# Guide to Writing SOPs for Animal-Based Activities at the University of Auckland

**Table of Contents**

## A. Purpose

This guide provides instructions for all researchers, technicians, and staff on how to write, review, and maintain Standard Operating Procedures (SOPs) involving the use of animals at the University of Auckland.

Its purpose is to ensure all SOPs:

- Promote high-quality, repeatable scientific outcomes.
- Meet the standards of the University of Auckland Animal Ethics Committee (AEC).
- Comply with all New Zealand legal and ethical requirements.

This guide replaces the 2011 "Writing Standard Operating Procedures (SOPs)" document.

## B. Governance and Responsibilities

This section defines the roles for managing this guide and for the SOPs created using it, in alignment with the University's Policy Framework.

**For this Document**

- **Policy Owner:** Deputy Vice-Chancellor, Research and Innovation
- **Content Manager:** Animal Compliance Manager

**For Individual SOPs (e.g., Facility or Research SOPs)**

- **SOP Owner:** The person *accountable* for the procedure's compliance.
    - For a **Facility SOP** (e.g., cleaning, facility entry): This is the **Facility Manager** or their senior manager.
    - For a **Research SOP** (e.g., injection, surgery): This is the **Principal Investigator (PI)**.
- **Content Manager:** The subject matter expert *responsible* for writing, reviewing, and maintaining the SOP.
    - This may be the Owner (Facility Manager/PI) or a delegate, such as a **Senior Technician**, **Team Leader**, or **Senior Research Fellow**.

## C. The Official SOP Template

Use of the University of Auckland SOP template is mandatory for all animal-based activities.

- **Download the blank SOP template (as a .docx file) here: [Insert Link to the SOP Template File]**

This guide will walk you through how to complete each section of the template.

## D. The Legal and Ethical Framework

An SOP is a formal, binding document. All personnel performing procedures are responsible for understanding and adhering to the relevant SOP.

The following framework governs all SOPs:

- **Primary Legislation: The Animal Welfare Act 1999**. All SOPs must comply with the responsibilities outlined in **Part 6** of the Act, which governs the use of animals in Research, Testing, and Teaching (RTT).
- **The "3 Rs" (Mandatory Principles):** The Act mandates the "3 Rs," which must be the guiding principles for every procedure:
    - **Replacement:** Using non-animal alternatives wherever possible.
    - **Reduction:** Using the minimum number of animals necessary to achieve a valid scientific outcome.
    - **Refinement:** Modifying all procedures to minimise or eliminate animal pain and distress.
- **Key Guiding Document:** The National Animal Ethics Advisory Committee (NAEAC) "Good Practice Guide for the use of animals in research, testing and teaching." All procedures must align with the standards and recommendations in the most current version of this guide.
- **AEC Approval:** The University of Auckland AEC must review and approve all SOPs involving animals before they can be implemented. An SOP is a key part of an AEC application and forms a contract between the researcher and the AEC.

## E. The SOP Lifecycle

Who Writes an SOP?

SOPs should be written by the person or people "closest to the work," such as experienced technicians or researchers who perform the procedure (the "Content Manager").

- **Review is critical:** Before final approval, the SOP draft **must** be reviewed by relevant subject experts, such as a University Veterinarian, the Animal Welfare Officer (AWO), and facility managers.

When is an SOP Needed?

An SOP is required for all routine procedures that may impact an animal. This scope extends beyond direct animal manipulation and includes all activities that support animal welfare.

The NAEAC "Good Practice Guide" requires that **all SOPs used at an animal facility must be approved by the AEC.** This is because any activity within the facility, or its failure, can have a direct or indirect impact on the health, well-being, environment, or biosecurity of the animals.

SOPs fall into two main categories, both requiring AEC approval:

1. **Direct Animal Procedures:**
    - Any direct interaction with an animal.
    - *Examples:* Injections, blood sampling, anaesthesia, surgery, euthanasia, behavioural testing, transportation.

2. **Facility and Husbandry Procedures:**
    - Any procedure that manages the animal's environment, biosecurity, or general care.
    - *Examples:* Facility entry/exit, cleaning, cage changing, routine husbandry (feeding/watering), biosecurity/waste disposal, pest control, environmental monitoring.

An SOP must be written or updated whenever a new procedure is introduced or when any part of an existing procedure changes.

