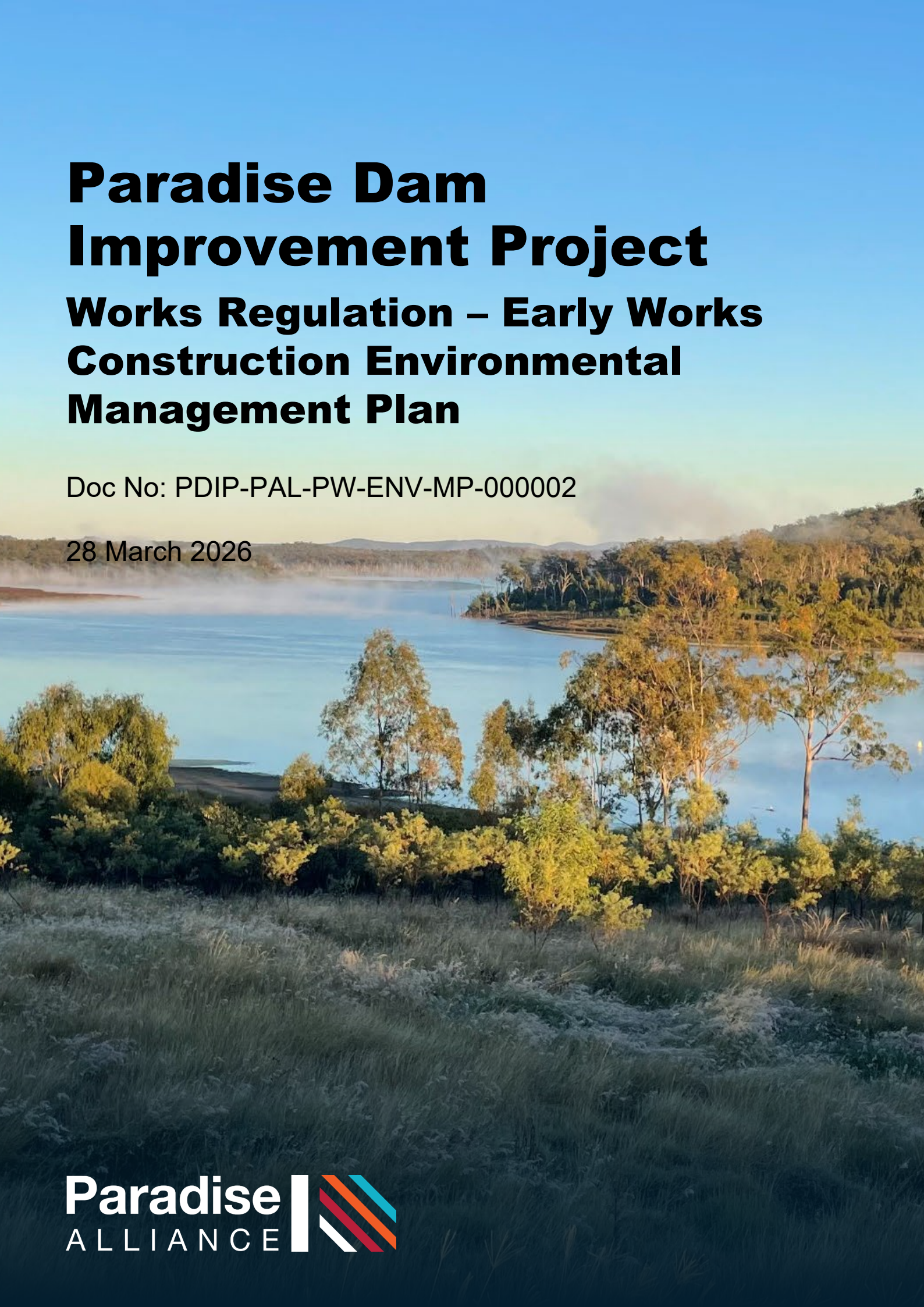
Paradise Dam Improvement Project

Works Regulation – Early Works Construction Environmental Management Plan

Doc No: PDIP-PAL-PW-ENV-MP-000002

28 March 2026



Paradise ALLIANCE

Project name	Paradise Dam Improvement Project
Document title	Works Regulation – Early Works Construction Environmental Management Plan
Document number	PDIP-PAL-PW-ENV-MP-000002
File name	

Rev.	Date	Prepared by	Reviewed by	Approved by	Remarks
Signature:					
0	10 October 2025	Environmental Scientist, PDIP	Environmental Lead, PDIP		Final – Version for OCG endorsement
Signature:					
1	28 March 2026	Environmental Scientist, PDIP	Environmental Lead, PDIP		Final – Updates to Air Quality and Water Quality Monitoring (including Appendix C)
Signature:					

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Acknowledgement of Country

The Paradise Alliance acknowledges the Traditional Owners of the Burnett River area, and Bundaberg region including the Wakka Wakka and Bailai, Gurang, Gooreng Gooreng and Taribelang Bunda Peoples.

We extend our respect to all Aboriginal and Torres Strait Islander peoples as the first peoples of this country and Traditional Custodians of the land and water we rely on. We respect and value their continued sacred connection to Country, including the diverse, rich traditions, languages and customs that are the longest living in the world. We acknowledge their resilience in the face of significant and ongoing historical, cultural and political change within Australia. We recognise and value the importance of truth-telling today, and our role to listen and learn.

Acronyms and abbreviations

Abbreviation	Definition
BRC	Bundaberg Regional Council
CEMP	Construction Environmental Management Plan
CHMA	Cultural Heritage Management Agreement
CVC	Conventional vibrated concrete
DCCEEW	Department of Climate Change, Energy, the Environment and Water (Federal)
DES	Department of Environment and Science, now DETSI (Queensland)
DETSI	Department of Environment, Tourism, Science and Innovation (Queensland)
DLGWV	Department of Local Government, Water and Volunteers (Queensland)
DRDMW	Department of Regional Development, Manufacturing and Water, now DLGWV (Queensland)
DTMR	Department of Transport and Main Roads (Queensland)
EA	Environmental authority
EMR	Environmental Management Register
EMS	Environmental Management System
EP Act	*Environmental Protection Act 1994* (Qld)
EPBC Act	*Environmental Protection and Biodiversity Conservation Act 1999* (Cth)
EPP	Environmental Protection Policy
ERA	Environmentally relevant activity
ERP	Emergency Response Plan
ERT	Emergency Response Team
ESC	Erosion and sediment controls
ESCP	Erosion and Sediment Control Plan
EVNT	Endangered, vulnerable, and near threatened
FN BGGGTB	First Nations Bailai, Gurang, Gooreng Gooreng, Taribelang Bunda People Aboriginal Corporation Registered Native Title Body Corporate
FSC	Fauna spotter catcher
FSL	Full supply level
IAS	Initial Advice Statement
IAR	Impact Assessment Report
IECA	International Erosion Control Association
m AHD	metres Australian Height Datum
MEDLI (Modelling)	The Model for Effluent Disposal Using Land Irrigation
MNES	Matters of National Environmental Significance
MSES	Matters of State Environmental Significance
NBRC	North Burnett Regional Council
OCG	Office of the Coordinator-General

Abbreviation	Definition
PDIP	Paradise Dam Improvement Project
PPE	Personal protective equipment
RCC	Roller-compacted concrete
RNTBCs	Registered native title bodies corporate
ROL	Resource Operations Licence
SDPWO Act	*State Development and Public Works Organisation Act 1971* (Qld)
SDPWO Act	*State Development and Public Works Organisation Regulation 2020* (Qld)
SDS	Safety data sheet
SMP	Species Management Plan
STP	Sewage treatment plant
TGS	Traffic guidance scheme
TPAV	Temporary project accommodation village
WoNS	Weeds of national significance
WTP	Water treatment plant
WWNTAC	Wakka Wakka Native Title Aboriginal Corporation

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Appendices

1. Introduction

1.1 Objectives and purpose

This Construction Environmental Management Plan (CEMP) sets out the requirements for management of Paradise Dam Improvement Project (PDIP) Early Works authorised by the State Development and Public Works Organisation Regulation 2020 (SDPWO Regulation). The CEMP describes how environmental and cultural heritage matters associated with Early Works are to be managed in accordance with good environmental practice.

To enable the Works Regulation to take effect, an endorsed and publicly presented CEMP is required. This document fulfills that requirement.

1.1.1 Commonwealth assessment

Sunwater has self-assessed its obligations under the Commonwealth's *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and referred (EPBC 2025/10206) a small area subject to Early Works activities (concrete batch plant and trial embankment area, as discussed in Section 1.6.3.3 and shown in Figure 6). The Department of Climate Change, Energy, the Environment and Water (DCCEEW) has determined the referral to be a controlled action.

Sunwater is required to avoid undertaking work with potential impact on protected matters under the EPBC Act in the area subject to the referral (Figure 6) until a decision has been made about the controlled action. Sunwater will be subject to any conditions associated with the decision and need to obtain all approvals that may be required beyond the authorisations provided by the PDIP Early Works regulation.

1.2 Scope of CEMP

The scope of this CEMP addresses Early Works of the PDIP, as defined in the Works Regulation (gazetted June 2025), listed in Table 1 below, and provided in further detail in Section 1.5.

Table 1: Early Works Activities

Activity	Description	CEMP applicable
Geotechnical Investigations	Geotechnical drilling, test pits and associated engineering investigations	Yes – Rev 0, Oct 2025
Batch plants	Construction and commissioning of batch plants including trail embankment activities	Yes – Rev 0, Oct 2025
Temporary project accommodation village (TPAV)	Staged construction and occupation of the TPAV	Yes – Rev 0, Oct 2025
Construction laydown areas	Development and use of construction staging areas, stockpiling, and storage of plant, equipment and materials	Yes – Rev 0, Oct 2025
Quarry investigations	Investigative drilling, excavations and small-scale extractions	Yes – Rev 0, Oct 2025
Any activities that are ancillary, necessarily required or incidental to the above	Any and all works that are ancillary, necessarily required or incidental to the works described above e.g. establishing site services such as temporary power supply	Yes – Rev 0, Oct 2025

The CEMP excludes all activities not identified within the scope of the PDIP Early Works.

1.3 Content of CEMP

This CEMP contains:

- project background and description of works
- an environmental management strategy including requirements for:
    - risk assessment and management
    - legislative requirements
    - system structure
    - roles and responsibilities
    - training
    - monitoring, inspections and reporting
    - incidents and complaints
    - non-conformity, corrective actions
    - communications and reporting
    - training
    - emergency management
- environmental management sub-plans for specific environmental aspects, outlining performance objectives, monitoring and management measures.

1.4 Project background

Paradise Dam is an existing approved operational dam located on the Burnett River in Coringa, Queensland. It was constructed by the Burnett Dam Alliance from 2003 to 2005 to provide water supply to the Wide Bay-Burnett and Bundaberg regions to support growth in the agriculture sector, attract new industry and meet future urban growth needs.

The left bank of the Burnett River at Paradise Dam (facing downstream) abuts the Good Night Scrub National Park and is on land of the Bailai, Gurang, Gooreng Gooreng, Taribelang Bunda (BGGGTB) People, within the Bundaberg Regional Council (BRC) local government area. The right bank is on Wakka Wakka Country and is in the North Burnett Regional Council (NBRC) local government area.

It is a roller-compacted concrete (RCC) gravity dam, originally constructed to a maximum height of 52 m and an approved storage volume of 300,000 megalitres, at a full supply level (FSL) of 67.6 metres Australian Height Datum (m AHD).

Ownership and operation of the dam was transferred to Sunwater Limited in December 2005. Part of the Bundaberg Water Supply Scheme (WSS), Paradise Dam supplies a reliable source of water to the Bundaberg region including the highly productive surrounding agricultural areas. The agriculture sector has recently undergone diversification of crop type; once mostly sugarcane, crops now include various types of horticulture (Sunwater 2024).

Figure 1: Lowered Paradise Dam wall (Source: Paradise Alliance 2025)

Following flood-related damage to the dam from a cyclone in 2013, safety concerns were raised and subsequently investigated. Actions that followed to make the dam structure more stable included lowering the primary spillway by 5.8 m during the Essential Works Project in 2019, which resulted in a reduced storage volume of 170,000 megalitres (Figure 1).

In parallel with the Essential Works Project, an extensive program of investigation and testing was undertaken to investigate the RCC at Paradise Dam. The results of the testing indicated an atypical degradation rate of the RCC material. Based on the findings of these investigations and an international expert review, Sunwater determined that Paradise Dam is a compromised asset beyond improvement work to fix the existing dam.

In January 2024, the Queensland Government announced Sunwater would begin planning for a replacement dam wall for Paradise Dam to ensure a safe and secure water supply for the Bundaberg region for future generations. The replacement dam wall will address issues with the original construction of Paradise Dam and will return the dam to its original FSL of 67.6 m AHD. These improvements are to be delivered through the PDIP.

1.5 Paradise Dam Alliance

In January 2024, Sunwater announced the formation of the Paradise Alliance (Figure 2) to commence preparations for the planning, design, costing and construction of the replacement dam wall.

