Australian Government
Department of the Environment

Draft EPBC Act referral guidelines for the vulnerable Tasmanian giant freshwater lobster (*Astacopsis gouldi*)

Acknowledgements

The Department of the Environment would like to thank the following people for their valued expert advice in the development of these guidelines and their participation at the workshop in Devonport, Tasmania, in 2010: Phil Bell, Stuart Chilcott, Niall Doran, Clare Hawkins, Alastair Richardson and Todd Walsh.

Disclaimer

The views and opinions expressed in this publication are those of the authors and do not necessarily reflect those of the Australian Government or the Minister for the Environment.

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Image credits

Photograph of a Tasmanian giant freshwater lobster by © Laurie Goldsworthy.

Important notice

Please note that these guidelines are general in nature. They do not remove your obligation to consider whether you need to make a referral to the Minister for the Environment (the Minister) under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). While these guidelines provide information to help you decide whether to refer your action, the possible impacts of your proposal will depend on the particular circumstances of the action. These circumstances may include issues such as the proximity of the action to habitat, indirect impacts and impact-mitigation measures.

These guidelines were developed on the basis of the best information available at the time of writing. However, impacts of proposals will be assessed by the Australian Government Department of the Environment (the Department) on the basis of the best information available at that point in time, which may differ from the information on which these guidelines are based.

These guidelines do not provide guidance on requirements under state and local government laws. Information on Tasmanian state and local government laws can be obtained from the Tasmanian Department of Primary Industries, Parks, Water and Environment (DPIPWE) (www.dpipwe.tas.gov.au) and the local councils in or near the proposed project area.

How to use these guidelines

These guidelines are intended to assist you in determining whether your action needs to be referred to the Department. These guidelines should be read in conjunction with Significant Impact Guidelines 1.1 – Matters of National Environmental Significance, which can be found on the Department's website at www.environment.gov.au/epbc/publications/nes-guidelines.html.

These guidelines apply to the Tasmanian giant freshwater lobster (*Astacopsis gouldi*) anywhere it may occur in Australia. The Tasmanian giant freshwater lobster is listed as a vulnerable species under the EPBC Act. Listed threatened species and ecological communities are matters of national environmental significance under the EPBC Act.

If you plan to undertake an action that has, will have or is likely to have a significant impact on the Tasmanian giant freshwater lobster, you must refer the proposal to the Minister before commencing. The Minister will then decide within 20 business days whether assessment is required under the EPBC Act. The potential significance of each action is judged on a case-by-case basis. Substantial penalties apply for undertaking an action, to which the EPBC Act applies, without approval (civil penalties up to $8.5 million or criminal penalties including up to seven years imprisonment). More information on referral, assessment and compliance is available on the Department's website at www.environment.gov.au/epbc/.

A national recovery plan for the Tasmanian giant freshwater lobster is currently in place and is available on the Department's website at www.environment.gov.au/biodiversity/threatened/publications/a-gouldi.html. The Minister must not make a decision which is inconsistent with a national recovery plan.

The decision tree in Figure 1 and the rest of these guidelines are designed to assist you in determining whether your proposed action needs to be referred. You may also

refer your proposed action if you are uncertain about the need to refer or contact the Department by emailing epbc.referrals@environment.gov.au.

Possible exceptions to the need to refer

Certain actions are exempt from the requirement of assessment and approval under the EPBC Act. These include lawful continuations of land use that started before 16 July 2000, or actions that were legally authorised before 16 July 2000. There are a number of criteria that must be satisfied to rely on any such exemptions. More information on exemptions under the EPBC Act is available on the Department's website at www.environment.gov.au/epbc/publications/exemptions.html.

Part 3 of the EPBC Act – "Environmental Approvals" – does not apply to forestry operations undertaken in a Regional Forest Agreement (RFA) Region, where an RFA is in place, unless the operation is being undertaken in a property on the World Heritage List, in a Ramsar wetland or is incidental to another action whose primary purpose does not relate to forestry. There are clauses within RFAs regarding continuous improvement in threatened flora and fauna management, taking recovery plans into account and establishing a comprehensive, adequate and representative (CAR) reserve system that are intended to meet the objectives of the EPBC Act. Persons carrying out forestry operations outside of an RFA region must consider their obligations under the EPBC Act.

