NO2N **Import into containment any new organism that is not genetically modified**

Application title:

Importation of specified "new" mammal species into containment at Wellington Zoo, and other zoos, to aid conservation though sustainable display, captive breeding and / or the conservation of genetic material

Applicant organisation:

Wellington Zoo Trust, 200 Daniell Street, Newtown, Wellington

Please provide a brief summary of the purpose of the application (255 characters or less, including spaces)

To import into containment 28 mammal species for captive breeding, display, educational presentations and to contribute to conservation by exposing visitors to conservation issues and the conservation of genetic material through breeding

PLEASE CONTACT ERMA NEW ZEALAND BEFORE SUBMITTING YOUR APPLICATION

Please clearly identify any confidential information and attach as a separate appendix.

Please check and complete the following before submitting your application:

All sections completed	Yes
Appendices enclosed	NA
Confidential information identified and enclosed separately	NA
Copies of references attached	Yes
Application signed and dated	Yes
Electronic copy of application e-mailed to ERMA New Zealand	Yes

Signed: **Date:**

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Section One – Applicant details

Name and details of the organisation making the application:	
Name:	Wellington Zoo Trust
Postal Address:	200 Daniell Street, Newtown, Wellington
Physical Address:	200 Daniell Street, Newtown, Wellington
Phone:	04 803 0767
Fax:	04 803 0777
Email:	simon.eyre@wellingtonzoo.com
Name and details of the key contact person *(if different from above)***:**	
Name:	Simon Eyre
Postal Address:	As above
Physical Address:	As above
Phone:	As above
Fax:	As above
Email:	As above
Name and details of a contact person in New Zealand, if the applicant is overseas:	
Name:	Not applicable
Postal Address:	
Physical Address:	
Phone:	
Fax:	
Email:	

Note: The key contact person should have sufficient knowledge of the application to respond to queries from ERMA New Zealand staff.

Section 2: Purpose of the application

Lay summary of the application (approximately 200 words)

Note: This summary should include a description of the organism(s), the purpose of the application or what you want to do with the organisms(s).

Use simple non-technical language

Wellington Zoo wishes to import specified new mammal species from outside of New Zealand for exhibition, conservation and education as well as for the conservation of genetic material. Zoo staff will benefit from the import through perfecting husbandry techniques for mammals.

A large number of mammal species are conservation dependant, vulnerable, endangered, critically endangered or extinct in the wild species (IUCN) and the development of a captive population within the Australasian region has many benefits for the conservation effort through education and increasing the knowledge of mammal species and the threats that face them.

The revenue that is generated through the display of these animals will be used to aid the conservation of a number of species in the wild and in zoos.

By holding species within zoological collections this will help to preserve the genetic material of these species for future generations.

The mammals will be housed in a containment facility to prevent escape.

A mammal can be defined as an animal that has fur and produces milk. Most give birth to live young, with the exception of Monotremes (Platypus and Echidnas) which lay eggs.

Describe the background and aims of the project

Note: This section is intended to put the organism(s) in perspective of the wider project(s) that they will be used in. You may use more technical language but please make sure that any technical words are included in the Glossary.

ARAZPA (the Australasian Regional Association of Zoological Parks and Aquaria) manages a large number of exotic and native species within Australia and New Zealand (incorporating the NZ branch formerly known as CMaG). Groups of species are managed by appropriate TAGs (Taxon Advisory Groups). A number of mammal species have been prioritised by the various TAGs for management as sustainable captive populations within the region. The mammals imported into Wellington Zoo, and other NZ zoos, would be founders for these populations and will be vitally important for the future of mammal populations within zoos in Australia and New Zealand.

A number of mammal species, like Tasmanian Devils (*Sarcophilus harrisii*) and Snow Leopards (*Uncia uncia*), have become iconic species thanks to the popularity of wildlife programs, their large numbers and the predator / prey relationship. They will help the visitors to have a greater understanding of conservation, by attracting them to the zoo where they will be exposed to strong conservation and education messages. Of the species contained in this application 19 species are listed in Appendix 1 or 2 of CITES and 8 are classed by the IUCN as Vulnerable, Endangered or Critically Endangered.

The other species included in this application have the following CITES and IUCN categories.

Species	CITES	IUCN
Black and White Colobus *Colobus guereza*	II	LR/lc
Francois Leaf-monkey *Trachypithecus francoisi*	II	VU
Moholi Bush Baby *Galago moholi*	II	LR/lc
Senegal Bush Baby *Galago senegalensis*	II	LR/lc
Brown Greater Galago *Otolemur crassicaudatus*	II	LR/lc
Northern Greater Galago *Otolemur garnettii*	II	LR/lc
Gorilla *Gorilla gorilla*	I	CR
Mandrill *Mandrillus sphinx*	I	VU
Bolivian Squirrel-Monkey *Saimiri boliviensis*	II	LC
Snow Leopard *Uncia uncia*	I	EN
Caracal *Caracal caracal*	(From Asia I all others II)	LC
Ocelot *Leopardus pardalis*	I	LC
Margay *Leopardus wiedii*	I	LC
Clouded Leopard *Neofelis nebulosa*	I	VU

Sand Cat *Felis margarita*	II	NT
Black Footed Cat *Felis nigripes*	I	VU
Spotted Hyaena *Crocuta crocuta*		LR/cd
Brown Bear *Ursus arctos*	I	LR/lc
Black Rhinoceros *Diceros bicornis*	I	CR
Pygmy Hippo *Hexaprotodon liberiensis*	II	EN
Lesser Chevrotain *Tragulus javanicus*		LR/lc
Short Beaked Echidna *Tachyglossus aculeatus*		LR/lc
Tasmanian Devil *Sarcophilus harrisii*		LR/lc
Western Grey Kangaroo *Macropus fuliginosus*		LR/lc
Koala *Phascolarctos cinereus*		LR/nt
Southern Hairy Nosed Wombat *Lasiorhinus latifrons*		LR/lc
Long Nosed Potoroo *Potorous tridactylus*		LR/lc
Feather Tailed Glider *Acrobates pygmaeus*		LR/lc

CITES appendices relate to:

- Appendix I includes species threatened with extinction. Trade in specimens of these species is permitted only in exceptional circumstances.
- Appendix II includes species not necessarily threatened with extinction, but in which trade must be controlled in order to avoid utilization incompatible with their survival.