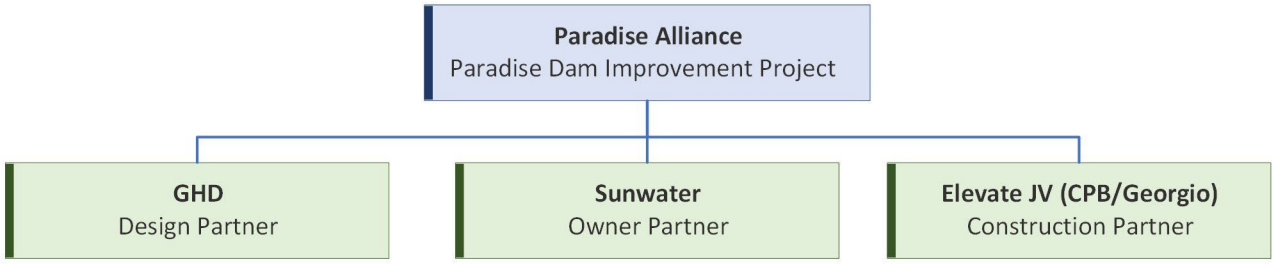

Figure 2: Paradise Alliance structure

The structure of the Alliance is a consortium of organisations with capabilities and experience to deliver the project. It includes:

- Sunwater as the owner partner
- GHD as the design partner
- Elevate Joint Venture (CPB/Georgiou) as the construction partner.

The Alliance has adopted the use of CPB policies and systems. Where relevant these systems are referenced within the CEMP as they relate to environmental management activities for Early Works.

1.6 Project description

PDIP involves construction of a replacement dam wall approximately 100 m downstream of the existing wall. The new wall will return the dam's FSL to 67.6 m AHD and will mirror its inundation footprint as originally approved. The Early Works program, including geotechnical investigations, will inform the final siting and design of the new Paradise Dam wall.

1.6.1 Project location

Paradise Dam is located on the Burnett River, approximately 40 km from the nearest town of Childers and 69 km south-west of Bundaberg (Figure 3). It is within both the NBRC and the BRC local government areas (Figure 4). The Early Works of the PDIP will be undertaken within the project area (Figure 6), including some areas extending beyond the construction footprint of the original dam, and in surrounding areas (Figure 7).

Location of Paradise Dam

Legend

- Paradise Dam
- Railway
- Watercourse
- Roads
- Paradise Dam
- Local government area
- National park

1:150,000 @ ISO A4

0 1 2 3 4

Kilometres

Map Projection: Universal Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

N

Paradise ALLIANCE

Revision 0

Date 23/09/2025

FIGURE 3

Data source: Sunwater: Paradise Dam (2024); DNRMMRRD: locality, roads (2021), cadastre (2024), railway, local government areas, watercourse (2025); DETSI: national park ((2023); World Imagery: Earthstar Geographics Basemaps_LatestStateProgram_AllUsers: .

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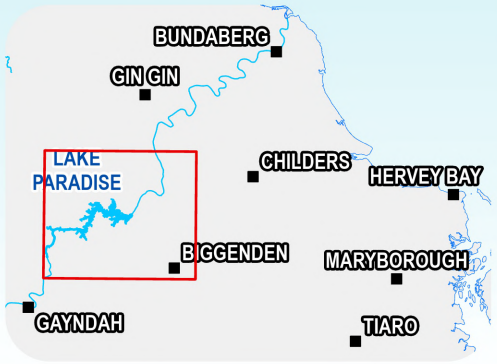
Local Government Area boundaries and road network

Legend

- City/Town
- Railway
- Local road
- State controlled road
- Major watercourse
- Project area
- Protected area
- Local government area
- Reservoir



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0 2 4 6 8

Kilometres

Map Projection: Universal Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

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Paradise ALLIANCE

Revision **0**

Date **1/10/2025**

FIGURE 4

Data source: Sunwater: Reservoir (2024); PA: project area (2025); DNRMMRRD: roads (2021), watercourse (2023), local government area, cadastre (2025); DETSI: protected area (2023);Light Gray Base: Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community
Basemaps_LatestStateProgram_AllUsers: .

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1.6.2 Early Works schedule

The Early Works of the PDIP will be delivered in multiple phases, many of which will run concurrently and are often interdependent, as presented in Figure 5. Early Works are required to prepare for the primary dam works. Primary dam works remain subject to further approvals and are not covered in this CEMP.

Early Works	2025	2026	2027	2028	2029	2030	2031	2032
Geotechnical investigations								
Quarry investigations								
TPAV		Construction	Utilisation					
Laydown/staging areas		Construction	Utilisation					
Concrete batch plants/trial embankment area		Construction	Utilisation					

Figure 5: Indicative Early Works schedule for the PDIP

1.6.3 Early Works activities

The scope of authorised activities is defined in the **Project Report** supporting the works regulation as:

- construction and associated earthworks for the TPAV, including but not limited to:
  - standard facilities constructed in accordance with industry best practices such as accommodation for personnel, mess, commercial kitchen, laundry, recreation rooms, meeting rooms, offices and car park
  - connections to onsite potable water, wastewater treatment and electricity
- construction, testing and commissioning of concrete batching plants works including:
  - an RCC batch plant
  - a conventionally vibrated concrete (CVC) batch plant
  - a trial embankment to ensure stringent strength and stability standards
- establishment of laydown areas for stockpiling and storage of plant, equipment and materials and similar activities during Early Works and main construction
- quarry investigations for a secure source of material on properties located near the project site including but not limited to:
  - site surveys, environmental and cultural heritage investigations, and land access
  - geotechnical investigations including percussion drilling, core drilling and small-scale trial blasts and extractions
- geotechnical investigations including but not limited to geotechnical drilling, trenching and soil sampling
- any and all works that are ancillary, necessarily required or incidental to the works described above e.g. establishing site services such as temporary power supply
- rehabilitation of temporary areas used for Early Works activities that will not be used for construction.

Figure 6 below illustrates the location of planned Early Works activities in the vicinity of the Paradise Dam site. It highlights zones for geotechnical investigations, batch plants, work areas and the TPAV.

Location of Early Works

Legend

- Roads
- Project area
- Paradise Dam
- Cadastre

Early works

- Geotechnical investigation area
- Temporary project accommodation village (TPAV)
- Work areas
- Batch plant

1:18,000 @ ISO A4

0 100 200 300 400

Metres

N

Map Projection: Universal Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

Paradise ALLIANCE

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Date **23/09/2025**

FIGURE 6

Data source: Sunwater: Paradise Dam (2024); PA: project area, early works (2025); DNRMMRRD: roads (2021), watercourse (2023), cadastre (2025); World Imagery: Maxar Basemaps_LatestStateProgram_AllUsers: .

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The property descriptions within the Early Works areas are provided in Table 2.

Table 2: Early Works property descriptions

Property description	Tenure	LGA	Landholder	Land use
Project area				
Lot 2 SP135369	Leasehold	BRC	Burnett Water Pty Ltd	Reservoir/dam
Burnett River	Watercourse	BRC / NBRC	State of Queensland	River/reservoir/dam
Lot 3 SP158186	Freehold	NBRC	Burnett Water Pty Ltd	Services/reservoir
Lot 2 SP339382	Freehold	NBRC	Burnett Water Pty Ltd	Services
Lot 3 P4471	Freehold	NBRC	Burnett Water Pty Ltd	Services
Lot 2 P4471	Freehold	NBRC	Burnett Water Pty Ltd	Services
Lot 1 P4471	Freehold	NBRC	Burnett Water Pty Ltd	Services
Unnamed roads	Road Reserve	NBRC	State of Queensland	Road
Paradise Dam Road	Road Reserve	NBRC	State of Queensland	Road
Quarry investigation area/s	Various – Refer to Figure 7			

With the exception of watercourses and road reserves, the land within the project area is owned by Burnett Water Pty Ltd, which is wholly owned by Sunwater. Figure 7 illustrates the regional envelope for the Early Works that involve quarry investigations. These investigations aim to identify suitable sources of aggregate required for the construction of the replacement dam wall. Sunwater is entering into land access agreements (LAAs) with landowners who own the areas of possible quarry investigation interest.

Location of the quarry investigation area

Legend

- Watercourse
- Roads
- Local government area
- Paradise Dam
- Quarry investigation area (Works regulation)

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0 1 2 3 4

Kilometres

Map Projection: Universal Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

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Paradise ALLIANCE

Revision **0**

Date **23/09/2025**

FIGURE 7

Data source: Sunwater: Paradise Dam (2024); PA: quarry investigation area (2025); DNRMMRRD: roads (2021), watercourse (2023), local government areas (2025); World Imagery: Earthstar Geographics Basemaps_LatestStateProgram_AllUsers: .

BUNDABERG REGIONAL COUNCIL

NORTH BURNETT REGIONAL COUNCIL

Burnett River

Booyal - Dallarnil Road

Gayndah - Mount Perry Road

Goorooiba - Biggenden Road

Isis Highway

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Site selection for quarry investigations is based on several key factors, including:

- geological suitability
- proximity to the dam wall to minimise trucking distances
- environmental sensitivities.

1.6.3.1 Geotechnical investigations

The geotechnical investigations are proposed within areas in and around the dam site within Lot 2 SP135369 on the left bank (facing downstream) and Lot 3 SP158186 on the right bank, as well as within the proposed spillway areas downstream of the existing dam wall within the Burnett River (Figure 6). Site facilities and amenities to support geotechnical investigations are provided at the existing PDIP site office.

The works may include:

- activities to support access and site investigations such as surveys, temporary track and pad construction including vegetation removal
- geotechnical boreholes and test pits
- core sampling and testing
- in situ testing of boreholes
- televiewing and reinstatement of geotechnical test areas
- trenching and foundation mapping
- a geophysical study of the area
- reinstatement of sites
- ancillary activities to support geotechnical investigations such as site delineation, erosion and sediment control, site surveys, utility investigations.

1.6.3.2 Temporary Project Accommodation Village

The TPAV is to be constructed on Sunwater-owned land on Lot 2 SP339382 (Figure 6), approximately 2 km from the existing dam site and off Paradise Dam Road (Campbells Road).

The TPAV will be developed in phases as construction resource needs ramp up. TPAV facilities will likely include:

- accommodation room units
- kitchen and mess facilities
- administration facilities i.e. offices, etc.
- laundry facilities
- recreational facilities and areas
- power generation
- waste management areas
- water and wastewater treatment services
- firefighting systems and water storage
- carparking and laydowns.

Construction of the TPAV will comprise activities including:

- survey demarcation of disturbance extents
- establishment of erosion and sediment control measures
- vegetation clearing and bulk earthworks
- demolition, repurposing or relocation of existing infrastructure as necessary
- establishment of the TPAV and associated facilities including vehicular entrances and exits, internal roads and accesses, permanent and temporary (generator) power supply
- connections to onsite potable water, wastewater treatment and electricity

- construction and commissioning of a sewage treatment plant (STP) and water treatment plant (WTP)
- landscaping and site stabilisation.

1.6.3.3 Concrete batch plants and trial embankment

Two concrete batching plants and a trial embankment are planned to be constructed and commissioned. One RCC batch plant and one CVC batch plant will be built, together with a trial embankment to ensure stringent concrete strength and stability standards are being met by the batching plants.

The batch plants and trial concrete embankment will be located on the right bank of Paradise Dam within Sunwater-owned Lot 3 SP158186 (Figure 6). The construction, testing and commissioning of the plants will include:

- site establishment – vegetation clearing and earthworks to form hardstand pads and stockpiling areas to support RCC and CVC patch plant infrastructure, and establishment of erosion and sediment control
- mobilisation and delivery of plant, equipment, structures and materials, the construction of internal haulage roads (including ingress and egress), establishment of site offices and amenities, installation of permanent and temporary (generator) power supply, and construction, testing and commissioning of the RCC and CVC batch plants
- landscaping and site stabilisation
- operation – the receival and storage of aggregate, aggregate preparation e.g. screening, washing, operation of the RCC and CVC batch plants, and RCC placement within the trial embankment area.

Note that this aspect of the Early Works is subject to approval from the Commonwealth Government (EPBC 2025/10206).

1.6.3.4 Laydown areas

Staging and laydown areas to support general construction related activities will be established for stockpiling, storage of plant, equipment and materials on Lot 2 SP339382 (Figure 6). Establishment is likely to include:

- survey demarcation of disturbance extents
- establishment of erosion and sediment control measures
- vegetation clearing and bulk earthworks.

1.6.3.5 Quarry investigations

Quarry investigations are required to identify a secure source of material on properties located near the project site. Quarry investigations comprise:

- site surveys, environmental and cultural heritage investigations, and land access
- geotechnical investigations including percussion drilling, core drilling, and small-scale trial blasts and extractions.

1.6.3.5.1 Site surveys, access, environmental and cultural heritage

Quarry investigations may include:

- ecological, heritage and other site surveys
- demarcation of *No Construction Access* areas where relevant
- existing service identification
- installation of erosion and sediment control measures
- vegetation clearing and access/pad site preparation as required to facilitate the investigation sites
- site establishment comprising portable ablutions, water tanks and drill mud storage
- ancillary activities to support the geotechnical investigations specific to the location, including landholder requirements.

Indicative site set-ups, plant and equipment are shown in **Figure 8**.

Figure 8: Investigatory drilling site set-up and equipment

1.6.3.5.2 Quarry geotechnical investigations

Subject to the outcomes of the investigations discussed in Section 1.6.3.5, it may be necessary to obtain a bulk sample of material which can be tested for strength, durability, hardness and other relevant engineering parameters. This testing will validate whether the aggregate/rock quality is suitable for use in dam construction.

This testing comprises temporary, Early Works geotechnical investigations only to prove up resource material suitability and potential volumes. The material will not be sold or otherwise commercially used and will only be used for technical evaluation purposes. Should investigations and assessments prove successful, and the site is confirmed as a viable source of aggregate, necessary environmental assessments would be undertaken and approvals and planning permissions e.g. material change of use of premises (extractive industry), environmentally relevant activity and environmental authority (ERA16), etc. would be sought separately.

In general, the works comprise undertaking a temporary, small-scale trial blast and extraction of material for off-site testing.

