



Review of the *Environmental Protection (Western Swamp Tortoise Habitat) Policy 2011*

Environmental Protection Authority

June 2026

Cover page photos: Top: Ellen Brook Nature Reserve (Photo by Yvonne Thomson). Middle: A Western Swamp Tortoise (Courtesy Friends of the Western Swamp Tortoise) Bottom: Water body in Ellen Brook Nature Reserve with fyke net to capture and monitor tortoise by Department of Biodiversity, Conservation and Attractions.

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1. Introduction

The *Environmental Protection (Western Swamp Tortoise Habitat) Policy 2011* (WST EPP 2011) has been reviewed by the Environmental Protection Authority (EPA) in accordance with section 36 of the *Environmental Protection Act 1986* (EP Act), which requires the EPA to periodically review Environmental Protection Policies (EPP) and report to the Minister for the Environment on whether the EPP should be continued without change, amended, or revoked.

This review report provides the key elements of the review and an overview of the draft revised policy to help support the public consultation process.

1.1 History of the Western Swamp Tortoise EPP

The EPA first identified the need for the protection of the Western Swamp Tortoise (*Pseudemydura umbrina*) habitat in its *EPA Redbook Recommended Conservation Reserves 1976-1991*. In 1983, the EPA recommended protective buffers surrounding the Ellen Brook and Twin Swamps Nature Reserves, and in 1993 the EPA wrote to the Minister for the Environment proposing an EPP to provide for these buffers. The first WST EPP, *Environmental Protection (Western Swamp Tortoise Habitat) Policy 2002*, was gazetted on 18 February 2003.

In 2010, the EPA conducted a statutory review of the 2002 EPP resulting in a largely unchanged new EPP published on 14 February 2012 (the WST EPP 2011). The current review was initiated in 2019. To enable the scientific input required to support the revision of the policy and allow time for the necessary parliamentary drafting, the review was deferred by the Minister for the Environment.

1.2 Policy area

The policy area is in the Upper Swan and Bullsbrook region northeast of Perth, Western Australia and comprises the land identified in Schedule 2 of the EPP, and includes:

- the Ellen Brook Nature Reserve
- the Twin Swamps Nature Reserve
- land acquired by Department of Biodiversity, Conservation and Attractions (DBCA), for habitat management
- surrounding land outside of the managed nature reserves that is important to the survival of the species
- roads within the policy area.

The policy area is largely rural, with some industrial and commercial land uses.

2. Importance of the Western Swamp Tortoise EPP

The EPP was developed to protect the habitat critical to the survival of the only naturally occurring population of the Western Swamp Tortoise remaining in the wild. The Western Swamp Tortoise relies on both aquatic and terrestrial environments during its life cycle and is therefore vulnerable to degradation and loss of habitat. The EPP guides activities within the

policy area to avoid and minimise adverse impacts, listing activities that may be detrimental to or degrade Western Swamp Tortoise habitat, including through habitat loss and degradation, changes to hydrology and water quality, predation and fire.

This section outlines the importance of the EPP in supporting the survival of the Western Swamp Tortoise. It describes the species' conservation and population status, the critical role of habitat protection, and the way the EPP provides a statutory framework to manage activities, and land uses that may degrade habitat values.

2.1 Conservation status and species significance

The Western Swamp Tortoise is one of Australia's most endangered vertebrate species. It is listed as Critically Endangered under both the State *Biodiversity Conservation Act 2016* (BC Act) and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act); as well as the *2007 IUCN Red List of threatened species*, reflecting its extremely high risk of extinction in the wild. It is also listed as a species threatened with extinction under the United Nations *Convention on International Trade of Endangered Species*.

