Guidelines for Assessing Translocations of Live Aquatic Organisms in Victoria

Version 4

Victorian Fisheries Authority

Guidelines for Assessing Translocations of Live Aquatic Organisms in Victoria

Version 4

February 2014

Victorian Fisheries Authority Report Series No. 65

ISSN 1448-1693
ISBN 978-1-74199-704-0

Accessibility
If you would like to receive this publication in an alternative format, please telephone the Customer Service Centre on 136186, email customer.service@VFA.vic.gov.au (or relevant address), or via the National Relay Service on 133 677 www.relayservice.com.au. This document is also available on the internet at www.VFA.vic.gov.au

Disclaimer
This publication may be of assistance to you but the State of Victoria and its employees do not guarantee that the publication is without flaw of any kind or is wholly appropriate for your particular purposes and therefore disclaims all liability for any error, loss or other consequence which may arise from you relying on any information in this publication.

Foreword

Guidelines for Assessing Translocations of Live Aquatic Organisms in Victoria

The translocation of a live aquatic organism at its broadest definition encompasses any human-assisted movement of that organism.

Translocations of live aquatic organisms occur for a number of beneficial reasons including the development of aquaculture facilities; stocking waters on Crown and private lands for sport and recreation, aquaria or preservation of species; and to facilitate scientific research.

Translocations of live aquatic organisms, however, have the potential to threaten the biodiversity and ecological integrity of Victoria's freshwater, estuarine and marine systems. These impacts can potentially affect the economic benefits provided by aquaculture, recreational and commercial fishing; domestic and international shipping; and the social and tourism benefits of being able to enjoy waters and foods free of pathogens and diseases.

Recognising the need for a nationally consistent, risk-based approach to managing translocations of aquatic organisms across Australia, the *National Policy for the Translocation of Live Aquatic Organisms - Issues, Principles and Guidelines for Implementation (1999)* was developed. The national policy, principles and guidelines recognised that the previous ad-hoc approach to managing translocations of live aquatic organisms did not adequately manage the risk to Australia's economic, social and environmental well-being.

In response to the national policy, the Department of Primary Industries and the Department of Sustainability and Environment finalised the *Guidelines for Assessing Translocations of Live Aquatic Organisms in Victoria* (the Guidelines) in 2003. In doing so, Victoria met the National requirements for translocation of live aquatic organisms though a process consistent with that adopted by other Australian jurisdictions. These Guidelines provide a structured and transparent approach to managing the risks associated with deliberate translocations in Victoria of aquatic biota to public and private waters managed under the *Fisheries Act 1995*. They describe a risk management and decision-making process for assessing translocation applications.

Since the release of the Guidelines in 2003, there has been significant learnings about managing the environmental risks of translocating live aquatic organisms into and within Victoria. In addition, many administrative processes outlined in the first Guidelines (2003) have been streamlined to achieve the same risk –based approach and effective management outcomes with improved timelines in the decision-making process.

Changes and amendments have been made to the guidelines in 2009 and 2014 reflecting the changes in respective government departments at the time. This version takes into account the change to the Victoian Fisheries Authority (VFA).

Contents

Part 1: Introduction

The translocation of live aquatic organisms into and within Victoria has the potential to threaten the biodiversity and ecological integrity of Victoria's freshwater, estuarine and marine systems. These threats have flow-on consequences, potentially affecting the economic benefits provided by aquaculture; recreational and commercial fishing; domestic and international shipping; and the social and tourism benefits of being able to enjoy waters and foods free of pathogens and diseases.

Translocated species introduced to the wild do not always establish viable, breeding populations. History has shown, however, that when a viable population is established and the species becomes a pest, control and elimination can be extremely difficult and often impossible. Therefore, translocation risks must be effectively managed.

Purpose of translocation guidelines

The purpose of *Guidelines for Assessing Translocations of Live Aquatic Organisms in Victoria (*the Guidelines) is to provide a risk assessment and administrative framework for proposals to translocate live aquatic organisms into and within Victoria that require approval under the *Fisheries Act 1995 (*the Act). These Guidelines establish a transparent basis by which the Victorian Fisheries Authority (VFA) meets its role and responsibilities in association with other government agencies including the Department of Land Water Planning(DEWLP), industry and the community.

These Guidelines will not be used to manage the translocation risks that may arise incidentally to other processes such as the discharge of ship's ballast water.

Structure of the guidelines

The guidelines include the following sections:

- Part 1: Introduction
- Part 2: Policy setting for the Guidelines
- Part 3: Administration of translocations;
- Part 4: Applying for authority to translocate live aquatic organisms.

Additional detail is included in the Appendices including a copy of the Terms of Reference for the Translocation Evaluation Panel, information on assessing translocation risks and references used in this document.

Definition of terms

A *live aquatic organism* is an organism defined as a fish under the Act or a plant declared in Victoria as a protected aquatic biota or as a noxious aquatic species. This includes all stages of the organism's life cycle and any derived viable genetic material that relies on the aquatic environment for part or all of its life cycle.

Translocation is a process that has been approved by the Secretary, VFA, or delegate for the deliberate, human-assisted movement of a live aquatic organism to protected waters under the Act. A translocation is defined by:

- the species of organism translocated;
- source of the translocated organism;
- destination of the translocated organism; and
- controls that manage the environmental risks of the translocation.

Examples of controls include the number of organisms that are being translocated, requirements for stock health certificates and/or other certifications and other biosecurity controls and must include a period of time that the approval is valid.

The maximum period of time that an authorisation is valid is five years.

A *translocation event* is the implementation of an approved translocation. Multiple translocation events may be undertaken in accordance with an approved translocation.

A *translocation protocol* describes the risk management controls and other biosecurity requirements for specific classes of translocations.

Stocking is the release of live aquatic organisms into Victorian waters. Protected waters means Victorian waters and any aquarium or hatchery or any other waters in Victoria whether or not it is private property. To *stock* protected waters without authorisation is an offence under the Act.

CEO is the Chief Executive Officer of the Victorian Fisheries Authority (VFA). The CEO reports to the VFA Board who reports to the Minister.

Part 2: Policy setting for the Guidelines

International, Commonwealth and State legislation and policy related to ecologically sustainable use of natural resources and the protection of aquatic biodiversity and human health require effective frameworks for the management of translocation risks. Within Victoria, relevant legislation includes the *Fisheries Act 1995* and the *Flora and Fauna Guarantee Act 1988*. Administration of legislation and related policy programs lies with Victorian Fisheries Authority and the Department of Land, Water and Planning

In 1999, the Commonwealth Ministerial Council on Forestry, Fisheries and Aquaculture approved the *National Policy for the Translocation of Live Aquatic Organisms- Issues, Principles and Guidelines for Implementation* (Bureau of Rural Sciences 1999). To meet the intentions of that policy, all Australian states and territories are required to develop translocation guidelines for their jurisdiction that achieve:

- consistency in the consideration of translocations within Australia
- effective coordination of administrative arrangements within jurisdictions
- appropriate supporting legislation
- acceptable levels of compliance
- a nationally accepted, explicit and transparent risk assessment process
- regular assessment and continuous improvement of risk management strategies including the adequacy of risk assessment, decision-making and enforcement processes
- increased community and industry awareness of the potential risks associated with the translocation of live organisms.

Victoria met these requirements in the publication and implementation of Guidelines for Assessing Translocations of Live Aquatic Organisms in Victoria (Department of Primary Industries/ Department of Sustainability and Environment 2003). This document was reviewed in 2008 and now again in 2018.

Part 3: Administration of translocations

This section outlines the administration of applications to translocate live aquatic organisms into and within Victoria including:

- the responsibilities of parties involved in the application and evaluation process
- the timeframes for provision of advice
- the supporting documentation
- the translocation protocols
- the review of the Guidelines.

The administrative principles that support the application of these guidelines have been included as Appendix C.

The translocation applicant

The *translocation applicant* is responsible for preparing and submitting a completed application to translocate live aquatic organisms into or within Victoria.

If further information is required (for example, a risk assessment), it is the responsibility of the translocation applicant to provide this information.

The VFA Administration Officer has the primary responsibility for managing the administration of translocation applications.

