Containment Standard for new organisms held in zoos

A MAF Biosecurity New Zealand and ERMA New Zealand Standard

February 2010
The Environmental Risk Management Authority (ERMA), in accordance with section 11(1)(fc) of the Hazardous and Substances and New Organisms Act 1996, approves this standard – *Containment standard for new organisms held in zoos* as a standard for containment facilities.

___________________________   __________________________
Rob Forlong      Date
Chief Executive
ERMA New Zealand
(for the Environmental Risk Management Authority)

MAF Biosecurity New Zealand endorses this standard for the *containment of new organism held in zoos*.

___________________________ _________________________
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Foreword

The Environmental Risk Management Authority (ERMA) is responsible for making decisions under the Hazardous Substances and New Organisms (HSNO) Act 1996 on applications to introduce and/or develop new organisms (including genetically modified organisms) in New Zealand.

The Ministry of Agriculture and Forestry (MAF), is responsible for preventing the importation of unwanted pests and diseases, and for controlling, managing or eradicating them should they arrive. MAF is also the agency responsible for enforcing the new organism provisions of the HSNO Act, including HSNO Act approvals and associated containment controls.

MAF develops import health standards and operational standards to exercise those enforcement responsibilities.

*Containment standard for new organisms held in zoos* (this standard), is a joint standard prepared by MAF in collaboration with ERMA and the Australasian Regional Association of Zoological Parks and Aquaria (ARAZPA). The Standard comprises of 3 parts – Biosecurity Act Requirements, Systems and Management Requirements and Containment Controls.

This version cancels and replaces the previous version - Standard 154.03.04: *Containment Facilities for Zoo Animals 2003*.

This Standard is approved by ERMA NZ and endorsed by MAF’s Director-General or authorised delegate and is effective from [ ] 2010. Any new zoos must comply with this standard after this date.

This Standard is accessible on:


Scope

The Standard applies to all zoos that hold new organisms. ¹

This Standard includes the minimum requirements to contain new organisms in a containment facility for the purposes of public exhibition, education, conservation, recreation and/or research and includes, for example, butterfly house, aquarium or an oceanarium.

These requirements are containment controls developed in accordance with the Third Schedule Part II: Matters to be addressed by containment controls for new organisms

¹ Zoo animals will be referred to as new organisms

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excluding genetically modified organisms (Appendix1) of the Hazardous Substances and New Organisms (HSNO) Act 1996.

The Operator of any facility approved to this Standard must also meet any additional containment controls included in the HSNO Act approval for any new organism held by that facility.

This Standard does not include provisions for the welfare of animals or the health and safety of containment facility staff and/or visitors to the facility. Please refer to the Animal Welfare Act 1991, Animal Welfare (Zoos) Code of Welfare and the Health and Safety in Employment Act 1982 respectively for more information.

Further details on the approval and management of a containment facility can be found in the reference document that accompanies this Standard. The reference document outlines processes required to meet parts of this Standard and includes additional information prepared by the zoo industry.

**Part 1  Biosecurity Act Requirements**

1.1 Facility approval

Containment facilities must be approved in accordance with section 39 of the Biosecurity Act 1993. They must have an Operator and be constructed and operated in accordance with this Standard, as well as comply with:

- the purpose of, and controls specified in, the HSNO Act approval(s) for all new organisms held in the facility;
- all conditions specified by MAF on any permit to import and in any import health standards; and
- all conditions relating to pests or unwanted organisms, specified by the CTO on a permission, issued pursuant to sections 52 and 53 of the Biosecurity Act 1993.

Any person wishing to have a place approved as a containment facility should follow the procedure outlined in the reference document that accompanies this Standard.

1.2 Leased Facilities

Any lease agreements must not interfere with a facility’s ability to meet the requirements of this Standard. If a facility, or part of a facility, is leased, the lease agreement (or non-gratia arrangement) with the owner must clearly identify the operational arrangements contracted with the owner for meeting the requirements of this standard.

1.3 Operator Approval

An Operator will be approved by the Director-General in accordance with section 40 of the Act, if the Director-General is satisfied that the applicant is a fit and proper person to operate the facility and the applicant is able to comply with this Standard.
The facility Operator is responsible for ensuring that:

- the facility meets the requirements of this Standard;
- resources are in place for maintaining the facility, and;
- the requirements of the operating manual and any Quality Management System can be met.

The Operator must demonstrate that they have relevant experience and access to the necessary resources to ensure that the facility complies with this Standard.

Any person wishing to be approved as an Operator of a facility should follow the procedure outlined in the reference document that accompanies this standard.

1.4 Deputy Operators

A deputy Operator must be appointed for a facility where the Operator responsible for that facility is located at a separate site. A deputy Operator must have the authority to act as a second Operator of the Facility, nominally when the Operator is absent. A deputy Operator must follow the same approval process as the nominated Operator.

1.5 Changes to Operator

The Inspector must be notified of any proposed changes to the Operator or deputy Operator(s). Prospective new Operators must complete an application according to the requirements in this Standard. It is illegal for a facility to operate without an approved Operator.

1.6 Cancellation of Approval of a Facility or Operator

A facility’s approval may be cancelled in accordance with section 39 of the Act if:

- the facility no longer complies with any of the requirements of this Standard; or
- the Director-General is satisfied that the facility is no longer used for the purpose(s) specified in the operating manual. Notice of cancellation will be given in writing.

An Operator’s approval may be cancelled in accordance with section 40 of the Act, if:

- the Director-General is satisfied that the Operator is no longer operating the facility according to this Standard,
- has ceased to act as Operator of the facility, or
- is no longer a fit and proper person to operate the facility.

Before an approval for a Containment Facility or Operator is cancelled, the Operator will be given a reasonable opportunity to provide comments to MAF. Notice of cancellation will be given in writing.

The Operator must contact an Inspector where approval of a facility is no longer required for any reason.
1.7 Personal Information on Individuals

In accordance with Principle 3 of the Privacy Act 1993, all information collected on applicants, identifying, or capable of identifying, an individual person is personal information. The information is collected for purposes relating to the approval of a facility under section 39 of the Biosecurity Act 1993 and approval as an Operator under section 40 of the Biosecurity Act 1993. The recipient of this information, which is also the agency that will collect and hold the information, is the Ministry of Agriculture and Forestry. Failure to provide this information will result in the Director-General declining an application for approval of a facility or Operator. An individual has the right of access to, and correction of, any personal information that has been provided.

1.8 Disease Occurrence and Investigation

The operator must make provision for the isolation and treatment of sick animals.

The operator must investigate infectious disease outbreaks within new organisms and try to establish their cause. The investigation of infectious diseases or animals displaying unusual behaviour must be completed under the guidance of a trained veterinarian. All disease test results must be recorded and retained for at least seven years.

The National Centre for Biosecurity and Infectious Disease (NCBID) must be contacted when:

- there is an infectious disease outbreak
- a new organism is identified
- there is a sudden unexplained significant increase or cluster of mortality.

To meet New Zealand’s requirements for surveillance of transmissible spongiform encephalitides the NCBID must be contacted immediately when deaths occur in imported new organisms belonging to the families’ bovidae, cervidae or felidae. The head shall be removed and submitted to the laboratory nominated by the centre or specific samples collected by a registered veterinarian as directed by the centre.
Part 2 Systems and Management Requirements

2.1 Quality Management System

2.1.1 General Provisions and Requirements

The Operator must document and implement a Quality Management System (QMS) for the facility.

The QMS must demonstrate the systems, policies and procedures that:

- address how the requirements of this standard are to be met; and
- measure and monitor the effectiveness of containment systems and procedures and demonstrate how this process is used to continually improve the QMS.

The QMS must be documented before approval of the facility, and must be updated to reflect the requirements of new HSNO Act approvals, permit(s) to import and import health standards to be used in the facility.

The Operator must keep appropriate records of operation as required for the QMS. Records must be kept for a minimum of seven years from receipt, preparation or amendment.

The Operator must have a document control system to record any amendments to the QMS. The version number and issue date of the documented QMS must be recorded on each page. The type of amendment and the person responsible must be recorded.

