

CATTLE

STANDARD OPERATING PROCEDURE

Approved 15 November 2023

Approval to conduct activities under this Standard Operating Procedure (SOP) is conditional upon curriculum justification for this use of animals being documented by the activity leader and reviewed by the principal.

Schools may undertake the approved activities outlined in this SOP once authorised to do so by the Queensland Schools Animal Ethics Committee (QSAEC) Animal Ethics Officer.

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SECTION 1 | OBLIGATIONS

1.1. LEGAL OBLIGATIONS

Schools have legal obligations under the [Animal Care and Protection Act 2001 \(Qld\)](#), the [Animal Care and Protection Regulation 2023 \(Qld\)](#), and the [Australian code for the care and use of animals for scientific purposes, 8th edition 2013 \(updated 2021\)](#) (Cwlth) (the Code), including:

- 1) ensuring persons in charge of an animal fulfil their duty of care to that animal
- 2) obtaining animal ethics approval prior to conducting scientific activities involving animals and acting in accordance with that approval once granted
- 3) reporting on the use of animals for scientific purposes.

Non-compliance with this legislation may result in schools receiving a maximum fine of 2000 penalty units. (Penalty unit value is notified in the [Penalties and Sentences Regulation 2015 \(Qld\)](#)).

All Queenslanders have a 'general biosecurity obligation' under the [Biosecurity Act 2014 \(Qld\)](#). Schools are responsible for [managing biosecurity risks](#) that are under their control and that they know about, or should reasonably be expected to know about. Contact Biosecurity Queensland on 13 25 23 for advice on managing specific risks or to report [notifiable incidents](#).

1.2. DUTY OF CARE FOR ANIMALS

If you are in charge of an animal, you have a duty of care to that animal - no matter why you are in charge of it, what you are using it for or how long it will be in your care. All decisions and actions involving the care and use of animals for scientific purposes must be underpinned by respect for animals. This respect is demonstrated by:

- using animals only when justified
- supporting the wellbeing of the animals involved
- avoiding or minimising harm, including pain and distress, to those animals
- applying high standards of scientific integrity
- applying the principles of [Replacement, Reduction and Refinement](#) (the 3Rs) at all stages of animal care and use through:
 - **replacement** of animals with other methods (alternatives)
 - **reduction** in numbers of animals used
 - **refinement** of techniques used, in order to minimise adverse impacts on animals
- knowing and accepting one's responsibilities.

1.3. CURRICULUM JUSTIFICATION FOR THE USE OF ANIMALS IN EDUCATION

It is the teacher's responsibility to provide a curriculum justification for any learning activity that involves the use of animals, including activities approved under a SOP. The use of animals must provide an added component to the learning that is neither trivial nor available in other ways, and there must be evidence to support this position. **Planning documents must clearly identify how the use of animals is essential to achieving the learning objectives.** The justification should consider whether [non-animal animal alternatives](#) achieve the same learning objectives, the minimum number of animals necessary to achieve the objectives, the impact on the animal/s involved and whether the potential effects on the wellbeing of the animals are justified by the potential benefits of their use.

The QSAEC, when undertaking a site visit at the school, may request to see documentation detailing the curriculum justification for the use of animals.

If there are viable alternatives to animal use that meet the learning objectives, they should be used in preference to using animals. At all times the impact on the animal/s should be considered and, where appropriate, discussed with the students in an age-appropriate way.

Activities outside the scope of this SOP **must be considered by QSAEC before approval can be granted.** To seek approval to conduct activities additional to those approved under this SOP or to modify an activity approved in this SOP, submit a [Modification, SOP variation or amendment form](#) in conjunction with the Activity notification form at the last page of this SOP.

Please note: The QSAEC will **not** approve any activities classified as Category 4 in the [Categories of animal use](#).

1.4. ANIMAL HEALTH AND WELFARE

[Responsibilities of school personnel under the Code](#) details obligations of staff under animal welfare legislation to promote the responsible care and use of animals for scientific purposes.

An **unexpected adverse event** is any event that may have a negative impact on the wellbeing of an animal and was not foreshadowed in the approved proposal, SOP or subsequent documents to QSAEC.

An unexpected adverse event may result from different causes, and includes but is not limited to:

- death of an animal, or group of animals, that was not expected (e.g. during surgery or anaesthesia, or after a procedure or treatment)
- adverse effects following a procedure or treatment that were not expected
- adverse effects in a larger number of animals than predicted during the planning of the project or activity, based on the number of animals actually used, not the number approved for the study
- a greater level of pain or distress than was predicted during the planning of the project or activity
- power failures, inclement weather, emergency situations or other factors external to the project or activity that have a negative impact on the welfare of the animals.

In the event of an unexpected adverse event or emergency, prompt action must be taken to address any adverse impacts on the animal/s. Alleviating unanticipated pain and distress must take precedence over an individual animal reaching the planned endpoint of the project, or the continuation or completion of the project. Emergency treatment may be required and, if necessary, animals must be humanely killed without delay.

In response to an unexpected adverse event, action and investigation by the activity leader or facility manager is required to ensure students, staff or other animals are not inadvertently affected. The specific response will depend on the animal and the circumstances. It may require seeking advice from a veterinarian to determine the best course of action (e.g. necropsy of the dead animal by the vet), removal of the deceased animal (e.g. by the supplier), or diagnostic investigations of facility or management practices to determine cause of death (e.g. water testing of fish tank, checking of ventilation).

All adverse events provide opportunities for students to learn from the experience. Activity leaders should optimise student learning outcomes (incidental and planned) by focussing on the learning potential of a specific event (e.g. prevention, animal welfare, diagnostic tools, treatment, security, harm minimisation).

Notify the QSEAC within 7 days of the event, using an [Unexpected adverse event report](#).

Please note: Necropsy of a dead animal is not an approved activity under this SOP due to potential health and biosecurity risks, and must only be performed by a competent person. QSAEC recommends that if a necropsy is required it is performed by a vet.

Further advice about reporting unexpected adverse events is available on the [Department of Primary Industries \(DPI\) website](#).

1.5. STUDENT AND STAFF HEALTH

Those involved in the care and use of animals should make themselves aware of the potential disease hazards and other associated occupational health and safety issues, and manage risks according to the school's risk management process. Apart from injuries which may occur due to handling animals, there are a variety of infectious diseases (zoonoses) that are transmissible from various animals to humans.

Zoonotic diseases are common and the illnesses they cause can be serious. They can be spread by direct contact with animals, for example via bites or scratches, or through contact with animal faeces, bodily fluids, airborne particles, birth products, or enclosures contaminated with these materials.

Staff should familiarise themselves with the zoonoses the animals in their care may potentially transmit, the routes of transmission and what activities may potentially expose staff or students to infection. This research will inform the risk assessment to determine how to manage these risks or determine whether the activity should be conducted at all.

For comprehensive advice regarding zoonotic diseases and precautionary measures to minimise risks to staff and students, refer to [Animal observation and handling](#), [Animal contact guidelines - reducing the risk to human health 2014 \(Interim\)](#) and [Preventing zoonoses](#).

[Risk management](#) of animal activities ensures the health, safety and well-being of students, staff and others involved. If a specific [Curriculum Activity Risk Assessment activity guideline](#) exists, that guideline must be adhered to at a minimum. Risks associated with zoonotic diseases carried by cattle must be identified and measures planned to allow activities to be conducted with an acceptable level of residual risk.

Any incident or injury that occurs in association with an activity must be reported, recorded and notified in accordance with [Health, safety and wellbeing incident management procedure](#).

1.6. RECORDKEEPING

Schools must keep a [school-based animal activity register](#) which includes records relating to their use of animals for scientific purposes for seven years for audit purposes. This includes:

- scientific user registration (for non-state schools)
- signed applications, activity notification forms and modifications
- approval responses from QSAEC
- signed QSAEC reports (e.g. annual completion reporting, unexpected adverse events, complaints).