Specifically, the Administration Officer provides:

- administrative support to the Translocation Evaluation Panel (TEP)
- advice to the TEP as to whether a translocation is compliant with an approved translocation protocol, the criteria for a low risk translocation or a previously approved translocation
- advice to applicants as to the completeness of an application.

Translocation Evaluation Panel

The TEP is established under the Guidelines by the Secretary, VFA and reports through VFA to the CEO, VFA or delegate.

The role of the TEP is to provide advice to the CEO on the management of risks associated with proposed translocations and to the Administration Officer on administrative assessments. Specifically, the TEP will:

- provide advice to the CEO, Victorian Fisheries Authority on proposed translocations not previously approved;
- provide advice to the CEO, Victorian Fisheries Authority on each translocation protocol during its development; and
- provide advice to the CEO, Victorian Fisheries Authority (VFA) if it disagrees with an administrative assessment by the VFA that a translocation application complies with an approved translocation protocol or is a low-risk translocation.

A copy of the Terms of Reference for the TEP is included in Appendix A.

Members of the TEP are appointed by the CEO, VFA or delegate, to provide expert advice about the translocation of live aquatic organisms. Membership will include:

- up to four non-VFA or government persons with combined experience in aquaculture, recreational fishing, commercial fishing, fish habitat and aquatic species conservation; and
- up to five representatives from VFA or DELWP with combined expertise in aquaculture, fish stocking, fish habitat, aquatic animal diseases and disease management, aquatic ecosystem management and aquatic species conservation.

The TEP chair is selected from the non-VFA members. The CEO of VFA appoints the chair.

Time frames for provision of advice on translocations

Where VFA assesses a translocation application as compliant with an approved translocation protocol or is a low-risk translocation, the TEP must provide advice to the CEO, VFA, or delegate within five working days of it receiving the application if it disagrees with that assessment.

All other advice must be provided by the TEP within twenty working days of receiving the request.

Note: the TEP timeframes shown above do not include time required for administrative processes of VFA.

Supporting documentation

Proponents may be required to obtain specified documents prior to a translocation event occurring. Documentation may include:

- certificates of animal health
- declarations of disease-free status from suppliers of stock
- declarations from competent veterinary authorities
- other relevant documents.

Unless otherwise approved by the CEO VFA, or delegate, these documents are valid for a maximum period of two weeks from the date of issue.

Those authorised to undertake translocations must keep these documents in a safe place and in good order for a period of three years after the date of issue and make these documents available to VFA upon request.

Legally acceptable translocations

Translocation proposals will be assessed by VFA for consistency with the Act and these Guidelines, and the completeness of the translocation application.

Applicants may be required to provide further information in support of their translocation application. In such cases, all timeframes are reset.

Translocation proposals must comply with all relevant Victorian and Commonwealth legislation.

Development of translocation protocols

Where translocation events have similar characteristics in terms of species, associated media, and source and destination type, and will be repeated regularly, it is preferred that an approved translocation protocol be developed.

An approved translocation protocol will allow translocation applications that comply with the protocol to be considered without the requirement for a case-by-case risk assessment.

Proponents who plan to undertake a translocation conforming to an approved protocol must demonstrate compliance with that protocol by applying for the authority to translocate aquatic organisms. If authorisation is granted, it will provide for an appropriate level of ongoing compliance monitoring.

The VFA in consultation with relevant stakeholders, will identify the need for protocols and lead their development. Following advice from the TEP, and approval by the CEO, VFA, or delegate, draft translocation protocols are referred to relevant stakeholders for comment.

To date, the following translocation protocols have been approved:

- *Protocols for the Translocation of Fish in Victorian Inland Public Waters* (Department of Primary Industries 2005)
- *Victorian Protocol for the Translocation of Blue Mussels* (Department of Primary Industries 2006)
- *Victorian Protocol for the Translocation of Eels* (Department of Primary Industries 2006a)
- *Victorian Abalone Aquaculture Translocation Protocol* (Victorian Fisheries Authority 2018)
- *Victorian Protocol for the Translocation of Aquatic Animals to Recirculating Aquaculture Systems* (Department of Primary Industries 2008).

All translocation protocols are available on the VFA website (https://vfa.vic.gov.au/operational-policy/moving-and-stocking-live-aquatic-organisms).

Where there is a need to manage the translocation risks of a specific class of translocation, Victorian Fisheries Authority may prepare translocation protocols.

Industry organisations, companies or individuals can prepare translocation protocols. Such translocation protocols will be referred to the TEP and require approval by the VFA Manager Aquaculture, VFA Fisheries Management and Science Director or VFA Chief Executive Officer.

Low-risk translocations

In some cases, a proposed translocation of live aquatic organisms may represent minimal environmental risk and is not compliant with an approved translocation protocol.

To be considered a low-risk translocation, a proposed translocation must be consistent with **all** of the following principles as well as the criteria listed below.

The principles that characterise a low-risk translocation are:

- the risk of release of diseases or parasites is considered minimal
- the risk of escape of translocated stock is considered minimal
- the cost of preparing a risk assessment far outweighs the benefits of the risk assessment process.

To be considered a *low-risk translocation*, a proposed translocation must also be assessed as meeting the following criteria:

- the receiving facility is appropriately authorised as a biosecure facility under State or Commonwealth legislation; or
- there is no approved translocation protocol that is relevant to the proposed translocation; and
- the proposed translocation is not for commercial purposes; and
- it does not involve a species declared as noxious or as protected aquatic biota under the Act; and
- the waters to be stocked is a secure facility contained wholly indoors; and
- the total volume of water into which the live aquatic organisms will be stocked is less than 5000 litres.

Review of the Guidelines

These Guidelines and their application will be reviewed by VFA in consultation with the TEP at any time as directed by the CEO, VFA, or delegate. These Guidelines should be reviewed within ten years to assess their ongoing efficiency and effectiveness in reducing risks associated with translocations.

Part 4: Applying to translocate

This section describes the application process for authority to translocate live aquatic organisms in Victoria. A summary of the process is provided as Figure 1.

Application process and evaluation

Translocation applications will be assessed against information provided on an application form approved by VFA.

Completion of the translocation application

The translocation application provides information necessary to assess the proposed translocation.

Translocation forms are available on the VFA website (https://vfa.vic.gov.au/operational-policy/moving-and-stocking-live-aquatic-organisms) or by contacting the VFA Customer Service Centre (136 186).

Completed applications must be forwarded to:

Translocation Administration Officer
Victorian Fisheries Authority
PO Box 114
Queenscliff VIC 3225

Email: fish.translocations@VFA.vic.gov.au

The TEP Administration Officer assesses the translocation application for completeness

The Administration Officer reviews translocation applications to ensure sufficient and appropriate information is provided to determine if the proposed translocation is legally acceptable, workable, and:

- is consistent with a previously approved translocation
- is consistent with an approved translocation protocol
- meets the criteria for low-risk translocations
- meets the requirements for a full risk assessment.

If an application is not complete or provides insufficient information, the applicant is notified by the Administration Officer of application shortcomings and invited to resubmit the application.

The TEP provides advice on the translocation application

Where a proposed translocation application is assessed by the Administration Officer to be inconsistent with an approved translocation protocol or the principles and criteria for low-risk translocations, the TEP will provide advice to VFA that the application does not conform to the above.

Where the translocation proposal is consistent with an approved translocation protocol or criteria for low-risk translocations, the application will be referred to the CEO, VFA or delegate.

Where the proposed translocation requires a full risk assessment of the environmental risks, the TEP will assess the application and provide advice to the CEO, VFA, or delegate on the management of the translocation risks. The applicant will be notified of the decision in writing, including any relevant conditions.

Preparation of a translocation risk assessment

The risk assessment is based on the principles and information included in Appendix B.

The use of quantitative data is preferable but qualitative data may be used in support of an application where quantitative data is limited or not available. Some translocation applications may warrant directed research to generate quantitative data for the assessment. When directed research is required, the TEP will recommend that the translocation application is rejected until the applicant can provide the information.

The risk assessment will identify parties responsible for risk minimisation and management strategies.

Subject to legislation and policy, public notification may be required if in the public interest. Where a cross-border translocation is proposed or cross-jurisdictional issues exist, inter-agency consultation may be required.

To be considered by the TEP, an application that includes a risk assessment must be received at least 10 working days prior to its next meeting. The TEP will provide advice including any suggested risk management strategies to VFA within 20 working days of the meeting at which the risk assessment is considered.

