TASMANIAN IRRIGATION –

Sassafras – Wesley Vale Irrigation Scheme Augmentation, Tasmania

Water Quality Management Plan

EPBC Act Reference: 2023 / 09666

Prepared for

Tasmanian Irrigation

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ABBREVIATIONS

ASS	Acid sulphate soils
CEMP	Construction Environmental Management Plan
CMEPR	Construction and Maintenance Environmental Protection Requirements
CNBC	Central north burrowing crayfish (*Engaeus granulatus*)
Construction Corridor	The impact area of construction activities.
DCCEEW	Department of Climate Change, Energy, the Environment, and Water
DGVs	Default Guideline Values
DO	Dissolved oxygen
EPBC Act	Environment Protection and Biodiversity Conservation Act (1999)
EPR	Environmental Protection Requirements
GBPS	Great Bend Pump Station
GGF	Green and gold frog (*Litoria raniformis*)
ML	Megalitre
PASS	Potential acid sulphate soils
PEVs	Protected Environmental Values
rDGV	relevant Default Guideline Values
SHBT	Saggers Hill Balance Tank
SOPs	Standard Operating Procedures
SWISA	Sassafras Wesley Vale Irrigation Scheme Augmentation
The Project	Sassafras Wesley Vale Irrigation Scheme Augmentation
TI	Tasmanian Irrigation Pty Ltd
WQMP	Water Quality Management Plan

1 INTRODUCTION

1.1 Engagement

Elgin Associates Pty Ltd (**Elgin**) was engaged by Enviro-dynamics Pty Ltd, on behalf of Tasmanian Irrigation Pty Ltd (**TI**), to prepare this Water Quality Management Plan (**WQMP**) to support the construction and maintenance (involving capital works) of the Sassafras Wesley Vale Irrigation Scheme Augmentation (**SWISA**; **the Project**).

1.2 Objective

The objective of this WQMP is to protect aquatic values, including aquatic fauna and flora, during SWISA construction and maintenance (involving capital works) at or adjacent water crossings by managing and monitoring water quality.

1.3 Project Overview

The existing Sassafras Wesley Vale Irrigation Scheme (SWIS) established in 2012 currently delivers 5,460 ML of reliable water. The SWISA is a 9,200 ML augmentation scheme established to provide additional water to the districts of Wesley Vale, Sassafras, Harford, Northdown, Thirlstane, and Pardoe (**Figure 1**). Combined, the schemes have the capability of delivering more than 14,660 ML of water entitlement over a 150-day summer period.

Water is primarily sourced from the Mersey River, with extra volume released from Lake Parangana used during low flow periods. Water will be extracted at the Great Bend Pump Station (**GBPS**) and pumped to the Saggers Hill Balance Tank (**SHBT**) and distributed to scheme participants via an underground pipeline network.

The construction of the SWISA involves refitting the GBPS, constructing new infrastructure including the SHBT and associated access road, Sassafras Booster Pump Station, approximately 102 km of new pipeline, and decommissioning the aged assets.

1.4 Project Area

The Project is located in the central north of Tasmania, extending between Devonport and Port Sorell in the northern extent, and southward to Sassafras and occurs within both the Mersey catchment and Rubicon river catchment (**Figure 1**). The area is comprised mostly of non-forest agricultural land with some small patches of remnant native vegetation. The major agriculture type is livestock grazing. The SWISA will service 163 properties, equating to a scheme Operational Area of 18,000 Ha. The Construction Corridor, the impact area of construction activities, is estimated to be approximately 321 Ha (**Figure 1**) and includes a nominal 30 m corridor around the pipeline alignment plus any permanent infrastructure and temporary construction impact areas.

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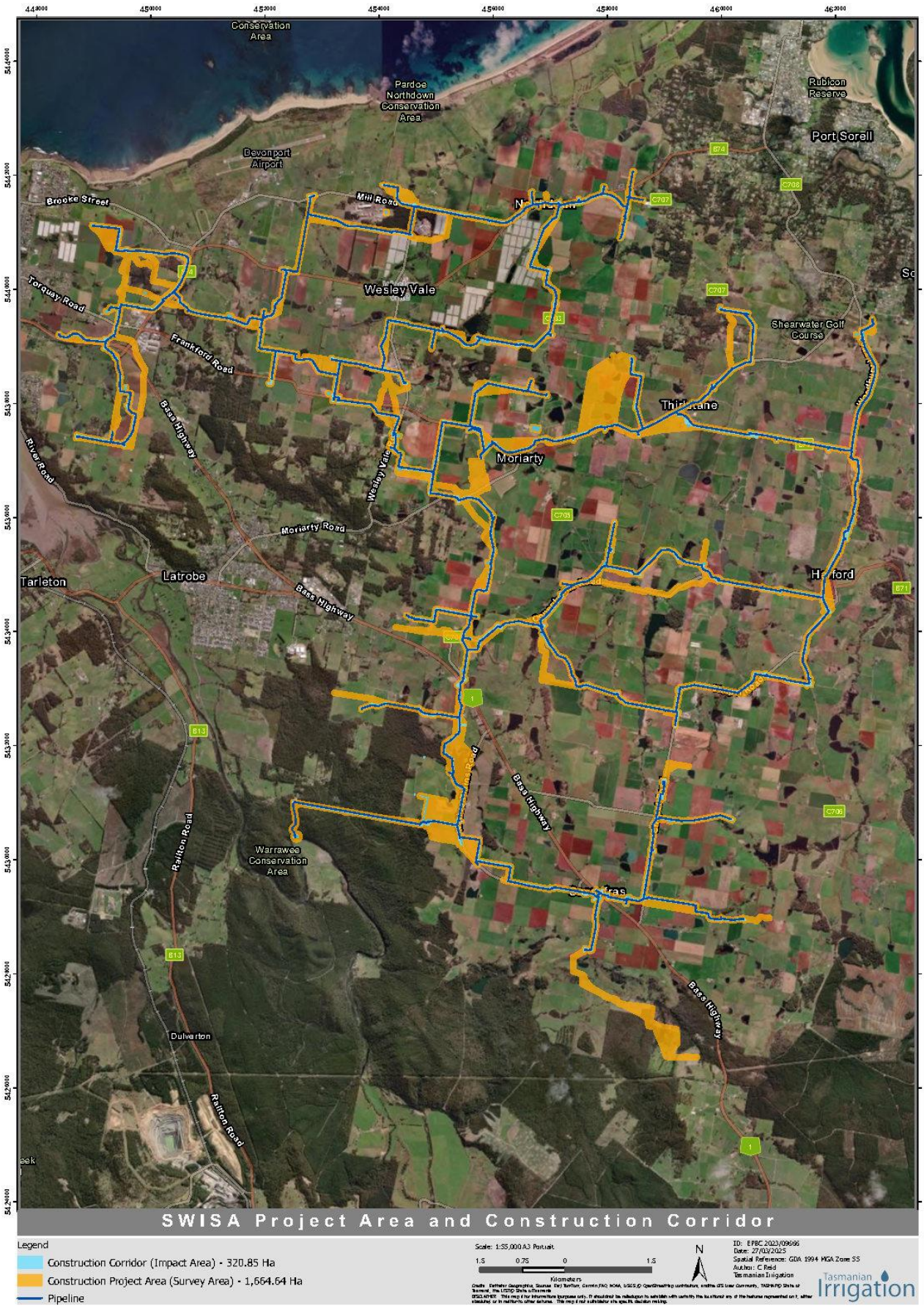

Figure 1. SWISA Project Area.