**The Review and Approval Cycle**

1. **Draft:** The Content Manager writes the SOP using the official template.
2. **Review:** The draft is reviewed by peers, the AWO/Veterinarian, and a relevant technical expert.
3. **Management Approval:** The SOP Owner (PI or Facility Manager) signs off on the "Management approval" line.
4. **AEC Submission and Approval:** The SOP is submitted to the AEC.
5. **Implementation and Training:** Once approved, all staff listed in the "Responsibility" section **must** be trained on the SOP. This training must be documented.
6. **Scheduled Review:** All SOPs must be reviewed at a minimum of every **three (3) years** (as noted on the template) by the SOP Owner to ensure they remain current and reflect best practices.

## F. Core Principles of Good SOP Writing

To be effective, an SOP must be clear, concise, and easy to follow.

- **Write for the User, Not the Auditor:** The primary goal is for the person doing the task to understand it perfectly, every time.
- **Use Active Voice and Command Statements:** Start each step with a strong, singular verb.
    - *Good:* "Open the valve." / "Inject 0.1 mL subcutaneously."
    - *Bad:* "The valve should be opened." (Passive) / "The operator will inject..." (Future tense).
- **Be Quantitative and Specific:** Avoid vague terms.
    - *Good:* "Maintain room temperature between 18°C and 22°C."
    - *Bad:* "Keep the room at a normal temperature."

- **Use Visuals (Strongly Recommended):** A picture is worth a thousand words. Insert:
  - **Flowcharts** for processes with "if-then" decision points.
  - **Photographs or Diagrams** to show correct animal handling, injection sites, or complex equipment setup.
  - **Tables** for drug dosages, materials lists, or monitoring schedules.
- **Clearly Define Key Terms:** Use "must," "should," and "may" consistently.
  - **MUST:** Indicates a mandatory legal, ethical, or safety requirement (e.g., "You **must** wear gloves...").
  - **SHOULD:** Indicates a recommended best practice (e.g., "You **should** label the sample...").
  - **MAY:** Indicates an optional or permissible action (e.g., "You **may** use a 5mL or 10 mL tube...").
- **Highlight Hazards:** Use consistent formatting for warnings.
  - **WARNING:** (All caps, bold) A hazard that can cause harm to **people**.
  - **Caution:** (Bold) A hazard that can cause harm to the **animal** or **equipment**.
  - *Note:* (Italics) Extra information or a helpful tip.

## G. How to Complete the SOP Template (Section-by-Section)

This section explains what to write in each numbered field of the official UoA SOP template.

**Front Page: Header and Approval Block**

- **Title:** Be specific and searchable (e.g., "Blood Collection from Rat Tail Vein" not "Rat Bleeding").
- **SOP No.:** Number assigned to the SOP by your facility or department from its own central register (e.g., AWO 13 – Subcutaneous Injection in Rodents).
- **Replaces:** If this is an update, list the SOP No. and Version No. it replaces (e.g., "SOP-101 v 2.0"). If new, write "New SOP."
- **Version No.:** Use a clear system (e.g., 1.0, 1.1, 2.0).
- **Effective Date:** The date the SOP is approved by the AEC and training is complete.
- **Signatories (Author, Reviewed by, Management approval):**
  - **Author:** The Content Manager who wrote the SOP.
  - **Reviewed by:** The AWO, Veterinarian, or technical expert who confirmed the SOP's accuracy and compliance.
  - **Management approval:** The SOP Owner (PI, Line Manager, or Facility Director) who is ultimately responsible for the procedure.
- **Animal Ethics Approval No.:** List the AEC application number that is allocated to your SOP by the RM system.

**Table of Contents**

- The Table of Contents is pre-set to include all main section headers (i.e., from **1. Purpose** to **12. Appendices**).

- Ensure you **update** the Table of Contents before finalising the SOP to capture accurate page numbers.

**1. Purpose**

State why this procedure exists in one or two sentences.

- *Example:* "To describe the standardised method for performing subcutaneous injection in mice, ensuring it is humane and repeatable."

**2. Responsibility**

Define who is qualified to perform this task. This is critical for training and compliance.

- *Example:* "This SOP applies to all researchers and technical staff listed on AEC application [AEC No.] who have completed the 'Rodent Handling Techniques' training module and have been assessed as competent by the Facility Manager/Trainer."

**3. Health and Safety**

List all hazards and control measures related to human safety. This is a good place to use a table.

