Project Plan SP 2020-023

Felixer grooming trap trial: Feral cat control for threatened fauna conservation in the southern forests.

Animal Science

Project Core Team

Supervising Scientist	Adrian Wayne
Data Custodian	Adrian Wayne
Site Custodian	

Project status as of Nov. 12, 2020, 11:37 a.m.

Pending project plan approval

Document endorsements and approvals as of Nov. 12, 2020, 11:37 a.m.

Project Team	granted
Program Leader	required
Directorate	required
Biometrician	required
Herbarium Curator	not required
Animal Ethics Committee	required

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Biodiversity and Conservation Science Program

Animal Science

Departmental Service

Service 7: Research and Conservation Partnerships

Project Staff

Role	Person	Time allocation (FTE)
Supervising Scientist	Adrian Wayne	0.15
Technical Officer	Marika Maxwell	0.1
Technical Officer	Colin Ward	0.1
Technical Officer	Donnelly District NC Program (DBCA (P amp;W))	0.05

Related Science Projects

SP2016-068: South West Threatened Fauna Recovery Project: Southern Jarrah Forest

Proposed period of the project

July 1, 2020 – June 30, 2023

Relevance and Outcomes

Background

Feral cats are one of the most significant threats to native species in Australia with over 100 listed threatened species impacted by feral cats (Woinarski et al. 2014). Efforts to control feral cats have had mixed success with baiting practices having greater success in arid regions and much lower success rates in the southern jarrah forest (Wayne et al. in review). This appears to be largely due to the preference of cats to take live prey, which are more consistently available in higher rainfall, more productive environments.

The Felixer™ cat grooming trap is a novel method of controlling feral cats that takes advantage of their compulsive grooming behaviour. The trap consists of an auditory lure to attract cats and a series of LIDAR sensors, which when triggered are analysed using a series of algorithms to identify if the animal is a target (fox and cat), or non-target species. When a target is identified the trap shoots a sticky gel that contains 1080 poison onto the animal's fur. The fox or cat will then groom this gel from their fur and in doing so will ingest the poison and die.

Statistical and design modelling show that 4-8 Felixer™ grooming traps can remove >80% feral cats from a 15,000 ha area in 4-8 week period (Brian Chambers, unpublished data). These models are based on the best available data and analyses on feral cats in the southern jarrah forest including home ranges and movement patterns from cats fitted with GPS collars (Adrian Wayne, unpublished data), and SECR-derived cat densities, detection probabilities and spatial information (Legge et al. 2017, Wayne et al. 2013, unpublished data).

SWCC has been contracted by the Department of Agriculture Water and Environment through the National Landcare Program to undertake a study of the effectiveness of Felixer™ cat grooming traps to reduce feral cat numbers in the Upper Warren and Muir-Byenup areas in Western Australia's south west. Numerous threatened species are found in this area including the woylie, western ringtail possum, chuditch, numbat and several bittern species (*Botaurus* spp.). Many of these threatened species have had large recent declines, with predation by

feral cats having been identified as a major contributing factor (Wayne et al. 2017a & b). Felixer™ traps have previously been tested in the presence of larger macropods and brushtail possums, and have been shown to reliably identify these species as non-targets (Dunlop et al. 2017; Read et al. 2019; Ecological Horizons 2018; 2020). As a precursor to this project, recent trials completed by SWCC and DBCA with captive numbats have also confirmed their safety for this species (Chambers et al. 2020). While there is considerable data for closely related species, Felixer™ trials in the presence of chuditch and woylies are currently limited or lacking.

Felixer™ trap effectiveness

Felixer™ traps have been tested at several sites to determine their effectiveness at killing feral cats. The results of these published studies are summarised below:

Six Felixer™ traps were deployed in mostly open farmland over an area of 11.8 km^2 (1,176 ha) on Kangaroo Island for 21 days. Prior to the Felixer™ traps being deployed 14 feral cats were trapped and fitted with VHF and GPS collars to track their movements and test the effectiveness of the Felixer™ traps. Feral cat density prior to the Felixer™ trial was estimated to be 2.98 cats/km^2. Technical issues with some of the Felixer™ traps meant that the total lethal trap effort was significantly reduced, however, 13 feral cats were targeted by Felixers, eight (8) of which were collared. The estimates of feral cat density at the end of the 21-day trial was 1.69 cats/km^2, a reduction of approximately 43%. The eight (8) collared cats killed by the Felixers moved between 220 and 2700 m from the Felixer™ site. The amount of time between being targeted and the cat dying ranged from 1 hour 41 minutes to 25 hours 23 minutes (Hodgens, 2019).