2 ROLES AND RESPONSIBILITIES

Table 1. WQMP indicative roles and responsibilities summary.

Stakeholder	Roles and Responsibilities
Tasmanian Irrigation	• Provision of monitoring and management requirements in the WQMP to relevant stakeholders. • Providing a copy of the current approved WQMP to relevant authorities and contractors (if applicable). • Ensuring compliance with the WQMP. • Continual review of risk mitigation/control suitability, and implementation of adaptive management techniques to meet compliance. • Liaison with relevant authorities as required to communicate any impacts or potential impacts to water quality and/or Australian Grayling.
Relevant contractors including those engaged for construction.	• Perform contract obligations in accordance with this WQMP and all other relevant legislation. • Prepare detailed Construction Management Documents that are informed by this WQMP, detailing how relevant control and protection measures will be implemented throughout construction and maintenance (involving capital works). • Continual review of risk mitigation/control suitability, and implementation of adaptive management techniques to meet compliance. • Implement monitoring, including installation and maintenance of monitoring equipment (if required), monitoring of water quality, and calibration of water quality meter/s; • Informing TI of any impacts or potential impacts to water quality and/or Australian Grayling.
Environmental consultants	• Prepare the WQMP and update as required. • Complete an impact risk assessment for each watercourse crossing that occurs in a watercourse where Australian Grayling are likely to occur. • Complete investigations or field notes following incidents if and as required. • Preparing detailed crossing-specific crossing methodology. • Complete water crossing monitoring post-construction. • Assist TI and relevant contractors with implementing management controls for water quality and fish passage aspects. • Reporting to TI. • Liaison with TI and relevant authorities as required on monitoring and management and its results including with the Department of Climate Change, Energy, the Environment and Water (**DCCEEW**).

3 REGULATION AND GUIDELINES

The Project is subject to assessment under the *Environment Protection and Biodiversity Conservation Act 1999* (**EPBC Act**) and relevant state legislation, including Permits to Take under the *Threatened Species Protection Act 1995* (Tasmania) and *Nature Conservation Act 2002* (Tasmania), a Reserve Activity Assessment under the *National Parks and Reserves Management Act 2002* (Tasmania) for works within the Warrawee Conservation Area, and approval from the Latrobe Council under the *Land Use Planning and Approvals Act 1993* (Tasmania).

The following legislation and guidelines also apply to the monitoring of water quality for the SWISA:

- Environmental Management and Pollution Control Act 1994
- State Policy on Water Quality Management 1997
- Australian and New Zealand guidelines for fresh and marine water quality (ANZG, 2018)
- ANZECC guidelines for water quality (ANZECC, 2000)
- Default Guideline Values for Aquatic Ecosystems of the Mersey Catchment (EPA Tasmania, 2021)
- Default Guideline Values for Aquatic Ecosystems of the Rubicon Catchment (EPA Tasmania, 2021).

3.1 EPBC Act Approval and Conditions

The Project was referred to the Australian Government under 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). EPBC approval was granted on 15 August 2025. The following conditions are relevant to this WQMP:

Water Quality Monitoring Plan

8) To prevent **harm** to **Australian Grayling** during **construction** works, the approval holder must, prior to the commencement of any **construction** works, prepare a Water Quality Management (WQMP). The approval holder must commence implementing the WQMP no later than the **commencement of the Action** and continue implementing the WQMP for all **construction** works until the completion of all **construction**.
9) The approval holder must conduct and implement water quality monitoring as set out in Environmental Protection Requirements (**EPR**) 4.2 of the **Construction and Maintenance Environmental Requirements** (**CMEPR**)**.**
10) If the **background turbidity level** immediately upstream of the **construction** works area, measured as set out in EPR 4.2 of the **CMEPR**, is at or below the specified seasonal turbidity value, as set out in the **relevant Default Guideline Values** (**rDGV**), the approval holder must ensure that **construction** works are carried out so that the turbidity value in any natural surface watercourse downstream of the **construction** works does not exceed the **rDGV**.
11) If a **background turbidity level** immediately upstream of a **construction** works area, measured as set out in EPR 4.2 of the **CMEPR**, exceeds the **rDGV**, the approval holder must ensure that **construction** works do not cause turbidity levels to increase above the measured **background turbidity level**.
12) If the turbidity value in any natural surface watercourse downstream of **construction** works exceeds the rDGV, the approval holder must:
    a) ensure that **construction** works cease immediately.
    b) not resume any **construction** works that may contribute to turbidity until the downstream turbidity level is below the **rDGV** or **background turbidity level.**

3.2 Environmental Protection Requirements

TI has developed Environmental Protection Requirements (**EPRs;** see Appendix A of the Construction Environmental Management Plan (**CEMP**)) to meet permit requirements and protect Matters of National Environmental Significance, including Australian grayling (*Prototroctes maraena*), central north burrowing crayfish (*Engaeus granulatus*), and green and gold frog *(Litoria raniformis)*, and other protected values and matters including aquatic values. The Construction and Maintenance Environmental Protection Requirements (**CMEPR**) is the overarching document that details the EPRs for the Project (see Appendix A of the CEMP). The CMEPR was submitted to and approved by the DCCEEW under the EPBC Act. The EPR relevant to this WQMP includes 4.2 Water Quality Management Plan, detailed below.

EPR 4.2 Water Quality Management Plan

A Water Quality Management is to be prepared and implemented during construction works to ensure suspended sediment and turbidity remain within:

- Default Guideline Values (**DGVs**) for Aquatic Ecosystems of the Mersey Catchment, Environment Protection Authority (EPA 2021a);
- Default Guideline Values (DGVs) for Aquatic Ecosystems of the Rubicon Catchment, Environment Protection Authority (EPA 2021b); and
- ANZECC Guidelines for Water Quality (ANZECC, 2000).

3.3 Related Internal Documents

Other plans and documents that are relevant to this WQMP and should be read in conjunction with this WQMP include:

- Construction and Maintenance Environmental Protection Requirements - Sassafras Wesley Vale Irrigation Scheme Augmentation, TI (Appendix A of the CEMP).
- Construction Environmental Management Plan - Sassafras Wesley Vale Irrigation Scheme Augmentation, TI, version 5, 1 October 2025 or the latest subsequent version revised in accordance with the approval notice conditions. Crossing Management and Monitoring Plan that will include impact risk assessment/s and detailed crossing methodology for crossing construction in watercourses where Australian Grayling are likely to occur. These documents were not yet prepared at the time of finalising this WQMP and must be finalised prior to any construction occurring within or adjacent to Panatana Rivulet.