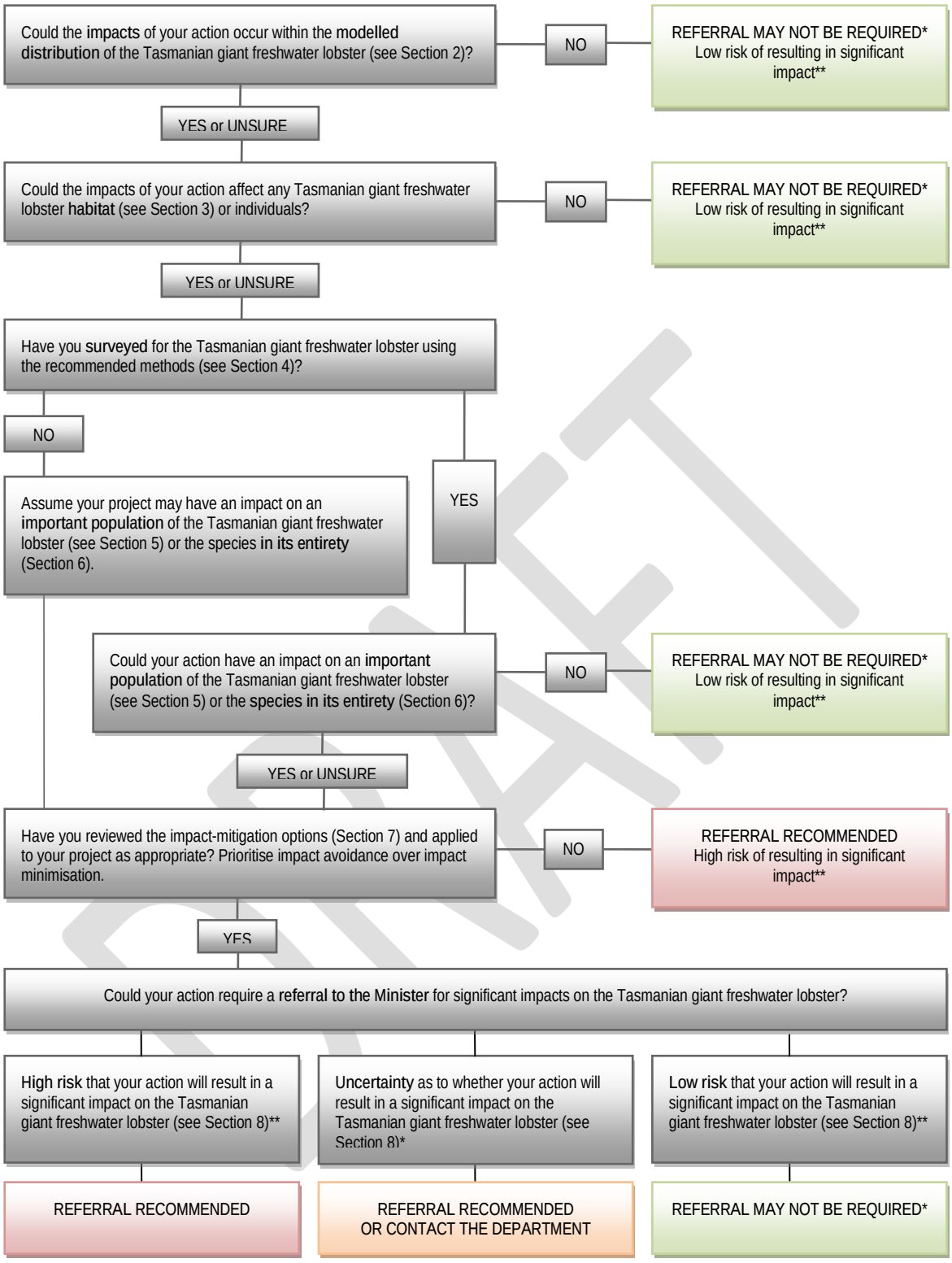
Where to get more information

The Species Profile and Threats (SPRAT) database profile for the Tasmanian giant freshwater lobster provides the biological and ecological context for survey guidelines, significant impact guidance and mitigation measures. The database can be accessed on the Department's website at www.environment.gov.au/cgi-bin/sprat/public/sprat.pl.