IUCN categories relate to:

EXTINCT (EX) - A taxon is Extinct when there is no reasonable doubt that the last individual has died.

EXTINCT IN THE WILD (EW) - A taxon is Extinct in the wild when it is known only to survive in cultivation, in captivity or as a naturalised population (or populations) well outside the past range.

CRITICALLY ENDANGERED (CR) - A taxon is which is facing an extremely high risk of extinction in the wild in the immediate future.

ENDANGERED (EN) - A taxon that is not Critically Endangered but is facing a very high risk of extinction in the wild in the near future.

VULNERABLE (VU) - A taxon is that is not Critically Endangered or Endangered but is facing a high risk of extinction in the wild in the medium-term future.

LOWER RISK (LR) - A taxon that does not satisfy the criteria for any of the categories Critically Endangered, Endangered or Vulnerable. Taxa included in the Lower Risk category can be separated into three subcategories:

1. Conservation Dependent (CD). Taxa which are the focus of a continuing taxon-specific or habitat-specific conservation programmes.
2. Near Threatened (NT). Taxa which do not qualify for Conservation Dependent, but which are close to qualifying for Vulnerable.

3. Least Concern (LC). Taxa which do not qualify for Conservation Dependent or Near Threatened.

DATA DEFICIENT (DD) A taxon is Data Deficient when there is inadequate information to make a direct, or indirect, assessment of its risk of extinction based on its distribution and/or population status. Data Deficient is not a category of threat or Lower Risk, but indicates that more information is required and acknowledges the possibility that future research will show that threatened classification is appropriate.

NOT EVALUATED (NE) A taxon is Not Evaluated when it is has not yet been assessed against the criteria

Section Three – Identification of the organism(s) to be imported

Complete this section separately for **each new organism** to be imported.

Identification of the organism to be imported

Latin binomial, including full taxonomic authority:	*Colobus guereza* (**Rüppell, 1835**)
Common name(s), if any:	Black and White Colobus
Type of organism (eg bacterium, virus, fungus, plant, animal, animal cell):	Animal
Taxonomic class, order and family:	Mammalia, Primates, Cercopithecidae

Latin binomial, including full taxonomic authority:	*Trachypithecus francoisi* (**Pousargues, 1898)**
Common name(s), if any:	Francois Leaf -monkey
Type of organism (eg bacterium, virus, fungus, plant, animal, animal cell):	Animal
Taxonomic class, order and family:	Mammalia, Primates, Cercopithecidae

Latin binomial, including full taxonomic authority:	*Galago moholi* **(A. Smith, 1836**)
Common name(s), if any:	Moholi Bush Baby
Type of organism (eg bacterium, virus, fungus, plant, animal, animal cell):	Animal
Taxonomic class, order and family:	Mammalia, Primates, Galagonidae

Latin binomial, including full taxonomic authority:	*Galago senegalensis* (**É. Geoffroy Saint-Hilaire, 1796**)
Common name(s), if any:	Senegal Bush Baby
Type of organism (eg bacterium, virus, fungus, plant, animal, animal cell):	Animal
Taxonomic class, order and family:	Mammalia, Primates, Galagonidae

Latin binomial, including full taxonomic authority:	*Otolemur crassicaudatus* (**É. Geoffroy Saint-Hilaire, 1812**)
Common name(s), if any:	Brown Greater Galago, Greater Bush Baby
Type of organism (eg bacterium, virus, fungus, plant, animal, animal cell):	Animal
Taxonomic class, order and family:	Mammalia, Primates, Galagonidae

Latin binomial, including full taxonomic authority:	*Otolemur garnettii* (**Ogilby, 1838**)
Common name(s), if any:	Northern Greater Galago, Greater Bush Baby
Type of organism (eg bacterium, virus, fungus, plant, animal, animal cell):	Animal
Taxonomic class, order and family:	Mammalia, Primates, Galagonidae

Latin binomial, including full taxonomic authority:	*Gorilla gorilla* (**Savage and Wyman, 1847**)
Common name(s), if any:	Gorilla
Type of organism (eg bacterium, virus, fungus, plant, animal, animal cell):	Animal
Taxonomic class, order and family:	Mammalia, Primates, Hominidae

Latin binomial, including full taxonomic authority:	*Mandrillus sphinx* (**Linnaeus, 1758**)
Common name(s), if any:	Mandrill
Type of organism (eg bacterium, virus, fungus, plant, animal, animal cell):	Animal
Taxonomic class, order and family:	Mammalia, Primates, Cercopithecidae

Latin binomial, including full taxonomic authority:	*Saimiri boliviensis* (**I. Geoffroy Saint-Hilaire and Blainville, 1834**)
Common name(s), if any:	Bolivian Squirrel-monkey
Type of organism (eg bacterium, virus, fungus, plant, animal, animal cell):	Animal
Taxonomic class, order and family:	Mammalia, Primates, Ceboidea

