

MAF Biosecurity New Zealand

STANDARD 154.03.04

Containment Facilities

For

Zoo Animals

**Ministry of Agriculture and Forestry
Biosecurity New Zealand
P O Box 2526
Wellington
New Zealand**

Contents

Contents.....	2
Endorsement.....	6
Review.....	7
Amendment record.....	7
Significant Amendments.....	7
1 Introduction.....	8
1.1 Scope.....	8
1.2 Background.....	8
2 References.....	9
3 Definitions.....	9
4 Approval of a Zoo and an Operator.....	14
4.1 Approval of a Zoo.....	14
4.1.1 Procedure for approval of a zoo.....	14
4.1.2 Site approval.....	14
4.1.3 Zoo approval.....	15
4.2 Approval of the Operator.....	15
4.2.1 Leased facilities.....	16
4.2.2 Collection of personal information on individuals.....	16
4.3 Cancellation of Approval.....	16
5 Zoo Manual.....	17
5.1 General.....	17
5.2 Containment Requirements.....	17
5.3 Management.....	17
5.4 Training.....	17
5.5 Internal Controls.....	17
5.6 Version.....	18
6 Structural and Operational Requirements.....	19
6.1 General Requirements.....	19
6.2 Containment of Zoo Animals.....	19
6.2.1 Enclosures.....	19
6.2.2 Modifications to an enclosure.....	20
6.2.3 Perimeter fence.....	20
6.2.4 Maintenance of enclosures and systems.....	20
6.2.5 Additional Requirements for Circuses.....	20
6.2.6 Access of People to the Zoo.....	21
6.2.7 Register of Zoo Animals.....	21
6.3 Movement of Zoo Animals.....	21
6.3.1 Temporary transfer.....	22
6.3.2 Transfer to another zoo.....	22
6.3.3 Importation of zoo animals.....	22
6.3.4 Export of zoo animals.....	22
6.3.5 Transport of zoo animals.....	22
6.4 Disposal of Dead Zoo Animals and Waste.....	22
6.5 Disease Occurrence and Investigation.....	23
6.6 Contingency Plans.....	23
6.7 External Audit.....	23

6.7.1	Non-compliance	23
6.8	Consequences of Cancellation of Approval of the Zoo	24
6.9	Costs	24
6.10	Reporting Requirements.....	24
6.11	Records.....	24
7	Schedule One.....	28
7.1	Enclosure Standards for Zoo Animals	28
7.1.1	Criteria for assessment	28
1.	Physical ability	28
7.2	Behavioural requirements	28
7.3	Risk ratings.....	29
8	Carnivores C1: Felids and Ursidae (excluding cheetah).....	30
8.1	Risk ratings.....	30
8.1.1	Physical ability	30
8.1.2	Behavioural factors	30
8.1.3	Public safety	31
8.1.4	Keeper safety and issues	31
8.2	Enclosure standards for Felids and Ursidae (excluding cheetah)	31
8.2.1	Physical containment.....	31
8.2.2	Behavioural factors shall be addressed by:	33
8.2.3	Public safety	34
8.2.4	Keeper safety.....	34
9	Carnivores C2: Canidae, Hyaenidae, cheetah	36
9.1	Risk ratings.....	36
9.1.1	Physical ability	36
9.1.2	Behavioural factors	36
9.1.3	Public safety	36
9.1.4	Keeper safety and issues	36
9.2	Enclosure standards for Canidae, Hyaenidae, cheetah.....	37
9.2.1	Physical containment.....	37
9.2.2	Behavioural factors shall be addressed by:	38
9.2.3	Public safety	39
9.2.4	Keeper safety.....	39
10	Carnivores C3: Mustelidae (weasels, otters, badgers, skunks) Procyonidae (raccoons, etc) Viverridae (civets, genets)	41
10.1	Risk ratings.....	41
10.1.1	Physical ability	41
10.1.2	Behavioural factors	41
10.1.3	Public safety	41
10.1.4	Keeper safety and issues	41
10.2	Enclosure standards for Mustelidae (weasels, otters, badgers, skunks) Procyonidae (raccoons, etc) Viverridae (civets, genets).....	42
10.2.1	Physical containment.....	42
10.2.2	Behavioural factors shall be addressed by:	43
10.2.3	Public safety	44
10.2.4	Keeper safety.....	44
11	Large Primates P1: apes and baboons	46
11.1	Risk ratings.....	46
11.1.1	Physical ability	46

11.1.2	Behavioural factors	46
11.1.3	Public safety	47
11.1.4	Keeper safety and issues	47
11.2	Enclosure standards for apes and baboons.....	47
11.2.1	Physical containment.....	47
11.2.2	Behavioural factors shall be addressed by:	49
11.2.3	Public safety	49
11.2.4	Keeper safety.....	50
12	Primates P2: (other than apes and baboons)	52
12.1	Risk ratings.....	52
12.1.1	Physical ability	52
12.1.2	Behavioural factors	52
12.1.3	Public safety	53
12.1.4	Keeper safety and issues	53
12.2	Enclosure standards for Primates P2: (other than apes and baboons).....	53
12.2.1	Physical containment.....	53
12.2.2	Behavioural factors shall be addressed by:	55
12.2.3	Public safety	55
12.2.4	Keeper safety.....	56
13	Ungulates, Marsupials and Rodentia.....	57
13.1	Risk ratings.....	57
13.1.1	Physical ability	57
13.1.2	Behavioural factors	57
13.1.3	Public safety	58
13.1.4	Keeper safety and issues	58
13.2	Enclosure standards for Ungulates, Marsupials and Rodentia.....	58
13.2.1	Physical containment.....	58
13.2.2	Behavioural factors shall be addressed by:	59
13.2.3	Public safety	60
13.2.4	Keeper safety.....	60
14	Pachyderms (elephant, rhinos, hippos)	62
14.1	Risk ratings.....	62
14.1.1	Physical ability	62
14.1.2	Behavioural factors	62
14.1.3	Public safety	62
14.1.4	Keeper safety and issues	62
14.2	Enclosure standards for Pachyderms (elephant, rhinos, hippos).....	63
14.2.1	Physical containment.....	63
14.2.2	Behavioural factors shall be addressed by:	64
14.2.3	Public safety	64
14.2.4	Keeper safety.....	65
15	Avian Species.....	67
15.1	Risk ratings.....	67
15.1.1	Physical ability	67
15.1.2	Behavioural factors	67
15.1.3	Public safety	68
15.1.4	Keeper safety and issues	68
15.2	Enclosure standards for avian species.....	68
15.2.1	Physical containment.....	68

15.2.2	Behavioural factors shall be facilitated by:.....	69
15.2.3	Public safety	69
15.2.4	Keeper safety.....	70
16	Enclosure standards for reptiles	71
16.1	Physical containment.....	71
16.1.1	The perimeter of the enclosure.....	71
16.1.2	The enclosures must meet the following requirements:.....	72
16.1.3	General structural requirements	73
16.1.4	Behavioural factors shall be facilitated by:.....	73
16.1.5	Public safety	74
16.1.6	Keeper safety.....	74
17	Invertebrates: Butterflies and Moths.....	75
17.1	Risk ratings.....	75
17.2	Generic requirements for butterfly and moth enclosures	75
17.3	Enclosure standards for the Butterfly House	77
17.4	Enclosure standards for breeding rooms for butterflies and moths.....	78

Endorsement

ENVIRONMENTAL RISK MANAGEMENT AUTHORITY
NGĀ KAIWHAKATŪPATO WHAKARARU TAIĀO



The Authority in accordance with the Hazardous Substances and New Organisms Act 1996 approves this Standard for the containment of zoo animals.

Rob Forlong
Chief Executive
Environmental Risk Management Authority
ERMA New Zealand
for Environmental Risk Management Authority

Date



This Standard is approved pursuant to sections 39 and 40 of the Biosecurity Act, 1993

Debbie Pearson
Chief Technical Officer
Ministry of Agriculture and Forestry

Date

Review

This MAF Biosecurity New Zealand Standard is subject to review and amendment at any time, to ensure that it continues to meet current needs. Amendments will be issued to holders of controlled copies and operators of containment facilities approved under this Standard.

Amendment record

Amendments to this Standard will be given a consecutive number and will be dated.

Please ensure that all amendments are inserted, obsolete pages removed and the record below is completed.

Amendment No:	Entered by:	Date:
1	S Butcher.	26 Jan 2007
2		
3		
4		
5		

Significant Amendments

1. Addition of the Butterfly and Moth Enclosure Standard.
2. Update authority name to MAF Biosecurity New Zealand.

1 Introduction

1.1 Scope

This Standard specifies the structural and operating requirements for containment facilities (zoos) holding zoo animals. It also specifies how these facilities and their operators may be approved.

1.2 Background

This Standard applies to zoo animals that are new organisms, i.e. those that have not been approved for release in New Zealand (e.g. lions and meercats) but are deemed to have containment approval under the Hazardous Substances and New Organisms (HSNO) Act 1996.

These new organisms are not eligible for release into New Zealand and the primary purpose of containment is to prevent their escape. They are defined as 'restricted organisms' in the Biosecurity Act, 1993 and are required to be held permanently in a containment facility approved under this Act.

The Environmental Risk Management Authority (the Authority) may impose additional controls under Third Schedule of the Hazardous Substances and New Organisms (HSNO) Act 1996 for containment of a zoo animal.

Before new species of zoo animals can be held in New Zealand zoos, the Authority must approve an application to import. An approval may be subject to controls, however, any operator may hold the same zoo animal under the same controls without the need for a further application to the Authority. An import health standard is also needed for any importation. Application must be made to MAF if one is not available.

A zoo may, in addition, hold animals that are not classified as new organisms. These are not subject to the conditions of this Standard. Nor indeed is any collection of exhibit animals comprised only of those that are not new organisms, subject to this Standard.

This standard replaces the Zoological Gardens Regulations 1977 that were revoked on 28 July 2003.

2 References

This Standard is an approved standard in terms of sections 39 and 40 of the Biosecurity Act, 1993.

The following publications are referred to:

- AS/NZS Standard 9001:2000: Quality Systems - Model for quality assurance in production, installation and servicing. Published by Standards New Zealand.
- ISO/IEC 17020: General criteria for the operation of various types of bodies performing inspection.
- Code of welfare for zoos, animal parks and aquariums.
- Code of welfare for circuses.
- International Air Transport Association (IATA) Live Animals Regulations
- Import health standards for imported zoo animals.

3 Definitions

For the purposes of this Standard the following definitions apply:

Approval

Means approved by the Director-General, MAF, or his/her delegate.

The chief technical officer, Operational Standards Team Manager and Senior Advisers are delegates for this Standard.

Audit

An evaluation to determine the degree of conformity with prescribed criteria and provides a basis for ongoing improvement.

Authorised movement

Authority from an inspector, given under section 25 of the Biosecurity Act, to move uncleared goods to a transitional facility, containment facility or biosecurity control area.

Chief technical officer

Is the chief technical officer [as defined in section 101 of the Biosecurity Act, 1993] of MAF with responsibility for animal health in New Zealand. The delegates identified in the definition of approval (see above) are the people to contact where reference is made to a chief technical officer in this Standard.

Circus

Zoo animals kept in the same ownership or control that are not kept permanently in one place but are part of a travelling show.

Confined contact

Handling of a animal when it is spatially confined and the keeper has contact through some type of protective barrier. Typically in this system, the specimen is not free to leave the work area until released by the keeper. The term ‘confined contact’ shall not apply when the animal is under restraint (either physical and/or chemical).

Containment facility

Means a place approved in accordance with section 39 of the Biosecurity Act 1993, for holding organisms that should not, whether for the time being or ever, become established in New Zealand. A containment facility may contain one or more enclosures. For the purpose of this Standard zoos and circuses must be approved as containment facilities.

Containment measure

Within a zoo three separate containment measures or combination of measures described below may be used to achieve restraint of a zoo animal within an enclosure.

Physical containment: Containment that maintains the animal within an enclosure by means of physical structures so that the animal(s) cannot climb, dig, swim or jump their way out.

Psychological containment: Containment that restrains an animal in an enclosure or within a given area by means of implied threat or reward, or by manipulation of the animal’s natural behaviours or instincts. For example electric fencing, strong territorial behaviour, placing food source within one area only. Using odours and sounds that deter animals from entering certain areas.

Direct control containment: Containment of an animal within an enclosure or within a given area by direct control from a keeper/handler. In practice this utilises psychological containment and depends on the ability of a keeper to call or otherwise entice the animal directly into a night house, den or other structure where the animal can be controlled by physical means.

Controls

Containment conditions imposed by the Environmental Risk Management Authority for an organism (zoo animal) as per section 45 (2) of the Hazardous Substances and New Organisms Act 1996.

Director-General

The chief executive of the Ministry of Agriculture and Forestry or his/her delegate.

Enclosure

The exhibit or place within a zoo where zoo animals are held by one or more containment measures.

Free contact

Direct handling of an animal where the keeper and the animal share the same unrestricted space. Neither the use of any physical restraint nor the posture of the animal diminishes the implied free contact.

IMPACT

A MAF database for recording operational information relating to imports of risk goods.

Import health standard

A document issued under section 22 of the Biosecurity Act, 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.