Detailed planning is undertaken on a property-by-property basis subject to the nature and extent of the likely resource being investigated. In general, to facilitate the extraction, an area as small as practicable will be cleared. Applying the mitigation hierarchy, sites are preferentially chosen for areas that have been previously cleared and disturbed and do not contain remnant vegetation. Where clearing is required, the necessary approvals will be obtained prior to work commencing.

1.7 Description of the environment

A summary of the existing conditions of key environmental values that have the potential to be impacted by Early Works activities is provided in Table 3.

Table 3: Existing environment summary

Environmental value	Existing environment summary
Biodiversity	The area around Paradise Dam is characterised by a mix of native vegetation including eucalyptus forests, grasslands, riparian vegetation downstream along the Burnett River and Allen Creek, and the reservoir upstream which supports aquatic plants and algae. The Burnett River and its surrounds are home to various flora and fauna species. Conservation significant fauna identified through field surveys included: *Neoceratodus forsteri* (Australian lungfish), *Elseya albagula* (white-throated snapping turtle), *Ornithorhynchus anatinus* (platypus), *Pteropus poliocephalus* (grey-headed flying-fox), *Hirundapus caudacutus* (white-throated needletail), *Tachyglossus aculeatus* (short-beaked echidna) and colonial breeder *Pardalotus striatus* (striated pardalote). No conservation significant flora species are considered likely to occur. Early Works activities are largely contained within cleared and previously disturbed areas including existing tracks, grazing and agricultural land, and areas used by Sunwater for operational purposes. Vegetation in these areas is generally absent or contains non-remnant pasture grasses. Remnant vegetation, including areas confirmed as subtropical eucalypt floodplain forest and woodland of the New South Wales north coast and south Threatened Ecological Community within and along Allen Creek has been avoided. However, some areas of confirmed remnant and/or regrowth vegetation may be impacted and subject to separate approvals: • Clearing of small areas of remnant vegetation may be required to accommodate geotechnical and quarry investigations. These are subject to environmental constraints or as permitted through separate approvals. • Small areas of remnant vegetation (RE 12.3.7 Least Concern) will be cleared along the property boundary to accommodate the TPAV, subject to separate approval. • An area of remnant/regrowth eucalypt woodland (RE 12.11.6) potentially providing suitable habitat for *Phascolarctos cinereus* (koala) will be impacted by the batch plant works. While there have been no records or observations of koala (or koala activity) within the project area, the presence of regrowth vegetation supporting koala food trees has conservatively been considered as potential koala habitat. This area is subject to assessment and approval under the EPBC Act (EPBC 2025/10206). Waterways providing for fish passage, including the Burnett River and Allen Creek, traverse the Early Works project areas. The construction of permanent waterway barriers is not proposed and clearing of riparian vegetation has been avoided and minimised through planning and design as far as practicable. If required, temporary waterway barrier works would be undertaken in accordance with the accepted development requirements for operational work that is constructing or raising waterway barrier works (Department of Agriculture and Fisheries) with appropriate notifications made as required. Direct impacts on aquatic fauna and flora, including Australian lungfish, white-throated snapping turtle and platypus are not expected. The existing fishway at Paradise Dam will remain operational during Early Works providing for fish passage. Environmental flow requirements relating to the existing dam will also continue to be met during Early Works.
Biosecurity	Introduced weed species are present within the Early Works project areas and surrounds, with pest plant species recorded at nearly all vegetation and habitat assessment sites during field surveys. Biosecurity risks can include invasive plants and animals, insects and pathogens. The following key restricted matters under the *Biosecurity Act 2014* and/or weeds of national significance (WoNS) have the potential to be on site and/or are at risk of being spread on site: • Invasive plants – *Ambrosia artemisiifolia* (annual ragweed) – Category 3 – *Baccharis halimifolia* (groundsel bush) – Category 3

Environmental value	Existing environment summary
	– *Cryptostegia grandiflora* (rubber vine) – Category 3, WoNS – *Dolichandra unguis-cati* (cat's claw creeper) – Category 3, WoNS – *Eichhornia crassipes* (water hyacinth) – Category 3 – *Hymenachne amplexicaulis* (hymenachne) – Category 3, WoNS – *Lantana camara* (lantana, common lantana) – Category 3, WoNS – *Lantana montevidensis* (creeping lantana) – Category 3 – *Opuntia stricta* (common prickly pear) – WoNS – *Opuntia tomentosa* (velvety tree pear) – Category 3 – *Parthenium hysterophorus* (parthenium weed) – Category 3, WoNS – *Salvinia molesta* (salvinia) – Category 3, WoNS – *Sporobolus pyramidalis* and *S. natalensis* (giant rat's tail grass) – Category 3. • Invasive animals – *Cyprinus carpio* (carp) – Categories 3, 5, 6, 7 – *Felis catus* and *Prionailurus bengalensis x Felis catus*) (feral cat), other than a domestic cat – Categories 3, 4, 6 – *Gambusia holbrooki* (mosquitofish) – Categories 3, 5, 6, 7 – *Oreochromis mossambicus* (Mozambique mouthbrooder) and *Tilapia mariae* (tilapia) – Categories 3, 5, 6, 7 – *Oryctolagus cuniculus* (European rabbit) - Categories 3, 4, 5, 6 – *Sus scrofa* (feral pig) - Categories 3, 4, 6 – *Vulpes vulpes* (European fox) - Categories 3, 4, 5, 6. Other introduced pest animal species recorded included: • *Acridotheres tristis* (common myna) • *Carassius auratus* (goldfish) • *Lepus europaeus* (European brown hare) • *Mus musculus* (house mouse) • *Rhinella marina* (cane toad). The Early Works areas are not located within a fire ant biosecurity zone. However, it is recognised that that red imported fire ants (*Solenopsis invicta)* are also a potential risk for any equipment, machinery or supplies mobilised from a fire ant zone i.e. South East Queensland. They are a restricted matter Category 1 in Queensland.
Water resources	Paradise Dam is located within the Burnett Basin and specifically the Lower Burnett River sub-basin. The broader Burnett Basin has a catchment area of approximately 3,320,998 ha. The Burnett Basin lies within the Wide Bay and Burnett region, inland from the Burrum and Mary River basins. The Burnett River originates at Mount Gaeta in the Great Dividing Range near Monto. It flows south to south-west for approximately 100 km, then east near Riverleigh, and northeast at Gayndah until it discharges into the Coral Sea near Bundaberg (45 km south of the Great Barrier Reef Marine Park). A number of watercourses regulated under the *Water Act 2000*, including the Burnett River and Allen Creek, traverse the Early Works project areas. Paradise Dam is within the Burnett Basin Water Plan Area under the *Water Act 2000.* Paradise Dam is a key component of the Bundaberg Water Supply Scheme with Sunwater as the holder of the Resource Operations Licence. There is limited groundwater use in the area surrounding Paradise Dam and the Early Works project areas fall outside of a groundwater management area under the Burnett Basin Water Plan area.

Environmental value	Existing environment summary
	Works are proposed to occur in near proximity to the Burnett River, Allen Creek and other named and unnamed watercourses and drainage features. Early Works activities do not propose to use groundwater. Construction water supply for the Early Works activities will be made available through Sunwater's current allocation from Paradise Dam. Early Works activities will not impact or alter existing dam operations. Potable water will initially be supplied by tanker. Groundwater extraction is not proposed. The Environmental Protection Policy 2019 (EPP (Water and Wetland Biodiversity)) provides for the achievement of the objectives of the *Environmental Protection Act 1994* (Qld) in relation to Queensland waters. The Burnett, Mary and Great Sandy basins are scheduled under the EPP (Water and Wetland Biodiversity); however, environmental values (EVs) and water quality objectives (WQOs) are not established for the Burnett River Basin. There are no gazetted EVs or associated WQOs for the Burnett River under the EPP; however, the Burnett Mary Water Quality Improvement Plan (2015) includes draft EVs relevant to the Early Works project areas. EVs for the Burnett River downstream of the existing Paradise Dam to Claude Wharton Weir are defined for aquatic ecosystems, irrigation, farm supply, stock water, aquaculture, human consumption of shellfish, recreation, drinking water industrial use, and cultural and spiritual values. Within the Paradise Dam storage, EVs are consistent, excluding for drinking water and non-Indigenous cultural and spiritual values. Surface water quality monitoring is currently underway to define baseline water quality characteristics.
Land and tenure	PDIP is located on the Burnett River, spanning the jurisdictions of the NBRC and BRC. This region is renowned for its productive agricultural industry, and the PDIP site is predominantly surrounded by agricultural land to the east, west and south. Existing land uses within the Early Works project area in and around the existing Paradise Dam are mainly associated with water management infrastructure for the dam. The project area includes the Burnett River area immediately downstream from the original dam wall and areas of road reserves. Paradise Dam is popular with the public and is used for recreational activities such as fishing, boating and camping, with camping grounds located near the dam wall. Tenure within the project area comprises freehold, leasehold, road reserves and watercourse. Most of the land in the immediate vicinity is freehold owned (Lot 3 SP158186 and Lot 2 SP339382) or leased (Lot 2 SP135369) by Burnett Water Pty Ltd, which is wholly owned by Sunwater. The site for the TPAV and construction laydown areas on Lot 2 SP339382 has been previously cleared for orchard and pasture activities. Existing residential infrastructure on this lot will be removed or repurposed as part of the Early Works. The nearest potential residential sensitive receptor associated with Early Works activities is located 200 m northwest of the TPAV on Lot 1 SP158185. Other potential sensitive receptors include the existing caretaker's cottage and caravan park kiosk, and recreational areas at Paradise Dam are not considered sensitive for the purpose of Early Works. Existing recreational facilities i.e. lookout and caravan facilities are located within Lot 3 SP158186 on the right bank, upstream of the existing Paradise Dam wall. Due to public safety considerations, there may be limits on public access during certain phases of the Early Works e.g. during the earthmoving activities using large plant. However, Sunwater will endeavour to keep public access open where public safety is not compromised Quarry investigations are being conducted on nearby agricultural properties that have historically been disturbed through activities such as grazing. Potential quarry investigation sites currently comprise private lands under freehold titles. Residential homestead locations and other farm infrastructure and activities are identified and assessed on a lot-by-lot basis and agreements negotiated with individual landowners as part of LAAs. Good Night Scrub National Park (Lot 110 NPW883) borders Lot 3 SP158186 to the immediate north and west and on the northern side of the Burnett River. Geotechnical investigations proposed for the left bank will not occur within Good Night Scrub National Park. Registered native title bodies corporate (RNTBCs) relevant to the Early Works area are the First Nations Bailai, Gurang, Gooreng Gooreng, Taribelang Bunda People Aboriginal Corporation (BGGGTB RNTBC), and the Wakka Wakka Native Title Aboriginal Corporation (WWNTAC). Native Title has been determined over part of the Early Works area on behalf of the BGGGTB RNTBC (QCD2017/010) and the WWNTAC RNTBC (QCD2022/004). Areas subject to the Native Title determinations include areas associated with the Burnett River, the proposed left abutment area (on Lot 2 SP135369), Allen Creek and Paradise Cemetery (Lot 71 CK540).

<table>
<tr><th>Environmental value</th><th>Existing environment summary</th></tr>
<tr><td></td><td>Early Works have sought to avoid impact on the Allen Creek and Paradise Cemetery Native Title determination areas. Sunwater has been engaging with both the BGGGTB RNTBC as the prescribed body corporate representing the rights and interests of the BGGGTB People to develop an Indigenous Land Use Agreement and the WWNTAC RNTBC for the PDIP overall.</td></tr>
<tr><td>Topography, geology and soils</td><td>
The project area falls within the Gympie subregion of the greater South East Queensland bioregion, which is characterised by low, hilly landscapes on old geological parent material.

The catchment geology consists of predominantly marine volcaniclastic depositions. Local geology comprises alluvium, Barambah basalt, the Good Night Beds, Mingo granite, andesite, rhyolite, granodiorite, gabbro and other metamorphosed sediments (Queensland Government, 2024).

The topography near the original dam wall is undulating on both the northern and southern extents of the Burnett River. Steep topography within the Good Night Scrub National Park extent reaches approximately 90 m elevation, rapidly falling to approximately 32 m elevation along the stream bed of the Burnett River downstream of the original dam wall. Hills and gullies occur on the southern side of the Burnett River, including along Allen Creek where it feeds into the Burnett River. Further downstream on the southern banks of the Burnett River, relatively flat expanses occur. Higher elevations occur outside to the east of the project area, with a small ridge reaching approximately 170 m elevation. The topography plays an important role in water management for the dam, with the surrounding hills contributing to the catchment area for the reservoir.

Soil types within the Early Works areas are dominated by Rudosols and Sodosols on the right bank, and Dermosols on the left bank, with several soil types within the project area and associated quarry investigation zones being susceptible to erosion.

The site features Rudosols, likely of the Leptic or Lithic suborders, which overlie solid bedrock. These soils contain a high proportion of rock fragments within a saprolitic profile (S3) and are embedded in a silty matrix. When tested using the ‘jam jar’ method:
• the S3 silty matrix becomes readily suspended in water but settles almost completely within 24 hours
• the S2 subsoil layer (grey-brown) exhibits dispersive characteristics, with sediment remaining suspended for more than 24 hours
• the S1 topsoil layer contains organic matter that floats, while most sediment settles within 24 hours.

In addition, Sodosols, which are texture-contrast soils, may present salt-affected subsoil layers that are also prone to erosion.

These erodible soils are addressed through specific erosion and sediment control plans (ESCPs) as identified in the Water Quality Sub-plan, which are developed for all disturbance areas to mitigate erosion risks.

While Early Works will be undertaken on the following two lots listed on the Environmental Management Register (EMR)[1], potential areas of contamination are reportedly outside the Early Works area.