Decision by CEO, VFA

The CEO, VFA, or delegate will consider the advice of the TEP before making a decision on the application.

VFA will notify the translocation applicant of the decision in writing, including any relevant conditions.

Translocation events

Once a translocation is approved, case-by-case assessment of subsequent translocation events is not required provided the translocation applicant can demonstrate conformance with the approved translocation.

In all cases, translocation applicants must submit a translocation application to VFA for consideration

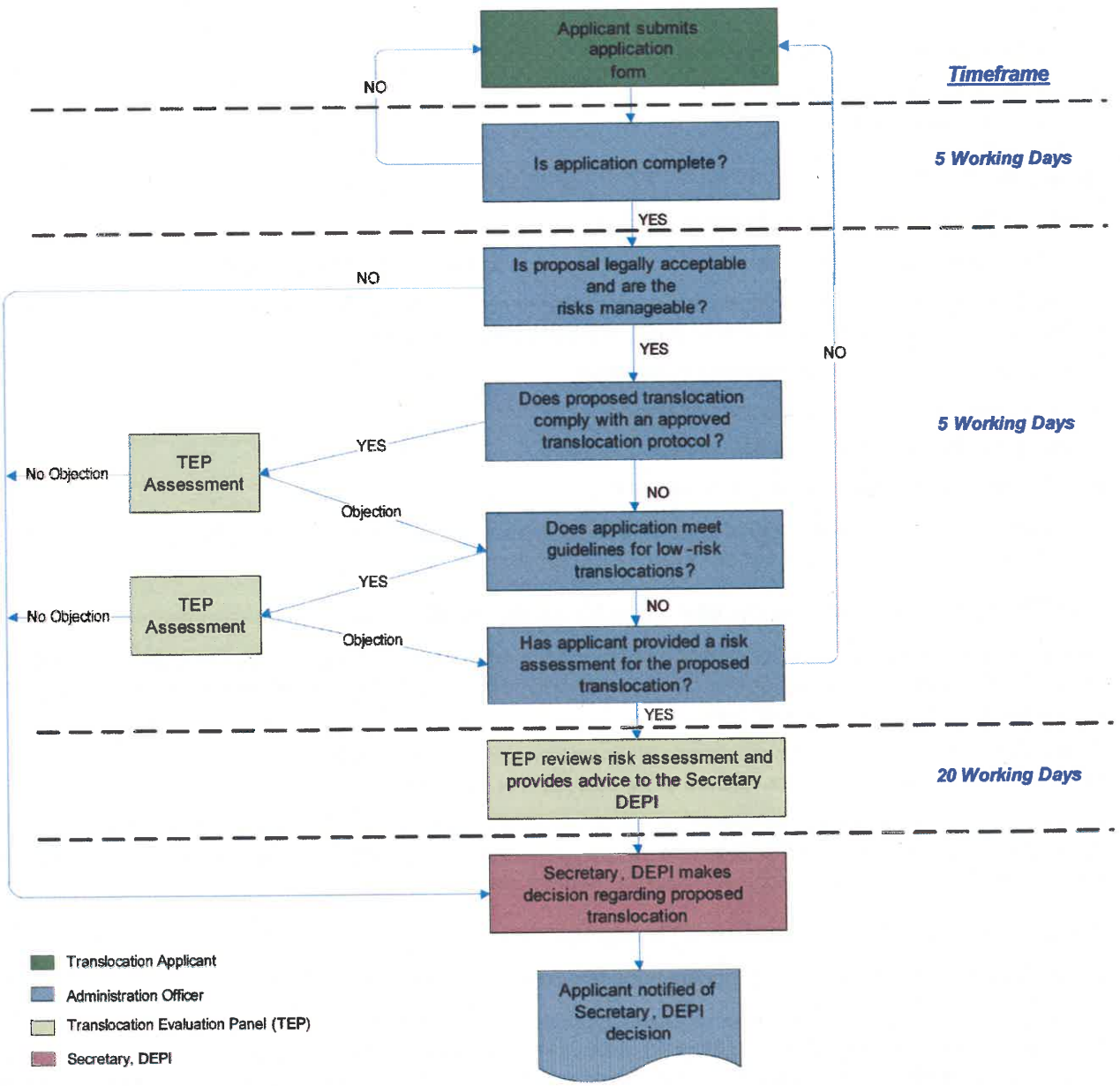

Figure 1: Decision-making framework for obtaining authority under the Fisheries Act 1995 for the translocation of live aquatic organisms

Appendix A: Copy of the Translocation Evaluation Panel Terms of Reference

In 1999, the Ministerial Council on Forestry, Fisheries and Aquaculture approved the *National Policy for the Translocation of Live Aquatic Organisms- Issues, Principles and Guidelines for Implementation* (Bureau of Rural Sciences 1999). To meet the intentions of that policy, all Australian states and territories were required to develop translocation guidelines for their jurisdiction that achieved:

- consistency in the consideration of translocations within Australia;
- effective coordination of administrative arrangements;
- appropriate supporting legislation;
- acceptable levels of compliance;
- a nationally accepted, explicit and transparent risk assessment process;
- regular assessment and continuous improvement of risk management strategies; and
- increased community and industry awareness of the potential risks associated with the translocation of live organisms.

These requirements are implemented by the *Guidelines for Assessing Translocations of Live Aquatic Organisms in Victoria (2009)*. The purpose of the Guidelines is to provide a risk assessment and administrative framework for the assessment of proposals to translocate live aquatic organisms into and within Victoria.

Definitions

CEO shall mean Chief Executive Officer of the Victorian Fisheries Authority

VFA shall mean the Victorian Fisheries Authority.

Guidelines shall mean the *Guidelines for Assessing Translocations of Live Aquatic Organisms in Victoria (2009)* as they may change from time to time.

TEP shall mean the Translocation Evaluation Panel.

Member shall mean a person appointed to the TEP by the CEO, VFA or delegate.

ToR shall mean these Terms of Reference.

Role

The TEP is established under the Guidelines by the secutary, VFA and reports through Victorian Fisheries Authority to the Secretary, VFA.

The role of the TEP is to provide advice to the CEO, VFA or delegate on the management of risks associated with proposed translocations. Specifically, the TEP will:

- provide advice to the CEO, Victorian Fisheries Authority on proposed translocations not previously approved;
- provide advice to the CEO, Victorian Fisheries Authority on each translocation protocol during its development; and
- provide advice to the CEO, Victorian Fisheries Authority (VFA) if it disagrees with an administrative assessment by the VFA that a translocation application complies with an approved translocation protocol or is a low-risk translocation.

Membership

Members

Members of the TEP are appointed to provide expert advice about the translocation of live aquatic organisms. Membership will include:

- up to four non-VFA or DEWP persons with combined experience in aquaculture, recreational fishing, commercial fishing, fish habitat and aquatic species conservation; and
- up to five representatives from VFA or DELWP with combined expertise in aquaculture, fish stocking, fish habitat, aquatic animal diseases and disease management, aquatic ecosystem management and aquatic species conservation.

Chair
The Chair is selected from the non-VFA or DELWP membership of the TEP and will ensure that the TEP fulfils its role.

The Chair reports, as requested by the CEO, VFA, or delegate on the operation of the TEP and the results of its deliberations.

Alternate Members
The CEO, VFA, or delegate may approve an alternate Member for each Member appointed to the TEP.

Appointment
A person nominated for appointment as a Member (or alternate Member) of the TEP is not a Member of the TEP until appointed by the CEO, VFA, or delegate.

A person nominated for appointment as a Member (or alternate Member) of the TEP must complete probity forms for police/bankruptcy checks.

Term of appointment
Members (or alternate Members) may be appointed Members of the TEP for a maximum term of three years. Members may be reappointed for a subsequent term of office.

If no term of office is determined by the CEO, VFA or delegate, a Member (or alternate Member) remains a Member of the TEP for a maximum term of three years or until they resign or are terminated.

Attendance of alternate Members
Alternate Members may only attend meetings of the TEP when the Member for whom they are the alternate is not in attendance.

Resignation
A Member (or alternate Member) of the TEP must submit a resignation in writing.

