

# NOTICE OF MEETING



## BIODIVERSITY ADVISORY COMMITTEE MEETING

An Biodiversity Advisory Committee Meeting of Byron Shire Council will be held as follows:

Venue	<b>Conference Room, Station Street, Mullumbimby</b>
Date	<b>Thursday, 18 March 2021</b>
Time	<b>9.00am</b>

Shannon Burt  
Director Sustainable Environment & Economy.

*I2021/426  
Distributed 11/03/21*

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## CONFLICT OF INTERESTS

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**What is a “Conflict of Interests”** - A conflict of interests can be of two types:

**Pecuniary** - an interest that a person has in a matter because of a reasonable likelihood or expectation of appreciable financial gain or loss to the person or another person with whom the person is associated.

**Non-pecuniary** – a private or personal interest that a Council official has that does not amount to a pecuniary interest as defined in the Code of Conduct for Councillors (eg. A friendship, membership of an association, society or trade union or involvement or interest in an activity and may include an interest of a financial nature).

**Remoteness** – a person does not have a pecuniary interest in a matter if the interest is so remote or insignificant that it could not reasonably be regarded as likely to influence any decision the person might make in relation to a matter or if the interest is of a kind specified in the Code of Conduct for Councillors.

**Who has a Pecuniary Interest?** - a person has a pecuniary interest in a matter if the pecuniary interest is the interest of the person, or another person with whom the person is associated (see below).

**Relatives, Partners** - a person is taken to have a pecuniary interest in a matter if:

- The person's spouse or de facto partner or a relative of the person has a pecuniary interest in the matter, or
- The person, or a nominee, partners or employer of the person, is a member of a company or other body that has a pecuniary interest in the matter.

N.B. “Relative”, in relation to a person means any of the following:

- (a) the parent, grandparent, brother, sister, uncle, aunt, nephew, niece, lineal descends or adopted child of the person or of the person's spouse;
- (b) the spouse or de facto partners of the person or of a person referred to in paragraph (a)

**No Interest in the Matter** - however, a person is not taken to have a pecuniary interest in a matter:

- If the person is unaware of the relevant pecuniary interest of the spouse, de facto partner, relative or company or other body, or
- Just because the person is a member of, or is employed by, the Council.
- Just because the person is a member of, or a delegate of the Council to, a company or other body that has a pecuniary interest in the matter provided that the person has no beneficial interest in any shares of the company or body.

### Disclosure and participation in meetings

- A Councillor or a member of a Council Committee who has a pecuniary interest in any matter with which the Council is concerned and who is present at a meeting of the Council or Committee at which the matter is being considered must disclose the nature of the interest to the meeting as soon as practicable.
- The Councillor or member must not be present at, or in sight of, the meeting of the Council or Committee:
  - (a) at any time during which the matter is being considered or discussed by the Council or Committee, or

- (b) at any time during which the Council or Committee is voting on any question in relation to the matter.

**No Knowledge** - a person does not breach this Clause if the person did not know and could not reasonably be expected to have known that the matter under consideration at the meeting was a matter in which he or she had a pecuniary interest.

**Non-pecuniary Interests** - Must be disclosed in meetings.

There are a broad range of options available for managing conflicts & the option chosen will depend on an assessment of the circumstances of the matter, the nature of the interest and the significance of the issue being dealt with. Non-pecuniary conflicts of interests must be dealt with in at least one of the following ways:

- It may be appropriate that no action be taken where the potential for conflict is minimal. However, Councillors should consider providing an explanation of why they consider a conflict does not exist.
- Limit involvement if practical (eg. Participate in discussion but not in decision making or vice-versa). Care needs to be taken when exercising this option.
- Remove the source of the conflict (eg. Relinquishing or divesting the personal interest that creates the conflict)
- Have no involvement by absenting yourself from and not taking part in any debate or voting on the issue as of the provisions in the Code of Conduct (particularly if you have a significant non-pecuniary interest)

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## RECORDING OF VOTING ON PLANNING MATTERS

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### Clause 375A of the Local Government Act 1993 – Recording of voting on planning matters

- (1) In this section, **planning decision** means a decision made in the exercise of a function of a council under the Environmental Planning and Assessment Act 1979:
- (a) including a decision relating to a development application, an environmental planning instrument, a development control plan or a development contribution plan under that Act, but
- (b) not including the making of an order under that Act.
- (2) The general manager is required to keep a register containing, for each planning decision made at a meeting of the council or a council committee, the names of the councillors who supported the decision and the names of any councillors who opposed (or are taken to have opposed) the decision.
- (3) For the purpose of maintaining the register, a division is required to be called whenever a motion for a planning decision is put at a meeting of the council or a council committee.
- (4) Each decision recorded in the register is to be described in the register or identified in a manner that enables the description to be obtained from another publicly available document, and is to include the information required by the regulations.
- (5) This section extends to a meeting that is closed to the public.

**BYRON SHIRE COUNCIL**  
**BUSINESS OF MEETING**

**1. APOLOGIES**

**2. DECLARATIONS OF INTEREST – PECUNIARY AND NON-PECUNIARY**

**3. ADOPTION OF MINUTES FROM PREVIOUS MEETINGS**

- 3.1 Adoption of minutes from 23 November 2020 ..... 5

**4. STAFF REPORTS**

**Sustainable Environment and Economy**

- 4.1 Brunswick Valley Landcare Support Officer Reports to March 2021 ..... 11  
4.2 Wildlife Signage Update ..... 17  
4.3 Biodiversity Conservation Strategy 2020 Actions Audit ..... 53  
4.4 Wildlife Safe Havens - Brunswick Valley Landcare Initiative ..... 81  
4.5 Environmental Levy Policy Review ..... 86  
4.6 Leash-Up Pilot Communication Project - Update ..... 95



**ADOPTION OF MINUTES FROM PREVIOUS MEETINGS**

**Report No. 3.1 Adoption of minutes from 23 November 2020**

**Directorate:** Sustainable Environment and Economy

5 **Report Author:** Kimberley Rogers, Environment Support Officer

**File No:** I2021/106

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10 **RECOMMENDATION:**

**That the minutes of the Biodiversity Advisory Committee Meeting held on 23 November 2020 be confirmed.**

15 **Attachments:**

1 Minutes 23/11/2020 Biodiversity Advisory Committee, I2020/1816 , page 7 [↓](#) 

## BYRON SHIRE COUNCIL

### ADOPTION OF MINUTES FROM PREVIOUS MEETINGS

3.1

## **Report**

The attachment to this report provides the minutes of the Biodiversity Advisory Committee Meeting of 23 November 2020.

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### **Report to Council**

The minutes were reported to Council on 17 December 2020.

### 10 **Comments**

**M I N U T E S   O F   M E E T I N G**



**BIODIVERSITY ADVISORY COMMITTEE  
MEETING**

Venue	Conference Room, Station Street, Mullumbimby
Date	Monday, 23 November 2020
Time	3:15pm

**BYRON SHIRE COUNCIL**

ADOPTION OF MINUTES FROM PREVIOUS MEETINGS

3.1 - ATTACHMENT 1

# BYRON SHIRE COUNCIL

## ADOPTION OF MINUTES FROM PREVIOUS MEETINGS

3.1 - ATTACHMENT 1

### BYRON SHIRE COUNCIL

BIODIVERSITY ADVISORY COMMITTEE MEETING MINUTES

23 NOVEMBER 2020

#### **Minutes of the Biodiversity Advisory Committee Meeting held on Monday, 23 November 2020**

**File No:** I2020/1816

**PRESENT:** Cr J Martin, Cr S Ndiaye

Staff: Liz Caddick Biodiversity Officer  
Peter Boyd Biodiversity and Agricultural Projects Officer  
Rachael Lee Koala Project Officer  
Michelle Chapman (Minute Taker)

Community: Peter Westheimer  
Luke McConell  
Greg Shanahan (BVL)

Cr Ndiaye (Chair) opened the meeting at 4.41pm following a field trip to the Mooibal Spur, Tallowood and acknowledged that the meeting was being held on Bundjalung Country.

#### **APOLOGIES:**

Chloe Dowsett, Sharyn French, Shannon Burt, Cr C Coorey

#### **DECLARATIONS OF INTEREST – PECUNIARY AND NON-PECUNIARY**

There were no declarations of interest.

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#### **ADOPTION OF MINUTES FROM PREVIOUS MEETINGS**

**Report No. 3.1      Adoption of Minutes from 10 August 2020 Biodiversity Advisory Committee Meeting**

**File No:** I2020/1549

#### **Committee Recommendation:**

**That the minutes of the Biodiversity Advisory Committee Meeting held on 10 August 2020 be confirmed.**

(Martin/Westheimer)

*The recommendation was put to the vote and declared carried.*

#### **BUSINESS ARISING FROM PREVIOUS MINUTES**

There was no business arising from previous minutes.

# BYRON SHIRE COUNCIL

ADOPTION OF MINUTES FROM PREVIOUS MEETINGS

3.1 - ATTACHMENT 1

## BYRON SHIRE COUNCIL

BIODIVERSITY ADVISORY COMMITTEE MEETING MINUTES

23 NOVEMBER 2020

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### STAFF REPORTS - SUSTAINABLE ENVIRONMENT AND ECONOMY

**Report No. 4.1**      **Biodiversity Projects and Operations Update**  
**File No:**            I2020/1547

**Committee Recommendation:**

**That the Biodiversity Advisory Committee note the update on current projects and programmes being undertaken by Council staff.**

(Westheimer/McConell)

*The recommendation was put to the vote and declared carried.*

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*There being no further business the meeting concluded at 5.40.*

STAFF REPORTS - SUSTAINABLE ENVIRONMENT AND ECONOMY

**Report No. 4.1 Brunswick Valley Landcare Support Officer Reports to March 2021**

5 **Directorate:** Sustainable Environment and Economy

**Report Author:** Lizabeth Caddick, Biodiversity Officer

**File No:** I2021/265

**Summary:**



10 This report tables the activities of the Landcare Support Officer in two quarterly reports, from July to December 2020.

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**RECOMMENDATION:**

15 **That the Biodiversity Advisory Committee note the report.**

**Attachments:**

- 1 Landcare Support Officer Quarterly report July-September 2020, E2020/84888 , page 13 [↓](#)
- 20 2  Landcare Support Officer Quarterly report Oct - Dec 2020, E2021/34655 , page 15 [↓](#) 

## **Report**

Council provided an allocation of funds in the 2020/21 budget to continue to support the Brunswick Valley Landcare, Landcare Support Officer position for 1 day per week to deliver the Land for Wildlife Program and respond to customer enquiries.

- 5 Attached are quarterly reports from the Landcare Support Officer for the Committees reference, from July- September 2020 and October to December 2020.

## **Strategic Considerations**

### **Community Strategic Plan and Operational Plan**

<b>CSP Objective</b>	<b>L2</b>	<b>CSP Strategy</b>	<b>L3</b>	<b>DP Action</b>	<b>L4</b>	<b>OP Activity</b>
<b>Community Objective 3: We protect and enhance our natural environment</b>	3.2	Strive to become a sustainable community	3.2.2	Support community environmental and sustainability projects	3.2.2.5	Support Brunswick Valley Landcare to deliver the Land for Wildlife Program and biodiversity enquiries

## **10 Recent Resolutions**

Nil

## **Legal/Statutory/Policy Considerations**

Nil

## **Financial Considerations**

- 15 Funding allocated in 2020/21 budget.

## **Consultation and Engagement**

Nil





## **Landcare Support Officer Report for Byron Shire Council**

**1<sup>st</sup> July – 30<sup>th</sup> September 2020**

### **LFW**

**Total of 129 properties registered in Byron Shire**

67 registered by BVL, 62 registered by BSC

6 Site Assessments and Properties registered:

- 53 Fig Tree Lane, Myocum
- 51 Fig Tree Lane, Myocum
- 134 Springvale Road, Eureka
- 51 Mullumbimby Road, Myocum
- 1648 Main Arm Road, Upper Main Arm
- 162 Friday Hut Road, Coorabell

EOI's received, site visits outstanding:

- 19 English's Road, Upper Coopers Creek – just came in
- 813 Left Bank Road – emailed, change of contact person, no reply re suitable date
- 39 Cedar Road, Wilsons Creek – emailed no reply

### **LANDCARE GROUPS**

- 24 BVL locality groups – 17 working on council owned land
- 3 BVL special interest groups
- 10 Incorporated Landcare groups working in Byron Shire (not under BVL's umbrella)
- Contacted all locality groups re COVID safe guidelines and with an example job safety analysis.

### **PROJECTS**

- **ET Ridge to River: Mooibal Spur Corridor Restoration Stage 1** \$99,873. Working on council road reserve and private properties between Tallow wood Ridge Estate and Tristran Drive, Mullumbimby Creek. Year 1 complete with on ground work on track. Most of the community days have been postponed due to COVID restrictions.
- **ET Broken Head Coastal Corridor** \$99,970 – working on 8 private properties in Broken Head. Bush Regen and planting. Year 2 reporting submitted, project on track.
- **SOS Phyllanthus** – \$7,500 received for final year of project working on 5 sites along the Brunswick River and Mullumbimby Creek in Mullumbimby
- **IRCC grant successful** "Adapting to climate variability—a planting guide for the Northern Rivers region, NSW" \$29,894 to be delivered by 31<sup>st</sup> March 2022. To research and audit past plantings, data presented in a report to guide future plantings, 1000 Climate resilient land scape guide distributed to community, 2 workshops education on Climate resilient landscapes, 1 Demonstration site as Heritage park with 350 plants + signs. Research and audits on track.
- **WIRES and Landcare Australia post-bushfire wildlife habitat regeneration successful** "Wildlife safe havens" project to 30 properties – installing Nestboxes, doing site visits, and supplying native plants + buying motion detecting cameras and monitoring camera on a pole and developing info leaflets and social media group. \$19,978 to be delivered by the 28<sup>th</sup> May 2021. EOI's sent out and site visits to start early November.
- **Fish Habitat Planting** – funded through Ozfish and ZEB and 1 landholder, 464 & 466 Main Arm Road. 375 plants over 0.2 ha plus regen along the main arm of the Bruns River. Regen started, planting to happen in November.

*20 October 2020 Report by Alison Ratcliffe*

- **Take a Walk in the Park**, Maslen Arboretum, Heritage Park. Byron Shire Council Community Initiatives Program (Section 356) \$5,000. To repair and maintain tracks and entrance, design and conduct 4 guided walks, order and install 20 new plant signs, add interpretive signage and a commemorative seat.

### **GRANTS**

- Submitted an application for Fisheries Habitat Action Grant for regen and planting on 2 properties on Main Arm Road \$19,850. Ties into councils 'Bringing Back the Bruns' project.

### **COUNCIL**

- Met with Liz Caddick and Louis Bell to discuss Riparian project mapping 8<sup>th</sup> July
- Met with Dave Filipczyk to walk through Heritage Park and talk about BSC's crown land grant to do regen work along the river and also the location of BVL's the climate resilient demonstration garden. Jo Green to help Dave with suitable salt marsh species to plant along the river bank.
- Attended the Biodiversity Advisory Committee meeting on 10<sup>th</sup> August at council
- Worked with Louis Bell to get together all the info on Landcare's riparian projects in the last 5 years for the report to go to the September council meeting.
- Dealt with a complaint from Malcolm Murray about 'mess' along Riverside Drive – is a council project so passed onto David Filipczyk.
- Reviewed and provided photos for councils "Starting Out: An Introductory Guide to Farming in the Byron Shire" booklet.

### **BVL PROJECT OFFICER**

- Rochelle is now working from council 1 day per week on a flexible basis to fit in with desk availability.

### **ENQUIRY TOPICS/ ISSUES**

Phone	Email	Website	Social Media	Walk in	In Person
3 x Funding for private property	3 x volunteering	4 x Volunteering	volunteering		Conservation agreements
2 x Contacts	2 x Support for project/grant	2 x Funding private property	Bush regen contractor list		Funding private property
2 x Support for grant application	2 x Contacts	2 x Books			
Noisy mynas	2 x Contractor list	Feral cat			
Funding for fire affected properties	Riparian restoration	moths			
Land for Wildlife	Phontainea	Promoting resource			
Koala sighting	Native grasses	Contacts			
Riparian restoration	Photos	Land for Wildlife			
Advice on project	Byrangerie reserve	events			
Mooibal spur	Plant ID				
Bush regen contractors	Funding private property				
Help with grant application	Riparian consultant				
Suffolk Park council land	Land for Wildlife				
Bruns Bowlo council land	Madeira bio control				
Info on Landcare NSW					
Weed info					
<b>20</b>	<b>19</b>	<b>14</b>	<b>2</b>		<b>2</b>
<b>TOTAL</b>					<b>57</b>

*20 October 2020 Report by Alison Ratcliffe*



## **Landcare Support Officer Report for Byron Shire Council**

**1<sup>st</sup> October – 30<sup>th</sup> December 2020**

### **LFW**

**Total of 131 properties registered in Byron Shire**

69 registered by BVL, 62 registered by BSC

Site Assessments and Properties registered:

- 602 Goonengerry Road, Montecollum
- 19 English's Road, Upper Coopers Creek

### **LANDCARE GROUPS**

- 24 BVL locality groups – 17 working on council owned land
- 3 BVL special interest groups
- 10 Incorporated Landcare groups working in Byron Shire (not under BVL's umbrella)

### **PROJECTS**

- **ET Ridge to River: Mooibal Spur Corridor Restoration Stage 1** \$99,873. Working on council road reserve and private properties between Tallow wood Ridge Estate and Tristran Drive, Mullumbimby Creek. Year 1 complete with on ground work on track. Community planting day planned for 13<sup>th</sup> March.
- **ET Broken Head Coastal Corridor** \$99,970 – working on 8 private properties in Broken Head. Bush Regen and planting. Year 2 reporting submitted, project on track.
- **SOS Phyllanthus** – \$7,500 received for final year of project working on 5 sites along the Brunswick River and Mullumbimby Creek in Mullumbimby
- **IRCC grant successful** "Adapting to climate variability—a planting guide for the Northern Rivers region, NSW" \$29,894 to be delivered by 31<sup>st</sup> March 2022. To research and audit past plantings, data presented in a report to guide future plantings, 1000 Climate resilient land scape guide distributed to community, 2 workshops education on Climate resilient landscapes, 1 Demonstration site as Heritage park with 350 plants + signs. Research and audits on track.
- **WIRES and Landcare Australia post-bushfire wildlife habitat regeneration successful** "Wildlife safe havens" project to 30 properties – installing Nestboxes, doing site visits, and supplying native plants + buying motion detecting cameras and monitoring camera on a pole and developing info leaflets and social media group. \$19,978 to be delivered by the 28<sup>th</sup> May 2021. 28 site visits completed with 28 nestboxes installed. Remaining 2 to be done soon. Follow up visits to be done in March/April.
- **Fish Habitat Planting** – funded through Ozfish and ZEB and 1 landholder, 464 & 466 Main Arm Road. 375 plants over 0.2 ha plus regen along the main arm of the Bruns River. Planting completed on 25<sup>th</sup> November 2020. Maintenance for 3 years included in project.
- **Take a Walk in the Park**, Maslen Arboretum, Heritage Park. Byron Shire Council Community Initiatives Program (Section 356) \$5,000. To repair and maintain tracks and entrance, design and conduct 4 guided walks, order and install 20 new plant signs, add interpretive signage and a commemorative seat.

### **GRANTS**

- Submitted a NSW Environmental Trust Restoration and Rehabilitation grant for \$169,977 over 4 years for Simpsons Creek Koala Corridor – restore, enhance and connect - Stage 2. Koala planting, cultural burning and community events in Tyagarah on 5 private properties.