In a separate trial 20 Felixer™ traps were set over a 26 km^2 (2,600 ha) fenced enclosure in arid South Australia for six weeks. Six cats were radio collared prior to the deployment of Felixers with two targeted by Felixers and later found dead. Thirty-three feral cats were targeted by the Felixers during the trial, including 22 individually recognisable cats that were targeted and then not observed again on monitoring cameras set across the enclosure. Cat density was estimated at 1.84 cats/km^2 before the trial and 0.64 cats/km^2 after, a reduction of approximately 63% (Moseby et al., 2020).

Felixer™ trap target specificity

Felixer™ traps have been used in the presence of numerous native mammal, reptile and bird species and have been shown to consistently identify these species as non-targets (Ecological Horizons, 2020, 2018; Hodgens, 2019; Moseby et al., 2020; Read et al., 2019; Table 1). Early in the development of the traps some native species were identified as targets. In the study where tammar wallabies and other species were identified as targets this was found to be the result of a rock blocking one of the sensors. Improvements have been made to the targeting algorithms with only small domestic dogs occasionally mis-identified as targets in recent studies (Dunlop et al., 2019). Felixer™ traps have also shown to consistently identify humans and vehicles as non-targets (Dunlop et al., 2019; Hodgens, 2019; Moseby et al., 2020; Read et al., 2019).

Table 1. Summary of Felixer™ grooming traps ability to identify non-target species as non-targets.

Common Name **Scientific name**	**Detected as non-target**	**Detected as target**
Mammals		
Chuditch, Western quoll *Dayurus geoffroii*	2[1]	
Northern quoll *Dasyurus hallucatus*	194[2]	
Brushtail possum *Trichosurus vulpecula*	2[2], 11[4], >100[5]	1[4]
Boodie *Betttongia lesueur*	2[1], 165[2]	
Bilby		

Macrotis lagotis
1[5]

Red kangaroo
Osphranter rufus
9[1]
1[1]
Euro
Macropus robustus
4[2]

Tammar wallaby
Notamacropus eugenii
197[3], 1[4]
21[3]
Kangaroos -species not listed

181[3], 30[4]
8[3]
Short-beaked echidna
Tachyglossus aculeatus
12[2]

Rodent – species not listed

16[1], 1[2], 4[6]

Reptiles
Perentie
Varanus giganteus
3[2]

Yellow spotted monitor
Varanus panoptes
4[2]

Goanna – species not listed
Varanus spp.
4[4], 3[6]

Lizard - species not listed

8[1]

Birds
Australian raven
Corvus coronoides
1[2], 22[4]

Common bronzewing
Phaps chalcoptera
2[2]

Quail -species not listed

2[2]

Dove – species not listed

4[2]

Magpie-lark
Grallina cyanoleuca
5[2], 16[4]

Willie wagtail
Rhipidura leucophrys
5[2]

Magpie
Gymnorhina tibicen
51[4]

Diamond dove
Geopelia cuneata
9[2]

Singing Honeyeater
Lichenostomus virescens
20[2]

Birds – species not listed

34[1], 358[6]

Introduced species
Fox
Vulpes vulpes
2[1]
1[1], 5[3]
Rabbit
Oryctolagus cuniculus
32[1],

Cow
Bos taurus
9[2]

Domestic dog
Canis lupus familiaris
17[2], 3[4]
3[2]
Human
Homo sapiens
79[2], 11[4], 30[6]

Vehicle

186[1], 164[4], 201[6]

References: [1]Ecological Horizons, 2018, [2]Dunlop, 2019, [3]Read et al. 2019, [4]Hodgens, 2019, [5]Ecological Horizons 2020, [6]Moseby et al. 2020.

Bold common name indicates species (potential targets) present in Upper Warren area.

Aims

1. Safety Assessment: Determine the safety of the Felixer™ grooming trap for use in the presence of the native fauna in the Upper Warren area, with a focus on those species not involved in other Felixer™ trials (chuditch and woylie).
2. Test: Determine whether Felixer™ grooming traps can reduce feral cat densities by at least 60% at a meso-spatial scale (>10,000 ha) in the southern jarrah forests, Western Australia.
3. Optimise: Improve the efficiency and effectiveness of Felixer™ grooming traps by refining the deployment design (i.e. adjusting spatio-temporal factors such as density, duration, mobility, and location in the landscape)
4. Sustain: Identify how to maintain a reduction in cat densities to allow for the recovery of native prey species (i.e. investigate the timing, frequency and spatial scale of Felixer™ trapping required to overcome recruitment from breeding and immigration).