Incident

An occurrence involving new organisms, which includes acts of non-compliance either through the failure to have a HSNO approval or a breach of conditions or controls, which is not a declared emergency but either presents or could have presented an unintended risk to the health and safety of people or the environment. This includes events where an unintended risk was narrowly averted and a series of events that may indicate a trend that causes concern.

Indigenous animals

Animals, such as rabbits (*Oryctolagus cuniculus*), kiwis and llamas that are not new organisms (zoo animals).

Inspector

A person appointed as an inspector under the Biosecurity Act, 1993.

Internal audit

An audit carried out by the company or organisation to evaluate its own performance in relation to the Standard or prescribed criteria.

Laboratory

The National Centre for Disease Investigation, Ward Street, Wallaceville, Upper Hutt and any other laboratory approved by the chief technical officer.

Lay-over site

A site where zoo animals in a circus are held while the circus temporarily stops performances.

Operational Standards Team Manager

The nominal contact person for matters relating to this Standard.

Address:

Operational Standards Team Manager,

Pre-Clearance Directorate

MAF Biosecurity New Zealand

Box 2526
Wellington
Fax: (04) 894 1662
Email standards@maf.govt.nz

New organism

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

- 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:
- an organism for which a containment approval has been given under this Act:
- a genetically modified organism:
- an organism that belongs to a species, subspecies, infrasubspecies, variety, strain, or cultivar that has been eradicated from New Zealand.
- Section 2A, HSNO Act.

Operator

The person who has overall responsibility for the facility, its maintenance and operation in terms of section 40 of the Biosecurity Act, 1993.

Permit to import

A numbered document issued as a requirement of the import health standard.

Physical failsafe

A physical structure that supplements the primary containment measure and prevents animals breaching containment if they threaten the main structure (e.g. collapsible in-rigger, steep-sided small moat).

Psychological failsafe

A psychological factor that supplements the primary containment measure and prevents animals breaching containment if they threaten the main structure (e.g. an extra electrical wire separated from the main unit, small water structure for non-aquatic animals, etc).

Procedure

A document that specifies, as applicable, the purpose and scope of an activity; what shall be done and by whom; when, where, and how it shall be done; what materials, equipment and documentation shall be used; and how it shall be controlled.

Protected contact

Handling of a animal where the keeper and the animal do not share the same unrestricted space. Typically in this system, the keeper has contact with the animal through some type of protective barrier, while it is not spatially confined and is free to leave the work area at will.

Restricted organisms

Means any organism for which a containment approval has been granted in accordance with the HSNO Act, 1996 (including any approval deemed to have been granted under sections 254 (1), 254 (3), 254 (8) (a), 255 (1), 255 (2), 256, 258 (1), and 258 (3)). Section 2, Biosecurity Act, 1993.

Supervisor

The person employed by the supplier who inspects the containment facility and audits the operation of containment.

Supplier

The party responsible for the performance of the inspection and audit work under a contract with the MAF Biosecurity New Zealand. MAF Operations is the present supplier.

The Authority

Environmental Risk Management Authority responsible for administering the Hazardous Substances and New Organisms Act 1996.

Total containment

Containment that encloses the animal completely in a physical structure (one that has a floor, sides and roof).

Transporter

Any wagon, truck, boat or van intended for the transport of an animal or animals.

Zoo

Means a containment facility approved to this Standard where live zoo animals are kept for the purposes of public exhibition, education, conservation or entertainment and includes, for example, a circus, butterfly house, aquarium and an oceanarium. A zoo may also hold indigenous animals that are not new organisms but these animals are not covered by this Standard.

Zoo animal

A new organism that has containment approval to be held in a zoo or circus. The organism is both a new organism under the HSNO Act and a restricted organism under the Biosecurity Act, 1993.

4 Approval of a Zoo and an Operator

4.1 Approval of a Zoo

A zoo (being a containment facility) shall be approved in accordance with section 39 of the Biosecurity Act, 1993. Each zoo shall have an approved operator and be constructed and operated in accordance with this Standard. [It is expected that the zoo will comply with the requirements of the Resource Management Act 1991, Building Act 1991, Animal Welfare Act 1999, the codes of welfare, and any other relevant legislation.]

A zoo shall not be approved unless there is an approved operator.

4.1.1 Procedure for approval of a zoo

Any person wishing to have a zoo approved and to be approved as an operator shall establish contact with the supervisor. [The supervisor's identity may be obtained from the Supplier.]

The supervisor will consider applications before construction or alteration of a zoo in order to provide advice on whether the proposed zoo is likely to comply with this Standard.

4.1.2 Site approval

An application for site approval shall be submitted to the national manager through the supervisor before construction of a zoo is considered. Lay-over sites for circuses will need site approval but not for sites used while 'on the road'. [If the site is not approved then there is no value in investing resources into developing the zoo.]

The application for site approval shall provide the following:

1. A site plan of the property which shows the location of the zoo (lay-over site for circuses) and the entrances to the site. Boundaries of neighbouring properties shall be shown. The physical location of the property shall be clearly shown in relation to roads in the area.
2. Details of the proposal, including the numbers and kinds of zoo animals that will be held in the zoo.
3. Outline any future plans for acquiring new zoo animals.
4. Describe the outer containment boundary and on a site map show where the enclosures are located within the facility.

Evidence from the relevant regional council and/or district council that the proposed operation satisfies planning requirements under the Resource Management Act, Building Act or any other relevant legislation under which these Councils have jurisdiction. The Director-General shall also be satisfied that the Local Authority has been properly informed about the project and, if appropriate, has issued a building consent to construct the zoo.

Operators of a circus shall provide a broad outline of their intended travelling plans.

A recommendation from the supervisor for site approval, which includes verification of the site's physical location.

Site approval from the national manager shall be in writing and the supervisor shall be advised.

4.1.3 Zoo approval

When the operator has met the requirements of sections 2.1.2, 3 & 4 of this Standard the supervisor shall be requested to inspect the zoo manual and zoo. When the supervisor is satisfied that:

1. the operator has met the structural and operational requirements of a zoo (section 4) as required in this Standard,
2. the operator has met any additional control measures for holding animals as specified by the Authority,
3. the zoo manual (section 3) meets the requirements of this Standard,
4. the application form on page 23 of this Standard has been completed satisfactorily by the prospective operator,
5. the supervisor shall send the application form and a copy of the zoo manual to the national manager together with the supervisor's recommendation for approval of the zoo as a containment facility.

Approval of a zoo will be in writing. A zoo may be approved for an unspecified time, a specified time or until a specified event.

4.2 Approval of the Operator

The operator is responsible for the operation of the containment facility and ensuring that mechanisms are in place for resourcing the zoo.

An operator shall be approved in accordance with section 40 of the Biosecurity Act, 1993. If the Director-General is satisfied:

- that the applicant is a fit and proper person to be the operator of the containment facility specified in the application; and
- the applicant is able to comply with the operating standards for that zoo,
- he/she may approve the applicant as the operator of the zoo.

In order to meet the second criterion above, the operator shall (demonstrate that he/she has access to) have the technical and financial resourcing mechanisms in place to maintain that zoo.

The supervisor shall send the application forms on pages 24 and 25 to the national manager together with the supervisor's recommendation for approval of the operator.

Approval of the operator will be in writing.

4.2.1 Leased facilities

If the zoo is leased, the lessee, responsible for the operation of the zoo, shall apply to be the operator and the contract with the owner shall clearly identify who is responsible for the maintenance of the premises and the resourcing of the operation. This contract shall be made available to the supervisor who shall be satisfied that the contract does not override the requirements of this Standard.

4.2.2 Collection of personal information on individuals

In regard to any information being collected on the application for approval of an operator, this is personal information [being information identifying or being capable of identifying an individual person]. Notification is hereby provided, in accordance with Principle 3 of the Privacy Act 1993, to individuals of the following matters:

This information is being collected for the purposes relating to the approval of an operator as per 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, PO Box 2526, Wellington.

You are reminded that under Principles 6 and 7 of the Privacy Act, 1993, you have the right of access to, and correction of, any personal information, which has been provided.

4.3 Cancellation of Approval

A zoo is no longer approved when the time specified in the approval expires or an event specified in the approval occurs. In addition, the chief technical officer may cancel approval of a zoo if:

1. the zoo no longer complies with this standard,
2. the chief technical officer is satisfied that the zoo is no longer used for the purpose or one or more of the purposes specified in the approval,
3. the operator ceases to be an operator of the zoo,
4. the operator is no longer a fit and proper person,
5. the operator requests cancellation.

The consequences of cancellation are described in [section 4.9](#).

The chief technical officer may cancel approval of an operator if:

1. no longer satisfied that the zoo is being operated according to this standard,
2. the operator ceases to be an operator of the zoo,
3. the operator is no longer a fit and proper person,

4. the operator requests cancellation.

Notice of cancellation shall be given in writing to the operator.

5 Zoo Manual

The operator shall prepare, maintain and implement a quality assurance programme and procedures based on the principles of AS/NZS Standard 9001:2000, code of good manufacturing practice or similar quality programme [accreditation with other agencies such as IANZ is not required].

The quality assurance programme and any amendments shall address the requirements of this Standard. It shall be documented in the zoo manual or in an alternative quality system.

The supervisor shall approve the quality assurance programme and any amendments.

The items listed below are the minimum requirements for the zoo manual.

5.1 General

Describe the long-term aims of the zoo. Provide a plan of the zoo showing where the zoo animals are held.

5.2 Containment Requirements

Document the operational procedures required to meet section 4 of this Standard.

5.3 Management

Identify the operator. Identify the manager if the operator nominates one.

Specify and document the responsibilities of the operator, manager and staff.

5.4 Training

Nominate a person or position responsible for ensuring that all people who work in the zoo are familiar with the principles of containment and the procedures of the zoo which ensure containment.

Describe how the training programme is to be implemented, the time scale for implementation and refresher courses.

Training must be available to new and existing staff. Document training records for all staff and ensure that staff are familiar with the requirements of this standard and any containment controls for zoo animals in their care.

5.5 Internal Controls

Identify quality systems used in the zoo.

The operator shall carry out an internal audit of its activities at least once every six months to verify that its activities continue to comply with the requirements of the quality assurance programme.

The quality assurance programme adopted to satisfy the requirements of this Standard shall be reviewed at least once a year by the management. This review shall ensure its continuing suitability and effectiveness and introduce any necessary changes or improvements.

All audit and review findings and any corrective actions that arise from them shall be documented.

5.6 Version

Record the version number and issue date of the zoo manual on each page. Updates are to be approved by the supervisor who shall also hold an up to date copy of the manual.

6 Structural and Operational Requirements

6.1 General Requirements

The operator shall provide for the maintenance, care and welfare of animals and adopt the welfare codes for zoos and circuses.

By appropriate enclosure design, supervision by trained staff and high standards of management, the operator of the zoo must ensure, as far as possible, that animals, staff, visitors and public are protected from injury or zoonoses.

Staff must be protected through the provision of effective and well-maintained animal handling facilities appropriate to the species being handled.

If dangerous animals are held then a trained person shall keep an adequate firearm at the zoo for use in an emergency.

Any incident involving a zoo animal that causes death or injury to a person and requires medical treatment must immediately be reported by the operator to the Police, Occupational Safety and Health Service, ERMA New Zealand and the supervisor.

6.2 Containment of Zoo Animals

The following requirements may be supplemented by species-specific controls from the Authority.

6.2.1 Enclosures

The operation manual shall show how the Enclosure Standards are addressed for each species, with specific reference to:

1. the application of the appropriate containment formula and the consequent physical dimensions of the enclosure,
2. how the foundation of the barrier has been fixed,
3. how the psychological needs of the species are met,
4. how the enclosure complies with respect to public safety,
5. how the keeper safety requirements are met,
6. how the operator shall limit the likelihood of accidental release of any zoo animal or any associated viable genetic material,
7. how the operator will respond to a breach of containment, with particular reference to:
 - the recovery of the zoo animal and associated genetic material,
 - the safety of the visiting public, and
 - the safety of all zoo staff.

The operation manual shall show how any containment controls from the Authority are addressed.

6.2.2 Modifications to an enclosure

Any major modifications to an enclosure that affects containment will require approval from the supervisor. 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 supervisor will be required to inspect the new enclosure to check that it complies with this Standard. Minor modifications shall be recorded by the operator and checked by the supervisor at the next visit.

6.2.3 Perimeter fence

In addition to the individual enclosures for each type of zoo animal, the zoo shall be completely enclosed by an outer perimeter fence that is separate from and totally surrounds the animal enclosures. This fence together with any other security measures shall deter unauthorised access of people and animals, and zoo animals escaping. This perimeter fence shall be at least 1.8 metres high, made of chain link, deer netting or an equivalent solid material and maintained in a state of good repair.

If all zoo animals are housed in a closed building e.g. an aquarium, the perimeter fencing requirements are waived.

The requirement for perimeter fencing is waived for circuses 'on the road' but measures to protect the public from zoo animals shall be implemented. These shall include the use of temporary fences at least 0.9 metres high and direct supervision by circus staff.