Clear and accurate records relevant to the particular species used in the activity/s should be readily available, including, as relevant:

- animal identification records (e.g. species, animal identification number or name, number of animals in each enclosure/paddock including location of animals)
- dates and sources of acquisition (include relevant agreements such as for agistment or the use of privately-owned animals)
- feeding/watering logs (times/amount)
- supervision/monitoring logs of animal health and wellbeing
- maintenance/monitoring logs for each enclosure
- dates and types of husbandry practices carried out
- breeding records
- vaccination/treatment records (include chemical/medication administration details and any veterinary treatment provided)
- fate plan and disposal details and dates (including transport requirements)
- emergency contacts and procedures.

SECTION 2 | QUALIFICATIONS, SKILLS AND EXPERIENCE

Any teacher conducting scientific animal activity must have competency in the particular procedure and:

- a relevant science or science education qualification (e.g. Agricultural Science, Biological Science) or
- relevant science or science education experience as deemed appropriate by the school principal (generally 2 years' experience).

For new or inexperienced teachers (less than two years' experience), all activities must be conducted under the supervision of a Science or Agricultural Science Head of Department (HOD) or suitably experienced person.

Where direct supervision of a suitably experienced person is not available, a new or inexperienced teacher must:

- identify a mentor, maybe a Science or Agriculture HOD from a neighbouring school
- provide planning documents to the mentor.

Persons deemed to be suitably qualified must have:

- conducted risk assessments on the procedure/s to be carried out
- found the procedure/s to be safe and humane considering animal and student welfare
- considered the maturity and suitability of the student/s involved in the activity.

Teachers should ensure that animal users, including students, staff and volunteers are provided with adequate prior instruction in specific activities to enable appropriate care of an animal and to minimise risk of undue stress or harm to an animal.

SECTION 3 | STANDARDS OF PRACTICE

3.1. PHYSICAL ATTRIBUTES OF CATTLE

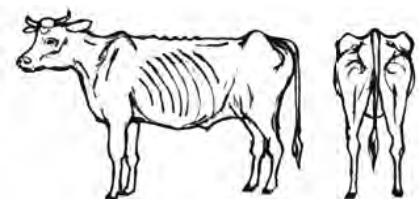
Size	Varies greatly between breeds. Mature heights up to 1.5 metres at the shoulder, or taller for some large breeds.
Weight	Varies greatly with breed and stage of growth, may vary from 400-1000 kg
Age at adult size	Varies between breeds, between 2 and 4 years
Weight at birth	Small breeds 15-20 kg. Large breeds 35-40+ kg. These are only average weights and final birth weight is dependent upon the age of the cow, the nutrition of the cow (particularly in early pregnancy), the breed, the specific genetics of the parents (i.e. some bulls 'throw' low birth weight calves and are actively selected to reduce problems at calving) and whether it is a single or multiple birth.
Gestation period	Average 282 days, range 275-290 days
Weaning	6-8 months
Healthy characteristics	Body Temperature: 38.6°C, range 37.0°C-39.3°C Respiration rate: 20-40 breaths/minute Heart rate: 40-100 beats/minute Other: moist muzzle, active, and alert, glossy coat, clear bright eyes.
Senses	Hearing: Cattle have very sensitive hearing. Noise (especially high-pitched noise) needs to be kept to a minimum. To move cattle, a low, calm voice should be used. Food may be used as a reward when training cattle to come to a bell or horn. Vision: Cattle have wide peripheral vision (300 degrees), poor depth perception, can differentiate colour and changes in light, and are frightened by distractions. Facilities should be painted in one colour, and shadows should be removed from working areas where possible.

BODY CONDITION SCORE FOR CATTLE

Condition scoring provides a simple and reliable estimate of the body fat reserves of cattle that is independent of size, and is a more reliable description of condition than live-weight alone. Ideally, beef cattle should score 3.5 – 4. Dairy cattle, due to the nutritional demands of lactation, are expected to have a slightly lower body condition score than beef cattle.

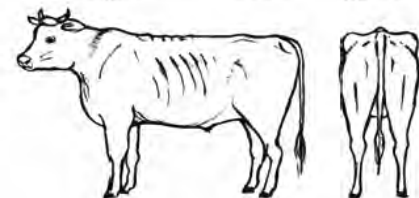
Condition score 1

Backbone prominent, hips and shoulder bones prominent, ribs clearly visible, tail-head area recessed, skeletal body outline



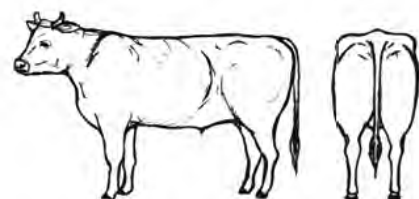
Condition score 2

Backbone visible, hips and shoulder bones visible, ribs visible faintly, tail-head area slightly recessed, body outline bony



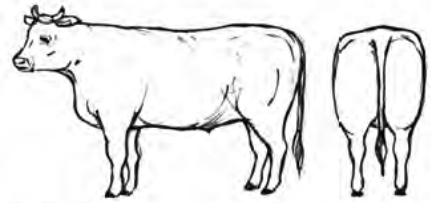
Condition score 3

Hip bones visible faintly, ribs generally not visible, tail-head area not recessed, body outline almost smooth

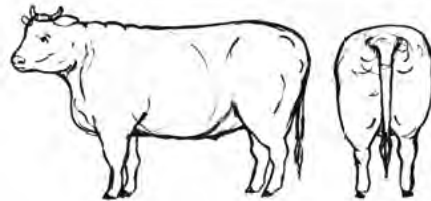


Condition score 4

Hip bones not visible, ribs well covered, tail-head area slightly lumpy, body outline rounded

**Condition score 5**

Hip bones showing fat deposit, ribs very well covered, tail-head area very lumpy, body outline bulging due to fat



3.2. NATURAL BEHAVIOURS OF CATTLE (MENTAL ATTRIBUTES)

Behaviours and memory	<p>When they are with other animals, cattle are less stressed. They will establish a social hierarchy/pecking order of dominance and will take movement cues from a lead animal. Cattle respond to the reactions of other cattle, for example, if placed with stressed cattle, they will also display stress. Some breeds (e.g. Brahman and Brahman cross) are more excitable than other breeds, are very inquisitive and respond well to gentle handling.</p> <p>Previous experience of being handled will affect the reaction of cattle to future handling. Cattle will recognise a familiar voice. Calm handling will produce a less stressed animal.</p> <p>Cattle have distinct personalities with individual differences in sociability, and exploratory behaviour. Cattle demonstrate both positive and negative reactions to stimuli.</p>
Flight zone	<p>Cattle have an instinctive flight zone. Very tame animals will have no distance between themselves and a human. Feedlot animals' flight zone may be around 1.5m, and unhandled animals may have a flight zone as large as 30m. To move cattle, good handling will work on the edge of their flight zone.</p>

3.3. SIGNS OF ILLNESS / PAIN

Stock health should be monitored daily. The first sign of ill health or pain may be a change in the animal's natural demeanour. It may be listless and lethargic.

Any of the following symptoms may be an indication of illness or pain:

- failure to thrive or grow
- variation in body temperature
- facial indicators such as ears straight back or lower than topline, tense face, changes in colour to eyes, inside of lips and gums
- head pressing
- acting dull/depressed with head low, withdrawal from interaction/isolation, less focus on surroundings/environment
- gastrointestinal function such as diarrhoea, weight loss or loss of appetite
- urogenital function, e.g. abortion, infertility or abnormal discharges
- respiratory function such as persistent coughing, gasping or panting
- tooth grinding.