Termination
A Member's (or alternate Member's) appointment may be terminated by:

- mutual agreement of the Member and the CEO, VFA, or delegate
- four weeks notice given by either party
- immediate notice if in the opinion of the CEO, VFA, or delegate it has been determined that the Member is not a fit and proper person.

If a Member is unable to attend a majority of meetings in a year, then the Chair (after consultation with the Secretary, VFA or delegate) may recommend an alternate person with the appropriate level of expertise be appointed.

Vacancies
The office of a Member becomes vacant if a Member:

- resigns
- is removed under these ToR
- is incapable of performing his/her duties
- becomes a bankrupt or a person disqualified from acting as a director or acting in the management of a company.

Remuneration
TEP Members, or alternate Members, may receive sitting fees for attendance at TEP meetings. Members and alternate Members who are employees of the Victorian Government are not eligible to receive sitting fees for TEP meetings.

Expenses
Travel and personal expenses of Members (or alternate Members) are paid at rates that are consistent with those described in the *Guidelines for the appointment and remuneration of part-time non-executive directors of State Government boards and members of statutory bodies and Advisory Committees.*

Pecuniary interest

Where a Member has a direct or indirect interest in any matter of business before the TEP, which may be construed as personal financial or other gain, that interest shall be declared to the TEP.

Where a Member so declares, the Chair may:

- refuse the Member the right to speak to the business
- refuse the Member the right to vote on that business
- require the Member to withdraw from a meeting for the period of discussion and resolution of that business.

A Member shall not be subject to the Pecuniary Interest provisions where the interest is solely the recovery of the cost of services or goods to the TEP.

A Member shall not be subject to the Pecuniary Interest provisions where the interest is solely related to the Members employment.

Observers

The CEO, VFA or delegate may nominate observers to attend meetings of the TEP. Observers may participate in discussions at the invitation of the Chair.

Operation

The TEP meets as required by the Chair.

Meeting agendas will be circulated at least five business days prior to the relevant meeting.

Meetings are managed by the Chair who will determine the pace and length of deliberations on agenda items. The Chair will ensure that every Member has adequate opportunity to participate in the discussions.

Minutes of meetings will be circulated to the Members or alternate Members for comment no more than ten working days after the meeting. Minutes from previous meetings should be formally adopted at the following meeting.

The TEP may consider translocation applications, risk assessments and other business out-of-session or in meetings, as determined by the Chair. Translocation applications and associated documents for consideration will be distributed in accordance with these ToR.

Unless alternative arrangements are made, the VFA will distribute translocation applications and associated documents by email. Members and alternate Members require access to email communication unless alternative arrangements are made with the Chair.

Confidentiality

In accordance with the secrecy provision of the Act and the Commonwealth *Privacy Act 1988*, deliberations of the TEP are strictly confidential.

The responsibility to maintain confidentiality lies with the Members and alternate Members.

Members, alternate members and observers must not disclose information that relates to a translocation application or may reveal the identity of a translocation applicant.

Members and alternate Members may discuss with their respective groups or organisations issues before the TEP that are not confidential but may not discuss any deliberations of the TEP or circulate any meeting agendas, minutes, papers or other materials publicly without the consent of the Chair.

Support

The VFA will provide administrative services to the TEP.

Reporting relationship to advisory bodies

In providing advice to the CEO, VFA or delegate, the TEP must not, without consent of the CEO, VFA or delegate, communicate its advice to anyone other than VFA.

Appendix B: Assessing translocation and associated risks

This appendix provides background information to assist with implementing the *Guidelines for Assessing the Translocation of Live Aquatic Organisms in Victoria*, and outlines the types of risk to the environment from translocations and describes the specific risks associated with them.

Three simple and measurable endpoints (Hayes 1997) are used to assess the risk[1] arising from translocation proposals:

- the likelihood and consequences of escape and/or release;
- the likelihood and consequences of survival; and
- the likelihood and consequences of establishment (of a feral population).

Each of the risks associated with each endpoint is assessed through the series of questions for closed or semi-closed systems such as aquaculture (Table 1) and open systems such as the wild release for angling, biodiversity conservation or other purposes (Table 2). These risks should be used as a guide when preparing risk assessments for proposed translocation of live aquatic biota.

In assessing the risks of a translocation, the challenge is to assess the reversibility of the proposed introduction and any adverse effects it may have. It is important to recognise that the risks include, in addition to the species in question, associated aquatic habitats, organisms, parasites and diseases.

After determining the potential risks of a translocation, the aim is to avoid unnecessary risks, reduce high risks and to manage residual risks.

Application of risk assessment

Subject to law

Proposals to translocate aquatic organisms into and within Victoria must comply with relevant Victorian and Commonwealth law. A species will only be considered as a candidate for translocation if possession of the species does not conflict with restrictions imposed under legislation. Such legislation may relate to the survival of a species or to the ecosystem in which it occurs or where the presence of the species could adversely affect the Australian environment. Proposals must also comply with bilateral or multilateral agreements that may exist for multi-State river basins.

Issues of scale

It is not possible, nor potentially relevant, to undertake a prior assessment of every proposed individual translocation of a live aquatic organism. Proposals perceived to involve greater risk may also require considerably more robust analysis and direct research to answer particular questions.

Uncertainty

Assessment of potential risk is by its nature an uncertain process. The degree of uncertainty will vary between proposals and it may not be possible to answer all questions outlined in Tables 1 and 2. The final decision will be a 'risk-weighted assessment' of the proposal as agreed in Commonwealth *Intergovernmental Agreement on the Environment*.

Authoritative risk assessment

This risk assessment must be conducted by a person(s) recognised as having relevant expertise in assessing the risks posed by the translocation of live aquatic organisms. It will be the responsibility of the proponent to organise and fund preparation of the risk assessment and demonstrate the assessor's expertise.

Background risk

Where a particular situation or risk (e.g. disease outbreak, existence of a feral population, prior stocking or likelihood of introduction by other means) already exists in receiving waters, it will be considered in assessing the impact on the receiving waters from a further translocation of the organism. Existing risk abatement regimes that mitigate the risks to the receiving waters will be considered when assessing the translocation proposal.

Risk thresholds

The extent to which risks are accepted and tolerated is likely to evolve with changing perceptions and understanding of the risk and changes in the value of the area that may be affected by the risks. In reflecting community values and the level of scientific certainty, the risk thresholds established by Victorian legislation and strategy usually define those risks

[1] The risk assessment process outlined in this policy conforms with that outlined in the *National Policy For The Translocation Of Live Aquatic Organisms* and is consistent with Australia – New Zealand Standard 4360.

that are unacceptable or intolerable[2]. As outlined in the *Victorian River Health Strategy* (Department of Natural Resources and Environment, 2002), for example, this is determined individually or collectively by various environmental, social or economic considerations, including:

- Protecting social assets such as human health and recreation.

  Example 1: The electric eel (*Electrophorus electricus*) poses a threat to human-safety because of the electric shock it can produce. Importation into Victoria and possession in the State is prohibited through its listing as a noxious aquatic species under the *Fisheries Act 1995* (the Act.

  Example 2: The sharp, brittle edges of the shell of the Pacific oyster (*Crassostrea gigas*) can injure the feet of people who step on it. For this and other reasons, aquaculture of the Pacific oyster is not permitted in the wild in Victoria.

- Protecting environmental assets such as: endangered fish, areas of importance for their indigenous flora and fauna, and river catchments that contain stream networks in good ecological condition.

  Example 1: To ensure the protection of the endangered trout cod (*Maccullochella macquariensis*) and Macquarie perch (*Macquaria australasica*), predatory exotic fish are not stocked in Seven Creeks or in areas that would lead to their immediate introduction to Seven Creeks.

  Example 2: A management objective for areas scheduled under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (the EPBC Act), or areas managed under the provisions of that Act, is the preservation and protection of indigenous flora and fauna within particular areas. To assist in achieving this objective, the EPBC Act requires that exotic flora and fauna be either exterminated, eradicated or controlled within such areas.

  Example 3: There are relatively few exotic species in the streams of catchments east of the Snowy River. Stocking fish into these systems is not permitted because of the long-standing administrative agreement on the values of these streams. For some catchments, this administrative agreement is explicitly reinforced by the Victorian *Heritage River Act 1992*, which requires all reasonable steps to ensure that areas, known as essentially natural catchments, are maintained in an essentially natural condition.