Other EPBC Act policy statements are available to help you understand the EPBC Act and your obligations. They are available on the Department's website at www.environment.gov.au/epbc/guidelines-policies.html or by contacting the community information unit by email: ciu@environment.gov.au or by phone: 1800 803 772. The Department can provide assistance in ensuring your action complies with the EPBC Act, especially when contacted early in the planning process.

The Protected Matters Search Tool, which is available on the Department's website at www.environment.gov.au/epbc/pmst/index.html, can provide a good starting point for determining the likelihood of matters of national environmental significance occurring in your area. State and territory government agencies may also hold relevant information including habitat and species distribution information.

Figure 1: Decision making



* Although it may appear that there is a low risk of a significant impact, and that a referral may not be required, you may still choose to refer your proposed action. If you are uncertain about the need to refer then you can contact the Department to discuss your action by emailing epbc.referrals@environment.gov.au.

** Risk is the chance rate of something happening that will have a [significant] impact on objectives [e.g. protecting matters of national environmental significance] (adapted from Australian/New Zealand Risk Management Standard ISO 31000:2009).

1. What is known about the Tasmanian giant freshwater lobster?

The Tasmanian giant freshwater lobster, also known as the 'tayatea', is the largest freshwater crayfish in the world. There are historic reports of specimens with weights up to 6 kg, but generally animals of 2–3 kg are considered large. The Tasmanian giant freshwater lobster is slow-growing. Females take approximately 14 years to reach sexual maturity, which is recognised in specimens with a carapace length of 120 mm or more. Females are believed to spawn only every second year in autumn, and carry the eggs and recently-hatched young under their tail until the following autumn. Larger females produce more young.

The Tasmanian giant freshwater lobster feeds mainly on decaying wood and associated microbes. The species' diet becomes more variable with age as it is known to eat leaves and animal flesh (such as small fish) when available. While adults have been known to range over several hundred metres of stream, individuals tend to spend most of their time at their preferred sites and return to those sites whenever they periodically move away. The species is, therefore, slow to colonise new areas.

Relevant background information on the biology and ecology of the Tasmanian giant freshwater lobster is provided in the Department's SPRAT database - www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=64415.

2. Could the impacts of your action[1] occur within the modelled distribution of the Tasmanian giant freshwater lobster?

The Tasmanian giant freshwater lobster is endemic to rivers of northern Tasmania (see Map 1). It is known to occur in the Arthur River catchment in the north-west of the island and all of the major river catchments that flow into Bass Strait from the Welcome River to the Ringarooma River, with the exception of the Tamar River catchment. The species is found at altitudes no higher than 400 m above sea level (asl), with most caught below 200 m asl.