### **COUNCIL**

- Set up Eventbrite, facebook and zoom meeting for Council's "living with Brush Turkey" webinar 27<sup>th</sup> October and attended in person.
- Met with louis Bell to finalise Riparian mapping of Landcare works

*16 February 2021 Report by Alison Ratcliffe*

**BVL PROJECT OFFICER**

- Rochelle is now working from council 1 day per week on a flexible basis to fit in with desk availability. In addition to this Rochelle has also been working with council on pest animal projects. 76 Indian mynas trapped to date.

**ENQUIRY TOPICS/ ISSUES**

Phone	Email	Website	Social Media	Walk in	In Person
2 x contacts	2 x Support for project	4 x MLNG	Bush regen list		Tube stock nursery
2 x Trail camera loan	Charity status	2 x volunteering			
Support for project	Contacts	Regen ag			
Contractor application	BCT grants	Code of conduct template			
Fire ant ID	Bush regen list				
Trees cut down	Volunteering				
History/info	Mapping				
DGR process					
LfW					
Support for locality group					
Indian Mynas					
Camphor control					
14	8	8	1		1
TOTAL					32

*16 February 2021 Report by Alison Ratcliffe*

## Report No. 4.2 Wildlife Signage Update

**Directorate:** Sustainable Environment and Economy

**Report Author:** Lizabeth Caddick, Biodiversity Officer

**File No:** I2021/266

### 5 Summary:

This report provides an update on ways in which Council is managing wildlife vehicle road strike in Byron Shire, as per Biodiversity Conservation Strategy Objective 4.7: Investigate and implement opportunities to protect native wildlife on Council-managed roads and infrastructure.

10 Wildlife road strike mitigation measures include:

- A trial of Rewilding Australia/WWF koala signs.
- Installation of signs and road pavement treatments as part of rural road upgrades.
- 2021/22 budget consideration to develop a Wildlife Roadkill Mitigation Strategy for Byron Shire Council, to help Council secure additional funding for wildlife road signage.

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### RECOMMENDATION:

20 **That the Biodiversity Advisory Committee recommends to Council that they consider an allocation of \$11,500 in the 2021/22 budget to fund the development a Wildlife Roadkill Mitigation Strategy for Byron Shire Council.**

### Attachments:

25

- 1 Lismore Wildlife Roadkill Mitigation Strategy - Stage 1 Wyrallah Rd Black Spot Mitigation Plan, E2019/69609 , page 24 [!\[\]\(15cb01d00100e773a50f80002909e9a5\_img.jpg\)](#) 



## Report

Council frequently receives expressions of concern from residents and volunteer wildlife groups regarding death/injury of native animals on our roads due to vehicle strike, accompanied with requests for more signage alerting road users to the presence of wildlife. Motor-vehicle collision is identified by Friends of the Koala as the second most common cause of koala mortality (after the disease Chlamydia), for koalas coming in to their care.

This report provides an update on ways in which council is managing wildlife vehicle road strike in Byron Shire, as per Biodiversity Conservation Strategy Objective 4.7: Investigate and implement opportunities to protect native wildlife on Council-managed roads and infrastructure.

### Rewilding Australia Signs Trial

Council is taking part in a trial of new static road signs that have been designed by Rewilding Australia (now WWF). These signs are identical in shape and size to standard wildlife road signs, but include a more engaging image (see photograph below).



To date signs have been installed on MacAuleys Lane and Coolamon Scenic Drive, and staff are awaiting traffic counter data to determine the impact of the signs. We are also liaising with WWF regarding producing larger, bolder signs. The original signs stand out well on exposed sunny stretches of road, but are less prominent on shaded rural roads

that are used by many native animals. WWF have received similar feedback from other Councils involved in the trial and are currently revising their sign design.

### Road Upgrades and Wildlife Signs

- 5 Installation of signage and pavement marking is expensive on rural roads, due to the timeframes required and need for traffic control. However, these costs can be reduced significantly when wildlife signage is installed concurrently with ongoing road works. To assist Infrastructure Services (IS) to identify priority sites for wildlife signage when planning road renewals/upgrades, staff have prepared a database of priority wildlife road strike hotspots for IS staff to review during their works planning phase.
- 10 The database includes information from draft koala road strike hotspot mapping done by Transport for NSW, as well as information provided by local wildlife carer groups. Advice from Transport for NSW and from Friends of the Koala is that road strike hotspots change over time, so this is a live database that will be updated as Council is made aware of new hotspots. Biodiversity Team staff liaise regularly with the Friends of Koala carer
- 15 representative for Byron Shire regarding hotspots and priority signage locations.

This year, wildlife signage is being incorporated into two road upgrade projects: Grays Lane, Tyagarah, and Bangalow Rd from Talofa to Suffolk Park. Wildlife signage on these roads will involve a combination of signs and pavement painting to delineate Wildlife or Koala Zones, similar to the images below.







IS are also continuing to investigate the use of virtual (audio) fencing in Byron Shire. Current research on virtual fencing demonstrates success with larger species, such as kangaroos. Staff considered virtual fencing through the use of rumble strips when designing the Grays Lane upgrade, however, there was concern that noise will impact residents. Further discussion with other agencies and councils (Bass Coast and Sunshine Coast) is required to confirm whether virtual fencing is likely to have any positive impact on smaller species (echidnas, bandicoots, potoroos etc.) and slow moving animals like koalas.

## 10 Road Strike Mitigation Action Plan

Sandpiper Ecology recently developed a Wildlife Roadkill Mitigation Strategy for Lismore Council (Attachment 1), which has enabled Lismore Council to secure funding under the NSW Koala Strategy for road strike mitigation signage and road marking in the Lismore Area. This strategy identifies key road strike hotspots, as well as identifying effective measures to mitigate impacts at these locations, based on wildlife ecology and current science. Development of a similar Strategy for Byron Shire would assist Council in seeking further funding support for road strike mitigation measures at key locations. There is already significant data, from Transport for NSW hotspots mapping, as well as wildlife



carer data, that could contribute to identify road strike hotspots. A budget to fund development of a Wildlife Roadkill Mitigation Strategy for Byron Shire Council is included in the 2021/22 budget for Council's consideration.

### **Next steps**

- 5        - Continue with Rewilding Australia-WWF signs trial, including trialling larger signs when available.
- Installation of wildlife/koala zone pavement marking and signs at Gray's Lane and Bangalow Rd.
- 10      - Council consideration of funding in 2021/22 budget for Wildlife Roadkill Mitigation Strategy.

## **Strategic Considerations**

### **Community Strategic Plan and Operational Plan**

<b>CSP Objective</b>	<b>L2</b>	<b>CSP Strategy</b>	<b>L3</b>	<b>DP Action</b>	<b>L4</b>	<b>OP Activity</b>
<b>Community Objective 3: We protect and enhance our natural environment</b>	3.1	Partner to protect and enhance our biodiversity, ecosystems and ecology	3.1.1	Protect and enhance our natural environment and biodiversity	3.1.1.1	Implement the Biodiversity Conservation Strategy
<b>Community Objective 1: We have infrastructure, transport and services which meet our expectations</b>	1.1	Provide a road network which is safe, accessible and maintained to an acceptable level of service	1.1.3	Prioritise road network asset renewal and upgrade programs in line with Community Solutions Panel values (SP)	1.1.3.16	Deliver Bangalow Road Renewal - Talofa
<b>Community Objective 1: We have infrastructure, transport and services which meet our expectations</b>	1.1	Provide a road network which is safe, accessible and maintained to an acceptable level of service	1.1.3	Prioritise road network asset renewal and upgrade programs in line with Community Solutions Panel values (SP)	1.1.3.14	Deliver Bangalow Road 8.02km section - Reconstruction - Byron Bay

### Biodiversity Conservation Strategy

**Objective 4.7** Investigate and implement opportunities to protect native wildlife on Council-managed roads and infrastructure.

- 5 **Action 4.25** Work with RMS, local wildlife groups and Regional Koala Communications Group to identify road strike hotspots in Byron Shire.

**Action 4.26** Seek funding for road strike mitigation trials at priority road strike hotspots.

**Action 4.27** Consider roadkill mitigation measures and opportunities to improve wildlife connectivity into design work for new roads and road asset upgrades.

### Byron Coast Comprehensive Koala Plan of Management

- 10 **Action 25** Prepare a koala road kill mitigation strategy for those roads within the *Koala Planning Area* (other than the Pacific Highway) identified by the Habitat Study as koala blackspots.

### Recent Resolutions

- 15 Report to BAC I2019/1757, 11 November 2019 – Wildlife Road Strike. Recommendation: That the Biodiversity Advisory Committee notes this report.

Report to Council I2020/528, 28 May 2020 – Wildlife Road Signage Trial.  
Recommendation:

1. That Council participate in the Rewilding Australia trial of static photographic wildlife signs at three identified road strike hot spots in the Shire.
- 20 2. That Council further investigate costs and grant funding opportunities to trial alternative road signage options, including vehicle activated signs and road surface treatments at selected locations in the Shire.

### Legal/Statutory/Policy Considerations

- 25 Council is currently in the process of updating Policy 07/102 – Tourist, Street Name, Community Facility and Service Signs, in order to update this policy to reflect current RMS guidelines, standards and supplements. However, Policy 07/102 does not include the provision of regulatory, warning and guide signage, which would include wildlife signage.

Because wildlife signs are considered regulatory, they do not require Council approval via the Local Traffic Committee.

### 30 Financial Considerations

Cost estimate to develop a Wildlife Roadkill Mitigation Strategy for Byron Shire Council: \$11,500 (ex GST). To be considered from Biodiversity Conservation Strategy budget (account no. 2605.160) in 2021/22 budget process.

**Consultation and Engagement**

Report reviewed by relevant staff from Infrastructure Services.

# Wildlife Roadkill Mitigation Strategy for Lismore City Council

## Stage 1: Assessment of Wyrallah Road Koala Roadkill Black-Spot and Mitigation Plan



Sandpiper Ecological

1/94 Main Street  
Alstonville

[sandpipereco.com.au](http://sandpipereco.com.au)

Version 2.0 – FINAL Report

3 May 2018

### Document Review

Date	Version	Status	Reviewed By	Represent	Delivered Format	Dispatched By
28/2/2018	A	Internal draft	D. Rohweder	Sandpiper	MSW	B. Taylor
28/2/2018	1	Draft	W. Neilan	Lismore CC	MSW	B. Taylor

### Document Distribution

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### Project team:

Dr B. Taylor (field survey, reporting)  
 Dr D. Rohweder (project management, review)

### Report prepared for:

Lismore City Council

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 ABN: 82 084 096 828  
  
 PO Box 401  
 ALSTONVILLE NSW 2477  
 P 02 6628 3559 | E [brendan@sandpipereco.com.au](mailto:brendan@sandpipereco.com.au)

**Cover Photo:** View south along Wyrallah Road from the Tucki Road intersection. (Photo: Sandpiper Ecological).

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## 1. Introduction

### 1.1 Background

Sandpiper Ecological Surveys (Sandpiper) was engaged by Lismore City Council (LCC) to develop a Wildlife Roadkill Mitigation Strategy (WRMS). The requirement to develop a WRMS arose out of recommendations in the Koala Habitat and Population Study (Biolink 2017). That study included an analysis of koala road strike within the area covered by the Lismore Comprehensive Koala Plan of Management (CKPoM), an area of approximately 20 000 ha in the south of the Lismore Local Government Area (LGA).

The Koala Habitat and Population Study (Biolink 2017) identified a temporal increase in reported koala road strikes for the period 2011-16 and identified five black-spots. Major black-spots were identified on Wyrallah Road; Alphadale Road and Cowlong Road intersection, Bruxner Highway; and Bruxner Highway at Goonellabah. Minor black-spots were identified at the intersection of Bruxner Highway and Tatham Road, Grennan and Graham Roads at Tregeagle; and a series of roads between Goonellabah and Tregeagle.

The aim of the WRMS is to reduce the incidence of wildlife roadkill, with a focus on koalas and other threatened fauna. The objectives of the WRMS are:

- To provide detailed recommendations and designs for mitigation measures to be implemented at selected roadkill blackspots identified in the Koala Habitat and Population Study (Biolink 2017)
- To identify additional wildlife roadkill black-spots across the LGA
- To provide a 'toolbox' of mitigation measures that LCC can use to reduce wildlife roadkill at identified black-spots
- To provide recommendations for ongoing monitoring, evaluation and data collection.

The WRMS will form part of LCC's Biodiversity Management Strategy (BMS) which was adopted in 2015 (LCC 2015). The BMS includes an action to respond to the threats to native wildlife caused by roads and vehicles in the Lismore LGA which features a 1000 km-long road network of major regional roads and minor sealed and unsealed rural roads. The BMS identified vehicle strike as a significant threat to wildlife, particularly koalas, across the Lismore LGA.

### 1.2 Scope of works

The scope of works for development of the WRMS features two stages:

- Stage 1: Undertake an assessment of the major koala roadkill black-spot on Wyrallah Road identified by Biolink (2017) and develop a mitigation plan tailored to the specific threat and topographical features of the site.
- Stage 2: Develop a Wildlife Roadkill Mitigation Strategy
  - I. Identify and map additional vehicle strike black-spots throughout the LGA.
  - II. Develop a 'toolbox' of vehicle strike mitigation measures that can be implemented at roadkill blackspots along both existing roads as well as during road construction or upgrade.
  - III. Develop a works program for implementation of mitigation measures.

- IV. Detail a monitoring program to evaluate the effectiveness of the mitigation measures.
- V. Provide recommendations for ongoing data collection to monitor wildlife roadkill to enable Council to identify future blackspots.

The following report addresses stage one of the WRMS. It describes the black-spot assessment at Wyrallah Road and presents a mitigation plan tailored to that site. Although the focus of this report is on koalas, the road strike mitigation strategy presented here should also benefit other wildlife taxa. Benefits to other taxa will be discussed in greater detail in the Stage 2 report.

## 2. Methods

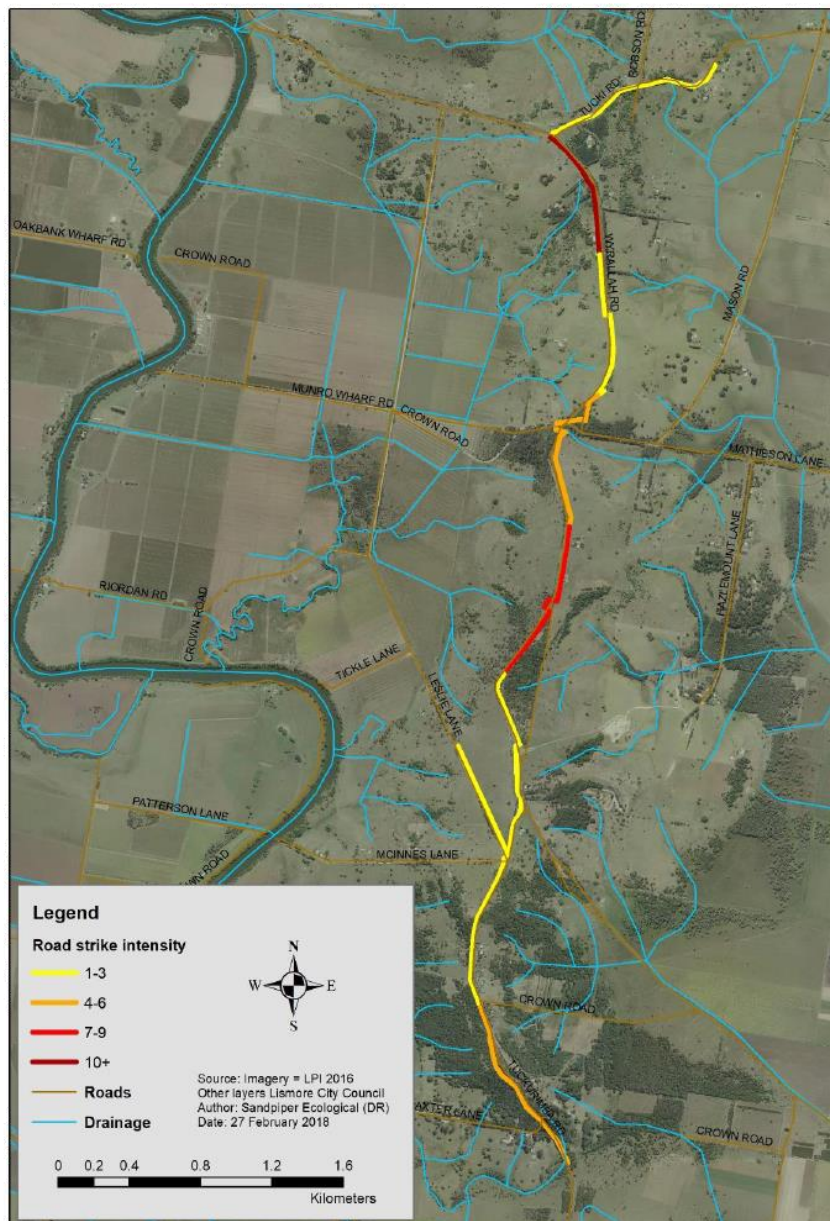
### 2.1 Site location, traffic data and koala road-strikes

The Wyrallah Road black-spot (identified as black-spot 2 in Biolink 2017) includes the southern part of Wyrallah Road, Tucki Road, Tuckurimba Road and Leslie Lane (Figure 1). The road sections cover a total length of 9km. Signed speed limits range between 60 and 80 km/h (Table 1). Road segments are sealed except for Leslie Lane which is gravel.

Traffic data for the Wyrallah Road black-spot area were sourced from LCC. The closest data recording locations on Wyrallah Road were 3.5-5km north and 4km south. Data sampling from 2010-11 recorded Average Annual Daily Traffic (AADT) in the order of 1860-2819 vehicles (Table 2). Data for Tuckurimba Road within the blackspot road section included an AADT of 251 vehicles and 258 vehicles and average speeds of 91.4 km/h for the recording station 300m south of the blackspot section (Table 2).

Thirty-five known koala road strikes have been reported at this locality for the period 2011-16 at a rate of 3.9 road strikes/km (Figure 1). The 1 km stretch south of the intersection between Tucki Road and Wyrallah Road featured the highest density of koala road strikes within the LGA, with 12 koala road strikes reported between 2011 and 2016 (Biolink 2017). Other high incidence sections include the road segment of Wyrallah Road approximately 1km south of Mathieson Lane (7-9 road strikes/km) and the southern end of Tuckurimba Road (4-6 road strikes/km).

Wyrallah Road koala blackspot assessment and mitigation plan - Lismore City Council



**Figure 1:** Extent and rate of koala road strike (2011-16) at the Wyrallah Road black-spot (Data source: Lismore City Council; Biolink 2017).

**Table 1:** Road segment lengths, speed limits and road surface features of the Wyrallah Road blackspot.

Road Segment	Length (km)	Signed Speed Limit (km/h)	Surface
Tucki Road	1.2	Unsigned	Sealed
Wyrallah Road	4.1	80	Sealed
Tuckurimba Road	2.5	80 & 60	Sealed
Leslie Lane	1.2	Unsigned	Unsealed

**Table 2:** Traffic data from sites within and near the Wyrallah Road black-spot area. AADT = Average Annual Daily Traffic (Source: Lismore City Council)

Road	Location	Station No.	Year Sampled	AADT	Average Speed (km/h)
Wyrallah Road	5km north of Tucki Rd	101	2011	2644	na
Wyrallah Road	3.5km north of Tucki Rd	96	2010	2819	na
Wyrallah Road	4km south of Tuckurimba Rd	92	2010	1860	na
Tuckurimba Road	20 m north of Paffs Ln	55	2013	258	91.4
Tuckurimba Road	200m south of McInness Ln	54	2002	251	na

## 2.2 Site inspection

A site inspection of the Wyrallah Road black-spot was undertaken on 19 January and 19 February 2018. During the inspection notes were taken on signage, road contours, roadside vegetation and driver visibility.