*Example Table:*

| Hazard | Risk | Control Measures |
|---|---|---|
| **Sharps Injury** | Injection or scalpel cut | Use safety-engineered needles. Never re-cap. Dispose of all sharps in an approved container. |
| **Animal Bite/Scratch** | Physical injury, infection | Must be competent in animal handling. Wear gloves. Report all bites to the Facility Manager. |
| **Chemical Hazard** | Toxic if inhaled | Handle isoflurane only within a certified fume hood or using a scavenging system. |

**Note:** You can select the content of the table according to the SOP requirements.

**4. Equipment**

A bulleted list of all materials, drugs, and equipment needed. Be specific.

- *Example:*
  - 70% Ethanol
  - 1mL sterile syringes
  - Approved anaesthetic (e.g., Isoflurane)
  - Heat pad set to 37°C
  - ...etc.

**5. Procedure**

This is the step-by-step "how-to."

- Break the procedure into logical, numbered sub-sections (e.g., **5.1 Preparation**, **5.2 Method**, **5.3 Post-Procedure**).
- For the actual steps *within* a subsection, use the lettered format (a, b, c...).
- Start each step with a **command verb** (e.g., "Place," "Wipe," "Inject," "Monitor").
- Insert photos or diagrams where appropriate.
- Add a sub-section for **contingencies** (e.g., "What to do if the animal shows unexpected distress" or "What to do if the machine fails").

**6. Animal Welfare Considerations**

This is the most important section for the AEC. It details how you are applying the "3 Rs," especially Refinement.

- *Example:* "This procedure refines animal welfare by..."
    - **Analgesia:** "Animals receive [Drug Name] at [Dose] 15 minutes prior to the procedure..."
    - **Handling:** "Animals must be handled gently and habituated to the procedure..."
    - **Pain Minimisation:** "Using a small-gauge (25G) needle minimises tissue trauma..."
    - **Welfare Endpoints:** Clearly state what to look for (e.g., "Signs of distress include [list signs]").
    - **Action Plan:** "If an animal shows [sign], immediately stop the procedure and contact the AWO or a University Veterinarian at awo@auckland.ac.nz".

**7. Monitoring**

Describe the monitoring during and after the procedure. Be specific about what, when, and how long.

- *Example:*
    - **During:** "Monitor respiratory rate and animal responsiveness continuously under anaesthesia."
    - **Post-procedure:** "Check the injection site for bleeding or swelling immediately after, at 1 hour, and at 24 hours post-procedure."
    - "Link to the 'Post-Operative Monitoring Sheet' (see Appendix 1) for daily checks."

**8. Environmental Enrichment**

Describe any specific enrichment provided to the animals to encourage natural behaviours and coping mechanisms.

- **Provision:** Detail what items or social structures are provided (e.g., "Animals are group housed with nesting material and chew blocks," or "Food treats are provided upon return to the home cage").
- **Restriction:** If enrichment must be **withheld** for scientific reasons (e.g., fasting, single housing, metabolic cages), you **must** explicitly state the justification here and reference the AEC approval.

**9. References and Associated Documents**

List all documents related to this SOP.

- **Should include:**
  - Other relevant SOPs (e.g., "SOP-102: Anaesthesia for Rodents").
  - Key scientific papers that validate the technique.
  - The NAEAC "Good Practice Guide for the use of animals in research, testing and teaching."

**10. Definitions**

Define all acronyms and technical terms to ensure clarity for all readers. List in alphabetical order.

*Example:*

| | |
|---|---|
| AEC | Animal Ethics Committee |
| AWO | Animal Welfare Officer |
| NAEAC | National Animal Ethics Advisory Committee |
| PI | Principal Investigator |
| SC | Subcutaneous |
| SOP | Standard Operating Procedure |
| UoA | University of Auckland |

**11. Revision Summary**

This provides a clear audit trail of changes.

- When a new version is created, add a row explaining *what* was changed.

*Example Table:*

| Version | Effective | Reviewer(s) / Editor(s) | Details of updates |
|---|---|---|---|
| 01 | 15 Nov 2022 | S. Lee<br>T. Anvar | New SOP |
| 02 | 15 Nov 2025 | J. Doe | Updated analgesic in Sec 6 per new Vet recommendation. |

## 12. Appendices

Attach any supplementary materials that are too large to include in the main body.

- *Example:*
  - Appendix 1: Post-Procedure Monitoring Sheet (template)
  - Appendix 2: Detailed Drug Dilution and Dosage Table
  - Appendix 3: Diagram of Anatomical Landmarks