Further examination may show evidence of:

- skin conditions, such as lesions or abnormal growths
- a tucked-up appearance, stiff gait, abnormal posture, patchy coat, kicking towards the belly, arched back or loss of hair
- excessive scratching or rubbing
- swollen joints or lameness
- unusual vocalisation.

Common ailments may include mastitis, bloat, internal parasites or milk fever.

If the cause of ill-health cannot be identified and corrected, assistance should be sought from a veterinarian who is familiar with cattle. Any signs of illness or injury, and treatments given, should be documented in the appropriate records.

3.4. ENVIRONMENT

Cattle may be kept in extensive situations in a paddock or more intensive situations, such as feedlots. Cattle perform well in an open pasture that has plenty of available water as well as shelter from wind, rain and sun. The minimum space required in extensive situations is determined by the pasture levels available. Meat and Livestock Australia has a [stocking rate calculator](#) to help assist with best pasture utilisation.

For cattle kept in intensive situations, care must be taken with the following:

MOVEMENT AND EXERCISE Cattle should be exercised daily if they are to be kept inside or in stalls for any length of time.

TEMPERATURE Heat stress can be a concern. In stalls, provide adequate ventilation, and in feedlots provide access to shade, such as trees or shelter.

LIGHT If cattle are kept indoors, the area should be well lit.

VENTILATION In stalls, allow free air movement without creating draughts.

BEDDING Suitable materials for stalls include straw, sand or sawdust. Suitable drainage needs to be provided.

CLEANING Clean the stalls daily.

Feedlots that produce meat for export must be accredited under the [National Feedlot Accreditation Scheme](#). Feedlot operations must comply with certain specified conditions.

3.5. FOOD AND WATER REQUIREMENTS

Cattle are most efficient, in terms of digestion, with good quality pasture. Fresh, clean water that is readily accessible is also needed for efficient growth. Care must be taken when cattle are put on pastures with high legume content as bloat can occur.

When hand-feeding, introduce new food types slowly and carefully. Do not feed excessive quantities of grains, feed plenty of high-quality roughage and feed small amounts of grain at frequent intervals during the transition.

Adequate trough space must be provided so all animals have equal access to food, to prevent crowding and eliminate unintentional over and under feeding.

Monitoring of live weight or condition scoring will indicate the adequacy or otherwise of the feed conditions.

TYPE Young calves: suckled on cow or use a milk replacement.

Older cattle: grazing is the most economical.

Supplementary feeding with hay and concentrate mixes may be necessary. If the cattle are solely grazed, a local veterinarian, DPI Agriculture officer or animal nutritionist should be consulted to determine if there is a need for specific supplementation. If feeding animals a high concentrate diet, this needs to be done over a transitional period, slowly increasing the concentrate proportion of the mix. The transition time takes at minimum 10 days and may take up to 21 days.

QUANTITY Food quantities when hand feeding vary with the animal's weight, stages of growth and stages of production. As a guide, an average 450 kg non-lactating cow requires 11.5 kg of dry matter feed (a balanced combination of grain and forages) each day.

REGULARITY For hand feeding, provide food twice daily for young calves and daily for other cattle.

ESSENTIAL DIETARY NEEDS (VARIATIONS) Newborn calves must get colostrum in the first 24 hours.

WATER A clean, fresh, reliable supply is necessary. As a guide, a small cow will require up to 60 litres per day and more if she is lactating. Water intake needs will also increase with the ambient temperature. For cattle kept in intensive systems, feed bins should be off the ground and automatic waterers, which supply clean, fresh water at all times, should be installed and checked daily.

There should be adequate waterers for the number of cattle housed. In a feedlot situation, dominant cattle will congregate between the food and water and may stop subordinate cattle from feeding and drinking if not enough space is made available.

3.6. BREEDING MANAGEMENT

In accordance with s.4.6 of the [Code](#), animal breeding that does not achieve an educational outcome in science and fails to provide for the lifetime welfare of animals (and their offspring) cannot be demonstrated to, or carried out by, students.

3.7. SUPERVISION AND MONITORING

Cattle must be inspected at least once a day to assess health and wellbeing. Water, paddocks, fencing and other environmental needs of cattle should also be inspected daily.

Feeding, watering and cleaning logs/schedules must be easily accessible, preferably displayed, for ease of monitoring.

Diligence in observation does not alter on weekends and holidays. Staff members need to be rostered to maintain observation schedule as per weekdays.

Daily/weekly monitoring logs must be maintained and should include monitoring of water quality, automated feeders, structures, back-up power, security, as well as animal health and behaviour.

Ongoing risk management of potential hazards (e.g. areas of entrapment, breaches of fencing, zoonotic diseases) should be rigorously applied.

Staff should ensure that appropriate records are maintained.

3.8. HANDLING

References: [Australian Animal Welfare Standards and Guidelines for Cattle](#); [Code of practice about cattle](#) (Schedule 4 of the Animal Care and Protection Regulation 2023); [Code of practice for transport of livestock](#) (Schedule 5 of the Animal Care and Protection Regulation 2023) (Transport code).

Cattle need to be handled calmly and with care to prevent distress and injury to the animals and the handlers. A set of solid yards, preferably including a race and crush or headbail, is necessary for the adequate handling of cattle. Design of loading facilities and holding pens should take into consideration layout, size, flooring, lighting and potential distractions. Well-designed facilities will help reduce bruises, stress and mortality. When designed well, round crowd pens and curved single file chutes work better than straight ones.

Non-slip surfaces can be achieved through re-grooving existing concrete flooring, printing on wet concrete with metal mesh, or installing metal grating or tyre tread flooring.

Cattle should be handled using low stress handling skills. The use of cattle prods should be discouraged. Cattle that are kept in schools should not require this handling technique. If, in exceptional circumstances, a cattle prod is needed, only the teacher should use it.

3.9. MOVEMENT

Schools that own or keep one or more cattle are required to register as a [biosecurity entity](#) with Biosecurity Queensland and will be allocated a property identification code for the property where the animal(s) are kept. Please refer to [DPI's On-farm biosecurity](#) for further information on biosecurity obligations.

There are a number of restrictions relating to the movement of cattle within Queensland and into Queensland from other states and territories. For further information about waybills and livestock identification, please refer to [Moving cattle, bison and buffalo](#) on the Queensland Government website.

3.10. TRANSPORT

The [Regulation](#) includes a compulsory code of practice for the transport of livestock at Schedule 5 (the Transport Code).

All persons involved in the transport of livestock must ensure that they are aware of and comply with their obligations under this code.

The key features of the transport code are detailed on the [Department of Primary Industries website](#).

The transport code applies to the transport process from animal assembly prior to loading to unloading at the final destination. It applies to commercial and non-commercial livestock.

General requirements for transporting all livestock are mandated in the transport code and include fitness for transport, advice of estimated time of arrival, impact of extreme weather conditions, suitability of handling facilities and vehicles, ramp alignment, livestock handling, loading density, inspection duties and record-keeping, use of prodders and dogs, and arrangements for distressed stock including killing.

Additionally, specific requirements for transporting certain animals are mandated. These include maximum journey time, spell duration and time off food and water. Specific requirements for cattle include, but are not limited to, the following:

- If cattle are known to be, or visually assessed to be, within four weeks of parturition and the estimated journey time or time off water is likely to be more than four hours, they are considered unfit to undertake a journey.
- Prodders must not be used with bobby calves. There are restrictions on the use of unmuzzled dogs with bobby calves.
- Guidelines for [feeding travelling cattle](#) and strategies for [loading cattle being transported by road](#) are available on the Queensland Government website.

Maximum journey times, maximum time off water and minimum spell durations are specified in the transport code. These times differ for buffalo and the transport code should be referred to for further information.

