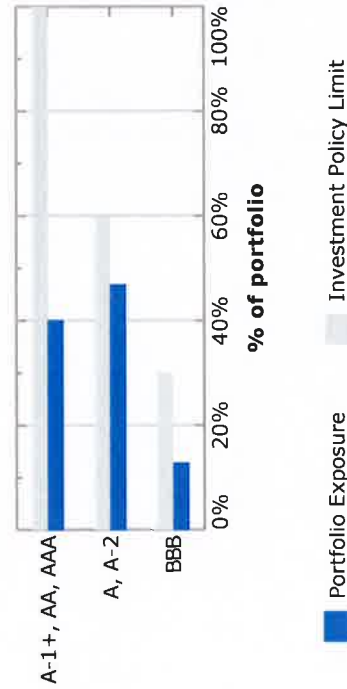


■ Portfolio Annualised Return

■ Bloomberg BB Index Annualised Return

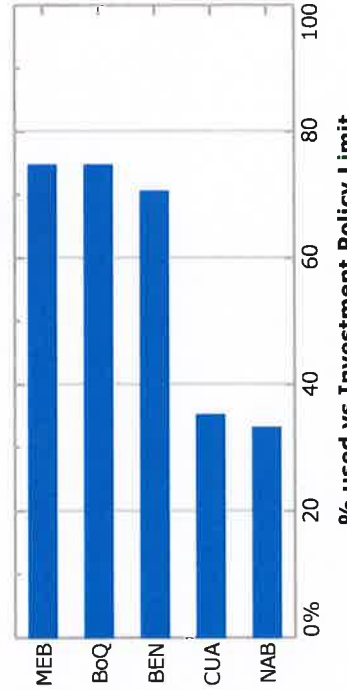
Investment Policy Compliance

Total Credit Exposure



■ Portfolio Exposure ■ Investment Policy Limit

Highest Individual Exposures



■ % used vs Investment Policy Limit

Term to Maturities

Maturity Profile	Face Value (\$)	Policy Max
Less than 1yr	40,506,000	67%
Greater than 1yr	19,629,895	33%
a. Between 3 and 5yrs	3,629,895	6%
b. Greater than 5yrs	1,000,000	2%
	60,135,895	

Cash Accounts

Face Value (\$)	Current Yield	Institution	Credit Rating	Purchase Price (\$)	Purchase Date	Current Value (\$)	Deal No.	Reference
4,506,000.00	1.5500%	National Australia Bank	A-1+	2,000,000.00	1-Feb-17	2,043,081.64	534818	AtMaturity
4,506,000.00	1.5500%			500,000.00	9-Nov-16	513,448.63	534517	AtMaturity
		Bank of Queensland	A-2	1,000,000.00	16-Feb-17	1,019,084.93	534882	AtMaturity
		ME Bank	A-2	1,000,000.00	1-Mar-17	1,017,787.67	534927	AtMaturity
		ME Bank	A-2	1,000,000.00	5-Jun-17	1,011,021.92	535292	AtMaturity
		Bank of Queensland	A-2	1,000,000.00	14-Dec-16	1,024,701.37	534665	AtMaturity
		ME Bank	A-2	1,000,000.00	14-Jun-17	1,010,356.16	535361	AtMaturity
		Bank of Queensland	A-2	1,000,000.00	20-Dec-16	1,024,241.10	534671	AtMaturity
		ME Bank	A-2	1,000,000.00	4-Apr-17	1,015,608.22	535131	AtMaturity
		Commonwealth Bank of Australia	A-1+	1,000,000.00	9-Mar-17	1,017,661.37	534987	AtMaturity
		Bank of Queensland	A-2	1,000,000.00	15-Feb-17	1,019,158.90	534879	AtMaturity
		ME Bank	A-2	1,000,000.00	28-Aug-17	1,004,541.10	535651	AtMaturity
		Rural Bank	A-2	1,000,000.00	2-Mar-17	1,018,049.32	534933	Annually
		Commonwealth Bank of Australia	A-1+	1,000,000.00	9-Mar-17	1,017,791.23	534986	AtMaturity
		Bank of Queensland	A-2	1,000,000.00	5-Jun-17	1,010,817.81	535293	AtMaturity
		Bank of Queensland	A-2	1,000,000.00	14-Jun-17	1,010,164.38	535362	AtMaturity
		Bank of Queensland	A-2	1,000,000.00	11-Oct-17	1,001,495.89	535851	AtMaturity
		ME Bank	A-2	1,000,000.00	26-Apr-17	1,013,980.82	535196	AtMaturity
		National Australia Bank	A-1+	1,000,000.00	30-Aug-17	1,004,384.11	535660	AtMaturity
		Bank of Queensland	A-2	1,000,000.00	2-Aug-17	1,006,606.85	535566	AtMaturity

Term Deposits

Maturity Date	Face Value (\$)	Rate	Institution	Credit Rating	Purchase Price (\$)	Purchase Date	Current Value (\$)	Deal No.	Accrued Interest (\$)	Coupon Frequency	Reference
1-Nov-17	2,000,000.00	2.8800%	Credit Union Australia	A-2	2,000,000.00	1-Feb-17	2,043,081.64	534818	43,081.64	AtMaturity	
8-Nov-17	500,000.00	2.7500%	Bendigo and Adelaide Bank	A-2	500,000.00	9-Nov-16	513,448.63	534517	13,448.63	AtMaturity	
15-Nov-17	1,000,000.00	2.7000%	Bank of Queensland	A-2	1,000,000.00	16-Feb-17	1,019,084.93	534882	19,084.93	AtMaturity	
6-Dec-17	1,000,000.00	2.6500%	ME Bank	A-2	1,000,000.00	1-Mar-17	1,017,787.67	534927	17,787.67	AtMaturity	
6-Dec-17	1,000,000.00	2.7000%	ME Bank	A-2	1,000,000.00	5-Jun-17	1,011,021.92	535292	11,021.92	AtMaturity	
13-Dec-17	1,000,000.00	2.8000%	Bank of Queensland	A-2	1,000,000.00	14-Dec-16	1,024,701.37	534665	24,701.37	AtMaturity	
13-Dec-17	1,000,000.00	2.7000%	ME Bank	A-2	1,000,000.00	14-Jun-17	1,010,356.16	535361	10,356.16	AtMaturity	
20-Dec-17	1,000,000.00	2.8000%	Bank of Queensland	A-2	1,000,000.00	20-Dec-16	1,024,241.10	534671	24,241.10	AtMaturity	
2-Jan-18	1,000,000.00	2.7000%	ME Bank	A-2	1,000,000.00	4-Apr-17	1,015,608.22	535131	15,608.22	AtMaturity	
10-Jan-18	1,000,000.00	2.7200%	Commonwealth Bank of Australia	A-1+	1,000,000.00	9-Mar-17	1,017,661.37	534987	17,661.37	AtMaturity	
14-Feb-18	1,000,000.00	2.7000%	Bank of Queensland	A-2	1,000,000.00	15-Feb-17	1,019,158.90	534879	19,158.90	AtMaturity	
28-Feb-18	1,000,000.00	2.5500%	ME Bank	A-2	1,000,000.00	28-Aug-17	1,004,541.10	535651	4,541.10	AtMaturity	
5-Mar-18	1,000,000.00	2.7000%	Rural Bank	A-2	1,000,000.00	2-Mar-17	1,018,049.32	534933	18,049.32	Annually	
7-Mar-18	1,000,000.00	2.7400%	Commonwealth Bank of Australia	A-1+	1,000,000.00	9-Mar-17	1,017,791.23	534986	17,791.23	AtMaturity	
7-Mar-18	1,000,000.00	2.6500%	Bank of Queensland	A-2	1,000,000.00	5-Jun-17	1,010,817.81	535293	10,817.81	AtMaturity	
14-Mar-18	1,000,000.00	2.6500%	Bank of Queensland	A-2	1,000,000.00	14-Jun-17	1,010,164.38	535362	10,164.38	AtMaturity	
11-Apr-18	1,000,000.00	2.6000%	Bank of Queensland	A-2	1,000,000.00	11-Oct-17	1,001,495.89	535851	1,495.89	AtMaturity	
24-Apr-18	1,000,000.00	2.7000%	ME Bank	A-2	1,000,000.00	26-Apr-17	1,013,980.82	535196	13,980.82	AtMaturity	
1-May-18	1,000,000.00	2.5400%	National Australia Bank	A-1+	1,000,000.00	30-Aug-17	1,004,384.11	535660	4,384.11	AtMaturity	
2-May-18	1,000,000.00	2.6500%	Bank of Queensland	A-2	1,000,000.00	2-Aug-17	1,006,606.85	535566	6,606.85	AtMaturity	