Expected outcome

- Confirmation of the safety of using Felixer™ grooming traps in the presence of numbats, chuditch, woylies and other native fauna.
- Confirmation that Felixer™ traps can significantly reduce feral cat densities.
- Operational protocols for the efficient and effective use of Felixer™ grooming traps to substantially reduce cat densities in the southern jarrah forests and at the Muir-Byenup Ramsar site.
- Operational protocols for maintaining a reduced density of feral cats using Felixer™ grooming traps in the southern jarrah forests and at the Muir-Byenup Ramsar site.
- A robust measure of cat densities in the southern jarrah forests.

Knowledge transfer

- At least one research paper published in a peer-reviewed science journal
- Operational protocols for the use of Felixer™ traps in the southern jarrah forests
- Oral presentation at an appropriate Western Australian science forum, e.g. DBCA science forum, and/or relevant society conference or symposium

Tasks and Milestones

June- July 2020	Felixer™ trial (nonlethal, camera mode only) in the presence of captive numbats at the Perth Zoo.
Jan 2021	Delivery of Felixer™ grooming traps (ordered in July 2020)
Jan – Feb 21	Felixer™ trial (nonlethal, camera mode only) in the presence of native wildlife in the Upper Warren (6 weeks)
Jan– Feb 21	Pre-trial cat density estimates at treatment and control sites
Mar 21 – Jan 22	Felixer™ trial – Stage 1: Test effectiveness (Felixer™ trap deployment and monitoring of feral cats using remote sensor cameras)
Mar – Apr 2022	Data analysis and Felixer™ trap service
May 20 – Apr 23	Felixer™ trial – Stage 2 & 3: Optimise and sustain effective cat control
Apr – Jun 2023	Data analyses and article preparation and submission

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Study design

Methodology

Felixer™ Trap Safety Testing

Felixer™ traps were trialled at Perth Zoo using captive numbats to reduce the amount of time needed to attain the minimum 100 detections to determine safety for this species. Felixer™ traps were set in 'camera only' mode with an additional motion activated infrared camera (Reconyx HC600) set approximately 2-3 m away facing directly towards the front of the camera. Felixer™ traps in camera only mode will record whether the animal triggering the camera is identified as a target or non-target.

Field trials of the Felixer™ traps in safe mode are required to demonstrate that there are no or acceptably low risks to non-target species such as chuditch that are not well represented in other Felixer™ trials elsewhere. A requirement of the approval processes is for a nonlethal (camera only mode) trial of the Felixer™ traps in the field for six weeks ('Felixer Cat Grooming device – process for approvals' document, Invasive Animals Program, DBCA, 2020). These trials will be conducted in the Upper Warren where the abundance of woylie and chuditch is relatively high.

Spatially Explicit Capture-Recapture modelling

The design of trial sites, including site size, number and spacing of monitoring cameras, duration of monitoring and the spacing of Felixer™ traps were refined using the secrdesign package in project R. The following parameters were used in the simulations:

- *Detector type: proximity*
- *Detection function: Half hazard rate* - This model was found to be the best fit for the data gathered at Boyicup and Balban in the previous remote sensor camera trapping surveys (A. Wayne, unpublished data).
- *N Distribution: Binomial (fixed)*

- *(Sigma): 2000m* – Sigma value modelled from A. Wayne (unpublished data) was 1952m. GPS tracking of 4 cats in the Upper Warren area found daily movement distances of 4084-7254 m (n=3) and home ranges of 4578-11,370 ha indicating that this value is conservative.
- *(Lambda): 0.5* - Maximum likelihood estimated lambda value from Boyicup site (A. Wayne, unpublished data)
- *Cat density: 0.0006 cats/ha (0.06/km^2)* - Densities estimated from Eradicat trials using spatially explicit capture recapture.

1. **i) Remote camera monitoring design simulation results**

The relative standard error decreases with greater trap spacings and is lower at any given trap spacing with more traps, or a longer monitoring duration (*Figure 1*).

Figure 1. Relationship between camera trap spacing and relative standard error with varying numbers of traps and monitoring duration.

We aimed for a relative standard error of less than 10% and the power to detect a population size change of approximately 30% as a minimum. To achieve this the following combinations of trap numbers, spacing and durations were identified as possible options (Table 2).