6.2.4 Maintenance of enclosures and systems

The zoo manual must also include a maintenance section that provides for:

A detailed description of any structural components of the zoo that require periodic inspection or maintenance to preserve the integrity of the enclosures and perimeter fencing;

A clear description as to how all the functioning systems of the zoo operate, with particular attention paid to the design principles involved. The functioning systems include heating, ventilation, air conditioning systems, water supply, alarms, power supply, standby power supply, fire protection and security;

Clear instructions on how to use the functioning systems, including procedures to be followed in the event of any reasonably foreseeable emergency;

Clear maintenance instructions for all components of the functioning systems that require periodic inspection or maintenance to preserve the integrity of containment;

6.2.5 Additional Requirements for Circuses

The operator shall provide the national manager with an itinerary at least a month in advance showing the projected movements of the circus. Any changes to the itinerary are to be notified to the national manager.

6.2.6 Access of People to the Zoo

A prominent sign shall be displayed at all entrances to show that the premise is a zoo and that unauthorised entry of people and animals is prohibited. Procedures shall be adopted to prevent unauthorised access to the zoo and enclosures.

The entrances to the zoo shall be kept locked, except when in active use.

As a general rule, in the interest of public safety and security of containment, the public shall not have direct contact with zoo animals. Barriers and signs shall be used to deter contact.

Where access is permitted, no animal can be directly approached by the general public unless under the direct supervision of an experienced animal handler/trainer. These handlers should be within eye contact of all individual animals under their care when in the presence of the general public.

6.2.7 Register of Zoo Animals

Where practicable each animal shall be permanently identified with a unique identifier unless they are the only individual of a given species at a zoo.

A register shall be maintained which records in addition to the number and kinds of animals:

1. the correct scientific name, common name, individual identification, any personal name and any distinctive markings. (If there is any doubt as to the identity of the species the Authority may direct the zoo to utilise the services of a suitably qualified person to make a species determination.)
2. the origin (i.e. details of the wild population or of the parents and their origin, and of any previous location);
3. the date of birth and death;
4. the dates of acquisition and transfer, with details of circumstances and addresses;
5. breeding and details of any offspring;

A reconciled register that accounts for births, deaths and transfers shall be available at all times. The operator shall regularly verify the accuracy of this register at a minimum of six monthly intervals.

The supervisor may give a dispensation from maintaining a complete and accurate register for very small animals like fish and invertebrates.

The supervisor may require a count of animals at any time to verify the register.

6.3 Movement of Zoo Animals

No zoo animal may be introduced or removed from the zoo except with approval from the national manager. The operator shall direct any applications initially through the supervisor. The authorised movement shall specify the conditions.

6.3.1 Temporary transfer

Approval may be given for the temporary transfer of animals outside the zoo for any legitimate purpose (veterinary treatment, educational, filming or exhibition) but the national manager must be satisfied that provisions for containment are addressed.

The operator shall submit a proposal, which describes the purpose of the transfer, provides details of the containment provisions associated with the transport and the temporary holding enclosure. Contingency plans shall 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 supervisor, but the supervisor must be notified as soon as is practicable.

6.3.2 Transfer to another zoo

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

The transfer of these animals shall be noted in the registers of both facilities.

6.3.3 Importation of zoo animals

The importation of a zoo animal to New Zealand requires an import health standard and permit from MAF.

An application for approval to import a new species (a new organism that does not occur in New Zealand) shall be made to the Authority.

The supervisor shall be satisfied that the new enclosure meets controls specified by the Authority or complies with the enclosure standards in the schedule of this Standard before a permit to import will be issued by MAF.

6.3.4 Export of zoo animals

Zoo animals may be exported.

6.3.5 Transport of zoo animals

The minimum requirement for the transportation of the zoo animals by air from overseas, for movements within New Zealand and for transfers between facilities shall 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.

For further information refer to the Codes of Welfare.

6.4 Disposal of Dead Zoo Animals and Waste

Dead zoo animals shall be incinerated or deeply buried.

The operator shall institute measures to prevent the escape of zoo animals or their genetic material by way of discharge of water or liquid waste and removal of solid waste.

6.5 Disease Occurrence and Investigation

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

The operator shall investigate infectious disease outbreaks within zoo animals and try to establish their cause. All disease test results shall be recorded.

In order to meet New Zealand's requirements for surveillance of transmissible spongiform encephalitides the National Centre for Disease Investigation shall be contacted immediately (telephone 04 526 5600) when deaths occur in imported zoo animals 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.

6.6 Contingency Plans

Contingency plans shall be in place to take account of:

1. the release or escape of zoo animals within and outside the zoo,
2. occurrence of infectious disease in the zoo animals,
3. emergency transfer to a veterinary surgery,
4. fire, earthquake, flooding and any other natural emergency,
5. closure of the zoo and disposal of the zoo animals.

If there is an escape of zoo animals a prompt corrective action shall be taken to recover and return the escaped animals to the zoo. The supervisor shall be advised as soon as is possible. If the animal poses a potential threat to human safety the police must be notified immediately.

If the zoo animal cannot be recovered, the zoo operator, in consultation with MAF, shall initiate an eradication programme with an associated monitoring regime.

6.7 External Audit

The operator shall provide the supervisor or any other representative of the chief technical officer, access to the zoo, records and documents for the purposes of audit. During audits the operator shall be available to assist and ensure that all relevant procedures and records are made available to the supervisor.

Inspections and on-site audits of the zoo will be conducted at least every twelve months by the supervisor as specified in section 6.4 of this Standard.

Additional audits will be conducted as required especially if non-compliance is found.

6.7.1 Non-compliance

Incidents of non-compliance will be dealt with by issuing:

1. a critical situation report for situations that may present a risk to biosecurity or to the

environment, or to the health and safety of people and communities. The chief technical officer may direct that the zoo shall be closed and may not be permitted to open until the non-conformity is rectified and measures taken to prevent recurrence, e.g. the perimeter fence has not been maintained to the Standard.

2. a corrective action request [CAR] for a non-compliance, which is not a serious risk to biosecurity or to the environment, or to the health and safety of people and communities. The zoo will remain open but the operator will be given a specified period of time to rectify the non-conformance, e.g. training of staff does not occur as stated in the zoo manual.

6.8 Consequences of Cancellation of Approval of the Zoo

If approval of the zoo is cancelled the chief technical officer may require that the zoo is closed to the public and that the operator arrange for the disposal of the animals. Directions may be given to the operator as per section 126 Biosecurity Act, 1993.

6.9 Costs

The operator is required to pay all costs associated with the approval and supervision of a facility in accordance with the Biosecurity Act, 1993 and its regulations.

6.10 Reporting Requirements

The operator shall by the 30th of June each year provide the national manager through the supervisor a copy of the register, disease investigation records, and records of transfers to other zoos. Explanatory notes shall highlight the differences between the present year and the previous year.

6.11 Records

The operator is required to demonstrate compliance with this Standard by keeping records as required for the zoo manual. Such records should be kept for a minimum of five years.

1. Approval records for the facility and operator.
2. Copies of permits to import, import health standard certification, the Authority approvals and controls, quarantine clearance and authorised movements.
3. The register of zoo animals [section 4.5].
4. Records of transfers to other zoos.
5. Disease investigation records.
6. Records of internal audits and corrective actions.
7. Records of external audits and corrective actions.

APPLICATION FOR APPROVAL OF A CONTAINMENT FACILITY FOR ZOO ANIMALS - PURSUANT TO SECTION 39 OF THE BIOSECURITY ACT, 1993.

Name of the containment facility (Zoo):

Physical location of the zoo [In addition attach a site plan showing relationship of the zoo to roads and other properties]:

Species of zoo animal that will be contained (include a schedule):

Operator's name:

Organisation:

Postal address:

Telephone No: _____ **Facsimile:** _____

I, _____, being the applicant, declaring that the above zoo meets the requirements of MAF Biosecurity New Zealand Standard 154.03.04: Containment facilities for zoo animals, apply to have it approved as a containment facility.

I include a copy of the zoo manual.

.....
Signature of applicant

.....
Date

Form approved by the Director-General pursuant to Section 39 of the Biosecurity Act, 1993.

APPLICATION FOR APPROVAL OF AN OPERATOR OF A CONTAINMENT FACILITY FOR ZOO ANIMALS) - PURSUANT TO SECTION 40 OF THE BIOSECURITY ACT 1993.

Applicant's name:

Designation:

Organisation:

Postal address:

Telephone No: _____ **Facsimile:** _____

Name of containment facility (Zoo):

Location of the containment facility (Zoo):

I _____, being the person [the proposed operator] responsible for the containment facility named above, declare that:

I have read and understand MAF Biosecurity New Zealand Standard 154.03.04: Containment facilities for zoo animals. I will ensure that the operation of the containment facility is in accordance with this Standard.

I have the technical and financial resourcing mechanisms in place to maintain the containment facility.

I hereby apply for approval as an operator.

.....
Signature of applicant

.....
Date

Form approved by the Director-General pursuant to section 40 of the Biosecurity Act, 1993.

7 Schedule One

7.1 Enclosure Standards for Zoo Animals

7.1.1 Criteria for assessment

All species of zoo animals with similar physical abilities and behavioural requirements have been assigned to the same class or subclass as they have similar containment requirements.

Each class and subclass has been assessed according to the following criteria:

1. Physical ability

The ability to breach containment by climbing, digging, jumping and/or physically destroying any physical structure is judged by the following criteria:

2. Known digging ability

3. Known jumping distance/height

Not necessarily directly applicable (depending on species) but contingent on the amount of psychological containment applied.

4. Known physical strength

Not necessarily directly applicable (depending on species). Some species that appear to have strength in direct relation to their body size do not use that strength to challenge their containment (e.g. Hamilton Zoo/Orana Park rhinos - in both zoos these animals are subject to 85-90% psychological containment only).

5. Known stress factor

Can be a psychological requirement, but known stressed species will use their physical strength against the containment barrier.

6. Known behavioural limitations

Species which appear to have considerable body size and consequent body strength may not use their strength to challenge containment (e.g. in case of fright or flight, tapirs will hide in appropriate available cover rather than challenge the containment barrier).

7. Known physical limitations

An adult lion has very limited climbing ability compared with a leopard almost the same size.

7.2 Behavioural requirements

Requirements that allow each species to engage in a variety of instinctive behaviours like their counterparts in the wild.

1. **Individual:** solitary living species Introduction of another specimen of the same species may result in behavioural change, which in turn may increase the likelihood of fright/flight response and a consequent impact on the physical containment requirements.
2. **Social:** species requirement to live in a social group/herd/pride Species living in a well

managed and balanced group/herd/pride have a direct influence on the need for a fright/flight response and an impact on the physical containment requirements.

3. **Species need for cover:** Provision of natural cover must be considered if it is a naturally evolved requirement of the species. The amount of cover available in its enclosure has a direct influence on the need for a fright/flight response and an impact on the physical containment requirements.
4. **Species requirement for individual space:** Regardless of group/herd/pride, each specimen within a species will require individual separation and/or isolation space. The provision of this space has a direct influence on the need for a fright/flight response and an impact on the physical containment requirements.
5. **Species requirement for group/herd/pride behavioural space:** If enough space is provided for the group/herd/pride to allow each species to engage in a variety of instinctive behaviours reflecting their species-specific needs, the provision of this space has a direct influence on the need for fright/flight response and an impact on the physical containment requirements.
6. **Species known ability to respond to keeper control (direct control containment):** Where specimens/species respond to direct control by keepers, the degree of control has a direct influence on the need for a fright/flight response and an impact on the physical containment requirements.
7. **Species known interaction with other species:** In mixed species exhibits, inter-species behaviour will have a direct influence on the need for a fright/flight response and an impact on the physical containment requirements.
8. **Requirements for public safety:** The risk of physical harm and the risk of zoonoses.
9. **Requirements for keeper safety:** The risk of physical harm and the risk of zoonoses.

7.3 Risk ratings

A rough risk assessment was made for each of the above factors. The scale used from lowest to highest risk is shown below:

Minimal	no risk
Low	some risk under rare circumstances only
Medium	increased risk of entry and contact, but when handled properly should be able to be managed
High	highest possible risk. No public contact and keeper contact only under specific conditions (refer to class standards)

8 Carnivores C1: Felids and Ursidae (excluding cheetah)

8.1 Risk ratings

8.1.1 Physical ability

Known jumping distance/height and climbing ability	All felids in this class (except lions) are fully or semi-arboreal.	Medium to high
Known digging ability	Most animals don't have the physical attributes to dig.	Low to medium
	Ursids should be rated as	Medium to high
Known physical strength	These animals are predatory and hunt the largest prey.	Medium to high
Known stress factor	These animals are predatory and have no naturally evolved fright and flight response. Stress factors will increase in direct proportion to the mean weight of other carnivore species.	Low to medium
Known behavioural limitations	These animals (except lions) are solitary and forced cohabitation may cause undue stress in containment.	Low to medium
Known physical limitations	These animals have most of the physical attributes needed to breach containment (the ability to climb and jump, physical strength, etc).	Low to medium

8.1.2 Behavioural factors

Individual: solitary living species	These animals (except lions) are solitary.	Medium to high
Social: requirement to live in a social group/herd/pride	These animals need to have their social behavioural requirements met.	Medium to high
Species need for cover	These animals require appropriate cover - to minimise undue stress and pacing behaviour, and to provide visual separation from the viewing public, each other, and other predatory species in their own class.	Medium to high
Species requirement for individual space	These animals (except lions) are solitary animals.	High
Species requirement for group/pride behavioural	For these animals except lions	Low

space		
	For lions only.	High
Species known ability to react to direct control containment	There may be differences between individual specimens and it may depend on time spent by keepers on conditioning.	Low
Species known interaction with other species	No species in this class have a known inter-species interaction apart from predator/prey.	Low

8.1.3 Public safety

Risk of escape	These animals are rated as highest possible risk in terms of public safety (direct physical attack).	High
----------------	--	------

8.1.4 Keeper safety and issues

Direct contact	These animals are rated as highest possible risk for keeper safety.	High
Enclosure security and entry	These animals are rated as highest possible risk.	High
Routine handling	These animals are rated as highest possible risk.	High

8.2 Enclosure standards for Felids and Ursidae (excluding cheetah)

8.2.1 Physical containment

The perimeter of the enclosure shall be:

1. Vertical and unclimbable, 4x mean species body length in height, AND with a minimum of one physical, OR one psychological failsafe, OR the height of known jumping height plus 20%, whichever is greater.