Latin binomial, including full taxonomic authority:	*Uncia uncia* **(Schreber, 1775)**
Common name(s), if any:	Snow Leopard
Type of organism (eg bacterium, virus, fungus, plant, animal, animal cell):	Animal
Taxonomic class, order and family:	Mammalia, Carnivora, Felidae

Latin binomial, including full taxonomic authority:	*Caracal caracal* (**Schreber, 1776**)
Common name(s), if any:	Caracal
Type of organism (eg bacterium, virus, fungus, plant, animal, animal cell):	Animal
Taxonomic class, order and family:	Mammalia, Carnivora, Felidae

Latin binomial, including full taxonomic authority:	*Leopardus pardalis* (**Linnaeus, 1758**)
Common name(s), if any:	Ocelot
Type of organism (eg bacterium, virus, fungus, plant, animal, animal cell):	Animal
Taxonomic class, order and family:	Mammalia, Carnivora, Felidae

Latin binomial, including full taxonomic authority:	*Leopardus wiedii* (**Schinz, 1821**)
Common name(s), if any:	Margay
Type of organism (eg bacterium, virus, fungus, plant, animal, animal cell):	Animal
Taxonomic class, order and family:	Mammalia, Carnivora, Felidae

Latin binomial, including full taxonomic authority:	*Neofelis nebulosa* (**Griffith, 1821**)
Common name(s), if any:	Clouded Leopard
Type of organism (eg bacterium, virus, fungus, plant, animal, animal cell):	Animal
Taxonomic class, order and family:	Mammalia, Carnivora, Felidae

Latin binomial, including full taxonomic authority:	*Felis margarita* (**Loche, 1858**)
Common name(s), if any:	Sand Cat
Type of organism (eg bacterium, virus, fungus, plant, animal, animal cell):	Animal
Taxonomic class, order and family:	Mammalia, Carnivora, Felidae

Latin binomial, including full taxonomic authority:	*Felis nigripes* (**Burchell, 1824**)
Common name(s), if any:	Black footed cat
Type of organism (eg bacterium, virus, fungus, plant, animal, animal cell):	Animal
Taxonomic class, order and family:	Mammalia, Carnivora, Felidae

Latin binomial, including full taxonomic authority:	*Crocuta crocuta* **(Erxleben, 1777)**
Common name(s), if any:	Spotted Hyaena
Type of organism (eg bacterium, virus, fungus, plant, animal, animal cell):	Animal
Taxonomic class, order and family:	Mammalia, Carnivora, Hyaenidae

Latin binomial, including full taxonomic authority:	*Ursus arctos* (**Linnaeus, 1758**)
Common name(s), if any:	Brown Bear
Type of organism (eg bacterium, virus, fungus, plant, animal, animal cell):	Animal
Taxonomic class, order and family:	Mammalia, Carnivora, Ursidae

Latin binomial, including full taxonomic authority:	*Diceros bicornis* (**Linnaeus, 1758**)
Common name(s), if any:	Black Rhinoceros
Type of organism (eg bacterium, virus, fungus, plant, animal, animal cell):	Animal
Taxonomic class, order and family:	Mammalia, Perissodactyla, Rhinocerotidae

Latin binomial, including full taxonomic authority:	*Hexaprotodon liberiensis* **(Morton, 1849)**
Common name(s), if any:	Pygmy Hippo
Type of organism (eg bacterium, virus, fungus, plant, animal, animal cell):	Animal
Taxonomic class, order and family:	Mammalia, Artiodactyla, Hippopotamidae

Latin binomial, including full taxonomic authority:	*Tragulus javanicus* **(Osbeck, 1765)**
Common name(s), if any:	Lesser Chevrotain
Type of organism (eg bacterium, virus, fungus, plant, animal, animal cell):	Animal
Taxonomic class, order and family:	Mammalia, Artiodactyla, Tragulidae

Latin binomial, including full taxonomic authority:	*Tachyglossus aculeatus* **(Shaw, 1792)**
Common name(s), if any:	Short Beaked Echidna
Type of organism (eg bacterium, virus, fungus, plant, animal, animal cell):	Animal
Taxonomic class, order and family:	Mammalia, Monotremata, Tachyglossidae

Latin binomial, including full taxonomic authority:	*Sarcophilus harrisii* **(Boitard, 1841)**
Common name(s), if any:	Tasmanian Devil
Type of organism (eg bacterium, virus, fungus, plant, animal, animal cell):	Animal
Taxonomic class, order and family:	Mammalia, Dasyuromorpha, Dasyuridae

Latin binomial, including full taxonomic authority:	*Macropus fuliginosus* **(Desmarest, 1817)**
Common name(s), if any:	Western Grey Kangaroo
Type of organism (eg bacterium, virus, fungus, plant, animal, animal cell):	Animal
Taxonomic class, order and family:	Mammalia, Diprotodontia, Macropodidae

Latin binomial, including full taxonomic authority:	*Phascolarctos cinereus* **(Goldfuss, 1817)**
Common name(s), if any:	Koala
Type of organism (eg bacterium, virus, fungus, plant, animal, animal cell):	Animal
Taxonomic class, order and family:	Mammalia, Diprotodontia, Phascolarctidae

Latin binomial, including full taxonomic authority:	*Lasiorhinus latifrons* **(Owen, 1845)**
Common name(s), if any:	Southern Hairy Nosed Wombat
Type of organism (eg bacterium, virus, fungus, plant, animal, animal cell):	Animal
Taxonomic class, order and family:	Mammalia, Diprotodontia, Vombatidae