Term Deposits

Maturity Date	Face Value (\$)	Rate	Institution	Credit Rating	Purchase Price (\$)	Purchase Date	Current Value (\$)	Deal No.	Accrued Interest (\$)	Coupon Frequency	Coupon Reference
16-May-18	1,000,000.00	2.6500%	ME Bank	A-2	1,000,000.00	18-Aug-17	1,005,445.21	535622	5,445.21	AtMaturity	
23-May-18	1,000,000.00	2.8500%	Credit Union Australia	A-2	1,000,000.00	24-May-17	1,012,571.23	535264	12,571.23	AtMaturity	
30-May-18	1,000,000.00	2.7000%	Bendigo and Adelaide Bank	A-2	1,000,000.00	31-May-17	1,011,391.78	535276	11,391.78	AtMaturity	
6-Jun-18	1,000,000.00	2.7000%	Bendigo and Adelaide Bank	A-2	1,000,000.00	5-Jun-17	1,011,021.92	535294	11,021.92	AtMaturity	
27-Jun-18	1,500,000.00	2.5900%	National Australia Bank	A-1+	1,500,000.00	27-Sep-17	1,503,725.34	535803	3,725.34	AtMaturity	
4-Jul-18	1,000,000.00	2.7000%	Bank of Queensland	A-2	1,000,000.00	5-Jul-17	1,008,802.74	535439	8,802.74	AtMaturity	
4-Jul-18	1,000,000.00	2.5800%	Commonwealth Bank of Australia	A-1+	1,000,000.00	5-Sep-17	1,004,029.04	535703	4,029.04	AtMaturity	
11-Jul-18	1,000,000.00	2.5800%	National Australia Bank	A-1+	1,000,000.00	13-Sep-17	1,003,463.56	535776	3,463.56	AtMaturity	
23-Aug-18	1,000,000.00	3.1000%	Westpac Group	A-1+	1,000,000.00	23-Aug-16	1,005,945.21	534157	5,945.21	Annually	
27-Aug-18	1,000,000.00	3.0500%	Bendigo and Adelaide Bank	A-2	1,000,000.00	26-Aug-15	1,005,431.51	508262	5,431.51	Annually	
28-Aug-18	1,000,000.00	2.6500%	ME Bank	A-2	1,000,000.00	29-Aug-17	1,004,646.58	535656	4,646.58	AtMaturity	
5-Sep-18	1,000,000.00	2.6000%	National Australia Bank	A-1+	1,000,000.00	1-Sep-17	1,004,345.21	535680	4,345.21	AtMaturity	
12-Sep-18	1,000,000.00	3.1000%	Westpac Group	A-1+	1,000,000.00	1-Sep-16	1,005,180.82	534201	5,180.82	Annually	
15-May-19	2,000,000.00	2.9000%	Bendigo and Adelaide Bank	BBB+	2,000,000.00	17-May-17	2,026,695.89	535244	26,695.89	Annually	
9-Aug-19	1,000,000.00	3.2000%	Westpac Group	AA-	1,000,000.00	9-Aug-16	1,007,364.38	534113	7,364.38	Annually	
	37,000,000.00	2.7441%			37,000,000.00		37,424,043.84		424,043.84		

Floating Rate Notes

Maturity Date	Face Value (\$)	Current Coupon	Security Name	Credit Rating	Purchase Price (\$)	Purchase Date	Current Value (\$)	Deal No.	Accrued Interest (\$)	Next Coupon Date	Coupon Reference
1-Apr-19	500,000.00	3.3050%	CUA Snr FRN (Apr19) BBSW+1.60%	BBB	500,000.00	1-Apr-16	504,722.95	533363	1,312.95	2-Jan-18	
10-May-19	1,000,000.00	2.6900%	WBC Snr FRN (May19) BBSW+1.00%	AA-	1,000,000.00	11-Mar-16	1,015,956.99	533330	6,116.99	10-Nov-17	
11-Jun-19	750,000.00	2.8350%	AMP Snr FRN (Jun19) BBSW+1.10%	A	750,000.00	11-Dec-15	759,443.42	512050	2,970.92	11-Dec-17	
18-Jul-19	1,000,000.00	3.1500%	ME Bank Snr FRN (Jul19) BBSW+1.45%	BBB	1,000,000.00	18-Jul-16	1,007,208.22	534040	1,208.22	18-Jan-18	
17-Sep-19	1,000,000.00	2.6500%	BEN Snr FRN (Sep19) BBSW+0.93%	BBB+	1,000,000.00	17-Sep-14	1,006,874.52	491128	3,194.52	18-Dec-17	
11-Nov-19	1,000,000.00	2.5400%	ANZ Snr FRN (Nov19) BBSW+0.85%	AA-	1,000,000.00	11-Nov-14	1,014,206.30	497055	5,706.30	13-Nov-17	