Despite long-standing conservation efforts, the species continues to face multiple and overlapping threats. These include ongoing loss and degradation of habitat within and around the policy area; climate change impacts that reduce the duration of standing water and quality of wetlands; changes to water quality and quantity; fires; predation; vehicle and machinery strike. Additional pressures arise from groundwater extraction and associated impacts, existing and future land uses and activities, including agricultural, industrial and business operations; and potential development, including urban and light industrial development. Predation remains a significant risk, alongside illegal take (poaching) and the loss of genetic diversity associated with the species' very small population size.

Given the species' Critically Endangered conservation status, small population size and ongoing exposure to multiple interacting threats, statutory protection of habitat and controls on activities that may degrade the habitat are important for its survival. The EPP provides a key mechanism to deliver this protection by safeguarding environmental values across the policy area and guiding land-use decision-making and on-ground activities.

2.1.1 The current tortoise population

Less than 100 tortoises were recorded in the policy area in recent surveys undertaken by the DBCA, who recorded 70 individual tortoises at Ellen Brook Nature Reserve in 2023 and 21 individuals at Twin Swamps Nature Reserve in 2024. Monitoring of the Western Swamp Tortoise population is undertaken using several methods, including counts of individuals known to be alive (KTBA) and radio-tracking. Due to the difficulty in capturing individuals, varying intensity of monitoring, and releases of captive-bred animals, KTBA figures represent an estimate and are not an accurate indicator of population size.

Ellen Brook Nature Reserve contains the only known original wild-born individuals and their progeny, although given monitoring limitations, it is possible that wild-born individuals remain at Twin Swamps Nature Reserve. Following a population decline at Twin Swamps in the 1990s, groundwater supplementation throughout winter and spring, combined with the release of 272 captive-bred juveniles between 1994 to 2015, temporarily increased the size of the sub-population.

The Western Swamp Tortoise population continues to be supported by a long-running breeding program at Perth Zoo, which commenced in 1988. Perth Zoo's captive breeding facility currently houses around 150–200 Western Swamp Tortoises. Since 2003, additional insurance populations have been established at Adelaide Zoo and Monarto Safari Park to safeguard against sudden loss or significant decline of the Perth Zoo colony.

Outside the policy area, there have been sub-populations established at Moore River and other trial sites, including Scott National Park. These translocation sites are managed and maintained by DBCA to ensure the long-term viability of the species.

Without the recovery program, including habitat protection, captive breeding and population supplementation, the Western Swamp Tortoise would have likely become extinct.

Further information on the Western Swamp Tortoise's life history, distribution and population is provided in the *Western Swamp Tortoise (Pseudemydura umbrina) Recovery Plan*, published by the former Department of Environment and Conservation (DEC) (now DBCA): [Western swamp tortoise \(Pseudemydura umbrina\) recovery plan - DCCEEW](#).

2.2 Importance for habitat protection

The Western swamp tortoise has specialised habitat requirements and an extremely limited natural distribution, making its survival closely dependent on the protection and management of remaining suitable habitat. The species relies on networks of seasonal wetlands and surrounding terrestrial areas to support feeding, breeding, nesting and aestivation across its life cycle. Disruption to wetland hydrology, loss of habitat connectivity or incremental encroachment from surrounding land uses can therefore have immediate and significant impacts on population viability.

The importance of protecting Western swamp tortoise habitat has long been recognised by the EPA, including the need to protect not only wetland areas but also adjacent buffer zones essential for maintaining hydrological function and reducing external pressures. Given the species' sensitivity to climate change, altered water regimes and disturbance, habitat protection across the entire policy area remains fundamental to preventing further decline and supporting long-term recovery.

Protecting the habitat values requires not only their identification and management, but also the management of activities and land uses that have the potential to degrade them—functions that together underpin the purpose and operation of the EPP.

The WST EPP area is declared as an Environmentally Sensitive Area under the EP Act.

2.2.1 Habitat management areas and reserves

The policy area is comprised of networks of seasonal, ephemeral freshwater wetlands and surrounding upland areas, including nature reserves and habitat management areas managed by the DBCA (Figure 1). Wetlands provide essential feeding and breeding habitat during the wetter months, while adjacent terrestrial areas support nesting and aestivation during the dry summer period, when wetlands typically dry out by mid-October to November.