<table>
<tr><th>Lot</th><th>Register</th><th>Description</th></tr>
<tr><td>2 SP339382</td><td>EMR</td><td>Livestock dip or spray race – operating a livestock dip or spray race facility
The livestock dip is in a known area on Lot 20 SP339382 on the opposite side of Paradise Dam Road from the TPAV Lot 2 SP339382. This area is not included within the proposed Early Works disturbance footprints and will not be impacted.</td></tr>
<tr><td>2 SP135369</td><td>EMR</td><td>Landfill – disposing of waste excluding inert construction and demolition waste
The current EMR search for Lot 2 SP135369 references the former National Parks and Wildlife Lot 110 NPW550. Lot 2 was created from those parts of Lot 110 NPW550 (now identified as Lot 110 NPW883) below the 100-year flood level.
Most of Lot 110 NPW883, including the landfill, is managed by Queensland Parks and Wildlife Service. It is understood that the landfill area was not transferred to Burnett Water Pty Ltd and is not within or near to the proposed Early Works disturbance footprints.</td></tr>
</table>
</td></tr>
</table>

[1] No sites in the project area are listed on the contaminated land register.

Environmental value	Existing environment summary
Traffic and transport	Paradise Dam is connected to an existing road network with primary access via Paradise Dam Road (Campbell's Road) and Coringa Road managed by NBRC.
Air quality	Air quality within the project area and surrounds is considered to be consistent with a rural landscape. Existing air quality is influenced by dust generated from stock movements, dust of natural origin, bushfires and controlled burns, and vehicular movements on unsealed roads. There is a single sensitive receptor within the project area, being the rural residential homestead located approximately 200 m north-east of the proposed TPAV on Lot 1 on SP158185. There is no reported long-term air quality monitoring in the Lower Burnett River area. Consequently, background concentrations have been estimated using qualitative assessments based on previous studies in cane-farming rural regions. The highest particulate levels are expected during periods of low wind combined with extensive bushfires or cane burning. Dust deposition gauges have been established on site and monitoring is underway to define baseline air quality characteristics. To provide a reference point, data from the Mackay region—where similar cane burning occurs—was used. One year of 24-hour average $PM10^2$ data (up to June 2000) from the EPA showed concentrations ranging from 5 to 50 µg/m³, with a median of 15 µg/m³. For assessment purposes, a conservative estimate of 30 µg/m³, representing the 95th percentile, was adopted. Under Section 6 of the Environmental Protection (Air) Policy 2019, environmental values to be protected or enhanced include air quality conducive to: • the health and biodiversity of ecosystems • human health and wellbeing • the aesthetics of the environment • agricultural use of the environment.
Noise and vibration	Existing background noise levels for the project area are consistent with nearby rural areas. Representative background noise levels vary from 38–47 A-weighted decibels (dB(A) L90) during the day to 30 – 38 dB(A) L90 at night (PDIP IAS, Sunwater 2025). There is a single sensitive receptor adjacent to the project area, being the rural residential homestead located approximately 200 m north-east of the proposed TPAV on Lot 1 on SP158185. Other potential sensitive receptors include the existing caretaker's cottage, caravan park kiosk and recreational areas at Paradise Dam. Good Night Scrub National Park is also a sensitive receptor, being a protected area recognised under the Environmental Protection (Noise) Policy 2019. Acoustic environmental values relate to the health and biodiversity of ecosystems, with the prescribed acoustic quality objective being 'the level of noise that preserves the amenity of the existing area or place'. Other potential receptors that have been considered but are not sensitive receptors for the purposes of the project include the TPAV and existing dwellings and infrastructure on Lot 2 SP339382, which are owned by Burnett Water Pty Ltd (to be demolished or repurposed to support project construction activities).
Waste	During the Early Works the following key waste streams have been identified: • clearing/grubbed organics i.e. vegetation, mulch, etc. • mixed spoil • demolition concrete • concrete washout water • building rubble and structural element demolition materials • groundwater from excavation – liquid waste • general office waste e.g. paper, cardboard, used printer cartridges

[2] Airborne particulate matter under 10 µm in diameter.

<table>
<tr><th>Environmental value</th><th>Existing environment summary</th></tr>
<tr><td></td><td>

spoil/soils impacted by hydrocarbon spills or leakage
TPAV wastes including foods, packaging and treated effluent
drilling waste e.g. muds.

</td></tr>
<tr><td>Natural hazards</td><td>
Hazards, health and safety considerations for the project include climate hazards, particularly flooding and bushfires.
Climate data sourced from the Bureau of Meteorology's Gayndah Airport weather station, located approximately 42 km south-west of the site, is presented below. The area lies within the Wide Bay-Burnett region, which experiences a subtropical climate with warm, wet summers and mild winters and distinctive wet and dry seasons. The wet season occurs between October and March, when the region typically experiences hot and humid summers with heavy rainfall. This accounting for approximately 71 per cent of annual rainfall. The dry season from April to September is generally cooler with less humidity and rainfall. During typical summer periods, average maximum monthly temperatures can reach over 33°C while average monthly minimum temperatures can reduce to less than 8°C in winter. In summary, over the 21-year period from 2003 to 2024, the area experiences:

maximum temperatures from 22.7°C in July to 33.7°C in January
minimum temperatures from 7.3°C in July to 20.8°C in January
monthly rainfall from 85.0 mm in February to 25.4 mm in July
rainy days (>1 mm) from 7.2 days in December to 2.4 days in August.

These seasonal variations highlight the region's pronounced wet and dry periods.
<table>
<tr><th>Parameter</th><th>Jan</th><th>Feb</th><th>Mar</th><th>Apr</th><th>May</th><th>Jun</th><th>Jul</th><th>Aug</th><th>Sep</th><th>Oct</th><th>Nov</th><th>Dec</th></tr>
<tr><td>Mean maximum temperature (°C)</td><td>33.7</td><td>32.8</td><td>31.4</td><td>29.0</td><td>25.6</td><td>22.9</td><td>22.7</td><td>25.0</td><td>28.0</td><td>30.3</td><td>31.7</td><td>32.8</td></tr>
<tr><td>Mean minimum temperature (°C)</td><td>20.8</td><td>20.6</td><td>19.1</td><td>15.2</td><td>10.9</td><td>8.4</td><td>7.3</td><td>7.9</td><td>11.5</td><td>15.1</td><td>17.4</td><td>19.5</td></tr>
<tr><td>Mean rainfall (mm)</td><td>78.2</td><td>85.0</td><td>73.3</td><td>27.0</td><td>31.1</td><td>29.6</td><td>25.4</td><td>26.0</td><td>27.1</td><td>73.0</td><td>63.8</td><td>84.1</td></tr>
<tr><td>Erosion risk rating</td><td>High</td><td>High</td><td>High</td><td>Medium</td><td>Medium</td><td>Medium</td><td>Low</td><td>Very low</td><td>Very low</td><td>Medium</td><td>Medium</td><td>High</td></tr>
<tr><td>Mean no. of days with rain >1 mm</td><td>5.9</td><td>5.8</td><td>5.5</td><td>3.6</td><td>3.0</td><td>3.3</td><td>3.0</td><td>2.4</td><td>2.9</td><td>5.1</td><td>5.4</td><td>7.2</td></tr>
</table>
</td></tr>
<tr><td>Cultural heritage</td><td>
Indigenous cultural heritage
Early Works areas are located on the traditional lands of the BGGGTB People (Burnett River – in-river and left bank) and Wakka Wakka People (right bank including the batch plants and TPAV). Sunwater is actively engaging with these groups to manage duty of care under the Aboriginal Cultural Heritage Act 2003 (Qld).
Non-indigenous cultural heritage
There are no registered matters of historic heritage significance within the Early Works areas. The closest registered State site is Deep Creek Railway Bridge, Chowey, located approximately 12 km south of the area. The NBRC local heritage register identifies the Paradise Cemetery (Lot 71 CK540), which was connected with the historical Paradise gold mining settlement (circa 1890s). The Paradise Cemetery is located alongside Paradise Dam Road, outside the Early Works area.
</td></tr>
</table>

2. Environmental Management Strategy

2.1 Aspects and impacts

A risk management approach is used to identify the inherent risk and impact severity associated with an aspect prior to controls. Residual risk is the risk level remaining with management controls.

ISO 14001 accreditation requires the project to identify and manage significant environmental risks as part of operations.

The environmental aspects and impacts relevant to the project are captured and managed through the supporting sub-plans, with mitigation measures assigned and implemented relative to the work activity and impact as applicable.

2.2 Project approvals and legislation

The Early Works are authorised under and subject to the provisions of Part 4, Division 16 of the *State Development and Public Work Organisation Regulation* (SDPWO Regulation). The Alliance is responsible for obtaining any additional permits that may be required under local and state planning instruments. A summary of legislation, standards and guidelines that may apply to the Early Works activities are described below (NB. this is not exhaustive and other requirements may apply).

2.2.1 Commonwealth legislation

As stated in the Works Regulation Report, the Works Regulation (and this CEMP) does not remove the requirement for Sunwater or the Paradise Alliance to undertake any assessments which may be required for matters of national environmental significance (MNES) under the EPBC Act. No works are to be undertaken under the CEMP would have the potential to adversely impact on MNES.

Commonwealth legislation relevant to the Early Works includes:

- EPBC Act
- *EPBC Act Environmental Offsets Policy*
- *Aboriginal and Torres Strait Islander Heritage Protection Act 1984*
- *National Greenhouse and Energy Reporting Act 2007*
- *Native Title Act 1993*.

2.2.2 Queensland legislation

Queensland legislation relevant to the Early Works include:

- *Environmental Protection Act 1994 (EP Act)*
- *Environmental Protection Regulation 2019*

The EP Act also allows for the preparation of environmental protection policies (EPPs). The following EPPs have been proclaimed:

- Environmental Protection (Air) Policy 2019
- Environmental Protection (Water and Wetland Biodiversity) Policy 2019
- Environmental Protection (Noise) Policy 2019.

In addition to the EP Act other major legislation relevant to the Early Works of PDIP includes:

- *Aboriginal Cultural Heritage Act 2003*
- *Biosecurity Act 2014*
- *Dangerous Goods Safety Management Act 2001*
- *Environmental Offsets Act 2014*
- *Explosives Act 1999*
- *Fisheries Act 1994*
- *Heritage Act 1992*
- *Land Act 1994*

- *Land Protection (Pest and Stock Route Management) Act 2002*
- *Nature Conservation Act 1992*
- *Planning Act 2016*
- *Queensland Heritage Act 1992*
- *Soil Conservation Act 1986*
- *State Development and Public Works Organisation Act 1971*
- *Transport Infrastructure Act 1994*
- *Transport Operations (Road Use Management) Act 1995*
- *Vegetation Management Act 1999*
- *Waste Reduction and Recycling Act 2011*
- *Water Act 2000*
- *Water Supply (Safety and Reliability Act 2008)*
- *Work Health and Safety Act 2011.*

2.2.3 Local government

The Early Works activities are required to comply with the relevant local laws e.g. *Local Law 3 (Community and Environmental Management) 2024* and *Local Law 4 (Local Government Controlled Areas, Facilities and Roads) 2011*.

2.2.4 Early Works authorisations

For the activities/works that fall within the Early Works authorised by the SDPWO Regulation, there is no requirement for development permits, such as those for material change of use and operational works e.g. earthworks under local planning schemes. However, it does not exempt compliance with other applicable laws or cover activities beyond its scope.

2.2.5 Standards and guidelines

- AS/NZS ISO 14001:2016 Environmental Management Systems – Requirements with guidance for use
- AS/NZS ISO 14004:2018 – Environmental Management Systems – General guidelines on implementation
- AS ISO 31000:2018: Risk Management – Guidelines
- AS/NZS ISO 19011:2019 – Guidelines for auditing management systems
- AS/NZS 3580.1.1:2016 Methods for sampling and analysis of ambient air – Guide to siting air monitoring equipment
- AS/NZS 3580.10.1:2016 Methods for sampling and analysis of ambient air – Determination of particulate matter – Deposited matter – Gravimetric method
- Department of Environment and Science (DES) Guideline Noise and vibration from blasting, Version 3.01 2016
- DES Noise Measurement Manual, Version 4.01, 2016
- AS 2187.0-1998 Explosives – Storage, transport and use – Terminology
- AS 2187.1-1998 Explosives – Storage, transport and use – Storage
- AS 2187.2-2006 Explosives – Storage and use, Appendix J – Blast monitoring
- AS 2436-2010 (R2016) Guide to noise and vibration control on construction, demolition and maintenance sites
- AS 2702-1984 Acoustic – Methods for the measurement of road traffic noise
- IECA (2008) Best Practice Erosion and Sediment Control
- Institute of Public Works Engineering Australia Queensland Urban Drainage Manual, 4th Edition
- DES Monitoring and Sampling Manual 2018, Version 2
- Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand, Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2019
- Australian Drinking Water Guidelines (ADWG), 2018
- State Planning Policy – State interest guidance material – Natural hazards, risk and resilience – Flood 2017
- Australian Code for the Transport of Dangerous Goods by Road and Rail, Edition 7.6
- AS 1216-2006 Class labels for dangerous goods
- AS ISO 16101-2007 Transport packaging for dangerous goods – Plastics compatibility testing
- AS 1940:2017 The storage and handling of flammable and combustible liquids
- AS 3780-2008 (R2009) The storage and handling of corrosive substances.

2.2.6 Other compliance obligations

Other compliance obligations include:

- environmental management systems (EMSs) (CPB ISO14001 EMS)
- site-specific environmental plans and procedures, including ESCPs, site rehabilitation plans, and LAAs.