Latin binomial, including full taxonomic authority:	*Potorous tridactylus* **(Kerr, 1792)**
Common name(s), if any:	Long Nosed Potoroo
Type of organism (eg bacterium, virus, fungus, plant, animal, animal cell):	Animal
Taxonomic class, order and family:	Mammalia, Diprotodontia, Potoroidae

Latin binomial, including full taxonomic authority:	*Acrobates pygmaeus* **(Shaw, 1793)**
Common name(s), if any:	Feather Tailed Glider
Type of organism (eg bacterium, virus, fungus, plant, animal, animal cell):	Animal
Taxonomic class, order and family:	Mammalia, Diprotodontia, Acrobatidae

Strain(s) if relevant:	Not applicable
Other information, including presence of any inseparable or associated organisms and any related organisms present in New Zealand:	No parasitic species will survive the pre-export isolation, or the post-arrival quarantine process imposed by the MAFBNZ Import Health Standard

Section Four – The proposed containment system

Describe the containment facility and the proposed containment system (physical and operational)

Question	Answer
Which MAF/ERMA Standard is this containment facility approved under?	MAF Biosecurity New Zealand/ERMA New Zealand Standard 154.03.04: *Containment Facilities for Zoo Animals* (Standard 154.03.04) The Zoo Standard has general requirements for the containment and management of all zoo animals. The Zoo Standard also has specific requirements for classes of zoo animals which take into account common physical abilities, behavioural requirements, public safety and keeper safety. Enclosures will be approved by MAFBNZ to ensure they meet the specific requirements for the individual animals before any new species is imported into the zoo.
What physical containment level (AS/NZS 2243: 2002) is this containment facility registered to (where relevant)?	Not applicable
What other physical measures do you propose to use to contain this organism?	Upon arrival into New Zealand the mammal will be quarantined for 30 days in a transitional facility at Wellington Zoo. They will then be moved to a display area compliant with Standard 154.03.04. The enclosure will be surrounded by a perimeter fence that will be at least as high as the minimum containment standard requirement.
What procedural or operational measures do you propose to use to contain this organism?	A double door trap shall be provided for keeper access. The keeper will enter the trap closing the door behind them before entering the main exhibit. Only authorised Wellington Zoo employees will have access to the enclosure. Manual restraint and handling will involve the use of trained staff and may require a veterinary officer to tranquilize the animal before handling. The visitors will not have contact with any animals unless the species and individual is deemed suitable for contact as an interactive encounter.

Any other information relevant to the containment of the organism.	A number of mammal species are already held in containment in New Zealand zoos, including Blackbuck *Antelope cervicapra* Sitatunga *Tragelaphus spekii* Giraffe *Girraffa camelopardalis* Zebra *Equus burchellii* Lion *Panthera leo* African Wild Dog *Lycaon pictus* Emperor Tamarins *Saguinus imperator* Chimpanzee *Pan troglodytes* Red Kangaroo *Macropus rufus* Easter Grey Kangaroo *Macropus giganteus* Brazilian Agouti *Dasyprocta leporina* African Crested Porcupine *Hystrix africaeaustralis* Little Red Fruit Bat *Pteropus scapulatus* Asiatic Elephant *Elephas maximus*

Describe the characteristics of the organism to be imported that may influence its ability; to escape from containment, to form a self sustaining population, or to cause adverse effects. *Refer to sample applications for guidance on how to answer these questions.*

Question	Answer *attach copies of the references used in an appendix*
What are the characteristics of the organism that may prevent/enable it to escape from containment? *eg spore production, infectivity, seed/pollen characteristics etc.*	Most mammals are mainly active during the day, but there are a large number of nocturnal species. They can live solitary or in large groups of many thousands strong. Sizes of the specified mammals range from the smallest being the Feather Tailed Glider, *Acrobates pygmaeus,* at just 125 to 160 mm long to the Brown Bear, *Ursus arctos*, which is up to 2,800 mm long. (Nowak 1991) . Most animals held in captivity do not generally possess the skills required to survive for extended periods of time outside of containment, such as hunting or predator evasion. Also most zoo animals consider their enclosure as their home range and if a breach of containment were to occur, would be unlikely to stray far from their enclosure. This would make it simpler to recapture an animal if a breach of containment occurred. All of the requirements, including food, water, shelter, enrichment, and social contact (if necessary for that species or individual) of any species kept in containment are met by the facility that cares for them. This too reduces the likelihood of a breach of containment as animal may not desire to escape even if it has the opportunity The Zoo Containment Standard has very strict controls in place for all species within containment, but those deemed dangerous to human health have even stricter containment protocols, sometimes including the requirement to destroy an animal that has breached containment rather than attempt to recapture it.

How could this organism escape from containment? *ie what are the possible pathways for escape? How does the proposed containment regime address these pathways?*	Possible pathways of escape are: • Escape during transport to containment facilities, • accidental or deliberate escape from enclosure, • escape due to accidental/unintentional or deliberate removal by people, and • escape from containment following natural disaster (flood, earthquake etc.) or fire. The containment standard 154.03.04 requires measures be taken to prevent escape by any of these pathways. These include requiring the containment facility to • have protocols in place to deal with any emergency, • trained staff to deal with any such emergency, • enclosure must meet the requirements set out for the specific species within the standard, which are inspected by a MAFBNZ inspector prior to any animals being allowed to be held within the enclosure
If it were to escape, could this organism establish a population outside of containment in New Zealand? *ie what conditions are required for growth and reproduction? And are those conditions present in New Zealand? What factors might prevent this from occurring?*	For a mammal species to establish a self-sustaining population in the wild, a male and female would need to escape, evade capture, find sufficient sustenance to survive, breed and produce offspring that would need to survive and breed them selves. Species specific information **Black and White Colobus** This is a large primate that has very bright black and white markings and a distinctive call. They measure 450 -720 mm long, with a tail that adds a further 520 – 1000 mm to that length. This is a species that lives in highly cohesive social groups, so in the event of a single animal breaching containment it is very unlikely to leave the vicinity of the enclosure. They also live in very small home ranges of about 15 ha which would help in locating and recapturing them in the event a breach of containment. There are no records in Introduced Mammals of the World (Long, 2003) of this species ever forming a feral population