4 WATER QUALITY

4.1 Aquatic Values

The Project occurs within both the Mersey and Rubicon catchments on the central north coast of Tasmania, with a majority of the Project occurring in the Rubicon River catchment.

The Rubicon River source is at Red Hills, west of Deloraine. The river flows through agricultural land with numerous farm dams established along its course until it passes through areas of native forest, flanked by the Wurra Wurra and Rubicon Hills. The river then empties into Port Sorell estuary (North Barker, 2025).

The source of the Mersey River is Lake Meston with Lees Creek the other major tributary flowing into it. The Mersey River flows through two large hydro-electric impoundments, Lake Rowallan and Lake Parangana (North Barker, 2025). Downstream from here several other major tributaries such as Lobster Rivulet, Dasher River, and Coilers Creek join until the Mersey flows through the port city of Devonport before feeding into the Bass Strait (North Barker, 2025).

Both river catchments support extensive agricultural activities including grazing, piggeries, dairying, and commercial cropping (North Barker, 2025). There are 386 water licenses currently allocated for water extraction for irrigation or commercial use across both catchments (BMT, 2025).

The Construction Corridor for the Project intersects with 82 watercourses (North Barker, 2025). EPBCA listed aquatic fauna that are likely to occur within the Construction Corridor and that are relevant to this WQMP include the Australian Grayling (*Prototroctes maraena*), Central north burrowing crayfish (*Engaeus granulatus;* **CNBC**), and the Green and gold frog (*Litoria raniformis*; **GGF**).

The Australian Grayling has been recorded in the Mersey and Rubicon Rivers (North Barker, 2025). One of the watercourses that will be intersected by the Construction Corridor, Panatana Rivulet, also has historical records confirming the presence of Australian Grayling in the watercourse, though no individuals were observed in recent electrofishing sampling (Elgin, 2025).

CNBC are found in close proximity to streams and springs, largely on natural low lying damp areas where soils are high in organic matter (BMT, 2025).

GGFs breed in permanent freshwater bodies with emergent vegetation and are also found in highly modified environments such as within the Construction Corridor (BMT, 2025).

4.2 Protected Environmental Values

Protected Environmental Values (**PEVs**) for receiving waterways are based on the *State Policy on Water Quality Management 1997* (Water Quality Policy) and *Environmental Management Goals for Tasmanian Surface Waters – North-Central Coast Catchments and the Greater Rubicon Catchment* (DPIWE, 2003) and *Environmental Management Goals for Tasmanian Surface Waters – Mersey River Catchment* (DPIWE, 2001) and are summarised below.

4.2.1 Rubicon Catchment

The Rubicon catchment is split into two regions: the North-Central Coast Catchments and the Greater Rubicon Catchment. The Project occurs within the North-Central Coast Catchments area.

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For the North-Central Coast Catchments area of the Rubicon catchment, DPIWE (2003) outlines PEVs for the following surface waters:

- Surface Waters on Private Land (including forest on private land)
- Surface waters with their headwaters in Forest Reserves, or flowing through Forest Reserves from adjacent headwaters arising in nature Recreation Areas, Game Reserves, Conservation Areas or Regional Reserves.
- Surface waters flowing through Forest Reserves from private land, state forest or unallocated crown land.
- Surface waters with their headwaters in National Parks, State Reserves, or Nature Reserves or flowing through National Parks, State Reserves, or Nature Reserves from adjacent headwaters arising in Nature Recreation Areas, Game Reserves, Conservation Areas, Regional Reserves or Forest Reserves
- Surface waters flowing through National Parks, State Reserves, and Nature Reserves from private land, state forests or unallocated crown
- Surface waters with their headwaters in Nature Recreation Areas, Conservation Areas, Game Reserves and Regional Reserves, or flowing through Nature Recreation Areas, Conservation Areas and Game Reserves from adjacent headwaters in a National Park, State Reserve or Nature Reserve.
- Surface Waters flowing through Nature Recreation Areas, Conservation Areas and Game Reserves from private land, state forests or unallocated crown land
- Surface waters flowing through Public Reserves (under the Crown Lands Act 1976) from private land, state forest or unallocated crown land.
- Surface waters on Unallocated Crown Land
- Surface Waters on Hydro Electric Corporation Land
- Surface waters within State Forests (managed under the Forestry Act 1920)
- Estuarine Surface Waters

PEVs for these surface waters include:

- Protection of aquatic ecosystems including:
    - Pristine or nearly pristine ecosystems
    - Modified (not pristine) ecosystems from which edible fish, crustacea, and shellfish are harvested
- Recreational water quality and aesthetics including:
    - Primary contact water quality,
    - Secondary contact water quality,
    - Aesthetic water quality.
- Raw water for drinking water supply subject to coarse screening plus disinfection (Cradle Coast, Burnie)
- Agricultural water uses including:
    - Irrigation
    - Stock watering
- Industrial Water Supply (paper mill, woodchip mill, vegetable processing, on-farm vegetable washing, hydro-electricity generation – Forth catchment, aquaculture).

4.2.2 Mersey Catchment

The Mersey catchment is split into three regions: the upper, middle, and lower catchments. The SWISA Project occurs within the lower catchment area.

For the lower catchment area of the Mersey catchment, DPIWE (2001) outlines PEVs for the following surface waters:

- Estuarine Waters
- Surface Waters in High Density Urban Areas
- Surface Waters in Low Density Urban/Rural Residential Areas

PEVs for these surface waters include:

    - Protection of aquatic ecosystems - modified (not pristine) ecosystems from which edible fish and crustacea, but not shellfish, are harvested
- Recreational water quality and aesthetics including:
    - Primary contact water quality,
    - Secondary contact water quality,
    - Aesthetic water quality.
- Agricultural water uses including:
    - Irrigation
    - Stock watering

5 SUMMARY OF RISKS TO WATER QUALITY AND MITIGATION MEASURES

A comprehensive environmental risk assessment was completed as part of the EPBC referral and assessment process (BMT, 2025) and as part of the CEMP (see Table 9-6 in the CEMP). **Table 2** below summarises the potential risks and impacts identified in these environmental risks assessments for the Project's construction and maintenance (involving capital works) that are relevant to this WQMP and references the relevant management and mitigation measures in the CMEPR.

Of note to this WQMP are the following avoidance and mitigation measures:

- No instream works to occur in a watercourse with known or suspected Australian Grayling during peak migration and spawning periods (March to April) and/or recruitment periods (November to January).
- In watercourses where Australian Grayling are likely to occur, an impact risk assessment must be completed by an aquatic fauna expert for each crossing. Detailed crossing-specific construction methodology will need to be implemented by the contractor.
- A sediment curtain is to be installed downstream of all instream works to reduce the downstream impacts of sediment disturbance and mobilisation.
- Sediment traps, bags, or basins to be used during dewatering or where otherwise necessary to mitigate discharge of highly turbid water back to the waterway.