## 2.3 Mitigation options investigation

A desktop investigation into koala road strike mitigation options was undertaken between 15 January and 22 February 2018. The investigation included:

- Online keyword searches of Google Scholar and Google Chrome.
- Discussions with:
  - koala road-strike mitigation researchers;
  - Friends of the Koala (FOK) representative;
  - animal road-strike mitigation suppliers;
  - Environmental Officers in surrounding LGA's about Council's koala road-strike mitigation strategies; and
  - Myall Koala and Environment Group about Vehicle-Activated koala signs.

Mitigation options were collated and, where possible, approximate costings derived. Each option was then scored for feasibility, cost and evidence of effectiveness.

### 3. Results

#### 3.1 Site features

Black-spot road segments all feature undulations, bends and straights (Figure 1; Plate 1-3). Road visibility varies considerably from 'high' along relatively flat and open straight sections (e.g. northern section of Wyrallah Road) to 'poor' or restricted along road crests and sections featuring bends and thick roadside vegetation (e.g. southern section of Tuckurimba Road). Roadside vegetation configuration varies from open grassland (e.g. south of Mathieson Lane), narrow roadside tree rows (e.g. along Tucki Road; Plate 1) to closed forest either side of the road corridor (e.g. Tuckurimba Road around Baxter Lane).



**Plate 1:** Tucki Road looking west on the approach to Wyrallah Road intersection.



Wyrallah Road koala blackspot assessment and mitigation plan - Lismore City Council



**Plate 2.** Looking south along Wyrallah Road from the Tucki Road intersection.



**Plate 3.** Looking south along Tuckurimba Road at the beginning of the 60 km/h section.

### 3.2 Mitigation options

A list of feasible mitigation options was generated from interrogation of online search results, relevant literature and discussions with other road-strike mitigation researchers, FOK representative, product suppliers and local council environment officers. Each of these options are detailed below and the advantages, disadvantages and approximate costs (where known) described.

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### 3.2.1 Koala warning signs and speed reductions

Wildlife warning signs are amongst the most frequently used roadkill mitigation measure (Huijser *et al.* 2015). The intent is to alert drivers to the possibility of encountering wildlife on or near the road and thus make the driver more vigilant and reduce speed (Bond & Jones 2013). Standard or static warning signs have typically featured line images of wildlife against a yellow background (Plate 4). In more recent years, enhanced or dynamic signs such as vehicle activated signs (VAS) and variable message signs (VMS) have emerged (Plate 5 & 6).



**Plate 4.** Static koala sign on Wyrallah Road adjacent Mathieson Lane.

Enhanced warning signs are reportedly more frequently observed and recalled by drivers than standard static signs (Bond & Jones 2013; Huijser *et al.* 2015). Their effectiveness may be further improved if they are located at roadkill black-spots and targeted at a specific time of day or season, referred to as 'temporal signs' (Huijser *et al.* 2015). For example, temporal signs reportedly reduced deer road-strike by 9-45% although their effectiveness appeared to diminish over time (e.g. Found & Boyce 2011; Sullivan *et al.* 2004). Conversely, a seasonal speed reduction trial using static signs to reduce koala road-strike in Redlands, Brisbane reported no significant reduction in vehicle speeds or koala road-strike but did report slightly higher survivorship for koalas struck on roads with lower speed limits (Dique *et al.* 2003).

Improved koala survivorship on roads with lower speed limits is an important point and is consistent with evidence that the risk of experiencing a collision increases exponentially with increasing vehicle speed (Huijser *et al.* 2015). Indeed, reduced roadkill rates of eastern quoll and Tasmanian devil in central Tasmania was attributed to a reduction in vehicle speeds although increased vigilance from signage may have been a contributing factor (Jones 2000). Further, vehicle-activated signs (e.g. flashing 'slow down' on activation) reportedly reduced vehicle speeds by 2-20 km/h and road accidents by up to 33% on rural roads in the UK (Winnett & Wheeler 2002). The combination of a variable message sign and pavement treatment on Clothiers Creek Road in Tweed LGA reportedly reduced the number of drivers exceeding the speed limit by 12% over a two-year period (S. Hetherington pers. comm.). This suggests that vehicle-activated signs and/or variable message signs

Wyrallah Road koala blackspot assessment and mitigation plan - Lismore City Council

could assist in reducing vehicle speeds and increasing driver vigilance at koala blackspots in the Lismore LGA and thereby reduce road strike and improve survivorship.



**Plate 5.** Koala Vehicle-Activated Signs (VAS) manufactured by Pioneerz Safety and installed on Bagotville Road in the Ballina LGA (left). Another version of koala VAS manufactured by HIVIS Group installed at Hawksnest on the mid-north coast (right). Signs are set to activate on a set speed (e.g. 5 km/h below the signed speed limit).



**Plate 6.** A constantly scrolling Variable Message Sign (VMS; not vehicle activated) manufactured by HIVIS Group and installed on Clothiers Creek Rd in the Tweed LGA (Source: S. Hetherington).

Another recommendation emerging from research on warning signs is that a sign should relate to a relatively short section of road to reduce the likelihood that a driver will forget and discontinue their vigilance (Huijser *et al.* 2015). Similarly, standard signs installed at numerous locations and left indefinitely will become increasingly ignored by drivers over time as they habituate to their presence (Huijser *et al.* 2015).

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**Advantages:**

- Relatively low cost.
- Low maintenance.
- Easily relocated.
- Variable Message Signs may reduce likelihood of habituation.
- Vehicle-Activated Signs can record vehicle speed, which assists in determining their effectiveness.

**Disadvantages:**

- Effectiveness may be short term, particularly for static signs.
- Risk of vandalism.

**Cost:**

- Standard static koala sign ([www.hivis.com](http://www.hivis.com)) = \$103 + delivery + installation
- Vehicle-activated koala sign ([www.hivis.com](http://www.hivis.com)) = \$10,714 (exc. GST; delivered) + installation
- Vehicle-activated koala sign ([www.pioneerzsafety.com](http://www.pioneerzsafety.com)) = approx. \$13,000 (exc. GST; delivered) + installation (\$4,000 by supplier)
- Koala Zone Variable Message Sign ([www.hivis.com](http://www.hivis.com)) = approx. \$15,000 (exc. GST; delivered) + installation.

**3.2.2 Rumble strips**

Rumble strips are raised rubber strips that cause a sound and car vibration when a vehicle passes over them (Plate 7). The intent of the rumble strip is to alert drivers. They are often used along road shoulders to alert errant/drowsy drivers before they run off the road. Rumble strips have been shown to substantially reduce the rate of run-off accidents and may be effective at reducing vehicle speed (Corkle *et al.* 2001). It has been suggested that use of rumble strips to increase driver alertness may reduce wildlife vehicle collisions (EDI Environmental Dynamics 2015).

**Advantages:**

- Low cost.
- Low maintenance.

**Disadvantages:**

- Noise may disturb nearby neighbours.

**Cost:**

- \$15.40/500mm strip ([www.barriergroup.com.au](http://www.barriergroup.com.au)) + installation costs.



**Plate 7.** Rumble strips (Source: [www.barriergroup.com.au](http://www.barriergroup.com.au))

### 3.2.3 Wildlife threshold pavement marking

Wildlife threshold pavement marking/painting is typically used to identify the start and/or end of signed significant wildlife conservation areas (Plate 8). The intent of the threshold treatments is to complement the entry signs into a significant wildlife conservation area/black-spot area and advise drivers they should modify their driving behavior and reduce their speed where required.

The concept has been applied at two koala black spots within the Tweed LGA. At the Clothiers Creek Road site, post-treatment monitoring revealed an 8% reduction in vehicles driving above the speed limit (S. Hetherington, pers. comm.). This rose to an average of 12% over a two-year monitoring period after the addition of variable message signs (Plate 6).

#### Advantages:

- Relatively low cost
- Low maintenance.

#### Disadvantages:

- Requires periodic re-application.
- Most effective if used in combination with other measures which adds to costs.

#### Cost:

- Approx. \$1,800 - \$2,250/treatment (i.e. \$45/m x 40-50m<sup>2</sup>) + traffic control.



**Plate 8.** 'Koala Zone' pavement marking (left) and associated VMS sign (right) on Clothiers Creek Road, Tweed LGA.

### 3.2.4 WID-activated signage system

This signage system is based on catching and placing Wireless Identification (WID) ear tags on koalas residing near a roadkill black-spot. If a tagged individual moves close to the road edge, dataloggers detect their presence and activate nearby warning signs (Figure 2). Warning signs can also feature audio (e.g. an alarm signal). The system is distributed by Brisbane-based company *Wildspy* ([www.wildspy.com.au](http://www.wildspy.com.au)).

#### Advantages:

- Highly targeted to koalas.
- Reduced likelihood of driver habituation to signage.
- Field trials demonstrate dataloggers effective in detecting WID tags.

#### Disadvantages:

- Requires capture of local koalas (and recapture at end of WID battery life).
- System only applies to tagged individuals.
- Battery life of WID ear tags ranges between 0.5 – 2.8 years depending on frequency of transmission.
- Would require inclusion of accelerometers in ear tags so tagged koalas resting in roadside trees within range of a datalogger do not continually activate sign.
- Activated sign feature of system yet to be trialed so effectiveness unknown.
- Theft of data loggers.

#### Cost:

- \$40,000 – \$100,000/km for signage & datalogger (depends on type and frequency of signs and frequency of dataloggers).
- Add cost of installation

- Add cost of capture/tagging of koalas which may be substantial depending on number of individuals.



**Figure 2.** WID ear tag (left) and schematic of WID-activated signage system (right). (Source: [www.wildspy.com.au](http://www.wildspy.com.au)).

### 3.2.5 Break-the-beam dynamic wildlife warning system

The technology works on roadside sensors detecting animal movement. Two different options are available:

- 1) Roadside fencing directs animals/koalas to designated crossing locations. Sensors at these crossing locations detect animal movement and activate LED warning signs which alert drivers to animals crossing (Figure 3).
- 2) In the absence of roadside fauna fencing, a series of sensors are placed along the roadside to create a 'virtual' fence. When an animal is detected by a sensor it activates an LED warning sign.

The company promoting the technology claim reductions in wildlife road mortality in the order of 95% at locations in Europe where it has been installed, presumably for option 1. No information was available about option 2 trials or effectiveness. It is yet to be trialed in Australia. The system is distributed by German company *Prowild* ([www.prowild.net](http://www.prowild.net)).

#### Advantages:

- May be appropriate for a range of species, including koalas.
- Capture of koalas not required.

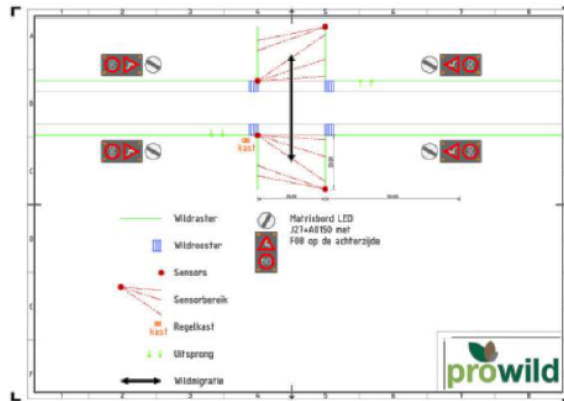
#### Disadvantages:

- Requires fencing of road corridor (option 1).
- Requires ongoing maintenance to retain clear line-of-sight between sensors (option 2).
- Unmaintained roadside vegetation may cause false-triggers.
- Not yet trialed in Australia so effectiveness for koalas unknown.
- Theft of sensors.

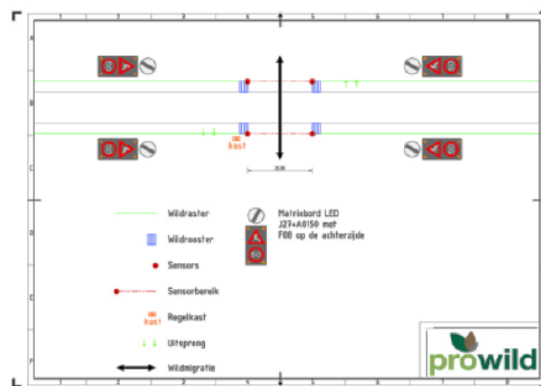
#### Cost:

- Approx. \$90,000/km (option 2)
- Uneven and winding roads require a higher frequency of sensors which increases costs.

#### Schematic zone detection



#### Schematic line detection



**Figure 3.** Dynamic Wildlife Warning System. Schematic Zone Detection (Option 1 - top) consists of roadside sensors that detect animal movements at designated crossing locations/gaps in fauna fence which in turn activate warning signs alerting drivers. Schematic line detection (Option 2 - bottom) relies on a virtual fence rather than a fauna fence (Source: [www.prowild.net](http://www.prowild.net)).

#### 3.2.6 Virtual fencing

Virtual Fencing is promoted as an active electronic protection system that aims to prevent animals from crossing the road when a vehicle is approaching at night. The devices are activated by approaching headlights causing them to emit sound and light stimuli intended to alert, repel and prevent animals from entering the road (Figure 4). A device every 25m for the length of the road treatment is recommended. At trial sites in Tasmania, road mortality was reportedly reduced by 60-70% although the report does not state which species this applied to.

The company sales representative claimed the devices would repel and/or stop koalas from entering the roadway. Other koala ecologists and researchers we consulted did not think the system would prevent koalas from entering the roadway (S. Fitzgibbon, A. Gillett, M. Matthes pers. comm.). A koala roadkill mitigation trial using virtual fencing is due to commence in early 2018 at Noosa, Queensland. The system is distributed in Australia by Wildlife Safety Solutions ([www.wildlifesafetysolutions.com.au](http://www.wildlifesafetysolutions.com.au)).

**Advantages:**

- May be appropriate for a range of fauna.
- Low maintenance.

**Disadvantages:**

- Not yet trialed on koalas so effectiveness unknown.
- Theft of units.
- Possible habituation by animals residing in the road corridor near the units.

**Cost:**

- \$7,800/km (40 units) + installation + posts.

## WHAT IS VIRTUAL FENCING?

### Overview

Virtual Fencing is an active electronic protection system that prevents animals from crossing the road when a vehicle is approaching at night.



**Figure 4.** Virtual Fencing is distributed in Australia by Wildlife Safety Solutions. Approaching car headlights activate the sensor which emits sound and light to deter animals from crossing the road. (Source: [www.wildlifesafetysolutions.com.au](http://www.wildlifesafetysolutions.com.au) )

### 3.2.7 Fauna fencing (and crossings structures)

Well designed and maintained fauna fencing (e.g. floppy top or 1500mm high chain mesh with 500mm wide metal flashing) prevents koalas from accessing the roadway (Plate 9). Fencing, however, is a barrier to movement and landscape permeability and should only be installed in conjunction with crossing structures such as land bridges, bridge underpasses or box culverts (Plate 9). Despite documented use of such structures by koalas (e.g. Taylor & Goldingay 2003; Dexter *et al.* 2016), retrofitting box culverts and/or land bridges into an existing road is prohibitively expensive. Rope bridges are a less expensive crossing option, but koalas have not been recorded using such structures (Plate 10; Goldingay & Taylor 2017). Similarly, a metal gantry-style structure with wooden poles laid within it was installed over a road in Redlands, QLD but was not reportedly used by koalas (Plate 10).

**Advantages:**



- Well designed and maintained fauna fencing is effective in preventing koala access to roadway.
- Fencing combined with underpasses is known to provide safe passage for koalas.
- Low risk of theft/damage.

### Disadvantages:

- Fencing is a barrier to movement/landscape permeability in the absence of crossing structures.
- Retrofitting crossing structures into an existing road is very expensive.
- Loss of fence integrity if gates left open or koala grids breached.
- Requires ongoing maintenance to repair breaches, clear debris.
- Resistance by local landholders to fence/gate/grids along property boundaries.

### Cost:

- Approximately \$80 – 100,000/km (both sides of road) to install floppy top fence.
- Add cost of crossing structures (e.g. box culverts).
- Add cost of koala grids at road/driveway crossings and gates.



**Plate 9.** Example of koala floppy top fencing (& refuge pole) to prevent road incursions and to direct fauna to a box culvert underpass (left). Box culvert under the Pacific Highway at Glenugie used on several occasions by koalas (right).



**Plate 10.** Above road crossing structures targeting koalas – '3-sided' rope bridge on grounds at Southern Cross University (left) and a metal gantry with leaning timber poles over Mt Cotton Road, southeast QLD (right; source: Dexter et al. 2016). Monitoring at both sites did not detect use by koalas.

### 3.2.8 Roadside reflectors and audio deterrents

Other mitigation technologies include roadside reflectors and car-mounted audio deterrents.

Reflectors are designed to deter animals from attempting road crossings by deflecting light from oncoming vehicle headlights into the roadside habitat to provide a visual warning (Fig. 5). Wildlife audio deterrents, such as ShuRoo, mount to the front of the vehicle and emit high frequency sound meant to alert and drive off animals on the roadway (Figure 6).

The manufacturers of ShuRoo promote a range of anecdotal evidence of their effectiveness in reducing kangaroo road strike on their website. However, there is no published scientific evidence supporting the effectiveness of audio deterrents or roadside reflectors in reducing wildlife road mortality (D'Angelo and van der Ree 2015). Moreover, we are unaware of any trials of either type of technology specifically targeting koalas.

#### Advantages:

- Relatively low cost.
- Relatively low maintenance.

#### Disadvantages:

- No robust evidence supporting their effectiveness.
- Theft of roadside reflectors.
- Audio deterrents require uptake by drivers.

#### Cost:

- Approximately \$7,600/km for Swareflex (i.e. 80 units/km @ \$95/unit).
- ShuRoo: \$565/unit + installation.



**Figure 5.** Swareflex roadside reflectors (left) and other reflector types (middle, right) (Source: D'Angelo and van der Ree 2015).





**Figure 6.** Audio deterrents such as the ShuRoo mount to the front of a vehicle and emit a pattern of high-frequency sounds intended to alert kangaroos and other wildlife of an approaching vehicle (Source: [www.shuroo.com.au](http://www.shuroo.com.au) ).

## 4. Discussion

### 4.1 Landscape context

The Wyrallah Road koala blackspot presents a familiar and challenging scenario for road managers. How do you prevent or reduce koala road strike along long stretches of moderate use road corridors that feature productive roadside habitat within a mostly cleared and modified landscape? Overlaying this are koala population densities in the order of 0.34 koalas/ha and occupancy rates in the order of 50-77% (Biolink 2017). The Biolink (2017) study pressed that given the relatively high and stable population density within the CKPoM planning area, the emphasis of management should be on ensuring that the terrain remains permeable to koala movement to enable ongoing population processes. Concomitant with maintaining landscape permeability is managing koala encounters with roads and vehicles. Road-strike accounted for 17.5% of known koala mortalities in the Lismore LGA for the 2011-16 period (Biolink 2017). Indeed, koala road mortality has been increasing annually since at least 1998 (Biolink 2017).

### 4.2 Mitigation options assessment

The mitigation technologies described in Section 3 offer a range of approaches aimed at reducing koala road mortality. Their respective feasibility, costs and proven effectiveness vary considerably and are summarised in Table 3. The relative merits of each are discussed according to these three criteria.

