Annex G Operational Environmental Management Plan

Operational Environmental Management Plan

Sassafras Wesley Vale Irrigation Scheme Augmentation (SWISA)

EPBC Number: 2023/09666

Tasmanian Irrigation

Project details

Project name:	Sassafras Wesley Vale Irrigation Scheme Augmentation
EPBC Number:	2023/09666
Location:	Northwest Tasmania (Sassafras, Harford, Thirlstane, Moriarty, Wesley Vale, Northdown, Pardoe, East Devenport)

Proponent details

Proponent:	Tasmanian Irrigation Pty Ltd
Responsible person:	Sophie Grace
ABN:	95 722 799 075
CAN	133 148 384

Declaration of accuracy

In making this declaration, I am aware that section 491 of the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act) makes it an offence in certain circumstances to knowingly provide false or misleading information or documents to specified persons who are known to be performing a duty or carrying out a function under the EPBC Act or the *Environment Protection and Biodiversity Conservation Regulations 2000* (Cth). The offence is punishable on conviction by imprisonment or a fine, or both. I am authorised to bind the approval holder to this declaration and that I have no knowledge of that authorisation being revoked at the time of making this declaration.

Signed: 

Full name: Sophie Grace

Organisation: Tasmanian Irrigation Pty Ltd

Date: 27/03/2025

Version	Date	Author	Reviewer	Comments
01	30/01/2025	Josie Kelman	Charles Livesey/Sophie Grace	Submitted to DCCEEW on 30/01/2025
02	27/03/2025	Josie Kelman	Charles Livesey	Submitted to DCCEEW on 27/03/2025 Addressing the DCCEEW Preliminary Documentation Review Comment Sheet 12 February 2025

Version	Date	Author	Reviewer	Comments
03	21/05/2025	Dan Probert	Charles Livesey	Submitted to DCCEEW 21/05/2025 Addressing DCCEEW PD Review Comments 28/03/2025

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Glossary and definitions

Abbreviation	Definition
ABS	Australian Bureau of Statistics
Active eagle nest	Any Tasmanian Wedge-tailed Eagle nest, unless the nest site has had an activity check conducted by either the Forest Practices Authority or a suitably qualified eagle specialist and determined to be inactive.
Aerial nest search	An aerial search conducted using helicopters to identify and record the location of Tasmanian Wedge-tailed Eagle nests. All aerial nest searches must be undertaken between 1 March and 30 June of any given year, and in accordance with the document Fauna Technical Note 1: Eagle Nest Searching, Activity checking and Nest Management (FPA, 2024).
AHT	Aboriginal Heritage Tasmania
ASL	Above Sea Level
ASS	Acid sulphate soils
BCR	Benefit Cost Ratio
BPS	Booster Pump Station
BSA	Tasmanian Biosecurity Act 2019
CEMP	Construction Environmental Management Plan
CEP	Construction Environmental Plan

Abbreviation	Definition
CET	Construction Environmental Table
CNBC	Central north burrowing crayfish
Construction Project Area	A 50m buffer around the pipeline alignments, pump stations and balance tanks that were used as the basis of field surveys. This was supplemented by other targeted surveys as part of specific technical ecological reports. This is the same as the Survey Area.
Daylight hours	The period between one hour after dawn and one hour before dusk.
DBH	Diameter at Breast Height
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DFTD	Devil Facial Tumour Disease
DGV	Default guideline values
DICL	Ductile Iron Cement Lined
DOB	Eucalyptus obliqua dry forest
DOL	Direct on-line
DOV	Eucalyptus ovata forest and woodland
DOW	Eucalyptus ovata heathy woodland
DSC	Eucalyptus amygdalina - *Eucalyptus obliqua* damp sclerophyll forest
e-flow	Environmental flow
EMPCA	Tasmanian Environmental Management and Pollution Control Act 1994
EOI	Expression of Interest
EPBC Act	Environmental Protection and Biodiversity Conservation Act 1999 (Cth)
EPR	Environment Protection Requirement
ESCP	Erosion and Sediment Control Plan
Exclusion Zones	Areas containing identified values and required buffer within which no works are permitted. Exclusion Zones will not be impacted by construction or maintenance activities. These must be appropriately field delineated and flagged.
Farm WAP	Farm Water Access Plan means…
FTE	Full Time Equivalent
GA	General Availability
GBPS	Great Bend Pump Station
GGF	Green and gold frog
ha	Hectare
HDD	Horizontal directional drilling
HDPE	High-density polyethylene
HV	High Voltage
HVAC	Heating, ventilation, and air-conditioning

Abbreviation	Definition
IFT	Issue for Tender
IRR	Internal Rate of Return
km	Kilometre
L/s	Liters per second
LGA	Local Government Area
LUPA Act	Land Use Planning and Approvals Act 1993
LV	Low Voltage
m	Meter
Maintenance	Refers to the systematic and routine activities carried out to ensure the optimal performance, reliability, and longevity of irrigation infrastructure. This includes regular inspections, cleaning, repairs, and replacements of components such as pumps, pipes, valves, and control systems. Its purpose is to prevent breakdowns, minimize downtime, and ensure efficient water delivery.
ML	Megalitre (one million litres)
MNES	Matters of National Environmental Significance
MVA	Mega-volt amperes
NAD	Acacia dealbata forest
NAF	Acacia melanoxylon swamp forest
NBES	North Barker Ecosystem Services
NC Act	Nature Conservation Act 2002 (Tas)
Nest activity assessment	Refers to a check of known eagle nests by a suitably qualified eagle specialist during the eagle management constraint period to determine the activity status of the nest. Eagle nest surveys must be undertaken in the breeding season, with timeframes informed by either the FPA or a suitably qualified eagle specialist (optimal timeframes for assessment are typically around October/November.
Night-time hours	The period between one hour before dusk and one hour after dawn.
NME	Melaleuca ericifolia swamp forest
NPV	Net Present Value
NRE Tas	Department of Natural Resources and Environment Tasmania
NVA	Natural Values Atlas
OEMP	Operational Environmental Management Plan
Operational Area	This is the same as the Irrigation District. Includes all land within properties that may purchase SWISA water, including relevant buffer zones around non-irrigable land that may contain natural values. It also represents the boundaries for the application of this Operational Environmental Management Plan.
PO	Property Outlet
Prequalified Farm WAP Consultant	A person approved by the Minister in accordance with the Water Management Act 1999 (Tas) and the Farm WAP Framework who has: • Appropriate tertiary qualifications or documented equivalent experience in water management, water use efficiency and water quality. • Appropriate tertiary qualifications or documented equivalent experience in soil science and its relationship to agriculture.

Abbreviation	Definition
	• Appropriate tertiary qualifications or documented equivalent experience in flora, fauna and terrestrial and aquatic ecology.
SAV	Surge Anticipation Valve
SBPS	Sassafras Booster Pump Station
SCADA	Supervisory Control and Data Acquisition
SEIFA	Socio-Economic Index for Areas
SHBT	Saggers Hill Balance Tank
SPIBA	Swift parrot important breeding area
SPRAT	Species Profile and Threat
Suitably qualified eagle specialist	A person who has attended and passed an eagle management course organised or approved by the Forest Practices Authority with at least five years' experience in eagle nest management.
Suitably qualified ecologist	A person with relevant professional qualifications and: • at least three years of experience writing, implementing and reporting on management plans for the habitat of protected matters, • has implemented and reported on management plans for the habitat of protected matters and can demonstrate the implementation of those plans achieved the desired habitat quality for habitat of protected matters.
Suitably qualified wildlife carer	A person who has attended wildlife rescue training through a certified training agent (e.g. WIRES or Bonorong Wildlife Sanctuary).
Survey Area	A 50m buffer around the pipeline alignments, pump stations and balance tanks that were used as the basis of field surveys. This was supplemented by other targeted surveys as part of specific technical ecological reports. This is the same as the Construction Project Area.
SWIS	Sassafras Wesley Vale Irrigation Scheme (EPBC 2010/5237).
SWISA / the Project	Sassafras Wesley Vale Irrigation Scheme Augmentation
TEC	Threatened ecological community
TI	Tasmanian Irrigation Pty Ltd
TI	Tasmanian Irrigation Pty Ltd
TPZ	Tree Protection Zone
TSP Act	Threatened Species Protection Act 1995
TWL	Top of water level
WBR	Eucalyptus brookeriana wet forest
WTE	Tasmanian Wedge-tailed Eagle
WVI	Eucalyptus viminalis wet forest

Executive Summary

This document provides a detailed overview of the operational environmental management measures for the proposed Sassafras Wesley Vale Irrigation Scheme Augmentation (SWISA, or the Project) in northwest Tasmania. The Project seeks to modernise the existing irrigation infrastructure to address increased regional demand for water while replacing assets nearing the end of their serviceable life. The Project is designed to deliver 5,660 megalitres of water annually to agricultural users across the region, supporting sustainable development and economic growth.

The primary objective of the Operational Environmental Management Plan (OEMP) is to establish a clear framework for avoiding, minimising, and managing potential environmental impacts affecting Matters of National Environmental Significance (MNES) under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). This document includes actionable measures, performance monitoring protocols, and risk management strategies to mitigate harm.

The Operational Area is situated within the Mersey and Rubicon River catchments and is characterised predominantly by agricultural land interspersed with patches of remnant native vegetation. The pipeline route traverses primarily modified agricultural landscapes, with some intersections of native forest, notably in the Warrawee Conservation Area. The hydrology of the region is shaped by the Mersey and Rubicon Rivers, from which the water will be extracted to meet irrigation needs. Water management will be guided by existing summer water licenses and additional winter storage capacity at Lake Parangana within the environmental constraints identified by the natural values assessment.

The SWISA Operational Area includes habitats for MNES. Key threatened fauna species include the Tasmanian devil, spotted-tail quoll, eastern quoll, eastern barred bandicoot, Tasmanian wedge-tailed eagle, swift parrot, and green and gold frog. The Area also supports the following threatened flora: the tailed-spider orchid, robust fingers, and wrinkled dollybush, as well as the two threatened ecological communities *Eucalyptus ovata/brookeriana* forest and woodland and Tasmanian white gum (*E. viminalis*) wet forest.

Pathways potentially impacting MNES without mitigation include shared pathways, such as habitat loss, vegetation fragmentation, and hydrological changes due to land-use intensification for agriculture and irrigation. Specific species threats include roadkill risk for the Tasmanian devil, nest disturbances for the wedge-tailed eagle, and habitat disruption for the green and gold frog due to disease and altered hydrology. Other impacts include soil disturbance affecting the central north burrowing crayfish and barriers to fish migration impacting the Australian grayling. Australian graylings may also be impacted by change in flow regimes and associated cold water pollution. This OEMP outlines mitigation measures and actions relative to risk to ensure that MNES are not significantly impacted. Farm Water Access Plans (Farm WAPs) are a key delivery mechanism for implementing biodiversity, water, and soil conservation mitigation measures. Monitoring and reporting are integral to the OEMP. An adaptive management approach ensures that project impacts are assessed, and mitigation measures are refined to address emerging risks.

1 Introduction

This Operational Environmental Management Plan (OEMP) has been prepared following the Environmental Management Plan Guidelines issued by the Department of Climate Change, Energy, the Environment and Water (DCCEEW, 2024). It forms part of the Preliminary Documentation submitted to DCCEEW for the Project. This OEMP outlines potential operational phase impacts and proposed management and mitigation measures for Matters of National Environmental Significance (MNES) protected under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) as well as environmental and heritage matters protected under state legislation. Construction phase impacts and mitigation measures are presented separately in a Construction Environmental Management Plan (CEMP).

The Sassafras Wesley Vale Irrigation Scheme Augmentation (SWISA, or the Project) is the proposed redevelopment of the existing Sassafras Wesley Valet Irrigation Scheme (SWIS) by Tasmanian Irrigation Pty Ltd (TI). The SWIS currently provides 5,660 megalitres (ML) of water to 135 irrigators located in the north-west of Tasmania in Sassafras, Harford, Thirlstane, Moriarty, Wesley Vale, Northdown, Pardoe, and East Devonport. The Project is proposed to meet the increased demand for irrigation water in the north-west region and to replace existing SWIS assets reaching the end of their serviceable life. The Project will increase the capacity of the irrigation scheme to supply an additional 9,200 ML of water (bringing the total capacity to 14,860 ML) and service 85 irrigators.

The Project involves the refurbishment of the existing Great Bend Pump Station (GBPS), and the construction of the Saggers Hill Balance Tank (SHBT), Sassafras Booster Pump Station (SBPS), and approximately 100 kilometres (km) of new pipeline. An overview of the Construction Project Area is shown in Figure 2 with a detailed project description provided in Section 3.

1.1 Operations

After the commissioning of the scheme, control will be transferred to the TI Operations team. Designed to operate for the next century, the scheme will have a 150-day summer water season, running from November to March over approximately 18,000 ha. However, replacing General Availability (GA) under SWIS, a winter season is planned to be implemented for the Project. As a result, many parts of the scheme will function year-round, with a reduced-capacity 215-day winter water season of 7,800 ML from April to October pending licence approval.

Parangana Outlet

TI proposes to have day-to-day operational control of the Parangana outlet for water release. All routine and emergency maintenance is proposed to be carried out by Hydro Tasmania due to the outlet's integration with other Hydro Tasmania infrastructure.

Irrigation

Irrigation water will be used by irrigators for various purposes, primarily for filling dams or directly irrigating crops. To manage how and where TI water is utilised, and to monitor its environmental impact, each irrigator must have an approved Farm WAP. Farm WAPs guide the sustainable application of water to ensure the long-term viability of land for agricultural production. Farm WAPs are a condition of Federal and State Government approval for all TI built schemes. The SWISA includes the requirement to have a Farm WAP covering all land and dams that TI water is applied to. The provision of water by TI is contingent upon compliance with the Farm WAP, which is regularly audited by TI Environmental Compliance Officers. Failure to adhere to the terms of the Farm WAP may result in the suspension or revocation of the irrigator’s water entitlement. The commencement of the first full irrigation season is anticipated to be scheduled between October 2026 and March 2027.

The Project was referred under the EPBC Act in 2023 and was determined to be a controlled action, with the controlling provision of listed threatened species and communities (section 18 and section 18A) (EPBC 2023/09666). The Project is also subject to assessment under relevant state legislation, including a Reserve Activity Assessment (RAA) under the *National Parks and Reserves Management Act 2002* for works within the Warrawee Conservation Area, and approval from the Latrobe Council under the *Land Use Planning and Approvals Act 1993* (LUPA Act).

2 OEMP Scope and Objective

2.1.1 Scope

The Irrigation District (Figure 1) represents the boundaries for the application of this OEMP and is known as the Operational Area in the Preliminary Documentation. The OEMP applies to all land within properties that may purchase SWISA water, including relevant buffer zones around non-irrigable land that may contain natural values.

The scope of this OEMP encompasses all operational activities including the extraction of water, irrigation of approximately 18,000 ha of land and ongoing maintenance and repair work. Ongoing major repairs and upgrades will also be subject to the CEMP.