Table 2. Values, potential impacts, and mitigation measures relevant to this WQMP.

Values	Potential impact summary (relevant impacts only)	Relevant mitigation measure (EPR; Appendix A of the CEMP)
Aquatic values	• Disruption of hydraulic patterns • Temporary impact, loss, degradation and fragmentation of aquatic habitat and adjacent riparian zone including streambanks • Sedimentation/watercourse pollution • Water runoff from stockpiled potential acid sulphate soils (**PASS**)/acid sulphate soils (**ASS**)	EPR 3 – Watercourses EPR 4 – Sediment and erosion EPR 8 – Environmentally hazardous materials EPR 12 – Contaminated soils and ASS
Australian grayling (*Prototroctes maraena*)	• Disruption of hydraulic patterns • Creating short- and long-term barriers to fish passage • Temporary impact, loss, degradation and fragmentation of aquatic habitat and adjacent riparian zone including streambanks • Sedimentation/watercourse pollution • Water runoff from stockpiled PASS/ASS	EPR 1D – Australian grayling EPR 3 – Watercourses EPR 4 – Sediment and erosion EPR 12 – Contaminated soils and ASS
Central north burrowing crayfish (*Engaeus granulatus*)	• Degradation of aquatic habitat and adjacent riparian zone including streambanks through soil compaction at the edge of waterways, introduction/spread of weeds, and alteration to water quality and quantity. • Water runoff from stockpiled PASS/ASS	EPR 3 – Watercourses EPR 4 – Sediment and erosion EPR 8 – Environmentally hazardous materials EPR 12 – Contaminated soils and ASS EPR 13 – Rehabilitation and reinstatement
Green and gold frog (*Litoria raniformis*)	• Degradation of aquatic habitat. • Altered hydrology, including modified flow regimes and groundwater extraction. • Water runoff from stockpiled PASS/ASS	EPR 1C – Green and gold frog EPR 3 – Watercourses EPR 4 – Sediment and erosion EPR 12 – Contaminated soils and ASS

6 WATER QUALITY INDICATORS AND GUIDELINE VALUES

6.1 Key Water Quality Indicators

The following key water quality indicators have been established for SWISA based on aquatic values and PEVs for the Rubicon and Mersey catchments and the comprehensive environmental risk assessment that was completed as part of the EPBC referral and assessment process (summarised in **Section 4**):

- Turbidity
- Dissolved oxygen (**DO**)
- pH

Note that in-situ field measurement of turbidity will be used as a real-time proxy for suspended solids, allowing for real-time decision making and adaptive management.

6.2 Water Quality Guideline Values

6.2.1 Rubicon Catchment

Water quality guideline values to protect the PEVs in the Rubicon Catchment were reviewed from the following sources:

- EPA (2021a). Default Guideline Values (**DGVs**) for aquatic Ecosystems of the Rubicon Catchment. The following was applied:
    - The river is in the Slightly to Moderately Disturbed (**SMD**) ecosystem condition category.
    - DGVs for SMD water quality, including both seasonal and full-year DGVs (Tables 10 through 14).
- ANZECC (2000). Australian and New Zealand Guidelines for Fresh and Marine Water Quality, with the river ecosystem type as lowland rivers.

Table 3. Water Quality Guideline Values for Key Water Quality Indicators - Rubicon Catchment

	ANZECC (2000)	**DGVs for Aquatic Ecosystems of the Rubicon Catchment (20^{th}) – 95^{th} Percentile**				
Parameter	**All year**	**Summer (Dec-Feb)**	**Autumn (Mar-May)**	**Winter (Jun-Aug)**	**Spring (Sept-Nov)**	**Summer (Dec-Feb)**
Dissolved oxygen (percentage saturation)	85 - 110	(92.0) 106.9	(91.3) 111.7	(92.2) 106.9	(91.4) 104.7	(93.4) 104.2
pH (units)	6.5 - 8.0	(7.3) 8.2	(7.4) 7.7	(7.2) 8.2	(7.2) 8.3	(7.2) 7.8
Turbidity (NTU)	6 - 50	12.8	8.4	14.6	11.9	8.6

6.2.2 Mersey Catchment

Water quality guideline values to protect the PEVs in the Mersey catchment were reviewed from the following sources:

- EPA (2021b). DGVs for Aquatic Ecosystems of the Mersey Catchment. The following was applied:
  - The river is in the SMD ecosystem condition category.
  - DGVs for SMD water quality, including both seasonal and full-year DGVs (Tables 10 through 14).
- ANZECC (2000). Australian and New Zealand Guidelines for Fresh and Marine Water Quality, with the river ecosystem type as lowland rivers.

Table 4. Water Quality Guideline Values for Key Water Quality Indicators - Mersey Catchment

	ANZECC (2000)	**DGVs for Aquatic Ecosystems of the Mersey Catchment (20^{th}) – 95^{th} Percentile**				
Parameter	**All year**	**All year**	**Summer (Dec-Feb)**	**Autumn (Mar-May)**	**Winter (Jun-Aug)**	**Spring (Sept-Nov)**
Dissolved oxygen (percentage saturation)	85 - 110	(92.0) 106.9	(91.3) 111.7	(92.2) 106.9	(91.4) 104.7	(93.4) 104.2
pH (units)	6.5 - 8.0	(7.1) 7.9	(7.3) 7.8	(7.4) 7.8	(7.0) 7.9	(7.0) 8.0
Turbidity (NTU)	6 - 50	20.8	16.5	22.3	28.5	17.0

7 WATER QUALITY MONITORING PROGRAM

7.1 Monitoring Site Selection

Monitoring upstream water quality will provide a snapshot of conditions upstream of any watercourse crossing works. Downstream monitoring of water quality will occur to ensure instream works are not impacting water quality beyond acceptable limits i.e. downstream water quality does not exceed trigger levels as outlined in **Section 8.2**.

See **Appendix A** for accompanying Site Selection Checklist.

For each watercourse crossing works, appropriate monitoring sites are to be selected as follows:

- Upstream:
    - Located upstream of all watercourses crossing works and potential sedimentation inputs from the site
    - Downstream of any confluences with significant creeks, streams or rivers
    - Not to be undertaken less than 10m or further than 200 m upstream from the site.
- Downstream:
    - Located downstream of all construction sediment inputs (from both point and diffuse sources)
    - Upstream of any confluences with significant creeks, streams or rivers
    - Not be undertaken less than 20m or further than 100 m downstream of the construction site.

A photo is to be taken at the selected upstream and downstream locations for all watercourse crossing sites prior to and following construction works.