Most options rate high on feasibility except WID-activated signs, break-the-beam warning systems, virtual fence, fencing/crossing structures and audio deterrents. Apart from audio deterrents, the technologies that scored low on feasibility present considerable logistical challenges to implement and are relatively high cost. Audio deterrents rate low on feasibility because they are reliant on uptake by motorists.

The least expensive technologies (per unit) include static signs, rumble strips, pavement treatments and audio deterrents. VAS and VMS signage and virtual fence are moderate cost options whereas WID-activated signs, break-the-beam systems and fencing/crossing structures score as very high cost. It should be noted that cost is largely scale-dependent.

**Table 3:** Feasibility, cost and proven effectiveness of various road-strike mitigation technologies. Rating metric: very low (+), low (++), moderate (+++), high (++++), very high (+++++).

Technology	Feasibility	Cost	Proven Effectiveness
Static signs	+++++	+	+
Vehicle-activated signs (VAS)	+++++	+++	+++
Variable message signs (VMS)	+++++	+++	++
Rumble strips	+++++	+	++
Pavement treatments	+++++	++	++
WID-activated signs	+++	+++++	+
Break-the-beam warning system	++	+++++	++++
Virtual fence	+++	+++	+
Fencing & crossing structures	++	+++++	+++++
Roadside reflectors	++++	+++	+
Audio deterrents	+++	+	+

Evidence of effectiveness (proven effectiveness), while critical to informing choice of mitigation technology, is in many instances difficult to quantify. Most mitigation technologies have not been subjected to well-designed trials and much of the evidence supporting their effectiveness or otherwise is either anecdotal, lacking appropriate design or collected over short time periods. Exceptions to this are break-the-beam systems that have undergone extensive trials in Europe and well-maintained fauna fencing and crossing structures which have been shown at numerous sites to prevent koala road-strike whilst enabling landscape permeability (e.g. Taylor & Goldingay 2003; Dexter *et al.* 2016).

There is emerging evidence in support of VAS to reduce both vehicle speed and wildlife road mortality. Less has been done on VMS but there is some evidence that they lower vehicle speeds. There is strong evidence of speed reductions in response to rumble strips but we are not aware of reports on its application to road-kill mitigation. Despite this, the use of rumble strips may assist in supporting other technologies such as pavement treatments or signage by providing an auditory cue. Virtual fence and WID-activated signs have potential but their application to koalas is yet to be demonstrated. Both technologies are costly to deploy over long road distances, particularly WID-activated signs.

### 4.3 An integrated approach

It is apparent from the preceding discussion that short of lining the road corridor with fauna fencing and retrofitting underpasses at regular intervals, no single technology will eliminate the incidence of koala road strike at Wyrallah Road (and other road-strike black-spots). Permeable landscapes mean that koalas will continue to encounter roads and traffic. Roadkill mitigation efforts, therefore, should aim to increase driver vigilance and reduce vehicle speed to reduce the likelihood that koala road encounters end in koala road deaths.

In light of this, we propose a plan that adopts an integrated approach featuring several technologies. The proposed approach is similar to that developed by Tweed Shire Council to mitigate koala road strike at black-spots on Clothiers Creek Road, Cabarita and Coronation Avenue, Pottsville. The Tweed

strategy has reportedly been successful in reducing vehicle speeds and reducing koala road-strike although koala road strike before data were incomplete (S. Hetherington pers. comm.). The approach centered on delineating the two black-spots as 'koala zones' and utilising a combination of static signs, variable message signs (VMS), slow points, pavement treatments and before/after traffic monitoring. Tweed City Council also promoted the 'koala zones' in a 'slow down for koalas' marketing strategy focusing on schools and local media.

Importantly, the landscape context of the two black-spots in Tweed Shire are very different to the Wyrallah Road black-spot. The Tweed black-spots occur at locations where the subject road traverses an urban forest corridor for 500m (Coronation Avenue) and a large forest block for 2.5km (Clothiers Creek Road). By contrast, the Wyrallah Road blackspot is 9km of road embedded within a highly modified rural landscape featuring numerous roadside tree rows, scattered paddock trees and clustered vegetation. The mitigation plan for this site must accommodate a very different landscape type, much larger scale of road corridor and a higher density koala population largely residing within the road corridor.

#### 4.4 Wyrallah Road black-spot Mitigation Plan

The proposed Wyrallah Road black-spot mitigation plan utilises 'koala zone' pavement marking, rumble strips, static signs and Vehicle-Activated Signs (VAS). It also requires initial use of LCC data loggers at particular locations and promotion of the 'koala zones' in local media and Lismore LCC marketing. Details of the proposed plan are provided in Table 4 and Figure 7. The precise placement of treatments will require some onground assessment and consideration of ecological and engineering requirements.

Pavement treatments, rumble strips and static 'Koala Zone' signs should be installed concurrently. Data loggers at V1 and V2 should be installed at least one month prior to VAS installation to capture 'before' treatment vehicle speeds. Data loggers should remain in place until installation of VAS which records vehicle speeds.

The 'Koala Zone' pavement marking and associated sign would mark the extent of the Wyrallah Road and Tuckurimba Road road-strike sections. The design of the 'Koala Zone' signs should be discussed with environmental staff and road engineers to ensure specification compliance and branding consistent with LCC policy. The Queensland Department of Transport and Main Roads (QDTMR), who developed the specifications for the pavement marking and which was approved for use in Tweed LGA, suggest the associated sign should inform and reinforce the pavement marking (QDTMR 2015). A single rumble strip should be installed within the lane approaching the 'Koala Zone' and 5m prior to the pavement marking. The intention is to provide an auditory stimulus to reinforce the visual sign.

Vehicle-Activated Signs are recommended at the two highest road-strike cluster locations – Wyrallah Road south of Tucki Road and Wyrallah Road 1km south of Mathieson Lane. The intention is to slow down speeding vehicles and improve driver vigilance. Road engineers should be consulted to determine precise installation locations.

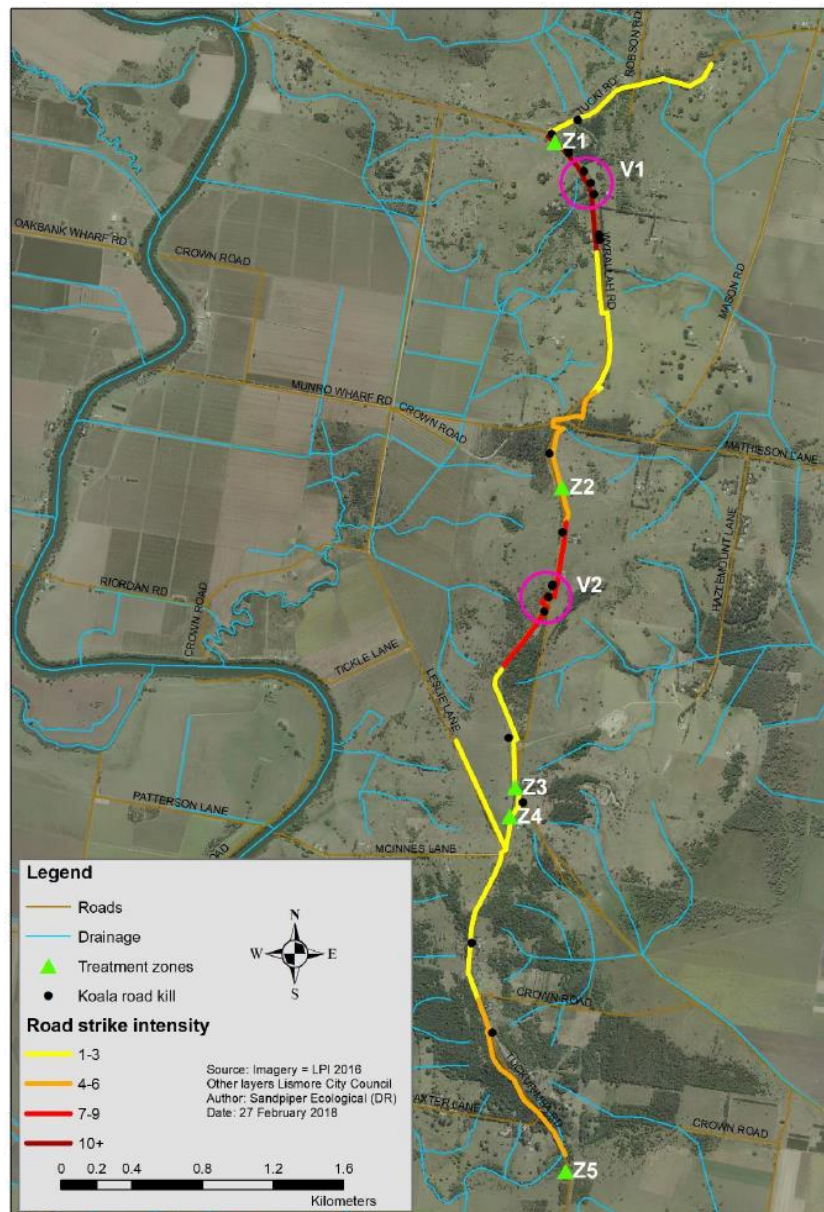
The 'Koala Zone' branding should be promoted via LCC marketing and local media. It should highlight that 'Koala Zones' are road strike black-spots. This should be nested within the broader message of drivers to be koala (wildlife) aware on local roads and the link between speed and an increased likelihood of hitting a koala (wildlife). The intention is to utilise 'Koala Zone' pavement marking at other Lismore LGA koala black-spots during Phase 2 of the WRMS.

It may be useful to link the 'Koala Zone' branding with that occurring in Tweed LGA to develop a broader, consistent narrative. Tweed City Council environment officers have also conducted promotion of 'Koala Zone' and 'Slow down for koalas' in local schools. A similar strategy should be considered for Lismore LGA schools.

**Table 4:** Mitigation treatments and costings for Wyrallah Road black-spot. Treatment locations are marked on Figure 7. NB = northbound lane. SB = southbound lane. \* = Placement to be determined by ecologist and road engineers because side of road koala strikes occurred were not evident in Biolink/FOK data.

Mitigation Treatment	Approx. Cost (exc. GST)	Other Costs	Notes
'Koala Zone' pavement marking <ul style="list-style-type: none"> <li>Locations Z1, Z3, Z4, Z5 (single lane)</li> <li>Location Z2 (both lanes)</li> </ul>	\$10 125	Traffic control	Includes cost of paint & application.
Rumble strip <ul style="list-style-type: none"> <li>Locations Z1, Z3, Z4, Z5 (single lane)</li> <li>Location Z2 (both lanes)</li> </ul>	\$660	Installation	Complete during 'Koala Zone' pavement marking. Single strip 10m before pavement marking.
Static 'Koala Zone' sign <ul style="list-style-type: none"> <li>Locations Z1 (SB), Z3 (NB), Z4 (SB), Z5 (NB)</li> <li>Location Z2 (NB &amp; SB)</li> </ul>	\$1 800	Installation	Modified version of Tweed 'Koala Zone' sign.
Vehicle-Activated Sign (VAS) <ul style="list-style-type: none"> <li>Location V1*</li> <li>Location V2*</li> </ul>	\$18 000 \$18 000	Installation Installation	Consider capacity for sign(s) to be relocated if required.
Data loggers <ul style="list-style-type: none"> <li>Location V1* &amp; V2*</li> </ul>	In-kind		At least 1 month prior to installation of VAS sign(s)
Promotion of 'Koala Zones' in local media & Lismore CC marketing	In-kind		

Wyrallah Road koala blackspot assessment and mitigation plan - Lismore City Council



**Figure 7:** Location of proposed road-strike mitigation treatments at Wyrallah Road koala black-spot. Z = 'Koala Zone' pavement treatment and sign. V = Vehicle-Activated Sign. Road strike intensity data for 2011-2016 (Source: Biolink 2017).



#### 4.5 Performance review

Collection of road-strike data should continue as it has to date. That is, via call outs to FOK and incidental observations reported to LCC by local people or road maintenance staff. A detailed Koala (wildlife) Road-strike Proforma will be developed in Stage 2 of the project with the intention of standardizing reporting and improving the capture of road and landscape attributes at road-strike locations.

The Stage 1 mitigation plan should be reviewed annually along with other strategies implemented as part of Stage 2. The Wyrallah Road black-spot mitigation plan should be assessed against the following Performance Indicators:

1. Increase in proportion of vehicles travelling at or below the signed speed at locations V1 and V2 after installation of mitigation treatment measures (Figure 8) compared to before installation.
2. Reduction in annual number of reported koala road strikes at the Wyrallah Road black-spot compared to average over previous two koala generations (i.e. 10 years).

In reviewing the performance of the Wyrallah Road black-spot mitigation plan, corrective actions will need to be considered in response to poor performance. In so doing, the plan should be regarded as adaptive and able to respond to broad changes in road and/or landscape conditions (e.g. bushfire) and the emergence of other black-spot location(s) within the focal area. In this regard, all signs should have the capacity to be relocated if required. The plan should also be adaptive to the emergence of alternative mitigation technologies and new information on the performance of road mitigation strategies at other locations.

## 5. References

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Wyrallah Road koala blackspot assessment and mitigation plan - Lismore City Council

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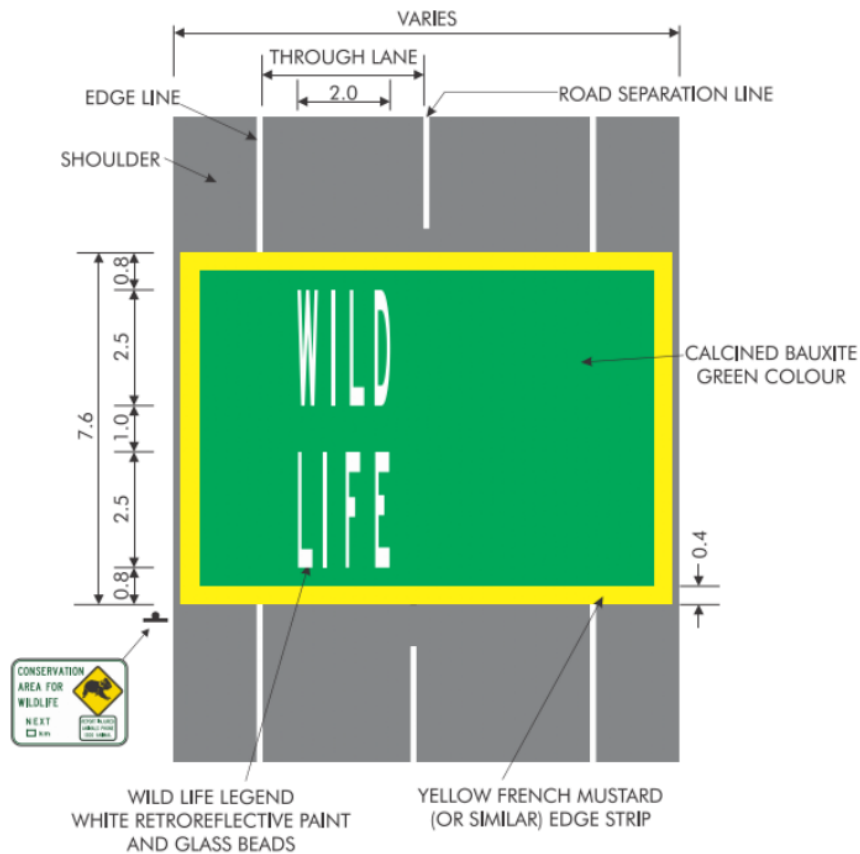
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Sandpiper Ecological Surveys

26

## Appendix A

**Figure A1.** Wildlife Zone pavement treatment specifications provided by Department of Transport and Main Roads (Qld). These specifications were adopted for pavement treatment on Clothiers Creek Road, Tweed LGA (refer Plate 8).





**Report No. 4.3      Biodiversity Conservation Strategy 2020  
Actions Audit**

**Directorate:**                      Sustainable Environment and Economy

**Report Author:**            Lizabeth Caddick, Biodiversity Officer

5    **File No:**                      I2021/275

**Summary:**

This report provides a summary of actions achieved during the first year of implementation of the Byron Shire Biodiversity Conservation Strategy 2020-2030. At the time of reporting, 62 of the 95 actions in the Action Plan are currently in progress.


- 10    Other actions listed in the Biodiversity Conservation Strategy will be progressed over the lifetime of the strategy in accordance with Council's Operational Plan.

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15    **RECOMMENDATION:**

**That the Biodiversity Advisory Committee notes this report.**

**Attachments:**

- 20    1      Biodiversity Conservation Strategy 2020 Actions Audit, E2020/89371 , page 56 [↓](#) 

## Report

The Byron Shire Biodiversity Conservation Strategy (BCS) was adopted in June 2020 (Council resolution 20-332), with community and stakeholder support. The BCS is a ten-year strategy, from 2020-2030, and includes a list of 95 prioritised actions: the Action Plan. As per Section 5.2 of the BCS, progress with the Action Plan is to be reported annually to Council's Biodiversity Advisory Committee.

This report provides a summary of actions in progress to date, during the first year of deliver of the Biodiversity Conservation Strategy – Table 1 (Attachment 1).

As per Table 1 (Attachment 1), 60 actions are currently in progress. Of these, 17 are ongoing actions – i.e. actions that will continue to be carried out throughout the lifetime of the BCS. For these actions it would generally be expected that 10% of the action would be achieved during each of the ten years of the strategy's duration.

Table 2 (Attachment 1) lists actions that have not been progressed during the first year of the strategy. These actions will be the subject of future budget bids and incorporated into future Council Operational Plans during the lifetime of the strategy.

## Options

This annual audit of actions is an opportunity for the Biodiversity Advisory Committee to review progress with the BCS to date, and also to recommend any changes/updates to adopted actions and priorities for incorporation into future budget bids and the 2021-22 Operational Plan.

## Next steps

This audit will be considered during development of Council's 2021-22 Operational Plan.

## Strategic Considerations

### Community Strategic Plan and Operational Plan

CSP Objective	L2	CSP Strategy	L3	DP Action	L4	OP Activity
<b>Community Objective 3: We protect and enhance our natural environment</b>	3.1	Partner to protect and enhance our biodiversity, ecosystems and ecology	3.1.1	Protect and enhance our natural environment and biodiversity	3.1.1.1	Implement the Biodiversity Conservation Strategy

Note, Tables 1 and 2 list all 2020-21 Operational Plan actions that relate to Biodiversity Conservation Strategy Actions.

## **Recent Resolutions**

### **Resolution 20-332, 25 June 2020**

5 Resolved that Council:

1. Note the submissions received during the public exhibition period (24 March to 20 May 2020) of the Biodiversity Conservation Strategy 2020-2030, issues raised and staff responses.
- 10 2. Adopt the Biodiversity Conservation Strategy 2020-2030 with the amendments outlined in Attachment 2 (E2020/40811) of this report.
3. Make public the submissions referenced in point 1, subject to the approval of the authors
4. Also make the previous Biodiversity Conservation Strategy and the audit thereof publicly available.

### **15 Legal/Statutory/Policy Considerations**

Nil

### **Financial Considerations**

Delivery of the Biodiversity Conservation Strategy is funded from various council funds including the Environmental Levy and grant funding for specific projects.