Floating Rate Notes

Maturity Date	Face Value (\$)	Current Coupon	Security Name	Credit Rating	Purchase Price (\$)	Purchase Date	Current Value (\$)	Deal No.	Accrued Interest (\$)	Next Coupon Reference Date
29-Nov-19	500,000.00	3.2100%	GBS Snr FRN (Nov19) BBSW+1.50%	BBB	500,000.00	29-Nov-16	500,791.63	534565	2,814.25	29-Nov-17
22-Jan-20	1,000,000.00	2.6000%	WBC Snr FRN (Jan20) BBSW+0.90%	AA-	1,000,000.00	22-Jan-15	1,011,061.10	501146	641.10	22-Jan-18
21-Feb-20	500,000.00	2.7900%	BEN Snr FRN (Feb20) BBSW+1.10%	BBB+	500,000.00	21-Nov-16	505,651.78	534537	2,751.78	21-Nov-17
3-Mar-20	1,000,000.00	2.8350%	MAC Snr FRN (Feb20) BBSW+1.10%	A	1,000,000.00	3-Mar-15	1,015,194.93	502273	4,504.93	4-Dec-17
20-Mar-20	750,000.00	3.0100%	CUA Snr FRN (Mar20) BBSW+1.30%	BBB	750,000.00	20-Mar-17	754,487.67	534994	2,597.67	20-Dec-17
17-Jul-20	1,000,000.00	2.5998%	CBA Snr FRN (Jul20) BBSW+0.90%	AA-	1,000,000.00	17-Jul-15	1,010,518.42	507122	1,068.42	17-Jan-18
18-Aug-20	1,000,000.00	2.7900%	BEN Snr FRN (Aug20) BBSW+1.10%	BBB+	1,000,000.00	18-Aug-15	1,012,182.88	505173	5,732.88	20-Nov-17
20-Oct-20	1,000,000.00	2.9500%	SUN Snr FRN (Oct20) BBSW+1.25%	A+	1,000,000.00	20-Oct-15	1,016,999.86	510106	969.86	22-Jan-18
18-Jan-21	500,000.00	2.8502%	CBA Snr FRN (Jan21) BBSW+1.15%	AA-	500,350.00	25-Jan-16	508,431.61	533092	546.61	18-Jan-18
20-Apr-21	500,000.00	3.1600%	BEN Snr FRN (Apr21) BBSW+1.46%	BBB+	500,000.00	20-Apr-16	509,114.45	533420	519.45	22-Jan-18
3-Jun-21	1,000,000.00	2.9050%	WBC Snr FRN (Jun21) BBSW+1.17%	AA-	1,000,000.00	3-Jun-16	1,021,796.16	533707	4,616.16	4-Dec-17
30-Mar-22	500,000.00	2.7600%	AMP Snr FRN (Mar22) BBSW+1.05%	A	500,000.00	30-Mar-17	505,002.67	535097	1,247.67	29-Dec-17
16-Aug-22	500,000.00	2.6600%	SUN Snr FRN (Aug22) BBSW+0.97%	A+	500,000.00	16-Aug-17	513,185.75	535608	2,805.75	16-Nov-17
	15,000,000.00	2.8307%			15,000,350.00		15,192,831.31		51,326.43	

Zero Coupon Bonds

Maturity Date	Face Value (\$)	Current Coupon	Security Name	Credit Rating	Purchase Price (\$)	Purchase Date	Current Value (\$)	Deal No.	Purchase Yield	Reference
22-Jan-18	2,000,000.00		CBA Snr Bond (Feb18) ZC	A-1+	1,000,000.00	21-Jan-08	1,989,240.00	220294	7.1692%	
	2,000,000.00				1,000,000.00		1,989,240.00		7.1692%	

Mortgage Backed Securities

Weighted Avg Life	Face Value (\$)	Current Coupon	Security Name	Rating	Purchase Price (\$)	Purchase Date	Current Value (\$)	Deal No.	Accrued Interest (\$)	Reference
22-Aug-22	629,895.21	2.1400%	Emerald Reverse Mortgage (A Tranche)	AAA	1,000,000.00	17-Jul-06	500,276.24	310323	2,659.02	
21-Jul-27	1,000,000.00	2.2500%	Emerald Reverse Mortgage (B Tranche)	AA	1,000,000.00	6-Jul-07	600,554.79	310288	554.79	

Mortgage Backed Securities										
Weighted Avg Life	Face Value (\$)	Current Coupon	Security Name	Rating	Purchase Price (\$)	Purchase Date	Current Value (\$)	Deal No.	Accrued Interest (\$)	Reference
	1,629,895.21	2.2075%			2,000,000.00		1,100,831.04		3,213.82	

Wollondilly Shire Council Accrued Interest Report



Accrued Interest Report

Asset Type	Deal Number	Face Value (\$)	Settlement Date	Maturity Date	Interest Received (\$)	Days Accrued	Interest Accrued (\$)	Percentage Return
Bonds								
CBA Snr Bond (Feb18) ZC	220294	2,000,000.00	21-Jan-08	22-Jan-18	0.00	31	8,483.85	7.17%
					0.00		8,483.85	7.17%
Cash								
National Australia Bank	211819	4,506,000.00			6,296.82	31	6,296.82	1.55%
					6,296.82		6,296.82	1.55%
Floating Rate Note								
CUA Snr FRN (Apr19) BBSW+1.60%	533363	500,000.00	1-Apr-16	1-Apr-19	4,171.51	31	1,403.63	3.31%
WBC Snr FRN (May19) BBSW+1.00%	533330	1,000,000.00	11-Mar-16	10-May-19	0.00	31	2,284.66	2.69%
AMP Snr FRN (Jun19) BBSW+1.10%	512050	750,000.00	11-Dec-15	11-Jun-19	0.00	31	1,805.86	2.84%
ME Bank Snr FRN (Jul19) BBSW+1.45%	534040	1,000,000.00	18-Jul-16	18-Jul-19	7,927.12	31	2,673.01	3.15%
BEN Snr FRN (Sep19) BBSW+0.93%	491128	1,000,000.00	17-Sep-14	17-Sep-19	0.00	31	2,250.68	2.65%
ANZ Snr FRN (Nov19) BBSW+0.85%	497055	1,000,000.00	11-Nov-14	11-Nov-19	0.00	31	2,157.26	2.54%
GBS Snr FRN (Nov19) BBSW+1.50%	534565	500,000.00	29-Nov-16	29-Nov-19	0.00	31	1,363.15	3.21%
WBC Snr FRN (Jan20) BBSW+0.90%	501146	1,000,000.00	22-Jan-15	22-Jan-20	6,457.26	31	2,202.19	2.59%
BEN Snr FRN (Feb20) BBSW+1.10%	534537	500,000.00	21-Nov-16	21-Feb-20	0.00	31	1,184.79	2.79%
MAC Snr FRN (Feb20) BBSW+1.10%	502273	1,000,000.00	3-Mar-15	3-Mar-20	0.00	31	2,407.81	2.84%
CUA Snr FRN (Mar20) BBSW+1.30%	534994	750,000.00	20-Mar-17	20-Mar-20	0.00	31	1,917.33	3.01%
CBA Snr FRN (Jul20) BBSW+0.90%	507122	1,000,000.00	17-Jul-15	17-Jul-20	6,553.00	31	2,208.08	2.60%
BEN Snr FRN (Aug20) BBSW+1.10%	505173	1,000,000.00	18-Aug-15	18-Aug-20	0.00	31	2,369.59	2.79%
SUN Snr FRN (Oct20) BBSW+1.25%	510106	1,000,000.00	20-Oct-15	20-Oct-20	7,435.62	31	2,505.48	2.95%
CBA Snr FRN (Jan21) BBSW+1.15%	533092	500,000.00	25-Jan-16	18-Jan-21	3,585.50	31	1,209.15	2.85%
BEN Snr FRN (Apr21) BBSW+1.46%	533420	500,000.00	20-Apr-16	20-Apr-21	3,982.47	31	1,341.92	3.16%
WBC Snr FRN (Jun21) BBSW+1.17%	533707	1,000,000.00	3-Jun-16	3-Jun-21	0.00	31	2,467.26	2.90%