7.2 Parameters

Water quality parameters for field measurement during water quality monitoring are based on PEVs and aquatic values for the Rubicon and Mersey catchments and include:

- Turbidity
- DO
- pH

WATER QUALITY MONITORING PROGRAM

7.1 Monitoring Commencement and Frequency

7.1.1 Flowing watercourse

Monitoring to be undertaken by a suitably qualified person and is to be conducted in accordance with the following:

- Upstream and downstream readings taken immediately prior to construction commencing.
- Minimum three upstream and downstream readings taken daily once construction has commenced:
    - Prior to the commencement of daily works
    - During daily works
    - At the completion of daily works
    - At any other time that there is a visible change in turbidity downstream resultant from site activities.
- All water quality readings to be checked against the Turbidity Management Framework and actions taken as necessary (see **Section 8.3**).
- Where parameters exceed trigger levels as per **Section 8.2**, works must immediately be ceased, and appropriate remedial action taken until parameters meet the Turbidity Management Framework and EPBC permit requirements (see **Section 8.3**).

7.1.2 Dry watercourse

If the watercourse is dry, visual monitoring is required and includes upstream and downstream monitoring prior to, during, and after construction works adjacent to, or in the bed of, a watercourse. An upstream and downstream photograph to demonstrate no flow must be taken prior to, during, and after construction works. If conditions change and the watercourse begins to flow, reassess against **Section 7.1.1**.

7.2 Methods

Sampling and field measurement methods would be undertaken in general accordance with the following standards and guidelines:

- Standards Australia AS/NZ, Australian/New Zealand Standard 1998, AS 5667.1:1998 Water Quality – Sampling.
- EPA Victoria (2009). Sampling and Analysis of Waters, Wastewaters, Soils and Wastes. Publication IWRG701, June 2009, Environment Protection Authority, Victoria.

Monitoring methods are outlined below for in-situ measurements of field parameters. Also refer to relevant TI Standard Operating Procedures (**SOPs**).

Measurement equipment would be maintained and operated in accordance with manufacturer's specifications and records of maintenance must be retained for at least three (3) years.

7.3 In-situ Measurement

Field parameters are to be measured with a water quality meter calibrated according to the manufacturer's instructions. Calibration records must be maintained for periodic review. Where anomalous results suggest a calibration issue, the accuracy of the water quality device should be confirmed either with calibration solutions, or another calibrated device.

Water quality results, visual observations, and samples collected must be recorded. A suggested field sheet format is provided in **Appendix B**.

A photo of the water quality results must be taken from the water quality meter for each sampling event.

For all photos, including those referenced in **Section 7.1**, a phone application should be used that overlays the following details onto the image: site name, coordinates, date, and time. A systematic naming convention must also be applied to all photos to ensure they are searchable (e.g., *SiteID_Direction_Timing*). For example: *WC01_Upstream_Before works*.

Water quality measurements are to be collected from 10 cm below the surface at a minimum (where practicable), plus additional depths as required to assess the vertical distribution of parameter concentrations. Where the watercourse depth is below 10 cm, water can be collected in the water quality meter's storage cup, ensuring sediment within the watercourse is not disturbed in the process.

7.4 Personnel

Measurements are to be undertaken by personnel with demonstrated experienced in the measurement of surface waters in aquatic environments. Personnel must understand the WQMP framework and requirements and be able to operate a water quality meter and troubleshoot data inconsistencies to ensure data integrity. Where there are inconsistencies observed in the data, the data, the water quality meter, and the collection procedure should be reviewed by the Specialist Aquatic Scientists and corrective instructions or direct training provided to Contractor staff.

8 WATER QUALITY TRIGGERS

8.1 Events Requiring Management Response

Water quality events that could be associated with the Project and that prompt further investigation and/or a management response are summarised in **Table 8** below.

Table 5. Water quality events requiring management response

Water Quality Event	Event details	Response
Turbid water downstream of instream works that exceeds the turbidity critical trigger level and the upstream background turbidity.	See **Section 8.2**.	• Notify TI and the contractor's Environmental Compliance Team immediately. • A stop works notice will be issued and an internal investigation undertaken. • See **Section 8.3**. • Contact the SWISA Aquatic Ecologist (Elgin) to determine appropriate response measures and remedial actions and to assist with any investigations or field notes (if necessary). • Authorisation to commence works must be sought from TI.
Turbid water downstream of instream works that exceeds the turbidity warning trigger level.	See **Section 8.2**.	• Stop works notify TI and the contractor's Environmental Compliance Team immediately. • Review mitigation and management measures currently in place and implement additional monitoring and management intervention(s). • See **Section 8.3**. • Contact the SWISA Aquatic Ecologist (Elgin) to determine appropriate response measures and remedial actions and to assist with any investigations or field notes (if necessary). • Authorisation to commence works must be sought from TI.
Instream works occurring in a watercourse with known or suspected Australian Grayling during peak migration and spawning periods and/or recruitment periods.	Instream works occurred in a watercourse with known or suspected Australian Grayling (as outlined in the Crossing Management and Monitoring Plan) during peak migration and spawning periods (March to April) and/or recruitment periods (November to January).	• Notify TI and the contractor's Environmental Compliance Team immediately. • A stop works notice will be issued and an internal investigation undertaken. • Notify DCCEEW. • Contact the SWISA Aquatic Ecologist (Elgin) to determine appropriate response measures and remedial actions and to assist with any investigations or field notes (if necessary). • Authorisation to commence works must be sought from TI.
Complaint or notification.	A complaint is received from public or notification received from regulatory agency about a water quality issue that could be Project related.	• Notify TI and the contractor's Environmental Compliance Team immediately. • An internal investigation to be undertaken. • Authorisation to commence works must be sought from TI.

WATER QUALITY TRIGGERS

Water Quality Event	Event details	Response
Uncontrolled release of turbid water from site works.	Uncontrolled release of turbid water that has spread beyond site works (i.e. is visibly migrating offsite, such as turbid runoff into a nearby watercourse).	• Notify TI and the contractor's Environmental Compliance Team immediately. • A stop works notice will be issued and an internal investigation undertaken. • Contact the SWISA Aquatic Ecologist (Elgin) to determine appropriate response measures and remedial actions and to assist with any investigations or field notes (if necessary). • Authorisation to commence works must be sought from TI.
Uncontrolled release of fuel, oil, and/or grease to watercourse.	Uncontrolled release of fuel, oil, and/or grease to the watercourse due to a spill or leakage.	• Notify TI and the contractor's Environmental Compliance Team immediately. • A stop works notice will be issued and an internal investigation undertaken. • Notification to EPA and/or the relevant Council may be required. • Authorisation to commence works must be sought from TI.

8.2 Water Quality Trigger Levels

Trigger levels are specific thresholds derived from rDGVs and other relevant guidelines that are set for selected water quality parameters. When exceeded, they prompt further investigation and/or a management response. Trigger levels act as early warning indicators to prevent water quality from deteriorating to a point where it would impact aquatic values and PEVs. For turbidity, there are two trigger levels:

- Warning trigger: signals that the current management response is not adequate at preventing impacts to water quality. This allows for review or controls and further management intervention to prevent water quality deteriorating further and exceeding the critical trigger.
- Critical trigger: when water quality has deteriorated to a point where works would impact aquatic values and PEVs.