Ongoing maintenance is expected to be minimal, with operations and maintenance typically requiring a single light vehicle (operating in daylight hours, weekdays only). The scope of maintenance will vary from scheme-wide to individual sites. Major maintenance will be periodic at the primary asset sites (pump stations and balance tank). This will include the use of light and heavy vehicles over a period of up to a week, in daylight hours. Pump stations will typically require scheduled maintenance once a year, requiring 2-3 light vehicles, and significant maintenance involving some heavy vehicles (1-2) every 5-10 years. The balance tank will typically require additional vehicles every ten years, which may include heavy vehicles and heavy plant for up to a week.

2.1.2 OEMP Objective

The objective of this OEMP is to outline clear measures to avoid, minimise, and manage the potential for the Project to result in harm to relevant MNES protected under the EPBC Act. The OEMP provides:

- a clear plan to implement actions that prevent impacts on environmental matters associated with the operations of SWISA; and
- a plan for performance reporting and monitoring of future potential impacts of operations within a clear risk management framework that prescribes trigger points for corrective actions.

In relation to the protection of MNES, harm means to cause any measurable direct or indirect disturbance or deleterious change as a result of any activity associated with the Action (i.e. the Project). The controlling provision of EPBC 2023/09666 is listed threatened species and communities (section 18 and section 18A), with the relevant MNES of this OEMP as follows:

Threatened Fauna

- *Sarcophilus harrisii* (Tasmanian devil);
- *Dasyurus maculatus maculatus* (spotted-tail quoll);
- *Dasyurus viverrinus* (eastern quoll);
- P*erameles gunnii gunnii* (eastern barred bandicoot);
- *Aquila audax fleayi* (Tasmanian wedge-tailed eagle);
- T*yto novaehollandiae castanops* (Tasmanian masked owl);
- *Lathamus discolor* (swift parrot);
- *Neophema chrysostoma* (blue-winged parrot);

- *Litoria raniformi*s (green and gold frog);
- P*rototroctes maraena* (Australian grayling);
- *Engaeus granulatus* (Central North burrowing crayfish);

Threatened Flora

- *Caladenia caudata* (tailed-spider orchid);
- *Caladenia tonellii* (robust fingers);
- *Cassinia rugata* (wrinkled dollybush);

Threatened ecological community

- *Eucalyptus ovata/brookeriana* (Black gum or Brookers gum) forest and woodland
- Tasmanian white gum *(Eucalyptus viminalis)* wet forest

2.2 Relationship to other documents

The OEMP provides a synthesis of information relevant to the management of operational impacts and designed to reflect ongoing requirements after the implementation of the CEMP. The information pertaining to the ecological survey and potential risk associated with the SWISA operations have primarily been extracted from the North Barker Ecosystem Services (2024) Sassafras – Wesley Vale Irrigation Scheme Augmentation Natural Values Assessment. The Natural Values Assessment provides extensive detail on Natural Values across the site and should be used as the primary reference for these matters. Other key documents for Natural Values Assessment information that support this OEMP are Elgin Associates (2024) Australian Grayling (*Prototroctes maraena*) Species Impact Assessment and Enviro-dynamics (2024) Tasmanian Devil Impact Assessment.

Farm WAPs are a condition of the Irrigation District establishment and are enshrined in the Bylaws that are established by Tasmanian Irrigation within an Irrigation District. These plans are developed as part of the delivery and management mechanism for SWISA to ensure the sustainable application of irrigation water.

3 Scheme Description

3.1 Overview of the SWISA Project

The Project is a significant expansion of the existing irrigation infrastructure in North-West Tasmania. Managed by Tasmanian Irrigation, the Project seeks to augment the water supply available to irrigators, increasing the scheme's capacity from 5,660 megalitres (ML) to 14,860 ML per season. The augmented scheme will deliver high-reliability water to 132 irrigators across approximately 18,000 hectares of agricultural land.

The Project consists of key infrastructure upgrades, including:

- Refurbishment of the Great Bend Pump Station (GBPS);
- Construction of the Saggers Hill Balance Tank;
- Installation of the Sassafras Booster Pump Station and
- Replacement and installation of over 100 km of new pipeline to distribute water across the scheme.

3.2 Project Location

The Project is situated in North-West Tasmania, east of Devonport, with its primary water source being the Mersey River. The scheme serves the agricultural regions surrounding the townships of Sassafras, Harford, Thirlstane, Moriarty, Wesley Vale, Northdown, Pardoe, and East Devonport. The irrigation scheme's

infrastructure crosses varied landscapes, including pastureland, remnant native vegetation, and key conservation areas such as the Warrawee Conservation Area.

Key geographic boundaries of the Project include:

- The River Mersey to the west and southwest.
- The River Rubicon and Port Sorell to the east.
- Bass Strait to the north.

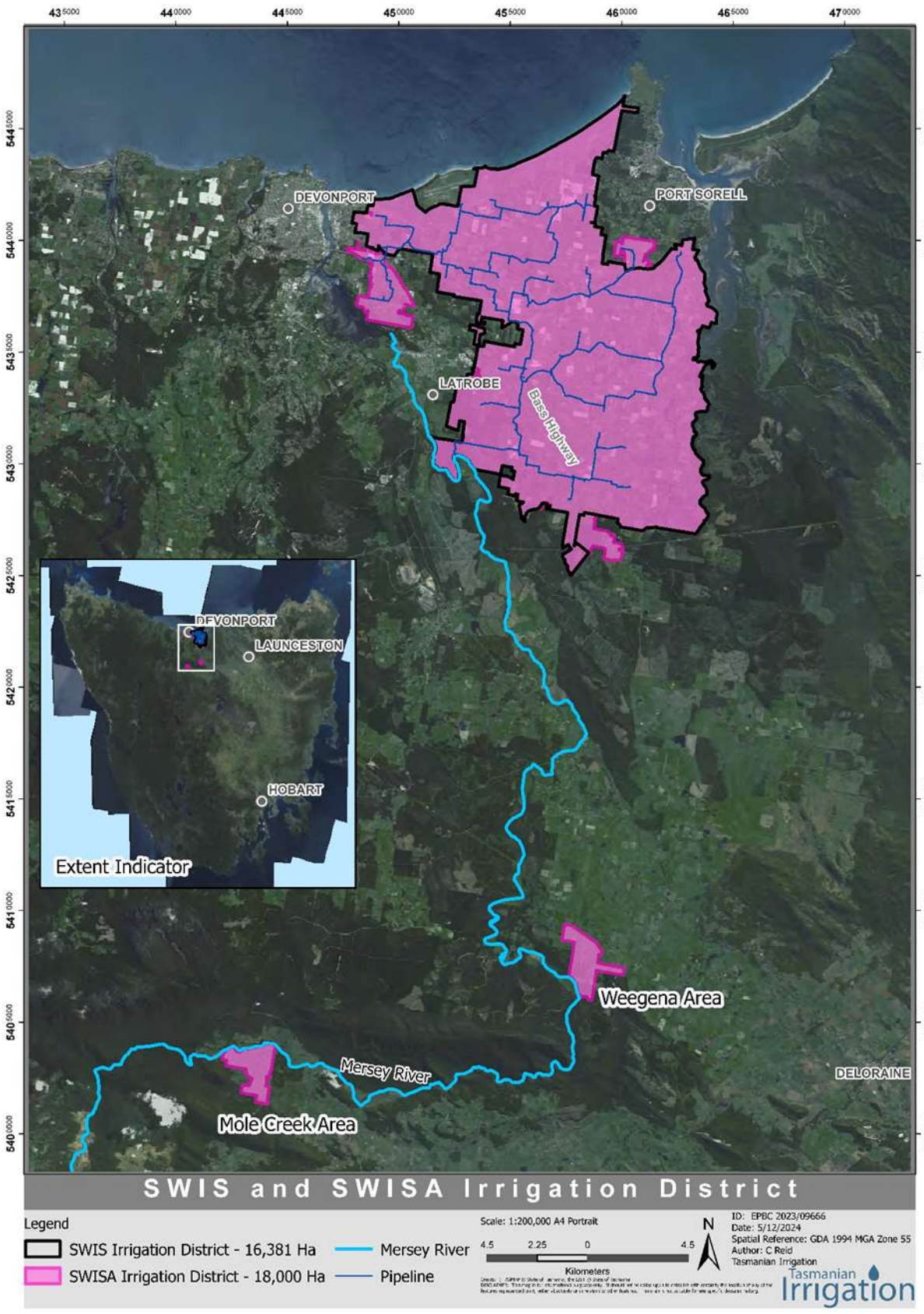


Figure 1 SWISA Irrigation District (Boundaries for application of this OEMP)

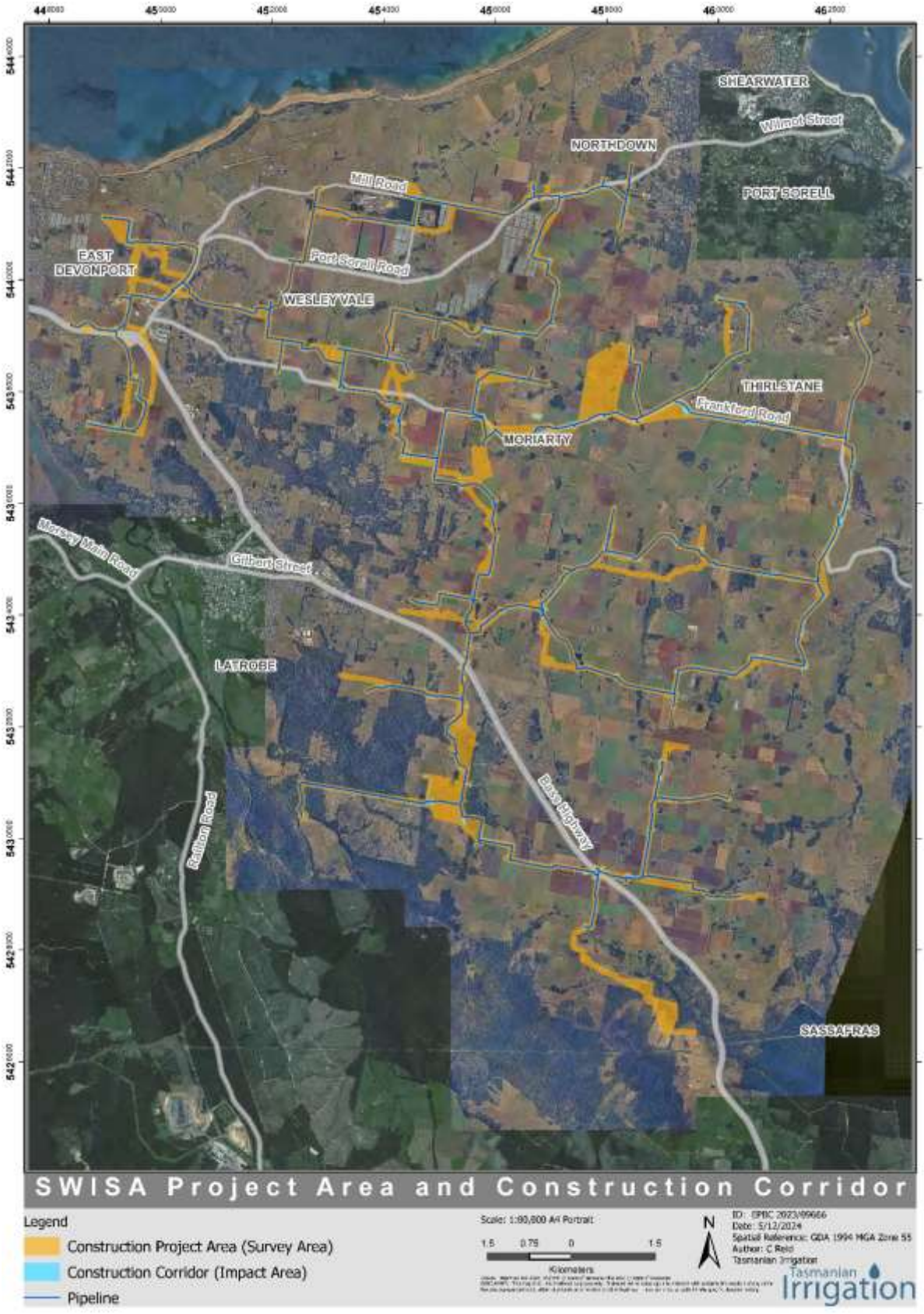


Figure 2 SWISA Construction Project Area

3.3 Environmental Operational Context

The Operational Area, located within the Mersey and Rubicon River catchments on the northern coast of Tasmania, is characterised by a predominance of agricultural land, with scattered remnant native vegetation and designated conservation areas. The pipeline route primarily crosses non-forest agricultural landscapes, with notable intersections of native forest occurring in the Warrawee Conservation Area near the GBPS. Native vegetation remnants along the route are generally in degraded condition due to fragmentation, though areas within larger, more contiguous forest blocks exhibit healthier conditions, particularly away from edge effects. Agricultural land constitutes the majority (92.55%) of the proposed SWISA area, with a minor portion (6.28%) involving modified land and water bodies.

The hydrology of the Operational Area is shaped by the Mersey and Rubicon Rivers, both of which support significant agricultural activities and water extraction for irrigation. The Project will extract water from the Mersey River at the GBPS, utilising an existing summer water license and additional winter storage capacity at Lake Parangana. Water management will be controlled through releases from Lake Parangana to meet irrigation needs with the aim of avoiding adverse effects on existing water users or the environment. Environmental management measures, including Farm Water Access Plans (Farm WAPs) and water quality monitoring, aim to mitigate risks such as runoff, groundwater contamination, and impacts on aquatic ecosystems.

The following MNES are identified as occurring within or in the vicinity of the operational footprint of the Project: *Sarcophilus harrisii* (Tasmanian Devil); *Dasyurus maculatus maculatus* (Spotted-Tail Quoll); *Dasyurus viverrinus* (Eastern Quoll); *Perameles gunnii gunnii* (Eastern Barred Bandicoot); *Aquila audax fleayi* (Tasmanian Wedge-Tailed Eagle); *Tyto novaehollandiae castanops* (Tasmanian Masked Owl); *Lathamus discolor* (Swift Parrot); Neophema chrysostoma (Blue-winged parrot); *Litoria raniformis* (Green and Gold Frog); *Prototroctes maraena* (Australian Grayling); *Engaeus granulatus* (Central North Burrowing Crayfish); *Caladenia caudata* (Tailed-spider Orchid); *Caladenia tonellii* (Robust Fingers); *Cassinia rugata* (Wrinkled Dollybush); *Eucalyptus ovata/brookeriana* (Black gum or Brookers gum); Tasmanian white gum (*Eucalyptus viminalis*) wet forest.

A description of the MNES values is provided in this section to help build an understanding of the relative significance of the species distributions and habitat conditions within the Project operational area and more broadly within Tasmania. Further detail on MNES values can be found in the Natural Values Assessment prepared for the Project (North Barker 2024).

3.3.1.1 Sarcophilus harrisii (Tasmanian devil)

Tasmanian devils are solitary nocturnal animals, covering home ranges between 360-1,315 hectares (ha) and typically travelling up to 16 km a night. They are primarily found in terrestrial native habitats, and forestry plantations. They will also use the forest and pasture interface they require shelter such as hollow logs, burrows, or caves, and hunting areas with a mix of open understorey and dense vegetation. The species' population is estimated at around 17,000, with a continuing decline primarily due to Devil Facial Tumour Disease (DFTD). Devils are widespread across Tasmania, particularly in open eucalypt forests and coastal scrub. Although present throughout the state, they are most abundant in regions supporting dense prey populations. The species faces additional threats from predation by domestic dogs, vehicle collisions, and habitat loss, degradation or fragmentation.