Accrued Interest Report

Asset Type	Deal Number	Face Value (\$)	Settlement Date	Maturity Date	Interest Received (\$)	Days Accrued	Interest Accrued (\$)	Percentage Return
AMP Snr FRN (Mar22) BBSW +1.05%	535097	500,000.00	30-Mar-17	30-Mar-22	0.00	31	1,172.05	2.76%
SUN Snr FRN (Aug22) BBSW+0.97%	535608	500,000.00	16-Aug-17	16-Aug-22	0.00	31	1,129.59	2.66%
					40,112.47		36,053.49	2.83%
Mortgage Backed Securities								
Emerald Reverse Mortgage (A Tranche)	310323	629,895.21	17-Jul-06	22-Aug-22	0.00	31	1,144.86	2.14%
Emerald Reverse Mortgage (B Tranche)	310288	1,000,000.00	6-Jul-07	21-Jul-27	5,781.64	31	1,907.95	2.25%
					5,781.64		3,052.80	2.21%
Term Deposit								
Westpac Group	534334	1,000,000.00	14-Sep-16	4-Oct-17	1,643.84	3	246.58	3.00%
ME Bank	535360	1,000,000.00	14-Jun-17	11-Oct-17	8,476.71	10	712.33	2.60%
ME Bank	535187	750,000.00	19-Apr-17	18-Oct-17	9,910.27	17	925.68	2.65%
Credit Union Australia	534818	2,000,000.00	1-Feb-17	1-Nov-17	0.00	31	4,892.05	2.88%
Bendigo and Adelaide Bank	534517	500,000.00	9-Nov-16	8-Nov-17	0.00	31	1,167.81	2.75%
Bank of Queensland	534882	1,000,000.00	16-Feb-17	15-Nov-17	0.00	31	2,293.15	2.70%
ME Bank	534927	1,000,000.00	1-Mar-17	6-Dec-17	0.00	31	2,250.68	2.65%
ME Bank	535292	1,000,000.00	5-Jun-17	6-Dec-17	0.00	31	2,293.15	2.70%
Bank of Queensland	534665	1,000,000.00	14-Dec-16	13-Dec-17	0.00	31	2,378.08	2.80%
ME Bank	535361	1,000,000.00	14-Jun-17	13-Dec-17	0.00	31	2,293.15	2.70%
Bank of Queensland	534671	1,000,000.00	20-Dec-16	20-Dec-17	0.00	31	2,378.08	2.80%
ME Bank	535131	1,000,000.00	4-Apr-17	2-Jan-18	0.00	31	2,293.15	2.70%
Commonwealth Bank of Australia	534987	1,000,000.00	9-Mar-17	10-Jan-18	0.00	31	2,310.14	2.72%
Bank of Queensland	534879	1,000,000.00	15-Feb-17	14-Feb-18	0.00	31	2,293.15	2.70%
ME Bank	535651	1,000,000.00	28-Aug-17	28-Feb-18	0.00	31	2,165.75	2.55%
Rural Bank	534933	1,000,000.00	2-Mar-17	5-Mar-18	0.00	31	2,293.15	2.70%

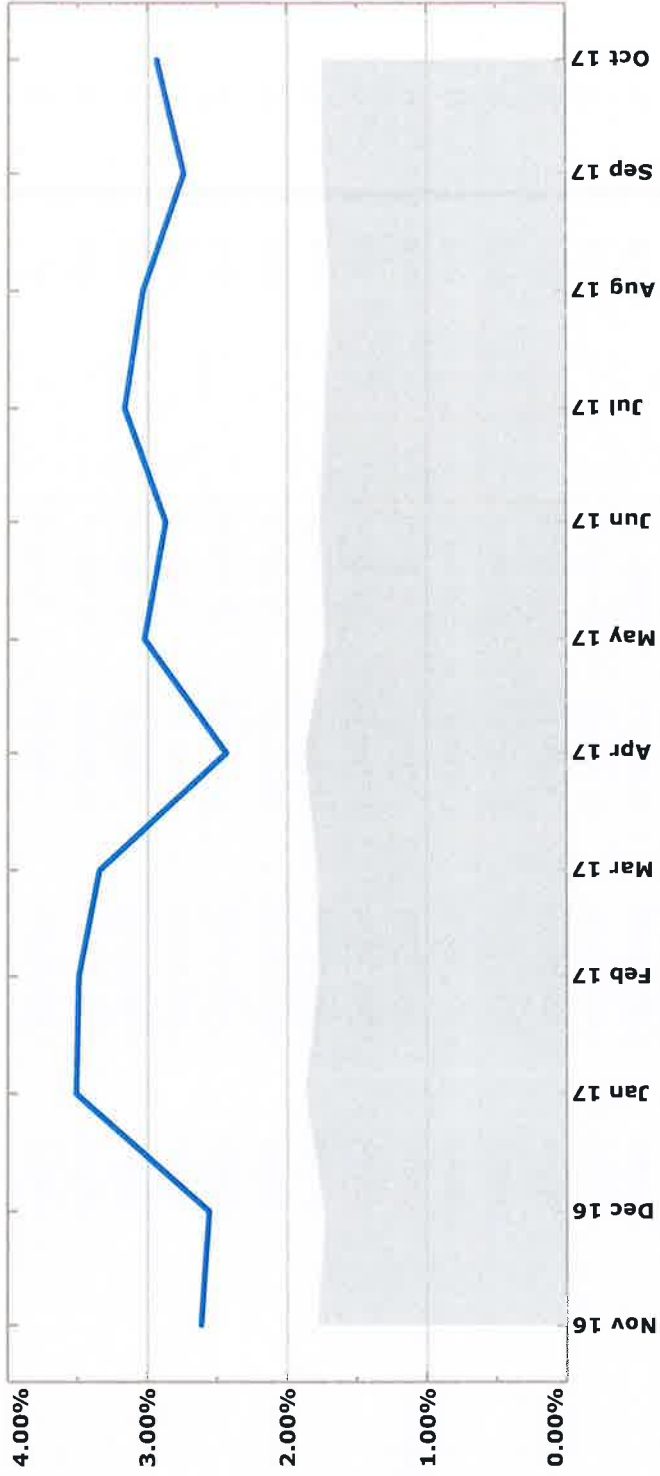
Wollondilly Shire Council
Accrued Interest Report