As the SWISA spans two catchment areas, prior to works commencing, it must firstly be confirmed which catchments the works are to occur in and during which season. To confirm which catchment the works are taking place within, use the "EPA Aquatic Ecosystem DGVs for Surface Water Catchments" layer on the Tasmanian Government's LISTmap website (https://maps.thelist.tas.gov.au/listmap/app/list/map) or use Geographic Information System software with the relevant layer uploaded and displayed.

As turbidity is the parameter most likely to exceed the seasonal warning and critical trigger levels specified in **Sections 8.2.1** and **0** below, a Turbidity Management Framework is available in **Appendix C** to assist contractors with assessing turbidity against trigger levels.

8.2.2 Rubicon Catchment Trigger Levels

Seasonal trigger values for the Rubicon Catchment area are in **Table 6** below.

Table 6. Downstream Water Quality Trigger Levels – Rubicon Catchment

	Seasonal Trigger Levels			
Parameter	**Summer (Dec-Feb)**	**Autumn (Mar-May)**	**Winter (Jun-Aug)**	**Spring (Sept-Nov)**
Fuel, oil, and grease	A visible hydrocarbon sheen is observed on water in watercourse.			
Dissolved oxygen (percentage saturation)	Less than 85% saturation.			
pH (units)	Downstream pH is more than 1 pH unit lower or higher than background pH measured upstream at the time.			
Turbidity (NTU) - Critical Trigger	Above 8.4 or, if upstream exceeds 8.4, turbidity cannot exceed the upstream turbidity value as measured at the time.	Above 14.6 or, if upstream exceeds 14.6, turbidity cannot exceed the upstream turbidity value as measured at the time.	Above 11.9 or, if upstream exceeds 11.9, turbidity cannot exceed the upstream turbidity value as measured at the time.	Above 8.6 or, if upstream exceeds 8.6, turbidity cannot exceed the upstream turbidity value as measured at the time.
Turbidity (NTU) - Warning Trigger	Less than Critical Trigger AND More than 3 NTU above upstream turbidity as measured at the time.			

8.2.3 Mersey Catchment Trigger Levels

Seasonal trigger values for the Rubicon Catchment area are in **Table 7** below.

Table 7. Downstream Water Quality Trigger Levels - Mersey Catchment

	Seasonal Trigger Levels			
Parameter	**Summer (Dec-Feb)**	**Autumn (Mar-May)**	**Winter (Jun-Aug)**	**Spring (Sept-Nov)**
Fuel, oil, and grease	A visible hydrocarbon sheen is observed on water in watercourse.			
Dissolved oxygen (percentage saturation)	Less than 85% saturation.			
pH (units)	Downstream pH is more than 1 pH unit lower or higher than background pH measured upstream at the time.			
Turbidity (NTU) - Critical Trigger	Above 16.5 or, if upstream exceeds 16.5, turbidity cannot exceed the upstream turbidity value as measured at the time.	Above 22.3 or, if upstream exceeds 22.3, turbidity cannot exceed the upstream turbidity value as measured at the time.	Above 28.5 or, if upstream exceeds 28.5, turbidity cannot exceed the upstream turbidity value as measured at the time.	Above 17.0 or, if upstream exceeds 17.0, turbidity cannot exceed the upstream turbidity value as measured at the time.
Turbidity (NTU) - Warning Trigger	Less than Critical Trigger AND More than 5 NTU above upstream turbidity as measured at the time.			

8.3 Trigger Level Exceedance Response

In the event of a trigger level exceedance, it should be confirmed (or otherwise) as being due to a water quality issue associated with the Project works:

- Confirm the result that exceeded the trigger level.
    - For field measurements, this is to include observation of similar measurements on either side of the exceedance and not just an isolated one-off, and if required check it is not from an interference on the water quality sensors or a calibration issue. Review upstream data to confirm background levels at the time.
- Confirm that the exceedance is due to a water quality issue related to Project works and is not unrelated or from a broader water quality issue in the SWISA area. This would typically be by:
    - Field observations in and around watercourse crossings to correlate the location and type of trigger level exceedance with conditions at the time (i.e. such as turbidity trigger level

exceedance correlating with observations of runoff from construction works into a waterway).

- Review of field measurements from upstream, adjacent, and downstream sites to identify source origin and extent of impact and correlate these measurements with field observations and works underway.

If the trigger level exceedance is confirmed as being associated with Project works:

- Stop all works immediately.
- Notify the TI and/or contractor's Environmental Compliance Team immediately.
- Appropriate remedial action must be taken until parameters meet the trigger levels listed in this WQMP (refer to **Section 8.2**).
- A field note is to be completed within 24 hours (see **Appendix D**).
- The SWISA Aquatic Ecologist (Elgin) should be contacted to determine appropriate response measures and remedial actions and to assist with any investigations or field notes (if necessary).
- Confirmation of a trigger level exceedance attributed to a water quality impact from SWISA construction activities would qualify the exceedance as an environmental incident. These would be documented in an incident report completed by the contractor that includes an attached field note (**Appendix D**) and is entered and issued to TI in Procore database with details and follow-up findings and actions to minimise environmental impacts. The incidents would be documented as part of the WQMP reporting requirements and submitted to relevant regulatory authorities (if necessary). Further information on environmental incident criteria is detailed in **Section 8** of the SWISA CEMP.
- The effectiveness of existing mitigation measures for the responsible activity is to be assessed onsite at the time by a person from the TI and/or contractor's Environmental Compliance Team with reference to the mitigation measures outlined in the relevant EPR (summarised in **Table 2**)
- If the exceedance is related to a spill or leakage, stop associated works to facilitate clean-up and prevent or minimise any further release. Notify the TI and/or contractor's Environmental Compliance Team immediately to determine whether notification to the EPA and/or the relevant Council is required
- If existing controls are not in place or are ineffective, stop works and implement further controls to contain the issue to the immediate area as soon as practicable.
- Undertake further water quality measurements in and around the affected area to assess the extent of impact and the effectiveness of implemented controls, as per the monitoring protocols in **Section 7.**
- If applicable, update this WQMP and any other relevant management plans and submit for re-approval as required.

DATA MANAGEMENT AND INTERPRETATION, REPORTING, AND UPDATES AND REVIEW

9 DATA MANAGEMENT AND INTERPRETATION

Data management and retention are in accordance with TI's and the contractor's quality management systems and relevant SOPs.

Monitoring data would be managed and interpreted with the following approach:

1. Field measurement data from the water quality meter would be recorded (for example in field sheets and/or Survey123) each monitoring event and saved in a dedicated project file.
2. All calibration records for the Water Quality Monitoring device(s) used during the sampling to be stored safely, for review by TI Environmental or the Water Quality Specialist (if required).All monitoring photos to be stored safely in a backed-up repository, for review by TI Environmental or the Water Quality Specialist (if required).
3. Data to be compared against the relevant trigger values in this WQMP, as summarised in the Turbidity Management Framework.