Devils are widespread and there are recorded active den sites within the SWISA operational area. Key risks are habitat loss, degradation and fragmentation, and vehicle collision mortality. The devils were deemed to not be at risk of any impacts due to the operation of the SWIS with mitigation measures in place.

Further detail can be found in the Natural Values Assessment Section 4.3.1.1 (North Barker 2024).

3.3.1.2 Dasyurus maculatus maculatus (spotted-tail quoll)

Spotted-tail quolls are widely distributed across Tasmania, with higher abundance in the north and northwest, where suitable habitats with predictable rainfall, prey density, and denning availability exist. The species has

been recorded in the Operational Area, mostly detected within continuous forest in the south-west and mosaic woodland in the north-east of the region. It was deemed that the development would not significantly impact the spotted-tail quoll, with mitigation measures in place in the development of Farm WAPs.

Major threats to the species include habitat loss and fragmentation due to agricultural development, urban expansion, and road construction, as well as human persecution and vehicle collision mortality. Their presence in agricultural mosaics and some selectively logged forests indicate spotted-tail quolls are adaptable to some habitat disturbance, as long as prey and denning resources are available. However, the removal of critical habitat features like hollow logs and trees, or declines in prey abundance, may make habitat less suitable. During the operational phase, all SWISA irrigators' land is subject to the provisions outlined in the TI Farm WAP process.

Further detail can be found in the Natural Values Assessment Section 4.3.1.1 (North Barker 2024).

3.3.1.3 Dasyurus viverrinus (eastern quoll)

The Eastern quoll is a nocturnal, carnivorous marsupial found in a variety of habitats across Tasmania, including open grasslands, dry eucalypt forests, and coastal scrub. While its population size is unknown, the species has been in decline since 2015, potentially linked to mild wet winters and limited recovery. The Eastern quoll primarily preys on invertebrates and small animals and lives in underground burrows or logs. The species breeds between May-June, with young emerging in late spring. The species faces multiple threats, including predation by introduced species (cats, dogs), disease, climate change, non-target poisoning, and vehicle collisions. Despite being listed as endangered under the EPBC Act, no specific recovery plan is in place for the species, and its habitat is fragmented, especially in the wettest parts of Tasmania.

Conservation efforts are needed, as the Eastern quoll's population continues to decline. Prevention of the loss of habitat is the most important component of mitigation efforts for the Project. By identifying the distribution of denning sites for these species prior to the commencement of SWISA water application through regulation by the Farm WAP process, potential impacts to this species due to clearance of native vegetation will be mitigated to negligible risk.

Further detail can be found in the Natural Values Assessment Section 4.3.1.1 (North Barker 2024).

3.3.1.4 Perameles gunnii gunnii (eastern barred bandicoot)

The Eastern barred bandicoot is a small marsupial that inhabits grasslands, grassy woodlands, and agricultural lands across Tasmania. They have a short lifespan of 2-3 years and primarily feed on invertebrates, with some plant material. The species is somewhat territorial, with males having larger home ranges than females, and breeds year-round, producing litters of 1-5 young. The species has faced significant population declines in the Midlands but is locally common in some regions, particularly southeast Tasmania and agricultural areas. The species' distribution is restricted, and their population is estimated at around 20,000 individuals.

Major threats to their survival include habitat loss due to ground cover removal, predation by introduced species such as feral cats, and toxoplasmosis spread by cats. This species was recorded at low densities within the Project operational area.

All SWISA irrigators' land is subject to the provisions of this OEMP which includes the TI Farm WAP process. This process will include measures for further survey and requisite protection measures that prevent impact on individuals, subpopulations, and habitat if this species and its habitat are located on farms within the Project Operational Area. The eastern barred bandicoot was deemed to not be at risk when mitigation measures were applied through the Farm WAP.

Further detail can be found in the Natural Values Assessment Section 4.3.1.2 (North Barker 2024).

3.3.1.5 Lathamus discolor (swift parrot)

The swift parrot is a small to medium-sized parrot native characterised by its bright green body, blue crown patches, and a prominent red face. They typically live in small groups, although larger flocks can form around abundant food sources. The species migrates from southeast mainland Australia to Tasmania between September and January for breeding. Swift parrots nest in hollow trees, especially eucalyptus, with a preference for trees showing signs of senescence. These birds primarily forage on blue gum and black gum trees, with their foraging behaviour influenced by the abundance of flowering of these tree species. The swift parrot population is highly mobile and migratory, with an estimated population ranging from 750 to 1,000 birds. The core range for breeding is in the southeast of Tasmania, especially near coastal areas where blue gum trees are abundant. The north of Tasmania provides important forage for the birds after their migration from Victoria and it is in this region where the first observations of the season typically occur.

Threats to the species include habitat loss, particularly from logging and land clearance that affects both foraging and nesting sites. Conservation efforts focus on maintaining suitable habitats both nesting and foraging. The greatest risk to this species due to the operation of the scheme is from the potential for changes in land use, as well as clearance and conversion of potential breeding and foraging habitat areas to agricultural land. With an OEMP and Farm WAPs in place, no impacts to this species are anticipated due to the operation of the SWISA.

Further detail can be found in the Natural Values Assessment Section 4.3.1.3 (North Barker 2024).

3.3.1.6 Neophema chrysostoma (blue-winged parrot)

Blue-winged parrots are small, slender parrots with distinctive blue patches on their wings and an olive-green body. They breed in spring and summer, nesting in tree hollows, often in live or dead trees with vertical openings. Their diet primarily consists of seeds from grasses, herbs, and shrubs, foraged from the ground in grasslands, grassy woodlands, and wetlands. The species is found in coastal, sub-coastal, and inland areas of Tasmania mostly in the northwest, east, and central regions.

The population of blue-winged parrots has declined by 30–50% in the last 11 years, with an estimated 10,000 mature individuals left in the wild. Habitat loss, predation by introduced species like sugar gliders, and climate change are key threats to the species. Within the Operational Area, there are several records of the blue-winged parrot, and habitat preservation is important to mitigate risks. The species relies on large tree hollows for nesting and is threatened by habitat loss, grazing, and changes in fire regimes which will primarily be managed through Farm WAPs, and no impacts are anticipated once mitigation measures are applied.

Further detail can be found in the Natural Values Assessment Section 4.3.1.8 (North Barker 2024).

3.3.1.7 Tyto novaehollandiae castanops (Tasmanian masked owl)

The Tasmanian masked owl is the largest nocturnal forest owl in Tasmania, known for its distinctive pale chestnut-brown facial disc and dark speckles. With a wingspan of up to 128 cm and a body length of 47-51 cm, females are typically larger than males. This owl primarily inhabits lower elevation forests and breeds seasonally, usually between October and November, using large trees with deep hollows for nesting. Its diet is versatile, feeding on both native animals and introduced species such as rodents and rabbits. However, it faces threats from habitat loss, tree dieback, and competition for limited nesting sites with other species.

In the context of the Operational Area, the primary risk to the Tasmanian masked owl is habitat clearing and the conversion of forests into agricultural land. While there are no known nests in the Operational Area, preserving large, hollow-bearing trees is crucial to maintaining suitable breeding and foraging habitats. With management measures in place, including this OEMP and Farm WAPs, no significant impacts to the owl population are anticipated from the operation of the SWISA.

Further detail can be found in section 4.3.1.4 (North Barker 2024)

3.3.1.8 Litoria raniformis (green and gold frog)

The green and gold frog is a large, active species found in Tasmania, including areas like the Operational Area. They are primarily found near freshwater habitats, such as ponds, marshes, and lagoons, where they breed in the warmer months (September to February). Although they prefer areas with abundant vegetation, they can adapt to more modified environments, such as agricultural land and constructed water bodies. These frogs are known to travel significant distances, but they generally stay close to their breeding sites and have strong site fidelity.

In the context of the Operational Area, the green and gold frog's habitat includes both aquatic breeding sites and adjacent terrestrial areas for foraging and shelter. They are vulnerable to habitat fragmentation, as they rely on both intact water bodies and surrounding vegetation for survival. While they can use modified landscapes and can be found in farm dams, habitat loss or changes, especially to water bodies, can significantly impact their populations. Thus, any development or land-use changes in the Operational Area that affect water quality or habitat connectivity may pose a threat to their survival. However, with the mitigation measures in place, no impacts to this species are anticipated due to the operation of the SWISA.

Further detail can be found in the Natural Values Assessment Section 4.3.1.7 (North Barker 2024).

3.3.1.9 Engaeus granulatus (Central North burrowing crayfish)

The Central North burrowing crayfish (CNBC) is a small invertebrate species found in Tasmania, living in complex burrow systems connected to the water table. Typically, less than 10 cm in body length, it spends most of its life within its burrows, feeding on decaying organic matter. Breeding occurs in the spring and summer, with juveniles dispersing in autumn rains. The crayfish's burrows are sensitive to local hydrology changes, with depths and horizontal spread varying depending on water availability. CNBC populations are typically found in swampy areas, wetlands, and stream banks, where they are associated with riparian vegetation and organic soils. Their burrows are often difficult to detect without excavation, and colonisation of new habitats typically occurs during flood events.

The CNBC is a rare species, with an estimated population of between 74,400 and 392,200 individuals. Its range is primarily confined to central northern Tasmania, where it faces habitat fragmentation due to agricultural development. The species is often found in areas with fertile soils overlying Tertiary basalts and much of its habitat has been cleared. Consequently, CNBC populations are isolated, and its presence in conservation reserves is limited. The Operational Area falls within the core range of the CNBC, making any suitable habitat there of significant value. Given the difficulty in identifying burrowing species without excavation, it is assumed that most burrows in the area belong to the CNBC, though other species like *E. mairener* may also be present. The greatest risk to the species is a change in land use due to the provision of SWISA water. With an OEMP and Farm WAPs in place, no impacts to this species are anticipated due to the operation of the SWISA.

Further detail can be found in the Natural Values Assessment Section 4.3.1.6 (North Barker 2024).

3.3.1.10 Caladenia caudata (tailed-spider orchid)

Caladenia caudata is a small, perennial orchid species native to Tasmania, known for its pink to reddish flowers. It reproduces from seed in association with mycorrhizal fungi, and the plant's basal leaf emerges in autumn or early winter. The species is typically found in sunny, north-facing sites in lowland coastal and near-coastal areas of Tasmania. While it is vulnerable to threats like grazing, drought, and fire, it can survive these impacts through underground tubers. Flowering occurs from mid-August to November, with detection highest in the years following fire. These plants grow 8-15 cm tall and usually produce 1-4 flowers per scape.

The population of *Caladenia caudata* is small, with fewer than 10,000 individuals distributed across over 40 subpopulations, most of which occupy less than 0.05 km². The species' extent of occurrence is approximately 34,800 km², but the area it occupies is much smaller. It is found in coastal and near-coastal areas across central and southern Tasmania, including the Furneaux Islands. The species' habitat is primarily confined to sunny, well-

isolated sites, and it is associated with lowland forests and coastal vegetation. Despite the presence of some marginal habitat in the Survey Area, the species' key populations, such as those in the Henry Somerset Reserve, are not at risk from operational impacts.

Further detail can be found in the Natural Values Assessment Section 4.2.2.1 (North Barker 2024).

3.3.1.11 Caladenia tonellii (robust fingers)

Caladenia tonellii is a critically endangered orchid species endemic to Tasmania, found mainly between Sheffield and Port Sorell, with outlying populations along the north coast. Plants grow singly or in loose groups, featuring a narrow hairy basal leaf and a thin stem, with one to five white or pink flowers per plant. Flowering occurs from late October to early December, and while its response to fire is unknown, the species inhabits fire-prone areas and is likely fire-tolerant. Its habitat includes *Eucalyptus amygdalina* forests with shrubby undergrowth on shallow soils. The species relies on insect pollination, and the habitat critical to its survival includes current, historic, and potential recruitment sites, emphasizing its need for protection.

The population is estimated to be under 250 mature individuals, with the largest subpopulation of about 100 plants in the Henry Somerset Reserve. The species is distributed across a small number of sites, and recent surveys confirmed its presence in the SWIS pipeline corridor near Devil Road. Although the SWIS project initially excluded known populations, later records of *Caladenia tonellii* prompted pipeline alignment adjustments to avoid impacts. No additional management actions were mandated during the project's approval process, as it was deemed to pose minimal risk to the species.

Further detail can be found in the Natural Values Assessment Section 4.2.2.2 (North Barker 2024).

3.3.1.12 Cassinia rugata (wrinkled dollybush)

Cassinia rugata is a perennial shrub growing up to 3 meters tall, with dense branching from the base and distinctive sticky, cottony, and bristly young twigs. Its leaves range from 6-25 mm long and are often narrow due to rolled margins. The inflorescences, spanning 3-12 cm, produce 20-300 small flowerheads, which aid in identification during the February to April flowering season. Found in coastal mainland regions of Victoria and South Australia, and near Port Sorell in Tasmania, its habitats range from damp low forests to sedgy wetlands and occasionally disturbed roadside verges. In Tasmania, it occupies a linear subpopulation of about 1.3 km with an area of occupancy under 0.35 hectares.

First identified in Tasmania in 2010, the species is restricted to specific wetlands and remnants in the Parkers Ford Road area, with no direct records along the proposed SWIS pipeline route. Historical observations near Cape Portland remain unconfirmed, although suitable habitat persists there. The Tasmanian subpopulation, estimated at approximately 300 plants, is critically significant due to its limited distribution and small population size. *Cassinia rugata* was not addressed during the SWIS project assessment, and no specific management actions were mandated. Further monitoring and conservation efforts are essential to safeguard its fragmented populations.

Further detail can be found in the Natural Values Assessment Section 4.2.2.3 (North Barker 2024).

3.3.1.13 Eucalyptus ovata/brookeriana (Black gum or Brookers gum)

Eucalyptus ovata forest and woodland (DOV) are primarily found in poorly drained, fertile soils on drainage flats across Tasmania, with the largest patches typically on private land. Dominated by *Eucalyptus ovata*, with occasional *E. obliqua* and *E. viminalis*, these forests feature a diverse understorey, including shrubs like *Acacia melanoxylon* and sedges such as *Carex appressa*. Grazing and land conversion have significantly impacted these forests, leading to modified understorey structures and increased weed presence. The community is classified as threatened under Tasmania's NC Act and meets EPBC Act thresholds. It is of high conservation priority,

particularly within the Woolnorth bioregion, where it is poorly reserved and important for old growth conservation.

The black gum – Brookers gum forest/woodland ecological community, which includes DOV, is endemic to Tasmania and covers an estimated 20,000-26,000 ha. It is found in damp, poorly drained areas, primarily in the northern and southeastern bioregions. The Operational Area overlaps the Furneaux-Flinders and Tasmanian Northern Slopes bioregions, which collectively account for over 21% of the ecological community's remaining distribution. However, due to extensive land modification within the Operational Area, high-quality patches contiguous with native vegetation are uncommon. Four patches (>0.5 ha) that met the EPBC Act thresholds were identified during recent ecological surveys within the Operational Area and have been avoided during the realignment process. The black gum – Brookers gum community was not identified as requiring specific management during the SWIS project's environmental assessment.