The two primary reserves within the policy area; Ellen Brook Nature Reserve and Twin Swamps Nature Reserve, differ in hydrological characteristics but are both sensitive to changes in climate, hydrology and disturbance. The Ellen Brook Nature Reserve contains

wetlands that are primarily rainfall-driven (Smith and Shams 2002) and characterised by clayey soils that contribute to its hydroperiods, with suitable aestivation habitat also provided within the reserve.

The Twin Swamps Nature Reserve is dependent on groundwater connectivity; these wetlands are underlain by largely impermeable claypans that are influenced by groundwater conditions within the Gngangara system (Muirden 2019).

A drying climate and increasing temperatures have reduced wetland hydroperiods for both reserves found within the EPP, constraining opportunities for reproduction and juvenile survival along with increasing the tortoise's vulnerability to disturbance. To ensure there is sufficient water for the tortoises, the wetlands within Twin Swamps Nature Reserve have required supplementation by groundwater since 1994.

Disturbance events, including wildfire, can exacerbate these pressures by degrading habitat condition and vegetation structure. As a result, active management is required to maintain habitat suitability and reduce risk. Detailed descriptions of habitat characteristics, threats, management interventions and monitoring programs are provided in the DBCA Western Swamp Tortoise Recovery Plan, which remains the primary instrument guiding species-specific conservation and recovery actions.

Habitat outside the formal reserve system also plays an important role by facilitating movement between wetlands and buffering core habitat from surrounding land uses. The Western Swamp Tortoise can travel considerable distances both on land and through water to forage, find shelter, and breed. The broader EPP area also functions as an important buffer from surrounding land uses, helping to minimise development pressures and reduce the risk of adverse impacts on habitat condition beyond areas managed by DBCA. Protection of habitat across the entire policy area is therefore critical to the long-term survival of the species.