	Francois Leaf –monkey This is another large primate species, measuring 550 – 635 mm, with a tail that adds a further 820 – 872 mm to this length. This diurnal species has a loud call which would aid in finding any individuals that had breached containment. Also they travel mainly between 7 and 10 am and 3pm and 4pm which would mean that for the majority of the day any escaped animals are likely to remain in one place. There are no records in Introduced Mammals of the World of this species ever forming a feral population **Moholi and Senegal Bush Babies** These two species of closely related small primates measure just 120 – 200 mm long and come from Senegal to Namibia. Due to their small size and tropical nature it is unlikely that this species could survive outside of containment in New Zealand, because they are adapted to live in tropical temperatures their small body size would be unlikely to be able to maintain their body temperature in our climate. There are no records in Introduced Mammals of the World of these species ever forming a feral population **Brown and Northern Greater Galagos** These are significantly larger species of Bush Baby, measuring 270 – 465 mm and range from Somalia to eastern South Africa. Due to their size and tropical nature it is unlikely that this species could survive outside of containment in New Zealand, because they are adapted to live in tropical temperatures their body size would be unlikely to be able to maintain their body temperature in our climate. There are no records in Introduced Mammals of the World of these species ever forming a feral population **Gorilla** Gorillas are the largest of the world's non human primates, measuring 1500 – 1700 mm and weighing between 71.5 and 169.5 kg. Gorillas have a small range in the wild from Nigeria to Zaire. They are a tropical species and would be very unlikely to be able to survive in the New Zealand climate without the additional heating they get whilst in containment. Gorillas are the only great ape not currently held in New Zealand zoos. There are no records in Introduced Mammals of the World of these species ever forming a feral population

	Mandrill Mandrills are the largest of the world's monkey species, measuring between 560 – 810 mm and weighing 11.5 – 26.9 kg. Mandrills have a very small range in the wild, being found in Cameroon and Gabon. They are a tropical species and would be very unlikely to be able to survive in the New Zealand climate without the additional heating they get whilst in containment There are no records in Introduced Mammals of the World of these species ever forming a feral population **Bolivian Squirrel Monkey** Bolivian Squirrel Monkeys are small primates measuring up to 310 mm and weigh between 700g and 1088g. This is a species that lives in troops of around 20 individuals. Bolivian Squirrel-monkeys are a tropical species, found in Brazil, Bolivia, Peru, Venezuela and Columbia and would be very unlikely to be able to survive in the New Zealand climate without the additional heating they get whilst in containment There are no records in Introduced Mammals of the World of these species ever forming a feral population. The similar species Common Squirrel-monkey (*Saimiri sciureus*) was held in a number of New Zealand collections (including Auckland Zoo) between 1963 and May 2000. The last 2 animals were transferred from Auckland zoo to Pouakai Zoo Park in New Plymouth on 24th May 2000. **Snow Leopard** This large cat measures between 1000 - 1300 mm, with a tail that measures a further 800 – 100 mm. This is a species that has, in the past, been kept in New Zealand zoos, including Wellington Zoo, with no known record of escape and no formation of a feral population. There are no records in Introduced Mammals of the World of this species ever forming a feral population

	Caracal This large cat measures between 600 – 915 mm. This small cat has a wide distribution from Turkestan to north west India to Arabia and is found in dry areas, woodland and acacia scrub. Although it is possible that this species could form a self sustaining population outside of containment in New Zealand it is unlikely due to the strict containment protocols in place under MAF Biosecurity New Zealand/ERMA New Zealand Standard 154.03.04: *Containment Facilities for Zoo Animals* (Standard 154.03.04) There are no records in Introduced Mammals of the World of this species ever forming a feral population **Ocelot** This small cat measure between 550 – 1000 mm. This small cat species ranges from Arizona to Northern Argentina and inhabits tropical Forests, swampy savannas and scrubland. They are a tropical species and would be very unlikely to be able to survive in the New Zealand climate without the additional heating they get whilst in containment There are no records in Introduced Mammals of the World of this species ever forming a feral population **Margay** This is a small cat measuring 460 – 790 mm. This small cat species ranges from Northern Mexico to Northern Argentina and inhabits moist forests. They are a tropical species and would be very unlikely to be able to survive in the New Zealand climate without the additional heating they get whilst in containment. There are no records in Introduced Mammals of the World of this species ever forming a feral population **Clouded Leopard** This is a large cat species, measuring 616 – 1066 mm with a tail being an additional 550 – 912 mm. This species, often, does not tolerate others of their own species. Due to this fact the chance of a pair or a pregnant female breaching containment would be very remote. There are no records in Introduced Mammals of the World of this species ever forming a feral population