OR,

2. Vertical and climbable, 4x mean species body length in height, AND with a minimum of one physical AND one psychological failsafe,

(Maximum height for vertical perimeter in B1.1 & B1.2 is 5.5 metres.)

OR,

3. the height of known jumping height plus 20%, whichever is greater, AND with a minimum of one physical, OR one psychological failsafe.

OR,

4. Horizontal, with a width of 4x mean species body length and depth twice the standing mean species body height, AND with a minimum of one physical, OR one psychological failsafe.

Table 1. Carnivores C1: Felids and Ursidae (excluding cheetah)

Common name: Latin name:	Mean body length (nose to vent) cm	Range weight kg
Ursidae		
American Black Bear <i>Ursus americanus</i>	120	40-400
Sun Bear <i>Helarctos malayamus</i>	90	27-65
Felidae		
Tiger <i>Panthera tigris altica</i> <i>Panthera tigris sumatrae</i> <i>Panthera tigris tigris</i>	180 140 175	65-306
African Lion <i>Panthera leo</i>	175	150-260
Puma <i>Felis concolor</i>	100	67-103
Serval <i>Felis serval</i>	60	8-18
Bobcat <i>Lynx rufus</i>	60	4-15
Leopard Cat <i>Prionailurus bengalensis</i>	45	2-8
Asiatic Golden Cat <i>Felis temmincki</i>	45	8-15
Jaguar <i>Panthera onca</i>	100	45-114

The enclosures must meet the following requirements:

1. The foundation of any containment barrier shall be fixed either by direct fixing into the ground or by hardened material, in such a manner that the animals cannot breach containment by digging under the perimeter.
2. No climbing structures shall be placed within the enclosure so that a breach of containment can occur. If the top of the structure is level with, or below the top of the containment barrier, the minimum distance from the perimeter shall be 3x mean species body length. If the top of the climbing structure is above the containment barrier, the

minimum distance shall be 4.5x mean species body length.

3. Any climbable angle in the containment barrier shall have one physical OR one psychological failsafe.

(None of the above requirements shall apply where there is total containment.)

4. Provision shall be made for additional lockable holding facilities, into which all specimens 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.
5. Double door/gate/slide systems shall be provided where entry is required for daily servicing by animal care staff.
6. All electrical and mechanical systems, doors and slides, shall be kept in good working order. All maintenance shall be done in accordance with the manufacturer's recommendations.
7. All materials used in the containment barrier shall be able to withstand the impact of 4x the mean species body weight (verified by the manufacturer's specifications). Refer to Table 1.
8. Direct control containment may be used as a temporary measure, as directed by the operator and/or veterinarian.

8.2.2 Behavioural factors shall be addressed by:

1. Provision of complex variable environments that stimulate both physical and mental activity.
2. Implementation of a proactive enrichment programme.
3. Provision of an environment, space and furniture sufficient to allow such exercise as is needed for the welfare of the particular species.
4. Ensuring that the species is managed to minimise any undue stress due to social interaction, by timely dispositions and acquisitions to maintain appropriate social group structure.
5. Provision of enough keeper time to condition animals to enter and exit night dens/short-term secure holding pens on command and/or by routine (within the enclosure).
6. Provision of an environment (natural cover, geographical features and space) to allow normal behaviour patterns, with particular emphasis on the ability for self-segregation and visual isolation from both group members and the viewing public.
7. Ensuring that there is no undue stress caused by the visual and/or vocal proximity of other species.

8.2.3 Public safety

1. There shall be no direct contact with this class by any unauthorised personnel.
2. If a non-solid containment barrier is to be used at the public viewing site of the enclosure, the public barrier (to Health and Safety specifications) shall be placed a minimum of 1 metre distance from the barrier, AND there shall be an internal electric fence at animal shoulder height.
3. If a solid containment barrier is used at the public viewing site it shall be able to withstand the impact of 5x the mean species body weight (verified by the manufacturer's specifications).
4. If there is a containment breach the Police and Supervisor shall be notified immediately.
5. There shall be an emergency procedure in case of a containment breach by any C1 carnivores, with specific emphasis on procedures for destruction of this species in a safe manner in relation to the public.
6. Any institution holding this class of species shall have appropriate firearms and the appropriately licensed/trained personnel available, within five (5) minutes during visiting hours and within thirty (30) minutes after visiting hours, to deal with a breach of containment by this class of species.
7. The following carnivores shall be destroyed in the event of any containment breach where there is a threat to human safety: Tiger, Lion, Jaguar, Leopard, Puma, and Snow Leopard

8.2.4 Keeper safety

1. Procedures shall address the routine entry and exit of staff into the enclosure.
2. Unless an animal is hand-reared or suitably conditioned, no direct animal contact shall be initiated without the specific agreement of the senior animal manager/operator. Animal contact shall be of the following types only:
 - Protected contact: Handling of an animal through some type of protective barrier, where the animal is not spatially confined and is free to leave the work area.
 - Confined contact: Handling of an animal through a protective barrier where the animal is spatially confined, as in a restraint device.
3. All personnel in regular contact and with responsibility for the daily management of these animals shall have a demonstrable working knowledge of their behaviour, with particular emphasis on seasonal and/or day-to-day variations.
4. All animals shall be removed from their enclosure into night dens/short-term secure holding pens before any animal care personnel shall be allowed to enter the enclosure. This standard need not apply under the following conditions:
 - It is recognised the animals present no risk of serious harm or injury, OR

- Protection is ensured by a vehicle that prevents contact between its occupants and any carnivore.
5. At no time shall any animal care personnel allow the entry of unauthorised personnel, unless a senior animal manager has granted prior approval.
 6. All doors/slides/gates that form part of the containment barrier shall be able to be operated in a safe and secure manner.
 7. Staff entering the enclosure for daily servicing shall use a double door/gate system, where the outside door/gate must be shut before accessing the enclosure.

9 Carnivores C2: Canidae, Hyaenidae, cheetah

9.1 Risk ratings

9.1.1 Physical ability

Known jumping distance/height and climbing ability	These animals cannot climb or jump higher and further than twice their body length.	Low
Known digging ability		Low to high
Known physical strength	These animals are predatory but have impact and holding strength only.	Low to medium
Known stress factor	These animals are predatory and have underdeveloped fright and flight responses.	Low to medium
Known behavioural limitations	Most species are social group species.	Medium
Known physical limitations		Medium

9.1.2 Behavioural factors

Individual: solitary living species	These are social animals.	Low
Social: requirement to live in a social group/herd/pride	These animals need to have their social behavioural requirements met.	Medium to high
Species need for cover	Most species in this class are open plains animals.	Low to medium
Species requirement for individual space		Low to medium
Species requirement for group/pride behavioural space		High
Species known ability to react to direct control containment	There may be differences between individual specimens and this may depend on time spent by keepers on conditioning.	Medium to high
Species known interaction with other species	No species in this class have a known inter-species interaction apart from predator/prey.	Low

9.1.3 Public safety

Risk of escape	These animals are predators.	Medium to high
----------------	------------------------------	----------------

9.1.4 Keeper safety and issues

Direct contact	These animals are predators. Individual animals may present less risk of escape than several animals or a group.	High
Enclosure security and entry		High
Routine handling		Medium to high

9.2 Enclosure standards for Canidae, Hyaenidae, cheetah

9.2.1 Physical containment

The perimeter of the enclosure shall be:

1. Vertical, 2.5x mean species body length in height, OR the height of known jumping height plus 15%, whichever is greater, AND one physical, OR one psychological failsafe,

OR,

2. Horizontal, 2.5x mean species body length wide, OR width of known jumping distance plus 20%, AND depth equal to 1.5x mean species standing body height AND one physical, OR one psychological failsafe.

OR,

3. Both vertical and horizontal – the vertical and horizontal dimensions shall be no less than 150% of the relevant formulas above.

Table 2. Carnivores C2: Canidae, Hyaenidae, cheetah

Common name: Latin name:	Mean Body length (nose to vent) Cm	Range Weight kg
Canidae & cheetah		
Cheetah <i>Acinonyx jubatus</i>	100	30-65
Cape Hunting Dog <i>Lycaon pictus</i>	75	18-36
Maned Wolf <i>Chrysocyon brachyurus</i>	80	20-23
Hyaenidae		
Aardwolf <i>Proteles cristatus</i>	45	9-14
Spotted Hyena <i>Crocuta crocuta</i>	90	48-55

The enclosures must meet the following requirements:

1. The foundation of any containment barrier shall be fixed either by direct fixing into the ground or by hardened material, in such a manner that the animals cannot breach containment by digging under the perimeter. The fixture and/or hardened materials shall be no less than 1 metre deep in the case of all Canidae within this class of species.
2. Exhibit structures within the enclosure shall not be placed in such a manner to provide a means for animals to escape.
3. Any climbable angle in the containment barrier shall have one physical OR one psychological failsafe.

(None of the above requirements shall apply where there is total containment.)

4. Provision shall be made for additional lockable holding facilities, into which all specimens 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.
5. Double door/gate/slide systems shall be provided where entry is required for daily servicing by animal care staff.
6. All electrical and mechanical systems, doors and slides shall be kept in good working order and all maintenance shall be done in accordance with manufacturer's recommendations.
7. All materials used in the containment barrier shall be able to withstand the impact of 3x the mean species weight. Refer to Table 2. In the case of genus Hyaenidae, materials shall be able to withstand 2x the known compression pressure by biting. In each case verified by the manufacturer's specifications.
8. Direct control containment may apply to this class under the following conditions:
 - The keeper/handler can show that the zoo animal is under full control to the satisfaction of the operator, OR
 - There are circumstances warranting direct control containment as a temporary measure, as directed by the operator and/or veterinarian, OR
 - The animal weighs less than 25kg and its stage of development presents no risk of serious injury.

9.2.2 Behavioural factors shall be addressed by:

1. Provision of complex variable environments that stimulate both physical and mental activity.
2. Implementation of an aggressive proactive enrichment programme.
3. Provision of an environment, sufficient to allow such exercise as is needed for the welfare of the particular species.

4. Minimising any undue stress due to social interaction. The removal or introduction of animals required to maintain an appropriate social structure shall be managed a timely manner.
5. Provision of enough keeper time to condition animals to enter and exit night dens/short-term secure holding pens on command and/or by routine (within the enclosure).
6. Provision of an environment (natural cover, geographical features and space) to allow normal behaviour patterns, with particular emphasis on the ability for self-segregation and visual isolation from both group members and the viewing public.
7. Ensuring that there are no other species in visual and/or vocal proximity to cause undue stress. Care is needed where large felids and/or Hyaenidae are held near cheetah.

9.2.3 Public safety

1. There shall be no direct contact with this class of species by any unauthorised personnel.
2. If a non-solid containment barrier is used at the public viewing site of the enclosure, the public barrier (to Health and Safety specifications) shall be placed a minimum of 1 metre distance from the perimeter, and there shall be an internal electric fence at animal shoulder height.
3. A solid containment barrier at the public viewing site shall be able to withstand the impact of 4x the mean species body weight (verified by the manufacturer's specifications).
4. If there is a containment breach and there is a potential threat to the public, the Police and Supervisor shall be notified immediately.

9.2.4 Keeper safety

1. Procedures shall address the routine entry and exit of staff into the enclosure.
2. Unless an animal is hand-reared or suitably conditioned, no direct animal contact shall be initiated without the specific agreement of the senior animal manager/operator. Animal contact shall be of the following types only:
 - Protected contact: Handling of an animal through some type of protective barrier, where the animal is not spatially confined and is free to leave the work area.
 - Confined contact: Handling of an animal through a protective barrier where the animal is spatially confined, as in a restraint device.
3. All personnel in regular contact and with responsibility for the daily management of these animals shall have a demonstrable working knowledge of their behaviour, with particular emphasis on seasonal and/or day-to-day variations.
4. All animals shall be removed from their enclosure into night dens/short-term secure holding pens before any animal care personnel shall be allowed to enter the enclosure. This requirement shall not apply under the following conditions:

- It is recognised that the animals present no risk of serious harm or injury, OR
 - A vehicle that prevents contact between its occupants and any carnivore ensures protection.
5. At no time shall any animal care personnel allow the entry of unauthorised personnel, unless a senior animal manager has granted prior approval.
 6. All doors/slides/gates that form part of the containment barrier shall be able to be operated in a safe and secure manner.
 7. Staff entering the enclosure for daily servicing shall use a double door/gate system, where the outside door/gate must be shut before accessing the enclosure.