- Protecting economic assets by reducing the risk of disease and the threat to ecosystem services

  Example 1: Ecosystems provide services of considerable economic benefit such as the removal of nutrients introduced to water bodies from licensed discharges, catchment run-off and the production of fish for human consumption. For these reasons, species such as the sabella worm and the Northern Pacific seastar (*Asterias amurensis*) are declared as noxious aquatic species under the *Fisheries Act 1995*.

Making decisions

Decisions regarding translocation proposals are based on the risk being acceptable. This may include restrictions on the numbers, sizes, origins, genotypes or other characteristics of the live aquatic organisms in question, quarantine protocols, improvements to security of containment facilities and contingency planning.

The views of the 'land' manager obtained during the translocation evaluation process will be an important consideration in determining the acceptability of risk.

Environmental risk

Environmental risks associated with the translocation of aquatic organism can be divided into the following main categories:

- environmental/ecological issues;
- disease and parasite introduction; and
- chemical release.

Environmental/ecological issues

The translocation of aquatic organisms may create several environmental/ecological risks:

- genetic shift in wild populations;
- establishment of feral populations;
- environmental impacts from the release of the species; and
- translocation of associated species (e.g. parasites).

[2] Standards Australia International and Standards New Zealand (2000) describe the concepts of tolerability and acceptability in more detail.

Many of these risks are discussed in the *National Strategy for the Conservation of Australia's Biological Diversity* (the National Biodiversity Strategy) (Department of the Environment, Sport and Territories, 1996).

Genetic shift in wild populations

Translocated species that escape or are deliberately released into the wild may breed with other distinct populations of the same species, possibly resulting in a genetic shift in the local population. Similarly, hybridisation between endemic species and translocated species where the species are genetically compatible may occur. This is a particular risk associated with inappropriate stocking of native species for stock enhancement.

Genetically modified organisms (GMOs) pose specific concerns where their modifications may provide a competitive advantage over unmodified wild organisms (potentially resulting in displacement of the latter). Traits of GMOs may also be transferred to local populations through inter-breeding. However, GMO technology may also be used to reduce the risks posed to receiving waters from escapes by producing animals that are incapable of breeding or have specific dietary requirements that preclude that organism's survival in the wild.

The risk of genetic shift in wild populations can be minimised by ensuring that the translocated organisms are of the same genetic stock as local populations. This may be achieved by sourcing broodstock from that area or from connected populations.

Risk may also be minimised by reducing the number of organisms translocated. If lower numbers are translocated, there is less reproductive potential and consequently less potential for genetic shift. Given the high fecundity of many aquatic organisms, however, this may not have a significant impact on managing the genetic risks.

On a similar note, translocating organisms with relatively lower fecundity may also reduce reproductive potential and therefore reduce the risk of genetic shift.

Although it rarely occurs to a significant degree in nature, hybridisation, for example trout cod- Murray cod (*Maccullochella peelii peelii*) or estuary perch (*Macquaria colonorum*)- Australian bass (*Macquaria novemaculeata*), could increase with inappropriate stockings.

Establishment of feral populations

Feral populations are populations that successfully establish in an area because of the escape or release of non-endemic or exotic organisms. This may be a population of the plants or animals being translocated or a population of a secondary organism that was translocated along with the primary organism (e.g. attached parasites or species in the transport medium).

Feral populations can result from the escape or release of zygotes (fertilised eggs) or gametes (eggs and sperm) of translocated species to natural water bodies.

Through competition, predation and environmental modification, feral populations can have a range of adverse environmental effects on endemic communities. Examples of species that have established feral populations include European carp (*Cyprinus carpio)*, redfin perch (*Perca fluviatilis*), marron (*Cherax tenuimanus*), yabbies (*Cherax destructor)*, Murray cod, trout cod, Macquarie perch, freshwater catfish (*Tandanus tandanus)*, oriental weatherloach (*Misgurnus anguillicaudatus*), tilapia (*Tilapia* and *Sarotherodon* sp.), mosquito fish (*Gambusia* sp.*)*, swordtails (*Xiphophorus* sp), trout (*Salmo, Oncorhynchus* and *Salvelinus* sp.) and cord-grass (*Spartina* sp.).

Some feral populations may have been planned and authorised (e.g. recreational stocking, biological control programs or native species enhancement).

In closed and semi-closed systems, the risk of feral populations becoming established can be minimised through adequate containment of adults, juveniles, zygotes and gametes combined with appropriate contingency planning.

Where containment is considered inadequate, an assessment of the species' ability to establish feral populations is required and would include consideration of the following criteria:

- the natural range of the species and similarities, for example climatic conditions, weather patterns, between the natural range and target location;
- the current range of the species including its history, if any, of establishing feral populations elsewhere;
- the known environmental requirements for all stages of the lifecycle if these requirements will be met in the receiving waters;
- the food requirements for all stages of the lifecycle and if these requirements will be met in the receiving waters; and
- the habitat requirements for all stages of the lifecycle, for example the need for a specific type of breeding site, and if these requirements will be met in the receiving waters habitat requirements.

Risks of establishing feral populations may be minimised through the translocation of only one sex (in dioecious, non-sequential hermaphroditic species) or infertile individuals or those with reduced fertility (e.g. triploids, hybrids).

Environmental impacts from escaped organisms

Regardless of their ability to establish self sustaining populations in receiving waters, translocated organisms may survive long enough in natural waterways to create environmental impacts including competition, displacement, predation and habitat alteration. This can have resultant impacts at the individual, population, community and ecological process level.

Translocated organisms that escape to natural water bodies may compete with and displace local species, potentially causing long-lasting changes to the community structure. Additionally, translocated organisms may prey on endemic species.

In many cases, endemic species will be at greater risk to the translocated predator because there has been no predator-prey co-evolution between the species. This may be particularly devastating if the local species are not normally preyed on, and consequently, have not developed defence mechanisms or appropriate behaviour patterns.

Translocated organisms may alter the habitats of natural waterways in many ways, including:

- the creation of burrows and destabilisation of banks (e.g. yabbies);
- disturbance of aquatic vegetation with consequential effects on erosion, water quality and habitat of native species (e.g. European carp);
- predation of native species (e.g. trout);
- the overgrowth of the surface of the water body (e.g. water hyacinth *Salvinia molesta*); and
- the removal or depletion of food supply.

In closed and semi-closed systems the risk of adverse environmental impacts may be reduced through adequate containment of adults, juveniles, zygotes and gametes, combined with appropriate contingency plans to address escapes of stock.

In open systems, or where containment is minimal, an assessment of the species' potential for environmental impacts that is based on a thorough understanding of the ecology of both the translocated species and the target region is required.

Translocation of associated species

There may be a risk that associated species including larvae and juvenile animals will be translocated along with the target species. This may include species that are:

- similar in appearance to the organism;
- on, or in, the target organism; or
- on, or in, the transport medium.

Specific instances of this apply to shellfish spat and finfish fingerlings being translocated from hatcheries (e.g. mussels (*Mytilus galloprovincialis* and *M. edulis*) and abalone (*Haliotis* sp.), golden perch (*Macquaria ambigua*) and silver perch (*Bidyanus bidyanus*), Atlantic salmon (*Salmo salar*) and rainbow trout (*Oncorhynchus mykiss*)).

Translocation of associated species may also take place through the movement of species located external (i.e. epifauna and ecto-parasites on shells, gills and scales) and internal (e.g. endo-parasites, microalgal cysts) to the target organism.

The risks of translocation of other species can be minimised through appropriate certification of hatchery stock. In closed and semi-closed systems, appropriate quarantine, containment and contingency plans will minimise the risk of release of associated species to natural water bodies. Risks can be further minimised for filter feeders through depuration procedures and treatment before release.

With most translocations, the organisms will be transported in a medium, typically water. The fate of this medium also needs to be considered as it may contain undesirable organisms. This is of particular concern if the stock comes from an area where parasites, algal blooms or disease outbreaks are current or common and these organisms are not present in the receiving waters.

Risk can be reduced by appropriate treatment and disposal of transport media, including the appropriate treatment (e.g. cleaning, drying.) of transport equipment (e.g. cages, ropes, nets, racks, tanks).