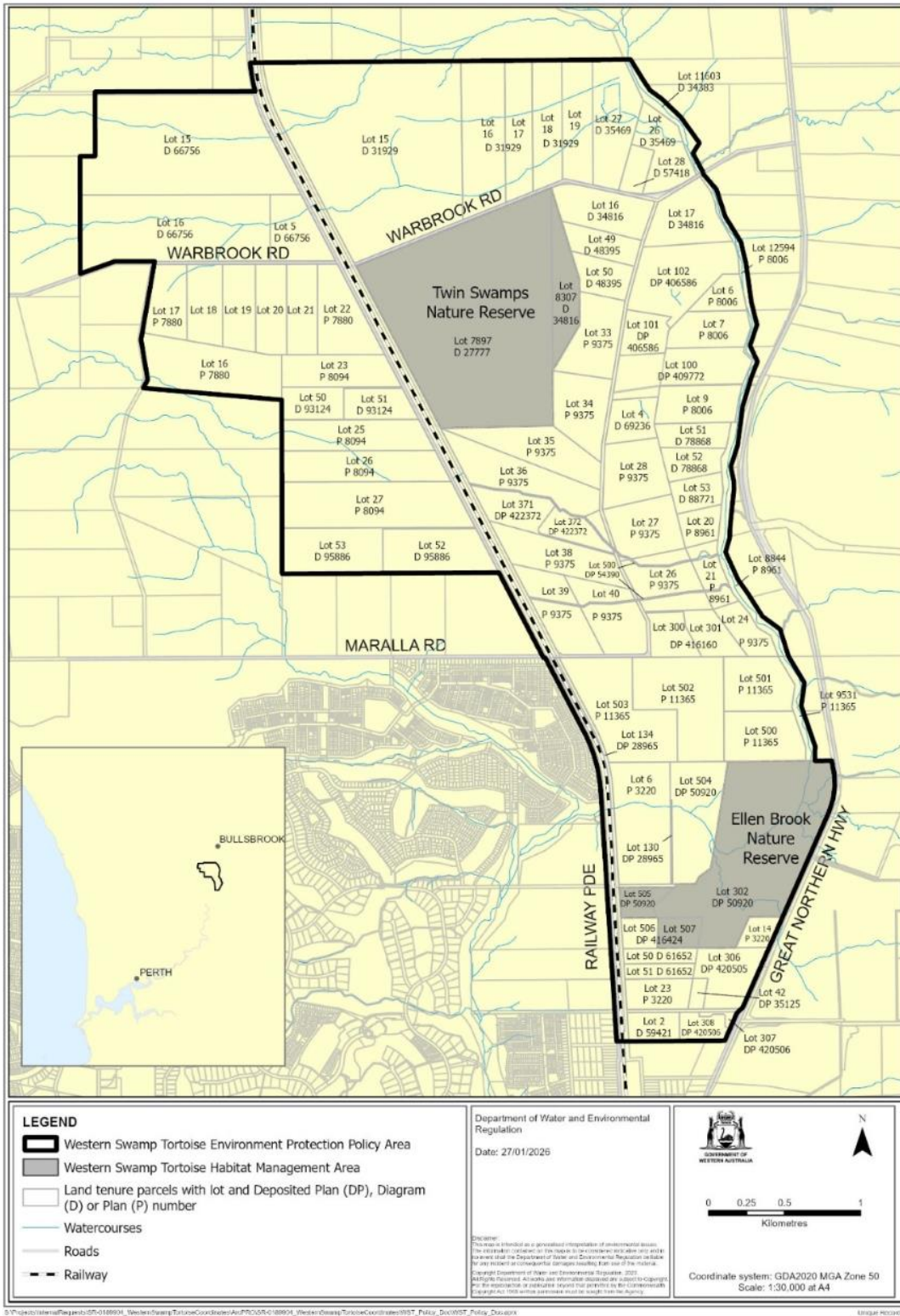


Figure 1. Environmental Protection (Western Swamp Tortoise Habitat) Policy Area

3. Proposed amendments to the Western Swamp Tortoise EPP

The review of the WST EPP 2011 has considered the latest scientific information available on the Western Swamp Tortoise (through ongoing consultation with DBCA), land developments and threatening processes that have occurred since the policy was last reviewed. The review also assessed the effectiveness of the existing EPP in protecting habitat values.

Overall, the EPA concluded that additional measures are required to better protect habitat and manage both existing and emerging pressures on the Western Swamp Tortoise and its habitat.

In response, the EPA proposes amendments to the EPP that focus on improving its implementation and effectiveness and providing improved protection for Western Swamp Tortoise habitat.

The draft *Environmental Protection (Western Swamp Tortoise Habitat) Policy 2026* gives effect to these proposed changes, as outlined in this section, to support the long-term protection and recovery of the Western Swamp Tortoise.

3.1 Key changes

3.1.1 Strengthening recognition and protection of habitat in the EPP area

Consideration

The existing EPP does not make it clear that the Western Swamp Tortoise habitat includes the policy area outside of the Twin Swamps and Ellenbrook Nature Reserves.

Key changes

The revised EPP provides improved clarity to ensure that the whole EPP area is recognised as habitat and requires a high level of protection for the survival of the Western Swamp Tortoise, not solely the land within nature reserves. This includes:

- alignment of the definition of “habitat” with the BC Act to explicitly recognise:
 - areas occupied continuously, periodically or occasionally by the Western Swamp Tortoise, and
 - areas once occupied continuously, periodically or occasionally by the Western Swamp Tortoise.

3.1.2 Importance of hydrology and hydrological processes

Consideration

The existing EPP included limited explicit consideration of hydrology and hydrological processes, particularly groundwater. This is particularly important given the increasing importance of protecting the hydrology, water quality, ecological function and ecological condition of the Western Swamp Tortoise habitat particularly those aspects impacted by threatening processes such as climate change.