The Inspector must be notified of and approve any amendments to the QMS prior to implementation to ensure that the facility remains within the scope of any approvals it is working under. The Inspector must hold an up to date copy of the QMS.

The Operator must review the QMS annually to ensure that it is current and includes all the information necessary to meet the requirements of this Standard.

2.1.2 Containment

The QMS must document procedures describing how the facility will be operated to:

- comply with the Standard
- comply with the purpose and controls of any applicable HSNO Act approvals
- comply with any applicable conditions specified by permit(s) to import, import health standard(s), and CTO permissions
- meet the requirement to monitor and evaluate the effectiveness of such practices and incorporate improvements into the QMS.

The QMS must contain a floor plan showing:

- the general layout of the facility
- the location and identity of containment enclosures within the facility
for aquariums and oceanariums, a plan of the waste disposal system showing drainpipes, the natural underground drainage of the site and proximity to streams or coastline, and include details of the municipal sewerage system or on-site septic tank if appropriate.

2.1.3 Management

The QMS must identify:

- the Operator
- the Deputy Operator (if applicable); and
- the specific responsibilities of the Operator in relation to complying with the requirements of this standard
- all other individuals with management responsibility and their specific delegated responsibilities. This includes delegated managers, curators, head keepers and other approved users.

The QMS must specify how the Operator will:

- review containment and management policies and procedures and implementation strategies to ensure they are effective
- communicate the importance of complying with the regulatory requirements and the escalation implications of non-compliance
- implement initial and continued training programmes specific to the animals contained and the purpose of the facility
- ensure that containment procedures are documented and put into practice
- implement a safety programme which is consistent with biosecurity and containment requirements as specified in this standard and any additional HSNO Act approval controls or MAF conditions
- prepare, implement, evaluate and (if necessary) improve emergency and contingency plans and procedures.

2.1.4 Training Programme

All people working in the facility must have working knowledge of this Standard appropriate to their level of responsibility.

The QMS must outline the minimum knowledge required for all individuals with independent access to the facility (from cleaners, administrative staff and maintenance personnel to zoo keepers), and specify additional knowledge required for individuals with varying levels of responsibility.

The training programme must describe how people working in the facility will be made aware of, and understand containment.

Training records must be documented for all people working in the facility, including refresher training that must be undertaken annually (as a minimum).
2.1.5 Records

The Operator must implement and maintain an effective record keeping system that allows easy access to records of operation required to demonstrate compliance with this Standard.

Records must be kept for a minimum of seven years from receipt, preparation or amendment and must include a zoo register that details all of the new organisms held.

These records must be correlated to the individual containers/cages in which the organism is held and the physical location (i.e. room number) of the container/cage.

Part 3  Containment controls for new organisms (zoo)

3.1 Structural Requirements

The containment facility must be constructed to contain new organisms.

The facility is responsible for any costs incurred in the assessment of containment enclosures, including any independent building and/or construction advice the Inspector deems necessary.

3.1.1 Perimeter fence

All fixed facilities must have a perimeter fence or be contained by a building that discourages unauthorised entry and acts as a barrier for animals. The perimeter fence must be at least 1.8m finished height and be either of solid construction or constructed from chain-link, deer mesh or an equivalent material and maintained in a state of good repair. A security feature (barbed or electric wire, overhang) must also be fitted.

3.1.2 Enclosures

Enclosures are the containment areas in which the animals are held. These must be secure. Staff must conduct daily inspections and arrange for any necessary repairs and measures to ensure the security of enclosures and the perimeter fence.

Each animal must be kept in an enclosure and be removed only for veterinary or husbandry purposes, transfer or public encounters. The Operator must ensure that the animal continues to be effectively contained when removed from its enclosure for whatever purpose.

All enclosures must meet the following requirements, as well as the specific enclosure details included in Appendix 1:

i. Barriers

Barriers must comply with the species specifications set out in Appendix 1 in this Standard and may include:

- Unclimbable – Animal will be unable to climb this type of barrier, e.g., smooth wall, metal or glass.
• Climbable - Animal will be able to climb this barrier, e.g., wire mesh.
• Climbable with Electrified Wire - Animal will be deterred from attempting to climb the barrier by use of electrified wires. There must be procedures in place to ensure that the electric fence is working and back up procedures or mechanisms are in place to deal with power failures (e.g. battery back-up)².

ii. Safety barriers
All reasonable precautions must be taken to prevent unsupervised contact between the public and dangerous animals. Barriers must be erected to prevent public contact with dangerous animals and to deter children from climbing such barriers.

iii. Foundations
The foundation of any enclosure must contain the new organism (refer to Appendix 1). Solid foundations can be concrete or compacted rock except for large primates (PI – refer to Appendix 1) where concrete must be used.

iv. Material
All materials used must be of suitable strength and size to contain the new organism concerned (including juveniles of that species). Special requirements are recorded in the specific enclosure details in Appendix 1.

v. Anti-dig material
Material (often wire mesh), must be attached to the containment barrier, spread horizontally and secured to or buried in the ground adjacent to the enclosure perimeter that prevents animals digging or burrowing out of containment.

vi. Internal structures/furniture
Enclosure furnishings and structures must not compromise the containment of animals within the enclosure.

vii. Enclosure access
There must be at least two containment barriers between all containment species and public areas of the zoo at the point of entry used for daily access to enclosures (e.g., a double door or gate system).

viii. Enclosures for dangerous animal
Must include additional lockable holding facilities into which the animals held in the main enclosure can be locked away on command and/or by routine. These can be yard/night den facilities, in or adjacent to the main enclosure.

² Energisers used to contain zoo animals weighing more than 20 kg should pulse at least once every 1.5 seconds and have an output of at least 6,000 volts as measured at the energiser.
ix. **Drive-through enclosures**

Where animals are kept in drive-through enclosures, entry and exit to the enclosures must be through a system of double gates whereby:

- one gate cannot be opened until the other is securely closed; and
- there is sufficient space between the gates to allow the gates to be securely closed to the front and rear of any vehicle which may enter the enclosures.

Where there are adjoining drive-through enclosures, access points between the enclosures must be controlled to prevent the movement of animals between enclosures.

Electronically operated gates must have an alternative method of control so they can be opened and closed manually in the event of an interruption to the power supply or other emergency.

x. **Walk-through enclosures**

Where visitors are allowed to enter animal enclosures on foot (walk-through enclosures) enclosures must have clearly marked areas distinguishing public areas from those for the animals.

Sufficient measures must be taken (e.g., through signs, supervision and/or barriers) to ensure that the public do not enter the animal only areas. Barriers and signs must be used to deter contact.

xi. **Maintenance of enclosures and systems**

All enclosures must be inspected and maintained to preserve containment. The Quality Management System must document the inspection and maintenance of all containment enclosures, systems and the perimeter fence including:

- Clear maintenance instructions for all components of the functioning systems that require periodic inspection or maintenance to preserve the integrity of containment.
- A clear description of how all the functioning systems of the zoo operate and how to use these systems, including emergency procedures in the event of an emergency. The functioning systems include heating, ventilation, air conditioning systems, water supply, alarms, power supply, standby power supply, fire protection and security.
- A current list of maintenance providers and their contact details
- Clear maintenance instructions for all vegetation within the enclosure to prevent escape by any zoo animal.
- Clear procedures in place to control and monitor the movement of pest animals within their facility including measures in place to deter pest animals, surveillance and remedial action if vermin is found.
xii. Modifications to an enclosure

Any major modifications to an enclosure that affects containment must be approved by the Inspector. A major modification is defined as a modification that potentially affects the integrity of the containment or significantly alters the structure of the enclosure.

The Inspector must inspect the new enclosure to check that it complies with this Standard. Minor modifications must be recorded by the Operator and checked by the Inspector at the next visit.

3.2 Transfers of new organisms

3.2.1 Transfers (import & export) between approved facilities

A transfer approval is required for transfers of new organisms between containment facilities and for export overseas.