10 Carnivores C3: Mustelidae (weasels, otters, badgers, skunks) Procyonidae (raccoons, etc) Viverridae (civets, genets)

10.1 Risk ratings

10.1.1 Physical ability

Known jumping distance/height and climbing ability		Low to high
Known digging ability		Low to high
Known physical strength	Depends on mean weight.	Low to medium
Known stress factor	Stress factors are mainly caused by inter-species aggression and predation.	Low to medium
Known behavioural limitations		Low
Known physical limitations		Low to medium

10.1.2 Behavioural factors

Individual: solitary living species	Most of these species will live in family groups.	Low
Social: requirement to live in a social group/herd/pride	The social behavioural requirements of these animals must be met.	Minimal to medium
Species need for cover		Low to medium
Species requirement for individual space	Special needs at cubbing/breeding time/season.	Low to high
Species requirement for group/pride behavioural space		Low
Species known ability to react to direct control containment	There may be differences between individual specimens and this may depend on time spent by keepers on conditioning.	Minimal
Species known interaction with other species	No species have a known inter-species interaction apart from predator/prey.	Low

10.1.3 Public safety

Risk of escape	Directly related to mean species weight.	Minimal to low
----------------	--	----------------

10.1.4 Keeper safety and issues

Direct contact		Low to medium
Enclosure security and entry		High
Routine handling		Low to medium

10.2 Enclosure standards for Mustelidae (weasels, otters, badgers, skunks) Procyonidae (raccoons, etc) Viverridae (civets, genets)

10.2.1 Physical containment

The perimeter of the enclosure shall be:

1. Vertical and unclimbable, 2x body length in height, OR the height of known jumping height plus 15%, whichever is greater (in the case of genets, jumping height plus 30%).

OR,

2. Vertical and climbable, 3x body length in height, OR height of known jumping height plus 15% (in the case of genets plus 30%), whichever is greater, AND with one physical OR one psychological failsafe.

OR,

3. Horizontal, 4x body length wide, OR width of known jumping distance plus 15%, whichever is greater, AND depth twice the standing body height, AND with a minimum of one physical OR one psychological failsafe,

OR,

4. Both vertical and horizontal – the vertical and horizontal dimensions shall be no less than 150% of the relevant formulas above.

Table 3. Carnivores C3: Mustelidae (weasels, otters, badgers, skunks) Procyonidae (raccoons, etc) Viverridae (civets, genets)

Common name: Latin name:	Mean Body length (nose to vent) cm	Range Weight kg
Procyonidae		
Nepalese Red Panda <i>Ailurus fulgens fulgens</i>	35	3.5 –6.5
Coati <i>Nasua narica narica</i>	40	3-5
Raccoon <i>Procyon lotor</i>	45	3-9

Viverridae		
African Civet <i>Civettictis civetta</i>	65	12-15
Meerkat <i>Suricata suricatta</i>	20	0.68
Mustelidae		
Small-clawed Otter <i>Aonyx cinerea</i>	40	3-6
American Badger <i>Taxidea taxus</i>	60	4-12

The enclosures must meet the following requirements:

1. The foundation of any containment barrier shall be fixed either by direct fixing into the ground or by hardened material, in such a manner that the animals cannot breach containment by digging under the perimeter.
2. Climbing structures shall not be placed within the enclosure so that a breach of containment can occur.
3. Any climbable angle in the containment barrier shall have one physical or one psychological failsafe.

(None of the above requirements shall apply where there is total containment.)

4. Double door/gate/slide systems shall be provided where entry is required for daily servicing by animal care staff.
5. All electrical and mechanical systems, doors and slides shall be kept in good working order. All maintenance shall be done in accordance with manufacturer's recommendations where applicable.
6. All materials used in the containment barrier shall be able to withstand the impact of 3x the mean species weight (verified by the manufacturer's specifications). Refer to Table 3.
7. The size of any netting or other non-solid materials used for containment structures shall be less than half the body size of the smallest known specimen after weaning.
8. Direct control containment shall not apply to this class of species unless:
 - The operator can show that the specimen or species does not present a risk of serious injury and is under full control to the satisfaction of the operator, OR
 - There are circumstances warranting direct control containment as a temporary measure, as directed by the operator and/or veterinarian.

10.2.2 Behavioural factors shall be addressed by:

1. Provision of complex variable environments that stimulate both physical and mental

activity.

2. Implementation of an aggressive proactive enrichment programme.
3. Provision of an environment, space and furniture sufficient to allow such exercise as is needed for the welfare of the particular species.
4. Minimising any undue stress due to social interaction. The removal or introduction of animals required to maintain an appropriate social structure shall be managed a timely manner.
5. Provision of enough keeper time to condition animals to enter and exit night dens/short-term secure holding pens on command and/or by routine.
6. Provision of an environment (natural cover, geographical features and space) to allow normal behaviour patterns, with particular emphasis on the ability for self-segregation and visual isolation from both group members and the viewing public.
7. Ensuring that there are no other species in visual and/or vocal proximity to cause undue stress.
8. Species of this class may be considered for mixed exhibits, providing the interaction between species does not cause undue stress.
9. An additional enclosure(s) shall be provided at the zoo for alternative holding of a maximum of 30% of the group in cases of undue stress caused by aggressive interaction and/or other problems within the group.

10.2.3 Public safety

1. There shall be no direct contact with this class by any unauthorised personnel.
2. If a non-solid containment barrier is to be used at the public viewing site of the enclosure, the public barrier (to Health and Safety specifications) shall be placed a minimum of 200mm distance from the barrier.
3. If a solid containment barrier is used at the public viewing site it shall be able to withstand the impact of 2x the mean species body weight (verified by the manufacturer's specifications).

10.2.4 Keeper safety

1. Procedures shall address the routine entry and exit of staff into the enclosure.
2. No direct animal contact shall be initiated without the specific agreement of the senior animal manager/operator.
3. Animal care personnel may enter the enclosure at their discretion, providing it is recognised the animals present no risk of serious harm or injury.
4. All personnel in regular contact and with responsibility for the daily management of these

animals shall have a good working knowledge of their behaviour, with particular emphasis on seasonal and/or day-to-day variations.

5. At no time shall any animal care personnel allow the entry of unauthorised personnel, unless a senior animal manager has granted prior approval.
6. All doors/slides/gates that form part of the containment barrier shall be able to be operated in a safe and secure manner.
7. Staff entering the enclosure for daily servicing shall use a double door/gate system, where the outside door/gate must be shut before accessing the enclosure.

11 Large Primates P1: apes and baboons

11.1 Risk ratings

11.1.1 Physical ability

Known jumping distance/height and climbing ability	These animals are considered fully arboreal.	High
Known digging ability	No species in this class have the physical attributes to dig. However, the ability to use tools should be rated.	Low to medium
Known physical strength	These animals will use their physical strength in conjunction with their very high reasoning ability.	High
Known stress factor	As most adults in this class will be predator-free, their fright and flight response is medium to low. Most stress factors will be caused by inter-species and inter-specimen/group aggression.	Low to medium
Known behavioural limitations	These animals have highly evolved reasoning ability and will challenge containment as individuals and as a group.	Low
Known physical limitations	There are no physical limitations that will restrict their ability to breach containment.	Minimal to low

11.1.2 Behavioural factors

Individual: solitary living species	These animals are social animals	High
Social: requirement to live in a social group/herd/pride	The social behavioural requirements of these animals must be met.	High
Species need for cover	These animals require appropriate cover - to minimise undue stress and pacing behaviour, and to provide visual separation from the viewing public, each other, and other predator species in this class.	High
Species requirement for individual space		Minimal to low
Species requirement for group behavioural space		High
Species known ability to react to direct control containment	There may be differences between individual specimens and this may depend on time spent by keepers on conditioning.	Medium to high
Species known interaction with other species	This class of species have limited known inter-species interaction in terms of mixed exhibits. (Some small primates have been	Minimal to low

	successfully kept with gorillas.)	
--	-----------------------------------	--

11.1.3 Public safety

Risk of escape	These animals are rated as highest possible risk in terms of public safety (direct physical attack).	High
----------------	--	------

11.1.4 Keeper safety and issues

Direct contact	These animals are rated as highest possible risk in terms of direct contact and keeper safety.	High
Enclosure security and entry	These animals are rated as highest possible risk.	High
Routine handling	These animals are rated as highest possible risk.	High

11.2 Enclosure standards for apes and baboons

11.2.1 Physical containment

The perimeter of the enclosure shall be:

1. Vertical and unclimbable, 4.5x mean species body length in height, OR height of known jumping height plus 20%, whichever is greater.

OR,

2. Vertical and climbable, 4.5x mean species body length in height, OR the known jumping height plus 15%, whichever is greater, AND with a minimum of one physical AND one psychological failsafe.

OR,

3. Horizontal, 4x mean species body length wide, OR width of known jumping distance plus 20%, whichever is greater, AND depth 1.2x mean species standing body height (upright), AND one physical OR one psychological failsafe.

OR,

4. Both vertical and horizontal – the vertical dimensions shall be greater than 80% of the vertical requirements and the horizontal dimensions shall be greater than 75% of the horizontal requirements. The depth of horizontal section shall comply with clause 3 above.

Physical containment may be less than 100% but not less than 75% of the formula. If less than 100% the structure shall have in addition, a minimum of one physical and one psychological failsafe.

For the purpose of this class, the standing measurement shall mean the height of the animal when standing in an upright position (as opposed to on all fours) and the body length shall include the tail except for the apes.

Table 4. Large Primates P1: apes and baboons

Common name Latin name	Mean Body length cm	Tail length Cm	Range Weight kg
Primates			
Chimpanzee Pan troglodytes	85	N/a	40-50
Orang-utan Pongo pygmaeus	100	N/a	40-90
Siamang Hylobates syndactylus	55	N/a	10-12
Baboon Papio hamadryas ursinus	70	60	14-40
Papio hamadryas hamadryas	65		
White –checked Gibbon Hylobates leucogenys	40		

The enclosures must meet the following requirements:

1. The foundation of any containment barrier shall be fixed either by direct fixing into the ground or by hardened material, in such a manner that the animals cannot breach containment by digging under the perimeter, either manually and/or by using tools.
2. Climbing structures shall not be placed within the enclosure so that a breach of containment can occur. If the top of the structure is level with, or below the top of the containment barrier, the minimum distance from the perimeter shall be 4x mean species body length. If the top of the climbing structure is above the containment barrier, minimum distance shall be 4.5x mean species body length.
3. Any climbable angle in the containment barrier shall have one physical or one psychological failsafe.

(None of the above requirements shall apply where there is total containment.)

4. Provision shall be made for additional lockable holding facilities, into which all specimens 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.
5. Double door/gate/slide systems shall be provided where entry is required for daily servicing by animal care staff.
6. All electrical and mechanical systems, doors and slides shall be kept in good working order. All maintenance shall be done in accordance with manufacturer's recommendations.

7. All materials used in the containment barrier shall be able to withstand the impact of 4x mean species body weight (verified by the manufacturer's specifications).
8. The size of any netting or other non-solid materials used for containment barriers shall be less than half the body size of the smallest known newborn specimen of the species it contains.
9. Direct control containment shall not apply to this class of species unless:
 - The keeper/handler can show that the zoo animal is under full control to the satisfaction of the operator, OR
 - There are circumstances warranting direct control containment as a temporary measure, as directed by the operator and/or veterinarian.

11.2.2 Behavioural factors shall be addressed by:

1. Provision of complex variable environments that stimulate both physical and mental activity.
2. Implementation of an aggressive proactive enrichment programme.
3. Provision of an environment, space and furniture sufficient to allow such exercise as is needed for the welfare of the particular species.
4. Minimising any undue stress due to social interaction. The removal or introduction of animals required to maintain an appropriate social structure shall be managed a timely manner.
5. Provision of enough keeper time to condition animals to enter and exit night dens/short-term secure holding pens on command and/or by routine (within the enclosure structure).
6. Provision of an environment (natural cover, geographical features and space) to allow normal behaviour patterns, with particular emphasis on the ability for self-segregation and visual isolation from both group members and the viewing public.
7. Ensuring that there are no other species in visual and/or vocal proximity to cause undue stress, with particular emphasis on predator animals (large felids) in relation to these primates.
8. This class of species may be considered for mixed exhibits with species outside this class.

11.2.3 Public safety

1. There shall be no direct contact with this class of species by any unauthorised personnel.
2. If a non-solid containment barrier is used at the public viewing site of the enclosure, the public barrier (to Health & Safety specifications) shall be placed to maintain a minimum of half a metre distance from the barrier, and there shall be an internal electric fence at animal shoulder height.