	Sand Cat This is a desert species of cat that is of similar size to a domestic cat. As this species originates from very dry areas, Saudi Arabia and the Arabian peninsula, they require a low humidity environment. In too high humidity's they contract bronchial infections (Eyre 1997), and as such in the event of a breach of containment this species could not survive in New Zealand. There are no records in Introduced Mammals of the World of this species ever forming a feral population **Black Footed Cat** This is a desert species of cat that is much smaller in size than a domestic cat, being just 337 – 500 mm long. As this species originates from very dry areas, places like the Kalahari desert, they require a low humidity environment. In too high humidity's they contract bronchial infections, and as such in the event of a breach of containment this species could not survive in New Zealand. This species is not an overly social species so is normally only kept in small numbers so in the unlikely event of a breach of containment at most only one or two animals would likely to be able to escape containment. There are no records in Introduced Mammals of the World of this species ever forming a feral population, only a planned reintroduction **Spotted Hyaena** The Spotted Hyaena measure 950 – 1658 mm long, with the tail being a further 255 – 360 mm and their shoulder height is between 700 and 915 mm high. This is an open plains carnivore / scavenger and as such would be relatively easy to find in the event of a breach of containment. There are no records in Introduced Mammals of the World of this species ever forming a feral population **Brown Bear** The Brown Bear is the largest of the animals covered in this application measuring 1,700 – 2,800 mm in length. Although there are records for Brown Bears in Introduced Mammals of the World after the 1800s these are all from translocations of problem animals. Auckland Zoo kept Brown Bears for many years (1953 until 1978) without this species escaping containment, or forming a feral population

	Black Rhinoceros Black Rhinos are one of the largest land living mammals measuring between 2950 – 3750 mm and weighing between 700 – 1800 kg. In Introduced Mammals of the World there are no records of there being any feral populations, only intentional introductions and reintroductions. **Pygmy Hippo** This is a large species measuring between 1500 – 1750 mm and can weigh up to 270 kg. This is a tropical species, coming from Sierra Leone to Nigeria, which lives in and around bodies of warm water. As such it would not be able to survive in New Zealand outside of containment, due to a lack of suitable habitat. Also there are no records in Introduced Mammals of the World of this species ever forming a feral population **Lesser Chevrotain** This is a small hoofed animal, only measuring between 400 and 750 mm long. They come from the forests of Thailand, Indochina, the Malay Peninsula, Sumatra, Java and Borneo. Due to their small size and tropical nature it is unlikely that this species could survive outside of containment in New Zealand, because they are adapted to live in tropical temperatures their small body size would be unlikely to be able to maintain their body temperature in our climate. There are no records in the Introduced Mammals of the World of this animal ever forming a feral population **Short Beaked Echidna** This is a small egg laying mammal, measuring 300 – 450 mm and weighing 2 – 7 kg. Although this species has been kept for many years, in zoos around the world, the only records, in Introduced Mammals of the World, are of intentional introductions to Australian Island. There are no records of there being any feral populations of this species.

	Tasmanian Devil This is a small carnivore that measures between 525 mm – 800 mm with a tail that is a further 230 – 300 mm long. This is a species that, as part of a Tasmanian Recovery Program, has very strict containment protocols and as such a breach of containment is highly unlikely. In the event of a breach of containment, due to the monitoring and regular capture of animals on Tasmania there is a large amount of knowledge on the capture of this species. There are no records in Introduced Mammals of the World of this species ever forming a feral population **Western Grey Kangaroos** Western Grey Kangaroos are one of the larger macropods, measuring 1050 – 1400 mm. This species was held at Auckland Zoo between 1972 and 1974. Also Wellington Zoo, Auckland Zoo, and Orana Wildlife Park currently hold and have held two other Kangaroo species with no escapes, and no feral populations being formed. In introduced Mammals of the World there are only records of intentional introductions within Australia. **Koala** This is a highly specialised animal that measures 600 – 850 mm. Its diet is a variety of Eucalyptus leaves only (and they require variety not just one species otherwise they will stop eating), and as such it will not be possible for this species to survive outside of containment in New Zealand. **Southern Hairy Nosed Wombat** This species is relatively large, measuring between 770 – 1000 mm and weighs between 19 and 32 kg. This is a mainly sedentary species and in the event of a breach of containment would be relatively easy to locate and recapture. A related species (the Common Wombat *Vombatus ursinus* deemed approval number PRE001035) has been kept previously in New Zealand Zoos with no animal escaping containment or forming a feral population. The only records in Introduced Mammals of the World for this species are of intentional introductions.

	Long Nosed Potoroo This is a small species, measuring 243 – 415 mm with a tail that measures 198 – 325 mm and weighs 660 – 2200 g. This species is kept in zoos around the world with there being no feral populations having been formed. According to Introduced Mammals of the World an attempt to introduce this species was made by the Auckland Acclimatisation Society in 1867 which failed. This species has a fairly specialised diet consisting mainly of fungi which (if sufficient of the correct types of fungi were not available) could have been a contributing factor to the failure of this introduction. The only other mention of Long Nosed Potoroos is of an intentional introduction into Maria Island, Tasmania in 1971 **Feather Tailed Glider** This is a very small marsupial species measuring just 125 to 160 mm long and weighs between 12 and 14 g. Being such a small species it is unlikely that, even if this species breached containment, they would be able to survive in New Zealand, especially over winter. it is unlikely that this species could survive outside of containment in New Zealand, because they are adapted to live in warmer temperatures and together with their small body size, they would be unlikely to be able to maintain their body temperature in New Zealand's climate. There are no records in Introduced Mammals of the World of this species ever forming a feral population. All species would be held in containment facilities that comply to MAF Biosecurity New Zealand/ERMA New Zealand Standard 154.03.04: *Containment Facilities for Zoo Animals* (Standard 154.03.04). There have been no intentional or unintentional escapes from zoo containment in New Zealand that have led to the forming of self sustaining feral populations These animals do not, generally, possess the skills, like hunting or predator evasion, required to survive for extended periods of time outside of containment. Also most zoo animals consider their enclosure as their home range and if a breach of containment were to occur would be unlikely to stray far from their enclosure.

