Ministry for Primary Industries
Manatū Ahu Matua

Approved Diagnostic Tests, Vaccines, Treatments, and Post-Arrival Testing Laboratories for Animal Import Health Standards

MPI-STD-TVTL

Contents

Endorsement

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Schedule 1: MPI approved diagnostic tests

MPI approved tests are recorded in table 1 of this document and appropriate test methodology will be stated where required (e.g. as per WOAH Manual, as per publication, as per SCAHLS procedure, etc.). MPI may approve alternative tests to those stated in an IHS for a particular risk organism when satisfied with the evidence provided. Satisfactory evidence includes details such as sensitivity, specificity, validation for species and tissue/samples used.

Table 1: MPI approved diagnostic tests

Disease name	MPI approved tests
Import Health Standard: Bovine Germplasm (BOVIGERM.GEN)	
Bovine Viral Diarrhoea (BVD) – virus genotype 2 (BVDV2)	VI (as per WOAH methodology) • For semen donors this test is approved for agent detection testing. • For embryo donors this test is approved for managing the risk of persistent infection, and acute infection (when sampled within 48 hours of collection). • Approved for semen and embryos
	Antigen capture ELISA (as per WOAH methodology) • For semen donors this test is approved for agent detection testing. • For embryo donors this test is approved for managing the risk of persistent infection, and acute infection when combined with 21-day donor isolation.
	Real-time RT PCR (as per WOAH methodology) • For semen donors this test is approved for agent detection testing. • For embryo donors this test is approved for managing the risk of persistent infection and acute infection (when sampled within 48 hours of collection). • Approved for semen and embryos
	Serum neutralisation and virus neutralisation tests (SN/VN) (as per WOAH methodology) • For semen and embryo donors this test is an approved serological test (for detection of acute infection at least 2 weeks after infection).
	ELISA (as per WOAH methodology)

Import Health Standard: Bovine Germplasm (BOVIGERM.GEN)	
	• For semen and embryo donors this test is an approved serological test (for detection of acute infection at least 2 weeks after infection).
Bovine brucellosis – (*B. melitensis, B. abortus*)	Buffered Brucella antigen tests (BBAT) (as per WOAH methodology)
	Fluorescence polarisation assay (FPA) (as per WOAH methodology)
	Complement fixation test (CFT) (as per WOAH methodology)
	Indirect enzyme-linked immunosorbent assay (I-ELISA) (as per WOAH methodology)
Brucella suis	Fluorescence polarisation assay (FPA) (as per WOAH methodology)
Bovine genital campylobacteriosis, BGC, *Campylobacter fetus* subspecies *venerealis* (*Cfv*)	Culture (as per WOAH methodology)
	Monoclonal antibody-based capture enzyme-linked immunosorbent assay (MAB) (as per WOAH methodology)
	Immunofluorescent antibody test (IFAT or FAT) (as per WOAH methodology)
Contagious bovine pleuropneumonia (CBPP)	CF (as per WOAH methodology)
	ELISA (as per WOAH methodology)
Enzootic bovine leukosis (EBL)	AGID (as per WOAH methodology)
	ELISA (as per WOAH methodology)
	VI on semen
	PCR on semen
Foot and mouth disease (FMD)	VN (as per WOAH methodology)
	ELISA (as per WOAH methodology)
Infectious bovine rhinotracheitis (IBR) and infectious pustular vulvovaginitis (IPV) - BHV 1.1 and 1.2a	ELISA (as per WOAH methodology)
	SN/VN (as per WOAH methodology)

<table>
<tr><th colspan="2">Import Health Standard: Bovine Germplasm (BOVIGERM.GEN)</th></tr>
<tr><td></td><td>Real time-PCR (on germplasm as per WOAH methodology)</td></tr>
<tr><td></td><td>VI (on germplasm as per WOAH methodology)</td></tr>
<tr><td>Leptospira interrogans serovar hardjoprajitno</td><td>A vaginal swab or unfiltered collection fluids, from the day of collection for New Zealand, tested negative for Leptospira spp. using a PCR test that has been validated by the manufacturer for fluids/tissues.</td></tr>
<tr><td>Mycoplasma bovis</td><td><u>Embryos</u>

Using <u>unfiltered collection/flush fluids</u> from the embryo collection for New Zealand, DNA extraction and PCR must be carried out using the methodology described below.