Table 2. Optimal camera trap number, spacing and monitoring duration combinations

# Traps	**# Days sampling**	**Trap Spacing (m)**	**Site area hectares (based on square grid)**	**Relative Standard Error (%)**	**Minimum population size change to detect at P=0.05 (%)**	**Expected cat population size**
49	56	2000	14400	8.84	32.3	9
42	2400	20736	8.22	30.3	12	
36	56	2400	14400	9.5	33.2	9

A combination of 49 traps at 2000m spacings deployed for 56 days was chosen as the layout that would be used (i.e. a conservative approach). This gives us a site size of ~14000 ha, or 13.5km diameter circular site.

1. **ii) Felixer™ trap layout design results**

A maximum of eight Felixer™ traps are planned for use in the trial and we modelled four scenarios of deployment:

- 8 traps deployed for 28 days in a 4x2 trap grid: ~4300m spacing
- 8 traps deployed for 28 days in a 3x3 hollow grid (no central trap) : ~4000m spacing
- 8 traps deployed for 56 days in a 3x3 hollow grid (no central trap): ~4000m spacing
- 4 traps set for 56 days in a 2x2 hollow grid: ~6000m trap spacing

The results of the modelling indicate that all of these trap layouts are capable of detecting all of the individuals present at the sites based on the expected cat densities (*Table* 3). The number of potential recaptures also indicates that the Felixer™ traps should have multiple opportunities to target individual cats if they are not identified as a target when near a trap the first time. The estimated number of cats potentially killed is higher than the simple population estimate, as the number of cats potentially targeted by Felixer™ traps includes animals whose home ranges are primarily outside of the study area.

Table 3. Results of Felixer™ trap layout simulations.

# Traps	**Trap Layout**	**Trap Spacing (m)**	**# Days deployment**	**Area of trap grid***	**Est cat pop size**	**Est. cats killed (n)**	**Est. potential recaptures (r)**
8	4x2 grid	4300	28	14792	9	19	131
8	3x3 hollow grid	4000	28	14400	9	19	131
8	3x3 hollow grid	4000	56	14400	9	21	279
4	2x2 grid	6000	56	14400	9	16	134

**Area includes a buffer of 0.5*trap spacings around trap grid.*

A 3x3 hollow grid with 4000m trap spacings will be used for 56 days initially to determine whether this layout can remove at least 60% of cats (i.e. a conservative approach).

iii) Sensitivity of design to variance in cat density and movement

To estimate the impact of changing cat density on the merits of this survey design we ran scenarios with density at 50% (0.0003 cats/ha) with a corresponding 100% increase to (4000 m) and a scenario with density at 200% (0.0012 cats/ha) with a corresponding 50% decrease to (1000m). The results demonstrate that the survey and Felixer™ design is robust to variance in these parameters (Table 4). It may seem counterintuitive that more cats would be killed when the cat density is lower, but this is a result of the assumed greater movement distances which increases the number of cat homeranges that would intersect with the Felixer™ grid.

Table 4. Sensitivity of survey design to changes in density and .

Cat Density (animals/ha)	(m)		Relative Standard Error (%)	Minimum population size change to detect at P=0.05 (%)	Estimated number of cats killed by Felixer™ traps	Est. potential recaptures (r)
0.0003	4000	0.5	8.6	31.3	26	573
0.0006	2000	0.5	8.9	32.3	21	279
0.0012	1000	0.5	7.6	27.9	19	130

A scenario was also simulated with reduced to 0.1 to simulate cats showing a level of avoidance of cameras and Felixer™ traps with density of 0.0006 cats/ha and of 2000 m. This scenario yielded an estimated 11.9% RSE and 41.8% minimum population size change detectable at p=0.05. This scenario also resulted in the number of cats estimated to be killed dropping to 16 with 50 potential opportunities for Felixer™ traps to identify and target these cats. The 16 cats potentially killed in this scenario is still greater than the estimated nine cats in this area bounded by the Felixer™ grid and therefore the design appears robust to changes in this parameter.

General Trial Design

The stage 1 (effectiveness) trial will use a Before-After Control-Impact (BACI) design using a single control site and two impact sites. Feral cats will be monitored using motion activated infrared remote sensor cameras (RSCs) to determine the efficacy of the Felixer™ traps at reducing feral cat densities. The Felixer™ trapping trials will be conducted at one of the impact sites first. Once completed, the second trial at the second impact site will be conducted. The monitoring of cats at the control site by camera trapping will be conducted simultaneously before, during and after the Felixer™ trap trials at both sites (Table 5).