	Zoo animals are managed in such a way that their diets, shelters, companions and all aspects of their environments are controlled by zoo staff (Kleiman, 1989). Because of this, animals prepared for release into the wild in reintroduction programs for conservation purposes (in countries outside of New Zealand), have intensive training programmes to ensure they are fit for survival outside of containment (Kleiman, 2006). McPhee (2003) states that a larger number of captive animals would therefore need to be released, for self-sustaining populations to develop. A case in point is Jin the otter that breached containment at Auckland Zoo in 2006. On her recapture she had lost approximately 1/3 of her body weight after about 4 weeks in the wild. This shows that she was unable to feed her self sufficiently in the wild to maintain her body condition let alone manage the increased pressure on her resources if she was pregnant or rearing offspring. This incident helps to show that without the proper training in how to survive in the wild a zoo animal is unlikely to be able to survive for extended periods outside of containment. None of the species listed in this application are listed on any of the following The HSNO act list of Prohibited New Organisms The Biosecurity Act Unwanted Organisms Register IUCN ISSG Global Invasive Species Database None of the species listed are recorded as having formed feral populations anywhere in the world. Of the species contained in this application 18 species are listed in Appendix 1 or 2 of CITES and 8 are classed by the IUCN as Vulnerable, Endangered or Critically Endangered Whilst in containment the mammal will be conditioned to approach keepers for food; so in the unlikely event of a breach of containment, they can be recaptured or lured back into their enclosure with food. The keepers at Wellington Zoo are required to check maintain all of their enclosures as per the requirements in the Wellington Zoo Manual. This involves a minimum of daily enclosure perimeter checks and

	checking the animal at least three times per day. All keeping staff are trained, and have regular retraining, in these procedures. The Wellington Zoo Manual has contingency plans which detail the processes followed in case of a breach of containment, as required by MAF Biosecurity New Zealand/ERMA New Zealand Standard 154.03.04: *Containment Facilities for Zoo Animals* (Standard 154.03.04).
If a population did establish could it be eradicated? How? Would it be noticed immediately? How would such a population be identified?	The breach of containment by a mammal would be noted very rapidly, and most animals would be easily located. All animals in Wellington Zoo are checked a minimum of three times each day (first thing in the morning, during the day when the enclosure is serviced and last thing at the end of the day). Many animals have multiple feeds each day so those animals are often seen more times than this by the zoo keeper responsible for their day to day care. In addition to the keeping staff Wellington Zoo has many staff who roles involve them being out in the zoo grounds throughout the day who would also be able to see an animal if it had breached containment. The mammal will be conditioned to approach keepers for food; so in the unlikely event of a breach of containment, they will be recaptured or lured back into their enclosure with food. The Wellington Zoo Manual contains contingency plans in event of escape of any containment species, including plans for recapture or destruction as necessary, for example if a male Chimpanzee breaches containment it will be destroyed rather than recaptured (as per MAF Biosecurity New Zealand/ERMA New Zealand Standard 154.03.04: *Containment Facilities for Zoo Animals* (Standard 154.03.04).
Additional information	

Section Five – Identification and assessment of effects

Identify and assess the effects of the organism. Look primarily at the effects if the organism remains in containment, but also consider what might happen if the organism were to escape. If the organism were to escape think about what additional things would need to occur for these effects to be realised.

What are the beneficial effects of the organism(s) and the application? *These benefits must be relevant to the purpose and scope of the application*

The importation of mammals is very likely to allow Zoo staff to perfect husbandry techniques of these conservation dependant species and will allow for the development of a captive population in order to maintain these species, that are often declining in their natural environments.

The importation of mammals is very likely to increase the numbers of visitors to zoos, resulting in increased education of our visitors and the generation of revenue for conservation efforts.

What adverse effects could this organism have on the environment? *For all stages of the life cycle*

The diets of mammal species consist of most types of vegetable, and / or meat or invertebrates. Therefore, if a mammal was to breach containment and form a self-sustaining population, they could have local adverse effects on New Zealand biota. However, due to the ease of recapture of these animals any effect is likely to be of short term duration

What adverse effects could this organism have on public health? *For all stages of the life cycle*

Most mammals are timid species that will run from people rather than try to cause injury. Therefore the risk would be minimal.

Any species deemed to be dangerous to human health is held under the strictest containment and the risks to the public and staff are mitigated by the containment and management regimes, as required by the MAF Biosecurity Authority/ERMA New Zealand Standard 154.03.04: *Containment Facilities for Zoo Animals* (Standard 154.03.04) and detailed in the Wellington Zoo Manual.

What adverse effects could this organism have on the relationship of Māori and their culture and traditions with their ancestral lands, water, sites, waahi tapu, valued flora and fauna and other taonga (taking into account the principles of the Treaty of Waitangi)?

The mammal would first need to escape from containment and then successfully establish a self-sustaining population, before any negative impacts upon the native ecosystem could occur. If this chain of events did eventuate then the mammal could have adverse effects on native ecosystems. However, as previously concluded, it is highly improbable that a mammal will escape containment and/or establish a population without detection. In the short time that an escaped mammal would remain at large the magnitude of any impact would be minimal.

Are there any other potential adverse effects (including effects on New Zealand's international obligations, society and community or the market economy)?

None identified

Are there any ethical considerations associated with the organism(s) to be imported or the proposed research?