A transfer request form must be completed and signed before the transfer by the operator or authorised delegate. The Inspector will provide this form and sign it once it is signed by the appropriately authorised persons from the exporting and importing facility, as well as any other MAF representative required to approve the transfer.

Transfers must be in accordance with the International Air Transport Association (IATA) Live Animals Regulations. All containers must be clearly labelled with the name, address and phone number of both the sender and the recipient.

Copies of all records relevant to those animals must accompany zoo animals moving to new locations.

All transfers must be documented by the importing and exporting facilities. Operators are responsible for ensuring that copies of transfer requests and records of transfers are kept and that the facility registers are updated accordingly.

The Operator of the importing facility must advise the Inspector within 72 hours of the arrival of imported animal into the facility.

3.2.2 Temporary transfers

Approval may be given for the temporary transfer of animals outside the zoo for veterinary treatment.

The operator must submit a proposal, which confirms the intended treatment, provides details of the containment provisions associated with the transport and at the veterinary treatment area. Contingency plans must address actions to be taken for any incidents during the transport or if there is an escape.
Transfers for the purposes of emergency veterinary treatment are permitted without prior approval of the Inspector, but the Inspector must be notified as soon as is practicable.

3.3 Public encounters

Approval may be given by the Inspector for an animal to be removed from its enclosure for the purposes of a public encounter. Approval will only be given to encounters held within a containment facility approved to this Standard.

The Operator must submit a proposal to the Inspector that documents the proposed encounter and how the animal will be contained and the method of restraint used during the encounter. Details on all public encounters (including those that take place within the animal’s enclosure) must include information on how a containment breach will be managed.

The Inspector may give approval once satisfied that the animal will be contained and that there are procedures in place to manage a containment breach.


Industry guidelines for public encounters can be found in the reference document that accompanies this Standard.

3.4 Access and security

3.3.1 Identification of entrances to the facility

A prominent sign must be displayed at all entrances to show that the premise is a zoo and that unauthorised entry of people and animals is prohibited.

3.3.2 Number of entrances and access to the facility

Facility entrances and details of security features in place must be documented as part of the QMS. Security fixtures must be designed to prevent unauthorised access.

Specific entry requirements for Butterfly houses are included in Appendix 1

3.3.3 Security requirements for entrances and the facility.

The entrances to the zoo must be kept locked, except when in active use.
Visitors in walk-through enclosures that are not permanently supervised must be either under video surveillance or regularly checked by staff or volunteers to ensure that visitors remain within the approved areas.

Remote operators of mechanically operated gates to drive-through enclosures must have a clear, unobstructed view of the gates under their control and of the area in the vicinity of the gates.

### 3.3.4 Access of persons to the facility

The public may have access to a containment facility for zoo animals. This access must be controlled and the facility must have procedures in place to manage the movement of the public within the facility.

Access to the containment enclosures within a facility must be restricted to persons authorised by the facility Operator and members of the Authority, or its authorised agent or authorised enforcement officers and Inspectors. Maintenance contractors/staff essential for the operation of the facility (i.e., as a plumber, electrician and carpenter) may be permitted entry. They (authorised maintenance staff) must adhere to access procedures and be accompanied by a staff member authorised by the operator.

If any zoo animal causes injury to staff or the public then the inspector must be notified as soon as possible and within 24 hours.

### 3.3.5 Firearms

Any containment facility holding classes C1, C2, P1, and pachyderms must have appropriate firearms and the appropriately licensed and trained personnel available to operate them within five (5) minutes during visiting hours and within thirty (30) minutes after visiting hours, to deal with a breach of containment by these classes of species inside the perimeter fence of the Zoo.

### 3.3.7 Disposal of a zoo animal including associated biological material

The Operator must institute measures to prevent the escape of zoo animals or their genetic material (e.g., viable eggs of invertebrate animals) leaving the containment area by way of discharge of water or liquid waste and removal of solid waste.

This includes any biological material such as cell lines, tissues, eggs, sperm or embryos, capable of self-replication or from which an animal could be regenerated.

Any of the described biological material must be dead before disposal. Generally this is not of concern with regards to higher vertebrates but is an issue with amphibians, fish, and invertebrates.
Dead zoo animals must be incinerated or deeply buried as soon as reasonably practicable. The Inspector must approve any decision to use a dead animal for any other purpose ie, body used for research purposes or taxidermy for display.

3.3.8 Butterfly houses

For all containment facilities holding butterflies and moths, associated viable waste (e.g., waste from all stages of the butterfly and moth life cycles, food plants and other vegetation must be sterilised by either autoclaving or other MAF approved treatment method. If waste cannot be sterilised in the facility it must be double bagged or placed in a sealed container in the facility before transport for treatment. Vegetation may be mulched on-site in the butterfly house and retained in the containment facility for use as plant mulch.

3.4 Contingency plans

Contingency plans must be documented as part of the QMS and must address the actions to be taken in the case of an emergency or other unexpected event. Resources must be identified and accessible for the contingency.

Contingency plans must be in place to take account of the release or escape of zoo animals:

- within and outside the zoo through accident or deliberate action;
- during emergency transfer to a veterinary surgery or to another approved containment facility for zoo animals;
- as a result of fire, earthquake, flooding, any other natural emergency, sabotage, theft, power failure, or any other event; and
- through closure of the zoo and disposal of the zoo animals.

A breach of containment includes escape of new organism(s) from their enclosure and/or the containment facility, unauthorised entry to facility, and/or structural integrity of facility compromised.

The contingency plan for the attempted retrieval or destruction of any zoo animal or any viable material of the organism that has escaped must be implemented immediately if there is a breach of containment of a new organism.

For aquariums and oceanariums the contingency plan must include how a major spill will be managed to ensure that no new organisms escape.

The QMS must describe the corrective action if there is an escape of zoo animals from containment. Action must be immediately taken to prevent further escape and, if possible, to recover and return to containment the escaped zoo animal.

The Operator must ensure that the Inspector responsible for supervision of the facility has received notification of the breach within 24 hours. In addition, if the animal(s) is (are) class C1, C2, P1, a pachyderm or any other animal that poses a threat to human life, the police must be notified immediately.
Any animal that breaches containment and poses an immediate threat to the public and staff must be destroyed unless contingency plans identify an alternative method of containing the animal with which the Inspector is satisfied.

An eradication programme with an associated monitoring programme must be instituted if the animal cannot be recovered.

The Operator is responsible for any costs incurred during the implementation of any contingency plan.

### 3.4.5 Closure of a zoo

The Operator must ensure that there are contingency plans in place for the management and movement of all new organisms if the facility can no longer operate for the purposes of public exhibition, education, conservation, recreation and/or research.

### 3.5 Equivalence

MAF recognises that the examples given in the attached specific containment requirements (Appendix 1) may in some cases not be appropriate for all facilities.

Alternative systems or practices that meet the same level of containment may be developed by a facility.

If approved by the Inspector, these alternative practices may be used at the facility as equivalent measures to meet the requirements of the Standard. These processes must be outlined in the operating manual.

### 3.6 Inspection and monitoring requirements

#### 3.6.1 Internal Assessments

The Operator must ensure that an internal compliance assessment is carried out every six months to check that appropriate systems, procedures and processes are in place.

The Operator must maintain records of internal assessments, corrective actions, completed actions and closeout and ensure that the QMS has been modified where improvements have been identified. The process for translating the results of internal assessments into improvements in the QMS must be documented.
3.6.2 External Assessments

Facilities approved to this Standard will be assessed on a regular basis. The assessment schedule will be determined by the Inspector based on the facility’s performance.

The Operator must provide Inspectors, Enforcement Officers or any other representative of a CTO, access to the facility, records and documents for inspection and assessment or to investigate non-compliances with this standard. The Operator, facility manager, or any delegated technical representative, must be available to assist and ensure that all relevant procedures, documents and records are made available.