Accrued Interest Report

Asset Type	Deal Number	Face Value (\$)	Settlement Date	Maturity Date	Interest Received (\$)	Days Accrued	Interest Accrued (\$)	Percentage Return
Commonwealth Bank of Australia	534986	1,000,000.00	9-Mar-17	7-Mar-18	0.00	31	2,327.12	2.74%
Bank of Queensland	535293	1,000,000.00	5-Jun-17	7-Mar-18	0.00	31	2,250.68	2.65%
Bank of Queensland	535362	1,000,000.00	14-Jun-17	14-Mar-18	0.00	31	2,250.68	2.65%
Bank of Queensland	535851	1,000,000.00	11-Oct-17	11-Apr-18	0.00	21	1,495.89	2.60%
ME Bank	535196	1,000,000.00	26-Apr-17	24-Apr-18	0.00	31	2,293.15	2.70%
National Australia Bank	535660	1,000,000.00	30-Aug-17	1-May-18	0.00	31	2,157.26	2.54%
Bank of Queensland	535566	1,000,000.00	2-Aug-17	2-May-18	0.00	31	2,250.68	2.65%
ME Bank	535622	1,000,000.00	18-Aug-17	16-May-18	0.00	31	2,250.68	2.65%
Credit Union Australia	535264	1,000,000.00	24-May-17	23-May-18	0.00	31	2,420.55	2.85%
Bendigo and Adelaide Bank	535276	1,000,000.00	31-May-17	30-May-18	0.00	31	2,293.15	2.70%
Bendigo and Adelaide Bank	535294	1,000,000.00	5-Jun-17	6-Jun-18	0.00	31	2,293.15	2.70%
National Australia Bank	535803	1,500,000.00	27-Sep-17	27-Jun-18	0.00	31	3,299.59	2.59%
Bank of Queensland	535439	1,000,000.00	5-Jul-17	4-Jul-18	0.00	31	2,293.15	2.70%
Commonwealth Bank of Australia	535703	1,000,000.00	5-Sep-17	4-Jul-18	0.00	31	2,191.23	2.58%
National Australia Bank	535776	1,000,000.00	13-Sep-17	11-Jul-18	0.00	31	2,191.23	2.58%
Westpac Group	534157	1,000,000.00	23-Aug-16	23-Aug-18	0.00	31	2,632.88	3.10%
Bendigo and Adelaide Bank	508262	1,000,000.00	26-Aug-15	27-Aug-18	0.00	31	2,590.41	3.05%
ME Bank	535656	1,000,000.00	29-Aug-17	28-Aug-18	0.00	31	2,250.68	2.65%
National Australia Bank	535680	1,000,000.00	1-Sep-17	5-Sep-18	0.00	31	2,208.22	2.60%
Westpac Group	534201	1,000,000.00	1-Sep-16	12-Sep-18	0.00	31	2,632.88	3.10%
Bendigo and Adelaide Bank	535244	2,000,000.00	17-May-17	15-May-19	0.00	31	4,926.03	2.90%
Westpac Group	534113	1,000,000.00	9-Aug-16	9-Aug-19	0.00	31	2,717.81	3.20%
Grand Totals					20,030.82		87,403.22	2.74%
							141,290.18	2.76%

Annualised Monthly Return (Marked to Market)



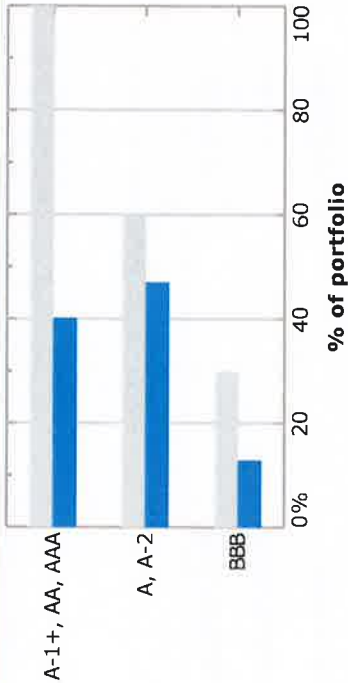
■ Portfolio Annualised Return ■ AusBond BB Index Annualised Return

Historical Performance Summary

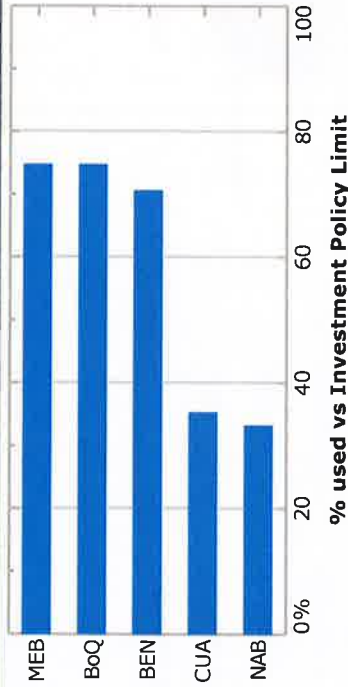
	Portfolio	AusBond BB Index	Outperformance
Oct 2017	2.93%	1.74%	1.19%
Last 3 Months	2.90%	1.72%	1.18%
Last 6 Months	2.96%	1.73%	1.23%
Financial Year to Date	2.97%	1.72%	1.24%
Last 12 months	2.97%	1.76%	1.21%



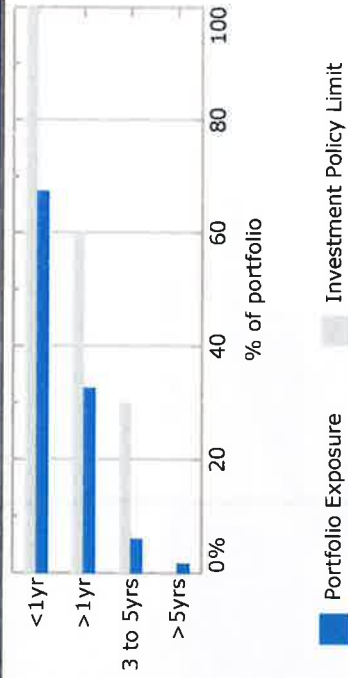
Total Credit Exposure



Individual Institutional Exposures



Term to Maturities



	Credit Rating	Face Value (\$)	Policy Max
Short Term	A-1+	16,006,000	
Long Term	AA	7,500,000	
Long Term	AAA	629,895	
		24,135,895	40%
Short Term	A-2	24,500,000	
Long Term	A	3,750,000	
		28,250,000	47%
Long Term	BBB	7,750,000	
		7,750,000	13%
		60,135,895	100%

	% used vs Investment Policy Limit
Members Equity Bank (A-2, BBB)	75%
Bank of Queensland (A-2, BBB+)	75%
Bendigo and Adelaide Bank (A-2, BBB+)	71%
Credit Union Australia (A-2, BBB)	35%
National Australia Bank (A-1+, AA-)	33%
Commonwealth Bank of Australia (A-1+, AA-)	24%
Westpac Group (A-1+, AA-)	22%
Suncorp Bank (A-1, A+)	12%
AMP Bank (A-1, A)	10%
Rural Bank (A-2, BBB+)	8%
Macquarie Group (A-1, A)	8%
Greater Building Society (A-2, BBB)	8%
Emerald Reverse Mortgage (B Tranche) (AA)	5%
ANZ Group (A-1+, AA-)	5%

Maturity Profile	Face Value (\$)	Policy Max
Less than 1yr	40,506,000	67%
Greater than 1yr	19,629,895	33%
a. Between 3 and 5yrs	3,629,895	6%
b. Greater than 5yrs	1,000,000	2%
	60,135,895	0%