One option from A (extraction) and one option from B (amplification) are required.

A. Using the extraction methods below, with the modifications indicated, negative results were obtained.

1. MagMax™ CORE kit in with the following conditions:

a. A 200 µl input and 90-100µl elution volume are required.
b. The input must not be taken from centrifuged/clarified collection fluids.
c. The extended lysis step is optional.

AND

B. Using one of the PCR methods below, with a negative result defined as no amplification with a cycle threshold cut-off value ≤40:

1. Modified assay as per Wisconsin Veterinary Diagnostic Laboratory’s master mix formulation comparison study of analytical sensitivity, utilizing primers and probe sequence as published by Rossetti et al. (2010)[1] and using 8µl of DNA extract as template. Granted approval for USA on 4 July 2022.

2. Modified Rossetti et al (2010)[1] assay as per University of Guelph’s Animal Health Laboratory validation report using 8µl of DNA template. Granted approval for Canada on 14 February 2023.

<u>Semen</u>

DNA extraction and PCR using the methodology described below.

One option from A (extraction) and one option from B (amplification) are required.

A. Using one of the extraction methods below, with the modifications indicated, negative results were obtained when either a minimum of two extractions (straws) per batch of extended semen were carried out [note: MPI has approved Wisconsin Veterinary Diagnostic Laboratory (WVDL) to use a validated modification of one extraction from a pool of two or more straws per batch of extended semen when each PCR reaction uses 8ul of semen DNA extract as template].</td></tr>
</table>

Import Health Standard: Bovine Germplasm (BOVIGERM.GEN)	
	1. QIAGEN DNA Mini-kit (tissue or liquid protocol) in accordance with the instructions for semen extraction with the following modifications: a. A 200 µl input and 90-100µl elution volume are required. b. Washing of pellets (e.g. with PBS) is not permitted. c. An extended lysis step is optional; **or** 2. MagMax™ CORE kit in accordance with the instructions for semen extraction with the following modifications: a. A 200 µl input and 90-100µl elution volume are required. b. The input must not be taken from centrifuged semen. c. The extended lysis step is optional; or 3. MagMAX Total Nucleic Acid Kit protocol as per Netherlands' validation report approved by MPI 8 March 2022. **AND** B. One of the following methods, with a negative result defined as no amplification with a cycle threshold cut-off value ≤40, and thresholds set according to the laboratory protocols, or at the lower end of the exponential phase in absence of a protocol: 1. VetMAXTM M. bovis Kit (Applied Biosystems, Laboratoire Service International France) following the manufacturer's instructions; or 2. Rossetti et al. (2010)[1] methodology with component concentrations and volumes in the range of the recommended by the master mix manufacturer, and a DNA template volume of 10% of the reaction volume; or 3. KaspRT PCR for the detection of Mycoplasma bovis in individual milk (fresh and conserved), bulk milk, synovial fluid, fresh semen and semen straw samples. Validated by the GD laboratory PO Box 9, 7400 AA Deventer, the Netherlands. Granted approval for Netherlands on 8 March 2022; or 4. Modified assay as per Wisconsin Veterinary Diagnostic Laboratory's master mix formulation comparison study of analytical sensitivity, using 8ul of semen DNA extract as a template, and utilizing primers and probe sequence as published by Rossetti et al. (2010)[1]. Granted approval for USA on 28 June 2022.
Q fever	ELISA (as per WOAH methodology)
	PCR on germplasm (as per WOAH methodology)
Rift Valley Fever	VN (as per WOAH methodology)
Tuberculosis	Intradermal tuberculin test (as per WOAH methodology)