More information about internal and external assessments can be found in the reference document that accompanies this Standard.
Glossary

audit
A systematic, independent and documented process for obtaining evidence and evaluating it objectively to determine the extent to which specific criteria are fulfilled.

chief technical officer (CTO)
The persons appointed by the Director-General as chief technical officers under section 101 of the Biosecurity Act 1993.

containment facility
A place approved in accordance with section 39 of the Biosecurity Act 1993.

controls (HSNO Act 1996)
Any obligations or restrictions imposed on any hazardous substance or new organism, or on any person in relation to any hazardous substance or new organism, by this or any other Act or any regulations, rules, codes, or other documents made in accordance with the provisions of this or any other Act for the purposes of controlling the adverse effects of that substance or organism on people or the environment.

corrective action request (CAR)
A request for a corrective action to remedy a non-compliance.

dangerous animal
An animal that is likely to cause serious injury (ie. serious damage to health requiring medical attention and ongoing treatment) or death of a human.

Director-General
The chief executive of the Ministry of Agriculture and Forestry.

Enclosure
For the purposes of this Standard, it means the separate structures in which the different new organisms are housed within the wider containment facility.

enforcement officer
An enforcement officer appointed under section 98 or section 99(3) of this [HSNO] Act.

ERMA New Zealand
Is made up of the following three components:
- Environmental Risk Management Authority (ERMA) - a quasi-judicial decision-making body (and also the Governing Board of ERMA New Zealand), who make decisions on applications to import hazardous substances and new organisms (including genetically modified organisms) into New Zealand.
- Ngā Kaihautū Tikanga Taiao - a committee to advise and assist the Authority from a Māori perspective.
• ERMA New Zealand - the Agency that is the administrative support organisation for the Authority, including advising applicants and evaluating and reviewing applications to assist the Authority.

**Import Health Standard (IHS)**
A document issued under section 22 of the Biosecurity Act 1993, which specifies the requirements to be met for the effective management of risks associated with importation of risk goods, before those goods may be imported, moved from a biosecurity control area or a transitional facility, or given a biosecurity clearance.

**Inspector**
A person appointed under section 103 of the Biosecurity Act 1993 to undertake administering and enforcing the provisions of the Biosecurity Act.

**New Organism**
Under section 2 of the HSNO Act 1996, new organism means (with some qualifications):

(a) an organism belonging to a species that was not present in New Zealand before 29 July 1998:

(b) an organism belonging to a species, subspecies, infrasubspecies, variety, strain, or cultivar prescribed as a risk species, where that organism was not present in New Zealand at the time of promulgation of the relevant regulation:

(c) an organism for which a containment approval has been given under this Act:

(ca) an organism for which a conditional release approval has been given:

(cb) a qualifying organism approved for release with controls:

(d) a genetically modified organism:

(e) an organism belonging to a species, subspecies, infrasubspecies, variety, strain, or cultivar that has been eradicated from New Zealand.

**Non-compliance**
A failure to comply with the requirements of this standard

**Operator**
The person or organisation, approved by the Director-General, who has overall responsibility for a facility, under section 40 of the Biosecurity Act 1993.

**Permit to Import**
A written order issued by the Director-General authorising the importation of risk goods to a specified facility.

**Public Encounter**
For the purposes of this standard a public encounter is a situation where there is intended contact, or the possibility of contact, between the public and an animal or animals. This part of the standard does not apply to **demonstrations** where the animal remains inside its enclosure, public remain outside the enclosure, and there is no chance of contact between them.
Quality Management System
The term “quality management system” in this standard means the quality, administrative and technical systems that govern the operations of a facility.

release
In relation to new organisms, means to allow the organism to move within New Zealand free of any restrictions other than those imposed in accordance with the Biosecurity Act or the Conservation Act 1987. Section 2, HSNO Act.

risk good
Any organism, organic material, or other thing, or substance, that (by reason of its nature, origin, or other relevant factors) may constitute, harbour, or contain an organism that may:
- cause unwanted harm to natural and physical resources or human health in New Zealand; or
- interfere with the diagnosis, management or treatment, in New Zealand, of pests or unwanted organisms.

The Authority
Under the Biosecurity Act 1993, the Authority means – the Environmental Risk Management Authority established under the Hazardous Substances and New Organisms Act 1996.

unwanted organisms
Under section 2 of the Biosecurity Act 1993, an unwanted organisms means – any organism that a chief technical officer believes is capable or potentially capable of causing unwanted harm to any natural and physical resources or human health; and
(a) includes—
(i) any new organism, if the Authority has declined approval to import that organism; and
(ii) any organism specified in Schedule 2 of the Hazardous Substances and New Organisms Act 1996; but
(b) does not include any organism approved for importation under the Hazardous Substances and New Organisms Act 1996, unless—
(i) the organism is an organism which has escaped from a containment facility; or
(ii) a chief technical officer, after consulting the Authority and taking into account any comments made by the Authority concerning the organism, believes that the organism is capable or potentially capable of causing unwanted harm to any natural and physical resources or human health.

zoo
A containment facility approved to this standard where live zoo animals are kept for the purposes of public exhibition, conservation, research or education.
Note: A zoo includes for example, a butterfly house, aquarium or an oceanarium. A zoo may also hold indigenous animals that are not new organisms but these animals are not covered by this Standard.
Appendix 1  Enclosure standards for zoo animals

The following table provides a list of all animals covered by the enclosure specifications and in which table. The operator must satisfy the requirements of one containment method included in the relevant table. Each method is described in separate columns.

The Inspector may approve individual variations on these methods if they are satisfied that the proposed method will contain the specimens concerned adequately. Where given, such approvals will be provided in writing and should be filed by the Operator for future reference.

<table>
<thead>
<tr>
<th>Appendix</th>
<th>Enclosure standards for zoo animals</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1</td>
<td>Carnivores (bears, big cats and hyenas)</td>
</tr>
<tr>
<td></td>
<td>Ursidae (Bear, sun bear)</td>
</tr>
<tr>
<td></td>
<td>Panthera leo &amp; Panthera tigris (Tigers, Lions)*</td>
</tr>
<tr>
<td></td>
<td>Panthera onca (Jaguar)</td>
</tr>
<tr>
<td></td>
<td>Panthera pardus spp (Leopard)</td>
</tr>
<tr>
<td></td>
<td>Felis concolor (Puma)</td>
</tr>
<tr>
<td></td>
<td>Hyaenidae (Hyenas)</td>
</tr>
<tr>
<td></td>
<td>Uncia uncia (Snow Leopard)</td>
</tr>
<tr>
<td></td>
<td><strong>Table 1</strong></td>
</tr>
<tr>
<td>C2</td>
<td>Carnivores (medium to small predators and cheetah)</td>
</tr>
<tr>
<td></td>
<td>Felis serval (serval),</td>
</tr>
<tr>
<td></td>
<td>Lynx rufus (Bobcat), Prionailurus bengalensis (leopard cat)</td>
</tr>
<tr>
<td></td>
<td>Felis temmincki (Asiatic Golden cat), Prionailurus viverrinus (fishing cat)</td>
</tr>
<tr>
<td></td>
<td>Leopardus pardalis (ocelot), Leopardus wiedii (Margay)</td>
</tr>
<tr>
<td></td>
<td>Caracal caracal (Caracal)</td>
</tr>
<tr>
<td></td>
<td>Acinonyx jubatus (Cheetah), Canis lupus spp (Wolf), Chrysocyon brachyurus (Maned wolf)</td>
</tr>
<tr>
<td></td>
<td>Lycaon pictus (African Wild Dog), Sarcophilus harrisii (Tasmanian Devil)</td>
</tr>
<tr>
<td></td>
<td><strong>Table 2</strong></td>
</tr>
<tr>
<td>C3</td>
<td>Carnivores (small carnivores and red panda)</td>
</tr>
<tr>
<td></td>
<td>Ailururs fulgens fulgens (red panda), Suricata suricatta (meerkat)</td>
</tr>
<tr>
<td></td>
<td>Aonyx cinerea (small-clawed otter)</td>
</tr>
<tr>
<td></td>
<td><strong>Table 3</strong></td>
</tr>
<tr>
<td>P1</td>
<td>Large Primates (apes and baboons)</td>
</tr>
<tr>
<td></td>
<td>Hominidae (gorilla, chimpanzee, orang-utan)</td>
</tr>
<tr>
<td></td>
<td>Papio spp (baboon)</td>
</tr>
<tr>
<td></td>
<td><strong>Table 4</strong></td>
</tr>
<tr>
<td>P2</td>
<td>Primates (other than apes and)</td>
</tr>
<tr>
<td></td>
<td>Hylobatidae (gibbons), Cebinae spp</td>
</tr>
<tr>
<td></td>
<td><strong>Table 5</strong></td>
</tr>
<tr>
<td>Category</td>
<td>Examples</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>---------------------------------------------------------------------------</td>
</tr>
<tr>
<td>baboons</td>
<td>(capuchin), <em>Atelinae</em> <em>spp</em> (spider monkeys) <em>Galagonidae</em> (bush babies), <em>Lemuridae</em> (lemur) <em>Cercopithecidae</em> (macaque, mandrill, colobus, leaf monkey) <em>Callitrichidae</em> (tamarin, marmoset)</td>
</tr>
<tr>
<td>Ungulates (except Pachyderms)</td>
<td>Tapir, peccary, antelope species, zebra, camel, giraffe Lesser Malay Chevrotain, waterbuck, sitatunga</td>
</tr>
<tr>
<td>Monotremes, Marsupials and Rodents</td>
<td>Macropods, wombats, tasmanian devils, koala, feathertail glider Long Nosed Potoroo, Short Beaked Echidna Rodents (digging and non digging species)</td>
</tr>
<tr>
<td>Pachyderms (elephant, rhinos, hippos)</td>
<td><em>Elephantidae</em> (elephants) <em>Hippopotamidae</em> (hippopotamus) <em>Rhinocerotidae</em> (rhinoceros)</td>
</tr>
<tr>
<td>Avian species</td>
<td>Flying and non-flying (naturally flightless, pinioned or otherwise unable to fly) birds.</td>
</tr>
<tr>
<td>Reptile species</td>
<td><em>Testudinidae</em> (tortoises), <em>Crocodylia</em> (crocodile), <em>Varanidae</em> (monitor lizards) All other reptiles</td>
</tr>
<tr>
<td>Invertebrates</td>
<td>All invertebrates</td>
</tr>
</tbody>
</table>
Table 1  **Carnivores C1: Bears, Big Cats and Hyenas**