Disease and parasites

The principal cause for concern in this risk category is the possible introduction of an exotic pathogen (bacteria, viruses, ecto- and endo-parasites, fungi) into the natural water bodies and subsequent infection of existing species. The translocation of endemic pathogens to new areas is also a primary concern.

A population exposed to a new pathogen may be particularly susceptible and a common response is mass mortalities. The effects may be increased if the population is already stressed, e.g. through habitat degradation or overfishing.

There will be fluctuations in the composition and abundance of species and there is always a risk of extreme virulence that will reduce a population so much that it may not recover. Organisms that survive will show some resistance, which in due course may help the population in re-establishing itself. This, however, does not mitigate the risk of introducing diseases and parasites. There is often a time lag between introducing an infectious agent and the appearance of clinical disease (if environmental conditions are good, there may not be a disease outbreak for some time following introduction).

Parasites and disease are an integral part of any natural system. However, the introduction of a disease or parasite (not necessarily an exotic disease) into a natural water body could change the existing 'pathogen status' of the waters. The introduction may perpetuate or aggravate existing diseases by increasing their incidence, virulence, potency and frequency and may reduce the competitiveness of the affected species. This impact may apply to parasites such as ecto-parasites on farmed fish including fungal flora and gut parasites. It may also have significant ramifications for translocation of, or trade in, aquatic organisms or products from the area.

There are many examples of species carrying unwanted diseases. These include goldfish and roach, which may carry the organism causing goldfish ulcer disease (*Aeromonas salmonicida*); barramundi which may carry a virus (*Nodavirus*); abalone which may carry the *Perkinsus* parasite or abalone ganglioneuritis; and redfin which may carry epizootic haematopoietic necrosis virus.

It is important to note that some species in the receiving waters may not be susceptible to the introduced agent but may act as carriers, helping to establish the pathogen without exhibiting clinical signs of infection. If other susceptible species are translocated at a later stage, then disease may break out. Furthermore, many bacteria and parasites do not need a fish host and once introduced into the water system can survive without the presence of susceptible or non-susceptible host.

The risk of transferring parasites and diseases into the environment from an aquaculture facility can be reduced through containment of the farmed species, appropriate treatment of discharged wastes and proper disposal of any transport medium used to transport live aquatic organisms. Risk of parasite and disease transfer can also be reduced through the implementation of health certification processes, appropriate quarantine procedures, targeted surveillance and monitoring programs in hatchery facilities, and disease zoning policies.

Where quarantine or health certification is not practical, for example in the live seafood trade, knowledge of the pest and disease status of the source area will provide information on the likely disease status of stock taken from that region. Similarly, regular surveillance and monitoring of wild stock fisheries can assist in providing early indications of potential parasite and disease problems.

Chemical release and management

Many aquatic species, especially those that are farmed or inhabit polluted waters, may be exposed to drugs and other chemicals. Many of these substances have adverse environmental and marketing consequences. The risk from translocation arises when undesirable chemicals are transported either in the transport medium or as residues in the stock itself.

Risks may be minimised by appropriate treatment and disposal of the transport medium, using contaminant free stock, depuration of shellfish, adoption of appropriate monitoring and testing regimes and adhering to the usage regulations of chemicals registered by the Australian Pesticides and Veterinary Medicines Authority (APVMA). Enclosing facilities within bunds and developing appropriate contingency plans that address events such as flooding will reduce the risk of release of unwanted chemicals to natural waters.

Types of translocations

Translocations can be proposed for a number of purposes including:

- stocking for recreational and commercial fishing and conservation;
- open water aquaculture systems;
- land-based aquaculture systems;
- research and/or display facilities;
- live bait;
- live seafood trade; and
- aquarium trade.

The following discussion provides a general indication of the potential risks that may be involved.

Stocking programs and open water aquaculture systems

Live aquatic organisms translocated to open systems including aquaculture can affect catchment drainage systems. In these cases, the assessment of risk should consider the potential for the species to affect the ecology and general environment of the waters into which they are stocked.

Risks

Genetic shifts or the loss of genetic diversity in wild populations may be a risk if there are existing populations of the translocated species in the receiving waters. Where the stock to be translocated and produced in a hatchery, this risk can be reduced by using broodstock obtained from the area proposed for stocking.

If populations of the translocated species are not present in the target area, the risk of establishing a feral population should be assessed. In some cases, this might be the desired outcome.

As there is little or no ability to contain stock in open systems, translocated species may interact with aquatic and non-aquatic components of the receiving ecosystem. An adequate assessment of translocation risks should therefore be based on a thorough knowledge of the translocated species, its ecology and the ecology of and potential impacts on the receiving waters.

Containment of undetected and undesirable associated species translocated along with the target species is not possible in open systems and is a major concern when introducing wild stock. Assessments of risk should be based on knowledge of the status of the receiving waters and source areas. Risks may be further minimised through depuration, transfer to fresh media before release and by ensuring that the transport media and containers are disposed of appropriately after use. To assist in managing this risk, organisms should be transported in media taken from the receiving area. Quarantine periods may be appropriate.

With hatchery-reared stock, certification of disease and parasite status may reduce the risks of translocation. Where certifying the health of stock is not possible, monitoring and surveillance before translocation may be used to certify the status of the stock.

Land-based aquaculture systems, contained research or display facilities

The primary risk issues in issues in land-based, contained research and display facilities are containment of stock, treatment and disposal of wastewater and surplus stock and contingency plans in case of emergency. In determining the adequacy of the risk management processes employed to manage these risks, the consequences of stock escape should be considered. If all of the risk management measures are adequate, the translocation may be approved.

If containment, water treatment and disposal and contingency plans are inadequate, an assessment should be made based on the potential for the species and associated species, parasites and diseases to affect the ecology and general environment of the receiving waters. Where stock for these facilities come from hatcheries, disease status, water quality and information on associated species should be available.

Risks

Aquaculture, research and display centres often hold large numbers of stock that, should they escape, could affect populations of native organisms. The risk arises from the release of mature fish, juveniles, gametes and zygotes and associated species. In closed or semi-closed systems, risk can be minimised through appropriate containment of all life stages, treatment and disposal of wastewater and having appropriate contingency plans in place.

Risks may also minimised by locating and operating the facility with no open connection to any watercourse thus preventing escapees from entering natural water bodies.

If containment is insufficient and there is a risk of stock being released in an emergency, risks may be reduced by using broodstock obtained from local populations. If local broodstock are not available, the potential for the organism to establish a feral population and its impacts on the receiving environment should be considered in the risk assessment.

Managing risks of translocations of associated organisms including parasites and diseases may be addressed by appropriately treating and disposing of wastewater and stock and contingency planning as outlined above. The likelihood of pest and disease outbreak is greater in closed culture systems and research and display facilities where stocking rates can be high. If containment, treatment or contingency plans may be inadequate, and there is potential for organisms or wastewater to enter the natural environment then the likelihood of the stock carrying disease should be assessed. This risk may be reduced through health certification, inspection and quarantine procedures.

Live bait

Because live bait is released into natural water bodies, there are many concerns about its translocation. Although this discussion only deals with live bait, many of the issues raised below are also relevant to the translocation of dead bait. Translocations of live bait are characterised by the movement of small numbers of individuals over relatively short distances. The high fecundity of many aquatic species that are used as bait means that small populations may have a large reproductive potential should they escape. Although animals used for live bait often originate from wild stock, some bait species are cultured.

There is increasing concern over the use of imported organisms not originally destined for the bait market being used as live or dead bait. These animals may not have been screened on the same basis as they would have been if it were known they would be used as bait.

The concerns related to transport medium, disease and associated species are particularly relevant because the stock are often taken from the wild and handled and distributed by the public. Consequently, rigorous handling and waste disposal procedures are not often used.

Risks

Although the material is released to natural water bodies, the number of animals is generally low and the organisms often killed during use. Bait species may, however, establish feral populations if they survive the translocation, are released in sufficient numbers and the environment of the receiving waters is favourable to them. The potential risk may be assessed through an understanding of the species and its habitat requirements.

As individuals often carry out these inadvertent translocations independently and are not subject to an approval process, the implementation of a rigorous policy is difficult. If a substantial release is likely, for example a live bait production facility, the facility should be treated as for a closed aquaculture facility.