[1] Rossetti B. C., Frey J., Pilo P. (2010). Direct detection of *Mycoplasma bovis* in milk and tissue samples by real-time PCR. Mol. Cell. Probes 24, 321–323

Import Health Standard: Alpacas and llamas (CAMANIIC.GEN)	
Bovine viral diarrhoea (BVD) – type 2	Antigen ELISA (as per WOAH methodology)
	VI (as per WOAH methodology)
	RT-PCR (as per WOAH methodology)
Brucellosis	CF (as per WOAH methodology)
	ELISA (as per WOAH methodology)
	Fluorescence polarisation assay (as per WOAH methodology)
	Buffered Brucella antigen test (as per WOAH methodology)
Foot and mouth disease (FMD)	ELISA (as per WOAH methodology)
	VN (as per WOAH methodology)
Infectious bovine rhinotracheitis (IBR) and infectious pustular vulvovaginitis/balanoposthitis (IPV/B)	VN (as per WOAH methodology)
	ELISA (as per WOAH methodology)

Import Health Standard: Canine Semen (CANSEMIC.GEN)	
Brucella canis	RSAT
	TAT
	CpAg-AGID
	IFAT
	PCR
Leptospirosis interrogans serovar *canicola*	MAT (Alternative proposed by WOAH)

Import Health Standard: Cats and dogs (CATDOG.GEN)	
Rabies	FAVN or RFFIT rabies neutralising antibody titration test (as per WOAH Manual)
Babesia canis	IFAT or ELISA, PCR
Babesia gibsoni	IFAT or ELISA, PCR
Brucella canis	RSAT, TAT, CPAg-AGID, or IFAT
Leptospirosis interrogans serovar *canicola*	MAT
Heartworm (*Dirofilaria immitis*)	ELISA

Import Health Standard: Poultry Hatching Eggs & Specific-Pathogen-Free Chicken Eggs (COMEGIC.GEN)	
Salmonella	Agent identification (Salmonella culture as per WOAH methodology)
	Rapid whole blood agglutination test (as per WOAH methodology)
	Rapid serum agglutination test (as per WOAH methodology)
Avian influenza	PCR (approved for Canada, Australia, Netherlands, United Kingdom)
	Virus isolation with pathogenicity testing (as per WOAH methodology)
	ELISA (as per WOAH methodology) (serological methods not acceptable for use in ducks)
APMV-1(Newcastle disease)	ELISA (subject to MPI approved method) (serological methods not acceptable for use in ducks)
	Heamagglutination Inhibition (HI) serology (as per WOAH methodology)
	RT-PCR (approved for Australia, Canada, United Kingdom and Netherlands)
Chlamydia psittaci	Post-arrival testing- histochemical staining of liver and spleen impression smears
	Pre-export testing by CFT (approved for Australia)
	RT-PCR (approved for post-arrival testing)

Import Health Standard: Poultry Hatching Eggs & Specific-Pathogen-Free Chicken Eggs (COMEGIC.GEN)	
Ornithobacterium rhinotracheale	IDEXX ORT ELISA
Mycoplasma iowae	Agent identification (Culture approved for United Kingdom with serotyping by IFAT)
	Real-time PCR (as described in J.Diagn Invest 20.330-325 (2008)) (approved for Canada)
Mycoplasma meleagridis	Agent identification (Culture as per WOAH methodology for *M. gallisepticum*)
	Haemagluttination inhibition test (as per WOAH methodology for *M. gallisepticum*) (approved for Canada and United Kingdom)
	PCR (methodology to be approved by MPI)
	Rapid serum agglutination test (as per WOAH methodology for *M. gallisepticum*)(approved for Canada and United Kingdom)
	ELISA (methodology to be approved by MPI)
	Western Blot (methodology to be approved by MPI)
	Immunoblot (approved for United Kingdom)
Reovirus of Muscovy ducks	SN,AGID,ELISA (subject to MPI approved method)
Goose parvo virus and Muscovy duck parvo virus	RT-PCR or ELISA (subject to MPI approved method)
Duck virus enteritis	Virus isolation, PCR (as per WOAH methodology)