<table>
<thead>
<tr>
<th>Common name: Latin name:</th>
<th>Minimum Unclimbable Barrier height (m)</th>
<th>Minimum Climiable Barrier height (m)</th>
<th>Minimum Climicable Barrier height (m) with electrified wire</th>
<th>Minimum Wet Moat Specifications</th>
<th>Foundation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ursidae</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bear Ursus spp</td>
<td>4</td>
<td>Fully enclosed</td>
<td>4m mesh with 900mm overhang at 45° with minimum of three electric wires at varying heights</td>
<td>3m wide, 2m deep moat with a 2m unclimbable barrier or 1m unclimbable barrier with 800mm wide electrified in-rigger for wet moats, minimum 5 wires.</td>
<td>1000mm deep solid foundation or 500 mm deep solid foundation plus 900mm wide anti-dig material</td>
</tr>
<tr>
<td>Sun Bear Helarctos malayamus</td>
<td>3.5</td>
<td>Fully enclosed</td>
<td>2.8m mesh with 900mm overhang at 35-45° with minimum of three electric wires at varying heights</td>
<td>3m wide, 2m deep moat with a 2m unclimbable barrier or 1m unclimbable barrier with 800mm wide electrified in-rigger for wet moats, minimum 5 wires.</td>
<td>1000mm deep solid foundation or 500 mm deep solid foundation plus 900mm wide anti-dig mesh</td>
</tr>
<tr>
<td><strong>Felidae</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tiger Panthera tigris</td>
<td>4</td>
<td>4.0m with a 900mm overhang at 35-45°</td>
<td>3.6m mesh with 900mm overhang at 35-45° with minimum of three electric wires at varying heights</td>
<td>5m wide moat 1.8m deep with a 2m unclimbable barrier or 5m wide moat 1.8m deep 1m unclimbable barrier with 800mm wide electrified in-rigger, minimum 5 electrified wires</td>
<td>500mm deep solid foundation or 500mm anti-dig material</td>
</tr>
<tr>
<td>African Lion Panthera leo</td>
<td>4</td>
<td>4.0m with a 900mm overhang at 35-45°</td>
<td>3.6m mesh with 900mm overhang at 35-45° with minimum of two electric wires at varying heights</td>
<td>4m wide moat 1.8m deep with a 2m unclimbable barrier or 1m unclimbable barrier with 800mm wide electrified in-rigger for wet moats, minimum 5 wires</td>
<td>500mm deep solid foundation or 500mm anti-dig material</td>
</tr>
<tr>
<td>Jaguar Panthera onca</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Leopard Panthera pardus spp</td>
<td></td>
<td>Not suitable. Species must be fully enclosed</td>
<td>Not suitable. Species must be fully enclosed</td>
<td>Not suitable. Species must be fully enclosed</td>
<td>500mm deep solid foundation or 500mm anti-dig wire material</td>
</tr>
<tr>
<td>Clouded Leopard Neofelis nebulosa</td>
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<tr>
<td>Snow Leopard Uncia uncia</td>
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<td></td>
</tr>
<tr>
<td><strong>Hyaenidae</strong></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Hyena Crocuta sp</td>
<td>3</td>
<td>Not suitable</td>
<td>3.0 mesh including with 900mm overhang at 35-45° with minimum of three electric wires at varying heights</td>
<td>3m wide moat, 1.8m deep with a 2m unclimbable barrier or 3m wide moat, 1.8m deep with 1m unclimbable barrier with 800mm wide electrified in-rigger, minimum 5 wires</td>
<td>1000mm deep solid foundation or 900mm anti dig wire material</td>
</tr>
<tr>
<td>Common name:</td>
<td>Latin name:</td>
<td>Wet Moat Specifications</td>
<td></td>
<td></td>
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<tr>
<td>-------------</td>
<td>-------------</td>
<td>-------------------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Serval</td>
<td><em>Felis serval</em></td>
<td>2m wide moat, 1.8m deep with a 2m unclimbable barrier or 2m wide moat, 1.8m deep with a 1m unclimbable barrier with 800mm wide in-rigger with minimum 5 electrified wires on in-rigger</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bobcat</td>
<td><em>Lynx rufus</em></td>
<td>2m wide moat 1.8m deep with a 2m unclimbable barrier or 1m unclimbable barrier with 800mm wide electrified in-rigger for wet moats, minimum 5 wires</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leopard Cat</td>
<td><em>Prionailurus bengalensis</em></td>
<td>Fence must finish flush with ground</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asian Golden Cat</td>
<td><em>Felis s. temminckii</em></td>
<td>2m wide moat 1.8m deep with a 2m unclimbable barrier or 1m unclimbable barrier with 800mm wide electrified in-rigger for wet moats, minimum 5 wires</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fishing Cat</td>
<td><em>Prionailurus viverrinus</em></td>
<td>2m wide moat 1.8m deep with a 2m unclimbable barrier or 1m unclimbable barrier with 800mm wide electrified in-rigger for wet moats, minimum 5 wires</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small cat species</td>
<td><em>Felis spp.</em></td>
<td>2m wide moat 1.8m deep with a 2m unclimbable barrier or 1m unclimbable barrier with 800mm wide electrified in-rigger for wet moats, minimum 5 wires</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cheetah</td>
<td><em>Acinonyx jubatus</em></td>
<td>2m wide moat 1.8m deep with a 2m unclimbable barrier or 1m unclimbable barrier with 800mm wide electrified in-rigger for wet moats, minimum 5 wires</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ocelot</td>
<td><em>Leopardus pardalis</em></td>
<td>2m wide moat 1.8m deep with a 2m unclimbable barrier or 1m unclimbable barrier with 800mm wide electrified in-rigger for wet moats, minimum 5 wires</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Margay</td>
<td><em>Leopardus wiedii</em></td>
<td>2m wide moat 1.8m deep with a 2m unclimbable barrier or 1m unclimbable barrier with 800mm wide electrified in-rigger for wet moats, minimum 5 wires</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caracal</td>
<td><em>Caracal caracal</em></td>
<td>2m wide moat 1.8m deep with a 2m unclimbable barrier or 1m unclimbable barrier with 800mm wide electrified in-rigger for wet moats, minimum 5 wires</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>African Wild Dog</td>
<td><em>Lycaon pictus</em></td>
<td>2m wide moat 1.8m deep with a 2m unclimbable barrier or 1m unclimbable barrier with 800mm wide electrified in-rigger for wet moats, minimum 5 wires</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Comment [AU1]:**