Table 5. Indicative field program illustrating the successive Felixer™ trap deployment trials at two sites using one common control site.

8 week Period	Impact site 1	Control site	Impact site 2	# cameras
1	Before	Active		100
2	During Felixer™ trapping	Active	Before	150
3	After	Active	During Felixer™ trapping	150
4		Active	After	100

1. **i) Trial sites**

Trial sites will be approximately circular with a diameter of about 13.5 km, giving an area of about 14,300 ha (Figures 2 - 5). At the estimated density of 0.0006 cats/ha (0.06 cats/km^2) this equates to approximately nine cats in each site. Sites are separated by a about 10 km to ensure independence between sites.

In the two impact sites, eight Felixer™ trap sites will be deployed at approximately 4000m spacings. The Felixer™ traps will be located next to and facing on to forest tracks to substantially increase the encounter rate of introduced predators (e.g. Read *et al.* 2015a; Towerton *et al.* 2016; Raiter *et al.* 2018; Wayne et al. 2013, in review, unpublished data). The tracks used for Felixer™ trapping will be closed to public access using Regulation 44 provisions (Conservation and Land Management Regulations, 2002). Felixer™ traps will be serviced every two weeks with 1080 gels replenished as required. The number of gel capsules containing 8mg of 1080 will be limited to no more than 12 per machine, in accordance with DBCA's Invasive Animal Program requirements.

All sites are within the current Western Shield baiting areas and fox baiting will continue as normal at all sites.

Figure 2. Indicative trial site layout with a northern and southern Felixer™ treatment trial site and central control site

Figure 3. Indicative Control Site (fox baiting, no Felixer™ traps)

Figure 4. Indicative northern (Tone Perup Nature Reserve) impact site with camera and Felixer™ trap site layout (fox baiting, 8 Felixer™ traps)

Figure 5. Indicative southern (Lake Muir) impact site with camera and Felixer™ trap site layout (fox baiting, 8 Felixer™ traps)

0.0.1 Camera monitoring

Within each site about 50 camera monitoring locations will be used to assess the effect of the Felixer™ traps on cat density. Cameras will be laid out at approximate 2000 m grid spacings, with all cameras placed on tracks where possible. This will substantially increase cat detection probabilities (Wayne et al. in review, unpublished data) and therefore cat detection events. This will mean more data for SECR modelling that will allow more precise estimates of cat densities, thus enabling greater sensitivity in our ability to assess the effectiveness of Felixer™ traps to reduce cat numbers. However, it will also impose a bias in density estimates, meaning that the density estimates may not be accurate. The increased risk of theft by having the remote cameras located adjacent to roads will managed (see section below).

Wherever possible cameras will be installed facing south to reduce false triggers from the sun. Cameras will be placed on permanent metal stakes, or trees, with the motion sensor approximately 30 cm from the ground aimed at ~60-70^o to the track to maximise captures. Cameras used will be a mixture of Reconyx HP2X, HC600 and PC900 cameras. Where possible a single camera type will be used across each site, the camera types will also be consistent over time at each site to avoid any impact of camera function in cat detection probability over time. Cameras will be set to high sensitivity with 10 pictures taken per trigger and no delay after each trigger. This should improve the chances of being able to distinguish individual cats for the SECR analysis.

During stage 1 of the Felixer™ trials (testing their effectiveness), cameras will be active at the impact and control sites for eight weeks prior to, during and after Felixer™ deployment trials. This will provide sufficient data to estimate cat densities immediately prior to and after the deployment trials. Data collected during the Felixer™ deployment trials will track changes in cat activity. Assumptions of 'closed populations' during and after the deployment trials are expected to be violated due to animal mortality and recruitment, respectively. The implications of this assumption violation will need to be carefully considered during analysis and inference.

Cameras will be checked every two weeks while in use to ensure that SD cards do not become full and data is lost.

0.0.2 Photo processing

It is anticipated that this project will generate in excess of two million images that will need processing. Several options exist for processing these photos:

- Machine learning imagery analysis.

Several options existing including, 'Machine Learning for Wildlife Image Classification' (MLWIC), 'ClassifyMe' and Wildlife Insights. MLWIC is an open source analysis package built in program R, it requires the software to be trained to identify the species present in the area. ClassifyMe is a windows-based application that has been developed by the NSW Department of Primary Industries and University of New England. SWCC has joined the closed beta testing of this software to evaluate its effectiveness. Wildlife Insights is a project being run by World

Wildlife Fund in collaboration with Google to analyse camera trapping data. SWCC is currently in discussions with WWF to determine if this project may be a suitable means for analysing the data collected in this project.