Class of cattle	Maximum hours journey time	Maximum hours off water	Minimum hours spell duration
Bobby calves Under five days old Between five and 30 days old	6 12	<i>See notes below</i>	
Cattle known or visually assessed to be between 24 and 37 weeks pregnant (inclusive); Lactating cattle travelling with dependent young; Cattle more than 30 days old but less than 6 months old	24	24	12
Cattle known or visually assessed to be more than 37 weeks pregnant	4	4	24
Any other cattle	48	48	36

Bobby calves must be:

- fed within six hours of loading
- protected from heat and cold stress
- given sufficient space to lie down during transport
- provided with bedding during transport if less than five days old
- handled without use of electric prodders.

3.11. DISEASE PREVENTION

Disease control methods and internal and external parasite control programs should be developed in consultation with veterinarians or the DPI Agriculture officer. All activities should be documented using the appropriate records.

It is important to maintain a program of vaccination and control of all internal and external parasites for all cattle. Seek veterinarian advice for effective vaccinations to suit your local area. When treating for internal

and external parasites, all animals should be treated at the same time and pastures should be rotated in conjunction with the drench program. These programs need to be documented in the appropriate records.

When using vaccines, drenches or any other animal-care chemicals, take care to:

- read all labels
- store chemicals in original containers
- ensure chemicals are not out of date
- maintain appropriate storage
- adhere to withholding periods
- determine the weight of animals
- determine the correct dose rate
- use protective clothing if required.

Q FEVER

Q fever is a highly infectious bacterial infection which may be acquired from cattle.

Animals cannot be vaccinated against Q fever. Infected animals show no signs of illness but shed the bacteria into their environment through urine, faeces, milk and birth tissues and fluids. Pregnant and birthing animals present a high risk as birth tissues and fluids can have particularly high concentrations of Q fever bacteria.

Q fever is mainly spread by inhalation of bacteria particles from infected animal body fluids, either directly or attached to dust particles. Contaminated dust becomes airborne through dusty stockyards and prevailing winds, animal movement, dry sweeping, handling wool, hides, straw/hay and manure etc. Q fever bacteria can also become airborne directly during animal birthing, handling birth products, high pressure hosing, slaughtering animals and dressing carcasses. Less commonly, Q fever can be spread through drinking unpasteurised milk.

Humans can gain immunity to Q fever through previous exposure or vaccination. Vaccination is licenced for those aged 15 years or older.

Q fever can be a very serious disease and prevention is a priority. Higher risk activities that should be avoided by non-immune staff and students include those that expose staff and students to dust and aerosols, e.g.

- observing or assisting with animal birthing
- handling birth products
- slaughtering animals and dressing the carcass
- generating dust and aerosols when cleaning up birth products and animal excreta (e.g. dry sweeping, using a high-pressure hose)
- visiting at-risk workplaces (e.g. abattoirs, tanneries).

Refer to the [Q fever - in the school environment](#) fact sheet for comprehensive advice and precautionary measures to take when conducting the Approved Activities described below.

3.12. ANIMAL EMERGENCY ARRANGEMENTS

The school must have an emergency management plan to deal with events in and out of school hours. Details of the plan will vary according to the needs of each school and must include:

- signage that includes emergency contacts, animal identification details
- monitoring of animals, including on weekends and school holidays
- a first aid kit for animals
- at least one local veterinarian on call
- strategies to withdraw individual animals (e.g. due to illness or death) or all stock (e.g. due to equipment issues, leaks, natural disasters, vandalism)
- strategies for animals to be easily identified and returned to schools (e.g. due to escape, theft, or displacement in natural disasters)
- arrangements for power outages (e.g. checking on backup power, battery level checking)
- a list of who is competent to euthanase animals if necessary

- a schedule of persons authorised to respond to emergencies and engage veterinary assistance.

3.13. HUMANE KILLING AND EUTHANASIA

Where an animal has become so sick, diseased or injured that recovery is unlikely or undesirable on humane grounds, euthanasia must be arranged with a local veterinarian or a person competent in the technique for cattle.

Humane killing of animals due to overbreeding or termination of an activity is not approved under this SOP.

Notify the QSAEC of deaths and other unexpected adverse events within 7 days of the incident's occurrence, using the [Unexpected adverse event report](#). The signed hardcopy should be held in the school's animal activity register.

3.14. DISPOSAL – FATE PLANNING

Forward planning (e.g. how and when to retire an animal from the program) will support animal welfare and wellbeing and ensure that animals used are fit to fulfil the needs of the program. Considerations should include age and health.

Cattle can be sold privately or at auction, consigned to a registered processor/abattoir, or returned to normal husbandry conditions at the end of scientific use. Carcasses must be disposed of in accordance with local council regulations. If animals are rehomed with a student, Section 3.4.1 of the Code requires a written commitment from a parent or guardian for the provision of adequate, ongoing and responsible care of the animal.

Cattle that are returned to normal husbandry conditions at the end of scientific use can remain on school property and continue to be cared for by the school in accordance with current best practice. Stocking rates, facilities and assets need to be managed accordingly to ensure the animal's wellbeing is maintained.

SECTION 4 | APPROVED ACTIVITIES

All activities must be conducted in line with industry and veterinary standards. Chemicals and drugs used must be judged to be required by a qualified instructor, must be registered products, and must be used in accordance with Safety Data Sheet information and manufacturer's instructions.

Note: Instructor:student and student:animal ratios cannot always be specified with accuracy given the wide variety of class sizes, student ages and settings in which activities are being conducted. While ratios stated in this document are suggested minimum requirements, careful consideration must be given to determine ratios that are most effective in supporting and safeguarding animal wellbeing.

4.1. ADMINISTRATION OF EYE-DROPS, CREAMS, OINTMENTS, BANDAGES

Category 3 – moderate impact				
Activity	Objective	3R activities	Ratios	References
Administration of eye-drops, creams, ointments, bandaging	To instruct students in the procedures for the administration of eye-drops, creams, ointments, bandaging	Step-by-step guides, modelling, videos, simulations	Instructors:Students 1:30 instructing 1:1 supervising Students:Animals 30:1 observing 1:1 performing	<u>Animals are restrained as per Item 4.19</u>

When using medications, animal care chemicals and equipment, staff must be appropriately qualified and care must be taken to:

- read labels carefully and follow label directions
- use correct animal weight to determine correct dosage/rate
- store and dispose of chemicals/medications/syringes/bandaging being used appropriately
- use protective clothing when required
- use correct equipment for application
- document the dose, chemical/medication name, batch number, expiry date, withholding period, identity of animal(s) administered to and date of administration.

4.2. ADMINISTRATION OF INJECTIONS, IMPLANTS AND POUR-ON TREATMENTS

Category 3 – moderate impact				
Activity	Objective	3R activities	Ratios	References
Administration of injections, implants and pour-on treatments	To instruct students in the application of pour-on chemicals for the control of internal and external parasites affecting cattle	Step-by-step guides, modelling, videos, simulations	Instructors:Students 1:30 instructing 1:1 supervising Students:Animals 30:1 observing 1:1 performing	Cattle animal welfare standards , 'Disease and injury'

When injecting cattle, ensure the needles are sharp and sterile, and that each animal is adequately restrained. Intramuscular injections should be administered into the neck. Choose the site for the injection and clean away loose dirt. After the injection, remove the syringe before the plunger is released.

It is important to maintain application of pour-on treatments if it is necessary to control internal and external parasites for all cattle. When treating for external parasites, all animals should be treated at the same time and pastures should be rotated. These activities need to be documented in the appropriate records.

When using medications, animal care chemicals and equipment, staff must be appropriately qualified and care must be taken to:

- read labels carefully and follow label directions
- use correct animal weight to determine correct dosage/rate
- adhere to withholding periods and check expiry dates where applicable before use
- store and dispose of chemicals/medications/syringes/bandaging being used appropriately
- use protective clothing when required
- use correct equipment for application
- document the dose, chemical/medication name, batch number, expiry date, withholding period, identity of animal(s) administered to and date of administration.