DRAFT containment standard for zoo animals 154.03.04
February 2010
### Table 3. Carnivores C3: Small Carnivores & Red Panda

<table>
<thead>
<tr>
<th>Family</th>
<th>Common name: Latin name</th>
<th>Minimum Unclimbable Barrier height (m)</th>
<th>Minimum Climbable Barrier height (m) with electrified wire</th>
<th>Minimum Climbable Barrier height (m) with electrified wire</th>
<th>Minimum Wet Moat Specifications</th>
<th>Foundation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ailuridae</td>
<td>Red Panda <em>Ailurus fulgens</em> fulgens</td>
<td>1.8m</td>
<td>Not suitable- must be fully enclosed if using climbable barriers</td>
<td>Not suitable</td>
<td>Not suitable</td>
<td>250mm solid foundation or 500mm anti-dig material</td>
</tr>
<tr>
<td><strong>Herpestidae</strong></td>
<td>Meerkat <em>Suricata suricatta</em></td>
<td>1.0m</td>
<td>Not suitable- must be fully enclosed if using climbable barriers</td>
<td>Not suitable</td>
<td>Not suitable without a 1.2m unclimbable barrier beyond moat.</td>
<td>Entire ground area of enclosure must be covered with anti-dig material with aperture small enough to contain all specimens (anti-dig material may be buried in substrate).</td>
</tr>
<tr>
<td><strong>Mustelidae</strong></td>
<td>Small-clawed Otter <em>Aonyx cinerea</em></td>
<td>1.2m</td>
<td>Not suitable- must be fully enclosed if using climbable barriers</td>
<td>Not suitable</td>
<td>Water feature can form part of containment barrier with 1.2m unclimbable end wall or 400mm unclimbable in-rigger on 45 degree angle.</td>
<td>200mm solid foundation or 500mm anti-dig material</td>
</tr>
</tbody>
</table>
Table 4  Large Primates P1: apes and baboons

Containment of primates cannot be achieved with climbable barriers without electrified wires. Containment of hominids using electrified wires on climbable barriers is not suitable for small exhibits (less than 2,000 sq. metres). Such exhibits may not have enough space to allow animals to avoid each other during times of tension and in this situation electric wires cannot guarantee containment.

<table>
<thead>
<tr>
<th>Common name: Latin name:</th>
<th>Minimum Unclimbable Barrier height (m)</th>
<th>Minimum Climbable Barrier height (m) with electrified wire</th>
<th>Minimum Wet(?) Moat Specifications</th>
<th>Foundation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hominidae</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gorilla</td>
<td>4</td>
<td>3.8m with at least 11 electric wires spaced no more approximately 320mm apart for full height of barrier (minimum 11 wires). 1.2m in-rigger at top of barrier, 30 degrees from vertical, with minimum 10 electric wires at approx 12 mm spacing. At between 2.5 and 3.5 m on barrier an additional horizontal in-rigger, 1m long, with minimum 8 electric wires at approx 100mm spacing.</td>
<td>2m wide moat, 1m deep, with an unclimbable barrier protruding 2m above maximum water level. Minimum one electrified wire and earth on unclimbable barrier</td>
<td>300mm concrete.</td>
</tr>
<tr>
<td>Gorilla gorilla</td>
<td></td>
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</tr>
<tr>
<td>Chimpanzee</td>
<td></td>
<td></td>
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<tr>
<td>Pan troglodytes</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Orang-utan</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Pongo pygmaeus</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td><strong>Papio spp</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baboon</td>
<td>2 metre with 1m unclimbable sheet metal plus 0.5 unclimbable overhang at 45 degrees. As well as electric wire at bottom of unclimbable section and top of barrier</td>
<td>2.8m with 400mm overhang at 45 degrees with minimum six electric wires.</td>
<td>4m wide and 1.2m deep moat with a 1.6m unclimbable barrier or 1m unclimbable with an electric wire.</td>
<td>300mm or 300mm anti-dig material (can be vertical)</td>
</tr>
<tr>
<td>Papio hamadryas ursinus</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Papio hamadryas hamadryas</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Comment [SA2]: Waiting for industry to confirm number of wires.
<table>
<thead>
<tr>
<th>Common name:</th>
<th>Minimum Unclimbable Barrier height (m)</th>
<th>Minimum Climbable Barrier height (m) with electrified wire</th>
<th>Minimum Wet Moat Specifications</th>
<th>Foundation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hylobatidae</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gibbons</td>
<td>Not suitable. Must be fully enclosed or contained by a moat.</td>
<td>Not suitable. Must be fully enclosed or contained by a moat.</td>
<td>4m wide and 1.2m deep moat.</td>
<td>No special foundation required for containment- species do not dig.</td>
</tr>
<tr>
<td>Hylobates spp</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capucin</td>
<td>3.5</td>
<td>3m high with 1m overhang at top of barrier with 5 electric wires at 100mm spacing (on the overhang) and an additional in-rigger at 1.9m with minimum of four electric wires at 100mm spacing.</td>
<td>4m wide and 1.2m deep moat.</td>
<td>300mm</td>
</tr>
<tr>
<td>Cebus spp</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spider Monkeys</td>
<td>3.5</td>
<td>3m high with 1m overhang at top of barrier with 5 electric wires at 100mm spacing (on the overhang) and an additional in-rigger at 1.9m with minimum of four electric wires at 100mm spacing.</td>
<td>4m wide and 600mm deep moat.</td>
<td>300mm</td>
</tr>
<tr>
<td>Ateles spp</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Squirrel Monkeys</td>
<td>3.5</td>
<td>3m high with 1m overhang at top of barrier with 5 electric wires at 100mm spacing (on the overhang) and an additional in-rigger at 1.9m with minimum of four electric wires at 100mm spacing.</td>
<td>4m wide and 600mm deep moat.</td>
<td>300mm</td>
</tr>
<tr>
<td>Saimiri sciureus</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Galagonidae</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bush Babies</td>
<td>Not suitable. Must be fully enclosed</td>
<td>Fully enclosed</td>
<td>Not suitable</td>
<td>No special foundation required for containment- species do not dig.</td>
</tr>
<tr>
<td>Galago sp / Otolemur sp</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lemuridae</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lemur</td>
<td>3.0</td>
<td>2m high with 800mm overhang at 45 degrees with minimum 5 electric wires at 60mm spacing and an additional in-rigger at least 1.8m above ground level with minimum of two electric wires at 100mm spacing.</td>
<td>3.5m wide and 600mm deep moat.</td>
<td>300mm</td>
</tr>
<tr>
<td>Ceropithecidae</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mucaca spp</td>
<td>3.0</td>
<td>3m high with 1m overhang at top of barrier with 5 electric wires at 100mm spacing (on the overhang) and an additional in-rigger at 1.9m with minimum of four electric wires at 100mm spacing.</td>
<td>3.5m wide, 1.2m deep moat with a 2m unclimbable barrier or 1.5m unclimbable barrier with an electric wire at top of barrier</td>
<td>300mm and 1m anti-dig material</td>
</tr>
<tr>
<td>Mandrill</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cercopithicidae</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black and White</td>
<td>Not suitable. Must be fully enclosed or contained by a moat</td>
<td>Not suitable. Must be fully enclosed or contained by a moat.</td>
<td>4m wide and 1.2m deep moat.</td>
<td>300mm</td>
</tr>
<tr>
<td>Colobus guereza</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Species</td>
<td>Suitability Restrictions</td>
<td>Moat Dimensions</td>
<td>Width (mm)</td>
<td></td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>----------------------------------------------------------------</td>
<td>----------------------------------------</td>
<td>------------</td>
<td></td>
</tr>
<tr>
<td>Francois Leaf Monkey</td>
<td>Not suitable. Must be fully enclosed or contained by a moat.</td>
<td>4m wide and 1.2m deep moat.</td>
<td>3000mm</td>
<td></td>
</tr>
<tr>
<td>Trachypithecus francisci</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Callitrichidae</td>
<td>Not suitable- must be 2.0m unclimbable barrier or fully enclosed.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tamarins and Marmosets</td>
<td>2.0</td>
<td>3.2m wide and 600mm deep moat.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 Special attention should be given to structures in enclosure in order not to provide platforms for jumping over barrier.
## Table 6  Ungulates (except pachyderms)