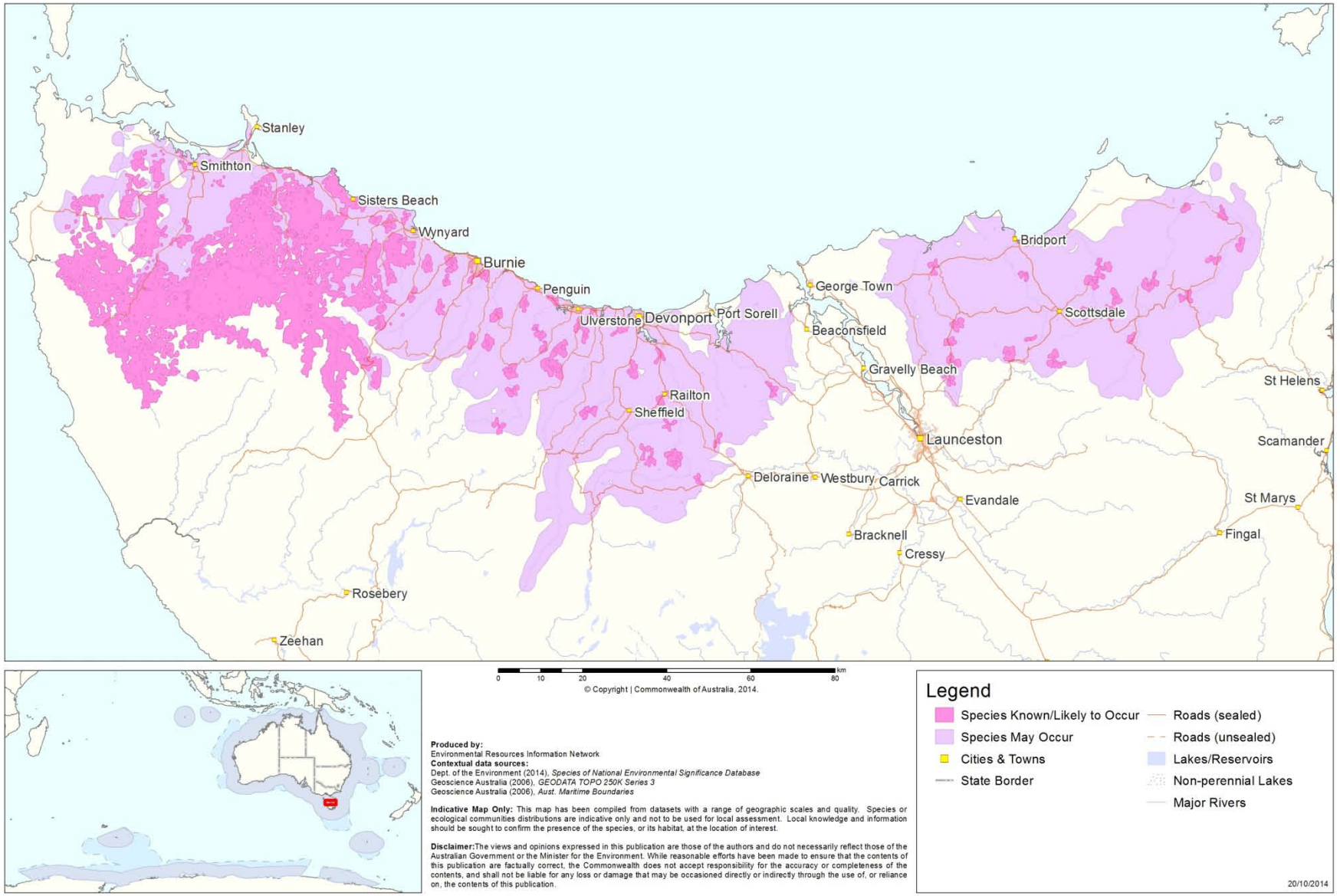
Localised extinctions, or large declines in numbers, of the Tasmanian giant freshwater lobster are thought to have occurred in the Welcome, Montagu, Rubicon, Don, Brid, Boobyalla, Pipers, Ringarooma, Duck, Little and Great Forester Rivers and Claytons Rivulet since European settlement in Tasmania. As a result, the species' distribution is thought to have become more disjunct.

The Tasmanian giant freshwater lobster has been introduced into two catchments: the North Esk catchment (St Patricks River) and the Derwent catchment (Clyde River), although the populations in these catchments are considered to be experimental and not ecologically functional.

The distribution maps in this document are based on the best available information at the time of publication and remain a static product. For the most up-to-date report of whether the Tasmanian giant freshwater lobster may occur in your project area, always use the Department's Protected Matter Search Tool.

[1] When considering whether or not your action will have a significant impact on the Tasmanian giant freshwater lobster, it is relevant to consider all adverse impacts from the action, including direct, indirect and offsite impacts such as downstream or downwind impacts, upstream impacts and facilitated impacts (impacts that result from further actions, which are made possible or facilitated by the action).

Map 1: Modelled distribution of the Tasmanian freshwater lobster (*Astacopsis gouldi*)



3. Could the impacts of your action affect habitat for the Tasmanian giant freshwater lobster?

According to the national recovery plan for the Tasmanian giant freshwater lobster, habitat critical to the survival of the species is any habitat which has a boulder or cobble substrate[2] and water temperatures ranging from approximately 5–18 °C[3]. Such habitats occur in flowing or still waters in any size of stream within the species' modelled distribution and are usually well shaded by native riparian vegetation.

Adults are typically found in still deep pools sheltering beneath undercut banks or snags (decaying logs), at least partly submerged in the water. They are also known to move through shallow riffle zones.

Juveniles inhabit the abovementioned environments and are also found in smaller tributaries and shallow fast-flowing streams. They favour habitats with large stable rocks or logs which are not embedded in finer substrates but which occur on coarser substrates and/or with a distinct cavity underneath.