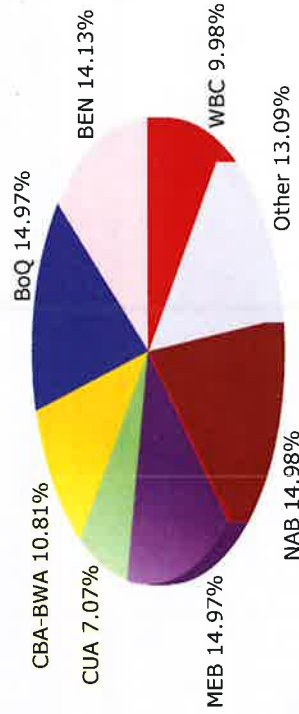
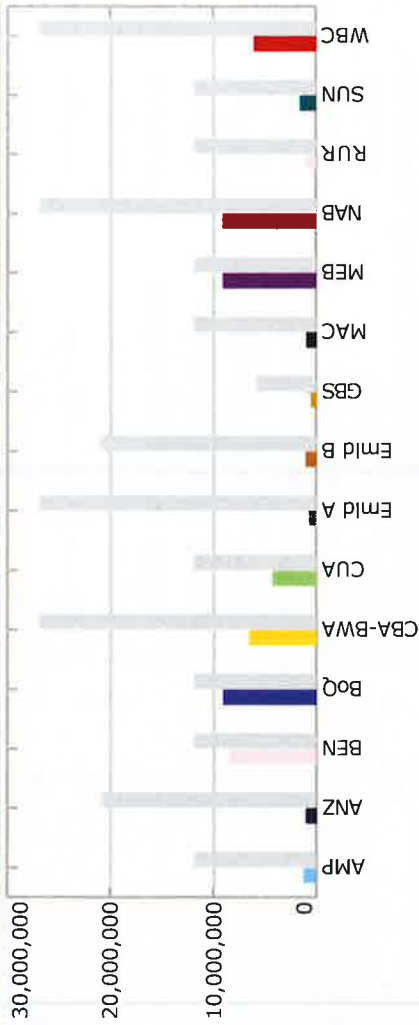
Detailed Maturity Profile	Face Value (\$)
00. Cash + Managed Funds	4,506,000
01. Less Than 30 Days	3,500,000
02. Between 30 Days and 60 Days	5,000,000
03. Between 60 Days and 90 Days	4,000,000
04. Between 90 Days and 180 Days	8,000,000
05. Between 180 Days and 365 Days	15,500,000
06. Between 365 Days and 3 Years	15,000,000
07. Between 3 Years and 5 Years	3,629,895
08. Between 5 Years and 10 Years	1,000,000
	60,135,895

✓ = compliant
X = non-compliant

Individual Institutional Exposures

Parent Group	Credit Rating	Portfolio Exposure (\$)	Investment Policy Limit (\$)
AMP Bank	A, A-1	1,250,000	12,027,179
ANZ Group	A-1+, AA-	1,000,000	21,047,563
Bank of Queensland	A-2, BBB+	9,000,000	12,027,179
Bendigo and Adelaide Bank	A-2, BBB+	8,500,000	12,027,179
Commonwealth Bank of Australia	A-1+, AA-	6,500,000	27,061,153
Credit Union Australia	A-2, BBB	4,250,000	12,027,179
Emerald Reverse Mortgage (A Tranche)	AAA	629,895	27,061,153
Emerald Reverse Mortgage (B Tranche)	AA	1,000,000	21,047,563
Greater Building Society	A-2, BBB	500,000	6,013,590
Macquarie Group	A-1, A	1,000,000	12,027,179
Members Equity Bank	A-2, BBB	9,000,000	12,027,179
National Australia Bank	A-1+, AA-	9,006,000	27,061,153
Rural Bank	A-2, BBB+	1,000,000	12,027,179
Suncorp Bank	A-1, A+	1,500,000	12,027,179
Westpac Group	A-1+, AA-	6,000,000	27,061,153
		60,135,895	

Individual Institutional Exposure Charts



Current Month Cashflows

<u>Transaction Date</u>	<u>Deal No.</u>	<u>Cashflow Counterparty</u>	<u>Asset Type</u>	<u>Cashflow Description</u>	<u>Cashflow Received</u>
3-Oct-17	533363	Credit Union Australia	Floating Rate Note	Coupon - Received	4,171.51
				<u>Deal Total</u>	<u>4,171.51</u>
4-Oct-17	534334	Westpac Group	Term Deposits	Interest - Received	4,171.51
		Westpac Group	Term Deposits	Maturity Face Value - Received	1,643.84
				<u>Deal Total</u>	<u>1,000,000.00</u>
				Day Total	1,001,643.84
11-Oct-17	535360	ME Bank	Term Deposits	Interest - Received	8,476.71
		ME Bank	Term Deposits	Maturity Face Value - Received	1,000,000.00
				<u>Deal Total</u>	<u>1,008,476.71</u>
535851		Bank of Queensland	Term Deposits	Settlement Face Value - Paid	-1,000,000.00
				<u>Deal Total</u>	<u>-1,000,000.00</u>
17-Oct-17	507122	Commonwealth Bank of Australia	Floating Rate Note	Coupon - Received	8,476.71
				<u>Deal Total</u>	<u>6,553.00</u>
				Day Total	6,553.00
18-Oct-17	533092	Commonwealth Bank of Australia	Floating Rate Note	Coupon - Received	3,585.50
				<u>Deal Total</u>	<u>3,585.50</u>
534040		ME Bank	Floating Rate Note	Coupon - Received	7,927.12
				<u>Deal Total</u>	<u>7,927.12</u>
535187		ME Bank	Term Deposits	Interest - Received	9,910.27
		ME Bank	Term Deposits	Maturity Face Value - Received	750,000.00
				<u>Deal Total</u>	<u>759,910.27</u>
				Day Total	771,422.90
20-Oct-17	510106	Suncorp Bank	Floating Rate Note	Coupon - Received	7,435.62
				<u>Deal Total</u>	<u>7,435.62</u>
533420		Bendigo and Adelaide Bank	Floating Rate Note	Coupon - Received	3,982.47
				<u>Deal Total</u>	<u>3,982.47</u>