Import Health Standard: Egg Products (EGGPRODS.GEN)	
Angara disease (fowl adenovirus type 4 [FAdV-4])	PCR (as per methodology in Ganesh K, Suryanarayana VV and Raghavan R (2002). Detection of fowl adenovirus associated with hydropericardium hepatitis syndrome by a polymerase chain reaction. Veterinary Research Communications, 26(1), pp73-80)

Import Health Standard: Horses (HORANIIC.GEN) **Import Health Standard: Semen and Embryos from Horses (*Equidae*) (HORSSEMB.SPE)** **Import Health Standard: Semen and Embryos from Equids (EQUIGERM.SPE)**	
African horse sickness	Complement Fixation (as per WOAH methodology)
	ELISA (as per WOAH methodology)
	Agent identification (PCR) (alternative proposed by WOAH)
	Virus Neutralisation (VN) (alternative proposed by WOAH)
Contagious equine metritis	Agent identification (culture) (as per WOAH methodology)
	Quantitative PCR (qPCR)
Dourine	Complement Fixation (as per WOAH methodology)
	ELISA (alternative proposed by WOAH)
	Indirect Fluorescent Antibody Test (IFAT) (alternative proposed by WOAH)
Equine infectious anaemia	Agar Gel Immunodiffusion (AGID) (Coggins) (as per WOAH methodology)
	ELISA (alternative proposed by WOAH)
Equine influenza	PCR (alternative proposed by WOAH)
Equine piroplasmosis	ELISA (as per WOAH methodology)
	Indirect Fluorescent Antibody Test (IFAT) (as per WOAH methodology)
Equine viral arteritis	Virus isolation (on semen only; as per WOAH methodology)
	Virus Neutralisation (VN); synonym: Serum Neutralisation (SN) (as per WOAH methodology)
	Reverse-transcription PCR (semen, or EDTA whole blood from equids other than uncastrated males, alternative proposed by WOAH)
Glanders	Complement Fixation (CF) (as per WOAH methodology)

Import Health Standard: Horses (HORANIIC.GEN) **Import Health Standard: Semen and Embryos from Horses (*Equidae*) (HORSSEMB.SPE)** **Import Health Standard: Semen and Embryos from Equids (EQUIGERM.SPE)**	
Venezuelan equine encephalomyelitis	Complement Fixation (alternative proposed by WOAH)
	Haemagglutination Inhibition (HI) (alternative proposed by WOAH)
	Plaque Reduction Neutralisation (PRN) (alternative proposed by WOAH)

Import Health Standard: Ornamental Fish and Marine Invertebrates (ORNAMARI.ALL)	
Aquabirnavirus	Virus Isolation *Carassius auratus*: Batch testing as per *Aquatic Birnavirus infection of finfish,* McColl KA, Davies KR, Young JG and Crane MstJ, 2009 listed in the Australian and New Zealand Standard Diagnostic Procedures (ANZSDP).
Aeromonas salmonicida	Bacterial Culture *Carrassius auratus*: Batch testing as per Clinical Bacteriology Procedure Manual, Version 1.0, 15 February 2013 (see pages 10-14 outlining NATA batch testing procedures).
Aphanomyces invadans	Examination of gross clinical signs; histology of susceptible species of fish displaying clinical signs.
Hoferellus carassii	*Carrassius auratus*: Examination of gross clinical signs; examination of fresh tissue in wet mount by light microscope OR; histology.