2.3 Organisational commitment and management systems

The Alliance's organisational commitment and management systems are described in the sections below.

2.3.1 Environmental Management System

EMSs require a clear organisational commitment, typically expressed through an environmental policy. The EMS is the mechanism through which these policy commitments are implemented and delivered.

The CEMP is embedded within, uses the tools of, and is delivered through the EMS of the Alliance. The Alliance has adopted the EMS of its construction partner, CPB Contractors, which is ISO 14001 accredited. These systems provide the framework for delivering environmental outcomes and ensuring compliance across the PDIP, including Early Works.

The Alliance EMS is based on the requirements of the CPB Management System and has been specifically tailored to ensure compliance with Sunwater's environmental requirements.

The EMS has been developed and implemented to ensure a consistent approach to project delivery. The management system comprises:

- a policy statement of strategic intent and commitment, which defines the minimum mandatory requirements that all levels of the organisation are expected to comply with
- the Project Management Plan outlining how the PDIP, including Early Works will be managed, supported by a suite of functional management plans
- procedures and work instructions specifying how to undertake and control specific activities. These list accountable roles and the tools and knowledge to be used. Where appropriate and approved by the respective functional manager, project-specific procedures may be produced to reflect specific project circumstances
- tools, including preformatted documents such as forms and templates that are required to be completed as part of a procedure
- knowledge documents that reference material to provide context, additional information or guidance to a policy or procedure
- business applications (software tools) to manage business and support operations.

2.3.2 Environmental Policy

The Alliance has adopted CPB's Environmental Policy for the Early Works. The Environmental Policy is included in Appendix A.

2.3.3 Development and implementation of the CEMP

The environmental management framework for delivery of obligations and compliance through this CEMP is presented in Figure 9 below.

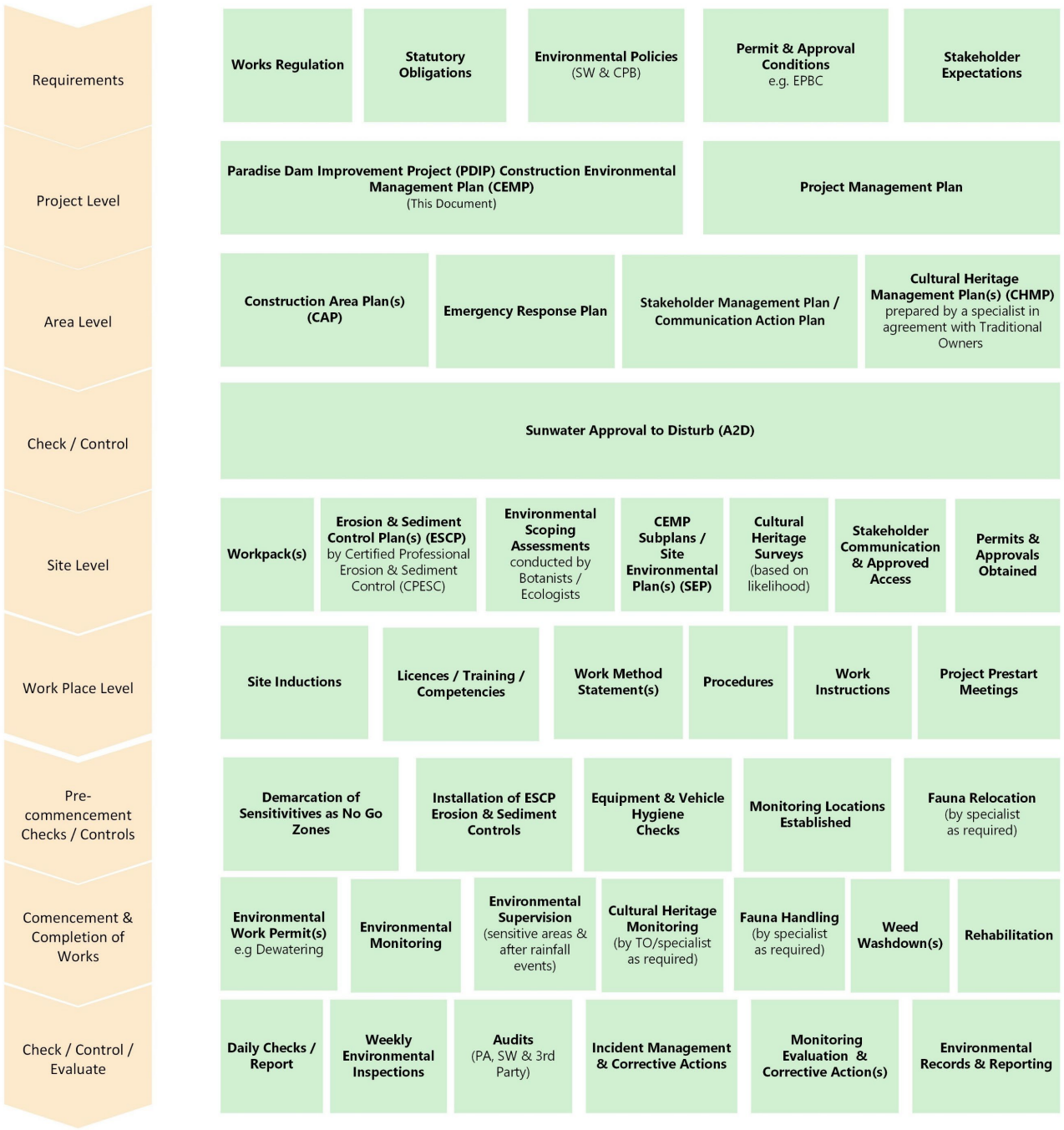

Figure 9: Environmental management framework

2.4 Roles and responsibilities

The Alliance will operate under the systems, policies, plans, and procedures of the EMS for PDIP execution and compliance, including Early Works. The standard Alliance policies and procedures outline the specific requirements and processes necessary to support the effective implementation of this CEMP.

2.4.1 Sunwater responsibility

- define Sunwater environmental performance and management requirements that the Alliance will comply with.
- obtain endorsement of the CEMP from the Office of the Coordinator-General (OCG), publish the endorsed document (including revisions) on the Sunwater website and notify the OCG of future revisions.

- obtain LAAs for quarry investigations and applicable Early Works authorisations as described in Section 2.2 of this CEMP.
- liaise with regulators and other agencies as required.
- require the Alliance to report all incidents and non-conformances with compliance obligations to Sunwater so that Sunwater can report to relevant government authorities/agencies where required.
- undertake regular surveillance and audit of the CEMP's implementation performance.
- receive any public complaints and manage reporting to the OCG in line with Works Regulation requirements.
- manage complaint escalation and response and report these to the OCG in accordance with the complaint management procedure (refer to Stakeholder Engagement Plan – Appendix B).
- maintain, for the duration of the Early Works, open and effective communications with the communities in the vicinity of the works areas about the construction program, scale, duration and nature of the proposed work, and proposed impact mitigation measures.

2.4.2 Alliance responsibility

- Develop and maintain in consultation with Sunwater a CEMP that is suitable and for endorsement by the OCG.
- Carry out all work consistent with the CEMP and approval conditions.
- Conduct activities in accordance with any pertinent licence or agreements.
- Obtain any necessary additional works permits, licences and approvals from statutory authorities not obtained by Sunwater.
- Set and achieve CEMP environmental objectives and targets.
- Ensure all employees are trained, inducted and competent in their responsibilities under the CEMP prior to commencing work on site.
- Conduct monitoring, site inspections and reporting on environmental performance as specified in the CEMP.
- Record complaints, incidents and non-conformances, implement corrective and preventative actions to address these, and report on these matters to Sunwater.
- Advise Sunwater of required updates to the CEMP as required during the project to capture changes to the scope of works and services, updated compliance obligations, and in response to incidents, complaints or audits.
- Submit updated CEMP to Sunwater for review, use and publication.
- Prepare and submit site-specific work method statements and site-specific EMPs to Sunwater as required by contract conditions.
- Participate in inspection and audits by Sunwater, auditors and regulatory authorities.
- Prepare detailed engineering designs.
- Ensure all designs and construction works are prepared and conducted in accordance with approvals, the contract, relevant legislation and regulations, and local laws.

2.4.3 General environmental responsibilities

All staff have a general environmental duty under Section 319 of the EP Act, and must not carry out any activities that cause, or are likely to cause, environmental harm, unless all reasonable and practical measures are taken to prevent or minimise harm. While performing their work, if staff notice that serious or material environmental harm is being caused or threatened by their actions, or the actions of someone else, they must then report the matter under Section 320 of the EP Act.

Additionally, staff are required to comply at all times with:

- the Alliance's environmental policy and EMS
- relevant legislation, with particular attention to environmental legislation under this CEMP

- environmental management requirements for construction and operation as specified in the CEMP and EMS
- PDIP training requirements
- all approvals and the Coordinator-General's conditions.

2.4.4 Appropriately qualified persons

Management of the CEMP will be undertaken by qualified staff with the appropriate training and experience. All staff will be trained in incident reporting and environmental awareness through the induction/onboarding process. All environmental activities are to be carried out by appropriately qualified personnel which will be verified by the Alliance. The Alliance will consult with appropriately qualified personnel e.g. aquatic fauna specialists in the development of management options and actions, including design options, to address risks from the proposed works.

2.4.5 Competence and training

All employees and subcontractors working on site will be provided with environmental training to achieve a minimum level of awareness and competence appropriate to their assigned activities. Targeted environmental awareness training will be provided to individuals or groups of workers with a specific authority or responsibility for environmental management or those undertaking an activity with a high risk of environmental impact.

Staff involved in environmental monitoring will be trained and competent in the activities to be undertaken, including sample collection, handling, storage, and transport, and in the operation, calibration, and maintenance of any equipment to be used.

Staff involved in update of the project CEMP sub-plans will be appropriately qualified and experienced in design and/or development of those sub-plans.

Records of staff training will be maintained by the site environmental representative and will be auditable and available for inspection on request.

2.5 Induction and awareness training

Before site personnel under the project's control (including Early Works) begin work, they must be inducted and made aware of:

- the requirements of the CEMP, sub-plans and site rules
- the Environmental Policy (Appendix A)
- the significant environmental aspects and values in the vicinity of the Early Works and related actual or potential environmental impacts associated with their work
- activities with a high risk of environmental impact
- the responsibilities and accountabilities of site personnel
- their contribution to the effectiveness of the EMS, including the benefits of enhanced environmental performance
- the implications of not conforming with EMS requirements, including not fulfilling the organisation's compliance obligations
- expectations for visitor site access requirements and associated workplace health and safety behaviours.

NB: The sub-management plans of the CEMP also prescribe aspect-specific training and induction requirements.

Routine 'toolbox' discussions will be held to ensure that feedback can be provided on issues of interest or concern and that information arising from project-specific issues (including Early Works) is communicated to all relevant staff. Induction and 'toolbox' records will be maintained to verify attendance.

The Alliance Health and Safety Representative will be responsible for conducting inductions and toolbox discussions; however, subject matter experts will typically deliver relevant materials e.g. environment team for environmental matters, community and stakeholder team for communications and engagement, and so on.

2.5.1 Site visitors

Any visitors to the site will be given a site-specific induction and will be escorted around the site by a person who has been specifically authorised by Sunwater or the Alliance. Visitors must remain with their escort at all times. The escort will alert the visitors to hazards on site, including workplace health and safety issues and expected behaviours.

2.6 Incident management, inspection, monitoring, auditing and reporting

Inspections, monitoring, auditing and reporting will be undertaken to document compliance with this CEMP in accordance with the schedule in Table 4. Where monitoring and auditing determines that existing management measures are not effective, corrective and preventative measures will be developed and implemented as soon as practicable.

Table 4: Inspection, monitoring, auditing and reporting schedule

Activity	Responsibility	Daily	Weekly	Fortnightly	Monthly	Quarterly	Six-monthly	Annually	As required
Inspections									
Daily report	Alliance	■							
Weekly environmental inspections	Alliance		During active works						
Monitoring									
Site water quality monitoring	Alliance				■				■
Fauna monitoring	Alliance & Sunwater								■
Cultural Heritage monitoring	Alliance & Sunwater								■
Audits									
CEMP audit	Alliance						■		
CEMP audit	Sunwater						■		
Reporting									
Project reporting	Alliance			■					
Energy & materials form	Alliance				■				
E&S monthly indicator	Alliance				■				

Activity	Responsibility	Daily	Weekly	Fortnightly	Monthly	Quarterly	Six-monthly	Annually	As required
E&S quarterly report	Alliance					■			
Incident & CAR reporting	Alliance & Sunwater								■
PDIP CEMP version update	Alliance & Sunwater							■	

2.6.1 Environmental site inspections

Routine environmental site inspections will be conducted and documented. Observations and improvements identified will be communicated to the relevant staff or subcontractor for action.

In addition, informal site inspections will be undertaken by supervisors/foremen and if observations require additional controls, actions or a change in construction activities, these matters will be directly managed by the supervisor.

The purpose of site inspections is to:

- provide a surveillance tool to ensure that environmental controls are being implemented
- identify where problems might be occurring (or have the potential to occur)
- facilitate the identification and early resolution of problems.

Should environmental work/improvement or alternative activities be identified during an inspection, these will be advised to the supervisor for assessment and implementation.

2.6.2 Monitoring

Measuring, monitoring and evaluating will be key activities of each element within the CEMP sub-plans. Monitoring will mean setting in place and operating various procedures to monitor, measure and record the level of impact on the environment during the execution of the project.

The monitoring of environmental impacts will be carried out in accordance with the monitoring requirements for each element throughout the CEMP, relevant legislation and the conditions of any permit, where relevant.