3.3.1.14 Tasmanian white gum wet forest

The *Tasmanian white gum wet forest* (WVI) is a critically endangered ecological community. It is a tall, open wet eucalypt forest dominated by *Eucalyptus viminalis*, with an understorey of dense shrubs, ferns, or rainforest species such as *Nothofagus cunninghamii*. Regeneration typically occurs following disturbances like wildfire, resulting in even-aged forest patches. Found predominantly in the Northern Slopes and Ben Lomond bioregions of Tasmania, the WVI community covers approximately 7,600 hectares, with a median patch size of 2.5 hectares. Threats to its survival include land clearance for agriculture, altered hydrology, nutrient enrichment, grazing, and hybridisation with non-native eucalypts.

To mitigate operational impacts from the Southern Water Irrigation Scheme (SWIS), mitigation measures are prescribed through the Farm Water Access Plan (WAP). These include mapping and monitoring the extent and quality of WVI patches, prohibiting land clearance or modification, and implementing 30–50 m buffer zones around forest remnants. These measures aim to reduce threats from invasive species, altered water quality, grazing, and nutrient drift to negligible levels. The operation of the SWISA will not have a significant residual impact on Tasmanian white gum wet forest.

3.3.1.15 Prototroctes maraena (Australian grayling)

The Australian grayling (*Prototroctes maraena*) is a diadromous fish species native to Tasmania, southern New South Wales, and Victoria. Its lifecycle requires migration between freshwater and marine environments, with spawning occurring in autumn and winter in lower freshwater reaches. Juveniles migrate back upstream in spring and early summer, driven by streamflow cues. Grayling prefers habitats like deep pools, gravel-bottomed streams, and occasionally turbid waters, and they are typically silvery with olive-grey backs and a salmon-like appearance. Threats include barriers to fish migration, predation and competition from introduced species like trout, habitat loss, sedimentation, and pollution. Conservation measures focus on maintaining natural flow regimes, removing migration barriers, protecting instream and riparian habitats, and managing water quality.

The species has been recorded in catchments across Tasmania, with strongholds in the Mersey catchment and historical abundance before European colonisation. The Sassafras-Wesley Vale area has also shown recent observations, underscoring the importance of preserving its habitats and mitigating human impacts to support the species' recovery and population stability. Key mitigation measures for the management of this species and its habitat are included in the OEMP and will be managed by TI rather than through the farm WAPs.

Further detail can be found in the Elgin Associates (2024) Australian Grayling (*Prototroctes maraena*) Species Impact Assessment.

3.4 State Approvals

Approvals obtained under state legislation to date are outlined in Table 3.1.

Table 3.1 State approvals obtained to date for the Project

Legislation	Approval	Status
Aboriginal Heritage Act 1975	Permit required for potential impacts to AH6130	To be obtained
Crown Lands Act 1976	Works permits – Bass Highway, Port Sorell Road, Frankford Road	To be obtained
Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)	Approval of EPBC 2023/09666	Assessment process underway
Land Use Planning and Approvals Act 1993	Planning permits from Latrobe and Devonport Councils	To be obtained
National Parks and Reserves Management Act 2002	Level 2 Reserve Activity Assessment (for works within the Warrawee Conservation Area)	Assessment process underway
Nature Conservation Act 2002	Permit to take wildlife (dens and burrows)	To be obtained
Threatened Species Protection Act 1995 (TSP Act)	Permit to take threatened fauna and flora (GGF, CNBC, Persicaria decipiens (slender waterpepper)	To be obtained

4 Impact pathways

Impact pathways describe the mechanisms by which risks may affect Matters of National Environmental Significance (MNES). These pathways, identified during ecological surveys of the Project, encompass both shared and unique mechanisms. Shared pathways (Table 5.1) represent processes that affect multiple MNES, while unique pathways (Table 5.2) are species-specific, reflecting particular vulnerabilities based on life cycles and habitat dependencies.

Shared impact pathways are closely associated with increasing land-use intensification and typically involve the loss, modification, or fragmentation of vegetation and habitat. This includes land conversion for irrigation and agriculture, such as converting remnant vegetation into pasture, constructing roads, or draining swampy areas. Additional contributors include clearing riparian vegetation, removing hollow-bearing paddock trees, woody debris and conducting prescribed burning that diminishes prey availability or habitat features. Degradation of remnant vegetation and altered hydrological regimes further exacerbate these impacts, reducing the availability and functionality of critical habitats.

In addition to these broad-scale risks, unique impact pathways affect specific species and ecological communities. For the Tasmanian devil, increased traffic from intensified land use raises the risk of roadkill. The Tasmanian wedge-tailed eagle faces nest disturbances due to maintenance activities and heightened human presence. Threatened ecological communities, meanwhile, are vulnerable to hybridisation with non-Tasmanian plantation eucalypts, such as *Eucalyptus nitens*. For the green and gold frog, altered hydrology disrupts breeding habitats, while diseases like chytridiomycosis, caused by the fungal pathogen *Batrachochytrium dendrobatidis,* threaten population health. The Central North burrowing crayfish is particularly sensitive to soil disturbances, while the Australian grayling is impacted by structural and non-structural barriers to fish passage and cold-water pollution from water releases at Parangana Dam.

Identifying these pathways builds an understanding of the requirements for mitigation and strategic approaches to mitigate risk. Adaptive management measures targeting both overarching and species-specific threats are important strategies for the prevention of harm to MNES within the Project operations area.

5 Mitigation Measures/operational controls

Due to the risk associated with shared impact pathways there are also several shared mitigation measures that apply across MNES. The main management tool for ensuring mitigation measures is clearly planned, implemented monitored and evaluated are Farm Water Access Plans. The mitigation measures in relation to the impact pathways are documented in Table 5.1 and Table 5.2.

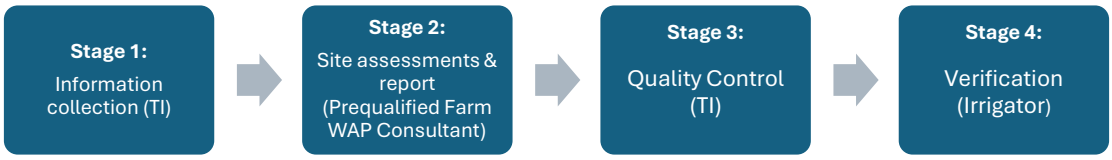
5.1 The Farm Water Access Plan (Farm WAP) Program

A Farm WAP is required for every property that receives TI water for irrigation or storage purposes to demonstrate that the water use is sustainable and does not negatively impact soil health, water resources, biodiversity and natural values. The purpose of a Farm WAP is to identify the area of the property where TI water will be applied and/or stored and to manage any potential risks that may arise from the use of this water. A Farm WAP does not have to cover an entire property but must include all on-farm dams, land and infrastructure where TI water will be stored or applied both now and in the future. A Farm WAP must clearly identify the water, soil and biodiversity risks associated with receiving and using TI water, as well as outline actions to effectively manage each risk. They are self-management tools that guide the sustainable use of TI water and are used to demonstrate compliance with state and federal legislative requirements. An annual audit program ensures water application complies with Farm WAP requirements, with audits conducted annually throughout each scheme's 100-year lifespan.

Farm WAPs provide detailed information on soil, biodiversity, and water resources; current and proposed future water use; and potential irrigable land, categorised by land use such as root cropping, surface cropping, irrigated pasture/fodder, dryland pasture, horticulture, and forestry. They also outline actions to manage environmental

risks, including monitoring schedules, and provide guidance on best management practices and relevant guidelines.

The development process involves four stages, starting with a desktop assessment of the property's resources and the irrigator's plans for utilising additional water resources. This is followed by a property visit to confirm desktop information, after which a detailed, property-specific plan is developed, incorporating the natural values of the land. Farm WAPs can only be prepared by prequalified consultants approved by the Minister for Water, following modules endorsed by the Department of Natural Resources and Environment Tasmania. It may also involve a workshop or field day to support landholders in understanding their obligations (refer to Appendix 2). The biodiversity module is the most relevant section of the Farm WAP for the management of impact pathways.



5.1.1 The Farm WAP Biodiversity Module

The objective of the Biodiversity Module is to identify biodiversity assets within the Farm WAP area and ensure that the application of Tasmanian Irrigation water will not have a direct or indirect impact on these assets, including but not limited to the following.

- Threatened native vegetation communities
- Non-threatened native vegetation
- Threatened fauna and flora species listed under the Tasmanian *Threatened Species Protection Act 1995 Act* or Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*
- Wetlands, waterways, floodplains, and dams
- Weeds listed as declared under the *Tasmanian Biosecurity Act 2019* (BSA)

The Biodiversity Module must achieve the following aims:

- Avoid impacts to Matters of National Environmental Significance.
- Avoid potential habitat impacts to Matters of National Environmental Significance.
- No significant impacts on Matters of National Environmental Significance resulting from the operation of the Irrigation Scheme and the associated Irrigation District.
- Identification of the biodiversity values occurring within the Farm WAP area and an understanding of how to sustainably manage these.
- Understand the legislation and planning instruments relevant to biodiversity and their compliance obligations under these.
- Development of specific management actions that address any identified risks to biodiversity values within the Farm WAP area.
- An understanding of their role in monitoring the actions within the Farm WAP.
- An increased understanding of the interaction between biodiversity management and other natural resources such as soils and water.
- Highlight any potential clearing and the process to gain legal approval.

5.2 Other mitigation measures outside of the Farm WAPs

Monitoring across the scheme is a key mitigation measure as it embeds an adaptive management approach. This is covered in Section 6. The auditing of Farm WAPs is a critical mitigation measure as it allows tracking of compliance and the measurement of the success of the measures implemented as part of the Farm WAPs to protect MNES.

A key component of the mitigation measures is also related to the management of water flows by TI. The management of flow regimes is beyond the scope of a Farm WAP but sits within the broader Mersey Water

Management Plan (DPIWE 2005) and in NRE 2023. Compliance with these measures is essential for the management of impacts especially for the Australian grayling (refer to Table 5.2 for specific measures).

Routine maintenance is a part of all infrastructure project operations. The construction EPRs will also apply to the ongoing maintenance of SWISA infrastructure throughout the lifetime of the scheme (refer to CEMP).

Table 5.1 Shared impact pathways and specific mitigation measures for all MNES

Farm WAP Mitigation Measures	Relevant Matter of National Environmental Significance														
	DOV & WVI communities	Eastern quoll	Spotted-tail quoll	Tasmanian devil	Swift parrot	Blue-winged parrot	Tasmanian wedge-tailed eagle	Tasmanian masked owl	Eastern barred bandicoot	Green and gold frog	Central north burrowing crayfish	Australian grayling	tailed-spider orchid	robust fingers	wrinkled dolly bush
Shared Impact pathway: Land use changes which result in habitat clearing, loss, modification and/or fragmentation															
Vegetation/habitat															
Property-wide survey for MNES threatened species and ecological communities to identify and confirm habitat.	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Prohibit clearance or modification of MNES threatened species and ecological communities.	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Monitoring and review to ensure rigorous protections against unregulated land clearing.	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Prevent the clearing of riparian vegetation communities	x	x	x	x	x	x	x	x	x	x	x	x			x

Farm WAP Mitigation Measures	Relevant Matter of National Environmental Significance														
	DOV & WVI communities	Eastern quoll	Spotted-tail quoll	Tasmanian devil	Swift parrot	Blue-winged parrot	Tasmanian wedge-tailed eagle	Tasmanian masked owl	Eastern barred bandicoot	Green and gold frog	Central north burrowing crayfish	Australian grayling	tailed-spider orchid,	robust fingers	wrinkled dolly bush
Shared Impact pathway: Land use changes which result in habitat clearing, loss, modification and/or fragmentation															
Flora and vegetation communities															
A 50 m clearing/ disturbance buffer from threatened flora and ecological communities	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Monitoring of vegetation condition using a repeatable method	x												x	x	x
Fauna Habitat															
Identify extent and condition of potential habitat for listed MNES known to exist on the property	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Specify a 50 m clearing and disturbance buffer from all known threatened mammal species dens and known occupied habitat		x	x	x											

Farm WAP Mitigation Measures	Relevant Matter of National Environmental Significance																
	DOV & WVI communities	Eastern quoll	Spotted-tail quoll	Tasmanian devil	Swift parrot	Blue-winged parrot	Tasmanian wedge-tailed eagle	Tasmanian masked owl	Eastern barred bandicoot	Green and gold frog	Central north burrowing crayfish	Australian grayling	tailed-spider orchid,	robust fingers	wrinkled dolly bush		
Shared Impact pathway: Land use changes which result in habitat clearing, loss, modification and/or fragmentation																	
Define a 30 m land clearance limit from threatened mammal dens and den habitat		x	x	x													
Require maintenance of logs/hollows in areas of bush and define habitat tree management prescriptions		x	x	x	x	x	x	x									
Retain and protect connective habitat corridors	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		
Define appropriate re-vegetation techniques for terrestrial habitat areas and/or habitat corridors	x	x	x	x	x	x			x	x							
Define maintenance/increase riparian vegetation for bank stabilisation and for shelter for threatened terrestrial and aquatic species		x	x	x	x	x	x	x	x	x	x	x					

Farm WAP Mitigation Measures	Relevant Matter of National Environmental Significance														
	DOV & WVI communities	Eastern quoll	Spotted-tail quoll	Tasmanian devil	Swift parrot	Blue-winged parrot	Tasmanian wedge-tailed eagle	Tasmanian masked owl	Eastern barred bandicoot	Green and gold frog	Central north burrowing crayfish	Australian grayling	tailed-spider orchid,	robust fingers	wrinkled dolly bush
Shared Impact pathway: Biosecurity threats and invasive species impacts including damage from pest animals, diseases and weed invasion leading to increased competition and a reduction in habitat quality.															
Undertake targeted control strategies for pest animals where required and incorporate monitoring of impacts	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Biosecurity measures applied to prevent the spread of pests, weeds and disease	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Incorporate a weed management plan for declared weeds with control conducted on at least an annual basis	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

Farm WAP Mitigation Measures	Relevant Matter of National Environmental Significance																
	DOV & WVI communities	Eastern quoll	Spotted-tail quoll	Tasmanian devil	Swift parrot	Blue-winged parrot	Tasmanian wedge-tailed eagle	Tasmanian masked owl	Eastern barred bandicoot	Green and gold frog	Central north burrowing crayfish	Australian grayling	tailed-spider orchid,	robust fingers	wrinkled dolly bush
Shared Impact pathway: Altered hydrology and water quality decline including modifications to the landscape that disrupt natural water flows; increased dryland salinity; drying out of sites through drainage, damming, or irrigation; or water pollution and increased sediment loads from run-off.															
Outline actions to improve poor drainage resulting from irrigation/urban actions									x	x			x	x	
Outline actions to manage salinity in saline-risk areas according to salinity hazard assessment. Action to be site-specific with the major aim of avoiding groundwater recharge and raising groundwater level.	x									x	x	x			x
Outline actions to ensure run-off is managed where excess is likely to be generated i.e. on steeper slopes with duplex soils and on compacted ground where infiltration is limited.	x									x	x	x			x
Preclude use of heavy machinery use within 5 m of aquatic habitat sites.										x	x	x			