Import Health Standard: Ovine and Caprine Semen and Embryos (OVCAGERM.GEN)	
Bluetongue	ELISA (as per WOAH methodology)
	VI (as per WOAH methodology)
	PCR (as per WOAH methodology)
Foot and mouth disease (FMD)	ELISA (as per WOAH methodology)
	VN (as per WOAH methodology)

Import Health Standard: Ovine and Caprine Semen and Embryos (OVCAGERM.GEN)	
Maedi-visna	AGID (as per WOAH methodology)
	ELISA (as per WOAH methodology and LSIVet ELISA for MV/CAE in France)
Ovine pulmonary adenomatosis	Post-mortem examination of respiratory system and associated lymphatics (as per WOAH discussion of OPA necropsy)
	PCR (as per WOAH methodology)
	Histopathology (as per WOAH methodology)
	Immunohistochemistry (as per WOAH methodology)
Peste des petits ruminants	VN (as per WOAH methodology)
Rift Valley fever	VN (as per WOAH methodology)
Wesselsbron	Serum Neutralisation or Haemagglutination inhibition test on a blood sample any time prior to collection and between 3 weeks and 2 years after collection. Semen and embryos that were collected between tests which indicate a rise in titre are ineligible for export to New Zealand (test methodology to be approved by MPI).
Contagious agalactia	Culture and identification of the organism (as per WOAH methodology)
	PCR (as per WOAH methodology)
	ELISA (as per WOAH methodology)
	Immunoblotting (methodology to be approved by MPI)
Caprine and ovine brucellosis	BBAT (as per WOAH methodology)
	CF (as per WOAH methodology)
	ELISA (as per WOAH methodology)
	FPA (as per WOAH methodology)
Ovine epididymitis	CFT (as per WOAH methodology)
	ELISA (as per LNCR France methodology)

Import Health Standard: Ovine and Caprine Semen and Embryos (OVCAGERM.GEN)	
Contagious caprine pleuropneumonia	CF (as per WOAH methodology)
Bovine and caprine tuberculosis	Intradermal tuberculin test (as per WOAH methodology)
Enzootic abortion of ewes	CF (as per WOAH methodology)
	PCR (conducted at LNCR in France)
	DNA microarray hybridisation assay (methodology to be approved by MPI)
Q fever	ELISA (as per WOAH methodology)
	IFA (as per WOAH methodology)
	PCR (as per WOAH methodology)

Import Health Standard: Pig Semen (PIGSEMEN.GEN)	
Porcine reproductive and respiratory syndrome (PRRS) virus	RT-PCR (approved for Canada) Multivalent ELISA using both North American and European strains (approved for Canada)
Transmissible gastroenteritis (TGE) virus	Serum neutralisation and specific competitive blocking ELISA (approved for Canada)
Brucella suis	Fluorescence polarisation assay and indirect ELISA (approved for Canada)

Import Health Standard: Turkey Meat and Meat Products (POUTURIC.GEN)	
Salmonella arizonae	Agent identification (Salmonella culture as per WOAH methodology)
Turkey viral hepatitis	Post-mortem inspection and associated liver condemnation rate, interpreted at flock level (<2% condemnation)
Turkey coronavirus	RT-PCR (subject to MPI approved method)
APMV-2 & APMV-3	Virus isolation (subject to MPI approved method)

Schedule 2: MPI approved vaccines

MPI may approve alternative vaccines to those stated in the IHS. MPI will only approve vaccines once satisfied with the details provided by the Competent Authority of the exporting country about the vaccination protocol, including vaccine type, discussion of potential risks with the vaccine and how they can be managed (for example reversion to virulence), and surveillance details, including how vaccinated animals will be distinguished from infected animals. MPI approved vaccines are recorded in table 2 of this document.