Current Month Cashflows

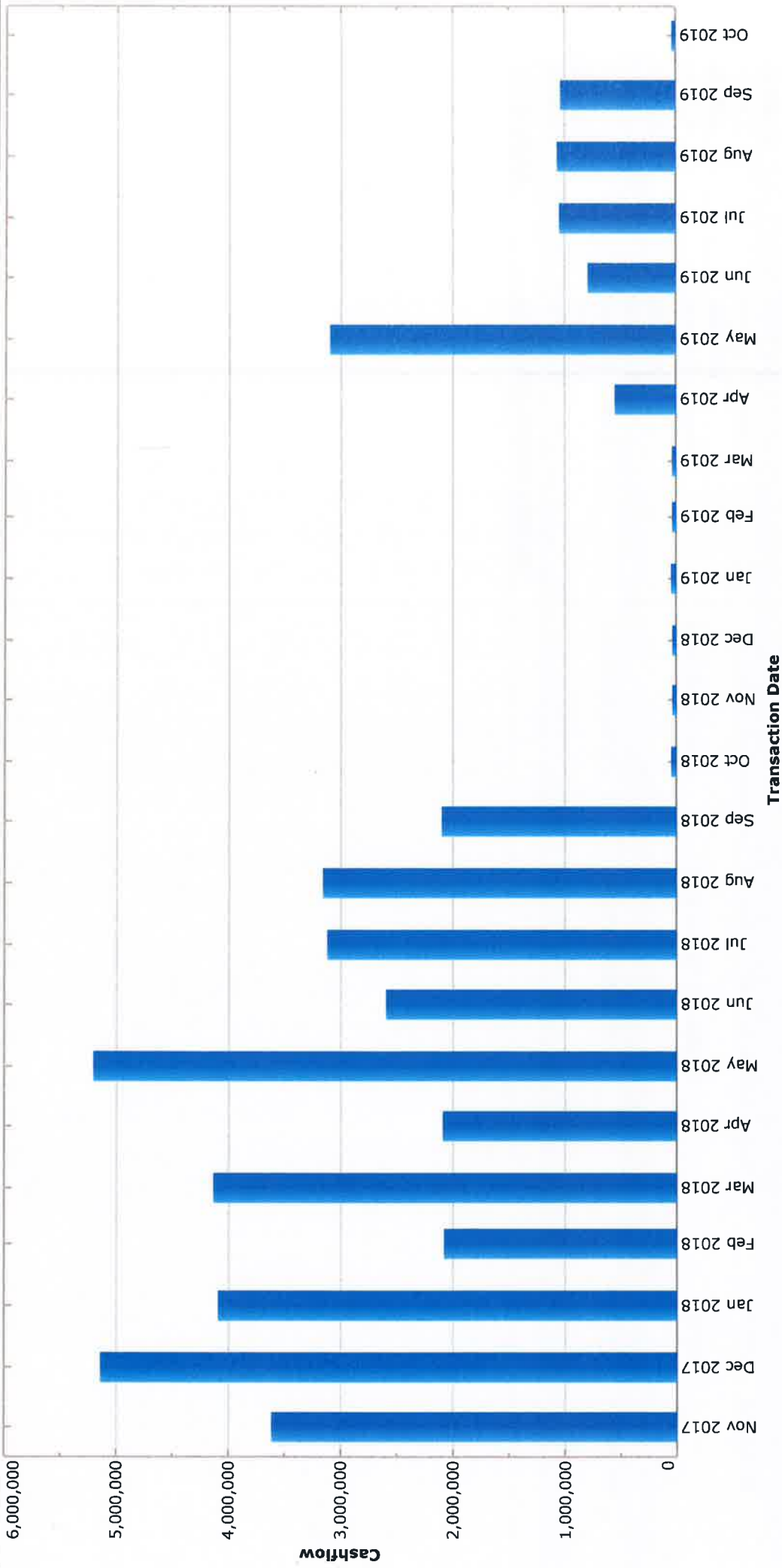
<u>Transaction Date</u>	<u>Deal No.</u>	<u>Cashflow Counterparty</u>	<u>Asset Type</u>	<u>Cashflow Description</u>	<u>Cashflow Received</u>
23-Oct-17	310288	Emerald Reverse Mortgage (B Tranche)	Mortgage Backed Securities	Coupon - Received	5,781.64
				Day Total	11,418.08
				<u>Deal Total</u>	<u>5,781.64</u>
	501146	Westpac Group	Floating Rate Note	Coupon - Received	6,457.26
				<u>Deal Total</u>	<u>6,457.26</u>
				Day Total	12,238.90
				Net Cash Movement for Period	1,815,924.94

Next Month Cashflows

<u>Transaction Date</u>	<u>Deal No.</u>	<u>Cashflow Counterparty</u>	<u>Asset Type</u>	<u>Cashflow Description</u>	<u>Cashflow Due</u>
1-Nov-17	534818	Credit Union Australia	Term Deposit	Interest - Received	43,081.64
		Credit Union Australia	Term Deposit	Maturity Face Value - Received	2,000,000.00
				<u>Deal Total</u>	<u>2,043,081.64</u>
8-Nov-17	534517	Bendigo and Adelaide Bank	Term Deposit	Interest - Received	13,712.33
		Bendigo and Adelaide Bank	Term Deposit	Maturity Face Value - Received	500,000.00
				<u>Deal Total</u>	<u>513,712.33</u>
10-Nov-17	533330	Westpac Group	Floating Rate Note	Coupon - Received	6,780.27
				<u>Deal Total</u>	<u>6,780.27</u>
13-Nov-17	497055	ANZ Banking Group	Floating Rate Note	Coupon - Received	6,541.37
				<u>Deal Total</u>	<u>6,541.37</u>
15-Nov-17	534882	Bank of Queensland	Term Deposit	Interest - Received	20,120.55
		Bank of Queensland	Term Deposit	Maturity Face Value - Received	1,000,000.00
				<u>Deal Total</u>	<u>1,020,120.55</u>
16-Nov-17	535608	Suncorp Bank	Floating Rate Note	Coupon - Received	3,352.33
				<u>Deal Total</u>	<u>3,352.33</u>

Next Month Cashflows

<u>Transaction Date</u>	<u>Deal No.</u>	<u>Cashflow Counterparty</u>	<u>Asset Type</u>	<u>Cashflow Description</u>	<u>Cashflow Due</u>
20-Nov-17	505173	Bendigo and Adelaide Bank	Floating Rate Note	Day Total	3,352.33
				Coupon - Received	7,185.21
				<u>Deal Total</u>	<u>7,185.21</u>
21-Nov-17	310323	Emerald Reverse Mortgage (A Tranche)	Mortgage Backed Securities	Day Total	7,185.21
				Coupon - Received	3,397.64
				<u>Deal Total</u>	<u>3,397.64</u>
	534537	Bendigo and Adelaide Bank	Floating Rate Note	Coupon - Received	3,516.16
				<u>Deal Total</u>	<u>3,516.16</u>
29-Nov-17	534565	Greater Building Society	Floating Rate Note	Day Total	6,913.80
				Coupon - Received	4,045.48
				<u>Deal Total</u>	<u>4,045.48</u>
				Day Total	4,045.48
				Net Cash Movement for Period	3,611,732.98



EC8 Attachments

1. Guide to Recruiting IHAP Representatives

Monday 11 December 2017

EC8 – Delegation to the General Manager to recruit Independent Hearing and Assessment Panel

Guidelines for the selection of Independent Hearing and Assessment Panel (IHAP) community representatives

Selection criteria

Community representatives will be selected from the local community. Mayors, councillors, property developers and real estate agents are not eligible to be appointed as community representatives.

Local community representatives should:

- be current residents within the local government area (LGA)
- have knowledge and awareness of the LGA and issues of concern to the local community
- be able to represent and communicate the interests of the local community
- have an understanding of the planning process and assessment issues (but are not expected to be experts)
- commit to attending the IHAP meetings and contributing constructively to the determination of applications
- be willing to adhere to the IHAP code of conduct and operational procedures.

If your council area has wards, you need to appoint a community representative to address matters for each ward. Members can represent one or more wards. All community representatives for the ward can attend an IHAP meeting where the chairperson will identify the representative most closely associated with the matter before the panel to be heard and vote on the matter. Other community representatives would act as observers.

If council has an existing IHAP with a community representative, and is of the view that this person meets the new legislative requirements, you may choose to continue their appointment as a community representative.

The General Manager is to oversee the selection process for the community representatives of the IHAP.