None identified

Section Six – Additional information

Additional Information	Y/N	If yes, explain
Do any of the organism(s) need approvals under any other New Zealand legislation?	Y	Permit to import from MAF
Does New Zealand have any international obligations relating to (any of) the organism(s)?	Y	CITES obligations for some species
Have any of the new organism(s) in this application previously been considered in New Zealand or elsewhere? What was the outcome?	N	
Is there any additional information that you consider relevant to this application that has not already been included?	N	

Provide a glossary of scientific and technical terms used in the application:

Not applicable

List of appendices attached:

Not applicable

List of references attached:

Eyre, S 1997. The effectiveness of Environmental Enrichment in Preventing and Curing Stereotypic Behaviour in a Sand Cat (*Felis margarita harrisoni*). Ratel 24 (5):156-165. Association of British Wild Animal Keepers

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McPhee, ME 2003. Generations in captivity increases behavioral variance: considerations for captive breeding and reintroduction programs. Biological Conservation 115: 71-77.

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Rowe N, 1996. The Pictorial Guide to the Living Primates, Pogonias Press

Servheen, C, Herrero,S and Peyton, B 1999. Status Survey and Conservation Action Plan Bears. IUCN

MAF Biosecurity Authority/ERMA New Zealand Standard 154.03.04: *Containment Facilities for Zoo Animals* (Standard 154.03.04).

Website – The IUCN Red List of Threatened Species. http://www.iucnredlist.org/search/

Website – Convention on International Trade in Endangered Species Appendices 1, 2 and 3. http://www.cites.org/eng/app/appendices.shtml

Website – International Species Information System Species Holdings Abstracts https://app.isis.org/abstracts/abs.asp

Website – Integrated Taxonomic Information System http://www.itis.gov/

Website – MAFBNZ Unwanted Organisms Register http://www1.maf.govt.nz/uor/searchframe.htm

Website – ERMA NZ List of Banned Animals and Plants http://www.ermanz.govt.nz/no/aboutno/banned.html

Website – World Conservation Union (IUCN) Invasive Species Specialist Group (ISSG) Global Invasive Species Database http://www.issg.org/database/species/search.asp?sts=sss&st=sss&fr=1&sn=&rn=&hci=-1&ei=166&x=34&y=7

Wellington Zoo Containment Manual

APPENDIX 1

Mammals already held in containment in New Zealand zoos:

Species

Common name

ERMA Approval Number

Acinonyx jubatus

Cheetah

PRE008902

Ailurus fulgens

Red panda

PRE008903

Aonyx cinerea (synonym = Amblonyx cinerea)

Oriental short (small) clawed otter

PRE008904

Ateles belzebuth

Long haired spider monkey

PRE008908

Ateles geoffroyi

Spider monkey

PRE008911

Camelus dromedarius

Dromedary

PRE008914

Canis latrans

Coyote

PRE008915

Catopuma temminckii
Golden cat
PRE008916

Cebus apella
Brown Capuchin monkey
PRE008918

Ceratotherium simum
White rhinoceros
PRE008919

Cercopithecus aethiops
Vervet monkey
PRE008920

Dasyprocta aguti (synonym = Dasyprocta leporina)
Brazilian agouti, Golden Agouti
PRE008922

Dolichotis patagonum
Patagonian cavy
PRE008923

Elephas maximus
Asiatic elephant
PRE008924

Equus burchellii
Zebra
PRE008927

Giraffa camelopardalis
Giraffe
PRE008929

Helarctos malayanus
Malayan sun bear
PRE008931

Hippopotamus amphibius
Hippopotamus
PRE008932

Hydrochaeris hydrochaeris
Capybara
PRE001041

Hylobates lar
White handed lar gibbons
PRE008934

Hylobates leucogenys
White cheeked gibbon
PRE008935

Hylobates muelleri
Grey gibbon
PRE008936

Hylobates syndactylus
Gibbon Saimang
PRE008937

Hystrix africaeaustralis
African Crested Porcupine
PRE001034

Hystrix cristata
Crested Porcupine
PRE008938

Lemur catta
Ring-Tailed Lemur
PRE008940

Lemur macao
Lemur
PRE008941

Leontopithecus rosalia
Golden lion tamarin
PRE008942

Leptailurus serval
Serval
PRE008943

Lycaon pictus
African wild dog, African hunting dog
PRE008944

Lynx rufus
Bobcat
PRE008945

Macaca irus
Crab eating Macaque
PRE008946

Macaca mulatta
Rhesus macaqua
PRE008947

Macaca nemestrina
Pig tailed macaque monkey
PRE008948

Macaca radiata
Bonnet Macaque
PRE008949

Pan troglodytes
Chimpanzee
PRE008952

Panthera leo
Lion
PRE008953

Panthera pardus
Leopard
PRE008955

Panthera tigris
Tiger
PRE008957

Papio hamadryas ursinus
Baboon
PRE008958

Pecari tajacu (synonym = Tayassu tajacu)
Collared Peccary
PRE008960

Pongo pygmaeus
Orangutan
PRE008961

Prionailurus bengalensis
Leopard cat
PRE008962

Pteropus poliocephalus
Grey headed flying fox
PRE008963

Pteropus scapulatus
Little red flying fox
PRE008964

Puma concolor
Puma
PRE008901

Saguinus oedipus
Cotton top tamarin
PRE008965

Suricata suricatta
Meerkat
PRE008966

Tapirus terrestris
South American tapir
PRE008967

Varecia variegata
Ruffed lemur
PRE008969

Full approvals also exist for the following

Canis species
NOC07005

Panthera pardus
Leopard
NOC04020

Prionailurus viverrinus
Fishing Cat
NOC06011

Chrysocyon brachyurus
Maned Wolf
NOC06006

Saguinus imperator
Emperor Tamarin
NOC06007

Callithrix pygmaea
Pygmy Marmoset
NOC05003

Antelope
NOC07010