<table>
<thead>
<tr>
<th>Common name: Latin name</th>
<th>Minimum Unclimbable Barrier height (m)</th>
<th>Minimum Climbable Barrier height (m)</th>
<th>Minimum Climbable Barrier height (m) with electrified wire</th>
<th>Minimum Wet Moat Specifications</th>
<th>Foundation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tapir (Tapirus spp.)</td>
<td>1.8m</td>
<td>1.8m</td>
<td>1.5m with at least 2 electric wires (one at top of fence, one at approximately 0.75m above ground level)</td>
<td>1.5 deep and 0.3m unclimbable wall above maximum water level</td>
<td>Barriers finished close enough to ground to prevent animals crawling underneath</td>
</tr>
<tr>
<td>Peccary</td>
<td>1.5</td>
<td>1.8</td>
<td>1.8 (as for no-electrics)</td>
<td>not suitable</td>
<td>1m solid foundation</td>
</tr>
<tr>
<td>Antelope species</td>
<td>1.8m</td>
<td>1.8m</td>
<td>Not suitable for containment but are recommended for management purposes</td>
<td>Minimum of 4 m wide and 1.2 m deep.</td>
<td>Barriers finished close enough to ground to prevent animals crawling underneath</td>
</tr>
<tr>
<td>Zebra Camel</td>
<td>1.4</td>
<td>1.4</td>
<td>Not suitable for containment but are recommended for management purposes</td>
<td>Minimum of 4 m wide and 1.2 m deep.</td>
<td>Barriers finished close enough to ground to prevent animals crawling underneath</td>
</tr>
<tr>
<td>Giraffe</td>
<td>1.8m</td>
<td>1.8m</td>
<td>Not suitable for containment but are recommended for management purposes</td>
<td>Minimum of 4 m wide and 1.2 m deep.</td>
<td>Barriers finished close enough to ground to prevent animals crawling underneath Though not required for containment-electric wires are recommended for fences less than 2.5 m high and around moats to minimise the risk of animals harming themselves on these barriers.</td>
</tr>
<tr>
<td>Lesser Malay Chevrotain Tragulus javanicus</td>
<td>1.8m</td>
<td>1.8m</td>
<td>Not suitable for containment</td>
<td>Not suitable for containment</td>
<td>Barriers finished close enough to ground to prevent animals crawling underneath</td>
</tr>
<tr>
<td>Waterbuck Sitatunga</td>
<td>1.8m</td>
<td>1.8m</td>
<td>Not suitable for containment but are recommended for management purposes</td>
<td>Minimum of 4 m wide and 1.2 m deep. Moat must be fenced at outer edge with at least one electric wire.</td>
<td>Barriers finished close enough to ground to prevent animals crawling underneath</td>
</tr>
</tbody>
</table>
### Table 7 Monotremes, Marsupials and Rodents

<table>
<thead>
<tr>
<th>Common name</th>
<th>Common name Latin name</th>
<th>Minimum Unclimbable Barrier height (m)</th>
<th>Minimum Climbable Barrier height (m)</th>
<th>Moat Width (m)</th>
<th>Foundations¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>Macropods</td>
<td>1.8m</td>
<td>1.8m</td>
<td>not suitable</td>
<td></td>
<td>Barriers finished flush with ground.</td>
</tr>
<tr>
<td>Wombats</td>
<td>1.2m</td>
<td>1.2m</td>
<td></td>
<td></td>
<td>Entire enclosure must be covered with anti-dig mesh with aperture small enough to contain all specimens</td>
</tr>
<tr>
<td>Tasmanian Devil Sarcophilus harrisii</td>
<td>1.2m with inward horizontal or slanted overhang at least 30cm wide</td>
<td>1.2m</td>
<td></td>
<td></td>
<td>Entire enclosure must be covered with anti-dig mesh with aperture small enough to contain all specimens</td>
</tr>
<tr>
<td>Koala</td>
<td>2.4 m</td>
<td>Not suitable</td>
<td>Not suitable</td>
<td></td>
<td>Barriers finished flush with ground.</td>
</tr>
<tr>
<td>Feathertail Glider Acrobates pygmaeus</td>
<td>Not suitable, must be fully enclosed</td>
<td>Not suitable, must be fully enclosed</td>
<td>Not suitable, must be fully enclosed</td>
<td></td>
<td>Barriers finished flush with ground.</td>
</tr>
<tr>
<td>Long Nosed Potoroo Potorous tridactylus</td>
<td>1.8m</td>
<td>1.8m with 0.3 m overhang or fully enclosed</td>
<td>Not suitable</td>
<td></td>
<td>300 mm</td>
</tr>
<tr>
<td>Short Beaked Echidna Tachyglossus aculeatus</td>
<td>0.9m</td>
<td>Not suitable</td>
<td>Not suitable</td>
<td></td>
<td>Entire enclosure must be covered with anti-dig mesh with aperture small enough to contain all specimens</td>
</tr>
<tr>
<td>Rodents- Digging Species African Crested Porcupine and other digging rodent species</td>
<td>1.0</td>
<td>N/A</td>
<td>N/A</td>
<td></td>
<td>Entire enclosure must be covered with anti-dig mesh with aperture small enough to contain all specimens</td>
</tr>
<tr>
<td>Rodents – Non digging species (Capybara and Agouti)</td>
<td>1.0</td>
<td>N/A</td>
<td>N/A</td>
<td></td>
<td>300mm or 300 mm anti-dig material</td>
</tr>
</tbody>
</table>
### Table 8  Pachyderms (elephant, rhinos, hippos)

<table>
<thead>
<tr>
<th>Common name Latin name</th>
<th>Minimum Unclimbable Barrier height (m) - solid vertical barriers</th>
<th>Minimum Climbable Barrier height (m)</th>
<th>Enclosure barrier specifications - pole only</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asian &amp; African Elephant (males with / without females)</td>
<td>2.5m</td>
<td>2.5 m with single electric wire at top of barrier (current AZ minimum)</td>
<td>2.5m high at 0.5m spacing (current AZ method)</td>
</tr>
<tr>
<td>Asian &amp; African Elephant (females only)</td>
<td>1.9m</td>
<td>1.9m with single electric wire at top of barrier (current AZ minimum)</td>
<td>2.5m high at 0.5m spacing (current AZ method)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Common name Latin name</th>
<th>Minimum Unclimbable Barrier height (m) (e.g. wall or pole and rail fence)</th>
<th>Enclosure barrier height – unclimbable embankment</th>
<th>Enclosure barrier specifications - pole and cable</th>
<th>Enclosure barrier specifications - pole only</th>
<th>Water filled Moat Specifications (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hippopotamus Pygmy Hippopotamus</td>
<td>1.6m.</td>
<td>2.0m steep (at least 45° from horizontal) stone bank</td>
<td>1.5m</td>
<td>1.5m high at 0.5m centres.</td>
<td>Minimum 1.6m depth with unclimbable wall of 1.6m above maximum water level or 0.7m above maximum water level with an electric wire at top of barrier.</td>
</tr>
<tr>
<td>White Rhinoceros Black Rhinoceros</td>
<td>1.6m</td>
<td>2.0m steep (at least 45° from horizontal) stone bank</td>
<td>1.5m</td>
<td>1.6m high at 0.5m centres.</td>
<td>5m wide and 1.5m deep</td>
</tr>
</tbody>
</table>