### **20 Consultation and Engagement**

N/A

**Biodiversity Conservation Strategy Actions Audit 2020**

**Table 1: Actions in Progress**

No.	Action	Priority	Performance Indicator	Progress at end 2020	% achieved	2020-21 OP Action	2020 Expenditure
11	Update Council's DCP 2014 to include a Biodiversity, Vegetation and Habitat Management Chapter that: - Reflects current legislation; - Reflects the Guiding Principles of the Biodiversity Conservation Strategy. - Aligns with the Byron Shire Rural Land Use Strategy 2017. - Reflects updates to local and regional vegetation mapping; - Provides standards and controls to ensure planning of new development maintains or improves ecological values & ecological function; - Incorporates clear planning controls for protection of Koala Habitat, within the Byron Coastal Koala Management Area, and other rural koalas habitat areas; - Aligns with the Guiding Principles of this Biodiversity Conservation Strategy.	VH	Biodiversity DCP adopted and in use.	DCP 2014 Chapter B1 Biodiversity adopted by Council 10 December 2020 (Resolution 20-692).	60%	3.1.1.3	\$25,000 contract staff
13	Review opportunities to improve biodiversity through tree planting/restoration provisions in Council's urban and rural development approval processes.	M	DCP chapters B2, D2 and D3 updated with clear guidelines for offset planting, on-site planting ratios and restoration	Draft DCP 2014 Chapter B2 Tree and Vegetation Management on public exhibition 23 November to 20 December 2020. Report I2020/1539.	50%	3.1.1.3	See A 1.1

# BYRON SHIRE COUNCIL

## STAFF REPORTS - SUSTAINABLE ENVIRONMENT AND ECONOMY

## 4.3 - ATTACHMENT 1

No	Action	Priority	Performance Indicator	Progress at end 2020	% achieved	2020-21 OP Action	2020 Expenditure
			opportunities.				
16	Review and, where necessary, update Council's Koala Plan of Management in accordance with SEPP (Koala Habitat Protection) 2019.	H	Shire-wide KPOM adopted in accordance with SEPP (Koala Habitat Protection) 2019.	CKPOM sent to NSW DPIE for ratification under new Koala SEPP in March 2020. Currently awaiting ratification of CKPOM by Department of Planning and Environment. Koala SEPP may be subject to further change as reported to Council 10 Dec, I2020/1793.	20%		In house
19	Update Council planting lists to identify species in different vegetation communities likely to be adaptable or sensitive to climate change.	M	Updated planting lists available on Council website	Letter of support provided for Brunswick Valley Landcare project "Adapting to climate variability - a planting guide for the Northern Rivers region, NSW", funded by Increasing Resilience to Climate Change (IRCC) Community Round 1 grant from DPIE. Grant awarded July 2020. The project will deliver a climate resilient landscapes planting guide for the Northern Rivers Region, and promote adaptive planting to strengthen the community's connection to local vegetation, gardens and landscape. The guide will help the community to better understand the effects of temperature, fire, flood and drought in the Byron Shire and broader Northern Rivers region. Additionally, a "climate resilient landscape" demonstration site will be set up in Mullumbimby's Heritage Park featuring revegetation projects and plants for local gardens that are resilient to the effects of climate change. Council will be contributing to the planting guide through peer review, promotion of workshops via council media, distribution and promotion of the Planting Guide, use of Heritage Park site and ongoing support of BVL support officer and project officer.	10%	3.2.2.5	In house

# BYRON SHIRE COUNCIL

## STAFF REPORTS - SUSTAINABLE ENVIRONMENT AND ECONOMY

## 4.3 - ATTACHMENT 1

No	Action	Priority	Performance Indicator	Progress at end 2020	% achieved	2020-21 OP Action	2020 Expenditure
117	Develop a process for Council field staff to update Council's GIS mapping with threatened species records on site.	M	Field staff trained in use of application to upload threatened species records to Council GIS.	Use of ARC Collector app being investigated as part of Southern Cross University student internship.	50%		In house
118	Update Council's wildlife corridor mapping and liaise with other NRJO Councils to ensure consistency in wildlife corridor mapping across the region.	H	Corridor mapping available on Council GIS. Corridor mapping included as a red flag in Biodiversity DCP.	Landmark Ecological Services commenced work on wildlife corridor mapping project, Sep 2020	20%	3.1.1.2	Total project budget: \$39,000. Invoiced to date: \$0
120	Map areas that have been revegetated: a) using public funds, and b) for conservation purposes	H	GIS map layer identifying areas revegetated using public funds developed and maintained. Map supplied to Local Land Services offices.	Mapping of restoration and revegetation areas throughout Byron Shire being progressed as part of Southern Cross University student internship. A budget bid of \$8,850 has been made to complete this work in 2021-22. Council is also working with other Northern Rivers conservation agencies and local councils to progress development of an online application for documenting koala habitat restoration.	30%		In house
124	Make Council's roadside threatened flora mapping available to council outdoor staff, contractors and the community via mobile application and public facing webmap viewer.	M	Refer Integrated Pest Management Strategy	In progress.	10%	3.1.1.8 5.2.1.9	In house
125	Map potential habitat areas for Mitchell's Rainforest Snail.	M	Mitchell's Rainforest Snail habitat mapped on Council GIS.	Review of current research and understanding re Mitchell's Rainforest Snail provided to Biodiversity Advisory Committee 10 August 2020 (I2020/1068). A budget bid of \$8,000 has been made to do this work in 2021-22 (BAC minute ref 20-523).	10%		In house
126	Promote use of mobile data collection applications, such as Feral Scan and I Spy Koala, to enable the community to participate in biodiversity-related data collection.	M	New mobile data collection applications reviewed and linked to Council's website	I Spy Koala app promoted through all koala community and landholder engagement projects. Link to I Spy Koala added to Council website, July 2020: <a href="https://www.byron.nsw.gov.au/Services/Environment/Native-animals-and-plants/Koalas#section-2">https://www.byron.nsw.gov.au/Services/Environment/Native-animals-and-plants/Koalas#section-2</a>	50%		In house

# BYRON SHIRE COUNCIL

## STAFF REPORTS - SUSTAINABLE ENVIRONMENT AND ECONOMY

## 4.3 - ATTACHMENT 1

No.	Action	Priority	Performance Indicator	Progress at end 2020	% achieved	2020-21 OP Action	2020 Expenditure
			where relevant.				
127	Investigate the need for and benefits of a significant tree register.	L	Findings reported to Biodiversity Advisory Committee	Council 2020-21 Community Grants program provided funding to Mullum SEED for community development of a Significant Tree Register and app. This is a community-led project that is aimed at creating a culture of appreciating and valuing trees, rather than providing legal protection. It is based on the National Trust criteria for nominating trees, which aim to foster goodwill and stewardship amongst landholders. Nominations will be reviewed by an expert panel of botanists, historians, arboriculturalists etc. Council staff are liaising with Mullum SEED during development of this project.	20%		Community Grants Program funding \$5,000; (Partner contribution, cash and in kind \$13,590)
130	Continue development of Coastal Management Programs for the Shire's coastline and estuaries, ensuring CMPs are consistent with the intent of this Biodiversity Strategy. +C37	M	Refer Council Coastal Management Plans	<p>Council has commenced the preparation of a Coastal Management Program(s) or CMP for the Byron Shire Coastline under the 5 stage CMP process.</p> <ul style="list-style-type: none"> <li>Council has recently adopted a Scoping Study for Cape Byron to South Golden Beach CMP (June 2020).</li> <li>Council has recently started on the preparation of a Scoping Study for the southern Byron Shire coastline from Cape Byron to the southern boundary of the Shire at Seven Mile Beach, and including the Belongil Creek estuary.</li> <li>A Scoping Study is proposed for the Brunswick River estuary as a future priority.</li> </ul> <p>Stage 2 of the process and a Coastal Hazard Study is proposed to commence in late 2020 for the entire</p>	40%	3.3.1.1	Coastal and Estuary Grants Program (\$53,000) with matching Council contribution. Stage 2 budget is \$35,000.



# BYRON SHIRE COUNCIL

## STAFF REPORTS - SUSTAINABLE ENVIRONMENT AND ECONOMY

## 4.3 - ATTACHMENT 1

No	Action	Priority	Performance Indicator	Progress at end 2020	% achieved	2020-21 OP Action	2020 Expenditure
				coastline of the Byron Shire and will look at a variety of hazards including beach erosion and recession, coastal and tidal inundation. Additional Stage 2 studies may be identified through completion of the Scoping Study for the southern Shire coastline and for the Belongil Creek estuary.			
131	Review Council's funding framework for biodiversity projects, including Environmental Levy Implementation Policy.	L	Biodiversity funding framework options reported to Biodiversity Advisory Committee.	Report to BAC in preparation	10%		In house
132	Work with Council's Grants Officer to identify funding opportunities available to deliver elements of this plan on both private and public land.	O	Grant funding secured annually for Biodiversity Conservation Strategy projects.	<p>Ongoing.</p> <p>Grants received to date include:</p> <ul style="list-style-type: none"> <li>- July 2020, \$18,000 Koala Food for the Future project (DPIE Saving our Species);</li> <li>- July 2020, \$39,300 Leash Up dog owner engagement project (DPIE Saving our Species);</li> <li>- October 2020, \$5000 Mullumbimby High School Trees for Koalas - Connecting Communities project (DPIE Saving our Species).</li> <li>- October 2020 - Council and North Coast Local Land Services awarded \$186,500 NSW Government Fish Habitat Grant for restoration of a section of the Brunswick River east of Mullumbimby, as part of the 'Bringing Back the Bruns' project. This is a 2 year project involving river bank stabilisation and revegetation.</li> </ul> <p>Currently investigating funding for:</p> <ul style="list-style-type: none"> <li>- CKPOM surveys (DPIE)</li> </ul>	10%		In house

# BYRON SHIRE COUNCIL

## STAFF REPORTS - SUSTAINABLE ENVIRONMENT AND ECONOMY

## 4.3 - ATTACHMENT 1

No	Action	Priority	Performance Indicator	Progress at end 2020	% achieved	2020-21 OP Action	2020 Expenditure
133	Incorporate relevant elements of this strategy (e.g. relating to coastal wetlands, littoral rainforest) into Council's Coastal Management Programs, to increase potential for funding support through the State Government Coastal and Estuary Grants Program.	M	Refer Council Coastal Management Program (CMP/s)	<i>Ongoing action.</i> To be progressed as part of CMP development - refer Action 1.30.	10%	3.3.1.1	In house
21	Provide expert advice regarding how people can help protect biodiversity, including: - Simple steps people can take to reduce their climate footprint. - How to improve biodiversity of urban areas and villages. - How to protect native wildlife from threats. - Information on the Shire's most threatened species.	H	Council environment web pages reviewed and updated annually.  4 x social media posts per year relating to protecting biodiversity and/or managing threats to biodiversity.	<i>Ongoing action</i> - July 2020: Koala pages on Council's website updated <a href="https://www.byron.nsw.gov.au/Services/Environment/Native-animals-and-plants/Koalas">https://www.byron.nsw.gov.au/Services/Environment/Native-animals-and-plants/Koalas</a> - August 2020: Councils Responsible Dog Ownership page updated with a section on managing dogs and koalas <a href="https://www.byron.nsw.gov.au/Community/Pets/Responsible-dog-ownership">https://www.byron.nsw.gov.au/Community/Pets/Responsible-dog-ownership</a> . - September 2020: Council restorations team partnered with Mullumbimby High School Green Group to regenerate 500m of Mullumbimby Creek bank behind the school, including training students in plant and weed identification. - October 2020: Council put on a public webinar: Living with Brush Turkeys, by Brush Turkey expert, Ann Goeth. - Since adoption of the strategy in June Council has put out 13 media releases and/or social media posts to inform the public of biodiversity conservation issues, including managing dogs around wildlife, nesting shorebirds, slowing down on our roads for wildlife, rescuing koalas, illegal dumping of green waste and wildlife friendly fencing. - In 2020, Council staff and Brunswick Valley Landcare officer responded to 240 public enquiries relating to biodiversity issues.	10%	3.2.2.1	In house
22	Use Council's website to promote	H	Website updated to	Planned for 2021-22 FY	0%	3.2.2.1	In house

# BYRON SHIRE COUNCIL

## STAFF REPORTS - SUSTAINABLE ENVIRONMENT AND ECONOMY

## 4.3 - ATTACHMENT 1

No	Action	Priority	Performance Indicator	Progress at end 2020	% achieved	2020-21 OP Action	2020 Expenditure
	existing local biodiversity information resources that are available via Council front Counter, including: - Tweed-Byron Native Species Planting Guide - My Local Native Garden book - Weeds of the North Coast of NSW identification guide - Wildlife posters.		list publications available. Update promoted via social media.				
24	Implement Flying Fox information and awareness program	H	Refer Flying Fox Camp Management Plan	- June 2020: Media release & radio - Flying foxes and pollination. - October 2020: Media release - Wildlife Friendly fencing. - Workshops/field days postponed due to COVID-19	40%	4.1.1.9	In house
27	Support and promote local biodiversity-related events and citizen science initiatives.	O	Community biodiversity and conservation events promoted via Council media platforms as required.	Council partnered in planning and delivery of Northern Rivers Koala Habitat Restoration Webinar, 18/9/20 - This event was aimed at providing conservation practitioners and community groups with current best practice for koala habitat restoration in the Northern Rivers region.  Council collaborated with Mullumbimby High School on 3 biodiversity and sustainability related projects in 2020, including: - School waste audit and project to improve recycling and resource recovery, August 2020. - Mullumbimby Creek river bank restoration behind Mullumbimby High School, with school Green Group, October 2020. - <i>Trees for Koalas - Connecting Communities</i> project: support with project planning, funding, sourcing plants, media and organising student planting day.  Byron Shire Council Community Initiatives Program	10%	3.2.2.1	In house

# BYRON SHIRE COUNCIL

## STAFF REPORTS - SUSTAINABLE ENVIRONMENT AND ECONOMY

## 4.3 - ATTACHMENT 1

No	Action	Priority	Performance Indicator	Progress at end 2020	% achieved	2020-21 OP Action	2020 Expenditure
				<p>provided grant funding for:</p> <ul style="list-style-type: none"> <li>- Bangalow Koalas 2020-21 - community tree planting and a koala health and habitat workshop. \$5,000 grant.</li> <li>- Mullum SEED - for development of a Significant Tree Register app for Byron Shire.</li> </ul> <p>Council Facebook posts to promote the following events:</p> <ul style="list-style-type: none"> <li>- Birdlife Australia Winter Backyard Bird Count.</li> <li>- Save the Koala Day - 3 posts, 25/9/2020.</li> </ul> <p>Letters of support provided to the following community biodiversity initiatives:</p> <ul style="list-style-type: none"> <li>- Brunswick Valley Landcare Heritage Park-Maslen Arboretum <i>Take a Walk in the Park</i> project.</li> <li>- BVL <i>Climate Resilient Planting Guide</i> project.</li> </ul>			
28	Develop and implement a Pest Management Education and Awareness Plan for target pest animal species in Byron Shire.	H	Refer Pest Animal Management Plan	<ul style="list-style-type: none"> <li>- Northern Rivers Feral Deer Management Plan developed in collaboration with other Northern Rivers Councils. Involved community awareness raising and control.</li> <li>- Pilot Indian Mynah trapping program due to commence in Mullumbimby. Includes development of awareness raising plan.</li> </ul>	10%	3.1.1.13	In house
210	Keep the community informed of the Shire's 'worst weeds' via Council's website.	M	Refer Integrated Pest Management Strategy	<p>Council website updated to include:</p> <ul style="list-style-type: none"> <li>- Link to Weeds of SE QLD and Northern NSW app.</li> <li>- Link to DPI Weedwise app.</li> <li>- Link to Weeds Australia Weeds of National Significance weed profiles page.</li> </ul>	20%	3.1.1.8	In house
211	Inform the community of impacts of dumping green waste/rubbish in bushland, & promote use of green waste bins.	O	Refer Integrated Pest Management Strategy	<ul style="list-style-type: none"> <li>- Council supported Mullumbimby High School waste audit and recycling and resource recovery project - August 2020.</li> <li>- Update and reprint of Green Waste Illegal Dumping brochures.</li> <li>- Applied for a NSW EPA Grant; Combatting Illegal Dumping: Clean up and prevention program, targeting</li> </ul>	10%	3.1.1.8	In house

# BYRON SHIRE COUNCIL

## STAFF REPORTS - SUSTAINABLE ENVIRONMENT AND ECONOMY

## 4.3 - ATTACHMENT 1

No.	Action	Priority	Performance Indicator	Progress at end 2020	% achieved	2020-21 OP Action	2020 Expenditure
				<p>the dumping of green waste on public land and proposing appropriate reduction strategies.</p> <p>Ongoing activities:</p> <ul style="list-style-type: none"> <li>- Regular distribution of brochures and personalised letters to residents in response to incidents of illegally dumped green waste (undertaken on a weekly basis).</li> <li>- Regular engagement with residents surrounding bush regeneration sites to inform of impacts of green waste dumping (undertaken by bush regen team).</li> </ul> <p>Media releases:</p> <ul style="list-style-type: none"> <li>- Aug 2020 - Mullumbimby High School waste audit.</li> <li>- Sep 2020 - Illegal dumping and free green waste drop off at Myocum Resource Recovery Centre.</li> </ul>			
212	Develop an education and awareness program regarding managing the impacts of domestic animals on native wildlife.	M	Council website updated. Social media posts. Pet-owner awareness event delivered.	<p>Leash-up Pilot Communications project - aimed at engaging with dog owners to improve safety for both dogs and koalas. Preliminary survey in August-September 2021 received 401 responses and will assist in the strategic development of a pilot communication program to increase dog leashing compliance to help prevent dog-koala/wildlife interactions and attacks. The survey received responses from all across the shire, with a broad age range and predominantly female. 89% keep dogs in at night, 68% strongly support walking dog off leash, 77% say wildlife protection is very important, 41% of dogs known to encounter local wildlife.</p> <p>Council website updates:</p> <ul style="list-style-type: none"> <li>- July 2020: Pets section of Council website updated with a brand new section with tips on how to manage your dog around koalas and protect native wildlife: Managing dog and koala/wildlife co-habitation.</li> </ul>	50%	3.2.2.1	Leash up: \$45,152 (DPIE SOS program funding: \$39,890; Council funding \$5,252)

# BYRON SHIRE COUNCIL

## STAFF REPORTS - SUSTAINABLE ENVIRONMENT AND ECONOMY

## 4.3 - ATTACHMENT 1

No	Action	Priority	Performance Indicator	Progress at end 2020	% achieved	2020-21 OP Action	2020 Expenditure
214	Seek funding for design and fabrication of engaging interpretive information regarding native wildlife at locations receiving high visitor numbers.	M	Funding for signs sourced and interpretive signs installed at key locations.	Design of two signs (Tallow and Belongil Creek) is being developed in consultation with the Arakwal Corporation. The signs will provide information on three key elements – the cultural significance of the creeks, the ecology of the creeks and Council's entrance opening practices.	25%		\$5,000 for 2 signs
215	Support opportunities for incorporation of environmental awareness raising activities at events.	O	Attendance of Council environmental officers at events.	Biodiversity section added to Council Events Guide - August 2020.  Council Events, Sustainability and Biodiversity staff progressing sustainable events working group.	10%	2.1.7.5 3.2.2.1	In house
217	In consultation with Bundjalung of Byron Bay Aboriginal Corporation (Arakwal), increase inclusion of known Bundjalung language for place, plants and animals in Council biodiversity documents and outputs.	M	Interpretive signs (Action 2.14) incorporate Bundjalung language. Environmental messaging for visitors and tourism providers (Action 2.13) incorporates Bundjalung language where relevant.	Bundjalung of Byron Bay Aboriginal Corporation (Arakwal) consulted in development of Biodiversity Conservation Strategy and provided advice regarding inclusion of Bundjalung imagery in the Strategy.	5%		In house
33	Investigate increasing the level of extension services currently provided by BVL to provide greater support to individuals wanting to improve biodiversity values on private property.	H	Report to Council	Brunswick Valley Landcare Officer project funding increased from \$16,500 in 2019-20 to \$22,500 in 2020-21.	50%	3.2.2.5	\$19,500