Table 2: MPI approved vaccines

Disease name	MPI approved vaccines
Import Health Standard: Horses (HORANIIC.GEN)	
Equine influenza	Registered vaccines containing equivalent strains of EI virus as recommended by the WOAH Expert Surveillance Panel on Equine Influenza Vaccine Composition: http://www.oie.int/en/our-scientific-expertise/specific-information-and-recommendations/equine-influenza/. Vaccines should contain both clade 1 and clade 2 viruses of the Florida sublineage. Clade 1 continues to be represented by A/eq/South Africa/04/2003-like or A/eq/Ohio/2003-like viruses but more recent clade 1 viruses are available from the WOAH reference laboratories. Clade 2 continues to be represented by A/eq/Richmond/1/2007-like viruses but more recent clade 2 viruses are available from the WOAH reference laboratories.
Equine encephalomyelitis (Eastern, Western, and Venezuelan)	EEE and WEE: inactivated vaccines, as per WOAH Manual VEE: attenuated virus or inactivated virus vaccines, as per WOAH Manual
Equine viral arteritis	Modified live virus or inactivated vaccines, as per WOAH Manual
Japanese encephalitis	Inactivated vaccine, as per WOAH Manual
Hendra virus	Zoetis *Equivac HeV*
Rabies virus	Inactivated vaccines, as per WOAH Manual
Import Health Standard: Cats and Dogs (CATDOG.GEN)	
Rabies	Inactivated virus vaccine or recombinant vaccine expressing the rabies virus glycoprotein.
Import Health Standard: Semen and Embryos from Sheep and Goats (OVCAGERM.GEN)	
Bluetongue virus	Live-attenuated, as per WOAH Manual

Foot and mouth	Chemically inactivated cell-culture-derived preparations of a seed virus strain blended with a suitable adjuvant/s and excipients, as per WOAH Manual
Peste des petits ruminants	Cell culture-attenuated strains of natural PPRV, as per WOAH Manual
Sheep and goat pox	Attenuated live and inactivated capripoxvirus vaccines, as per WOAH Manual
Q fever	Inactivated whole phase 1 vaccine, as per WOAH Manual
Import Health Standard: Bovine Germplasm (BOVIGERM.GEN)	
Rift Valley Fever	Inactivated vaccine, as per WOAH Manual
Leptospirosis	Inactivated vaccine, as per WOAH Manual

Schedule 3: MPI approved treatments

MPI may approve treatments for a particular risk organism(s) when satisfied with the evidence provided. MPI approved treatments are recorded in table 3 of this document.

Table 3: MPI approved treatments

Disease name	MPI approved treatment
Leptospira interrogans serovar *canicola*	Dihydrostreptomycin
	Doxycycline
Bacillus anthracis	12.5% formalin –at least 10 hours as disinfectant for liquid waste.
Coxiella burnetii	5% formalin – for at least 24-48 hours as disinfectant for liquid waste.
Leptospirae in germplasm	Minimum doses for pigs, cattle, sheep, goats, deer, and camelids in each ml of frozen semen: a) 50 µg tylosin, 250 µg gentamicin, 150 µg lincomycin, 300 µg spectinomycin; or b) 500 IU penicillin, 500 µg streptomycin, 150 µg lincomycin, 300 µg spectinomycin; or c) 25 µg dibekacin, 75 µg amikacin Minimum doses for embryos from cattle, sheep, goats, deer, and camelids: a) 50 IU/ml penicillin and 50 µg/ml streptomycin; or b) 50 µg/ml tylosin
	For equine semen and embryos, the following antibiotics can be used. For semen, the antibiotics listed should be included per ml of semen and for embryos the antibiotics listed below should be included during embryo production: a) A combination of 50 µg tylosin, 250 µg gentamicin, 150 µg lincomycin, and 300 µg spectinomycin; or b) A combination of 500 IU penicillin, 500 µg streptomycin, 150 µg lincomycin, and 300 µg spectinomycin; or c) A combination of 25 µg dibekacin and 75 µg amikacin; or d) A combination of 1.2 mg/ml ticarcillin and 0.5 mg/ml amikacin; or e) 50 µg gentamicin alone. For equine embryos only, the following antibiotics can be used. The antibiotics listed below should be included during embryo production: a) A combination of 100 IU penicillin and 100 µg streptomycin; or b) A combination of 100 IU penicillin and 50 µg gentamicin