Key changes

The draft revised EPP expands on aspects relating to hydrology to ensure these are considered in protection of the habitat. This includes:

- explicit reference to hydrology, hydrological processes and groundwater, particularly focused on protection of the habitat and ecosystem health conditions.
- a definition of hydrology (refer to Background and Part 1 – Terms used).

3.1.3 Latest scientific and management information for the Western Swamp Tortoise

Consideration

Close consultation with DBCA throughout the revision of the EPP has ensured consideration of the latest available scientific and management information be applied to the review of the WST EPP 2011.

Key changes

To ensure the revised draft EPP reflects the current understanding of the Western Swamp Tortoise and its habitat, the following changes have been included:

- updates to terminology, including a definition of ‘aestivation’ (refer to Background and Part 1 – Terms used)
- amendments to reflect the latest scientific and management information underpinning the Western Swamp Tortoise Recovery Plan to ensure the draft revised EPP complements the recovery plan in the recovery and protection of the tortoise. These are discussed further in the relevant sections (3.1.1 – 3.1.6).

3.1.4 Compatibility of development and activities with the protection of the Western Swamp Tortoise habitat

Consideration

Development of activities within and surrounding the EPP area have the potential to impact the environmental values within the EPP area and protections need to be strengthened given existing and potential threats and pressures.

Key changes

- amendments to ensure consideration is given to the potential impacts of development and activities in areas within and surrounding the EPP area, and is compatible with the protection of Western Swamp Tortoise habitat, including:
 - a revised list of activities based on considerations such as incidents occurring in the EPP area that have demonstrated risk to the Western Swamp Tortoise habitat
 - review of clause 9 (Part 3) – to ensure public authority decisions and actions consider impacts on environmental values in the EPP area.

3.1.5 Declaration of environmental values

Consideration

The WST EPP 2011 required the protection of beneficial uses of the Western Swamp Tortoise habitat but did not provide adequate information to enable implementation.

Key changes

Environmental values have been expanded to include ecosystem health conditions in addition to a revised set of beneficial uses. This expands the environmental quality objective to be more consistent with the EP Act; provides more guidance in relation to protecting the Western Swamp Tortoise habitat; and strengthens the basis for decision-making and enforcement under the EPP. The environmental values are:

Beneficial uses

- its use as a habitat for wild populations of the Western Swamp Tortoise, with suitable places for the tortoises to move around on land and in water, forage for food, find shelter, breed and aestivate
- its use for habitat and species management to support the long-term survival of the tortoise
- its use as a resource for studying wild populations of the tortoise and the habitat critical to their survival in the wild, including to inform future decisions about managing the tortoise and its habitat through a process of adaptive management
- its use as a basis for conserving biodiversity and ecological integrity and maintaining a diverse natural environment for present and future generations.

Ecosystem health conditions

The condition of the following aspects of the ecosystem of the EPP area relevant to maintaining and improving the ecological structures, functions and processes that are critical for the long-term survival of wild populations of Western Swamp Tortoise:

- habitat that is suitable for the tortoise to move around on land and in water, forage for food, find shelter, breed and aestivate
- the hydrology and water quality of the surface water, wetlands and groundwater
- the quality of the land and soil
- the extent, quality and connectivity of native vegetation, including seasonal ephemeral wetland, riparian and restored native vegetation that provides habitat for the Western Swamp Tortoise
- the extent of the aquatic fauna that provide food for the Western Swamp Tortoise.

3.1.6 Policy area map and description

Consideration

A review and update of the policy area map was needed to reflect current habitat areas and contemporise the mapping of the area.

Key changes

The map of the policy area has been updated (Figure 1) to include:

- 'habitat management areas' as defined in the draft revised EPP, incorporating the nature reserves and lots 505 and 507
- deposited plan references and provide an accompanying table (Schedule 2) in place of a list of coordinates.