- Volunteer processing through Zooniverse

Zooniverse is a citizen science-based approach to identifying species from camera traps involving volunteers donating their time to classify images. Removing blank images (with no animals) from the photos would aid processing and checking of the classification is required to ensure the quality of the data produced.

0.0.3 Data Analyses

Cat densities will be estimated using Spatially Explicit Capture Recapture (SECR), which relies on the individual identification of cats at different camera trap sites to estimate capture probabilities and therefore densities without having to estimate an effective trapping area which can create significant bias in density estimates (Després-Einspenner et al., 2017; Efford and Fewster, 2013). Densities of feral cats will be calculated for each eight-week period.

To determine the efficacy of the Felixer™ traps the density of feral cats will be compared between paired sites using a BACI design to determine whether a significant reduction in cat densities has been achieved. The number of feral cats identified as targets and shot with gel will be recorded to determine the number of cats killed by the traps.

0.0.4 Adaptive Process

The aims of the Felixer™ field trials are:

1. Safety Assessment: Determine the safety of the Felixer™ grooming trap for use in the presence of the native fauna in the Upper Warren area, with a focus on those species not involved in other Felixer™ trials (chuditch and woylie).
2. Test: Determine whether Felixer™ grooming traps can reduce feral cat densities by at least 60% at a meso-spatial scale (>10,000 ha) in the southern jarrah forests, Western Australia.
3. Optimise: Improve the efciency and effectiveness of Felixer™ grooming traps by rening the deployment design (i.e. adjusting spatio-temporal factors such as density, duration, mobility, location in the landscape)
4. Sustain: Identify how to maintain a reduction in cat densities to allow for the recovery of native prey species (i.e. investigate the timing, frequency and spatial scale of Felixer™ trapping required to overcome recruitment from breeding and immigration).

The spacing and the duration of Felixer™ trap deployment at the sites will be modified based on the results obtained in the trial to date. Initially the goal of stage 2 is to establish if the planned deployment of eight Felixer™ traps for eight weeks can reduce feral cat densities by greater than 60%. If this goal is not achieved using the design described above, then other options such as moving Felixers at four weekly intervals or changing the spacing between traps will be explored. The options chosen will be informed by the camera data and the analysis of cat densities and movements between trap sites.

Should stage 2 successfully reduce cat densities by more than 60% at both impact sites, the trial will move on to stage 3 - optimising the efficiency of the Felixer™ trap deployment. Changes to the Felixer™ deployment will be informed by analysis of the camera trapping and Felixer™ data. Changes that may improve efficiency may include;

- Trap density/spacing
- Duration
- Timing (e.g. season)
- Location at the meso (e.g. adjacent to tracks, hydrographic features) and micro scale (e.g. placement in relation to other physical features that may aid in concealment or exposure to cats)
- Use of audio lures or other lures
- Felixer™ trap settings

0.0.5 No. specimens

None

Biometrician's Endorsement

required

Data management

No. specimens

0

Herbarium Curator's Endorsement

not required

Animal Ethics Committee's Endorsement

required

Data management

All recordings and digital records will be kept in accordance with the department's legislative responsibilities under the State Records Act 2000.

Data sharing agreement and research collaboration agreement (signed 23 & 24 June 2020) outline the details of data use and sharing between SWCC and DBCA.

Photo images:

- kept on dedicated external hard drive(s), with a secured off-site backup copy.
- data which records private activities and/or conversations will not knowingly be communicated or published.
- If a private activity or conversation has been captured as an image or recording, this data will be deleted. Exceptions to this would include recordings of security incidents or illegal activity.

Budget

Consolidated Funds

Source	Year 1	Year 2	Year 3
FTE Scientist	0.15	0.15	0.15
FTE Technical	0.2	0.2	0.2
FTE - District	0.05	0.05	0.05
Equipment	90,000		
Vehicle			
Travel			
Other			
Total	90,000		

External Funds

Source	Year 1	Year 2	Year 3
Salaries, Wages, Overtime	36,900	36,900	36,900
Overheads			
Equipment	36,350	2,900	650

Source	Year 1	Year 2	Year 3
Vehicle	4,250	8,500	4,250
Travel			
Other	30,904	30,612	25,172
Total	108,404	78,912	66,972