Farm WAP Mitigation Measures	Relevant Matter of National Environmental Significance																
	DOV & WVI communities	Eastern quoll	Spotted-tail quoll	Tasmanian devil	Swift parrot	Blue-winged parrot	Tasmanian wedge-tailed eagle	Tasmanian masked owl	Eastern barred bandicoot	Green and gold frog	Central north burrowing crayfish	Australian grayling	tailed-spider orchid,	robust fingers	wrinkled dolly bush
Shared Impact pathway: Altered hydrology and water quality decline including modifications to the landscape that disrupt natural water flows; increased dryland salinity; drying out of sites through drainage, damming, or irrigation; or water pollution and increased sediment loads from run-off.															
Soil testing and nutrient management planning to be implemented to reduce risk of run-off and associated water pollution										x	x	x			
Shared Impact pathway: Grazing pressures from domestic stock including increased grazing pressures associated with intensification and changes in landscape function; trampling and soil compaction at the edge of waterways; habitat damage, degradation of wetlands and water quality; and degradation of foraging habitat.															
Require installation of barrier protection from livestock for key threatened habitat sites/vegetation communities	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Require installation of barrier protection from livestock for riparian areas										x	x	x			x
Require creation of off-stream or hardened and fenced stock watering points										x	x	x			x

Farm WAP Mitigation Measures	Relevant Matter of National Environmental Significance														
	DOV & WVI communities	Eastern quoll	Spotted-tail quoll	Tasmanian devil	Swift parrot	Blue-winged parrot	Tasmanian wedge-tailed eagle	Tasmanian masked owl	Eastern barred bandicoot	Green and gold frog	Central north burrowing crayfish	Australian grayling	tailed-spider orchid,	robust fingers	wrinkled dolly bush
Shared Impact pathway: Grazing pressure impacts from native fauna including trampling and compaction, habitat damage and degradation of foraging habitat															
Require a wildlife management plan developed before controlling native browsers: The Wildlife Management plan must include regular monitoring and compliance with State legislation and permits required.	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Preclude chemical spraying or fertiliser application within 10 m of known threatened flora species or threatened ecological community	x												x	x	x
Preclude fertiliser application and chemical spraying within 10 m of aquatic habitat.										x	x	x			

Farm WAP Mitigation Measures	Relevant Matter of National Environmental Significance														
	DOV & WVI communities	Eastern quoll	Spotted-tail quoll	Tasmanian devil	Swift parrot	Blue-winged parrot	Tasmanian wedge-tailed eagle	Tasmanian masked owl	Eastern barred bandicoot	Green and gold frog	Central north burrowing crayfish	Australian grayling	tailed-spider orchid,	robust fingers	wrinkled dolly bush
Shared Impact pathway: Inappropriate disturbance, including absent or inappropriate fire regimes.															
Outline fire management regime to match burn intensity and frequency to the types of bush on the property giving consideration to mosaic burning and burning in autumn and winter and in accordance with appropriate local laws.	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

Table 5.2 Unique pathways and specific mitigation measures by MNES

MNES	Impact pathway	Mitigation measure
Threatened vegetation communities (Tasmanian forests and woodlands dominated by black gum or Brookers gum, and Tasmanian white gum wet forest)	Hybridisation with non-Tasmanian plantation eucalypts particularly hybridisation with the plantation species, *Eucalyptus nitens* (for both vegetation communities)	• Farm WAP requiring restriction on plantation of *Eucalyptus nitens* within pollinator range (minimum distance of 200 m)
Tasmanian wedge-tailed eagle	Risk of disrupting a breeding event during maintenance works around (within 500 m or 1,000 m line-of-sight) an active nest within a given breeding season. Disturbance to active nests due to routine, major, or unplanned maintenance activities within proximity to nests.	• No removal of vegetation within 1,000 m of an active eagle nest to occur within the eagle management constraint period. • No change in land use with 500 m direct distance of an eagle nest. • Planned maintenance within 500 m or 1,000 m line-of-sight of any active eagle nest must not be conducted during the eagle management constraint period.

MNES	Impact pathway	Mitigation measure
Tasmanian wedge-tailed eagle	Risk of disrupting a breeding event during maintenance works around (within 500 m or 1,000 m line-of-sight) an active nest within a given breeding season. Disturbance to active nests due to routine, major, or unplanned maintenance activities within proximity to nests.	If unplanned repair work or maintenance must be undertaken during the eagle management constraint period (unless the repair work is urgently required to avert a serious threat to life, property or the environment), the following measures are required: • Unless a nest activity assessment has been undertaken for all nests within 1,250 m of the location, assume that all known nests are active eagle nests. • Ensure that, before entering the works area, all workers are aware of the location of all active eagle nests. • Ensure that no person or vehicle enters any area within 200 m of an active eagle nest. • Ensure that no person looks directly towards an active eagle nest while they are within 1,000 m of an active eagle nest. • Ensure that, unless not visible from any active eagle nest, no heavy vehicles and no more than two light vehicles enter any area within 1,000 m of an active eagle nest, and that in any seven-day period, no vehicle enters within 1,000 m of an active eagle nest more than twice. • Ensure that no heavy vehicles, and no more than two light vehicles, enter any area within 500 m of an active eagle nest in any seven-day period, or enters within 500 m of an active eagle nest more than twice. • Ensure that, in any seven-day period, unless not visible from any active eagle nest, no vehicle remains within 1,000 m of an active eagle nest any longer than 30 minutes; and that regardless of visibility, no vehicle remains within 500 m of an active eagle nest any longer than 30 minutes (unless a suitably qualified eagle specialist has provided prior written agreement specifying the required safeguards and mitigation measures and justification that harm will not result). • If safety requirements allow, instruct workers to not wear hi-visibility clothing while in the allowed proximity to an active eagle nest. • Ensure that no vehicle is parked within sight of an active eagle nest. • Ensure workers always remain within 5 m of one another (to the degree possible) and no work breaks are conducted while within 500 m of an active eagle nest.

MNES	Impact pathway	Mitigation measure
Tasmanian wedge-tailed eagle	Risk of disrupting a breeding event during maintenance works around (within 500 m or 1,000 m line-of-sight) an active nest within a given breeding season. Disturbance to active nests due to routine, major, or unplanned maintenance activities within proximity to nests.	• In the event that the above are not achievable, and/or one or more eagles are noted on or around a nest during works (or the nest is already known or assumed to be active when the exceptional circumstances have been triggered), NRE Tas as the State regulator must be notified immediately and a nest-specific management plan prepared by the proponent to the satisfaction of the regulator, with further mitigation measures to be implemented to the degree practicable on a case-by-case basis. These measures may include: ○ If possible/deemed necessary, the works to cease immediately – until the nesting season is finished and/or the nest is deemed inactive; and ○ If the nature of the works is such that they cannot cease, suitably qualified ecologist/s must be present to observe and monitor the eagle(s) for signs of distress and disruption of breeding activity and advise the contractors accordingly of periods when work can occur. • If a nest activity assessment has been undertaken prior to necessary unplanned repair work or maintenance during the eagle management constraint period and the nest is deemed as inactive, then the eagle management constraint period does not apply and the above are not relevant.
Tasmanian devil	Increased risk of roadkill due to vehicle movement in operational areas.	• Undertake all maintenance and operational works during daylight hours only, restrict speed limits on Devil Road to 20 km/h at all times. • Ongoing monitoring and awareness training for operational staff.
Tasmanian devil	Noise disturbance	• Undertake works that generate noise levels greater than the ambient level at the site (36 dB) outside the Devil Management Constraint Period (see CEMP). • See EPR 1F – Tasmanian devil management – [redacted] in the CEMP for further guidance.
Tasmanian Devil	Predation by domestic dogs	• Prohibit any access by dogs (or other pets) accompanied by workers to all TI sites.
Green and gold frog	Soil disturbance around waterways	• Farm WAP to preclude the use of heavy machinery use within 10 m of habitat sites and ensure the minimisation of mechanical disturbance from vehicle intrusion onto the shoreline to reduce the potential for sedimentation of the waterbody.

MNES	Impact pathway	Mitigation measure
Green and gold frog	Altered hydrology of breeding habitats leading to disruption of breeding cycles.	• Farm WAP to specify retention of a minimum of two metres of standing water in the basin of the waterbody identified as containing habitat to allow GGF adults and larvae to persist at the site until the end of the season. If this is not practical, an assessment must be taken of the waterbody to determine adequate depths to maintain minimum breeding habitats. • Farm WAP to prohibit physical removal of floating aquatic and riparian vegetation.
Green and gold frog	Disease, in particular chytridiomycosis caused by the fungal pathogen *Batrachochytrium dendrobatidis*	• Green and gold frog population and habitat monitoring undertaken at known GGF sites for a minimum of 5 years, which includes: ○ Surface water quality of GGF breeding and dispersal habitat, including nutrient load, ○ Targeted monitoring program for pest fish species, and control and eradication strategies investigated if incursions into green and gold habitat sites are found, and ○ Monitoring of chytrid fungus.
Central North burrowing crayfish	Soil disturbance	• Farm WAP to limit routine maintenance of drainage lines involving clearance of vegetation or scraping topsoil from May to September when soil is damp, and temperatures are lower to reduce the likelihood of desiccation and mortality of individuals inhabiting impacted burrows.
Australian grayling	The Great Bend infrastructure's presence in the waterway has the potential to act as a barrier to fish passage	To avoid and mitigate impacts to fish passage during low-flow conditions(particularly of juveniles migrating upstream) everal controls on extraction are to be included in the OEMP. These include: • That extraction is managed such that water flow below or adjacent to the pump house is not reduced to <0.2m. • Aextraction is managed such that water flow below or adjacent to the pump house is not reduced to <195 ML/day during Dec-May, and <260 ML/day during November. • The river channel adjacent to the pump station will be monitored to ensure the low flow channel is not diverted to, or modified to be within 2.5m of the pump intake. • Where the low flow channel is changed because of natural processes or otherwise, so that it is realigned within 2.5m of the pump intake, remedial

MNES	Impact pathway	Mitigation measure
		works to be completed to restore the low-flow channel to an adequate distance for the intake structure.
Australian grayling	Other on farm instream barriers that have the potential to act as a barrier to fish passage	• Farm WAP to prevent the installation of instream barriers.

Australian grayling	The Great Bend infrastructure may cause entrainment and mortality of fish during water extraction	• The intake structure will utilise a screen at the outer southern face of each pump well, with the screen oriented parallel to the direction of stream flow, according to the following specifications:
		  ○ The screens will be constructed so that approach velocities (as measured in Boys *et al*. 2012, 2021, and Boys 2021) will not exceed 0.1 m/s.
		  ○ Screen orientation and mesh size must ensure that sweeping velocities remain higher than approach velocities during all operational conditions.
		• Where screens that do not meet the above specifications are used at the outer pump well faces, screens that achieve <0.1 m/s approach velocities must be installed within the pump well. Unless monitoring determines that Australian Grayling are not entrained within the pump wells at any time, additional design requirements for screens installed within the pump well are specified below:
		  ○ The pump wells must either:
		  - include a bypass opening on both the upstream and downstream side to allow the exit of fish from the pump well in the direction of streamflow, or
		  - include the use of operational procedures to allow entrained fish to exit the pump well. These must include at a minimum, pump shutdowns for at least 20 minutes every 6 hours of operation from September to December.

Australian grayling	Changes to flow regime resulting from water extraction	• Extraction is limited to within the existing framework specified in the Mersey Water Management Plan (DPIWE, 2005) and in (NRE, 2023). • Where timed releases from Parangana dam are used to supplement flow for extraction, water quality parameters of release water must comply with

MNES	Impact pathway	Mitigation measure
		Default Guideline Values as specified in Environment Protection Authority (2021). • Flow rates within the reaches below the dam must be regularly monitored to ensure that the incidence of *cease to take* thresholds as specified in (DPIWE, 2005) and in (NRE, 2023) does not increase because of Project operations. • Quantitative monitoring of the Australian Grayling population in the Mersey River is conducted at least every two years.

Australian grayling	Changes to the flow regime resulting from water releases from Parangana Dam for the purpose of extraction at Great Bend result in cold water pollution	• Regular monitoring of water quality within the reaches below the dam to ensure that values remain within Default Guideline Values as specified in Environment Protection Authority (2021).
		• Monitoring of water quality and temperature should be conducted at the point of release from Parangana Dam and stratified downstream to the Great Bend Pump Station to detect the extent, if any, of cold-water pollution resulting from timed supplemental releases for the SWISA.
		• Monitoring of water temperatures must be:
		  ○ Monitored continuously within <1 km downstream of Parangana Dam in the main river channel.
		  ○ Monitored continuously at the Great Bend Pump Station within the main river channel.
		  ○ Monitored continuously at the existing Liena Gauge.
		• Monitoring should be conducted for at least 2 years continuously prior to commencement of operation of the scheme, and two years following commencement of operation of the scheme. Continued monitoring after 2 years post commencement can be reevaluated once a suitable data set exists to inform a review of risks associated with cold water pollution – nominally six (6) release events each in winter and summer.

6 Risk Management

Due to the extensive character of an irrigation development such as the Project a risk management framework and strategy for application is required. The identified impact pathways, mitigation measures and risk management response are provided in Table 6.1. The risk framework is also embedded in the Farm WAP and the strategy for ensuring compliance with any MNES permit requirements is the implementation at a more detailed farm level. Each Farm WAP includes a site-specific risk assessment against each potential impact and associated mitigation measures, implementation monitoring and compliance with requirements (refer to Appendix 1 for example). Compliance is further managed through an audit program.

6.1 Environmental monitoring and corrective actions

Monitoring for compliance and ensuring that MNES are not impacted are conducted at two levels. At a large scale across the SWISA scheme monitoring is conducted by TI. This includes landscape and habitat change monitoring, Australian grayling water monitoring and other monitoring set out in section 6.1.6. At a property level monitoring requirements set out in the Farm WAP are the responsibility of the landholder. All commitments are designed to be specific and auditable with measurable outcomes and clear timeframes.

Both levels share an adaptive management approach where monitoring is used as the tool to adapt management when measures have been ineffective and trigger values reached requiring additional interventions (see Table 6.2 for monitoring regimes).

Adaptive management is an approach to management often described as learning by doing (Holling 1978, Walters 1986). The adaptative management concept is widely applied in conservation due to the inherent uncertainty in ecological systems and understanding of those systems (Peterson 2005). It is important to ensure that adaptative management is not implicit in its assumptions but that decisions are structured and measured to build understanding.

The actions proposed in this OEMP reflect the current state of knowledge for the target species and the current management techniques and resources available. The monitoring and evaluation are designed to clearly articulate and critically review the implementation of actions and their outcomes. If the implementation of actions does not achieve the outcomes expected, then the relative success of each action will be independently assessed and external influences considered.

It is considered essential that the reporting be factual and not constrained by fear of failure. All outcomes will be reported. If a revised approach is required at any time due to observations that management responses are ineffective the reporting will identify limitations and proposed adaptations. If there is a significant detrimental impact within the Project operational area, Tasmanian Irrigation will notify DCCEEW with the aim of updating the OEMP.