Live fish trade

Animals for the live fish trade including shellfish and crustaceans are usually obtained from wild populations or aquaculture operations and transported to processors, markets or restaurants. Although there is legitimate concern about the translocation of live fish, receivers can be encouraged to treat stock and wastewater appropriately.

A major concern is the fate of the stock after it is sold because restaurants and individuals that purchase live product may not dispose of the transport media and offal in a manner that prevents impacts on the aquatic environment.

Risks

As live fish are a valued commodity, it is likely the number of animals that enter natural water bodies will be small. Given the high fecundity of many aquatic organisms, this may not mitigate potential effects. If stock comes from wild populations, issues related to water quality, associated species and disease status are unlikely to be known.

In some instances, non-endemic bivalve molluscs for the seafood trade may be held in natural waters while awaiting consumption. If this is to occur, the translocation should be assessed as for an open aquaculture system.

There is a risk of transporting unwanted parasites and diseases with live seafood. Disease-free certification is impractical with live, wild caught stock, and quarantine is unlikely to be an acceptable technique because of delays in marketing fresh product. Consequently, the only risk management options available are knowledge of the parasite and disease status of the source area and appropriate disposal of remains and transport medium after the seafood has been processed. This is likely to be difficult, because there is little opportunity to enforce any such requirements. The low numbers of animals that might escape to the aquatic environment reduces the environmental risk.

Additionally, there is a risk of movement of undesirable species in the transport media including toxic dinoflagellates and blue green algae. Risks may be minimised through appropriate treatment and disposal of the transport media and containers.

Aquarium trade

The aquarium trade includes marine and freshwater species that are endemic to Australia or exotic species that are translocated to Australia or bred from stock already in the country. Some species are collected from the wild.

Aquarium stock is typically distributed to shops and on-sold to the public and the trade is largely uncontrolled beyond the retail level. The relative simplicity of producing many popular aquarium species in 'backyard culture' facilities increases the risk of introducing parasites and disease. Such facilities are often small scale (and often unknown to authorities) and therefore not subject to the regulatory regimes applied to other aquaculture facilities.

Aquarium species and associated organisms may be transferred throughout Australia as fish-owners move and transport their pets and equipment. As with translocation of live bait, a major risk mitigation strategy is effective education of the public of the environmental concerns that relate to the unauthorised release of aquarium species. As sources of information on risk and the facilities for appropriate disposal of unwanted animals, aquarium retail outlets play a valuable role in this education process.

A hatchery for aquarium species should be assessed as a closed aquaculture system.

Risks

Exotic marine aquarium species listed on Part 1 of the *List of Specimens taken to be suitable for live import* (the Schedule) of the EPBC Act may, unless genetically modified, be imported into Australia. Additional species may be added to the Schedule following satisfactory evaluation under a risk assessment process that assesses their potential to become pests or to introduce disease and parasites.

The potential for environmental effects has not necessarily been assessed for all aquarium species listed on the Schedule and all risk categories may need to be considered depending on the source of stock and destination of the translocation. For example, more than 15 exotic species have established sustainable populations in Queensland waters. Regulation of the domestic aquarium trade is the jurisdiction of State and Territory Governments. The EPBC Act does not provide a mechanism to 'recall' a species that is removed from the Schedule or which is not listed at all.

Australian States and Territories have taken one or both of two approaches to managing exotic fishes in the aquarium trade: permitted and prohibited species lists. While Victoria's approach is based on the latter, it is recognised that in the absence of these Guidelines, there would be no mechanism to consider the trade in species whose pest and disease status is unknown.

In accordance with *A Strategic Approach to the Management of Ornamental Fish in Australia* (Department of Agriculture Forestry and Fisheries 2006), all State and Territory jurisdictions agreed to implement consistent noxious aquatic species list that includes species on the agreed national list and those species relevant to the jurisdiction. Species included in the document 'grey list' that, through a risk assessment process are determined to have the potential to become pests or to introduce disease and parasites, will be added to lists of noxious aquatic species.

The environmental risks associated with translocation of aquarium fish and plants will vary. Tropical aquarium species may have limited survival capacity in the cooler waters of southern Australia, but the warmer waters in cooling ponds associated with power stations can provide an ideal environment for many species.

Although aquarium species are generally released in small numbers, the lack of natural predators and the documented survival characteristics of some species suggest they may have a good chance of establishing feral populations in Australian waters if basic habitat requirements are met. This is also relevant to plants bred for the aquarium trade, which are selected for their robustness and vigour. An example is the green alga *Caulerpa taxifolia*. This aquarium plant, a declared noxious aquatic species under the Act, has entered the marine environment in some parts of the world and despite attempts to control it, has spread rapidly through shallow, littoral environments.

The translocation of disease by aquarium species is of particular concern. There are known cases of aquarium species carrying disease (e.g. goldfish ulcer disease) that can cause significant damage to wild fish stocks and aquaculture operations. Where possible, risk can be minimised by the use of hatchery stock that is appropriately certified as free of parasites and disease. As indicated above, a major potential disease risk arises from organisms produced in facilities that are not subject to licensing or regulation.

Table 1: Translocation risk assessment – closed or semi-closed systems.

Escape / Release	Survival	Establishment
Likelihood	**Likelihood**	**Likelihood**
A1. Will the transport medium and equipment be treated before transport?	C1. Is the natural and/or current range of the species/genetic stock known?	E1. Are the environmental requirements for the completion of all stages of the life cycle known and are they available in the potential receiving waters?
A2. Will the transport medium be treated by appropriate methods after the translocation?	C2. Are the temperature and water quality requirements for survival known and are they available in the potential receiving waters?	E2. For diseases and parasites are carriers and hosts required for the completion of all stages of the life cycle known, and are they available in the potential receiving waters
A3. How close and accessible are nearby watercourses?	C3. Are the habitat requirements for survival known and are they available in the potential receiving waters?	E3. Is the ability of the species to hybridise with local species known?
A4. Is the facility fully enclosed and secure from unauthorised access?	C4. Are the food requirements of the species known and are they available in the potential receiving waters?	E Based on the answers to Questions E1 to E3, what is the likelihood of establishment?
A5. Based on a knowledge of the facility's waste water treatment and disposal, and containment of all life stages of the organism, are any life stages likely to be released from the facility during normal operations?	C5. How 'natural' is the target area (some species colonise disturbed areas more effectively)?	**Consequences**
A6. Based on knowledge of the facility's waste water filtration, sterilisation and disposal, are any diseases present in the facility that are likely to escape?	C6. For diseases and parasites, are suitable hosts likely to be available in the target area?	F1. How 'natural' are the potential receiving waters (in unique or pristine areas the consequences of the establishment are likely to be considered to be more important)?
A7. Does the facility have adequate contingency plans in the event of a technical failure?	C Based on the answers to Questions C1 to C6, what is the likelihood of survival?	F2. Are there any endangered or rare species in the potential receiving waters?
A8. Have local environmental issues (e.g. flooding) been considered in containment planning?	**Consequences**	F3. Is the species subject to an eradication or minimisation program in the target area?
A9. What is the nature of any disease surveillance programs in the source area and/or facility?	D1. Is the species endemic to the target area?	F4. Is the organism genetically modified?
A10. Are there any disease, parasite or unexplained mortality issues in the source area?	D2. Is the species currently found in the target area?	F5. Should the species establish in natural water bodies, is it likely that it can be eradicated?
A11. Will the consignment be reliably certified free of known diseases, and if so by whom?	D3. Is the species likely to be a significant competitor/predator in the target area?	F6. Based on knowledge of the species' growth, reproductive characteristics and behaviour, is the species likely to displace local species in similar ecological niches?
A12. What is the OIE disease zoning status of the source and destination areas?	D4. Is the species likely to alter the physical environment?	F7. Based on knowledge of the species' behaviour and physical characteristics, is it likely to be a significant predator in the potential receiving waters?
A13. What quarantine processes and/or treatments will the consignment be subject to?	D5. Is the species likely to destabilise local plant communities?	F8. Based on knowledge of the species' behaviour and physical characteristics, is it likely to alter the physical environment in the potential receiving waters?
A14. Are undesirable species (e.g. parasites, blue green algae) likely to be translocated with the consignment that are not currently found in the target location?	D6. What effects are any released diseases or parasites likely to have in the potential receiving waters without completing their full life cycle?	F9. Based on knowledge of the species' behaviour and physical characteristics, is it likely to destabilise plant communities in the potential receiving waters?
A15. Will the consignment be reliably certified free of undesirable accompanying species? If so, by whom?	D Based on the answers to Questions D1 to D6, what are the consequences of survival?	F10. Is the consignment of the same genetic stock as local populations?
A Based on the answers to Questions A1 to A15, what is the likelihood of escape?		F11. What effects are any released diseases or parasites likely to have in the potential receiving waters?
Consequences		F Based on the answers to Questions F1 to F11, what are the consequences of survival?
B1. What species (including diseases and parasites) are likely to escape?		
B2. In the event of an escape, what life stages (e.g. gametes, fertilised eggs, juveniles, adults, etc.) are likely to escape?		
B3. In the event of an escape what numbers are likely to escape?		
B Based on the answers to Questions B1 to B3, what are the consequences of escape?		