All results would be retained for at least the lifetime of the Project.

10 REPORTING

Reporting requirements are in accordance with **Table 6-1** of the CEMP.

11 UPDATES AND REVIEW

The WQMP is to be updated as required to allow for adaptive management and to reflect any relevant changes once the Project is under construction, such as in response to trigger level exceedances and trigger events.

12 LIMITATIONS

Elgin Associates Pty Ltd has prepared this WQMP for the sole use of Tasmanian Irrigation in accordance with the usual care and thoroughness of the consulting profession. It is based on generally accepted practices and standards at the time it was prepared. No other warranty, expressed or implied, is made as to the professional advice included in this report. The methodology adopted and sources of information used by Elgin Associates are outlined in this report. Elgin Associates has made no independent verification of this information beyond the agreed scope of works and Elgin Associates assumes no responsibility for any inaccuracies or omissions. No indications were found during our investigations that information contained in this report as provided to Elgin Associates was false.

This document was prepared from November – January 2026 and is based on information provided by Enviro Dynamics and TI. Elgin Associates disclaims responsibility for any changes that may have occurred after this time. This report is to be read in full together with all other reports referenced by this report. No responsibility is accepted for use of any part of this report in any other context or for any other purpose or by third parties.

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13 REFERENCES

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APPENDIX

Appendix A - SWISA Watercourse Crossing Works – Site Selection Checklist

Watercourse Crossing Works - Site Selection Checklist

Date:	**Catchment:**	**Crossing number/code:**	
Water flowing?	☐ No (dry) – sections below not relevant. Take photos facing upstream and downstream prior to works.	☐ Yes (flowing) – continue with sections below.	
Upstream Site			
Site selection:	Site located upstream of all watercourse crossing works and potential sedimentation inputs from the works?		☐ Yes / No ☐
	Site downstream of any confluences with significant creeks, streams or rivers?		☐ Yes / No ☐
	Between 10 m and 200 m upstream from all watercourse crossing works?		☐ Yes / No ☐
Distance upstream:	m	Site photo taken before works commencing?	☐ Yes / No ☐
Location	Lat:	Long:	E: N:
General observations:	☐ Photo Taken		
Downstream Site			
Site selection:	Site located downstream of all construction sediment inputs (from both point and diffuse sources)?		☐ Yes / No ☐
	Site upstream of any confluences with significant creeks, streams or rivers?		☐ Yes / No ☐
	Between 20 m and 100 m downstream from all watercourse crossing works?		☐ Yes / No ☐
Distance downstream:	m	Site photo taken before works commencing?	☐ Yes / No ☐
Location	Lat:	Long:	E: N:
General observations:	☐ Photo Taken		

APPENDIX

Appendix B - SWISA Watercourse Crossing Works – Water Quality Monitoring Field Sheets

Water Crossings: Daily Water Quality Monitoring Fieldsheet – Rubicon Catchment

Catchment:	Rubicon		**Date:**		**Sampled By:**		
Field Chemistry							
Timing	**Site**	**Time**	**Temp (ºC)**	**DO (% sat)**	**pH**	**Turbidity (NTU)**	**WQ Site Photo?**
			Trigger Levels	**Less than 85%**	**Downstream pH 1 unit lower or higher than upstream pH**	**Critical Trigger Levels:** ☐ **Summer (Dec-Feb) - above 8.4** ☐ **Autumn (Mar-May) - above 14.6** ☐ **Winter (Jun-Aug) - above 11.9** ☐ **Spring (Sept-Nov) - above 8.6** **Warning Trigger Level:** 3 NTU above upstream turbidity	
Prior to commencement of daily works	**Upstream**						☐ YES
	Downstream						☐ YES
Results **below** Trigger Levels OR upstream value? If results exceed, notify TI and Environmental Compliance Team			☒ NA	☐ Yes ☐ No - notify	☐ Yes ☐ No - notify	☐ Yes ☐ No - notify	
During daily works and at **any other time** that there is a visible change in turbidity downstream resultant from site activities	**Upstream**						☐ YES
	Downstream						☐ YES
Results **below** Trigger Levels OR upstream value? If results exceed, notify TI and Environmental Compliance Team			☐ NA	☐ Yes ☐ No - notify	☐ Yes ☐ No - notify	☐ Yes ☐ No - notify	
At **completion** of daily works	**Upstream**						☐ YES
	Downstream						☐ YES
Results **below** Trigger Levels OR upstream value? If results exceed, notify TI and Environmental Compliance Team			☐ NA	☐ Yes ☐ No - notify	☐ Yes ☐ No - notify	☐ Yes ☐ No - notify	

Water Crossings: Daily Water Quality Monitoring Fieldsheet – Mersey Catchment

Catchment:	Mersey		**Date:**		**Sampled By:**		
Field Chemistry							
Timing	**Site**	**Time**	**Temp (ºC)**	**DO (% sat)**	**pH**	**Turbidity (NTU)**	**WQ Site Photo?**
			Trigger Levels	**Less than 85%**	**Downstream pH 1 unit lower or higher than upstream pH**	**Critical Trigger Levels:** ☐ **Summer (Dec-Feb) - above 16.5** ☐ **Autumn (Mar-May) - above 22.3** ☐ **Winter (Jun-Aug) - above 28.5** ☐ **Spring (Sept-Nov) - above 17.0** **Warning Trigger Level:** 5 NTU above upstream turbidity	
Prior to commencement of daily works	**Upstream**						☐ YES
	Downstream						☐ YES
Results below Trigger Levels OR upstream value? If results exceed, notify TI and Environmental Compliance Team			☐ NA	☐ Yes ☐ No - notify	☐ Yes ☐ No - notify	☐ Yes ☐ No - notify	
During daily works and at **any other time** that there is a visible change in turbidity downstream resultant from site activities	**Upstream**						☐ YES
	Downstream						☐ YES
Results below Trigger Levels OR upstream value? If results exceed, notify TI and Environmental Compliance Team			☐ NA	☐ Yes ☐ No - notify	☐ Yes ☐ No - notify	☐ Yes ☐ No - notify	
At **completion** of daily works	**Upstream**						☐ YES
	Downstream						☐ YES
Results below Trigger Levels OR upstream value? If results exceed, notify TI and Environmental Compliance Team			☐ NA	☐ Yes ☐ No - notify	☐ Yes ☐ No - notify	☐ Yes ☐ No - notify	