Monitoring procedures will be developed in accordance with standard protocols and the requirements of relevant agencies as appropriate. All equipment used for environmental monitoring will be calibrated and maintained to the standards recommended by the supplier/manufacturer. Records of calibration and maintenance for each piece of monitoring equipment will be held on site.

Environmental monitoring samples, if taken, will be sent for analysis to a National Association of Testing Authorities registered laboratory where applicable. All records of laboratory analysis results and quality assurance are auditable and will be available for inspection, on request, by regulatory agency officials or their representatives.

Baseline water quality and air quality (dust) is currently being undertaken as described in the project EMP (Appendix C).

2.6.3 Review and auditing

2.6.3.1 Review

The CEMP will be reviewed within six months of endorsement, and annually thereafter for the duration of the Early Works. The purpose of the review is to ensure that the CEMP and associated processes are meeting the requirements of relevant legislation, standards, policies, licenses, permits, approvals and objectives.

The review will consider, but not be limited to:

- site personnel and administering authorities' comments

- audit findings
- recommendations/opportunities for improvement
- environmental monitoring, incidents, non-conformances and complaint reports
- the effect of changes in standards and legislation.

2.6.3.2 Audit

The implementation of the CEMP will be audited periodically (at least every 12 months) to check on the environmental management and performance of Early Works of the PDIP. Aspects of Early Works with a potential for environmental impact may be subject to additional environmental audits. The audit objectives will be to verify compliance with applicable Commonwealth, State and local government environmental permits, approvals and regulations issued for the PDIP.

The audit will also seek to verify compliance with the CEMP.

Each audit will be internally reviewed by the Alliance and/or Sunwater and all actions raised will be addressed. Copies of audit reports and details of corrective actions will be made available for regulatory inspection on request.

The results and corrective actions of an audit must be reviewed, and action taken to remedy areas of substandard performance.

Audits may address (without limitation):

- compliance with legislative and regulatory requirements
- compliance with the CEMP
- documentation and recordkeeping
- compliance with approval, permit and licence obligations.

The Alliance will develop a monitoring and inspection procedure including a schedule of all inspections and audits (internal/external) for the PDIP, including Early Works. The procedure will include all inspection and audit templates.

2.6.4 Amendments to the management plan

It may be necessary to amend the CEMP to ensure its efficacy. Sunwater is required to notify OCG of any proposed material amendments that may alter the approved scope. For non-material amendments, Sunwater is required to note changes through the CEMP's reporting arrangements.

Considerations for updating the CEMP may include:

- findings from audit and/or reporting processes
- non-conformances
- trends in monitoring data
- changes to the regulatory framework
- changes to standards and guidelines applicable to the work
- changes to practices to improve environmental outcomes if management practices are proving ineffective.

Any amendments to the CEMP will be provided to OCG in tracked changes for consideration and endorsement if required. If endorsement by OCG is required, the amended CEMP must be published to the Sunwater website within 10 business days following notification of endorsement by the OCG.

2.6.5 Reporting

Monthly environmental summary reports will be produced for the duration of the works and will be available for regulatory agency inspection on request. A quarterly summary of the report will be provided to the OCG. The report will include, but is not limited to:

- site inspections: number of inspections completed, and summary of corrective actions undertaken
- monitoring: summary of monitoring and whether non-conforming results were obtained
- register of current and completed non-conformance reports, corrective actions, environment-related complaints and environmental incidents raised, and a record of the current status
- positive environmental outcomes achieved, and opportunities identified
- all complaints/enquiries received, and actions taken to resolve issues.

2.6.6 Environmental incident management

2.6.6.1 Incident classification

Incidents will be classified by type and class in accordance with the Alliance's Synergy Event Classification Matrix (2025) with events and consequences described in Table 5 and Table 6 respectively.

Table 5: Event type definitions

Event types						
Incident	Near hit	Report only	Regulatory visit	Stakeholder contact	Drug and alcohol positive test	Hazard
Occurrence that results in physical or psychological injury or illness to a worker, damage to property, plant, equipment or the environment, or business interruption.	Occurrence that had the potential to (but did not) result in physical or psychological injury or illness to a person, damage to property, plant, equipment or the environment, or business interruption.	Event that required recording for future reference and is not included in statistical reporting.	Visit by a regulatory authority to the workplace.	Record of a contact between the workplace and an external stakeholder e.g. a compliment, complaint, enquiry or feedback.	Result that has been confirmed as positive by an accredited laboratory or calibrated testing device.	Event record of an identified hazard that, if controlled, has the potential to cause damage, harm or adverse health effects within the workplace.

Table 6: Actual and potential consequence to an environmental incident

Event classes				
Actual consequence				
1A	**2A**	**3A**	**4A**	
Environmental discharges, pollution or degradation which has high severity impacts on the community and/or environment or may have irreversible detrimental long-term impacts.	Environmental discharges, pollution or degradation which has moderate severity impacts on the community and/or environment (1 to 3 months) but is fully reversible in the long term.	Environmental discharges, pollution or degradation which has low severity impacts on the community and environment in the short term (<1 month) and is fully reversible with no residual impacts. Includes nuisance level impacts.	Negligible or sporadic discharges.	
Potential Consequence				
1P	**2P**	**3P**	**4P**	**5P**
Long-term/irreversible damage to neighbouring or valued ecosystem. Long-term remediation required. Irreparable damage to highly valued items/ locations of cultural significance.	Impacts extend off-site/ external ecosystem. Considerable remediation required. Significant damage to structures/locations of cultural significance.	Medium-term, contained impact requiring significant remedial action. Moderate but permanent damage to structures/items/ locations of cultural significance.	Short-lived, well-contained environmental impact – minor remedial action required. Moderate damage that is largely repairable.	Small, contained localised impact. Low level repairable damage to commonplace structures.

2.6.7 Incident response

The immediate response to all incidents is to make the area safe and undertake measures to prevent further environmental harm. Incident response procedures specific to Early Works will be developed for onsite teams across health, safety and environmental matters.

2.6.7.1 Notification to Sunwater

Sunwater is to be notified as soon as possible, but within four hours, of environmental incidents as per the agreed contractual arrangements. Regulatory Notifications for Environmental Incidents will be reported to regulators in accordance with the requirements of local, state and federal government regulations by the Sunwater environmental representative or delegate.

2.6.8 Incident classification and reporting

All environmental incidents, including community complaints that are a result of an environmental incident or breach, will be reported and recorded within three calendar days. Root causes will be identified and recorded for all actual Class 1 and 2 incidents (and optionally for Class 3 incidents). All statutory notices received from regulators, including penalty notices and fines, will be recorded as Regulatory Actions within the Notice of Violations sub-form upon receipt. All Notice of Violations are also recorded as Class 2 (or above) incidents.

The level of investigation needed will depend on the incident classification. Corrective actions, including those required to help prevent future incident occurrences, are a key outcome of incident investigations. Incident investigation reports will be prepared.

2.6.8.1 Statutory authority investigations

Before any staff member is questioned by officers of a statutory authority or in the case of regulator requests for further information, they are to consult with the relevant corporate officers of the participating entities of the Alliance, to determine if legal counsel is needed. Regulatory inspectors will be given appropriate assistance during their own investigations.

2.6.8.2 Notification to Sunwater and regulatory agency

Sunwater is to be notified as soon as possible, but within four hours, of environmental incidents and complaints as per the agreed contractual arrangements. The Complaint Reporting Procedure is detailed in Section 4 of the stakeholder engagement plan (Appendix B). Regulatory Notifications for Environmental Incident reporting to regulators is detailed in Appendix D. It is important to note that Sunwater (as the party to the Works Regulation) will undertake regulatory notifications as required, including notification of complaints to the OCG. The Alliance will assist Sunwater in this matter by providing advice and site information.

2.6.9 Non-conformance and corrective action system

2.6.9.1 Non-conformances

A non-conformance may be issued in response to poor or inappropriate work methods, equipment selection, maintenance of controls, or other identified concerns.

In the event of a non-conformance:

- the nature of the event will be investigated
- advice may be sought from a specialist
- monitoring may be undertaken
- the effectiveness or need for new/additional controls will be reviewed
- appropriate preventative or corrective actions will be implemented
- environmental documentation will be reviewed and revised
- where required, hold points will be placed on the area until appropriate actions have been undertaken
- actions associated with non-conformances will be closed out within the nominated timeframes.

2.6.9.2 Preventative and corrective actions

As described above, preventative and corrective action/s will be identified in response to an environmental incident, outcome of an inspection or audit and/or non-conformance. In addition, the identification, reporting and rectification of environmental deficiencies will be promoted at site-specific inductions, toolbox talks, and safety and environment committee meetings.

3. Documentation and communication

3.1 Document authority and precedence

This CEMP remains a live document throughout the delivery of the works and will be updated as required e.g. to accommodate new planned work activities, to the satisfaction of the OCG, and published.

3.2 Documentation and records

Adequate documentation and records will be maintained to demonstrate compliance with the CEMP. Records that should be available at all times and readily accessible for independent inspection and audit include but are not limited to:

- contract documents
- statutory permits and licences
- hazard, near miss, incident and technical reports
- monitoring data results
- environmental audits and reviews
- environmental training records
- non-conformance reports and details
- complaints register
- community consultation reports
- inspection, calibration and maintenance records
- environmental incident investigations and reports
- corrective action reports.

The following documents must be readily accessible to personnel undertaking activities associated with Early Works:

- a copy of the CEMP and sub-plans
- a copy of the approved Approval to Disturb (A2D) for the area on which the work activity is occurring
- copies of environmental checklists and forms required by the CEMP
- copies of relevant work instructions and procedures
- safety data sheets (SDSs) for any chemicals stored or used on the site
- copies of authorisation, permits, approvals, and attached conditions.

3.3 Communication

3.3.1 Internal communication

Environmental protection should be achieved through clear and concise internal communication that includes key environmental requirements, systems, processes, message and plans through various means such as:

- daily pre-start meetings
- project team meetings
- health, safety, environment and quality (HSEQ) team meetings
- project owner meetings
- subcontractor meetings
- HSEQ system review meetings
- toolbox talks as per Section 2.5

- message boards (located in crib rooms/site office)
- site signage.

Meetings will include appropriate environmental information and will be minuted and recorded. Internal communication will also include written instruction, encompassing drawings, specifications, method statements, risk assessments, contracts and subcontracts.

Communication regarding environmental management will be audited periodically (Section 2.6) to ensure that the communication structure is effective, and that all actions are performed and recorded.

These audits will also include follow-up of specific or corrective actions raised during previous audits to ensure that actions are complete. This CEMP is to be stored in a prominent location.

Significant communications, including all reports, incident forms, and complaints, will be documented and kept up to date.

Emergency response, emergency contacts, and incident notifications are covered in Section 4.

3.3.2 External communication

To ensure external communication is timely and transparent, only nominated personnel will be involved in consultation with external bodies on environmental issues as specified.

Any environmental incidents or non-compliances will be communicated in accordance with Section 2.6 above.

3.4 Enquiries and complaints

Enquiries, complaints and concerns represent an opportunity to improve and enhance environmental performance. Complaints or concerns will be addressed promptly and managed in accordance with the PDIP stakeholder engagement plan (Appendix B).

4. Emergency management

4.1 Emergency preparedness

To prepare for an emergency, the PDIP has conducted emergency response risk assessment that:

- identifies all foreseeable PDIP specific emergencies including Early Works
- identifies the resources required to develop specific communications required to efficiently respond to identified potential emergencies
- identifies the training and competencies required for workers who will be appointed to the Emergency Response Team (ERT).

In response to the above, an ERT has been established to manage, respond and recover from all identified specific emergencies. Emergency response protocols will be implemented in the event of an emergency; these are detailed below.

4.2 Emergency response

In an emergency call 000.

The following four step response framework is to be implement when an incident occurs:

1. **Be aware:** Identify that there is an emergency situation
2. **Assess:** Identify what is actually occurring and what actions would be best
3. **Act:** Raise the alarm: by stating ‘EMERGENCY, EMERGENCY, EMERGENCY’ on Channel 30 of the two-way radio
4. **After:** Provide care, complete relevant reporting.

There are three emergency alert classifications that the ERT will use when dealing with an emergency situation. These classifications are:

- **Level 1 Major:** An incident requiring full evacuation of the site with significant media attention, multi-agency intervention required.
- **Level 2 Moderate**: An incident requiring partial evacuation of the site, with a potential to escalate to a Level 1 incident.
- **Level 3 Minor**: An incident small in size and short in duration with limited impacts on worker safety.

Before a decision is made on the alert levels, the ERT will consider:

- alerting relevant authorities
- the seriousness of the incident
- the injuries and number of people involved
- the need for rescue
- the requirement for evacuation.

4.3 Environmental emergency events

Potential environmental emergency events that are foreseeable at Paradise Dam include:

- unplanned explosion
- fire
- hazardous substances spill
- motor vehicle accident
- inundation or riverine flooding.

Instances of environmental harm that occur during construction will be reported to the Department of Environment, Tourism, Science and Innovation (DETSI) or other relevant regulatory agency by the Alliance as soon as possible (as per Section 320 of the EP Act). Contact details are in Table 6, Section 4.4.2.

4.3.1 Unplanned explosion

For an incident which results in an unexplained explosion or has the potential for environmental harm, the following actions will be taken as soon as practicable and safe:

- determine a safe vantage point
- ensure any injured worker receives first aid or medical assistance
- consider secondary explosions, toxic gases and possible structural collapses
- ensure surrounding area is evacuated to an identified muster point and determine if any workers are missing
- contact emergency services and request their attendance
- ensure emergency services are guided from the project boundary to the affected area
- complete reporting requirements.