# BYRON SHIRE COUNCIL

## STAFF REPORTS - SUSTAINABLE ENVIRONMENT AND ECONOMY

## 4.3 - ATTACHMENT 1

No	Action	Priority	Performance Indicator	Progress at end 2020	% achieved	2020-21 OP Action	2020 Expenditure
35	Make the following Council vegetation mapping layers available to the public to assist with restoration planning: - Wildlife corridors - HEV Vegetation - Threatened species - Vegetation mapping - Priority restoration areas	M	Council vegetation mapping layers available via Council's website.	Council webmap viewer published on Council website June 2020. Currently includes: - HEV Vegetation - Big Scrub remnants - Bush regeneration and Landcare work areas - Vegetation mapping	50%		In house
36	Compile a database of: - landholders interested in or participating in active restoration and - landholders of sites identified as high priority for conservation/restoration (Action 1.9).	H	Landholder database created.	Landholder database developed. This database will continue to be updated and promoted throughout the lifetime of the strategy.  Media release 8 May 2020 regarding koala habitat planting included promotion of the database and invitation for expressions of interest (Byron Shire News, Northern Star, ZZZ fm & Bay fm).	60%	3.1.1.6	In house
37	Engage with landholders listed above (Action 3.4) to: a) advise of available land management resources, training, and incentives. b) advise of funding opportunities available for restoration, including grants and Biodiversity Stewardship Agreements.	M	Information regarding: a) available resources and b) funding opportunities provided to landholders identified in Action 3.4.	To date 47 landholders contacted regarding funding support for koala habitat planting through the North East Hinterland and Koala Food for the Future projects. 24 properties identified for koala habitat planting as part of these projects.  Advice regarding Biodiversity Stewardship Agreements provided to 12 potentially suitable landholders through NE Hinterland project.  Land for Wildlife Officer landholder engagement (2020): - 13 sites registered for Land for Wildlife - responded to 53 enquiries regarding resources, training and funding opportunities.	10%	3.1.1.6	In house and through BVL officer (refer Action 3.3 above)



# BYRON SHIRE COUNCIL

## STAFF REPORTS - SUSTAINABLE ENVIRONMENT AND ECONOMY

## 4.3 - ATTACHMENT 1

No	Action	Priority	Performance Indicator	Progress at end 2020	% achieved	2020-21 OP Action	2020 Expenditure
38	Work with neighbouring Councils and Friends of the Koala to Implement NE Hinterland Koala Conservation Project to increase planted koala habitat and secure conservation agreements for koala habitat on private land in Byron Shire.	H	2.8 Ha koala habitat planted by 2022.	16 ha identified for planting/restoration across 14 sites. Planting commenced at 12 sites (15 ha). 7 sites investigated for suitability for conservation agreements.	80%	3.1.1.1 2	Project officer \$9,000. Trees and restoration: \$17,649
39	Seek grant funding opportunities for combined Council-private landholder restoration and revegetation projects on private land.	M	Funding secured for restoration projects on private land.	<ul style="list-style-type: none"> <li>- May 2020: \$18,800 DPIE funding for Koala Food for the Future project, planting koala food trees on private land.</li> <li>- September 2020: \$5,000 funding from DPIE confirmed for Mullumbimby High School Trees for Koalas - Connecting Communities project.</li> <li>- October 2020: Council and North Coast Local Land Services awarded \$186,500 NSW Government Fish Habitat Grant for restoration of a privately-owned section of the Brunswick River east of Mullumbimby, as part of the 'Bringing Back the Bruns' project. This is a 2 year project involving river bank stabilisation and revegetation.</li> </ul>	30%	3.1.1.1, 3.1.1.6	In house

# BYRON SHIRE COUNCIL

## STAFF REPORTS - SUSTAINABLE ENVIRONMENT AND ECONOMY

## 4.3 - ATTACHMENT 1

No	Action	Priority	Performance Indicator	Progress at end 2020	% achieved	2020-21 OP Action	2020 Expenditure
310	Support and promote existing landholder incentive programmes.	H	Landcare Officer position hosted by Byron Shire Council. Managing Land in the Micro Climate of Byron Shire project delivered. Byron Habitat Corridors and Mooibal Spur Corridor Restoration Project delivered.	<p>Brunswick Valley Landcare Officer funded for 1 day/week.</p> <p>Managing Land in the Micro Climate of Byron Shire project :</p> <ul style="list-style-type: none"> <li>- Rural Land Management Handbook - 1st draft complete, graphic design in progress.</li> <li>- Workshops postponed due to COVID-19.</li> <li>- Mentoring program in development.</li> </ul> <p>Byron Habitat Corridors Stage 3 project in progress. Follow up maintenance completed at all sites, final report to Environment Trust due March 2021.</p> <p>Mooibal Spur Corridor Restoration Stage 1: \$99,873. Working on council road reserve and private properties between Tallow wood Ridge Estate and Tristran Drive, Mullumbimby Creek. Year 1 complete with on ground work on track. Most of the community days have been postponed due to COVID-19 restrictions.</p>	50%	3.1.1.6, 3.2.2.5 3.4.1.2	BVL officer - refer Action 3.3. above Micro climate total project budget: \$25,100. Byron Habitat Corridors 2020 project expenditure: \$12,762 site maintenance; \$5,880 project officer. Mooibal Spur Corridor Restoration Stage 1: \$99,873
311	Partner with Landcare to deliver annual/bi-annual training sessions for landowners on native vegetation restoration.	M	Two training sessions delivered per year in partnership with Brunswick Valley Landcare.	<ul style="list-style-type: none"> <li>- March 2020 - Koala Health and Habitat workshop delivered by Council and BVL through Byron Habitat Corridors Project.</li> <li>- October 2020 - Living Alongside Brush Turkeys Webinar by Ann Goeth. Delivered by Council &amp; BVL to Council staff and community.</li> </ul>	10%		Koala Habitat workshop \$750 Brush Turkey webinar \$240
312	Continue to facilitate Agricultural Cluster Group to identify opportunities for sustainable farming improvements.	O	Agricultural Cluster Group meetings attended ongoing	Agricultural Cluster Group meetings held February, August and November 2020.	10%	3.4.1.3	In house
314	Seek grant funding for an extension officer to work with landholders to protect and enhance biodiversity values on private land.	M	Grant proposal submitted to relevant authority.	Drought Pest and Weeds Federal Grant program - \$299,712 awarded to Council, including \$153,812 for engagement of a Agricultural Extension Officer for 18 months, to work with local farmers on sustainable farm management, productivity improvements and	100%	3.1.1.1 3.1.1.6 3.1.1.1 4	In house

# BYRON SHIRE COUNCIL

## STAFF REPORTS - SUSTAINABLE ENVIRONMENT AND ECONOMY

## 4.3 - ATTACHMENT 1

No.	Action	Priority	Performance Indicator	Progress at end 2020	% achieved	2020-21 OP Action	2020 Expenditure
				biodiversity. November 2020 - June 2022. Nov-Dec 2020 - completed 9 on-site consultations with local landholders.			
41	Progress restoration of remaining Council-managed sites identified as requiring restoration to an on-maintenance level (total 307 Ha requiring restoration) and provide follow-up quarterly maintenance on all restored sites.	H	50% of total area restored to on-maintenance level by 2030. All on-maintenance sites maintained quarterly.	<ul style="list-style-type: none"> <li>- Currently working on 58 sites (148 ha)</li> <li>- 28 sites (41 ha) are at maintenance level. All maintenance sites are receiving regular (quarterly) maintenance.</li> <li>- Not currently working on 69 sites (159 ha). Work sites are prioritised in accordance with biodiversity values, with sites of high biodiversity value worked first. As more sites reach a maintenance level, other currently un-worked sites are able to be incorporated into the works program.</li> <li>- The regen team is currently exploring the possibility of a restructure and hiring more staff – both of these will need to occur if the regen team is to take on any of the remaining 69 sites which are not currently being worked.</li> </ul>	30%	3.1.1.5 3.1.2.1	\$180,000
42	Restore (192 Ha) and maintain (315 Ha) native vegetation communities at Council Sewage Treatment Facility sites.	H	Area restored to on-maintenance level.	<ul style="list-style-type: none"> <li>- Currently working on 8 sites (136 ha)</li> <li>- 4 sites (19 ha) are at maintenance level and receive regular (quarterly) maintenance.</li> <li>- Not currently working on 9 sites (183 ha) (refer Action 4.1 above regarding resourcing).</li> </ul>	30%	3.1.2.1	\$180,000
43	Seek additional grant funding for the implementation of on-ground ecological restoration actions at priority Council-managed sites, including wildlife corridors, koala habitat and HEV vegetation.	H	Value of grant funding awarded.	The regen team is currently exploring the possibility of a restructure and hiring more staff – both of these will need to occur if the regen team is to take on any of the remaining sites or apply for grant funding.	10%	3.1.2.1	In house

# BYRON SHIRE COUNCIL

## STAFF REPORTS - SUSTAINABLE ENVIRONMENT AND ECONOMY

## 4.3 - ATTACHMENT 1

No.	Action	Priority	Performance Indicator	Progress at end 2020	% achieved	2020-21 OP Action	2020 Expenditure
45	Implement a regular forum to upskill Council bush regeneration and environmental planning staff (and Landcare members) with current best practice ecological information.	M	Annual forum held	October 2020 - Living with Brush Turkeys webinar, presented by Dr Ann Goeth. Webinar attended by 11 Council bush regeneration and environmental planning staff, plus community members.  September 2020 - Staff helped to organise and participated in the Northern Rivers Koala Habitat Restoration Webinar, attended by over 90 bush regeneration and biodiversity planning professionals and volunteers across the Northern Rivers region.	10%		In house
47	Implement a monitoring program for the Byron Coast koala population.	H	Refer Koala Plan of Management	August 2020 Funding proposal submitted to DPIE for CKPOM area koala habitat monitoring, as part of NSW Koala Monitoring Plan.	30%	3.1.1.1	Awaiting advice re funding
48	Continue to partner with University of Queensland regarding koala research and management projects in Northern NSW to help direct future management, including - North Coast Koala Linkage and - Maximising outcomes for koalas on private land project.	O	Attendance at North Coast Linkage project meetings and workshops.	Staff attended final North Coast Linkage project meetings in 2020. Following on from this project Council staff are working with other Northern Rivers councils to develop a Regional Koala Strategy.	40%	3.1.1.1 2 3.2.2.2	In house
49	Review and implement monitoring programs to assess effectiveness of Council ecological restoration, including: - Threatened flora monitoring, - Plant species diversity, - Koala activity in planted koala corridors.	M	Monitoring program developed and implemented at koala habitat planting sites; Monitoring program developed and implemented at Council restoration sites.	- Staff investigating mobile applications for recording threatened species at restoration sites. - Funding proposal submitted to DPIE for CKPOM area koala habitat monitoring, as part of NSW Koala Monitoring Plan. - Participated in quarterly Flying Fox National Census.	10%	3.1.2.1	In house

# BYRON SHIRE COUNCIL

## STAFF REPORTS - SUSTAINABLE ENVIRONMENT AND ECONOMY

## 4.3 - ATTACHMENT 1

No.	Action	Priority	Performance Indicator	Progress at end 2020	% achieved	2020-21 OP Action	2020 Expenditure
411	Support expert wildlife surveys at Byron and Brunswick Valley Sewerage Treatment Plants.	M	Survey program developed and implemented.	Biannual bird surveys at West Byron and Brunswick Valley STPs completed in 2020 by Byron Bird Buddies. Reporting in progress.	10%		\$5,000
412	Ensure Council is represented at Northern Rivers FABCON meetings and workshops to maintain currency regarding best fire management practice under changing climate.	O	FABCON meetings attended.	FABCON meetings cancelled in 2020 due to COVID-19. Attended SE Queensland Fire and Biodiversity Consortium Fire Science Webinars - Nov 2020.	10%		In house
413	Liaise with local conservation groups and government agencies to share information (e.g. monitoring data) and identify opportunities for biodiversity conservation partnerships.	O	Attend Regional Koala Communications Group Meetings. Attend Regional Shorebird Group Meetings. Meeting minutes reported to Biodiversity Advisory Committee.	<ul style="list-style-type: none"> <li>- Quarterly Regional Koala Communications Group meetings attended.</li> <li>- One Regional Shorebird Group meeting attended.</li> <li>- September 2020 - Council partnered in planning and delivery of Northern Rivers Koala Habitat Restoration Webinar, to engage conservation practitioners and community groups regarding current best practice for koala habitat restoration in NR region.</li> <li>- Byron Council partnering with other Northern Rivers Councils to develop a Northern Rivers Regional Koala Strategy.</li> <li>- Staff liaising with other Koala conservation practitioners in development of an online application for documenting koala habitat restoration. Currently ALA Biocollect application is being investigated.</li> <li>- September 2020 - Restorations team partnered with Mullumbimby High School Green Group to regenerate 500m of Mullumbimby Creek bank behind the school. Students trained in plant and weed identification.</li> </ul>	10%	3.2.2.2 3.2.2.4	In house

# BYRON SHIRE COUNCIL

## STAFF REPORTS - SUSTAINABLE ENVIRONMENT AND ECONOMY

## 4.3 - ATTACHMENT 1

No	Action	Priority	Performance Indicator	Progress at end 2020	% achieved	2020-21 OP Action	2020 Expenditure
414	Involve relevant aboriginal stakeholders in development of biodiversity plans and programmes so that traditional knowledge (e.g. relating to cultural burning, plant uses, plant propagation and culturally significant species) can be effectively incorporated.	O	Relevant stakeholders included in Stakeholder engagement for Biodiversity plans and projects	<ul style="list-style-type: none"> <li>- Jali Aboriginal Land Council consulted regarding implementation of Flying Fox Camp Management Plan at Paddy's Creek.</li> <li>- Arakwal Corporation consulted during development of Federal Fish Habitat Rehabilitation Program grant application for Brunswick River - Bringing Back the Bruns Stage 2.</li> <li>- Local Aboriginal stakeholders consulted during development and peer review of Biodiversity Conservation Strategy.</li> </ul>	10%	3.2.2.2	In house
415	Seek to partner with landholders, relevant Aboriginal stakeholders, universities and government fire management agencies to plan, implement and monitor an ecological and cultural burning hub at Broken Head Reserve Rd, to improve biodiversity values, provide on-ground training in ecological and cultural burning and provide data into effectiveness and best practice for biodiversity and fire management.	M	Ecological-cultural burning hub project investigated.	Draft project proposal in preparation. Council staff attended planned burn on site, October 2020.	10%	3.1.1.4	In house
417	Continue to facilitate Flying Fox Project Reference Group to advise the community and seek community input regarding flying fox management.	O	Quarterly Flying Fox Project Reference Group meetings coordinated.	Quarterly Flying Fox Project Reference Group meetings coordinated.	10%	3.1.1.9	In house
418	Implement actions in the Flying Fox Camp Management Plan 2018-2023.	H-M	Refer Flying Fox Camp Management Plan	<ul style="list-style-type: none"> <li>- Restoration works at Paddy's Creek, Bangalow complete.</li> <li>- Restoration started at Beech Camp, Suffolk Park.</li> <li>- Field day postponed due to COVID-19.</li> <li>- Beech Camp Vegetation Management Plan completed.</li> <li>- Quarterly Flying Fox Project Reference Groups convened.</li> </ul>	50%	3.1.1.9	Total expenditure \$15,576: - \$8,280 Paddy's Creek Camp, - \$7,296 Beech Camp

# BYRON SHIRE COUNCIL

## STAFF REPORTS - SUSTAINABLE ENVIRONMENT AND ECONOMY

## 4.3 - ATTACHMENT 1

No.	Action	Priority	Performance Indicator	Progress at end 2020	% achieved	2020-21 OP Action	2020 Expenditure
				- Quarterly flying fox census completed.			
419	Implement recommendations of Council's Roadside Vegetation Management Plan during road maintenance operations including: - Seek solutions to protect threatened vegetation while also achieving safety and asset protection requirements. - Seek opportunities to coordinate road maintenance activities so as to minimise seed set and weed spread. - Develop levels of service for RVMP categories.	M	Refer Integrated Pest Management Strategy	In accordance with the RVMP, Council is planning to deliver refresher training for Council rural slasher and grader drivers in 2021. A calendar of weed seeding times will also be developed in 2021.	5%	3.1.2.3	\$10,000 available in 2020-21
420	Map weeds of national significance and serious environmental weeds on Council Managed Land.	H	Refer Integrated Pest Management Strategy	Currently investigating use of Reflect application to plot and record this information.	5%	3.1.1.8	In house
421	Ensure a coordinated approach to Bitou Bush Management on the North Coast through: - Ongoing representation of BSC at the Bitou Bush Biosecurity Zone Group, - Ongoing maintenance of Bitou Bush at Council Sites.	M	Attendance at Bitou Bush Biosecurity Zone Group meetings.	Bitou Bush Biosecurity Zone Group meetings attended by Council Bush Regeneration Staff. Bitou Bush has been significantly reduced on council lands in the current containment zone (SGB to Cape Byron), although concerns remain regarding some Crown managed lands within this zone that are not receiving treatment.	50%	3.1.2.2	In house
422	Develop and implement Operational Plans for target pest species.	H	Refer Pest Animal Management Plan	- Indian Myna Operational Plan under development. - Dogs, Cats and Foxes Operational Plan completed	50%	3.1.1.1 3	Indian Mynah plan \$1,000



# BYRON SHIRE COUNCIL

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## 4.3 - ATTACHMENT 1

No	Action	Priority	Performance Indicator	Progress at end 2020	% achieved	2020-21 OP Action	2020 Expenditure
				2018.			
423	Work with North Coast LLS and private land managers to: - develop a coordinated cross-tenure approach to pest animal management, and - support management of target pest animal species on private land in high priority areas.	H	Refer Pest Animal Management Plan	- Feral Deer Management Plan developed in collaboration with other neighbouring Councils, National Parks and Wildlife and LLS. - Federal Government Drought, Pest and Weed program grant has funded additional \$28,000 for wild dog, cat and fox trapping on private land for 15 trapping weeks, in addition to Council's regular trapping program. Work in progress.	10%	3.1.1.1 3	Contract trapper: - \$28,000 Drought, Pest and Weeds Grant. - \$16,200 Council
424	Support programs researching more effective and efficient pest animal control methods.	L/M	Council staff attendance at conferences/worksh ops relating to best practice pest animal management.	Working with contract trapper to implement more effective trapping methods for feral cats, including cage traps.	10%	3.1.1.1 3	In house
425	Work with RMS, local wildlife groups and Regional Koala Communications Group to identify road strike hotspots in Byron Shire.	H	Current wildlife road strike hotspots identified..	RMS and local koala rescuers consulted regarding identification of koala road strike hotspots prior to selection of sites for Rewilding Australia koala signs trial. Report to Biodiversity Advisory Committee 11 November 2019, regarding wildlife road strike and hotspot mapping - I2019/1757.	15%	3.1.1.1 1	In house
426	Seek funding for road strike mitigation trials at priority road strike hotspots.	M	Grant funding received to trial best practice road strike mitigation measures at 3 sites within the Shire.	Currently implementing a trial of koala road signs designed by Rewilding Australia at 4 sites. Traffic speed counters have been installed to monitor speeds pre and post sign installation.	15%	3.1.1.1 1	In house

# BYRON SHIRE COUNCIL

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## 4.3 - ATTACHMENT 1

No.	Action	Priority	Performance Indicator	Progress at end 2020	% achieved	2020-21 OP Action	2020 Expenditure
427	Consider roadkill mitigation measures and opportunities to improve wildlife connectivity into design work for new roads and road asset upgrades.	O	Fauna connectivity options investigated during road upgrade design works.	June 2020 - Repentance Creek Rd Causeway upgrade: Causeway replaced with bridge to remove barrier to fish passage along Byrangery Ck, which will benefit native species including threatened Southern Purple Spotted Gudgeon.	10%		Investigations in house - grant funding would be required for implementation.
429	Continue to develop and implement 'Bringing back the Bruns' branded projects to address improvements in riparian and instream habitat, water quality, fish passage and habitat connectivity on Council and private land along the Brunswick River and its tributaries.	M	5km of riparian habitat along Brunswick River rehabilitated.	October 2020 - Council and North Coast Local Land Services awarded \$186,500 NSW Government Fish Habitat Restoration Grant for restoration of a section of the Brunswick River east of Mullumbimby, as part of the 'Bringing Back the Bruns' project. This is a 2 year project involving river bank stabilisation and revegetation. Preliminary site works due to commence December 2020.	10%	3.3.1.3	\$186,500 total project budget.