6.1.1 Rehabilitation and reinstatement monitoring

Ongoing monitoring of rehabilitation and reinstatement sites will ensure any failures are identified and addressed in a timely manner. Monitoring shall include population surveys of any relocated GGF or CNBC to assess whether these species have successfully colonised the sites following salvage translocation (if required) (see EPR 1B.7 and 1C.7).

Additionally, areas impacted by construction that have undergone rehabilitation will be monitored to assess habitat suitability for GGF and to determine whether the species has resumed use of these areas. This assessment will consider habitat structure, vegetation establishment, and other ecological factors critical to supporting the species.

Monitoring will be conducted annually for a minimum of five years or until sufficient data has been collected to demonstrate that the intended outcomes have been achieved.

6.1.2 Farm WAP Monitoring

The specific Farm WAP monitoring requirements for SWISA, as set out in the Farm WAP and being the responsibility of the landholder, are to ensure compliance with measures for land clearance, habitat protection, restoration, pest and weed management, soil and water management, chemical use, fire management, and species-specific protections. Monitoring must ensure no land clearance or modification occurs within MNES-listed habitats or within 30 m of threatened mammal dens. Logs, hollows, and habitat trees in bush areas must be regularly inspected to confirm their retention, and habitat tree management protocols must be implemented for key species.

Monitoring is required to assess the effectiveness of habitat restoration efforts, including re-vegetation and riparian vegetation enhancement for stabilisation and shelter (see EPR 13). Pest and weed management must be monitored through targeted strategies and annual reviews to control pest animals and declared weeds. Soil and water management must include regular inspections of salinity-prone areas, run-off controls, and buffer zones preventing heavy machinery and livestock impacts near aquatic habitats and riparian areas.

Chemical use monitoring ensures compliance with restrictions, prohibiting chemical spraying or fertilisation within 10 m of threatened flora and ecological communities, except for approved selective applications. Fire management practices must be evaluated to confirm adherence to defined burning regimes. Species-specific monitoring includes mapping and maintaining exclusion zones around wedge-tailed eagle nests, Tasmanian devil dens (30 m buffer, July-January), and green and gold frog populations (10 m buffer and monitoring of water levels and vegetation in habitat basins). Central North burrowing crayfish habitats must be monitored for appropriate drainage maintenance during from May to September to avoid disruption.

Farm WAP monitoring is crucial for ensuring that MNES are adequately protected and fostering sustainability to enhance land management and protect biodiversity. By defining and supporting sustainable practices, they encourage irrigators to adopt improved farming methods and encourage stewardship of natural resources.

6.1.3 The Farm WAP Audit Program

Annual auditing of Farm WAPs by TI is a key mechanism for ensuring sustainability and accountability in irrigation practices. By randomly selecting 10-15% of irrigators who used more than 5 ML of TI water during any given year, the audits focus on managing environmental risks effectively. This volume threshold was chosen due to the reduced risk associated with low water use, such as for stock drinking, and the significant potential risk from indirect minimal use on Matters of National Environmental Significance (MNES).

The objectives of the Farm WAP audit are:

- To verify the auditee's conformance with management actions in the Farm WAP.
- To demonstrate Tasmanian Irrigation's compliance with the EPBC referral decisions or Strategic Assessment relevant to each irrigation scheme.

The audit focuses on conformance with the management prescriptions set out in the Farm WAP. Criteria addressed include whether water has been applied appropriately, whether land capability limitations and biodiversity have been appropriately managed, ensuring monitoring has been undertaken, and whether required records are being kept.

Table 6.1 Environmental Risk Assessment

Ref. no	MNES	Mitigation Measure/action	Relevant management response	Triggers for intervention	Likeli-hood	Consequence	Residual risk	KPI	Corrective action	Monitoring Program
1	All	Auditing of Farm WAP compliance	Ensure annual audit of 10% of eligible irrigators under the approved Farm WAP Audit Program	Observed non-compliance with Farm WAP	Likely	Moderate	Medium	All irrigators comply with their Farm WAP requirements	Property visit for non-compliance education, discussion, and intervention to address non-compliance issues.	Farm WAP audit program
2	All	Farm WAP to prohibit clearance or modification of MNES threatened species and ecological communities	Survey for MNES threatened species and ecological communities conducted by prequalified Farm WAP consultant within the allocated irrigation zone (Farm WAP Area)	Clearance or modification of MNES threatened species or ecological communities is observed	Possible	Major	High	No clearance or modification of MNES threatened species or ecological communities occurs	Reportable incident with reference to the Forest Practices Authority and the Department of Natural Resources and Environment Tasmania.	Farm WAP monitoring and audit programs & landscape and habitat change monitoring
3	Tasmanian devil; eastern quoll and spotted tail quoll	Farm WAP to define a 30 m land clearance limit from threatened mammal dens and den habitat	Survey within the identified irrigation/ storage zone (Farm WAP Area for encroachment on threatened mammal dens and den habitat conducted by a qualified ecological consultant	Clearance within 30 m of threatened mammal dens or den habitat is observed	Possible	High	Medium	No land clearance occurs within 30 m of threatened mammal dens or den habitat	Property visit for non-compliance education, discussion, and intervention to address non-compliance issues.	Farm WAP monitoring and audit programs & landscape and habitat change monitoring
4	All fauna	Farm WAP to require maintenance of logs and hollows in areas of bush and to define habitat tree management protocols for key species where required	Farm WAP detailing requirements for logs and hollows dependant species	Unauthorised habitat tree removals or significant habitat degradation; habitat tree management protocols not followed	Unlikely	High	Medium	No decline in the quantity of habitat trees, logs or hollows for threatened fauna; habitat tree management protocols followed	Property visit for non-compliance education, discussion, and intervention to address non-compliance issues.	Farm WAP monitoring and audit programs & landscape and habitat change monitoring

Ref. no	MNES	Mitigation Measure/action	Relevant management response	Triggers for intervention	Likeli-hood	Consequence	Residual risk	KPI	Corrective action	Monitoring Program
5	DOV, WVI, Tasmanian devil; eastern quoll and spotted tail quoll, eastern barred bandicoot and green and gold frog	Farm WAP to require maintenance and regeneration or re-vegetation techniques to be employed for terrestrial habitat areas and/or connective habitat corridors where applicable.	Appropriate regeneration or re-vegetation techniques specified by a prequalified Farm WAP consultant within the farm WAP and supported by information from the initial property survey	Terrestrial habitat areas or connective corridors not regenerated or revegetated or not sufficient in extent or condition to support relevant threatened fauna population	Possible	Moderate	Medium	Terrestrial habitat areas and/or connective habitat corridors regenerated or revegetated and sufficient to support relevant threatened fauna population	Property visit to support restoration/revegetation.	Farm WAP monitoring and audit programs & landscape and habitat change monitoring
6	All	Farm WAP to require maintenance or increase of riparian vegetation for bank stabilisation and for shelter for threatened terrestrial and aquatic species	Riparian vegetation maintenance and bank stabilisation guidelines prepared by a prequalified Farm WAP consultant	Evidence of damage to or decrease of riparian vegetation or riverbanks or associated impacts to threatened terrestrial or aquatic species	Possible	High	Medium	No evidence of damage to or decrease of riparian vegetation or riverbanks or associated impacts to threatened terrestrial or aquatic species	Property visit for education, non-compliance discussion and intervention to address non-compliance issues – may also be a reportable incident with reference to Forest Practices Authority.	Farm WAP monitoring and audit programs & landscape and habitat change monitoring
7	All	Farm WAP to outline targeted control strategy for pest animals and include a Wildlife Management Plan for managing native browsers, incorporating regular monitoring.	Monitoring of control strategy impacts is implemented; with the strategy prepared by a prequalified Farm WAP consultant, and the Wildlife Management Plan ensures compliance with State legislation and required permits.	Targeted control strategy not implemented; targeted control does not adequately protect threatened species from pest animals and population decrease of threatened species due to pest animals is observed	Possible	Moderate	Medium	Control impacts are monitored, and the population decrease of threatened species due to pest animals is not observed	Property visits during audits to support the implementation of pest control strategies and provide wildlife and game management advice, including a review of the management plan.	Farm WAP monitoring and audit programs

Ref. no	MNES	Mitigation Measure/action	Relevant management response	Triggers for intervention	Likeli-hood	Consequence	Residual risk	KPI	Corrective action	Monitoring Program
8	All	Farm WAP to outline weed management plan for Weeds of National Significance (WONS) that have the potential to impact values, and require control conducted on an annual basis or more frequently if required	Weed management plan developed by a qualified ecological consultant	Weed management plan not implemented; threatened species natural values impacted by the presence or spread of declared weeds	Possible	Moderate	Medium	Weed management plan implemented; no impact by weeds on threatened species or natural values	Property visit for education, discussion and intervention to address non-compliance issues.	Farm WAP monitoring and audit programs
9	Green and gold frog. CNBC, DOV, WVI, wrinkled dollybush	Farm WAP to require salinity to be managed in saline-risk areas	Site-specific action detailed after assessment by qualified agricultural/ soil consultant	Salinity levels increase	Unlikely	High	Medium	Areas impacted by salinity do not increase	Property visit to provide land management and hydrological advice.	Farm WAP monitoring and audit programs
10	Green and gold frog, CNBC, DOV, wrinkled dollybush	Farm WAP to require management of run-off where excess is likely to be generated	Site-specific action detailed after assessment by a prequalified Farm WAP consultant	Run-off is found to be impacting threatened species or threatened species habitat	Unlikely	High	Medium	No negative effects of run-off observed	Property visit to provide land management and hydrological advice with review of plan.	Farm WAP monitoring and audit programs
11	Green and gold frog, CNBC, DOV, WVI, wrinkled dollybush	Farm WAP to preclude the use of heavy machinery within 5 m of aquatic habitat sites	Property-wide survey for aquatic habitat and riparian vegetation conducted by prequalified Farm WAP consultant	Damage to riverbanks, aquatic habitat or riparian vegetation through heavy machinery impacts are observed	Possible	Moderate	Medium	No damage to aquatic habitat sites through heavy machinery impacts	Property visit for education, discussion and intervention to address non-compliance issues.	Farm WAP monitoring and audit programs & landscape and habitat change monitoring

Ref. no	MNES	Mitigation Measure/action	Relevant management response	Triggers for intervention	Likeli-hood	Consequence	Residual risk	KPI	Corrective action	Monitoring Program
12	All	Farm WAP to require barrier protection from livestock for key threatened habitat sites/vegetation communities or riparian areas	Ensure installation follows best practice for livestock barrier protection	Damage to barrier is observed; damage to riparian areas, threatened species or bank erosion is observed due to stock access to rivers	Unlikely	Moderate	Low	Barrier protection is effective, no damage to riparian areas, threatened species or bank erosion is observed due to stock access to rivers	Barrier protection strengthened; alternative barrier protection design is utilised.	Farm WAP monitoring and audit programs
13	Green and gold frog, CNBC	Farm WAP to require recommendations for creating off-stream or hardened and fenced stock watering drinking points.	Ensure installation follows best practice for stock drinking points	Damage to riparian areas or bank erosion is observed due to stock access.	Unlikely	Moderate	Low	No damage to riparian areas or bank erosion due to stock access to rivers	Alternative stock drinking points put in place.	Farm WAP monitoring and audit programs & landscape and habitat change monitoring
14	All flora	Farm WAP to prohibit chemical spraying or fertiliser application within 10 m of known threatened flora species or threatened ecological communities. Where this is not practical, for example when dealing with a weed outbreak in a threatened ecological community, spot spraying or cut-and-paint methods with selective herbicides may be considered.	A review of practice is undertaken with ameliorative action required to practices that may have triggered the negative impact	Negative impact to threatened flora species or ecological communities observed due to chemical spraying or fertiliser application	Unlikely	Moderate	Low	No negative impact to threatened flora species or ecological communities from chemical spraying or fertiliser application	Prohibition boundary revisited and widened if required.	Farm WAP monitoring and audit programs

Ref. no	MNES	Mitigation Measure/action	Relevant management response	Triggers for intervention	Likeli-hood	Consequence	Residual risk	KPI	Corrective action	Monitoring Program
15	All	Farm WAP to outline appropriate burning regime	Burning regime designed by qualified fire consultant to match intensity and frequency to the types of bush on the property considering mosaic burning and burning in autumn and winter and in accordance with appropriate local laws.	Negative impact to threatened species or ecological community results from absent or inappropriate fire regime	Possible	Moderate	Medium	No negative impact to threatened species or ecological community from absent or inappropriate fire regimes	Burning regime adapted to reflect requirements as per adaptive management approach.	Farm WAP monitoring and audit programs
16	DOV, WVI	Farm WAP to restrict plantation of *Eucalyptus nitens* within pollinator range (minimum distance of 200 m) of threatened ecological communities that are at risk of hybridisation	Survey within the allocation irrigation zone (Farm WAP Area) for threatened ecological communities that hybridise with *Eucalyptus nitens* conducted by prequalified Farm WAP consultant	*Eucalyptus nitens* plantations established within 200 m of mapped threatened ecological communities that are at risk of hybridisation	Unlikely	Moderate	Low	No *Eucalyptus nitens* plantations established within 200 m of mapped threatened ecological communities at risk of hybridisation	*Eucalyptus nitens* plantations within pollinator range are removed.	Farm WAP monitoring and audit programs
17	WTE	Farm WAP to specify wedge-tailed eagle nest trees be protected from removal - mapped as exclusion zones	TI to conduct aerial WTE nest searches every two years to identify new nest locations	Wedge-tailed eagle nest tree removed	Rare	Moderate	Low	All known wedge-tailed eagle nest trees remaining intact	Property visit for education, discussion and intervention to address non-compliance issues.	Farm WAP monitoring and audit programs & landscape and habitat change monitoring

Ref. no	MNES	Mitigation Measure/action	Relevant management response	Triggers for intervention	Likeli-hood	Consequence	Residual risk	KPI	Corrective action	Monitoring Program
18	WTE	Eagle Management recommendations for maintenance works are applied	TI to ensure all workers are trained in the Eagle Management Strategy for Maintenance Works and are aware of active nest locations	Detection of new nest activity or decline in nesting success rates; increased observations of nest disturbances during routine activities	Rare	High	Low	No decline in nesting success rates observed; no disturbance to wedge-tailed eagle breeding event	Strategy implementation/practice review and adaptation.	Eagle monitoring
19	Tasmanian devil	Speed limits in Warrawee Conservation Area between dusk and dawn	Ongoing monitoring and awareness training for operational staff of roadkill risk	Increase in Tasmanian devil roadkill events exceeding baseline averages	Rare	High	Low	No increase in Tasmanian devil roadkill incidents in Warrawee Conservation Area	Review of speed limit and consideration of alternate strategies such as wildlife underpasses/bridges.	Dasyurid roadkill monitoring
20	Tasmanian devil	Preclusion of machinery use from within 30 m of Tasmanian devil dens between July and January inclusive - mapped as exclusion zones	Survey within the allocated irrigation zone (Farm WAP Area) for Tasmanian devil dens conducted by prequalified Farm WAP consultant	Noise impact to Tasmanian devil population observed	Unlikely	Moderate	Low	No noise impact to Tasmanian devil populations observed	Preclusion boundary expanded.	Farm WAP monitoring and audit programs
21	Green and gold frog	Farm WAP to require a 10 m buffer from all known green and gold frog important populations to prevent disturbance of habitat	Survey for green and gold frog populations within the allocated irrigation zone (Farm WAP Area) conducted by prequalified Farm WAP consultant	Green and gold population is declining, and buffers have not been adhered to	Unlikely	Moderate	Low	No decline in green and gold frog population attributable to lack of buffer implementation	Property visit for non-compliance education, discussion, and intervention to address non-compliance issues. With reinstatement of buffers and restoration if required.	Farm WAP monitoring and audit programs