4.3. DIPPING AND SPRAYING

Category 3 – moderate impact				
Activity	Objective	3R activities	Ratios	References
Dipping and spraying	To demonstrate the procedures for the control of ticks and other external parasites affecting cattle	Step-by-step guides, modelling, videos, simulations	Instructors:Students 1:30 instructing Students:Animals 30:1 observing 1:1 performing	Cattle animal welfare standards , 'Disease and injury'

When using medications, animal care chemicals and equipment, staff must be appropriately qualified and care must be taken to:

- read labels carefully and follow label directions
- use correct animal weight to determine correct dosage/rate
- adhere to withholding periods and check expiry dates where applicable before use
- store and dispose of chemicals/medications/syringes/bandaging being used appropriately
- use protective clothing when required
- use correct equipment for application
- document the dose, chemical/medication name, batch number, expiry date, withholding period, identity of animal(s) administered to and date of administration.

4.4. BRANDING

Category 3 – moderate impact				
Activity	Objective	3R activities	Ratios	References
Branding	To demonstrate the permanent identification of cattle with fire or freeze branding	Step-by-step guides, modelling, videos, simulations	Instructors:Students 1:30 instructing Students:Animals 30:1 observing 2:1 performing	Brands Act 1915 (Qld) ; Cattle animal welfare standards , 'Identification'

Calves should be at least three months old before fire branding is undertaken. Animals must be securely restrained with the side rump exposed. The correct heat of the iron is blue hot. Red hot is too hot. At the correct temperature, the iron will readily burn into a flat dry board. Never brand cattle when the hide is wet as this will result in scalding. If the area to be branded is thickly coated, it should be clipped first. Only use small brands on calves as the brand grows with the growth of the hide.

Operators should seek professional advice on pain minimisation strategies that align with current best practice.

Animals should be adequately restrained to minimise stress and to ensure safety to both animal and operator. Branding is a legal method of identification of ownership and individual identification of animals and is compulsory for some cattle offered for sale in Queensland. Positions for branding cattle are detailed in the Brands Act 1915 (Qld). Further information about branding is available on the [Department of Primary Industries website](#).

4.5. HANDLING AND TRAINING

Category 3 - moderate impact				
Activity	Objective	3R activities	Ratios	References
Handling and training	To instruct students in the appropriate methods of training cattle to regular human handling in existing yard facilities. To instruct students on safe and humane methods of training cattle to lead, tie up and stand in a show setting.	Step-by-step guides, modelling, videos, simulations	Instructors:Students 1:30 instructing 1:1 supervising Students:Animals 30:1 observing 2:1 performing	Code of practice about cattle (Schedule 4 of the Animal Care and Protection Regulation 2023); Cattle animal welfare standards , s. 5; Animals are restrained as per Item 4.19

Restricting the area available to cattle and making them dependent on hand feeding will facilitate the taming process. Ensure that hand feeding is regular, especially over weekends. Close supervision of students is necessary to ensure calm, gentle handling. Remember, cattle respond to kind, gentle treatment, positive reinforcement and repetition.

They also remember mistreatment for a long time. Due to the size of these animals, care must always be taken.

In the school situation, the work usually required in training an animal for leading and showing is generally considered as taming and gentling, rather than breaking-in. It is preferable if animals used in the school situation do not require breaking-in.

When taming and gentling cattle, training should begin while animals are young, with a body weight under 200 kg. Cattle should be restrained before a halter is put on. While the animal is still restrained, with the halter in place, gentle grooming and handling will reduce distress.

Avoid sudden movements and loud noise near the animal. When the animal is first tied up, make sure it is tied to a solid object by a short lead. When releasing the animal, it should be given a reward, such as some

palatable food, so that it associates something pleasant with the experience. Do not attempt to lead the animal until it is tamed and will allow grooming and handling in the tied position.

Instructors must be qualified and must have the safety and welfare of animals as the principles of operation. Inhumane procedures should not be used. Procedures should be adapted to the specific animal and cattle not suitable for taming and gentling should be excluded from the activity.

4.6. CATTLE GROOMING

Category 2 - low impact				
Activity	Objective	3R activities	Ratios	References
Cattle grooming	To instruct in methods of preparation of cattle showing, including grooming, washing, combing, clipping etc.	Step-by-step guides, modelling, videos, simulations.	Instructors:Students 1:30 instructing 1:10 supervising Students:Animals 30:1 observing 2:1 performing	<u>Animals are handled as per Item 4.5</u>

Grooming is an excellent method of gentling animals and is necessary for show preparation. The type of restraint required depends on the type of animal being groomed. Avoid over-washing as this will remove too many natural oils from the coat. If an animal is rugged, make sure that the rug is fitted correctly to avoid chaffing. Be careful not to overheat the animal if rugging animals in summer. Clipping is usually necessary for show animals only or to remove excess hair before branding. When clipping show animals, take extra care around the head. If the animal is frightened or moves suddenly, damage to eyes or ears can occur.

4.7. COLLECTION OF FAECAL AND URINE SAMPLES

Category 2 – low impact				
Activity	Objective	3R activities	Ratios	References
Collection of faecal and urine samples	To instruct students in the procedures for collection of urine and faecal samples	Step-by-step guides, modelling, videos, simulations.	Instructors:Students 1:30 instructing 1:1 supervising Students:Animals 30:1 observing 30:1 performing	<u>Animals are restrained as per Item 4.19</u>

Cattle that are accustomed to handling should be used for all of these activities. They should be adequately restrained in a crush or halter and tied up securely. Feeding the animal whilst collecting samples can have a calming effect. Before collecting samples, ensure that hands are thoroughly washed. When collecting faeces and urine samples, gloves should be worn, fingernails trimmed of person performing the task and hands thoroughly washed after completion of the activity.

N.B. The collection of cattle excreta is a high risk activity for staff and students who are not immune to Q fever.

4.8. DRENCHING AND MOUTHING

Category 3 - moderate impact				
Activity	Objective	3R activities	Ratios	References
Drenching and mouthing	To demonstrate the administration of pharmaceuticals by the oral route for internal parasite control, nutritional supplement, etc. To demonstrate the examination of the mouth for assessment of health and age estimation	Step-by-step guides, modelling, videos, simulations	Instructors:Students 1:30 instructing 1:1 supervising Students:Animals 30:1 observing 1:1 performing	Cattle animal welfare standards , 'Disease and injury'

When using medications, animal care chemicals and equipment, staff must be appropriately qualified and care must be taken to:

- read labels carefully and follow label directions
- use correct animal weight to determine correct dosage/rate
- adhere to withholding periods and check expiry dates where applicable before use
- store and dispose of chemicals/medications/syringes/bandaging being used appropriately
- use protective clothing when required
- use correct equipment for application
- document the dose, chemical/medication name, batch number, expiry date, withholding period, identity of animal(s) administered to and date of administration.

For both drenching and mouthing, cattle should be restrained in a headbail.

DRENCHING The drenching gun is passed gently, but firmly, over the back of the tongue, taking care to avoid damage to the mouth and gums and to avoid passage of drench into the trachea.

MOUTHING Examination of the mouth may be performed to determine an animal's age by dentition, check for condition of teeth or examine the mouth for evidence of foreign bodies or diseases. The lower lip can be manipulated by hand in a well-designed headbail. The routine use of nose pliers is not recommended. (Reference: [NSW Agriculture Agfact, Cattle must have sound teeth](#))

4.9. EAR MARKING, EAR TATTOOING AND EAR TAGGING

Category 3 – moderate impact				
Activity	Objective	3R activities	Ratios	References
Ear marking, ear tattooing and ear tagging	To demonstrate the various methods of ear identification used to identify individual animals in a herd situation or that have undergone certain husbandry procedures	Step-by-step guides, modelling, videos, simulations	Instructors:Students 1:30 instructing 1:1 supervising Students:Animals 30:1 observing 1:1 performing	Cattle animal welfare standards , 'Identification'; National Livestock Identification System (NLIS)

Ear identification is used to identify individual animals in a herd situation and to identify animals that have undergone certain husbandry procedures e.g. insecticidal ear tagging for Buffalo fly.