	For bovine semen and embryo donors: a) Treatment of the embryo donor with a single injection of oxytetracycline (20 mg/kg) 2-10 days prior to collection for New Zealand; or b) The donor was vaccinated as per the manufacturer's guidelines and given two injections of oxytetracycline (20 mg/kg of body weight) 10 days apart anytime during the 60 days prior to collection for New Zealand.
Mycoplasma spp. in ovine and caprine germplasm from Australia	Minimum doses in each ml of frozen semen: a) 50 µg tylosin, 250 µg gentamicin, 150 µg lincomycin, 300 µg spectinomycin; or b) 500 IU penicillin, 500 µg streptomycin, 150 µg lincomycin, 300 µg spectinomycin; or c) 25 µg dibekacin, 75 µg amikacin.
Mycoplasma bovis in bovine germplasm	**Semen:** The raw/neat semen for export to New Zealand must have the following combinations added to it at the specified dose per mL of neat/raw semen: a) gentamicin (575 µg), tylosin (115 µg), lincomycin–spectinomycin (345/690 µg) (GTLS); The antibiotics must be either: a) prepared and stored as separate stock solutions as described by the manufacturer to maintain potency; or b) premixed and used as indicated by the manufacturer to maintain potency; The semen and antibiotic solution must not be further diluted for at least 4 minutes; The semen must remain at no less than 5°C for a minimum of 2 hours before being frozen in the antibiotic solution; or **Embryos:** The embryos must be subjected to the protocol described in the IETS *Manual*: incubation at 37°C in tylosin (200 µg/mL) for a minimum of 4 hours after being washed 10 times.
Heartworm *(Dirofilaria immitis)*	Ivermectin at 6 mcg/kg
	Milbemycin at 0.5 mg/kg
	Moxidectin at 2-4mcg/kg
	Selamectin at 6 mg/kg
	Moxidectin sustained-released injection
Nematodes of alpacas and llamas: *Angiostronghylus cantonensis*	Approved treatments for Australia are registered for the purpose by the Australian Pesticides and Veterinary Medicines Authority (APVMA) and listed in the appendix of the Australian country-specific veterinary certificate.

Graphinema aucheniae *Marshallagia marshalli* *Nematodirus lamae* *Spiculopteragia peruvianus* *Thelazia californiensis* *Parelaphostrongylus tenuis* **Trematodes of alpacas and llamas:** *Dicrocoelium dendriticum* *Eurytrema pancreaticum* *Fasciola gigantica* *Fasciola magna* **Cestodes of alpacas and llamas:** *Monezia benedeni* *Thysaniezia* spp.	
Ectoparasites of alpacas and llamas: *Psoroptes ovis* (mite) *Microthoracius* spp. (lice) *Vermipsylla* spp. (flea) *Amblyomma* spp. (tick) *Bophilus* spp. (tick) *Dermacentor* spp. (tick) *Ixodes* spp. (tick) *Rhipicephalus* spp. (tick) **Myiasis caused by**: *Cochliomyia hominivorax* (new world screwworm), *Calliphora albifrontalis*, *C. auger*, *C. imperialis*, *C. nociva*, *Cephenemyia* spp. *Dermatobia* spp. *Wohlfahrtia* spp.	Approved treatments for Australia are registered for the purpose by the Australian Pesticides and Veterinary Medicines Authority (APVMA) and listed in the appendix of the Australian country-specific veterinary certificate.