3. A non-solid enclosure barrier shall be able to withstand the strength of the largest individual in the group.
4. The solid containment barrier shall be able to withstand the impact of 4x the mean species body weight (verified by the manufacturer's specifications).
5. If there is a containment breach by this class of species, the Police and Supervisor shall be notified immediately.
6. Any institution holding this class of species shall have appropriate firearms and the appropriately licensed/trained personnel available, within five minutes during visiting hours and within thirty minutes after visiting hours, to deal with a breach of containment by this class of species.
7. There shall be an emergency procedure in case of a containment breach by any P1 primates, with specific emphasis on procedures for destruction of this species in a safe manner in relation to the public.
8. The following primates shall be destroyed in the event of any containment breach where there is a threat to human safety: Male chimpanzee, male orang-utan and male baboon. Macaques if Herpes B positive. If life threatening: females of the above.

11.2.4 Keeper safety

1. Procedures shall address the routine entry and exit of staff into the enclosure.
2. Procedures shall address safety for animal care personnel dealing with these animals, with particular emphasis on disease and vermin control.
3. Unless it is recognised that animals present no risk of serious harm or injury, no direct animal contact shall be initiated with animals having a mean weight of more than 15kg, without the specific agreement of the senior animal manager/operator.
4. All personnel in regular contact and with responsibility for the daily management of these animals shall have a demonstrable working knowledge of their behaviour, with particular emphasis on seasonal and/or day-to-day variations in both individual and group behaviour.
5. At no time shall any animal care personnel allow the entry of unauthorised personnel, unless a senior animal manager has granted prior approval.
6. All doors/slides/gates that form part of the containment barrier shall be able to be operated in a safe and secure manner.
7. Staff entering the enclosure for daily servicing shall use a double door/gate system, where the outside door/gate must be shut before accessing the enclosure.

12 Primates P2: (other than apes and baboons)

12.1 Risk ratings

12.1.1 Physical ability

Known jumping distance/height and climbing ability	These animals are fully arboreal.	High
Known digging ability	No animals have the physical attributes to dig.	Minimal to low
Known physical strength	Physical strength in this class is related to their mean species body weight and mass.	High
Known stress factor	Most of these animals are susceptible to predatory fright and flight stress/response, and inter-species and inter-specimen/group aggression stress/response.	Medium to high
Known behavioural limitations	These animals have highly evolved reasoning ability and will challenge containment as individuals and as a group	Minimal to low
Known physical limitations	There are no physical limitations that will limit their ability to breach containment, other than their mean weight/body mass.	Minimal to low

12.1.2 Behavioural factors

Individual: solitary living species	These animals are social group animals.	High
Social: requirement to live in a social group/herd/pride	The social behavioural requirements of these animals must be met.	High
Species need for cover	These animals require appropriate cover - to minimise undue stress, and to provide visual separation from the viewing public and each other, with particular emphasis on natural overhead cover for species with a mean species weight of less than 5kg.	High
Species requirement for individual space		Low
Species requirement for group behavioural space		High
Species known ability to react to direct control containment	There may be differences between individual specimens, but this class of species will respond to direct control well.	Medium to high
Species known interaction with other species	A wide range in this class can co-exist with species in the same class and in other classes.	Medium to high

12.1.3 Public safety

Risk of escape	The mean weight of each species in this class will have a direct bearing on the likelihood of physical harm to the public.	Low to medium
----------------	--	---------------

12.1.4 Keeper safety and issues

Enclosure security and entry	These animals will have good reasoning and learning ability.	High
Routine handling	Risk factors will be minimized in direct correlation to the mean weight of species and time spent conditioning.	Low to medium

12.2 Enclosure standards for Primates P2: (other than apes and baboons)

12.2.1 Physical containment

The perimeter of the enclosure shall be:

1. Vertical and unclimbable, 8x mean species body length in height, OR height of known jumping height plus 20%, whichever is greater.

OR,

2. Vertical and climbable, 8x mean species body length in height, OR height of known jumping height plus 20%, whichever is greater, AND with a minimum of one psychological failsafe.

OR,

3. Horizontal, 6x mean species body length wide, OR width of known jumping distance plus 20%, whichever is greater, AND depth equal to twice the mean species standing body height.

OR,

4. Both vertical and horizontal – the vertical dimensions shall be greater than 75% of the vertical requirements AND the horizontal dimensions shall be greater than 75% of the horizontal requirements. The depth of the horizontal section shall comply with clause 3 above.

Table 5. Primates P2, (other than apes and baboons)

Common name: Latin name:	Mean Body length cm	Tail length	Range Weight kg
Lemur spp	40		2-3
Brown capuchin Cebus apella	30		1.3-4.8

The enclosures must meet the following requirements:

1. The foundation of any containment barrier shall be fixed either by direct fixing into the ground or by hardened material, in such a manner that the animals cannot breach containment by digging under the perimeter, either manually and/or by using tools.
2. Climbing structures shall not be placed within the enclosure so that a breach of containment can occur. If the top of the structure is level with, or below the top of the containment barrier, the minimum distance from the barrier shall be 3x body length. If the top of the climbing structure is above the containment barrier, the minimum distance shall be 4x body length.
3. Any climbable angle in the containment barrier shall have one physical or one psychological failsafe.

(None of the above requirements shall apply where there is total containment.)

4. Provision shall be made for additional lockable holding/night den facilities into which all specimens held in the main enclosure can be locked away on command and/or by routine, with particular emphasis on species subject to a high percentage of direct control containment.
5. Double door/gate/slide systems shall be provided where entry is required for daily servicing by animal care staff.
6. All electrical and mechanical systems, doors and slides shall be kept in good working order. All maintenance shall be done in accordance with manufacturer's recommendations where applicable.
7. All materials used in the containment barrier shall be able to withstand the impact of 4x mean species body weight (verified by the manufacturer's specifications).
8. The size of any netting or other non-solid materials used for containment barriers shall be less than half the body size of the smallest known specimen of a species after weaning.

12.2.2 Behavioural factors shall be addressed by:

1. Provision of complex variable environments that stimulate both physical and mental activity.
2. Implementation of an aggressive proactive enrichment programme.
3. Provision of an environment, space and furniture sufficient to allow such exercise as is needed for the welfare of the particular species.
4. Minimising any undue stress due to social interaction. The removal or introduction of animals required to maintain an appropriate social structure shall be managed a timely manner.
5. Provision of enough keeper time to condition animals to enter and exit night dens/short-term secure holding pens on command and/or by routine (within the enclosure structure).
6. Provision of an environment (natural cover, geographical features and space) to allow normal behaviour patterns, with particular emphasis on the ability for self-segregation and visual isolation from both group members and the viewing public.
7. Ensuring that there are no other species in visual and/or vocal proximity to cause undue stress.
8. This class of species may be considered for mixed exhibits with species of the same class or from other classes.
9. Provision shall be made at the zoo for alternative holding of a 5% maximum of the total primate holding to relieve undue stress caused by aggressive interaction and/or other problems within the group.

12.2.3 Public safety

1. There shall be no direct contact with this class of species by any unauthorised personnel.
2. If a non-solid containment barrier is used at the public viewing site of the enclosure, the public barrier (to Health & Safety specifications) shall be placed to maintain a minimum of 800 mm distance from the barrier, AND there shall be an internal electric fence at animal shoulder height.
3. A solid containment barrier shall be able to withstand the impact of 3x the mean species body weight (verified by the manufacturer's specifications).
4. If there is a containment breach by this class of animals and there is a potential threat to the public, the Police and Supervisor shall be notified immediately.

12.2.4 Keeper safety

1. There shall be a documented safety procedure for all animal care personnel dealing with these animals, with particular emphasis on disease control and vermin control measures.
2. Where animals weigh more than 15 kg procedures shall address the routine entry and exit of staff into the enclosure.
3. Unless it is recognised that animals present no risk of serious harm or injury, no direct animal contact shall be initiated with animals having a mean weight of more than 15kg, without the specific agreement of the senior animal manager/operator.
4. All personnel in regular contact and with responsibility for the daily management of these animals shall have a demonstrable working knowledge of their behaviour, with particular emphasis on seasonal and/or day-to-day variations in both individual and group behaviour.
5. At no time shall any animal care personnel allow the entry of unauthorised personnel, unless a senior animal manager has granted prior approval.
6. All doors/gates/slides that form part of the containment barrier shall be able to be operated in a safe and secure manner.
7. Staff entering the enclosure for daily servicing shall use a double door/gate system, where the outside door/gate must be shut before accessing the enclosure.

13 Ungulates, Marsupials and Rodentia

13.1 Risk ratings

13.1.1 Physical ability

Known jumping distance/height and climbing ability	None of these animals have the attributes to climb but all have some ability to jump.	Low to medium
Known digging ability	No species in this class have the physical attributes to dig.	Minimal
Known physical strength	These animals have the ability to use physical impact that is related to body mass.	Low
Known stress factor	These are prey animals and have a highly developed fright and flight response.	Medium to high
Known behavioural limitations	These are herd animals.	Medium to high
Known physical limitations	These animals are able to use only body mass and jumping ability to breach containment.	High

13.1.2 Behavioural factors

Individual: solitary living species	These are herd animals.	Minimal
Social: requirement to live in a social group/herd/pride	The social behavioural requirements of these animals must be met.	Medium to high
Species need for cover	These animals require appropriate cover - to minimise undue stress and pacing behaviour, and to provide visual separation from predator species. Most animals in this class are open plains/savannah species.	Low to medium
Species requirement for individual space	These animals have highly evolved herd/group instincts.	Low to medium
Species requirement for group behavioural space	All have highly developed herd instincts.	High
Species known ability to react to direct control containment	There may be differences between individual specimens and this may depend on time spent by keepers on conditioning. Ungulates will respond better than Marsupials.	Low to medium
Species known interaction with other species	Most will have minimal inter-species interaction, but will co-exist without undue stress.	Low to medium

13.1.3 Public safety

Risk of escape	These animals will use their body mass and/or kick forwards. Risk is related to mean species body weight.	Low to high
----------------	---	-------------

13.1.4 Keeper safety and issues

Direct contact	These animals will use body mass and/or kick forwards. Risk is related to mean species body weight. Species in this class have a highly developed fright and flight response.	Low to medium
Enclosure security and entry		Low
Routine handling		Low to medium

13.2 Enclosure standards for Ungulates, Marsupials and Rodentia

13.2.1 Physical containment

The perimeter of the enclosure shall be:

1. Vertical:

- a) For Ungulates, 1.2x mean species body height, OR height of known jumping height plus 15%, whichever is greater.
- b) For Marsupials, 1.2x mean species body length in height, OR height of known jumping height plus 10%, whichever is greater.
- c) For Rodentia, 2x mean species body length in height, OR height of known jumping height plus 10%, whichever is greater.
- d) For Giraffe, a vertical freestanding barrier should be 1.8 metres high.

OR,

2. Horizontal,

- a) For Ungulates and Rodentia, 2x body length wide, OR width of known jumping distance plus 15%, whichever is greater, AND depth as per vertical height (a) with one failsafe.
- b) For Marsupials, 3.5x body length wide, OR width of known jumping distance plus 15%, whichever is greater, AND depth 1.2x standing body height.

If physical containment is less than 100%, the enclosure shall have a minimum of one physical OR one psychological failsafe.

Physical containment shall be no less than 50%.

Body length shall mean:

- a) For Ungulates, from tip of nose to vent
- b) For Marsupials, from tip of nose to tip of tail for mean species weight of less than 10kg; from tip of nose to vent for mean species weight greater than 10kg.
- c) For Rodentia, from tip of nose to tip of tail, where appropriate.

The enclosures must meet the following requirements:

1. The foundation of any containment barrier shall be fixed either by direct fixing into the ground or by hardened material, in such a manner that the animals cannot breach containment as a result of foundation collapse, due to persistent pacing along the inner perimeter.
2. Provision shall be made for additional lockable holding facilities, into which all specimens 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. In the case of rodents and marsupials, these could be temporary facilities.
3. All electrical and mechanical systems, doors and slides shall be kept in good working order. All maintenance shall be done in accordance with manufacturer's recommendations.
4. All materials used in the containment barrier shall be able to withstand the impact of 3x the mean species weight (verified by the manufacturer's specifications).
5. Direct control containment shall not apply to this class of species unless:
 - There are circumstances warranting direct control containment as a temporary measure, as directed by the operator and/or veterinarian, OR
 - It is recognized the animal's stage of development or individual behaviour presents no risk of serious harm or injury.

13.2.2 Behavioural factors shall be addressed by:

1. Provision of complex variable environments that stimulate both physical and mental activity, with specific emphasis on herd behaviour.
2. Implementation of an aggressive proactive enrichment programme.
3. Provision of an environment and space sufficient to allow such exercise as is needed for the welfare of the particular species. In mixed species exhibits, specific emphasis shall be given to the ability of species to separate into their own herd structures.

4. Minimising any undue stress due to social interaction. The removal or introduction of animals required to maintain an appropriate social structure shall be managed a timely manner.
5. Provision of enough keeper time to condition animals to enter holding/handling yards (within the enclosure) without causing undue stress.
6. Provision of an environment (natural cover, geographical features and space) to allow normal behaviour patterns, with particular emphasis on the ability for self-segregation and visual isolation from both herd members, other species and the viewing public.
7. Ensuring that there are no other species in visual and/or vocal proximity to cause undue stress, with particular emphasis on predator species.
8. In the case of mixed species exhibits and where there are strongly territorial species, specific emphasis shall be given to the provision of enough space for territorial behaviour and establishment.