Ear marking may only be used in conjunction with the three-piece brand with which it is registered. Further information about registration and positioning of earmarking is available on the [DPI website](#), Cattle earmarking.

Compliance with [National Livestock Identification System](#) (NLIS) requirements must be ensured.

Operators should seek professional advice on pain minimisation strategies that align with current best practice.

The head must be firmly restrained and equipment should be checked and cleaned before and after use. Position the ear tag/tattoo between the two main veins and the cartilage ridges. The ear tag containing the microchip should be placed at the front of the offside ear. All procedures must be carried out according to the manufacturer's instructions.

4.10. HAND REARING OF CALVES

Category 2 – low impact				
Activity	Objective	3R activities	Ratios	References
Hand rearing of calves	To instruct students in the procedures for the successful hand rearing of calves	Step-by-step guides, modelling, videos, simulations	Instructors:Students 1:30 instructing 1:10 supervising Students:Animals 30:1 observing 1:1 performing	Code of practice about cattle (Schedule 4 of the Animal Care and Protection Regulation 2023); Cattle animal welfare standards , s. 8

Refer to the [Code of practice about cattle](#) (Schedule 4 of the Animal Care and Protection Regulation 2023) and the [Australian animal welfare standards and guidelines for cattle](#) (Cattle animal welfare standards) section 8 for detailed information on hand rearing and weaning of calves.

4.11. MEASUREMENT OF BODY WEIGHT

Category 2 - low impact				
Activity	Objective	3R activities	Ratios	References
Measurement of body weight and condition (including scanning)	To instruct students to measure body weight, live-weight gain and condition of cattle (including scanning)	Step-by-step guides, modelling, videos, simulations	Instructors:Students 1:30 instructing 1:5 supervising Students:Animals 30:1 observing 5:1 performing	<u>Animals are handled and moved as per Items 4.5 and 4.16;</u> <u>Animals are restrained as per Item 4.19</u>

Growth rates and condition are measured to monitor animal health, determine nutritional needs, plan remedial actions and provide data for analysis and planning. To gain accurate measurements for comparison of on-farm performance of different breeders, all cattle should be tested under the same growing conditions to ensure that genetic differences in performance appear.

Newborn calves are most accurately weighed with an appropriate scale (such as a spring scale with a sling).

Well-designed crush, race and weighing facilities must be used for weighing cattle. Cattle should be handled quietly before, during and after the procedure.

4.12. LOADING

Category 2 – low impact				
Activity	Objective	3R activities	Ratios	References
Loading	To instruct students to load cattle for transport	Step-by-step guides, modelling, videos, simulations	Instructors:Students 1:30 instructing 1:5 supervising Students:Animals 30:1 observing 5:1 performing	Code of practice for transport of livestock (Schedule 5 of the Animal Care and Protection Regulation 2023); <u>Animals are moved as per Item 4.18;</u> <u>Animals are mustered as per Item 4.16;</u> <u>Animals are restrained as per Item 4.19</u>

The handling and loading of livestock are regulated by the [Code of practice for transport of livestock](#).

4.13. MEASUREMENT OF BODY TEMPERATURE

Category 3 - moderate impact				
Activity	Objective	3R activities	Ratios	References
Measurement of body temperature	To instruct students in the measurement of the body temperature	Step-by-step guides, modelling, videos, simulations	Instructors:Students 1:30 instructing 1:1 supervising Students:Animals 30:1 observing 1:1 performing	<u>Animals are handled and moved as per Items 4.5 and 4.16;</u> <u>Animals are restrained as per Item 4.19</u>

If the animal is mobile it must be restrained in a crush, race or by halter. In the case of small calves, the animals could be restrained manually.

4.14. MEASUREMENT OF RESPIRATION AND PULSE RATE

Category 2 – low impact				
Activity	Objective	3R activities	Ratios	References
Measurement of respiration and pulse rate	To instruct students in the measurement of respiration and pulse rate	Step-by-step guides, modelling, videos, simulations	Instructors:Students 1:30 instructing 1:1 supervising Students:Animals 30:1 observing 2:1 performing	<u>Animals are handled and moved as per Items 4.5 and 4.16;</u> <u>Animals are restrained as per Item 4.19</u>

If the animal is mobile it must be restrained in a crush, race or by halter. In the case of small calves, the animals could be restrained manually.

4.15. MILKING

Category 2 – low impact				
Activity	Objective	3R activities	Ratios	References
Milking	To instruct students in the procedures of milking cattle	Step-by-step guides, modelling, videos, simulations	Instructors:Students 1:30 instructing 1:1 supervising Students:Animals 30:1 observing 1:1 performing	Cattle animal welfare standards , s. 9

Only cattle that are accustomed to handling should be used for milking. Ensure the animal is adequately restrained in a milking bail or halter and tied up securely. Feeding the animal whilst collecting samples can have a calming effect. Before collecting milk, ensure that hands are thoroughly washed. Wash teats and stimulate let down. After collection, teat(s) should be dipped to prevent infection.

4.16. MUSTERING, YARDING AND DRAFTING

Category 3 - moderate impact				
Activity	Objective	3R activities	Ratios	References
Mustering, yarding and drafting	To instruct students in low stress handling techniques used to gather cattle into yards for handling	Step-by-step guides, modelling, videos, simulations	Instructors:Students 1:30 instructing 1:5 supervising Students:Animals 30:1 observing 5:1 performing	Code of practice for transport of livestock (Schedule 5 of the Animal Care and Protection Regulation 2023); Cattle animal welfare standards , s. 5; <u>Animals are moved as per Item 4.18;</u> <u>Animals are restrained as per Item 4.19</u>

4.17. PALPATION OF TESTICLES

Category 2 – low impact				
Activity	Objective	3R activities	Ratios	References
Palpation of testicles	To instruct students in the procedures for the examination of scrotum and testicles by palpation	Step-by-step guides, modelling, videos, simulations	Instructors:Students 1:30 instructing 1:1 supervising Students:Animals 30:1 observing 1:1 performing	<u>Animals are restrained as per Item 4.19</u>

The main factors determining the testicle size of bulls are age, breed and level of nutrition. It is generally recommended that a bull's scrotal circumference is 34cm or better for optimum semen production. Bulls with a scrotal circumference under 30cm will generally only have a small quantity of poor quality semen.

After restraining the bull in a headbail, stand behind the animal and pat it about the rump and hind legs until it stands quietly.

MEASUREMENT Pull the testicles down firmly into the lower part of the scrotum, by grasping the neck of the scrotum with one hand, squeezing and pulling down. The thumb and forefingers should be located on the side of the scrotum, not between the testicles. Measure the scrotal circumference using a self-releasing metal tape. Prepare the tape by forming it into a loop and slipping the loop over the scrotum.

TESTICULAR CONSISTENCY The firmness and resilience (springiness) of the testicles is a good indicator of testicle function and semen quality. Firmness is judged by the distance the tissue can be depressed when squeezed. Resilience is judged by the pressure felt when squeezing, that is, the natural tendency of the tissue to return to its normal shape. Manual palpation is the most convenient method of assessing the consistency of a bull's testicles and this can be done when scrotal circumference is measured.