In addition to the attributes of habitat critical to the survival of the species described in the recovery plan, the following aquatic conditions are considered within the Tasmanian giant freshwater lobster's normal tolerance range and are characteristic of its habitat:

- minimum dissolved oxygen concentrations of 6 ppm or 80% saturation[4]
- pH ranging from 4.5 to 8, and
- concentrations of chemical contaminants within minimum safe levels (trigger values) as indicated in the *Australian and New Zealand guidelines for fresh and marine water quality*: *Volume 1* (2000) (ANZECC guidelines) which is available on the Department's website at www.environment.gov.au/resource/australian-and-new-zealand-guidelines-fresh-and-marine-water-quality-volume-1-guidelines.

Further information on the habitat types in which the Tasmanian giant freshwater lobster occurs is provided in the SPRAT database.

[2] Substrates are defined as follows: boulder, greater than 200 mm in length, and cobble, 60–200 mm in length.

[3] The Tasmanian giant freshwater lobster prefers water temperatures at the lower end of this range. Webb (2001) found the species occupying streams with water temperatures up to 21 °C, however research by Hamr (1990a) and Lynch and Blühdorn (1997) found the species in streams in which maximum water temperatures did not exceed 18 °C. Forteath (1987) found that adult specimens were not tolerant of water temperatures exceeding 18 °C for several weeks. The Tasmanian Crayfish Workshop estimated that the species' minimum and maximum tolerance thresholds for water temperature in their aquatic habitats to be 4 ºC and 22 ºC respectively.

[4] 100% saturation or concentrations of 9–12 ppm of dissolved oxygen in surface freshwater environments are generally considered optimal for healthy populations or aquatic fauna. Based on the ANZECC 2000 guidelines and the State of the Environment Report 2009 (Tasmania), the minimum threshold for dissolved oxygen in freshwater streams in Tasmania is approximately 6 ppm or 80−90% saturation (determined under low-flow conditions over at least one 24-hour period). The Tasmanian Crayfish Workshop estimated that the species' tolerance threshold for low dissolved oxygen in their aquatic habitats to be 4 ppm.

4. Have you surveyed for the Tasmanian giant freshwater lobster using the recommended methods?

A guide to conducting surveys for the Tasmanian giant freshwater lobster in areas of suitable habitat is outlined below. Surveys should:

- be conducted by a suitably qualified person with demonstrated skill in freshwater crayfish surveys
- maximise the chance of detecting the species, and
- account for uncertainty and error (e.g. false absences).

The following survey methods are recommended to detect the Tasmanian giant freshwater lobster. Where it is not possible to conduct surveys in this manner, or to use equivalent, alternative methods, failure to detect the species should not be considered indicative of its absence.

Desktop survey

A search of the relevant literature and Commonwealth and state databases and maps will provide an indication of where the species or habitat critical to its survival may occur in relation to an area to be affected by a proposed action. Determine whether field surveys or habitat assessments are necessary based on the adequacy of the data gathered during the desktop survey. Note that, where the available information required to determine the likelihood of an action having a significant impact on the species is inadequate, additional information may be requested by the Department. This would result in a delay and extension of the 20-day referral decision timeframe.

Field survey

If it is determined that field surveys are required due to data deficiency, or if legal certainty is required, surveys can be conducted year-round. However, smaller individuals (less than 1 kg) are generally sampled more accurately in summer and larger individuals more accurately in winter.

Different survey methods are used for juveniles and larger crayfish (sub-adults and adults). Visual surveys are recommended for juvenile crayfish and trapping methods for sub-adults and adults. Generally, surveys should consist of a combination of trapping and visual surveys to reduce the risk of a false absence being recorded.

If the population structure (demographics) needs to be determined, three separate surveys at least three weeks apart are required. The optimal timing is to conduct the three surveys across three seasons (for example, summer, autumn and winter).

<u>Visual search – juvenile crayfish</u>

Visual searches are conducted by turning rocks in riffle zones and boulder/cobble areas, with a hand-net held downstream. The effort required can be determined by search area (minimum 250 m stretch of stream) or time (minimum four hours of survey). All rocks in the riffle/rocky substrate zone should be turned and then slowly returned to their original position, being careful not to crush any organisms which may be underneath. Note that juveniles are difficult to detect or catch in smaller tributaries.

Trapping – non-juvenile crayfish

Traps, ring nets and bait lines can be used (measures should be taken to avoid the capture or entanglement of platypus when using traps). Set six traps for a period of four hours over a half-kilometre stretch of river. Within this search area, traps should be placed in the most suitable habitat (deep pools, near large woody debris and overhangs).