4.3.2 Fire

For an incident which results in a fire or has the potential for environmental harm, the following actions will be taken as soon as practicable and safe:

- do not let the fire get between you and your escape route
- extinguish fire if safe to do so
    - select the correct extinguisher
    - test the extinguisher before approaching the fire
    - direct the extinguisher
- complete reporting requirements.

4.3.3 Hazardous substance spill

For an incident that results in the release of contaminants or has the potential for environmental harm, the following actions will be taken as soon as practicable and safe:

- extinguish all naked flames (where relevant)
- read SDS
- stop the spill at the source
- surround the spill to stop any spread through bunding or development of sandbags
- soak up with absorbent material, wear appropriate personal protective equipment (PPE) in line with the SDS
- cordon off the area so only designated workers cleaning up can enter
- clean up soakage materials

- dispose of soakage materials appropriately
- complete reporting requirements.

4.3.4 Motor vehicle accident

For an incident which results in a motor vehicle accident or has the potential for environmental harm, the following actions will be taken as soon as practicable and safe:

- ensure there is no further injury to you, or anyone already injured
- check for leaking fluids
- ensure the vehicle/s are stable
- shut down/turn off the engine
- if there is an injury, follow the relevant procedure:
    - first aider to take charge of the situation until emergency help arrives (if required)
    - wait for the emergency team to arrive
    - send worker to access point to guide emergency vehicles and ensure no unauthorised entry
- complete reporting requirements.

4.3.5 Inundation or riverine flooding

For an incident which results in inundation or riverine flooding or has the potential for environmental harm, the following actions will be taken as soon as practicable and safe:

- assess the situation and determine if the rising/overflowing water will or has the potential to engulf plant, equipment or vehicles
- contact the ERT Leader, report the situation and follow instructions
- evacuate all workers from the threatened area
- if it is safe to do, move all plant, equipment or vehicles from the area under threat
- if anyone is injured, follow detailed emergency procedure for medical emergency
- do not let yourself, or anyone at the scene become trapped by rising/overflowing water
    - if floodwaters have somebody trapped, call the Fire and Rescue team
- move to a safe area (higher ground where rising water/further hazards can be re-assessed)
- if required, prepare access for emergency services vehicles, direct them to the scene and arrange an escort
- remain at the safe area until relieved by the Emergency Controller and authorised to leave
- complete reporting requirements.
-

4.4 Emergency contacts

4.4.1 Internal emergency contacts

Key personnel included as internal emergency contacts in the ERT are:

- Alliance Manager
- Emergency Response Team Leader
- Duty Emergency Response Team leader
- Safety Lead

- Project Lead
- Area Warden.

Contact details will be made available to all workers and visitors to the PDIP during induction and safety training.

4.4.2 External emergency service providers

Contact details for external emergency providers in the vicinity of the PDIP are provided in Table 7.

Table 7: Contact details for emergency service providers

Provider	Location	Contact Number
Queensland Ambulance Service	Childers, Gin Gin and Biggenden	**000** 112
Childers Fire Station	1 Goodwood Rd Childers QLD 4660	**000** (07) 4154 6175
Gin Gin Fire Station	24 Mulgrave St Gin Gin QLD 4671	**000** (07) 4154 6175
Childers Multipurpose Health Service	44 Broadhurst Street Childers QLD 4660	(07) 4192 1133
Biggenden Multipurpose Health Service	57 Alice Street Biggenden QLD 4621	(07) 4127 6400
Bundaberg Hospital	271 Bourbong Street Bundaberg QLD 4670	(07) 4150 2222
Childers Police Station	28 Macrossan Street Childers QLD 4660	**000** (07) 4192 1444
Gin Gin Police station	81 Mulgrave Street Gin Gin QLD 4671	**000** (07) 4153 8622
Childers State Emergency Service	3 North Street Childers QLD 4660	132 500
Element	**Emergency contact**	**Contact details**
Discovery of contaminated land	DETSI (Pollution Hotline) Contaminated Land Unit	1300 130 372
Potential fire ant discovery	Biosecurity Queensland Control Centre within the Department of Primary Industries	13 25 23
Wildlife rescue	DETSI	1300 130 372
	RSPCA QLD QLD Wildlife Carers Bundaberg	1300 264 625 07 4159 6431 07 4159 6529
Fire (including bushfire)	Queensland State Emergency Services (SES)	000

5. Environmental management sub-plans

The following specific management sub-plans have been developed to identify relevant environmental aspects and provide practical measures to prevent or minimise impacts to existing environmental values. The general structure of each management sub-plan is outlined in Table 8 below.

Table 8: Sub-plan structure

Element	Description of content
Objectives	The overarching objectives to be achieved for the environmental values likely to be affected.
Performance criteria	Measurable outcomes or indicators prescribed to gauge whether the management objectives are being met.
Aspects & impacts	A basic description of the environmental values likely to be affected by Early Works of the PDIP.
Management and mitigation measures	The strategies, tasks or methods proposed to achieve the performance criteria. This section provides the measures relevant to design, construction and operation.
Monitoring requirements and corrective action	The proposed monitoring activities to measure the performance criteria against relevant threshold or trigger values. Also includes the corrective actions to be implemented where certain performance criteria are not met.

5.1 Water quality sub-plan

5.1.1 Objectives

Objective	Performance criteria and indicators
Protect water quality in waters immediately adjacent to and downstream of the works area from the Early Works	No incidences of off-site waterbody contamination due to construction works or other site activities.
	No uncontrolled discharges of sediment laden waters e.g. without erosion and sediment control (ESC) treatment off-site.
	Manual discharges off-site will be in line with discharge criteria as specified in the site-specific erosion and sediment control plan (ESCP).
	No dewatering to occur without an approved dewatering permit in place.
	Treated effluent from the TPAV is dispersed in accordance with future ERA 63 licence requirements.
Comply with relevant legislative requirements and acceptable standards	ESCs constructed and maintained as per the IECA *Best Practice Erosion and Sediment Control Guidelines (2008)* and site ESCP.
Minimise erosion and sedimentation from the works site to the surrounding terrestrial and aquatic environment	No off-site movement (erosion) of sediment and placed fill.
Efficient and safe use of water resources	No take of unapproved water resources. Potable water to comply with Australian Drinking Water Guidelines criteria.

5.1.2 Aspects and potential impacts

Aspect/activity	Potential environmental impact
Bulk earthworks (excavation) and mass haul	Exposure of soils, potential dirty runoff, scour and sediment movement negatively impacting water quality. Suspension of fine silts in waters impacting mainly aquatic fauna and flora, including endangered, vulnerable and near threatened (EVNT) species habitat and ecosystems. Hydrocarbon contamination of waters.
Dewatering activities	Discharge of non-compliant surface water resulting in contamination and degradation of flora and fauna habitat, including EVNT species habitat and ecosystems.
Clearing and grubbing	Increased sediment load in runoff waters impacting on mainly aquatic fauna and flora, including EVNT species habitat and ecosystems. Soil erosion and deposition of sediment into local waterways. Degradation of sensitive species habitat.
General concreting & batch plant operation	Discharge of contaminated water and localised pH increase negatively impacting water quality and mainly aquatic ecosystems, including EVNT species habitat and ecosystems.
Construction water uses and dust suppression	Unnecessary use of water resources contributing to resource depletion.
Drainage	Soil disturbance and exposure leading to increased sediment load in runoff waters Sediment deposition into local waterways. Impact to mainly aquatic fauna and flora, including EVNT species habitat and ecosystems. Water quality impacts for rural and community values.
Storage and use of hazardous substances	Spills e.g. inappropriate storage and handling of dangerous goods, inappropriate refuelling practices, drilling muds, machinery breakdown, washdown, etc. impacting on water quality and aquatic ecosystems.
Site rehabilitation, demolition and remediation	Erosion and runoff impact on water quality and mainly aquatic ecosystems, including EVNT species habitat and ecosystems.
TPAV	Non-potable water used in TPAV causing potential harm to TPAV residents. Discharge of treated effluent causing land degradation or runoff to sensitive environmental areas. Discharge of treated effluent avoids runoff to potential potable water sources.

5.1.3 Mitigation measures

No.	Mitigation measure/control	Accountability
1	Ensure all soil and water risks and resources are considered as part of work area planning.	Project Engineers
2	ESCPs are developed by a suitably qualified person e.g. Certified Professional in Erosion and Sediment Control or other demonstrated experience) in consultation with the construction team.	Project Engineer/ Environmental Lead
3	Ensure ESC devices are constructed, installed and maintained as per the approved drawings, ESCPs or Site Environment Plan as relevant.	Supervisors
4	ESCs will be installed prior to (or immediately upon) any disturbance to vegetation or soil. These controls will remain in place and be maintained as required until revegetation, stabilisation or hard scaping has occurred.	Supervisors
5	As far as reasonably practical, cleared areas i.e. exposed soil will be kept to a minimum and progressively rehabilitated/revegetated as they become available.	Project Construction Lead
6	All materials will be stockpiled away from water flow paths as far as reasonably practicable.	Supervisors
7	Sediment laden water (dirty water) captured onsite will be preferentially reused e.g. dust control.	Supervisors
8	Water transfers/movement (including dewatering) around site and discharged from site will be undertaken in accordance with the project's dewatering procedure.	Project Engineer
9	An adequate number of concrete washout facilities will be available and maintained. The washout facilities will be isolated from surface water flows using bunds to prevent contamination of clean surface waters and will be lined to prevent contamination of soil and ground water.	Supervisors
10	All hazardous substances (liquids and solids) are stored and managed according to AS1940.	Supervisors

No.	Mitigation measure/control	Accountability
11	All refuelling points, including refuelling/lube trucks, will have and maintain hydrocarbon spill kits.	Supervisors
12	All dewatering-related complaints will be investigated and recorded. Relevant corrective actions are to be agreed and implemented, with accountabilities and timeframes assigned. The complainant or enquirer will be notified of the response as soon as practical. All environmental complaints and close-out actions are reported.	Environmental Lead Project Engineers Supervisors
13	In accordance with standard construction practices, weather forecasts will be used to guide work activities undertaken onsite. Forecasts will be checked at the start of each day and before undertaking new work activities that may be affected by rainfall or adverse weather forecasts to predict conditions that may pose an environmental risk, site environmental controls will be inspected and secured to reduce ESC impacts. Contingency planning to prevent spills will also involve monitoring for predicted flood events and the removal of plant, equipment, fuels and chemicals from flood-prone areas.	Environmental Lead Project Engineers Supervisors
14	All construction water to be sourced from an approved supply.	Project Construction Lead/Environmental Lead
15	Water quality monitoring (pH, turbidity, conductivity, temperature and dissolved oxygen levels) to be conducted prior to dewatering activities or in response to detection of potential contamination. Laboratory analysis may be requested if an incident response requires further water quality investigation.	Environmental Lead/Supervisor
16	Water quality monitoring objectives, locations and frequency will be defined based on the Queensland Water Quality Guidelines 2009.	Environmental Lead
17	Wastes (including wastewater, except as authorised under an Environmental Authority) must not be discharged and/or disposed onsite or released to any drain or waterway.	Supervisor
18	Appropriate spill kits will be available and maintained at each work front.	Supervisor
19	Contaminated land and general contamination risks will be considered when developing work area plans, including the development of a contaminated land procedure (including unexpected contamination, asbestos and/or acid sulfate soils finds).	Project Construction Lead Project Engineers Environmental Lead
20	When suspected contaminated materials are discovered, works will cease and the Supervisor and Environmental Lead will be notified immediately. The Environmental Lead will advise appropriate management strategies to recommence work.	All
21	Contaminated water runoff from suspected or actual contaminated land and stockpiles will be contained, treated and managed in accordance with contractual and legislative requirements.	Supervisor
22	All vehicles, plant and other machinery operating in contact with contaminated soil will be washed down and inspected before leaving site.	Supervisors
23	Testing will comply with contractual and legislative requirements.	Environmental Lead
24	For water that does not meet discharge criteria, other options such as (re)treatment, off-site disposal or a site-specific risk assessment will be considered as determined by regulatory requirements or regulators and competent assessors.	Environmental Lead
25	Works in a watercourse are to comply with Riverine Protection Permit Exemption's general requirements including: • If vegetation clearing is required, areas are to be confirmed by a botanist/ecologist to be under thresholds. • Area of disturbance is to be minimised to reasonably carry out the works. • Sediment and erosion controls must be used. • No fill to be brought into the waterway but if an exception is approved, it must not be susceptible to erosion i.e. dispersive or silts and free from contamination e.g. weed seeds, oils, chemicals and other contaminants. • Disturbed banks must be returned to a profile similar to the pre-disturbance condition and rehabilitated as soon as practicable. • Natural stream bed controls or features that create natural waterholes e.g. riffles, logs, sediment or rock bars must not be lowered or removed. • Any excavated material not removed as waste must be spread evenly within the bed and banks of the watercourse so that it does not interfere with the flow of water.	Project Engineers Supervisors Environmental Lead