(Reference: [Agriculture Victoria, Managing bulls at mating](#))

4.18. TRANSPORT

Category 3 - moderate impact				
Activity	Objective	3R activities	Ratios	References
Transport	To demonstrate to students the appropriate procedures for transporting cattle	Step-by-step guides, modelling, videos, simulations	Instructors:Students 1:30 instructing Students:Animals 30:1 observing	Code of practice for transport of livestock (Schedule 5 of the Animal Care and Protection Regulation 2023)

If cattle are known to be, or visually assessed to be, within four weeks of parturition and the estimated journey time or time off water is likely to be more than four hours, they are considered unfit to undertake a journey. Prodders must not be used with bobby calves. There are restrictions on the use of unmuzzled dogs with bobby calves. Guidelines for [feeding travelling cattle](#) and strategies for [loading cattle being transported by road](#) are available on the Queensland Government website. Maximum journey times, maximum time off water and minimum spell durations are specified in the [Code of practice for the transport of livestock](#). These times differ for buffalo and the transport code should be referred to for further information.

All persons involved in the transport of livestock must ensure that they are aware of and comply with their obligations under this code.

4.19. RESTRAINT AND INSPECTION

Category 2 - low impact				
Activity	Objective	3R activities	Ratios	References
Restraint and inspection	To instruct students in safe and humane restraint methods to enable procedures and close observations	Step-by-step guides, modelling, videos, simulations	Instructors:Students 1:30 instructing 1:2 supervising Students:Animals 30:1 observing 2:1 performing	Code of practice about cattle (Schedule 4 of the Animal Care and Protection Regulation 2023); Cattle animal welfare standards , ss. G5.14, G5.15, G5.4

4.20. NOSE RING APPLICATION

Category 2 - low impact				
Activity	Objective	3R activities	Ratios	References
Nose ring application	To instruct students in the placement of nose rings in cattle	Step-by-step guides, modelling, videos, simulations	Instructors:Students 1:30 instructing 1:1 supervising Students:Animals 30:1 observing 1:1 performing	Animals are moved as per Item 4.16; Animals are restrained as per Item 4.19

The proper use of removable show-lead nose rings (bulldogs) gives similar control to nose rings without the need for permanent attachment.

In certain circumstances, nose ringing may be considered a risk control measure. Bulls over the age of 12 months must have nose rings applied if they are to be shown at agricultural shows.

Nose ring equipment must be used in accordance with manufacturers' directions, to minimise the impact on the animal. The ring should be smooth and well-fitting and must not inflict pain.

The animal will be monitored at all stages in the procedure. If an animal is showing signs of stress during a procedure performed by the student/s, it must be withdrawn from the activity immediately.

4.21. CASTRATION

Category 3 - moderate impact				
Activity	Objective	3R activities	Ratios	References
Castration	To demonstrate the procedures for the sterilisation of male animals in a safe and humane manner.	Step-by-step guides, modelling, videos, simulations	Instructors:Students 1:3 instructing Students:Animals 3:1 observing	Code of practice about cattle (Schedule 4 of the Animal Care and Protection Regulation 2023); Cattle animal welfare standards , s. 6; Animals are moved as per Item 4.16; Animals are restrained as per Item 4.19

When deemed necessary, male calves should be castrated between 24 hours and six months of age, and ideally as young as possible, to minimise stress and reduce complications. Castration of cattle over six months of age must be performed by a vet.

Castration with elastrator rings is only recommended for calves up to two weeks of age.

Good hygiene practices in relation to facilities, hands, handling and instruments are required. Disinfectant should be used and changed regularly. Tetanus minimisation strategies are recommended.

Procedures must be carried out according to industry standards, Australian Animal Welfare Standards and Guidelines and manufacturers' directions for equipment used.

Operators should seek professional advice on pain minimisation strategies that align with current best practice. Local anaesthetic has proven to be an effective method of pain relief, particularly when used in conjunction with ketoprofen (a nonsteroidal anti-inflammatory drug).

4.22. DEHORNING

Category 3 – moderate impact				
Activity	Objective	3R activities	Ratios	References
Dehorning and horn tipping	To demonstrate the procedures for dehorning and horn tipping in a safe and humane manner.	Step-by-step guides, modelling, videos, simulations	Instructors:Students 1:30 instructing Students:Animals 30:1 observing	Code of practice about cattle (Schedule 4 of the Animal Care and Protection Regulation 2023); Cattle animal welfare standards , s. 6

Schools should favour polled cattle to enhance cattle welfare and handler safety.

If horned cattle are used, they should be dehorned as young as possible to minimise pain and stress. Dehorning should be undertaken before the horn bud attaches to the skull – generally about two months of age – and prior to weaning. Dehorning of cattle over six months of age must be conducted by a veterinarian, and is not recommended for cattle over the age of 12 months. Cattle must not be dehorned with corrosive chemicals.

Dehorning is best done in a calf cradle that allows good access to each horn site. The operator must be skilled in the procedure, or under the supervision of a skilled person, and should use the most appropriate tools and method. The recommended methods for dehorning of calves are by heat cautery (preferred), scoop dehorner or gouging knife as soon as the horn buds are detectable. The method of choice must be able to remove all horn-growing tissue in one action with minimal damage to adjacent tissues. Remove a complete ring of hair 1cm wide around the base of the horn to prevent horn regrowth when dehorning.

Animals dehorned at an early age (before the horn attaches to the skull) and handled calmly generally will not bleed excessively. Control any excessive bleeding before releasing the animal from the restraint by immediately using artery forceps, firm pressure, a pressure bandage or cauterisation.

Good hygiene practices should be practiced in relation to facilities, hands, handling and instruments with disinfectant being used and changed frequently. Consideration of weather and yard conditions and fly activity should be made when planning dehorning to reduce stress, bleeding and infection e.g. do not dehorn in very hot or wet, humid weather; or in muddy yards.

Operators should seek professional advice on pain minimisation strategies that align with current best practice. Local anaesthetic has proven to be an effective method of pain relief, particularly when used in conjunction with ketoprofen (a nonsteroidal anti-inflammatory drug).

After dehorning, cattle should be inspected regularly for the first ten days, and any infected wounds treated. In those situations where flies are a problem, a suitable fly repellent should be applied at the time of dehorning.

Older animals may be 'tipped' (ends of horns removed without cutting into sensitive horn tissue) without anaesthetic. Inward growing horns likely to penetrate or contact facial features should be trimmed appropriately.

4.23. GLOBAL POSITION SYSTEM (GPS) TRACKING AND BEHAVIOURAL MONITORING SENSORS

Category 3 – moderate impact				
Activity	Objective	3R activities	Ratios	References
GPS tracking and behavioural monitoring sensors	To instruct students in the methods to apply GPS collars, ear tags or headstalls	Step-by-step guides, modelling, videos, simulations	Instructors:Students 1:30 instructing 1:1 supervising Students:Animals 30:1 observing 1:1 performing	<u>Ear tagging as per item 4.9;</u> <u>Animals are moved as per Item 4.16;</u> <u>Animals are restrained as per Item 4.19</u>

The deployment of GPS and behavioural monitoring sensors, accelerometer or inertial measurement unit (IMU) on livestock enables the collection of data for analysis by students. Such monitoring systems are increasingly being used to improve animal welfare and production outcomes.

Schools should consider what type of sensor (GPS or accelerometer/IMU) and deployment (collar, ear tag or headstall) best suit the animals and environment.

GPS tracker devices log the location of the animal at a set interval, enabling mapping of livestock movements. Accelerometers record movements and can be used to monitor activity such as head movements and posture. IMUs incorporate accelerometers with a gyrometer and magnetometer, providing more detailed movement data.

Collars usually consist of a band of leather or webbing with a buckle for correct fitting, and an attached enclosure that houses the sensor device. The enclosure is made of a watertight polycarbonate box that allows sensors to be deployed for long periods of time in all weather conditions. Neck collars are fitted to an animal in such a way that they are tight enough to not fall off or drag on the ground when the animal is grazing, and loose enough to avoid being uncomfortable to the animal. Generally, if the collar is tight enough to only just prevent it being pulled over the ears of an animal it is suitable. Collars should be fitted in a race or headbail, as deemed appropriate for the animal.