Advertising

The council should seek expressions of interest from the community for the IHAP by placing at least two advertisements in local media publications (i.e. newspapers) and advertising through one or more of the following:

- the council's website, newsletters and social media e.g. council's Facebook, Twitter and LinkedIn pages
- any relevant community forums, ward or precinct committees etc convened by the council
- local / community radio or magazines
- council offices, libraries, community or sports centres, schools, residents and community groups.

The advertising period is to give community members sufficient time to apply, and should be no less than 28 days. A sample advertisement which can be tailored is provided below.

Applications are to be mailed or emailed directly to the General Manager, not the Department of Planning and Environment.

Appointing community representatives

Within two weeks of the end of the advertising period, the General Manager should arrange a selection panel to:

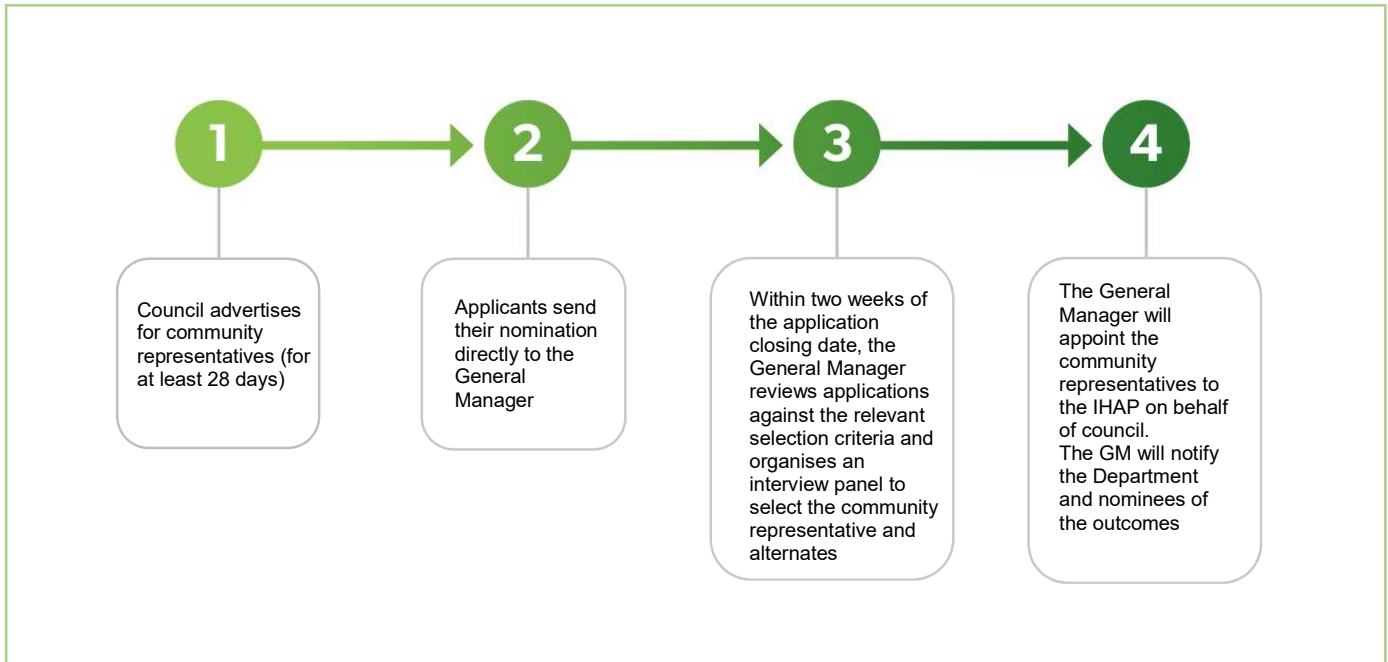
- review the applications against the relevant selection criteria
- shortlist suitable candidates
- arrange for interviews (if required)
- identify community representatives and their alternates
- advise the Department's Planning Panels Secretariat on who will be appointed to the IHAP, including any alternates / ward representatives, and provide reasons why they will be appointed.

It is good practice for the General Manager to notify the successful and unsuccessful applicants and the IHAP's chairperson (if known) of the decision.

Alternate representatives

It is recommended that at least two alternate community representatives should be chosen to attend if the appointed representative is unable to attend, for example due to illness, conflict of interest or for ward specific development. This will facilitate the rotation of members and the efficient panel operation.

Selection process for community representatives



Sample Advertisement for IHAP Community Representatives

A sample advertisement for community representatives is provided below.

This advertisement should be tailored to the specific circumstances of the council's IHAP, and include information on the anticipated frequency, time and duration of meetings.

NOMINATIONS ARE OPEN FOR APPOINTMENT OF COMMUNITY REPRESENTATIVES TO THE [INSERT COUNCIL INDEPENDENT HEARING AND ASSESSMENT PANEL]

Want to contribute to your community?

[INSERT Council NAME] is setting up an Independent Hearing and Assessment Panel (IHAP) to determine planning applications for local development.

The IHAP will consist of three independent experts and representatives of the local community.

We are looking for a mix of people who live locally to join our new [INSERT Council IHAP NAME].

Your role as an IHAP member is a part-time, paid role starting in March 2018. The position will be paid in accordance with rates to be set by the NSW Government. Further details will be provided on this shortly.

Selection criteria: You will be expected to contribute constructively to panel discussions, attend around [INSERT NUMBER] meetings a year, and help determine applications for new development in your area. Membership of the panel is for up to three years.

Mayors, councillors, property developers and real estate agents are not eligible to apply.

If you would like to apply, download a copy of the relevant nomination form at [INSERT COUNCIL WEB DETAILS] or contact [INSERT DETAILS] at [INSERT CONTACT DETAILS] for more information.

Applications must be lodged by [INSERT DATE] and sent to the General Manager [INSERT NAME AND CONTACT DETAILS OF GENERAL MANAGER]

Further details about the position and IHAPs can be found on council's website at [www.INSERT LINK].

Sample Nomination Form – IHAP Community Representatives

Nomination details

I would like to be a local community representative on the [INSERT COUNCIL NAME] Independent Hearing and Assessment Panel (IHAP).

I accept that selection and appointment to the IHAP will be subject to my:

- being a current resident in the local government area
- having knowledge and awareness of the local government areas and of issues of concern to the local community
- being able to demonstrate my understanding of the planning process and assessment issues
- being able to represent and communicate the interests of the local community
- being able to attend and the IHAP meetings and contribute constructively to the determination of applications
- being willing to adhere to the IHAP’s code of conduct and operational procedures.

I have attached a supporting letter demonstrating how I meet the criteria for membership.

Signed declaration

If appointed to the Independent Hearing and Assessment Panel (IHAP), I:

- confirm that I am aware of my responsibilities as a local community representative on the [INSERT COUNCIL NAME] IHAP
- confirm I meet the eligibility criteria for the panel
- agree to sign and comply with the panel’s code of conduct agreement
- agree to sign a declaration of pecuniary and non-pecuniary interests, and keep this declaration up to date.

Name

Contact details

Address

Signature and date

This signed nomination form and supporting letter must be sent directly to the General Manager at [INSERT NAME AND CONTACT DETAILS OF GENERAL MANAGER] by [DATE] 2017.

Please do not submit forms to the Department of Planning and Environment.