Ref. no	MNES	Mitigation Measure/action	Relevant management response	Triggers for intervention	Likeli-hood	Consequence	Residual risk	KPI	Corrective action	Monitoring Program
22	Green and gold frog	Farm WAP to preclude the use of heavy machinery within 10 m of green and gold frog habitat sites	Property-wide survey for green and gold frog habitat conducted by prequalified Farm WAP consultant.	Observed decrease in green and gold frog breeding season success due to impacts of heavy machinery; observed negative impact to green and gold frog habitat due to impacts of heavy machinery	Unlikely	Moderate	Low	No decrease in green and gold frog breeding season success; no observed negative impact on green and gold frog habitat due to impacts of heavy machinery	Property visit for non-compliance education, discussion and intervention to address non-compliance issues: review and increase heavy machinery buffer around green and gold frog habitat sites if appropriate.	Farm WAP monitoring and audit programs
23	Green and gold frog	Farm WAP to specify retention of a minimum of two metres of standing water in the basin of the waterbody identified as containing habitat to allow green and gold frog adults and larvae to persist at the site until the end of the season; and to prohibit physical removal of non-weed floating aquatic and riparian vegetation	Property-wide survey for green and gold frog habitat conducted by prequalified Farm WAP consultant.	Green and gold frog breeding cycle disrupted due to altered hydrology of breeding habitats with low water levels observed or removal of floating aquatic riparian vegetation observed	Unlikely	Moderate	Low	No disruption to the green and gold frog breeding cycle due to altered hydrology of breeding habitats.	Property visit for non-compliance education, discussion and intervention to address non-compliance issues.	Farm WAP monitoring and audit programs

Ref. no	MNES	Mitigation Measure/action	Relevant management response	Triggers for intervention	Likeli-hood	Consequence	Residual risk	KPI	Corrective action	Monitoring Program
24	Central North burrowing crayfish	Farm WAP requires routine maintenance of drainage lines in Central North burrowing crayfish habitat to be undertaken in May-September outside of typical breeding season when the when soil is damp	Survey within the allocated irrigation zone (Farm WAP Area) for Central North burrowing crayfish habitat conducted by prequalified Farm WAP consultant	Desiccation and mortality of Central North burrowing crayfish inhabiting impacted burrows; signs of significant burrow damage or increased soil compaction	Possible	Moderate	Medium	No desiccation or mortality to Central North burrowing crayfish from routine maintenance of drainage lines	Property visit for education, non-compliance discussion and intervention to address non-compliance issues.	Farm WAP monitoring and audit programs
25	Australian grayling	Mitigation of cold-water pollution through use of thermal curtains, selective withdrawal capabilities and operational strategies such as appropriately timed releases	Ensure Mersey River monitoring is carried out at appropriate intervals	Negative impacts to Australian Grayling from cold water pollution observed; Mersey River monitoring determines a significant impact on the thermal regime of the river	Unlikely	High	Medium	No negative impact to Australian Grayling from cold water pollution observed; water release has no significant impact on Mersey River thermal regime	Re-evaluation of flow releases and management to be conducted by suitable qualified ecologist	Australian grayling water monitoring program
26	Australian grayling	Regular water quality monitoring and adaptive management to address turbidity and nutrient levels in the Mersey River	Ensure regular water quality monitoring is completed	Turbidity and nutrient levels outside of the Default Guideline Values for Aquatic Ecosystems of the Mersey Catchment (Environment Protection Authority, 2021)	Possible	High	Medium	Turbidity and nutrient levels remain within the Default Guideline Values for Aquatic Ecosystems of the Mersey Catchment (Environment Protection Authority, 2021)	Where parameters exceed those specified, works must immediately be ceased, and appropriate remedial action taken until parameters meet the requirements.	Australian grayling water monitoring program

Ref. no	MNES	Mitigation Measure/action	Relevant management response	Triggers for intervention	Likeli-hood	Consequence	Residual risk	KPI	Corrective action	Monitoring Program
27	Australian grayling	Water extraction to be managed to prevent impact from the Great Bend infrastructure to the Australian grayling	Regular monitoring of water depth and water flow adjacent to the pump house	The Great Bend infrastructure's presence in the waterway acts as a barrier to fish passage; water depth adjacent to the pump house is <0.2m or water flow below or adjacent to the pump house is <195 ML/day during Dec-May, and >260 ML/day during November	Unlikely	High	Medium	Extraction managed such that water depth adjacent to the pump house is not reduced to <0.2m and water flow below or adjacent to the pump house is not reduced to <195 ML/day during Dec-May, and <260 ML/day during November	Where parameters exceed those specified, works must immediately be ceased, and appropriate remedial action taken until parameters meet the requirements.	Australian grayling water monitoring program
28	Australian grayling	Monitoring of the low-flow river channel adjacent to the pump station to prevent impact to the Australian grayling	Ensure regular monitoring of the position of the low flow channel	The Great Bend infrastructure's presence in the waterway acts as a barrier to fish passage; the low flow channel is realigned to be within. 2.5m of the pump intake	Possible	Moderate	Medium	The low flow channel adjacent to the pump station remains further than 2.5m from the pump intake	Where the low flow channel is realigned within 2.5m of the pump intake, remedial works will be completed to restore the low-flow channel to an adequate distance from the intake structure.	Australian grayling water monitoring program
29	Australian grayling	Farm WAP to prevent installation of instream barriers	Removal of instream barriers	On farm instream barriers have been installed and acting as a barrier to fish passage	Unlikely	Moderate	Low	No farm instream barriers are constructed or installed	Removal of constructed or installed farm instream barriers	Australian grayling water monitoring program

Ref. no	MNES	Mitigation Measure/action	Relevant management response	Triggers for intervention	Likeli-hood	Consequence	Residual risk	KPI	Corrective action	Monitoring Program
30	Australian grayling	Use of screens at the intake structure at the outer southern face of each pump well	Monitor pump wells to ensure fish are not entrained within the pump wells at any time, and screens are operating correctly as designed	The Great Bend infrastructure causes entrainment and mortality of fish during water extraction; approach velocities (as measured in Boys et al. 2012, 2021, and Boys 2021) exceed 0.1m/s; sweeping velocities fall lower than approach velocities	Possible	Moderate	Medium	Approach velocities do not exceed 0.1m/s. Sweeping velocities remain higher than approach velocities during all operational conditions	Screens that achieve <0.1m/s approach velocities must be installed within the pump well	Australian grayling water monitoring program
31	Australian grayling	Use of screens within pump well	Monitor pump wells to ensure fish are not entrained within the pump wells at any time, screens are operating correctly as designed and approach velocities remain below 0.1m/s	The Great Bend infrastructure causes entrainment and mortality of fish during water extraction; approach velocities exceed >0.1m/s; fish are found entrained within the pump well	Possible	Moderate	Medium	Australian grayling are not entrained within the pump wells at any time, screens are operating correctly as designed and approach velocities remain below 0.1m/s	Install the following additional design requirements for screens installed within the pump well: The pump wells must either: - include a bypass opening on both the upstream and downstream side to allow exit of fish from the pump well in the direction of streamflow, or - include the use of operational procedures to allow entrained fish to exit the pump well. These must include at a minimum, pump shutdowns for at least 20 minutes every 6hrs of operation during the months of September to December	Australian grayling water monitoring program

Ref. no	MNES	Mitigation Measure/action	Relevant management response	Triggers for intervention	Likeli-hood	Consequence	Residual risk	KPI	Corrective action	Monitoring Program
32	Australian grayling	Timed releases from Parangana dam are used to supplement flow for extraction	Monitor water quality in association with timed water releases from Parangana dam	Changes to flow regime of Mersey River impact Australian grayling; water quality due to timed release from Parangana dam not complying with Default Guideline Values as specified in Environment Protection Authority (2021)	Possible	Moderate	Medium	Water quality due to timed release from Parangana dam complies with Default Guideline Values as specified in Environment Protection Authority (2021)	Immediate action to ensure flow regimes are maintained to specifications	Australian grayling water monitoring program
33	Australian grayling	Extraction management in the Mersey River	Ensure adequate communication of no-take trigger limits	Changes to flow regime of Mersey River impacting Australian grayling; no-take trigger limits of 195ML/day during Dec-May, and 260ML/day during November	Possible	Moderate	Medium	No-take trigger limits are adhered to	Immediate action to ensure flow regimes are maintained to specifications.	Australian grayling water monitoring program
34	Australian grayling	Monitoring of flow rates within the reaches below the dam	Ensure flow rates within the reaches below the dam are regularly monitored	Changes to flow regime of Mersey River impacting Australian grayling; the incidence of cease to take thresholds as specified in (DPIWE, 2005) and in (NRE, 2023) increase because of SWISA operations.	Unlikely	Moderate	Low	The incidence of cease to take thresholds as specified in (DPIWE, 2005) and in (NRE, 2023) does not increase because of SWISA operations.	Immediate action to ensure flow regimes are maintained to specifications.	

Ref. no	MNES	Mitigation Measure/action	Relevant management response	Triggers for intervention	Likeli-hood	Consequence	Residual risk	KPI	Corrective action	Monitoring Program
35	Australian grayling	Quantitative monitoring of the Australian grayling population in the Mersey River is conducted at least every two years	Ensure quantitative monitoring of the Australian Grayling is conducted at least every two years	Declines in abundance and distribution of Australian grayling in the Mersey River are observed	Unlikely	High	Medium	No decline in abundance or distribution of Australian grayling in the Mersey River are observed	When declines in the abundance and distribution of Australian Grayling are observed in the Mersey River and its lower catchment, assessments are conducted to examine any potential interaction between these declines and the operation of the SWISA scheme. If a connection is identified, the evaluation focuses on determining whether the existing operational and mitigation measures are adequate to address the issue.	Australian grayling water monitoring program

36	Australian grayling	Monitoring of water quality and temperature conducted at the point of release from Parangana Dam, and stratified downstream to the Great Bend Pump Station to detect the extent, if any, of cold-water pollution resulting from timed supplemental releases for the SWISA irrigation scheme	Ensure continual monitoring of water quality and temperature according to the following prescriptions: • Monitored continuously within <1km downstream of Parangana Dam in the main river channel. • Monitored continuously at the Great Bend Pump Station within the main river channel. • Monitored continuously at the existing Liena Gauge. • Monitoring should be conducted for at least 2 years continuously prior to commencement of operation of the scheme, and two years following commencement of operation of the scheme. Continued monitoring after 2 years post commencement can be reevaluated once a suitable data set exists to inform a review of risks associated with cold water pollution – nominally six (6) release events each	Cold pollution due to water releases from Parangana Dam for the purpose of extraction at Great Bend dam impacts Australian grayling; releases from Parangana dam for the purposes of extraction for the SWISA scheme significantly change the natural seasonal thermal regime of the Mersey River or cause a reduction in water temperatures of greater than 10 degrees Celsius at any point downstream of the dam	Unlikely	High	Medium	Values remain within Default Guideline Values as specified in Environment Protection Authority (2021); releases from Parangana dam for the purposes of extraction for the SWISA scheme do not significantly change the natural seasonal thermal regime of the Mersey River and does not cause a reduction in water temperatures of greater than 10 degrees Celsius at any point downstream of the dam	Operational or design mitigations must be implemented and or adapted to mitigate the impact.	Australian grayling water monitoring program

Ref. no	MNES	Mitigation Measure/action	Relevant management response	Triggers for intervention	Likeli-hood	Consequence	Residual risk	KPI	Corrective action	Monitoring Program
			in winter and summer							

Monitoring is a cornerstone of accountability and a critical tool for tracking the success of mitigation measures. It facilitates adaptive management by providing essential data to assess and address potential risks to Matters of National Environmental Significance (MNES) arising from the operations of the Project.

A key component of potential operational impacts is the loss of habitat and change in the quality for habitat. To ensure this risk is managed a 3 yearly assessment of landscape change in relation to mature trees and habitat condition across the Project district will be implemented. This proactive approach ensures that management strategies remain effective and responsive to evolving conditions.

6.1.4 Landscape and habitat change monitoring

The landscape and habitat change monitoring involves desktop analysis to assess vegetation and habitat changes associated with the SWISA. This monitoring aims to identify potential landscape impacts on MNES. The analysis focuses on tracking alterations in the cover of remnant vegetation, ground cover, and mature tree retention, which are critical for habitat preservation. All known mammal dens will be reviewed to ensure no clearing or disturbance has encroached within the 30 m buffer zone. Additionally, vegetation condition and weed infestations will be evaluated to detect any signs of degradation or invasive species spread.

When substantial changes are detected through desktop analysis, field verification will be required to confirm and address observed impacts. Triggers for intervention, outlined in Table 6.1 Environmental Risk Assessment, will guide the need for onsite visits and corrective actions. The triggers are designed to allow identification of potential impacts and timely response to issues such as habitat loss, vegetation condition decline, or increased weed infestation. This approach provides a robust mechanism for monitoring and mitigating landscape changes to safeguard MNES and maintain the ecological integrity of the area.

6.1.5 Australian grayling water monitoring program

The monitoring requirements in the OEMP aim to mitigate impacts on fish passage, pump intake entrainment, flow regimes, and cold water pollution. To protect fish passage, water extraction must maintain a depth of at least 0.2 m and flows above 195 ML/day (Dec-May) and 260 ML/day (November). The low-flow channel near the pump intake must be monitored to remain at least 2.5 m away, with remedial works required if this distance is breached. Intake structures must use screens designed to limit approach velocities to ≤0.1 m/s, ensure proper sweeping flow, and include measures to allow fish to exit the pump wells, such as bypass openings or periodic pump shutdowns. Regular monitoring will ensure screens function properly and are undamaged.

Flow regimes must comply with the Mersey Water Management Plan, with no-take trigger limits enforced and supplemental releases monitored to avoid impacts on Australian Grayling populations. Migration cues during Sep-Dec will be monitored, with assessments and mitigation protocols implemented if deviations exceed 10%. To address cold water pollution, water temperature and quality must be monitored continuously downstream of Parangana Dam for at least two years pre- and post-operation. Releases must not alter the natural thermal regime or cause downstream temperature reductions exceeding 10°C. Remedial actions will be implemented where monitoring identifies significant impacts.

6.1.6 Other monitoring

There are other monitoring requirements not addressed by the Farm WAP monitoring, landscape and habitat change monitoring and the Australian grayling water monitoring program which are included below in Table 6.2. The life of the scheme is 100 years. It is anticipated that the monitoring programs will continue only as long as they provide useful information to adaptive management and protection of MNES.