13.2.3 Public safety

1. Direct contact may be considered if it is recognised the animals present no risk of serious harm or injury.
2. If a non-solid containment barrier is to be used at the public viewing site of the enclosure, the public barrier (to Health & Safety specifications) shall be placed at least 2 metres from the perimeter.
3. A solid containment barrier shall be able to withstand the impact of 3x impact of mean known animal weight (verified by the manufacturer's specifications). In mixed species exhibits use weight of the heaviest specimen present in the enclosure.
4. If there is a containment breach by this class of animals and there is a potential threat to the public, in particular by animals with a mean species body weight greater than 50 kg, the Police and Supervisor shall be notified immediately.

13.2.4 Keeper safety

1. No direct animal contact shall be initiated, or enclosures containing animals entered, without the specific agreement of the senior animal manager/operator, unless:
2. It is recognised the animals present no risk of serious harm or injury, OR
3. A vehicle or other physical means that prevents contact between the occupants and the animals ensures protection.
4. All personnel in regular contact and with responsibility for the daily management of these animals shall have a good working knowledge of their behaviour, with particular emphasis on seasonal changes in relation to ungulates (eg rut, calving, etc).
5. At no time shall any animal care personnel allow the entry of unauthorised personnel,

unless prior approval has been granted by a senior animal manager (not applicable to walk-through marsupial or rodent enclosures).

6. All doors/slides/gates that form part of the containment barrier shall be able to be operated in a safe and secure manner.
7. Staff entering the enclosure for daily servicing shall use a double door/gate system, where the outside door/gate must be shut before accessing the enclosure.

14 Pachyderms (elephant, rhinos, hippos)

14.1 Risk ratings

14.1.1 Physical ability

Known jumping distance/height and climbing ability	This class of species does not have these capabilities.	Low
Known digging ability		Not applicable
Known physical strength	Impact of body mass and strength in trunk.	High
Known stress factor	Has minimal fright and flight response in relation to other species.	Minimal
Known behavioural limitations	Herd protection instincts predominant.	Minimal
Known physical limitations	Physical strength is related to body mass and presence of prehensile trunk.	Low

14.1.2 Behavioural factors

Individual: solitary living species	Only mature bulls will live as occasional outcasts from herds.	Minimal to low
Social: requirement to live in a social group/herd/pride	The social behavioural requirements of these animals must be met.	Medium to high
Species need for cover		Low
Species requirement for individual space	These animals have highly evolved herd/group instincts and will rarely self-segregate.	Low to medium
Species requirement for group behavioural space	All of these animals have highly developed herd instincts.	High
Species known ability to react to direct control containment	There may be differences between individual specimens and this may depend on time spent by keepers on conditioning.	Medium to high
Species known interaction with other species	These animals will not tolerate other species.	Low

14.1.3 Public safety

Risk of escape	This species is rated as highest possible risk in terms of public safety (direct physical attack). However, this risk is directly related to the percentage of direct control containment.	Low to high
----------------	--	-------------

14.1.4 Keeper safety and issues

Direct contact	This species is rated as highest possible	Low to high
----------------	---	-------------

	risk in terms of keeper safety (direct physical attack). However, this risk is directly related to the percentage of direct control containment.	
Enclosure security and entry		High
Routine handling	There may be differences between individual specimens and this may depend on the ability of the keeper and the time spent by keepers on conditioning.	Low to high

14.2 Enclosure standards for Pachyderms (elephant, rhinos, hippos)

14.2.1 Physical containment

The perimeter of the enclosure shall be either:

1. Vertical and unclimbable, elephant 0.8x mean species body height, rhino shoulder height, hippo body length in height.

OR,

2. Horizontal, elephant and rhino 1.2x mean species body length, and hippo 1.2x mean species body length with a failsafe

AND

0.8 x body height in depth for all animals above.

The enclosures must meet the following requirements:

1. The foundation of any containment barrier shall be fixed either by direct fixing into the ground or by hardened material, in such a manner that the animals cannot breach containment as a result of foundation collapse, due to persistent pacing along the inner perimeter. Special consideration shall be given to the animals' ability to kick and/or dig with trunk or feet.
2. Containment barriers shall be built in such a manner that animals cannot escape. The bottom rail of horizontal railings shall be a minimum of 550 mm off the ground. All horizontal spacings (of railing etc) shall be no greater than quarter the body size of the smallest known specimen after weaning.
3. Provision shall be made for additional lockable holding yards/facilities, into which all specimens held in the main enclosure can be locked away on command and/or by routine. These can be yard/night house facilities in, or adjacent to the main enclosure.
4. All doors and gates must be engineered to withstand extreme forces. If mechanical opening devices such as hydraulic or electrically powered drives are used, they shall be able to be operated manually or with a backup generator in the case of power failure.
5. All electrical and mechanical systems, doors and slides shall be kept in good working

order. All maintenance shall be done in accordance with manufacturer's recommendations.

6. All materials used in the containment barrier shall be able to withstand the impact of 3x mean species body weight (verified by the manufacturer's specifications).
7. Direct control containment (excluding hippo) shall apply under the following conditions:
 - Where the operator can show that the animal is under full control to the satisfaction of the operator, OR
 - A keeper/handler shall be in attendance at all times when the animal is considered under direct control containment.

14.2.2 Behavioural factors shall be addressed by:

1. Provision of complex variable environments that stimulate both physical and mental activity.
2. Implementation of an aggressive proactive enrichment programme.
3. Provision of an environment and space sufficient to allow such exercise as is needed for the welfare of the species.
4. Minimising any undue stress due to social interaction. The removal or introduction of animals required to maintain an appropriate social structure shall be managed a timely manner.
5. Provision of enough keeper time to condition animals to enter holding/handling yards (within the enclosure structure) without causing undue stress.
6. Provision of an environment (natural cover, geographical features and space) to allow normal behaviour patterns, with particular emphasis on the ability for self-segregation and visual isolation from both herd members, other species and the viewing public.
7. All facilities must have the ability to separate and isolate animals to address behavioural concerns or to allow veterinary procedures.
8. Adult elephant bulls (six years and over) may be housed alone, but shall not be housed in complete isolation from other elephants. A minimum of two sensory instincts (tactile, olfactory, visual and/or auditory interaction) shall be provided for.

14.2.3 Public safety

1. Direct contact may be considered (excluding hippo) if it is recognised the animals present no risk of serious harm or injury.
2. Direct contact with the public shall be subject to the following conditions:
 - The animal shall be under direct control containment at all times.

- There shall be at least two keeper/handlers in attendance per animal at all times.
- For every two animals there shall be at least one staff member who is responsible for public behaviour around the animals.
- If a non-solid barrier is to be used at the public viewing site of the enclosure, the public barrier (to Health & Safety specifications) shall be a minimum distance of 1.2 metres from the enclosure barrier.
- A solid containment barrier shall be able to withstand the impact of 3x of mean known species weight (verified by the manufacturer's specifications).
- If there is a containment breach by this class of species and there is a potential threat to the public, the Police and Supervisor shall be notified immediately.

14.2.4 Keeper safety

1. All zoos shall have procedures for elephant management. They shall address as appropriate:
 - Free contact: Direct handling of an elephant when the keeper and elephant share the same unrestricted space. Neither the use of chains nor the posture of the elephant alters this definition.
 - Protected contact: Handling of an elephant when the keeper and elephant do not share the same unrestricted space. Typically in this system, the keeper has contact with the elephant through some type of protective barrier, while the elephant is not spatially confined and is free to leave the work area at will.
 - Confined contact: Handling of an elephant through a protective barrier where the elephant is spatially confined, as in an elephant restraint device.
2. All contact areas should have unobstructed escape routes.
3. Each institution must have one person designated as the elephant manager. This individual is responsible for:
 - Staff training
 - Developing and maintaining the programme
 - Communicating with his/her peers in other institutions to maintain up-to-date knowledge about the elephant programme
4. Only a qualified keeper may handle elephants with direct contact.
5. All animal care personnel who are in contact with, or manage elephants on a day-to-day basis, shall be aware of each animal's social compatibility and the dominant hierarchies of the herd.

6. Elephant-keeping staff shall demonstrate good understanding of all emergency procedures. Elephant management techniques should continually improve as the industry standards evolve.
7. At no time shall any animal care personnel allow the entry of unauthorised personnel, unless a senior animal manager has granted prior approval.
8. All doors/gates/slides that form part of the perimeter containment barrier shall be able to be operated in a safe and secure manner.
9. Staff entering the enclosure for daily servicing shall use a double door/gate system, where the outside door/gate must be shut before accessing the enclosure.

15 Avian Species

15.1 Risk ratings

15.1.1 Physical ability

Known jumping distance/height and climbing ability	Minimal for non-flighted and pinioned birds; high for all flighted birds.	Minimal to high
Known digging ability	Ratites are the highest rated in this class.	Minimal to low
Known physical strength	Physical strength is related to their mean species body weight and mass. Ratites are the highest rated.	Minimal to high
Known stress factor	Most are susceptible to predatory fright and flight stress/response (except ratites), and inter-species and inter-specimen/group aggression stress/response.	Medium to high
Known behavioural limitations	Most are highly flock- orientated.	High
Known physical limitations	Except for ratites and larger cranes they lack physical attributes and body weight/strength.	High

15.1.2 Behavioural factors

Social: requirement to live in a social group/herd/pride	Birds need to have their social behavioural requirements met.	High
Species need for cover	Birds require appropriate cover, to minimise undue stress, and to provide visual separation from the viewing public and each other, with particular emphasis on natural overhead cover for non-flighted birds.	High
Species requirement for individual space	A high percentage of birds will pair bond and require individual space at specific times of their annual cycle.	Low
Species requirement for group behavioural space		High
Species known ability to react to direct control containment	With the exception of some hook beak species, the ability to respond to direct control containment is minimal.	Minimal to high
Species known interaction with other species	A wide range of birds can co-exist with other species. There is also a wide range of smaller species that are very territorial.	Medium to high

15.1.3 Public safety

Risk of escape	The mean weight of the birds will have a direct bearing on the likelihood of physical harm to the public.	Low to medium
----------------	---	---------------

15.1.4 Keeper safety and issues

Enclosure security and entry	For larger ratites the risk factor will increase; for a mean species weight less than 15kg the risk factor is minimal.	Minimal to medium
Routine handling		Minimal to medium

15.2 Enclosure standards for avian species

15.2.1 Physical containment

The perimeter of the enclosure shall be:

1. For all flighted birds (except raptors)
 - 100% total containment only, or under direct control containment (eg free flight presentation).
2. For all non-flighted birds (including pinioned birds)
 - The perimeter shall follow the contour of the land, with the bottom of the fence secured in such a way that the birds' feet or toes cannot be trapped between the fence and the ground.
 - Vertical containment structure height shall be known jumping height plus 15%.
 - Horizontal containment structure shall be known jumping distance wide plus 15%, with depth to shoulder height, AND with one failsafe.

The enclosures must meet the following requirements:

1. The foundation of any containment barrier shall be fixed either by direct fixing into the ground or by hardened material, in such a manner that species cannot breach containment by digging under the perimeter.
2. Perching structures shall not be placed in such a manner so as to provide a means for animals to escape.
3. None of the above requirements shall apply where there is total containment.
4. Provision shall be made for additional lockable holding facilities into which all specimens held in the main enclosure can be locked away if there is a containment structure failure. This facility may be anywhere on the zoo site.

5. Provision shall be made for separation facilities during the breeding season to isolate individual birds or sexes if aggression occurs.
6. Staff entering the enclosure for daily servicing shall use a double door/gate system, where the outside door/gate must be shut before accessing the enclosure.
7. All electrical and mechanical systems, doors, slides, heaters, ventilators, etc shall be kept in good working order. All maintenance shall be done in accordance with manufacturer's recommendations.
8. All materials used in the containment barrier shall be able to withstand an impact of
9. 4 x mean species body weight (verified by the manufacturer's specifications).
10. Direct control containment shall apply under the following conditions only:
 - Where there are circumstances warranting direct control containment as a temporary measure, as directed by the operator and/or veterinarian.
 - Where birds are used for public display and/or educational demonstrations.

15.2.2 Behavioural factors shall be facilitated by:

1. Provision of complex variable environments that stimulate both physical and mental activity.
2. Implementation of an aggressive proactive enrichment programme.
3. Provision of an environment, space and furniture sufficient to allow such exercise as is needed for the welfare of the particular species, with emphasis on the provision of suitable water features for aquatic birds.
4. Minimising any undue stress due to social interaction. The removal or introduction of animals required to maintain an appropriate social structure shall be managed a timely manner.
5. The provision of multiple feed stations should be provided in enclosures with a large number of bird species. Minimum ratio of feed stations shall be one feed station per species.
6. Provision of an environment (natural cover, geographical features and space) to allow normal behaviour patterns, with particular emphasis on the ability for self-segregation and visual isolation from both group members and the viewing public. Special emphasis shall be placed on species with a known requirement for overhead cover.
7. Ensuring there are no other species in visual and/or vocal proximity to cause undue stress, with particular emphasis on natural bird predators.