3.2 Why were these changes made and what do they mean for me?

The changes made in this review of the WST EPP aim to improve the implementation of the EPP and better protect the WST habitat. They consider pressures surrounding the EPP area, and the latest science available relating to the habitat, climate and hydrology.

Landowners, public authorities and the broader community should familiarise themselves with the objectives, environmental values and relevant provisions of the draft *Environmental Protection (Western Swamp Tortoise Habitat) Policy 2026*, to support the avoidance or minimisation of potential impacts on the Western Swamp Tortoise and its habitat.

4. Other considerations during the review

4.1 EPP boundary

The review considered a change to the EPP boundary to reflect potential habitat areas for the Western Swamp Tortoise outside the current boundary. A wetland located on the southwestern boundary of the EPP has been identified as ancillary habitat for potential Western Swamp Tortoise drought refuge. However, the review concluded that no boundary changes were needed as part of this review, as the portion of the wetland outside the policy area (the northern portions of Lots 29-32 Maralla Road) could be protected through other mechanisms such as the North Ellenbrook District Structure Plan East. Metropolitan Regional Scheme Amendment 1411 proposes to zone this wetland area as 'Local Reserve' to create a contiguous reserve area 18.8 ha reserve across Lots 29-32, providing habitat for the Western Swamp Tortoise. The EPA in its determination not to assess the MRS Amendment under Part IV of the EP Act cited the proposed North Ellenbrook District Structure Plan East and amendments to the local planning scheme to provide for the protection of this area identified as potential ancillary habitat for the Western Swamp Tortoise.

5. Recommendations resulting from the review

In addition to the proposed amendments to the EPP, the review has identified a small number of actions that would further support the protection and long-term recovery of Western Swamp Tortoise habitat:

- undertake regular monitoring of water quality and quantity within and upgradient of the EPP area, with particular focus on wetlands within the Nature Reserves and the identified drought refuge wetland
- progress further research to support adaptive habitat management, including:
 - improved understanding of environmental water requirements (EWRs) for wetlands in the Twin Swamps and Ellenbrook Nature Reserves under a warming climate
 - identification of supplementation requirements
 - implementation of supplementation at Ellen Brook Nature Reserve, if required.

6. Next steps in review process

Following the public consultation period, submissions will be considered by the EPA (refer to the EPP Process flow chart in Appendix 1). Any changes to the draft policy will then be progressed, with the revised draft EPP prepared by Parliamentary Counsel Office and submitted with an accompanying report to the Minister for the Environment.

If approved by the Minister, an approval order will be published in the *Western Australian Government Gazette*, giving effect to the revised Western Swamp Tortoise EPP.

7. Supporting documents for the EPP

The following documents provide supporting information for the EPP and are available on the EPA's website:

- *Guidance for the Assessment of Environmental Factors No. 7. Protection of the Western Swamp Tortoise Habitat, Upper Swan/Bullsbrook* (Environmental Protection Authority, 2006).
- DBCA's Western Swamp Tortoise (*Pseudemydura umbrina*) Recovery Plan.

8. References

Environmental Protection Authority 2006, *Guidance for the Assessment of Environmental Factors No. 7. Protection of the Western Swamp Tortoise Habitat, Upper Swan/Bullsbrook*, Environmental Protection Authority, Western Australia.

Burbidge, A. A., Kuchling, G., Olejnik, C., & Mutter, L 2010, *Western Swamp Tortoise (Pseudemydura umbrina) Recovery Plan* (Wildlife Management Program No. 50). Department of Environment and Conservation.

Muirden, P. 2019, *Impact on hydrology of western swamp tortoise sites under climate change*. Unpublished report, DBCA Swan Coastal District.

Smith, R. A., and Shams, R. 2002, *Hydrogeological information for management planning in the Ellen Brook catchment: Western Australia*. Water and Rivers Commission, Salinity and Land Use Impacts Series Report No. SLUI11.

Appendix 1

EPP Review process flow chart