Table 6.2 SWISA Monitoring Program

Monitoring Program	Species/Control Area	Control Description	Monitoring Requirements	Responsibility	Frequency	Adaptive management measures
Dasyurid roadkill monitoring	Dasyurid sp., Warrawee Conservation Area	Roadkill monitoring	Roadkill occurrences for Dasyurid sp. along roads in Warrawee Conservation Area	TI	Periodic with annual review (when maintenance is undertaken that requires the workers to drive the road, any dasyurid roadkill will be recorded)	See Table 6.1 ref no. 19
Landscape and habitat change monitoring	Dasyurid sp., Warrawee Conservation Area	Habitat monitoring	Habitat loss and condition decline assessment	Ecologist/GIS specialist	Every 3 years – 1st report due December 2027.	See Table 6.1 ref no. 2 – 6, 11, 13, 17
Australian grayling water monitoring program	Australian grayling, Point of release at Parangana Dam, and stratified downstream to the Great Bend Pump Station	Water quality and temperature	Monitoring of water quality and temperate to detect the extent, if any, of cold-water pollution resulting from timed supplemental releases for the SWISA irrigation scheme	TI	Monthly	See Table 6.1 ref no. 25, 26, 36
Australian grayling water monitoring program	Australian grayling, Great Bend Pump Station	Water depth and water flow	Monitoring of water depth and flow adjacent to the pump house Monitoring of the low-flow river channel adjacent to the pump station	TI	Continual	See Table 6.1 ref no. 27, 28

Monitoring Program	Species/Control Area	Control Description	Monitoring Requirements	Responsibility	Frequency	Adaptive management measures
Australian grayling water monitoring program	Australian grayling, Mersey River	Water quality and flow rates	Turbidity and nutrient levels in the Mersey River Monitoring of flow rates within the reaches below the dam	TI/Hydro	Continual	See Table 6.1 ref no. 26, 32, 33, 34
Landscape and habitat change monitoring	Central North burrowing crayfish	Habitat monitoring	Presence and density of burrows within known locations and monitoring for the co-occurrence of the introduced freshwater yabby	Ecologist	Every 3 years – 1st report due December 2027. Avoid survey in periods of extreme dry or wet weather)	See Table 6.1 ref no. 24
Landscape and habitat change monitoring	Swift parrot and blue-winged parrot	Habitat monitoring	Desk-top analysis of mature tree habitat retention including identification of potential nesting trees	Ecologist/GIS specialist	Every 3 years – 1st report due December 2027	See Table 6.1 ref no. 2, 4
Farm WAP audit program	Central North Burrowing Crayfish	Habitat monitoring	Known locations are monitored by counting chimneys and observing any changes		Annually for five years	
Green and gold frog monitoring	Green and gold frog	Water quality monitoring	Water sampling for nutrient concentration (TP & TN), EC, DO, turbidity, pH	TI	Periodic with annual review – after large rainfall events	See Table 6.1 ref no. 10
Green and gold frog monitoring	Green and gold frog	Pest fish species monitoring	Targeted monitoring program for pest fish species, and control and eradication strategies investigated if incursions into green and gold habitat sites are found	TI	Periodic, when practical to complete with annual review	See Table 6.1 ref no. 7

Monitoring Program	Species/Control Area	Control Description	Monitoring Requirements	Responsibility	Frequency	Adaptive management measures
Farm WAP audit program	Green and gold frog	Chytrid fungus monitoring	Monitoring of chytrid fungus	TI	Periodic with annual review as part of Farm WAP Audit Program (10%)	
Eagle monitoring	Tasmanian wedge-tailed eagle	Habitat monitoring - Nest locations and disturbance records	Desk-top analysis of mature tree habitat retention including analysis of all active and inactive WTE nests. This assessment will be augmented with annual surveys conducted by FPA, Utas &NRE	Ecologist/GIS specialist	Every 3 years – 1st report due December 2027	See Table 6.1 ref no. 2, 4, 17
Farm WAP audit program & landscape and habitat change monitoring	*Caladenia tonellii* (robust fingers)	50 m exclusion zones around known populations	Vegetation condition assessments, weed intrusion surveys	TI	Annual review as part of Farm WAP Audit Program (10%)	See Table 6.1 ref no. 2, 8, 14, 15
Farm WAP audit program & landscape and habitat change monitoring	*Eucalyptus ovata/brookeriana* Forest/Woodland Community and Tasmanian white gum (*E. viminalis*) wet forest	Establishment of buffer zones and exclusion areas	Vegetation mapping, invasive species assessments	TI	Annual review as part of Farm WAP Audit Program (10%)	See Table 6.1 ref no. 2, 5, 9 - 11, 14 - 16

Monitoring Program	Species/Control Area	Control Description	Monitoring Requirements	Responsibility	Frequency	Adaptive management measures
Rehabilitation and reinstatement monitoring	All sites that have undergone rehabilitation/ reinstatement	Habitat and species monitoring	Monitoring must be undertaken annually to determine the success of rehabilitation of areas with any failures addressed. Monitoring for GGF presence in rehabilitation sites, as well as the condition of any relocated GGF or CNBC, must be included in this assessment. A five-year review must be undertaken to verify that targets have been achieved.	TI/ suitably qualified ecologist	Annual review with five – year report	See Table 6.1 ref no. 5

7 Roles and responsibilities

The table below defines the specific responsibilities of key personnel and stakeholders to ensure compliance with environmental obligations, effective risk management, and the sustainable operation of the scheme.

Roles and responsibilities for the implementation of this OEMP are presented in Table 7.1.

Table 7.1 Roles and responsibilities

Role	Responsibility
General Manager Environment, Health and Safety	• Ensure compliance with the OEMP and EPBC Act conditions. • Ensure Farm WAP audits are conducted according to the Farm WAP Audit Program. • Provide training and guidance on environmental management procedures. • Oversee implementation of the OEMP. • Coordinate monitoring programs and data reporting to DCCEEW and NRE.
TI Environment Team	• Implementing a compliance process to ensure that environmental requirements are upheld throughout the operational period. • Implementation of Farm WAP Audit Program. • Implement corrective actions when triggers are reached. • Ensure proper documentation of maintenance activities. • Arrange periodic aerial nest searches and nest activity assessments to be completed by a suitably qualified eagle specialist.
Prequalified Farm WAP Consultant	The TI Environment Team will engage a prequalified Farm WAP consultant to perform tasks as required in this OEMP.
Suitably qualified ecologist	The TI Environment Team will engage a suitably qualified ecologist to perform tasks as required by this OEMP.
Operations Team	• Oversee daily operational activities to align with OEMP guidelines. • Perform routine maintenance of pump stations, balance tanks, and pipelines. • Adhere to fauna disturbance protocols, particularly for sensitive species like the Tasmanian Wedge-tailed Eagle. • Collect environmental monitoring data and report incidents to the TI Environment Team • Follow hygiene protocols to prevent the spread of diseases affecting key species. • Ensure compliance with operational limits, especially near sensitive habitats and during restricted times.

8 Reporting

This section details the reporting requirement for compliance with this OEMP. A list of required reports, a description of the standard content of the report and the trigger points for the report are provided as well as the audience for the report in provided in Table 8.1.

Table 8.1 Reporting requirements

Report required	Description of the standard content	Trigger point for reporting	Report audience
Farm WAP Audit reports	A summary document of Audit finding across the Farm WAPs will be required to determine their effectiveness for compliance within the SWISA. Audits focus on conformance with the management prescriptions set out in each Farm WAP. Criteria to be addressed include whether water has	Annual requirement	Internal TI, NRE

Report required	Description of the standard content	Trigger point for reporting	Report audience
	been applied appropriately, and whether land capability limitations and biodiversity have been managed appropriately, whether monitoring has been undertaken, and whether the required records are being kept.		
Monitoring reports			
Australian Grayling population monitoring report	Population assessment and review	Quantitative monitoring is conducted for two years.	Internal TI
WTE nest activity	Habitat retention review – assessment of the maintenance of nesting trees and change over time	Every 3 years	Internal TI
Dasyurids: Tasmanian Devil, Spotted tail Quoll and Eastern Quoll	Monitoring of habitat quality and trend assessment including roadkill mortality rate assessment	Every 3 years	Internal TI
CNBC	Population assessment and trends in potential changes in density. Introduced Yabby invasion assessment in relation to CNBC habitat	Every 3 years	Internal TI
Blue-winged and Swift Parrot	Habitat retention review – assessment of the maintenance of nesting and foraging habitat and change over time	Annual reporting on forage and habitat availability	Internal TI
Water quality	Water quality trend analysis and review of changes	Annual requirement	Internal TI, NRE
Non-Compliance			
Non-compliance/ environmental incident reporting	Detailed information on the non-compliance, impact pathways and remedial actions undertaken.	Monitoring demonstrates non-compliance with permit condition	DCCEEW

9 Audit and review

This OEMP will be regularly audited by TI and an independent auditor to ensure compliance with conditions of approval and the commitments made in this OEMP. These requirements ensure the effective implementation and ongoing effectiveness of this OEMP, maintaining consistency with the Environment Protection and Biodiversity Conservation Act 1999 Independent Audit and Audit Report Guidelines. Table 9.1 outlines the schedule for auditing relevant to this OEMP.

Table 9.1 Audit and review requirements

Audit/review	Responsibility	Frequency	Minimum Requirement
Internal audit of OEMP	TI	2 years	Compliance with the commitments or actions in the OEMP and relevant improvements for performance in an area of environmental impact as per the defined triggers in Table 6.1.
Internal review of the OEMP	TI	After an environmental incident	Following an incident whereby potential impact to a MNES may have occurred and amendments required in this OEMP are required to be incorporated from the incident investigation.
Independent audit in accordance with EPBC 2023/09666	Independent auditor	As required by approval conditions	As required by approval conditions.

10 Environmental training

The contents of this OEMP will be communicated to TI operational and environmental personnel through a mandatory site induction. Environmental aspects of the site induction will be delivered by the TI Environmental Team and will include:

- Legislative and other requirements, including approvals and resulting conditions.
- Environmental objectives to be achieved for the Scheme.
- Environmental responsibilities and individual roles relevant to environmental management, including potential consequences of not meeting environmental responsibilities.
- Environmental reporting requirements relevant to individual roles.
- Potential environmental risks and impacts relevant to the operation of the scheme. This will include specific training on the identification and management of MNES during operation, including:
    - Identification of CNBC and habitat elements.
    - Identification of GGF, GGF habitat elements and signs, symptoms of chytrid fungus infection, and measures to be followed if a GGF is identified during operations.
- Environmental management measures outlined in the scheme's environmental management handbook including:
    - Weed and Disease Management Plan (WDMP)
    - Erosion and sediment control plan (ESCP)
    - Environmental incident and emergency response procedure

In addition to being communicated through the site induction, copies of the OEMP will be made available via the TI electronic document management system (EDSM), being SharePoint at the time of writing.

11 Emergency contacts and procedures

11.1 Environmental incidents

Environmental incidents for the Project include any event that results in potential or actual environmental harm, including harm to relevant MNES protected under the EPBC Act (see Section 3.3).

As outlined in Section 5, in relation to the protection of MNES, harm means to cause any measurable direct or indirect disturbance or deleterious change as a result of any activity associated with the Action (i.e. the Project).

Environmental incidents include:

- Any event that results in actual or potential serious or material environmental nuisance or harm (as defined under Section 5 of the Tasmanian Environmental Management and Pollution Control Act 1994 (EMPCA).
- Fauna death or injury caused by operational activities.
- Disturbance of an active Tasmanian wedge-tailed eagle nest
- Unauthorised clearance of state and nationally threatened flora species.
- Unauthorised clearance of threatened native vegetation communities (Tas) and threatened ecological communities (Cth.).
- Unauthorised clearance of state and nationally threatened fauna habitat, including:
    - optimal denning habitat for the Tasmanian devil, eastern quoll, and spotted-tail quoll.
    - known potential habitat for the CNBC habitat and GGF.
    - hollow-bearing trees and forest habitat areas (swift parrot, blue-winged parrot and Tasmanian masked owl).
    - trees containing Tasmanian wedge-tailed eagle nest
- Spills of environmentally hazardous materials to land or waterways.
- Failure of sediment and erosion controls causing unauthorised discharge of sediment to land or waterways.
- Damage to historic heritage or Aboriginal heritage values.
- Any other non-compliance with the OEMP identified through environmental audits and/or environmental monitoring.

The responses/corrective actions for these potential incidents are outlined in Section 6.

11.2 Emergency contacts

Emergency contacts will include the Scheme Operator and the TI Environment Manager, who will either stop or direct works as required to manage the emergency. The Environment Protection Authority Tasmania (EPA) will be notified where there is a risk of environmental harm (including environmental nuisance), as defined under the EMPCA. If the environmental emergency has the potential to harm a MNES, DCCEEW will also be notified through the TI General Manager Environment, Health and Safety. Key contacts for environmental emergencies are outlined in Table 11.1.

Table 11.1 Key contacts for environmental emergencies

Emergency contact	Contact number
Scheme Operator	<removed from public document>
General Manager Environment Health and Safety	<removed from public document>
EPA (incident response)	1800 005 171

Emergency contact	Contact number
WIRES Wildlife Rescue	1300 094 737
Bonorong Wildlife Rescue	0447 264 625

12 References

North Barker Ecosystem Services (25 November 2024) Sassafras – Wesley Vale Irrigation Scheme Augmentation Natural Values Assessment, Version 0.4

Elgin Associates (18 November 2025) Australian Grayling (*Prototroctes maraena*) Species Impact Assessment, Version Rev 3

Enviro-dynamics (December 2024) Tasmanian Devil Impact Assessment, Version 1.2

Appendix 1 – Risk assessment framework

A risk assessment has been conducted for all potential impacts. The likelihood and consequence of each potential impact was assessed in accordance with the descriptors given in the tables below. From these, a risk rating is determined and assigned to each potential impact. The assigned risk ratings were used to guide the amount of time and resources that will be required to manage each risk. Risks with 'low' risk ratings will usually require significantly less management than 'medium', 'high' and 'severe' risks.

Table 12.1: likelihood descriptors

Qualitative measure of likelihood	**How likely is it that this event/issue will occur after control strategies have been put in place**
Highly likely	Is expected to occur in most circumstances
Likely	Will probably occur during the life of the project
Possible	Might occur during the life of the project
Unlikely	Could occur but considered unlikely or doubtful
Rare	May occur in exceptional circumstances

Table 12.2: consequence descriptors

Qualitative measure of consequences	**What will be the consequence/result if this issue does occur rating**
Minor	Minor incident of environmental damage that can be reversed
Moderate	Isolated but substantial instances of environmental damage that could be reversed with intensive efforts
High	Substantial instances of environmental damage that could be reversed with intensive efforts
Major	Major loss of environmental amenity and real danger of continuing
Critical	Severe widespread loss of environmental amenity and irrecoverable environmental damage

Table 12.3: risk ratings

	Consequence				
	Minor	**Moderate**	**High**	**Major**	**Critical**
Highly Likely	Medium	High	High	Severe	Severe
Likely	Low	Medium	High	High	Severe
Possible	Low	Medium	Medium	High	Severe
Unlikely	Low	Low	Medium	High	High
Rare	Low	Low	Low	Medium	High

- Following the assessment of the uncontrolled risk, controls and mitigation strategies were then applied. The likelihood and consequence were then re-assessed considering the control, and a residual risk rating was determined. The completed risk assessment is shown in Table 6.1