**Table 2: Actions to be progressed in future years**

No.	Action	Priority	Performance indicator	Progress at end 2020
1.2	Amend existing Council DCP chapters to reflect current NSW environmental legislation and Council's Biodiversity DCP Chapter.	VH	DCP updated to refer to 2016 Biodiversity Conservation Act and Council's Biodiversity DCP	To be progressed following adoption of Biodiversity DCP
1.4	Work with other Northern Rivers council's to investigate opportunities to reduce the risk of Biodiversity Credits being used to export biodiversity values to other regions.	M	Report to BAC	Not started. To be progressed through NRJO NRM group.
1.5	Amend Council's LEP to increase protections for core koala habitat as per CKPOM.	H	LEP includes specific reference to protection of Core Koala Habitat.	Awaiting ratification of Coastal CKPOM by Department of Planning and Environment.

## BYRON SHIRE COUNCIL

### STAFF REPORTS - SUSTAINABLE ENVIRONMENT AND ECONOMY

### 4.3 - ATTACHMENT 1

1.7	Develop a Comprehensive Koala Plan of Management for Byron Shire Hinterland, in accordance with SEPP (Koala Habitat Protection ) 2019.	H	Byron Hinterland CKPOM adopted by Council. Byron Hinterland CKPOM ratified by NSW Department of Planning.	Awaiting ratification of Coastal CKPOM by Department of Planning and Environment and finalisation of 2019 Koala SEPP Guidelines.
1.8	Support development of Byron Shire Climate Change Adaptation Plan and integration of biodiversity conservation actions into this plan, including: - Investigating the impacts of climate change on local biodiversity; - identification and protection of wildlife corridors and refugia; - identification and protection of high carbon storage ecosystems and buffers for climate change adaptation.	M	Climate Emergency Action Plan reviewed by Biodiversity Officer.	Byron Shire Council Climate Change Risk Assessment completed and development of Climate Change Adaptation Plan being progressed through Sustainability and Emissions Reduction Advisory Committee (SERAC) and Strategic Planning Workshop with councillors.
1.10	Develop a priority restoration investment map that identifies key sites on private and public land requiring either protection or restoration, to assist in directing future Council and community restoration activities.	H/M	Priority investment map available on Council GIS, and accessible to community conservation groups.	This project to be progressed following development of wildlife corridor mapping.
1.11	Conduct a review of Byron Shire's biodiversity values as a baseline for ongoing biodiversity monitoring. Include: - Updated Byron Shire flora and fauna lists, - Status of threatened flora and fauna, - Status of weed species, - Extent of native vegetation, - Extent of protected vegetation (public and private land) - Fire frequency status.	VH	Baseline species lists and vegetation maps uploaded to Council website. Baseline lists/maps reviewed in 2026.	Planned for 2021-22 FY

## BYRON SHIRE COUNCIL

### STAFF REPORTS - SUSTAINABLE ENVIRONMENT AND ECONOMY

### 4.3 - ATTACHMENT 1

1.12	Update Council's threatened species mapping to reflect local, state and federal mapping.	O	OEH threatened species data uploaded annually to Council's GIS. Mapping updated as required and reported to Biodiversity Advisory Committee	Planned for 2021-22 FY
1.13	Upload Council's threatened species records to Bionet annually.	O	Council threatened species records uploaded annually to Bionet.	Not started
1.14	Update and maintain Council's vegetation and HEV mapping with revised Plant Community Types (PCTs) and current aerial photography.	H	Council vegetation mapping updated with new PCT data.	Revised PCTs not available at time of reporting.
1.15	Map 1750 vegetation formations as a baseline for ecological restoration.	M	1750 vegetation formations mapped.	Not started
1.16	Review procedure for updating Council's vegetation mapping following on ground ecological assessments/site visits.	M	Methodology for mapping site-based ecological data reviewed and implemented.	Not started
1.19	Update vegetation mapping to clearly identify recently listed threatened ecological communities e.g. Coastal Swamp Oak ( <i>Casuarina glauca</i> ) Woodland.	H	All threatened ecological communities identified on Council vegetation mapping.	Not started. Awaiting NSW Plant Community Types mapping.F26
1.21	Monitor extent of vegetation cover in Byron Shire every 3 years.	M	Extent of vegetation cover added to State of Environment reporting	To be progressed as part of 2023 State of the Environment reporting
1.22	Update Council's Koala Potential Habitat mapping to reflect new PCTs and emerging datasets from DPIE (Koala Habitat Information Base) and UQ (North Coast Koala Linkage Project).	H	Koala Potential Habitat map layer reflects up to date NSW vegetation mapping.	Revised PCTs not available at time of reporting.
1.23	Develop a process for recording and mapping areas covered by Vegetation Management Plans on private land.	M	New and recent VMPs added to Council's GIS.	Not started
1.28	Develop and integrate a biodiversity management checklist into Council's <i>Pulse</i> project management program for all Council projects.	M		Not started

# BYRON SHIRE COUNCIL

## STAFF REPORTS - SUSTAINABLE ENVIRONMENT AND ECONOMY

## 4.3 - ATTACHMENT 1

1.29	Ensure that Council's infrastructure planning map layers are kept up to date with current ecological data sets to inform infrastructure design and planning.	O	CRA and REF layers reviewed and updated as required.	Not started
2.3	Update existing Brunswick Catchment Riparian Planting Guide and make available on-line.	M	Revised Riparian Planting Guide on Council's website.	Not started
2.5	Raise community awareness of how planned fire in open forest ecosystems can help conserve biodiversity, re-invigorate Aboriginal cultural practices, improve community bush fire safety and reduce green house gas emissions.	M	Council website updated with information on fire ecology in Byron Shire. Community workshop on fire ecology.	Not started
2.6	Implement a community awareness campaign to assist in protection and habitat identification for the Mitchell's Rainforest Snail in the Byron Bay area.	M	Community awareness campaign implemented.	Proposed for 2022-23 financial year (BAC report I2020/1068)
2.9	Facilitate opportunities for information sharing regarding weeds and weed management, for example through supporting/promoting and staff attendance at local Landcare and Rous County Council workshops and field days.	O	Refer Integrated Pest Management Strategy	Note: workshops and field days cancelled in 2020 due to COVID-19
2.13	Seek opportunities to work with tourism operators to build capacity in environmental awareness, e.g. through: - Identifying industry needs - Developing clear, simple messaging - Identifying effective means to deliver key messages.	M	Tourism industry representatives engaged to identify key needs and information gaps. Council website updated with key information resources for tourism providers. Information session for tourism providers.	not started
2.16	Partner with Council Tourism Officers to investigate opportunities for development of a volunteer tourism initiative that links environmental community groups with visitors.	L	Review of volunteer tourism options available in Byron Shire.	not started

# BYRON SHIRE COUNCIL

## STAFF REPORTS - SUSTAINABLE ENVIRONMENT AND ECONOMY

## 4.3 - ATTACHMENT 1

3.1	Work with relevant aboriginal stakeholders to identify triggers for consultation with these groups on biodiversity issues, and to integrate these into Council's day-to-day operations.	M	Aboriginal cultural heritage triggers identified and uploaded to <i>promapp</i> system.	Stakeholder workshop (one day) held with cultural representatives from Arakwal Corporation and Jali Local Aboriginal Land Council to discuss cultural history, uses and values, and management issues in the study area (CMP Scoping Study for the Southern Byron Shire Coastline). A site tour of key locations followed with cultural representatives providing the history and context of each area including visits to Tallow Creek entrance, Ti-Tree (Taylors) Lake (women only), and the exposed middens at The Pass.
3.2	Where identified through Action 3.1, consult local relevant aboriginal stakeholders regarding input of traditional knowledge into biodiversity plans, strategies and projects.	O	Ongoing consultation as required.	To be progressed through specific plans, strategies and projects as required.  Aboriginal stakeholders are being consulted with and engaged as part of the development of CMPs for the Byron Shire Coastline.
3.4	Develop a web page that connects rural landholders to biodiversity management resources for rural properties.	M	Rural landholders biodiversity web page developed.	Not started
3.13	Investigate opportunities for Council to provide incentives for landholders to conduct restoration works that will assist with long term biodiversity conservation.	H	Landholder incentive options reviewed and reported to Biodiversity Advisory Committee.	Not started
3.15	Council conservation, land management and sustainability teams work collaboratively with private land managers to establish local carbon offsets that maximise biodiversity outcomes.	M	Local carbon offsets established.	Not started  Check with Jules
4.4	Identify priority open forest ecosystems requiring restoration through the reintroduction of fire, including areas at risk of Bell Miner Associated Dieback (BMAD).	H	Priority ecological burn sites identified.	not started
4.6	Seek grant funding for baseline study of koala populations in Site Investigation Area for Koala Plans of Management that is west of the coastal Koala Plan of Management area.	H	Koala populations mapped in Site Investigation Area west of Coastal Koala Plan of Management area.	Not started - awaiting advice from DPIE regarding funding for local Councils for KPOMs under new NSW Koala Strategy.

## BYRON SHIRE COUNCIL

### STAFF REPORTS - SUSTAINABLE ENVIRONMENT AND ECONOMY

### 4.3 - ATTACHMENT 1

4.10	Partner with local universities to undertake review of Council restoration data, including site work records and pre and post restoration species lists, to guide ongoing management and resourcing.	L	Restoration monitoring review completed.	not started
4.16	Continue Council representation at NRJO Natural Resource Managers Group.	O	NRJO NRM Group meetings attended	NRJO NRM Group meetings cancelled in 2020 due to COVID-19
4.28	Audit and renew roadside threatened vegetation markers.	M	Roadside markers reviewed and renewed every 5 years.	Not yet commenced
4.30	Seek funding to develop and implement projects addressing improvements in riparian and instream habitat, water quality, fish passage and habitat connectivity on Council and private land along waterways of the Wilson River catchment.	M	Funding secured for rehabilitation of 5km of riparian habitat along Wilson's River.	not started

**Report No. 4.4      Wildlife Safe Havens - Brunswick Valley  
Landcare Initiative**

**Directorate:**                      Sustainable Environment and Economy

**Report Author:**              Sharyn French, Manager Environmental and Economic Planning

5    **File No:**                              I2021/278

**Summary:**

Brunswick Valley Landcare is launching Wildlife Safe Havens, a follow-on from the very successful smaller project installing nest boxes in fire-affected and adjacent areas in the hinterland.

10    Wildlife Safe Havens is a much bigger project which will target endangered and threatened species that require nest hollows for survival. It aims to install hundred's of nest boxes in the region over the next 2 years.

15

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**RECOMMENDATION:**

20    **That the Biodiversity Advisory Committee recommend to Council that an amount of \$1000 from account 2605.127 be allocated to the Brunswick Valley Landcare Schools Wildlife Safe Havens initiative to purchase and install 2 nest boxes at two schools including monitoring training and follow-up over two nesting seasons.**



## Report

### Wildlife Safe Havens Campaign

There is a critical shortage of nest hollows for our many native animals that need hollows for breeding, shelter, biodiversity and farm pest management. Local business, [Wildbnb](#), make and install a range of boxes. Eco friendly, sustainable hoop pine, bees- wax dipped, zero waste. Brunswick Valley Landcare will mount a campaign to raise significant funds to enable a widespread installation programme. By:

- local artists painting 10 boxes and auctioning them at a small event for BVL supporters plus other spenders\enablers\patrons to attend. (Example of painted nest box below.)
- crowdfunder
- donations via socials\ media etc
- local businesses getting behind BVL to donate or drum up support
- info stands at markets and maybe main streets\venues with permission
- seeking grants as available

### Schools initiative

BVL would like to involve an increasing number of schools in the program, commencing with two schools.

Education and monitoring is a vital component of this initiative for gauging success, refining the program, and involving community.

BVL propose to install two wildbnb nest boxes in two Shire schools and involve and train the school children in monitoring nest box usage and importance.

Council support of \$1000 is requested to launch the schools initiative. The funds would be used for purchasing and installing the boxes, monitoring training and follow-up over two nesting seasons. Personnel from BVL and wildbnb would be involved.

### Why Schools?

Biodiversity and an understanding of why and how ecosystems and plant\ animal life are all linked is crucial to species survival. The reality that many native animals require natural hollows in trees is poorly understood. It takes 50-200 years for suitable natural hollows to develop, and so many have been removed. Fires have increased the problem, and the Northern Rivers has become a refuge for many species. Nest boxes provide a temporary solution and a vital one for species survival.

BVL believes the next generation can be well equipped and has a desire to find solutions to such problems once alerted to the "why,how and what".

The school nest box programme is a simple and interesting way of doing just that.

Figure 1. Images of painted nest box





## Strategic Considerations

### Community Strategic Plan and Operational Plan

CSP Objective	L2	CSP Strategy	L3	DP Action	L4	OP Activity
Community Objective 3: We protect and enhance our natural environment	3.2	Strive to become a sustainable community	3.2.2	Support community environmental and sustainability projects	3.2.2.5	Support Brunswick Valley Landcare to deliver the Land for Wildlife Program and biodiversity enquiries

## BYRON SHIRE COUNCIL

### STAFF REPORTS - SUSTAINABLE ENVIRONMENT AND ECONOMY

4.4

Community Objective 3: We protect and enhance our natural environment	3.1	Partner to protect and enhance our biodiversity, ecosystems and ecology	3.1.2	Restore degraded areas and habitats that have or provide significant or high environmental and or community value		
Community Objective 3: We protect and enhance our natural environment	3.1	Partner to protect and enhance our biodiversity, ecosystems and ecology	3.1.1	Protect and enhance our natural environment and biodiversity		

### Finance

Savings are available to support this initiative in budget #2605.127 Brunswick Valley Landcare Land for Wildlife Program.

## Report No. 4.5 Environmental Levy Policy Review

**Directorate:** Sustainable Environment and Economy

**Report Author:** Sharyn French, Manager Environmental and Economic Planning

**File No:** I2021/287

### 5 Summary:

The Environmental Levy Implementation Policy was adopted by Council in 2015 and is now due to be reviewed.

Clause 5.1 of the Policy places responsibilities on this Committee, as follows:

- 10 5.1 *The Biodiversity and Sustainability Advisory Committee will review the allocation of funds from the Environmental Levy, namely by:*
- a) *Providing advice to Council on matters to be considered for funding from the Environmental Levy each year*
  - b) *Reviewing the projects funded by the Environmental levy on a quarterly basis, following advice provided by Council staff and report progress to Council*
  - 15 c) *Reviewing annually the draft budget for expenditure of the Environmental Levy and providing advice to Council on both the allocation and expenditure of funds consistent with the Environmental Levy Terms of Reference including prioritisation and monitoring environmental outcomes of Levy funded projects*


20 This report requests feedback from the Committee to inform the review. Staff including Finance are also contributing comments for the review. It is anticipated that a report on the review will be tabled with Council in the first half of 2021.

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### 25 RECOMMENDATION:

**That the Biodiversity Advisory Committee consider and advise on any changes to the Environmental Levy Implementation Policy.**

#### **Attachments:**

- 30 1 Policy: Environmental Levy Implementation (Adopted after close of exhibition 7/5/2015 Res No. 15-094) (Current\_Policies), E2015/31373 , page 89 [↓](#) 

## **Report**

The Environmental Levy Implementation Policy (Attachment 1) is provided to the Committee for feedback to inform the review of the Policy.

5 The Environmental Levy provides for approximately \$380,000 per year. In the 2020/21 budget the Environmental Levy is allocated per the table below.

Updates on these projects are provided on a regular basis to each Committee meeting.

10 Council staff are currently compiling the draft 2021/22 budget for Council's consideration. The Biodiversity Advisory Committee will be able to review the draft budget when on exhibition in May 2021. The proposed timeframe for the development of the 2021/22 budget is as follows:

- February to April: draft budget and operational plan prepared
- May: Public exhibition
- June: Budget and operational plan adopted by Council

### **Environmental Levy Budget**

<b>Position/Program</b>	<b>2020/21 Budget - \$</b>
Unallocated	4,000
CZMP for Byron Bay Embayment	10,000
Wild Dog, Fox and Feral control Program	28,600
Rev of Biodiversity Cons Strategy '04	700
Byron Zero Emissions Project ( renamed to Emissions Reduction Strategy)	20,100
NE Hinterland Koala Project	13,000
Wildlife Corridor Mapping	30,400
Bush Regeneration Team: 1x Bush Regenerator Team Leader (35hpw), 2x Bush	205,700



## BYRON SHIRE COUNCIL

### STAFF REPORTS - SUSTAINABLE ENVIRONMENT AND ECONOMY

4.5

Position/Program	2020/21 Budget - \$
Regenerators (30hpw), 1x Trainee Bush Regenerator (7.5hpw) Operational costs: eg. motor vehicles, tools and equipment, traffic management control	
Project Support Officer (21hpw)	46,100
Coastal Officer (7hpw)	21,800
Sustainability Officer (28hpw)	76,300
<b>TOTAL</b>	<b>456,700</b> (Note: carryovers included)

## Strategic Considerations

### Community Strategic Plan and Operational Plan

CSP Objective	L2	CSP Strategy	L3	DP Action	L4	OP Activity
<b>Community Objective 5: We have community led decision making which is open and inclusive</b>	5.2	Create a culture of trust with the community by being open, genuine and transparent	5.2.3	Provide access to publicly available corporate registers	5.2.3.2	Review, update and publish Council policies online and report on the status of Council's policy register

## Financial Considerations

5 Nil

## Consultation and Engagement

Policies are exhibited for public comment.