15.2.3 Public safety

1. Direct contact with these species will be allowed under the following conditions:

- When security measures have been taken to minimise the possibility of breach of containment at the public point of entry to the enclosure, OR
 - Where it is recognised the birds present no risk of harm or injury, OR
 - The birds weigh less than 5kg.
2. For cranes – if a non-solid containment barrier is to be used at the public viewing site, and this is also the public barrier, then the height of the barrier shall be greater than 1 metre, and the barrier shall be unclimbable by the public.

15.2.4 Keeper safety

1. All animal care personnel and handlers shall have a good understanding and working knowledge of all the species they are to manage, with particular emphasis on ratite behaviour.
2. There shall be a safety procedures for managing ratites.

16 Enclosure standards for reptiles

16.1 Physical containment

16.1.1 The perimeter of the enclosure

1. For mean species body length of 100 mm or smaller:
 - When the perimeter of the enclosure is unclimbable the vertical height shall be a minimum of 400 mm.
 - When the perimeter of the enclosure is climbable then the vertical height shall be the 400 mm plus one unclimbable in-hanger, 150 mm wide at approx. 20 degree angle.
2. For mean species body length between 100 mm and 300 mm:
 - When the perimeter of the enclosure is unclimbable the vertical height shall be a minimum of 900 mm.
 - When the perimeter of the enclosure is climbable then the vertical height shall be 900 mm plus one unclimbable in-hanger, 300 mm wide at approx. 20 degree angle.
3. For mean species body length greater than 300mm:
 - When the perimeter of the enclosure is unclimbable the vertical height shall be a minimum of 1300 mm.
 - When the perimeter of the enclosure is climbable then the vertical height shall be a minimum of 1300 mm plus one unclimbable in-hanger, 450 mm wide at approx. 30 degree angle.
4. Crocodylians shall have a minimum enclosure height of 1500 mm.
5. For burrowing species:
 - The sub-strata of the enclosure shall be of materials that prevent these species from escaping by burrowing.
OR,
 - If they are able to burrow in the sub-strata then the base of the perimeter structure shall be buried in the ground for a minimum of four times the mean species body length.
6. None burrowing species the base of the perimeter structure shall be buried in the ground for a minimum depth equal to the mean body length.

7. For all semi-aquatic and aquatic species:
 - The diameter of the drain outlet for ponds and pools in an enclosure shall be a maximum of half the mean species body width, OR,
 - the drain shall have a grill or cover fixed permanently into the drain-outlet that prevents new born/hatched species escaping.
8. For terrestrial species, if any part of the enclosure is open to the weather, then special consideration shall be given to the surface drainage of the containment area to ensure that dry areas can be established quickly.
9. For arboreal species, no perching structures shall be placed in such a manner that breach of containment is facilitated.
10. All venomous /poisonous reptile species shall be kept in total containment constructed with solid materials.
11. Reptiles that are housed indoors only:
 - Provision shall be made to replicate the natural photo-period either by:
 - Providing heating lights that are red or blue. OR,
 - Manipulation of lighting OR,
 - Provide ultraviolet lighting.
12. Provision shall be made for a misting/humidity control system where applicable for the species.

16.1.2 The enclosures must meet the following requirements:

1. Special consideration shall be given to the selection of the materials used with regard to the humidity requirements of some reptiles. All manufacturers' recommendations shall be adhered to. For example:
 - diurnal desert species of reptiles require a relative humidity of 50%,
 - most coastal and mountain species require 50-70% relative humidity
 - reptiles in humid tropical environments require a relative humidity greater than 80%.
2. All material used in the construction of the enclosure perimeter shall be able to withstand an impact of three times the mean species body weight.
3. Where non solid materials are used and the reptiles are live bearing then the gauge of materials used in the enclosure perimeter including the drainage holes shall be half the size or smaller than any new born reptiles.
4. All material used for the perimeter fence buried below ground level shall be treated materials suitable for that use as recommended by the manufacturer.
5. The base of the containment perimeter shall be fixed into the ground in such a manner that running surface water and/or other spills cannot breach the containment barrier.

6. If any part of the enclosure is open to the weather, then special consideration shall be given to the surface drainage of the containment area with respect to a potential breach of containment.

16.1.3 General structural requirements

1. Provision shall be made for suitable alternative, lockable holding facilities, into which all specimens held in the main enclosure can be locked away in case of containment structure failure. This facility may be anywhere on the zoo site.
2. All electrical and mechanical systems, doors, slides, heaters, ventilators, etc. shall be kept in good working order. All maintenance shall be in accordance with manufacturer's recommendations where applicable.
3. Provision of double door/gate/slide systems, where entry is required for daily servicing by animal care staff.
4. Provision shall be made for separation facilities during the breeding season to isolate individual specimen or sexes if aggression occurs and/or when required for other management purposes.
5. If the enclosure is outside and open, provision shall be made to prevent predation by predatory birds.

16.1.4 Behavioural factors shall be facilitated by:

1. Provision of an environment, space and furniture sufficient to allow such exercise as is needed for the welfare of the particular species.
2. For burrowing species:
 - Sufficient depth of soil and/or other materials shall be provided in their enclosures for burrowing.
 - Special consideration shall be given to the drainage of these containment structures to ensure that all surface water will drain away and not leave the substrate water logged.
3. For all semi-aquatic and aquatic species:
 - A pool shall be provided. The water should be deep enough for the reptiles to submerge totally and big enough for free swimming, both horizontally and vertically.
 - Sufficient land area shall be provided to allow basking.
 - Where tropical species of turtles and crocodilians are displayed, water temperature should be 24-28oC.
 - The interior design and landscaping of reptile enclosures should be consistent

with the environmental needs of the inhabitants. Basking sites (rocks or logs) should be provided under a heat source for reptiles preferring radiant heat.

- Appropriate temperatures and humidity should be maintained for particular reptile species. A heat source should be provided within, or immediately adjacent to, each reptile enclosure sufficient to provide the opportunity to thermo-regulate.
- Heating devices shall be designed and positioned so that parts of the enclosure floor are not heated, thereby providing a range of temperatures. A daytime temperature gradient 22-30°C would accommodate thermal requirements for the majority of species
- Provision of an environment (natural cover, geographical features and space) to allow normal behavioural patterns, with particular emphasis on the ability for self-segregation and visual isolation from both group members and the viewing public. Special emphasis shall be placed on species with a known requirement for overhead cover

16.1.5 Public safety

1. Direct contact with these species will be allowed under the following conditions:

- When security measures have been taken to minimise the possibility of escape at the public point of entry, and where it is recognised that the reptiles present no risk of harm or injury, and the reptiles weight less than 2 kg and are non venomous/poisonous.

2. For all Crocodylians and reptiles with a mean body weight of 3 kg and over:

- If a non-solid containment barrier used at the public viewing site of the enclosure is also the public barrier, then the height of the barrier shall be greater than 1 metre in height, and the barrier shall be unclimbable by the public.

16.1.6 Keeper safety

1. All animal care personnel and handlers shall have a good understanding and working knowledge of all the species they are to manage.

2. There shall be a documented safety procedure for managing venomous and poisonous reptiles.

3. The appropriate anti venom shall be available at all times.

17 Invertebrates: Butterflies and Moths

This annex describes the requirements for butterflies and moths imported into a containment facility under an ERMA approval. The “**containment facility**” includes the following two areas; the “**Butterfly House**” where the adult butterflies and moths are housed for public display, and the “**Quarantine, Rearing and Breeding Facility**” where butterfly and moth pupae are imported into for rearing, and includes the corridor between the butterfly house and the quarantine, rearing and breeding facility, as well as the glass display area containing pupae for public display. In some cases a separate “**Breeding Room**” may be used to breed butterflies and moths from previously imported adults that have completed their quarantine period.

17.1 Risk ratings

Physical ability	Adult butterflies and moths can fly and have the potential to attach themselves to people and therefore be carried inadvertently from the enclosure.	Medium
Behavioural factors	Adults may make fast and erratic flight when stimulated. This may threaten containment.	Medium
Requirements for public safety	Some people can develop severe allergies to the scales of adult butterflies and moths. Some caterpillars have spines for defence against predators and can cause allergic reactions or inject venom.	Low
Requirements for keeper safety	As noted above some people can develop severe allergies and therefore keepers should minimise contact or wear protective clothing and gloves when handling butterflies and moths.	Low

17.2 Generic requirements for butterfly and moth enclosures

1. The Authority, or its authorised agent or properly authorised enforcement officers and MAF Inspectors¹ may inspect the facilities at any reasonable time.
2. The training of personnel working in the facility must be in compliance with the MAF/ERMA New Zealand Standard 154.03.042 “Containment Facilities for Zoo Animals” (Standard 154.03.04) and must include all controls imposed by the Authority.
3. The containment manuals must be updated, as necessary, to address the implementation of the controls imposed by the Authority, and the requirements of Standard 154.03.04.
4. The containment facilities must be located south of latitude 34°South (Cape Reinga).

¹ Inspectors appointed under section 103 of the Biosecurity Act 1993

² Any reference to this standard refers to the current version of any subsequent updated version endorsed by ERMA New Zealand and MAF Biosecurity New Zealand.

5. The containment facility must be maintained at temperatures of at least 20°C.
6. 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.
7. 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.
8. 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.
9. All butterflies and moths must be transported in a double packaging system (for example sealed taped containers within a second container such as a bag or box).
10. All species imported (or transferred from other containment facilities in New Zealand) must be sourced from either tropical locations or facilities maintained at temperatures of at least 20°C. Written evidence to this effect (for example signed statement from source facility or field collector) must physically accompany the import. Written evidence must be kept by the facility Operator and made available to The Authority, or its authorised agent or properly authorised enforcement officers and MAF Inspectors, if requested.
11. If for any reason a breach of containment³ occurs the facility Inspector, MAF Biosecurity New Zealand and ERMA New Zealand must be notified promptly as soon as is practicable after the event is noticed.
12. In the event of any breach of containment of the organism, the contingency plan for the attempted retrieval or destruction of any viable material⁴ of the organism that has escaped must be implemented immediately. The contingency plan must be included in the containment manual in accordance with the requirements of Standard 154.03.04.
13. Waste from all stages of the butterfly and moth life cycles, food plants and other vegetation must be disposed of in accordance with Standard 154.03.04 by MAF approved

³ A breach of containment means any interference with the containment facility or any non-compliance with the Authority's controls whether an approved organism escapes from containment or not.

⁴ Viable material is biological material that can be resuscitated to grow into tissues or organisms. It can be defined to mean biological material capable of growth even though resuscitation processes may be required, eg when organisms or parts thereof are sublethally destroyed by being frozen, dried, heated, or affected by chemicals.

methods, either on-site or off-site. These include for example, incineration, autoclaving and deep burial. If off-site, they must be treated in such a manner as to destroy the invertebrate and associated organisms (for example heat treatment or autoclaving) before double bagging, sealing and removal. Vegetation may be mulched on-site in the Butterfly House and retained in the containment facility for use as plant mulch.

14. Mounted butterflies and moths may be removed from the containment facility.
15. Any equipment leaving the containment facility must be cleaned and disinfected before removal.

17.3 Enclosure standards for the Butterfly House

1. 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.
2. 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.
3. The Quarantine, Rearing and Breeding Facility component of the containment facility must be separated from the Butterfly House by a means of excluding ready access by visiting public (for example a closed door).
4. Enclosure standards for quarantine and rearing rooms for butterflies and moths
5. Quarantine and rearing rooms are used for the quarantine and rearing of butterflies and moths bred overseas and imported for display.
6. The quarantine and rearing rooms 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 MAF Inspectors are permitted access to the Quarantine and Rearing rooms.
7. The quarantine and rearing room(s) for holding imported pupae before the adults are transferred to the display enclosure must be kept clean and free of debris. The room(s) and structures used for quarantine and rearing must be subject to regular cleaning and decontamination. Personnel working in quarantine and rearing rooms must wear protective clothing dedicated to the room and wash or disinfect their hands before leaving. Life stages of the butterflies and moths may be displayed to the public through viewing windows or separate display cases within the enclosure but they must not be physically accessible to the public.
8. Samples of butterflies and moths may be sent to a MAF approved diagnostic laboratory for disease investigation. Before submitting any diagnostic material the Inspector must contact the diagnostic laboratory to discuss the requirements with a laboratory diagnostician and receive direction on the type of sample required for specific tests and testing laboratory to be used. The packaging of specimens of infectious material must be in accordance with Standard 154.03.04. Samples are to be transported by the fastest

secure method in a clearly addressed sealed package.

17.4 Enclosure standards for breeding rooms for butterflies and moths

1. The facility Operator may breed butterflies and moths within the containment facility from parents that have completed the time in quarantine. The breeding room must be separate from the public display and quarantine areas.
2. 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 MAF Inspectors are permitted access to the breeding room.
3. 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 MAF Inspectors. Ready access by the visiting public to the contents of the physical structure should be prevented (eg by installation of a lock on any access flaps).