Water Crossings: Daily Water Quality Monitoring Fieldsheet – Generic

Catchment:	Rubicon		**Date:**		**Sampled By:**		
Field Chemistry							
Timing	**Site**	**Time**	**Temp (°C)**	**DO (% sat)**	**pH**	**Turbidity (NTU)**	**WQ Site Photo?**
			Trigger Levels				
At **any other time** that there is a visible change in turbidity downstream resultant from site activities	**Upstream**						☐ YES
	Downstream						☐ YES
Results **below** Trigger Levels OR upstream value? If results exceed, notify TI and Environmental Compliance Team			☐ NA	☐ Yes ☐ No - notify	☐ Yes ☐ No - notify	☐ Yes ☐ No - notify	
At **any other time** that there is a visible change in turbidity downstream resultant from site activities	**Upstream**						☐ YES
	Downstream						☐ YES
Results **below** Trigger Levels OR upstream value? If results exceed, notify TI and Environmental Compliance Team			☐ NA	☐ Yes ☐ No - notify	☐ Yes ☐ No - notify	☐ Yes ☐ No - notify	
At **any other time** that there is a visible change in turbidity downstream resultant from site activities	**Upstream**						☐ YES
	Downstream						☐ YES
Results **below** Trigger Levels OR upstream value?? If results exceed, notify TI and Environmental Compliance Team			☐ NA	☐ Yes ☐ No - notify	☐ Yes ☐ No - notify	☐ Yes ☐ No - notify	

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Appendix C - SWISA Watercourse Crossing Works – Turbidity Management Framework

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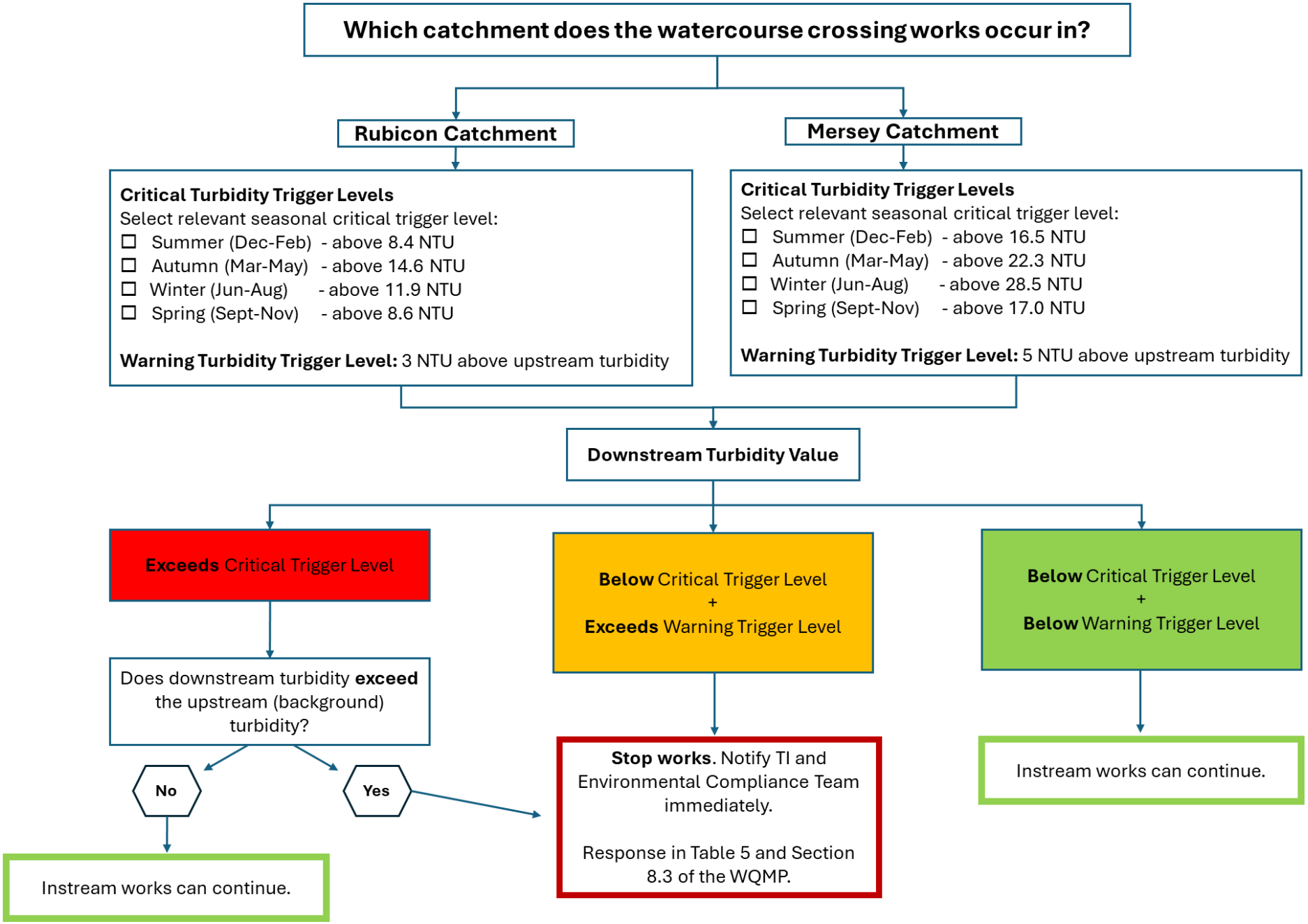
Which catchment does the watercourse crossing works occur in?
Rubicon Catchment
Mersey Catchment
Critical Turbidity Trigger Levels
Select relevant seasonal critical trigger level:
☐ Summer (Dec-Feb) - above 8.4 NTU
☐ Autumn (Mar-May) - above 14.6 NTU
☐ Winter (Jun-Aug) - above 11.9 NTU
☐ Spring (Sept-Nov) - above 8.6 NTU
Warning Turbidity Trigger Level: 3 NTU above upstream turbidity
Critical Turbidity Trigger Levels
Select relevant seasonal critical trigger level:
☐ Summer (Dec-Feb) - above 16.5 NTU
☐ Autumn (Mar-May) - above 22.3 NTU
☐ Winter (Jun-Aug) - above 28.5 NTU
☐ Spring (Sept-Nov) - above 17.0 NTU
Warning Turbidity Trigger Level: 5 NTU above upstream turbidity
Downstream Turbidity Value
Exceeds Critical Trigger Level
Below Critical Trigger Level + Exceeds Warning Trigger Level
Below Critical Trigger Level + Below Warning Trigger Level
Does downstream turbidity exceed the upstream (background) turbidity?
No
Yes
Instream works can continue.
Stop works. Notify TI and Environmental Compliance Team immediately.
Response in Table 5 and Section 8.3 of the WQMP.
Instream works can continue.

APPENDIX

Appendix D - SWISA Watercourse Crossing Works – Field Note Template

APPENDIX

Field Note [DRAFT] FN-SWISA-001

Date of Event	
Date Field Note Compiled	
Catchment	
Location of Impact including crossing number	

Notification	
Description of event	
Immediate action taken	
Follow up actions required	
Map of incident location (see maps below)	

APPENDIX

Review of Environmental Conditions	
Water quality surveillance	
Weather conditions	
Field observations	
Summary of observations	