**BYRON SHIRE COUNCIL**

**POLICY NO. 15/003**

**ENVIRONMENTAL LEVY IMPLEMENTATION**

E2015/31373

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**Policy – Environmental Levy Implementation****INFORMATION ABOUT THIS DOCUMENT**

<b>Date Adopted by Council</b>	7 May 2015	<b>Resolution No.</b>	15-094
<b>Policy Responsibility</b>	Manager Land and Natural Environment		
<b>Review Timeframe</b>	As required		
<b>Last Review Date:</b>		<b>Next Scheduled Review Date</b>	

**Document History**

<b>Doc No.</b>	<b>Date Amended</b>	<b>Details Comments eg Resolution No.</b>
E2014/44800	26 June 2014	Draft Version after Res 14-321
E2014/61683	11 September 2014	Draft incorporating Biodiversity & Sustainability Advisory Committee recommendations (public exhibition version Res 15-94)
E2015/31373	7/5/2015	Adopted after close of exhibition 7/5/2015 as per Res 15-094 no submissions received

**Further Document Information and Relationships**

<b>Related Legislation*</b>	Coastal Protection Act 1979
<b>Related Policies</b>	Byron Biodiversity Conservation Strategy Byron Low Carbon Strategy Coastal Zone Management Plans
<b>Related Procedures/ Protocols, Statements, documents</b>	

*Note: Any reference to Legislation will be updated in the Policy as required. See website <http://www.legislation.nsw.gov.au/> for current Acts, Regulations and Environmental Planning Instruments.*



*Policy – Environmental Levy Implementation*

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***Policy – Environmental Levy Implementation***

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***Policy – Environmental Levy Implementation***

***Policy No. 15/003***

<b>POLICY TITLE</b>	<b>ENVIRONMENTAL LEVY IMPLEMENTATION POLICY</b>
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**1. OBJECTIVES**

- 1.1. To inform the allocation of revenue raised through the Environmental Levy in the Byron Shire Council local government area.
- 1.2. To outline the arrangements for allocating and managing the Environmental Levy funds

**2. BACKGROUND**

Byron Shire is well known for its diverse, natural environment including beautiful coastlines, lush rainforests, creeks, rivers and mountain ranges which form part of the remnants of the Wollumbin caldera. These environmental assets are supported by an active and aware community that values and promotes the protection and enhancement of the environment.

Following the adoption of the Byron Biodiversity Conservation Strategy in 2004 Council received approval from the NSW government to apply a special rate variation of 2% for four years to fund a Biodiversity Levy in order to implement the Byron Biodiversity Conservation Strategy. In 2008, the Biodiversity Levy was replaced with an Environmental Levy that continues to support the implementation of the Byron Biodiversity Conservation Strategy as well as Council's sustainability and coastal programs.

The Environment Levy is a key revenue source to assist in the implementation of Council endorsed environmental plans and strategies. The Levy has been essential to the successes achieved through the implementation of a range of biodiversity, coastal and sustainability programs and enabled Council to leverage significant additional funding via external grants.

**3. PRINCIPLES**

The Environmental Levy is to be used to fund activities which either:

- 3.1. Identify, maintain, protect or enhance native biodiversity, ecosystems and ecological processes.
- 3.2. Reduce Byron Shire's greenhouse gas emissions or improve the environmental sustainability and resilience of Council and the community.
- 3.3. Undertake studies and prepare plans for coastal processes, values and risks and implement those actions that address protecting or enhancing coastal biodiversity, ecosystems and ecological processes.

**4. TERMS OF REFERENCE**

The Environmental Levy will only be used to fund staff, priority actions and projects consistent with:

- 4.1. Developing and/or delivering the Byron Biodiversity Conservation Strategy
- 4.2. Developing and/or delivering the Roadside Vegetation Management Plan
- 4.3. Developing and/or delivering the Byron Shire Low Carbon Strategy



**Policy – Environmental Levy Implementation**

- 4.4. Developing Coastal Zone Management Plans (CZMP), including estuary management plans, and delivering actions that are consistent with the above Principles, and/or the objectives of the above strategies, but not the implementation of 'coastal protection works' as defined under the *Coastal Protection Act 1979*<sup>1</sup>.

**5. POLICY STATEMENT**

- 5.1. The Biodiversity and Sustainability Advisory Committee will review the allocation of funds from the Environmental Levy, namely by:
- a) Providing advice to Council on matters to be considered for funding from the Environmental Levy each year
  - b) Reviewing the projects funded by the Environmental levy on a quarterly basis, following advice provided by Council staff and report progress to Council
  - c) Reviewing annually the draft budget for expenditure of the Environmental Levy and providing advice to Council on both the allocation and expenditure of funds consistent with the Environmental Levy Terms of Reference including prioritisation and monitoring environmental outcomes of Levy funded projects
- 5.2. All funds collected including any funds raised through Environment Levy business activities is held and accounted for separately from Council's general revenue.
- 5.3. Environment Levy funds should not be available at any time for expenditure as general revenue in accordance with principles of the Environmental Levy.
- 5.4. Any unspent funds at the end of financial year are to be returned to the Environment Levy budget.
- 5.5. The Environment Levy can be used for leveraging funding through grants and partnership opportunities offered by government and other organisations.
- 5.6. Funds from the Environment Levy may be quarantined or saved annually in order to compound funds over subsequent years to raise a larger sum of funds for designated projects or matching grants.

<sup>1</sup> Under Part 1, section 4 (1) of the *Coastal Protection Act 1979*, *coastal protection works* means activities or works to reduce the impact of coastal hazards on land adjacent to tidal waters and includes seawalls, revetments, groynes and beach nourishment.

## Report No. 4.6 Leash-Up Pilot Communication Project - Update

**Directorate:** Sustainable Environment and Economy

**Report Author:** Lizabeth Caddick, Biodiversity Officer

5 **File No:** I2021/291

### Summary:

10 Managing the interactions between domestic dogs and native wildlife is becoming an increasing challenge for land managers such as local councils and state government. In 2020, Council received grant funding of \$59,890 from the DPIE NSW Koala Strategy's 'Community Action' pillar to develop a communications program aimed at reducing dog-koala interactions.

15 This report provides an update on the Leash-Up Pilot Communications project, which seeks to develop an effective communications strategy by incorporating social behaviour change theory, field observation, target audience research and testing of communications concepts prior to the campaign launch.

20 The report presents some of the results gathered to date, from two on-line surveys aimed at understanding the attitudes, expectations and values of the target audience. The report then discusses next steps in the project, which will involve deployment of a targeted community education campaign later in 2020.

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### RECOMMENDATION:

25 **That the Biodiversity Advisory Committee notes this report.**

### Attachments:

30 1 Bow Wow Dog Owner Survey\_Topline Results, E2020/78797 , page 103  

## Report

### Background

Managing the interactions between domestic dogs and native wildlife is becoming an increasing challenge for land managers such as local councils and state government.

## BYRON SHIRE COUNCIL

### STAFF REPORTS - SUSTAINABLE ENVIRONMENT AND ECONOMY

4.6

Many native Australian animals are attacked by domestic dogs each year (DPIE, 2020), and even minor dog attacks can be fatal to koalas due to internal injuries or bacterial infection of the wound ([Friends of the Koala, 2019](#)). Adult koalas have sharp teeth and claws and can be fast to defend themselves, resulting in a risk of serious injury to both people's pets and koalas.

In 2019, Council staff attended a workshop hosted by DPIE, aimed at building land managers' understanding of dog owners, the importance those owners place on their companion animals, and how dog-owner behaviour could be influenced to reduce dog attacks on wildlife. This workshop led to the development of DPIE guidelines on [Protecting Wildlife from Domestic Dogs – a Guide to Community Engagement](#) (DPIE 2020), and funding was made available in 2019 to assist local governments in the development and implementation of community engagement programs aimed at managing dog-koala interactions. This report recommended the development of research-based community engagement programs, which allow land managers to be sensitive to local needs, desires, expectations and issues.

Through an Expression of Interest process, Byron Shire Council received grant funding of \$59,890 from the DPIE NSW Koala Strategy's '*Community Action*' pillar to develop a communications program aimed at reducing dog-koala interactions by increasing the number of dog owners exercising tighter dog control, indicated by walking dogs on leash.

Among 27 biodiversity behaviours, experts rate 'on-leash dog walking in natural areas and picking up after dogs' as the second-most highly flexible and impactful biodiversity behaviour that people could change to improve species and ecosystem outcomes ([Selinske et al., 2020](#)).

Bringing about behaviour change can be difficult, and ultimately is dependent upon understanding the attitudes, expectations and values of the target audience. The Leash-Up Pilot Communications project seeks to develop an effective communications strategy by incorporating social behaviour change theory, field observation, target audience research and testing of communications concepts prior to the campaign launch. This research-focussed approach is based upon recommendations of the [DPIE 2020 Guidelines for Protecting wildlife from domestic dogs](#).

#### Results to date

The first phase of the Leash-Up project involved information-gathering via the 'Bow Wow Dog Owner Research Survey' and field observations, to gain greater understanding of the target audience, especially in relation to dog leashing. The survey received 401 initial responses with a completion rate of 70%, and 154 people expressed their interest to participate in further research and provided contact details accordingly.

For topline results of the first survey see the previously published findings in Attachment 1.

During the second phase of the project, staff have developed a Strategic Communications Plan that:

- Identifies the problem in a broad and local context, causes and core behaviours;
- Identifies the target audience, barriers and motivators to change;

- Reviews case studies of similar situations in other parts of the world;
- Uses the Theory of Planned Behaviour which is applied in relevant research literature to address similar situations when developing key aims and core messages for communication.

## **5 Next steps**

Following the Strategic Communications Plan, the current phase of the Leash-Up project development involved a second research survey to investigate how a range of preliminary communication concepts and messaging resonated with dog owners. The survey, which closed on 26 February 2021, was conducted instead of concept testing via industry-standard focus groups. In total, 79 of 153 dog owners participated in the 30-minute Stage 2 survey though not all finished the survey (completion rate of 57%). Some early findings from this survey are discussed below.

From a list of 20 statements, dog owners ranked the Top 7 reasons most likely to encourage them to leash their dogs in all public spaces not signed 'off-leash' as follows.

**Table 1: Top 7 reasons most likely to encourage dog leashing as ranked by 60 dog owners.**

<b>Rank</b>	<b>Top 7 reasons most likely to encourage dog leashing (Base: 60)</b>
1	Reduce the risk of stressful interactions for other dogs, dog owners and people
2	Keep your dog safe
3	Prevent unwanted dog interactions, aggression and bites
4	Prevent a \$330 fine
5	Keep you in control no matter your dog's obedience
6	Help to protect the shire's biodiversity
7	Help to protect koalas which are outnumbered 100 to 1 by dogs

Furthermore, from a list of 14 information points, dog owners ranked those most important to them, and those which they found most surprising, as follows in Table 2.

**Table 2: Top information points ranked as 'most important to know' by 52 dog owners.**



With 1 being the most important.

<b>Top Information Points ranked by dog owners (Base: 52)</b>	<b>Most important</b>
1. Dogs must be leashed by law in all public places that are not signed/designated as 'off-leash' areas.	1
2. Dog owners can be fined if their dog rushes at, harasses or chases another animal or person.	2
3. Science shows that dog-walking in natural habitat reduces the number of birds by 41% and the types of birds by 35%.	3
4. There is an estimated minimum of 10,000 dogs in the shire.	4
5. Byron Shire is recognised as the only biodiversity hotspot in NSW with largely surviving natural ecosystems supporting a wide variety of habitats and threatened species.	5
6. Dog owners report 4 in 10 local dogs are observed to always come when called.	6
7. Science shows that off-leash dogs cause breeding shorebirds to leave their nests for longer compared to on-leash dogs.	6

**Table 3: Top information points ranked as 'most surprising' by 52 dog owners.**

<b>Top 10 Information Points ranked by dog owners (Base: 52)</b>	<b>Most surprising</b>
1. Science shows that dog-walking in natural habitat reduces the number of birds by 41% and the types of birds by 35%.	1
2. There are 23 known and reported dog attacks to koalas on average in the Northern Rivers each year.	1
3. There is an estimated minimum of 10,000 dogs in the shire.	2

## BYRON SHIRE COUNCIL

### STAFF REPORTS - SUSTAINABLE ENVIRONMENT AND ECONOMY

4.6

4. Annually reported dog attacks in Byron Shire have tripled in recent years to 59 in FY 2020.	2
5. Byron Shire is recognised as the only biodiversity hotspot in NSW with largely surviving natural ecosystems supporting a wide variety of habitats and threatened species.	3
6. There are approximately 100 dogs to every koala in Byron's Coastal Koala Management Area. This area has an estimated population of 240 koalas and covers 25% of Byron Shire, from Billinudgel to Broken Head.	3
7. Dog owners report 4 in 10 local dogs are observed to always come when called.	4
8. Science shows that off-leash dogs cause breeding shorebirds to leave their nests for longer compared to on-leash dogs.	5

The remaining survey results are currently being analysed to guide the development of the final community education campaign content, which will include digital marketing assets, videos and signage for deployment across eight weeks, and planned for commencement in early April, 2021. The campaign will include monitoring with the support of enforcement patrols.

Impressions and engagement levels across digital media will be used as a campaign measure along with field observations and feedback. Results will be reported to DPIE in June, 2021. These pilot project findings will inform other LGA's across NSW, where vulnerable koala populations face multiple threats of habitat loss, development, vehicle strike, dog attacks and climate change, which acts as multiple stressors to individual koalas, and other wildlife.



**Image 1: Byron Coastal Koala pictured in a paperbark tree outside IGA in Byron Industrial Estate over the Australia Day weekend, 2021.** One of an estimated 240 koalas inhabiting the Byron Coastal area, the healthy looking koala was attended by Friends of the Koala and escorted away from risks associated with traffic and dogs, to a safely-located koala food tree. (Image by Kerry Hathaway, facebook).

Managing dog-owner behaviour ultimately requires a multi-pronged approach that includes compliance activities, physical separation of dogs and wildlife and effective, motivating communication to influence dog owner behaviour. While compliance and enforcement are vital tools, community engagement that taps in to local community expectations and values can contribute to achieving ubiquitous, long term behaviour change.

## Strategic Considerations

### Community Strategic Plan and Operational Plan

CSP Objective	L2	CSP Strategy	L3	DP Action	L4	OP Activity
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# BYRON SHIRE COUNCIL

## STAFF REPORTS - SUSTAINABLE ENVIRONMENT AND ECONOMY

4.6

<b>Community Objective 2: We cultivate and celebrate our diverse cultures, lifestyle and sense of community</b>	2.4	Enhance community safety and amenity while respecting our shared values	2.4.3	Enhance public safety, health and liveability through the use of council's regulatory controls and services	2.4.3.4	Undertake proactive patrols of community parks and open spaces to monitor safe use by dogs and their owners
<b>Community Objective 2: We cultivate and celebrate our diverse cultures, lifestyle and sense of community</b>	2.4	Enhance community safety and amenity while respecting our shared values	2.4.3	Enhance public safety, health and liveability through the use of council's regulatory controls and services	2.4.3.6	Facilitate companion animals education
<b>Community Objective 3: We protect and enhance our natural environment</b>	3.1	Partner to protect and enhance our biodiversity, ecosystems and ecology	3.1.1	Protect and enhance our natural environment and biodiversity	3.1.1.1	Implement the Biodiversity Conservation Strategy
<b>Community Objective 3: We protect and enhance our natural environment</b>	3.1	Partner to protect and enhance our biodiversity, ecosystems and ecology	3.1.1	Protect and enhance our natural environment and biodiversity	3.1.1.11	Implement the Koala Plan of Management

## BYRON SHIRE COUNCIL

### STAFF REPORTS - SUSTAINABLE ENVIRONMENT AND ECONOMY

4.6

<b>Community Objective 3: We protect and enhance our natural environment</b>	3.2	Strive to become a sustainable community	3.2.2	Support community environmental and sustainability projects	3.2.2.1	Provide coastal, environmental and sustainability information and encourage and support community activities and groups
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#### Biodiversity Conservation Strategy 2020-2030

**Action 2.12** Develop an education and awareness program regarding managing the impacts of domestic animals on native wildlife.

#### Recent Resolutions

5 N/A

#### Legal/Statutory/Policy Considerations

The management of domestic dogs is governed by the [Companion Animals Act 1998](#)  
The protection of threatened species is governed by the [Biodiversity Conservation Act 2016](#) and aspects of the [SEPP \(Koala habitat Protection\) 2020](#).

#### 10 Financial Considerations

This project is funded by a NSW State Government grant.

#### Consultation and Engagement

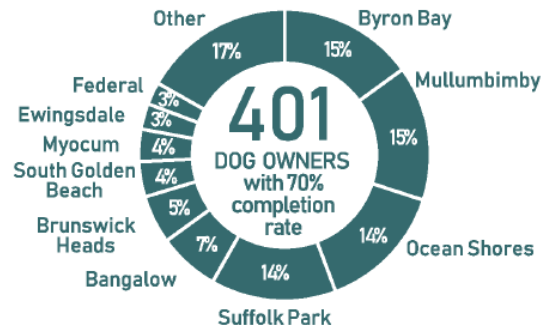
Communications, Open Spaces and Community Enforcement teams have been consulted during development and delivery of this project.



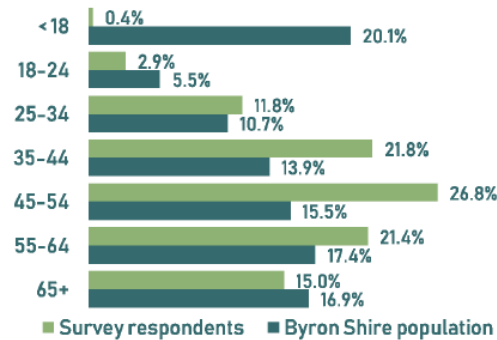
# Byron Shire Bow Wow Dog Owner Survey Topline Results

## Participants

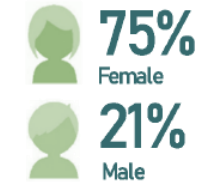
### Locality



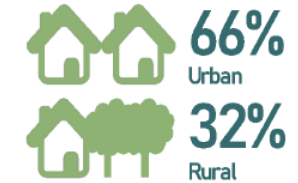
### Age Comparison



### Gender



### Home

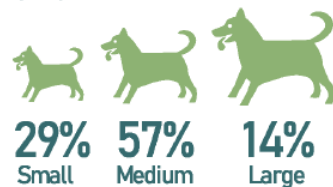


### Number of dogs owned



## Dogs

### Size



### At night



## Dog exercise

85%  
USE OFF-LEASH  
BEACHES  
AS THE TOP  
VENUE

68%  
STRONGLY  
ENJOY DOG  
MOVING  
FREE OFF-LEASH

### Top 5 benefits if leashed\*

1. Control of dog
2. Safety of my dog
3. Safety of other dogs & people
4. Safety of animals/wildlife
5. Dog stimulation & mental health

### Top 5 challenges if leashed\*

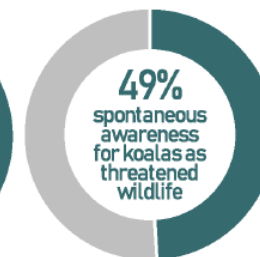
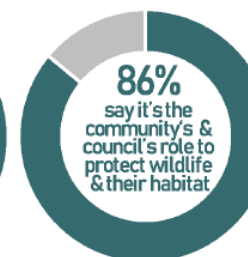
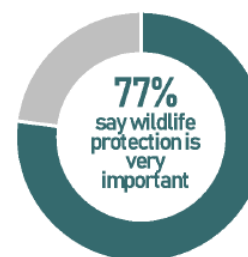
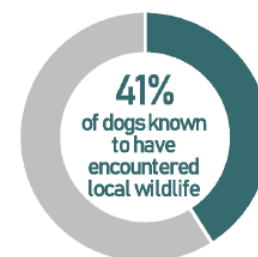
1. Dog can't exercise properly
2. Non-complying dogs & owners
3. Reduced dog play & socialisation
4. No challenges (e.g. if well trained)
5. Difficult to exercise/bad behaviour

\*When exercising in public spaces (non-off-leash)

### Response to commands



## Wildlife



Funded by NSW Department of Planning, Industry and Environment