Care should be taken to minimise the disturbance of habitats during surveys for the Tasmanian giant freshwater lobster. The species can suffer from shock when water temperatures decrease about 10 °C as a result of cold weather changes so avoid trapping during or after such weather events. Permits are needed to conduct surveys for the species. Contact the Tasmanian Department of Primary Industries, Parks, Water and Environment (www.dpipwe.tas.gov.au) and the Inland Fisheries Service (www.ifs.tas.gov.au) for further information and permits.

5. Could your action have an impact on an important population of the Tasmanian giant freshwater lobster?

Important populations are necessary for a species' long-term survival and recovery because they support and maintain breeding, dispersal and genetic diversity across the species' distribution. Therefore, important populations are an essential consideration when assessing impacts on a vulnerable species.

A population of the Tasmanian giant freshwater lobster is an 'important population' if it is:

- a key source population for breeding or dispersal within a river system or catchment
- necessary for maintaining genetic diversity, or
- near the limit of the species' range.

All Tasmanian giant freshwater lobster populations occurring in habitats critical to the survival of the species are considered to be important populations. The national recovery plan for the Tasmanian giant freshwater lobster identifies locations (rivers and catchments) in which important populations occur.

6. Could your action have an impact on the species in any other way?

In addition to having an impact on important populations of the Tasmanian giant freshwater lobster, you might have an impact on the species in its entirety. In contrast, you might not have an impact on an important population but you may have an impact on the species by other means. For example, an impact on the species may result by facilitating the spread of disease, or invasive or predatory species, or by destroying or modifying unoccupied but optimal habitat which may be critical to the long-term survival of the species. Any action which may directly or indirectly result in any of these sorts of effects is likely to have a significant impact on the species.

For further information on significant impact criteria, refer to page 11 of Significant Impact Guidelines 1.1. Section 8 of this document provides some further guidance on how the significant impact criteria may be applicable to the impacts of your proposed action.

7. Is your impact mitigation best practice so that it may reduce the significance of your impacts?

When designing your proposed action, avoiding impacts on the Tasmanian giant freshwater lobster should be your principal aim. This can be achieved by retaining habitat and preserving populations of the Tasmanian giant freshwater lobster. If you believe that options to retain habitat and preserve populations are not possible, then you should mitigate any remaining impacts.

Table 1 outlines the main threats to the Tasmanian giant freshwater lobster, the associated impacts and measures to reduce the level of impacts. It is not intended to be exhaustive or prescriptive.

Impact-mitigation should be monitored to ensure that it is effective and to allow for adaptive management responses.

The Department sometimes considers a translocation of a listed threatened species in relation to an action referred for assessment and approval under the EPBC Act, primarily when it is proposed to be on a temporary basis. Refer to the Department's policy statement on the translocation of listed threatened species, which is available on the Department's website at www.environment.gov.au/resource/epbc-act-policy-statement-translocation-listed-threatened-species-assessment-under-chapter.