Table 2: Translocation risk assessment – open systems.

Escape / Release	Survival	Establishment
Likelihood A1. Will the transport medium and equipment be treated before transport? A2. Will the transport medium be treated by appropriate methods after the translocation? A3. What is the nature of any disease surveillance programs in the source area and/or facility? A4. Are there any disease, parasites or unexplained mortality issues in the source area? A5. Will the consignment be reliably certified free of known diseases, and if so by whom? A6. What is the OIE disease zoning status of the source and destination areas? A7. What quarantine processes and/or treatments will the consignment be subject to? A8. Are there undesirable species (e.g. parasites, blue green algae) likely to be translocated with the consignment that are not currently found in the target location? A9. Will the consignment be reliably certified free of undesirable species, and if so by whom? A Based on the answers to Questions A1 to A9, what is the likelihood of escape? **Consequences** B1. What species (including diseases and parasites) are likely to escape? B2. In the event of an escape, what life stages (e.g. gametes, fertilised eggs, juveniles, adults etc.) are likely to escape? B3. In the event of an escape, what numbers are likely to escape? B Based on the answers to Questions B1 to B3, what are the consequences of escape?	**Likelihood** C1. Is the natural and/or current range of the species/genetic stock known? C2. Are the temperature and water quality requirements for survival known and are they available in the potential receiving waters? C3. Are the habitat requirements for survival known and are they available in the potential receiving waters? C4. Are the food requirements of the species known and are they available in the potential receiving waters? C5. How 'natural' is the target area (some species colonise disturbed areas more effectively)? C6. For diseases and parasites, are suitable hosts likely to be available in the target area? C Based on the answers to Questions C1 to C 6, what is the likelihood of survival? **Consequences** D1. Is the species endemic to the target area? D2. Is the species currently found in the target area? D3. Is the species likely to be a significant competitor/predator in the target area? D4. Is the species likely to alter the physical environment? D5. Is the species likely to destabilise local plant communities? D6. What effects are any released diseases or parasites likely to have in the potential receiving waters without completing their full life cycle? D Based on the answers to Questions D1 to D6, what are the consequences of survival?	**Likelihood** E1. Are the environmental requirements for the completion of all stages of the life cycle known and are they available in the potential receiving waters? E2. For diseases and parasites are carriers and hosts required for the completion of all stages of the life cycle known, and are they available in the potential receiving waters E3. Is the ability of the species to hybridise with local species known? E Based on the answers to Questions E1 to E3, what is the likelihood of establishment? **Consequences** F1. How 'natural' are the potential receiving waters (in unique or pristine areas the consequences of the establishment are likely to be considered to be more important)? F2. Are there any endangered or rare species in the potential receiving waters? F3. Is the species subject to an eradication or minimisation program in the target area? F4. Is the organism genetically modified? F5. Should the species establish in natural water bodies, is it likely that it can be eradicated? F6. Based on knowledge of the species' growth, reproductive characteristics and behaviour, is the species likely to displace local species in similar ecological niches? F7. Based on knowledge of the species' behaviour and physical characteristics, is it likely to be a significant predator in the potential receiving waters? F8. Based on knowledge of the species' behaviour and physical characteristics, is it likely to alter the physical environment in the potential receiving waters? F9. Based on knowledge of the species' behaviour and physical characteristics, is it likely to destabilise plant communities in the potential receiving waters? F10. Is the consignment of the same genetic stock as local populations? F11. What effects are any released diseases or parasites likely to have in the potential receiving waters? F Based on the answers to Questions F1 to F11, what are the consequences of establishment?

Appendix C: Administrative principles supporting the application of these guidelines

In accordance with the *National Policy for the Translocation of Live Aquatic Organisms* the following principles will be used to support the administration of these guidelines.

- Translocation of live aquatic organisms may have a potential economic, social or conservation benefits, but it is recognised that translocation of live aquatic organisms can involve serious risks for the receiving ecosystem and for human health.
- Translocations into catchments or maritime regions that are under more than one jurisdiction, for example the Murray-Darling river system, require the agreement of all the relevant jurisdictions.
- All translocation proposals should undergo an adequate and balanced risk assessment process, particularly with regard to the pest potential, disease status, potential to introduce parasites and diseases and possibilities of affecting biodiversity, in accordance with consistent risk assessment protocols aimed at minimising adverse impacts.
- A decision to permit a translocation may include a protocol that may be used for similar translocations.
- Risk assessments will include assessment of the likelihood and consequences of an introduction and the mechanism for risk management and minimisation. Where aquatic organisms are released into the wild, considerations of habitat preservation, threatened species status, and the genetic effects need to be evaluated.
- Whenever disease and parasite considerations are adequately addressed, translocation of 'threatened' species for the purpose of stock rehabilitation is supported with appropriate measures to ensure the genetic diversity and integrity of the species.

Monitoring programs will be used to assess and improve the accuracy of predictions generated by risk assessments and the effectiveness of management strategies applied to translocations.

Appendix D: References

Bureau of Rural Sciences 1999. *National Policy for the Translocation of Live Aquatic Organisms- Issues, Principles and Guidelines for Implementation.* Fisheries and Forestry Science Division. Canberra, ACT.

Hayes, KR. 1997. *A review of ecological risk assessment methodologies.* Centre for Research on Introduced Marine Pests. Technical Report No. 13. CSIRO Division of Marine Research, Hobart, Tasmania.

Department of Agriculture, Fisheries and Forestry. 2006. *A Strategic Approach to the Management of Ornamental Fish in Australia*. Department of Agriculture, Fisheries and Forestry, Canberra, ACT.

Department of the Environment, Sport and Territories. 1996. *National Strategy for the Conservation of Australia's Biological Diversity.* Canberra.

Department of Natural Resources and Environment. 2002. *Victorian River Health Strategy*. Department of Natural Resources and Environment, Melbourne, Victoria.

Department of Primary Industries/ Department of Sustainability and Environment. 2003. *Guidelines for the Translocation of Live Aquatic Organisms in Victoria.* Department of Primary Industries/Department of Sustainability and Environment, Melbourne, Victoria.

Department of Primary Industries. 2004. *Strategic Enterprise Risk Management Framework.* Department of Primary Industries, Melbourne, Victoria.

Department of Primary Industries. 2005. *Protocols for the Translocation of Fish in Victorian Inland Public Waters.* Fisheries Report Management Report Series No. 24. Department of Primary Industries, Melbourne, Victoria.

Department of Primary Industries. 2006a. *Victorian Protocol for the Translocation of Eels.* Fisheries Report Management Series No. 27. Department of Primary Industries, Melbourne, Victoria.

Department of Primary Industries. 2006. *Victorian Protocol for the Translocation of Mussels.* Fisheries Report Management Series No. 26. May 2006. Department of Primary Industries, Melbourne, Victoria.

Department of Primary Industries. 2007. *Victorian Abalone Aquaculture Translocation Protocol.* Fisheries Report Management Series No. 45. Department of Primary Industries, Melbourne, Victoria.

Department of Primary Industries. 2008. *Victorian Protocol for the Translocation of Aquatic Animals to Recirculating Aquaculture Systems.* Fisheries Report Management Series No. 47. Department of Primary Industries, Melbourne, Victoria.

Customer Service Centre **136 186**

www.depi.vic.gov.au