Cestodes of fish *Bothriocephalus acheilognathi*	Praziquantel base at ≥ 1 mg/L for 24 hrs to be completed 96 hrs before biosecurity clearance
	Praziquantel base at ≥ 4 mg/L for 12 hrs to be completed 96 hrs before biosecurity clearance
	Fenbendazole 40mg/kg orally on two occasions 4 days apart before biosecurity clearance
	Fenbendazole 2mg/L bath treatment once weekly for 3 weeks before biosecurity clearance
Nematode of fish *Capillaria philippinensis*	Levamisole base bath (1mg/L) for 24 hours.
Ectoparasite of fish *Argulus foliaceus*	Trichlorfon 0.25 – 0.5 mg / L as a bath for three hours and repeated after a 7-day interval for 2 - 4 occasions
	Diflubenzuron 0.3 – 0.6 mg / L as a bath
	Potassium permanganate 10mg / L for 30 minutes as a bath
	Lufenuron 0.13 mg / L as a bath once a week for 4 weeks
Treatments permitted for routine prophylactic use in ornamental fish	Acriflavine
	Bay oil (Pimenta racemosa)
	Benzalkonium chloride
	Blackwater extract
	Calcium Carbonate
	Chloramine-t
	Copper sulfate
	Formalin
	Hydrogen peroxide
	Magnesium sulphate
	Malachite green
	Methylene blue
	Monosodium phosphate
	Quinine sulphate
	Rift lake conditioning salts
	Salt (Sodium chloride)
	Sodium bicarbonate

	Tea tree oil (melaleuca)
General antiparasitic treatments permitted for ornamental fish	Dimetridazole
	Ivermectin
	Flubendazole
	Potassium permanganate
	Trichlorfon
Germplasm shipping containers	Traditional disinfectants – including 2% available chlorine (e.g. chlorine bleach); 2% Virkon; 2.4% Prevail (dilution ratio 1:40);
	UVC radiation - 10 minutes of UVC light (254 nm) (approved for Netherlands)

Schedule 4: MPI approved laboratories for post-arrival testing

Diagnostic testing undertaken during post-arrival quarantine is conducted by MPI Investigation and Diagnostic Centre (IDC) laboratories. When set out as a requirement in the import health standard, MPI may approve other laboratories that submit satisfactory evidence of equivalence. Satisfactory evidence for equivalence for laboratories includes: details of approval to a transitional facility standard with the appropriate physical containment approval for the samples held and testing carried out; and current approval under the MPI Recognised Laboratory Programme (RLP) to conduct the required tests. MPI approved laboratories for post-arrival testing are recorded in table 4 of this document.

Table 4: MPI approved laboratories for post-arrival laboratory testing

Laboratory Name	Transitional Facility Approval Number	Laboratory tests
Import Health Standard: Poultry Hatching Eggs & Specific-Pathogen-Free Chicken Eggs (COMEGIC.GEN)		
MPI IDC		All import testing
Poultry Veterinary Services	3583	Newcastle disease virus HI antibody or real-time PCR
		Avian influenza ELISA antibody or real-time PCR

Schedule 5: Definitions and Acronyms

Term/acronym	Definitions
AGID	Agar gel immunodiffusion
BBAT	*buffered* Brucella *antigen test*
C-ELISA	Competitive enzyme-linked immunosorbent assay (C-ELISA)
CF	Complement fixation
CPAg-AGID	Cytoplasmic agar gel immunodiffusion test
ELISA	Enzyme-linked immunosorbent assay
FAVN	Fluorescent antibody virus neutralisation
FPA	Fluorescence polarisation assay
IFAT	Indirect fluorescent antibody test
LP-ELISA	Liquid-phase blocking enzyme-linked immunosorbent assay
MAB	Monoclonal antibody-based capture enzyme-linked immunosorbent assay
MAT	Microscopic agglutination test
PCR	Polymerase chain reaction
RFFIT	Rapid Fluorescent Foci Inhibition Test
RSAT	Rapid slide agglutination test
RT-PCR	Reverse transcription polymerase chain reaction
TAT	Tube agglutination test
SN or VN	Serum virus neutralisation
VI	Virus isolation

Term/acronym	Definitions
VN	Virus neutralisation