Materials used should be adhere to the international best practise for containing the species concerned.
<table>
<thead>
<tr>
<th>Taxa</th>
<th>Enclosure barrier height</th>
<th>Foundation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flying birds</td>
<td>Not applicable, must be fully enclosed with double door / gate system for all access (public and staff).</td>
<td>Ensure netting/mesh are secure to foundation to prevent rodent infestation compromising containment</td>
</tr>
<tr>
<td>Non-flying birds (naturally flightless, pinioned or otherwise unable to fly)</td>
<td>Cranes (Family Gruidae) – 1.5m</td>
<td>Barrier flush to ground</td>
</tr>
<tr>
<td></td>
<td>Rhea (Rhea Americana) – 1.8m</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Other species not a threat to public and can be contained by perimeter fence.</td>
<td></td>
</tr>
<tr>
<td>Common name Latin name</td>
<td>Barrier height</td>
<td>Foundation</td>
</tr>
<tr>
<td>------------------------</td>
<td>---------------</td>
<td>------------</td>
</tr>
<tr>
<td>All reptiles except tortoises (family testudinidae), crocodylians (order crocodylia) and lizards with a body length (snout to vent) of 150 mm or greater</td>
<td>Not applicable. Must be fully enclosed</td>
<td>Ensure netting/mesh/glass is secure to foundation to prevent digging out. Anti-digging mesh must be used with strong digging species if not in solid bottom enclosures</td>
</tr>
<tr>
<td>Tortoises (family testudinidae), crocodylians (order crocodylia) and lizards with a body length (snout to vent) of 150 mm or greater</td>
<td>Unclimbable barrier height of at least 1 x length of average adult of species to be contained with a minimum height of 900 mm. Climbable barriers not suitable for these species (note that material required for unclimbable barrier varies with the climbing ability of the species concerned)</td>
<td>Ensure netting/mesh/glass are secure to foundation to prevent digging out. Anti-digging mesh must be used with strong digging species if not in solid bottom enclosures. Drain points of ponds must be covered with mesh to prevent escape by any individuals (including juveniles if adults contained are in a possible breeding situation).</td>
</tr>
</tbody>
</table>

Table 11  Invertebrates

<table>
<thead>
<tr>
<th>Common name Latin name</th>
<th>Barrier height</th>
<th>Foundation</th>
</tr>
</thead>
<tbody>
<tr>
<td>All invertebrates*</td>
<td>Not applicable. Must be fully enclosed</td>
<td>All foundations and containment structures used must be suitable to contain the smallest individuals, and to eliminate the possibility of viable eggs leaving the containment area.</td>
</tr>
</tbody>
</table>
*Additional requirements for butterfly and moth enclosures*

1. The containment facilities must be located south of latitude 34° South (Cape Reinga) and must be maintained at temperatures of at least 20°C.

2. The number of entry/exit doors to the containment facility must be kept to a minimum. Entry and exit of the public and staff must be through at least one vestibule with two self-closing doors (although staff may have a separate entrance). Vestibules must be sufficiently large so that both doors cannot be opened at once by a single individual. These doors must be equipped with gaskets (rubber, neoprene or magnetic, etc) to form a complete seal with the frame. The base of the doors must have floor sweeps attached to reduce the likelihood of adult butterflies or moths escaping.

3. Within the vestibule created by the double door system, a combination of at least two safeguards must be in place to reduce the likelihood that the butterflies or moths can escape. Safeguards may include, for example low light levels, mirrors within the vestibule so that people can check for the presence of butterflies or moths, a cold air curtain, or a curtain of narrow flexible vertical panels covering an area at least as large as the door opening placed before the inner door or between the doors – so that people are required to move through them before exiting the enclosure.

4. All drains, air vents and other outlets that connect to the outside of the containment facility must have a fine metal mesh screen securely fitted to them. The size of the mesh must be half the size of the smallest life cycle stage of caterpillar or adult.

5. Direct handling of adult butterflies and moths should be actively discouraged because of the potential to harm them, the possibility of allergy in some people, and the risk of a breach of containment.

6. The enclosure must be checked daily to remove leaves with eggs, caterpillars or pupae. The eggs, caterpillars or pupae must be destroyed or kept in the adjoining breeding room for breeding purposes.

7. Any Quarantine, Rearing and Breeding facilities of the containment facility must be separated from the Butterfly House by a means of excluding ready access by visiting public.

8. The breeding room must be separate from the public display area.

9. The breeding room must not be accessible to the public. Only persons authorised by the facility Operator and members of the Authority, or its authorised agent or properly authorised enforcement officers and Inspectors are permitted access to the breeding room.

10. Pupae in the publicly accessible area must be completely contained within a physical structure (for instance a box composed of transparent material such as glass) access to which is limited to persons authorised by the facility Operator and members of the Authority, or its authorised agent or properly authorised enforcement officers and Inspectors. Ready access by the visiting public to the contents of the physical structure
Appendix 2: Part 2 of Schedule 3 of the HSNO Act

Matters to be addressed by containment controls for new organisms excluding genetically modified organisms

1. To limit the likelihood of any accidental release of any organism or any viable genetic material, the controls imposed by an approval shall specify—
   (a) Requirements for treatment and decontamination to prevent escape by way of expelled air, discharge of water or liquid waste, removal of solid waste, or breaches in facility boundary;
   (c) Requirements to be complied with for the access of persons to the facility;
   (e) Requirements for the disposal of any biological material;
   (f) Requirements for facility construction;
   (g) Requirements to secure the facility and openings, including securing against failure in the event of foreseeable hazards.

2. To exclude unauthorised people from the facility, the controls imposed by an approval shall specify—
   (a) Means of identification of all entrances to the facility;
   (b) The numbers of entrances and access to the facility;
   (c) Security requirements for the entrances and the facility.

3. To control the effects of any accidental release or escape of an organism—
   (a) Controls imposed by an approval shall specify an eradication plan for escaped organisms;
   (b) Controls imposed by an approval may specify requirements to limit the likelihood of an escaped organism spreading, surviving, and breeding, including, but not limited to—
      i. Exclusion zones (spatial or temporal);
      ii. Location of the facility outside the usual habitat range of the organism.

4. Controls imposed by an approval shall specify inspection and monitoring requirements for containment facilities.

5. Controls imposed by an approval may specify the qualifications required of the person responsible for implementing those controls.
Appendix 3: Schedule 2 of the HSNO Act

Prohibited New Organisms

Any snake of any species whatever.
Any venomous reptile, venomous amphibian, venomous fish, or venomous invertebrate. (In this item, *venomous* means capable of inflicting poisonous wounds harmful to human health.)
Any American grey squirrel (*Sciurus carolinensis gmelini*).
Any red squirrel (*Sciurus vulgaris*).
Any musquash (or muskrat) (*Ondatra zibethica*).
Any coypu or nutria (*Myocastor coypus*).
Any beaver (*Castor canadensis*).
Any gerbil (*Meriones unguiculatus*).
Any prairie dog (*Cynomys spp.*).
Any pocket gopher (*Geomys spp. and Thomomys spp.*).
Any red or silver fox (*Vulpes vulpes*).
Any Arctic fox (*Alopex lagopus*).
Any mongoose (family Herpestidae) other than *Suricata suricatta*.
Any member of the family Mustelidae, subfamily Mustelinae, other than ferrets (*Mustela furo*), weasels (*Mustela nivalis*), and stoats (*Mustela erminea*), and subfamily Lutrinae, other than oriental small clawed otter (*Aonyx cinerea*).
Any mole (family Talpidae).
Any member of the family Esocidae (eg, pikes, muskellunge).
Any member of the families Phalangeridae and Petauridae, other than the Australian brushtail possum (*Trichosurus vulpecula*).
Any stickleback (*Gasterosteus spp.*).
Any giant African snail (*Achatina spp.*).
Any predatory snail (*Euglandina rosea*).
Any cane toad (*Bufo marinus*).