Table 1: Primary threats, impacts and mitigation

Threat	Impact	Mitigation
Reduced water quality (through actions such as the removal of riparian vegetation, channel alterations, bridge constructions or upgrades, releases from water storages or pesticide applications)	• Reduced habitat suitability due to altered sediment levels, oxygen levels, temperature and pH of the water • Mortality due to pesticides and other chemicals	• Establish or maintain a buffer of at least 30 m of natural vegetation along the length of streams known to support Tasmanian giant freshwater lobster populations. • Use effective erosion controls and sediment traps to prevent siltation of habitat. • Release water from large dams in a manner that minimises thermal pollution or deoxygenation of the aquatic environment (for example, multi-level takeoff and remixing). • Maintain water quality to the ANZECC guidelines (www.environment.gov.au/resource/australian-and-new-zealand-guidelines-fresh-and-marine-water-quality-volume-1-guidelines). • Avoid aerial spraying near watercourses. All aerial spraying should follow the DPIPWE Code of Practice for aerial spraying June 2000 (http://dpipwe.tas.gov.au/agriculture/agvet-chemicals/codes-of-practice-guidelines-and-information-sheets/codes-of-practice/code-of-practice-for-aerial-spraying). • Follow Forestry Tasmania's Keeping It Clean field hygiene manual.
Habitat degradation (through actions such as the removal of in-stream woody debris or the crossing of streams by livestock or with machinery)	• Loss of in-stream habitat such as woody debris • Loss of breeding habitat (riffles) • Loss of boulder/cobble habitat which protects juveniles from predation • Loss of riparian vegetation	• Where feasible, re-align in-stream debris rather than removing from the stream. • Follow the Tasmanian DPIPWE willow management guidelines (dpipwe.tas.gov.au/invasive-species/weeds/weeds-index/weeds-index-declared-weeds/willows) when removing willows from streams. • Avoid stock access to streams and stream banks. Fence new agricultural land from stream banks Provide off-stream stock watering points. • Avoid machinery crossings in boulder/cobble riffles. Where necessary, place machinery crossings in areas of streams where the substrate is predominantly pebbly[2]. • Follow the Forest Practices Code [Forest Practices Board (2000), Tasmania] for stream crossings (www.fpa.tas.gov.au/__data/assets/pdf_file/0020/58115/Forest_Practices_Code_2000.pdf).
Water extraction or changes to flows	• Loss of habitat • Direct mortality of individuals	• Maintain the existing hydrology of the local catchment area. • Set and provide for minimum environmental flows.
Fragmentation (barriers to movement and dispersal including altered water velocity)	• Reduced ability to recolonise areas • Reduced gene flow between populations	• Avoid the use of pipe culverts where possible. Where required, use appropriate culvert and stream crossing design to allow movement (for example, inverted U design with substrate equivalent to, and level with, the adjacent streambed). • Incorporate measures on weirs to facilitate the passage of lobsters.
Illegal fishing and invasive species	• Direct mortality of individuals • Predation and competition from introduced aquatic species such as the common yabby (*Cherax destructor*) and redfin perch (*Perca fluviatilis*)	• Use access restrictions to limit the risk of illegal fishing. • Discourage and report illegal fishing. • Implement quarantine protocols where appropriate to reduce the risk of introducing exotic species.

8. Could your action require a referral to the Minister for significant impacts on the Tasmanian giant freshwater lobster?

It is your responsibility to decide whether or not to refer your action to the Minister. If you believe your action is likely to have a significant impact on the Tasmanian giant freshwater lobster, you must refer. If you are uncertain whether your action will have a significant impact on the Tasmanian giant freshwater lobster, you may still refer for legal certainty or contact the Department. Table 2 provides guidance on what may be at high to low risk of requiring a referral to the Department, and where uncertainty may exist. This guidance is not intended to be comprehensive. Other types of actions or impacts may constitute varying degrees of risk.

Table 1: Referral guidelines

High risk of significant impacts on the Tasmanian giant freshwater lobster: referral recommended
Actions in habitats where important populations occur that may result in: • a measurable and statistically-significant addition of sediment (silt and small gravel) to the aquatic habitat over the long-term (one year or more) relative to up-stream “control” values • the alteration of water temperature to or outside the extremes of 4 ºC and 22 ºC • dissolved oxygen in water being lower than 4 ppm • an alteration of the pH outside the range of 4.5–8 • the loss of minimum water flows through the habitat • chemical concentrations in the water in the habitat in water outside of ANZECC water quality guidelines • any permanent barrier to in-stream movement of individuals (includes changes to water velocity that impede in-stream movement) • the removal of the main trunk of in-stream woody debris • the removal of embedded debris • the removal of vegetation within 30 m of a stream bank.
Uncertainty: referral recommended or contact the Department
Actions in habitats where important populations occur that may result in: • a measurable and statistically-significant addition of sediment (silt and small gravel) for a short term (less than one year) relative to up-stream “control” values • the alteration of water temperature outside the normal seasonal variation (5–18 ºC) • dissolved oxygen in water being lower than 6 ppm • the increased chance of the introduction or establishment of predatory or competitive species • the introduction of captive-bred individuals, which may be vectors for disease, into wild populations • a temporary displacement of individuals from their habitat (e.g. a translocation of lobsters during a bridge construction or upgrade).

Low risk of significant impacts on the Tasmanian giant freshwater lobster: referral may not be required but you may refer for legal certainty
• Actions that will not directly or indirectly affect Tasmanian giant freshwater lobster important populations, suitable habitat or the species as a whole • Actions that occur outside the modelled distribution of the Tasmanian giant freshwater lobster