Headstall deployments are useful for animals accustomed to this form of harness as lightweight sensors can be taped easily to one of the straps.

Ear tags can be deployed by cutting the male component of an identification tag out and then using tag pliers, attaching a new sensor ear tag. Ear tags are typically lightweight (around 20 grams).

4.24. ARTIFICIAL INSEMINATION

Category 3 – moderate impact				
Activity	Objective	3R activities	Ratios	References
Artificial Insemination	To demonstrate the procedures for artificial insemination in cattle.	Step-by-step guides, modelling, videos, simulations	Instructors:Students 1:3 instructing Students:Animals 3:1 observing	Code of practice about cattle (Schedule 4 of the Animal Care and Protection Regulation 2023); Cattle animal welfare standards , s. 7; <u>Animals are moved as per Item 4.16;</u> <u>Animals are restrained as per Item 4.19</u>

Instruction in insemination technique will only be provided by a suitably qualified veterinarian or instructor. Students observing this activity must have experience in cattle handling, be familiar with cattle anatomy/physiology, and have competency using abattoir specimens (such as a reproductive tract) or artificial cow.

Only mature cows of quiet temperament should be used for instruction. Animals under 15 months of age or undersized animals should not be used. Cows should be pregnancy tested prior to the commencement of instruction and only non-pregnant cows used. Note a person, other than a veterinary surgeon or an accredited person, must not use rectal palpation or transrectal ultrasound to test for pregnancy in cattle unless the person performs the test without fee or reward, as per section 27B of the Act.

Cows must be restrained to prevent lateral or forward movement, preferably with a vet gate.

Cows should have current *Leptospira* vaccination. Cows known to be carriers of Pestivirus or EBL should not be used.

Equipment should be disinfected or a new sleeve used between each cow. Only recommended test guns or insemination guns with sleeves should be used. Obstetrical lubricant or similar product should be used to provide lubrication and gloves must be worn (ensure fingernails are trimmed of person performing the task and hands are thoroughly washed after completion of the activity).

Cows showing vaginal discharge (other than oestrus discharge) should not be used. The oestrous status of cows used for instruction should not be significant. Cows showing any sign of stress, bleeding, straining or ballooning of the rectum prior to or during the process should be withdrawn from use.

There should be a maximum of two inseminations per cow per oestrous cycle. Cows may be used in one session per day. Further reuse should only occur after assessment of the cow by a veterinarian or a qualified instructor.

Cows not showing rectal thickening may be used at fortnightly intervals unless removed for some other reason. Cows which show evidence of rectal wall thickening should be withdrawn immediately and not used for a period of one month, after which reuse should only occur after assessment of the cow by a veterinarian or qualified instructor.

Cows should be checked twice daily for the first two days after the process and once daily for a further five days.

SECTION 5 | GLOSSARY

3R activities	Animals used for teaching and training are not being used to discover, prove or develop new ideas and techniques but to communicate scientific concepts and to develop manual skills and expertise in specific techniques. 3R activities provide opportunities to communicate scientific concepts and develop technical skills and expertise, ensuring animals are used only when necessary and minimising the impact on animals used.
Alternatives to animal use	Replacement of animals with other methods/activities for educative purposes must be sought and used whenever possible.
Cattle animal welfare standards	Animal Health Australia – Australian animal welfare standards and guidelines for cattle
Code of practice about cattle	Animal Care and Protection Regulation 2023 (Qld) , Schedule 4.
DPI	Queensland Department of Primary Industries
QSAEC	Queensland Schools Animal Ethics Committee
Supervision	Supervision in all instances means supervision by a suitably qualified person familiar with the procedures as well as normal and abnormal animal responses.
The Code	Australian code for the care and use of animals for scientific purposes , 8 th edition 2013 (updated 2021)
The Regulation	Animal Care and Protection Regulation 2023 (Qld)
Transport code	Code of practice for transport of livestock, Animal Care and Protection Regulation 2023 (Qld) , Schedule 5.

SECTION 6 | REFERENCES

- Agriculture Victoria – Condition scoring of beef cattle
<https://agriculture.vic.gov.au/livestock-and-animals/beef/health-and-welfare/condition-scoring-of-beef-cattle>
- Agriculture Victoria – Managing bulls at mating
<https://agriculture.vic.gov.au/livestock-and-animals/beef/breeding/managing-bulls-at-mating>
- Animal Health Australia – Australian animal welfare standards and guidelines for cattle
<https://www.animalwelfarestandards.net.au/cattle/>
- Australian & New Zealand Council for the Care of Animals in Research and Teaching (ANZCCART)
<https://www.adelaide.edu.au/ANZCCART/resources/>
- Australian Veterinary Association – Pain and Analgesia
<https://www.ava.com.au/policy-advocacy/policies/surgical-medical-and-other-veterinary-procedures-general/pain-and-analgesia/>
- Department of Primary Industries – Animal welfare during transport
<https://www.business.qld.gov.au/industries/farms-fishing-forestry/agriculture/livestock/livestock-movement/animal-transport-welfare>
- Department of Primary Industries – Cattle body condition scoring
https://www.daf.qld.gov.au/_data/assets/pdf_file/0015/53520/Animal-HD-Investigation-Condition-scores.pdf
- Department of Primary Industries – Earmarking cattle
<https://www.business.qld.gov.au/industries/farms-fishing-forestry/agriculture/livestock/animal-welfare/branding-livestock/earmarking-cattle>
- Dr Temple Grandin – Design of loading facilities and holding pens
<https://www.grandin.com/references/design.loading.facilities.holding.pens.html>
- Dr Temple Grandin – Directions for laying out curved cattle handling facilities for ranches, feedlots and properties
<https://www.grandin.com/design/curved.handling.facilities.html>
- Dr Temple Grandin – Non slip flooring for livestock handling
<https://www.grandin.com/design/non.slip.flooring.html>
- Meat & Livestock Australia
<https://www.mla.com.au/>
- Meat & Livestock Australia – Literature review of pain and welfare impacts associated with on-farm cattle husbandry procedures
<https://www.mla.com.au/research-and-development/reports/2014/literature-review-of-pain-and-welfare-impacts-associated-with-on-farm-cattle-husbandry-procedures/>
- Meat & Livestock Australia - Stocking rate calculator
<https://www.mla.com.au/extension-training-and-tools/tools-calculators/stocking-rate-calculator/>

- National Feedlot Accreditation Scheme
<http://www.feedlots.com.au/nfas>
- National Livestock Identification System (NLIS)
<https://www.nlis.com.au/>
- NSW Agriculture Agfact – Cattle must have sound teeth
https://www.dpi.nsw.gov.au/data/assets/pdf_file/0018/160344/sound-cattle-teeth.pdf

SECTION 7 | APPLICATION/ACTIVITY NOTIFICATION FORM

To seek QSAEC approval for animal use activities covered by this SOP, please complete the online [Activity notification form](#) (ANF) prior to the activities commencing.

Before completing the ANF, please ensure the following documents (if applicable) are available to upload to the online application:

Privately-owned animal use template agreement:

- If you are using privately-owned animals a **template agreement** with the details and duration of the owner's responsibility must be attached to your QSAEC application. Note the owner's personal details and signature are not required to be included for the QSAEC, however schools must ensure the agreement is completed by the owner and stored on their school-based animal activity register for 7 years for audit purposes. If there are any changes to the agreement once signed by the owner then a copy of the updated template agreement must be provided to the QSAEC prior to the animal use activities commencing.

Ensure all required fields are completed in the ANF and submit as per the outlined instructions.