No.	Mitigation measure/control	Accountability
	• All fill or stockpiles placed in the bed of the stream must not redirect flow into an adjacent bank. • Access tracks or crossings must not interfere with the low flow of water. • The invert of culverts or the deck height of a splash-through crossing must be placed at or below bed level. • All culverts placed within the watercourse must be aligned with the stream channel and placed as close to the centre of the watercourse channel as practical. • All culverts placed within the watercourse must be of a sufficient size to ensure uninterrupted low flows and minimise the occurrence of culvert blockage caused by flood-borne debris. • Constructed access tracks e.g. culverts or splash-through crossings must be provided with a scour apron and cut-off wall on the downstream side sufficient to prevent bed erosion. • Disturbed areas must be revegetated with trees, shrub and grasses endemic to the area, sufficient to re-establish a riparian environment and protect bed and banks from erosion.	
26	Batch plant layout will include controls for managing aggregate cooling waste waters, stormwater and washout waters. The batch plant will be designed and operated in accordance with the code of practice for the concrete batching industry (DES, EP Act) and the Environmental Management Guideline for Concrete Batch Plants (CCA, 2019)	Project Engineers
27	Construct and operate the treated effluent irrigation field for the STP in accordance with MEDLI Model and ERA licensing conditions. Design of onsite wastewater system and irrigation of effluent for accommodation camps will comply with AS/NZS 1547-2000. Use of recycled water for construction will be in accordance with appropriate risk assessments and licensing. Risk assessments are to consider use of recycled water and impacts associated with runoff, wet weather and sensitive environmental receptors.	Project Construction Lead/Project Design Lead/Environmental Lead
28	Concrete washouts will be sited outside the dam catchment and at least 50 m from waterways/drainage lines where practicable. Management of concrete washouts will be per the detailed ESCPs.	Project Engineers
29	A risk assessment will be completed for works over/near water ensuring suitable spill response consumables are in place such as oil containment booms and oil spill recovery equipment.	Project Engineers/ Environment Lead

5.1.4 Monitoring and reporting

Monitoring and reporting	Responsibility	Frequency
All team members and contractors must report all instances of contaminants released into water.	All	As required
Any results indicating potential environmental harm due to release of impacted water will be reported to as soon as possible through Alliance's internal reporting requirements.	Environmental Lead or delegate	As required
Daily visual observations of water quality to be recorded.	Supervisors	Daily
Fish or other aquatic species injury or death related to water quality (or another unknown occurrence) is to be recorded and where required, reported as soon as possible. All fish kills are to be reported to Sunwater. If the occurrence is above Sunwater's agreed threshold with the regulator, Sunwater is to formally notify the regulator.	Environmental Lead or delegate	As required
Record any non-conformances or risks and corrective actions.	Supervisors	As required
Visually inspect sediment pond(s) before forecast rainfall to ensure required freeboard is available and not clogged with sediment. Action to lower water levels in pond(s) should be taken where deemed necessary.	Supervisors	Prior to rain

Monitoring and reporting	Responsibility	Frequency
Visually inspect the works areas, impoundment and downstream waters following rainfall to detect signs of water contamination (sediment, oil, discolouration, litter).	Supervisors	After rain
Water quality monitoring – Refer Appendix C.	Environmental Lead or delegate	Monthly
Water quality monitoring to be conducted before dewatering activities or in response to detection of potential contamination.	Supervisors/ Environmental Lead or delegate	As required
Water quality monitoring to be undertaken if visual inspection indicates potential contamination. Records of any monitoring results are to be kept on file and reported in the weekly and monthly reports.	Environmental Lead or delegate	Weekly / Monthly
Record site environmental inspections and corrective actions.	Environment Lead or delegate	Weekly

5.1.5 Corrective actions

Any spills or litter to be contained and cleaned up immediately.

Waters captured onsite to be treated to nominated discharge criteria before release off-site, under an approved PDIP Dewatering Permit. Discharge criteria will be specified in the site-specific ESCP.

If onsite treatment cannot be achieved, water is to be removed by a contractor licensed to take the impacted water to an appropriately licensed facility.

Eroded areas to be stabilised and erosion controls implemented to prevent recurrence.

ESCs to be maintained regularly, including repair, as soon as possible.

Additional controls to be installed as required and/or work processes altered to reduce ESC risks.

ESCPs to be reviewed and updated, as required.

5.2 Flora and fauna sub-plan

5.2.1 Objectives

Objectives	Performance criteria and indicators
Minimise disturbance to native fauna and flora caused by construction and operation of the Early Works, both inside and outside work areas.	No non-conformances with relevant legislative or code requirements, acceptable standards.
	No clearing of vegetation outside of designated limits and without a Permit to Clear.
	No fauna injuries or mortalities.
	No increase in weed or pest presence within the project footprint.
	No non-compliances with project Rehabilitation Management Plan (developed from framework in Appendix E).

5.2.2 Aspects and potential impacts

Aspect	Potential impact
Clearing and grubbing	Loss of native vegetation and habitat. Loss of biodiversity. Fauna injury and mortality.
Concreting	Discharge of contaminated water and localised pH increase resulting in degraded flora and fauna habitats.

Aspect	Potential impact
Constructing of drainage or any other structures	Discharge of contaminated water resulting in impacts to mainly aquatic fauna and flora, including EVNT species habitat and ecosystems.
Light pollution	Disruption of nocturnal animals and altered behaviour patterns.
Rehabilitation	Restoration of disturbed areas and introduction of invasive species fails to provide flora and fauna habitat.
Transport of materials/workforce (including mobilisation)	Increased traffic and potential for spills resulting in degraded habitat, injury and/or mortality of wildlife. Spread of weeds (biosecurity).
Use of heavy machinery	Soil compaction, noise and air pollution and introduction of weeds and fire ants (biosecurity).
Waste management	Pollution or contamination of soil and water impacting flora and fauna species habitat and communities, including EVNT from construction waste. Injury and mortality through increased predation by pests.

5.2.3 Mitigation measures

No.	Mitigation measure/control	Accountability
1	Ensure all risks to flora and fauna are considered as part of the development of work area plans.	Project Engineers Project Construction Lead
2	Ensure limits of work are: • located within the approved Early Works construction footprint, shown on design plans, site environmental plans or other relevant site documentation • physically marked onsite e.g. flagged, fenced, sign-posted, and visible to workers and plant operators before commencement of works • discussed at pre-starts and/or toolbox talks • regularly inspected and maintained.	Project Engineer and Supervisors
3	Ensure that prior to any disturbance, clearing or grubbing activities the following occurs: • onsite delineation of clearing limits • a Permit to Clear approved by the Environmental Lead or delegate is issued • no-go zones are established for flora and fauna protection areas and marked up on site plans • weed infested areas are delineated and managed as required, with weed management practices communicated to relevant site staff and sub-contractors • fauna spotter catchers (FSCs) or the Environmental Lead conduct a search for wildlife that may need to be removed and relocated • A pre-clearing inspection checklist has been completed and approved by the Environmental Lead.	Environmental Lead or delegate Project Engineer and Supervisors
4	Supervisors will be notified immediately of: • damage to no-go zones fencing or signage • any unapproved land disturbance.	All
5	A reduced site speed will be implemented where necessary to mitigate fauna/vehicle collisions.	Supervisors
6	All vehicles and plant will remain on existing approved tracks/haul roads or within and on designated areas to minimise damage to vegetation and fauna habitats.	All
7	Where practicable, cleared vegetation will be beneficially re-used e.g. for habitat enhancement works, chipped for mulch and used as ESC.	Environmental Lead Project Engineers
8	If a threat to an animal is evident onsite all site staff will contact their supervisor and the Paradise Alliance Environment Lead immediately If the animal is in danger or harmed, works may need to cease until it has been safely relocated.	Supervisors/ Environmental Lead All

No.	Mitigation measure/control	Accountability
9	Any excavations left overnight should be covered or provide means for animals to escape i.e. branch, log, ramp or plank.	Supervisors
10	Any trenches or open pits or forms will be visually inspected prior to works commencing each day to detect any trapped fauna.	Supervisors
11	As incorporated into the Induction: pets and firearms or other weapons are not permitted on site.	All
12	Machinery, vehicles, material storage are not to be parked/located under vegetation canopies i.e. within the drip line of trees, shrubs to prevent compacting of root systems where possible.	Supervisors
13	Previously cleared areas – maximise use for stockpiles, laydown, drilling and other site works wherever possible.	Supervisors
14	Wildlife must not be handled or disturbed, deliberately injured or killed, including snakes. The environmental team will contact wildlife carer if animals require relocation or assistance.	All
15	During clearing works the FSC will: • inspect any hollows/burrows/nests or habitat trees for fauna before disturbance or removal • ensure any trees with occupied hollows are not cleared until animals have vacated them • if an uninjured fauna area is encountered, the FSC will safely relocate the fauna and determine a suitable safe release site • work with the supervisor and plant operators to agree communication protocol if fauna at risk are identified during the clearing • provide a report outlining all fauna management activities undertaken, including dates/times of inspections, supervision and details of fauna as required.	Environmental Lead or delegate
16	Clearing will be undertaken using a sequential approach, ensuring that any fauna can safely move into vegetated areas being retained. If fauna or nests are discovered at any time during construction, the works affecting the fauna will be stopped and the relevant Project Manager and Paradise Alliance Environmental and Approvals Manager notified. Where required, the FSC will be called for advice/onsite response.	Project Engineer and Supervisors
17	Fauna breeding places occurring on site will be managed in accordance with relevant low risk and/or high risk Species Management Programs (SMPs) prepared by suitably qualified ecologist/s.	Environmental Approvals Lead/ Environmental Lead
18	No dewatering to occur without an approved CPB Dewatering Permit.	Environmental Lead or delegate
19	Directional lighting and shields will be installed to minimise light spill outside immediate work areas having consideration for health and safety requirements. Night lighting will be minimised where practicable.	Environmental Lead or delegate

5.2.4 Monitoring and reporting

Monitoring and reporting	Responsibility	Frequency
Any trenches or open pits will be visually inspected prior to works commencing each day to detect any trapped fauna.	Engineers	If/when required
Daily observations of clearing extents and practices and excavations. Any non-conformances/actions to be recorded.	Supervisors	Daily
Daily site inspections for presence of wildlife, WoNS, etc. within works areas to be conducted prior to commencing work.	All	When clearing
Immediate reporting to supervisor of any clearing beyond that approved or planned.	All	When clearing
Incidents involving damage to vegetation or injury/death of animals, including fish or aquatic species, must be reported with an investigation undertaken as per incident procedures.	Project Engineer Environmental Lead	If/when required
Monitoring and reporting of vegetation clearance on a continual basis to confirm that specific controls have been implemented, approximate work	Supervisor	When clearing

Monitoring and reporting	Responsibility	Frequency
practices are being adopted, and approved clearing limits are not being breached.		
Reporting in accordance with SMPs and project approvals.	Environmental Lead	If/when required
Weekly site environmental inspection e.g. spread of weeds, WoNS, injured animals, damage to habitat/drainage features adjacent and downslope of work areas, etc.	Project Engineers Environmental Lead or delegate	Weekly

5.2.5 Corrective actions

The Alliance Manager or delegate may request the cessation of works at any time if there is a breach of performance criteria occurring or at risk of occurring.

In areas where unplanned clearing occurs or there is a failure of rehabilitation, the area will be replanted with equivalent vegetation and maintained until it is established.

If reporting to the regulator is required, all directions provided by the regulator will be followed.

An FSC will be contacted if an animal relocation or assistance is required during works.

If fauna is trapped e.g. in excavations, additional measures for fauna egress or exclusion will be considered.

5.3 Noise and vibration sub-plan

5.3.1 Objectives

Objectives	Performance criteria and indicators
Avoid or minimise noise and vibration impacts (includes blasting) on sensitive receivers and amenity	Early Works activities are not to cause a noise nuisance at a residential sensitive receptor.
	No substantiated noise or vibration-related complaints received.
	Timely information regarding blasting to relevant stakeholders.
	Construction activities do not result in vibration that causes property damage.

5.3.2 Aspects and potential impacts

Aspect	Potential impact
Construction activities	Prolonged exposure to noise affecting sensitive receptors, terrestrial and aquatic species, including EVNT species.
Heavy machinery operation	Disturbance to wildlife, especially during breeding seasons, potential displacement of animals.
Increased traffic	Noise from construction vehicles disturbing nearby habitats and communities.
Night work	Noise disrupting sensitive receptors and nocturnal animals, altering their natural behaviour patterns.
Drilling and blasting	Intense noise levels causing stress to sensitive receptors and local fauna, potential hearing damage in sensitive species. Damage caused by vibration to existing infrastructure.

5.3.3 Mitigation measures

No.	Mitigation measure/control	Accountability
1	Undertake early consultation with potentially affected receivers and other key stakeholders regarding construction activities that may cause disruption/high noise impacts.	Stakeholder Relations Advisor

No.	Mitigation measure/control	Accountability
2	Ensure all noise risks are considered as part of the development of construction area plans.	Project Construction Lead
3	Undertake construction activities within the nominated hours of work to comply with contractual and legal requirements. Nominated standard work hours are 6am–6pm daily, with batch plants and TPAV operating 24 hours a day.	Project Engineers and Supervisors
4	Works that need to occur outside of standard construction hours will be assessed by the Alliance Manager and Alliance Environment Lead via an out of hours works application. No works are to occur outside of standard construction hours without an approved Alliance out of hours works permit.	Project Engineers and Supervisors
5	Notify the Supervisor and Paradise Alliance Environment Lead of unexpected/ unplanned noise or vibration increases immediately.	All
6	All equipment will be serviced and maintained according to manufacturer's recommendations.	Supervisor
7	Undertake high noise generating works in accordance with project obligations.	Supervisors
8	Where reasonably practical avoid, or use alternatives to, audible and irritating reversing/movement alarms.	Project Engineers and Supervisors
9	Configure the construction site and haulage routes to minimise the need for reversing of heavy vehicles and mobile plant.	Project Engineers and Supervisors
10	Construct and maintain noise barriers to shield high noise generating activities or plant in accordance with contractual and approval obligations.	Project Engineers and Supervisors
11	Develop traffic guidance scheme to minimise noise impacts.	Project Engineers
12	When noise complaints are received, undertake monitoring at sensitive receiver locations to assess compliance in accordance with project requirements.	Environmental Lead or delegate
13	Conduct task observations as per project schedule to ensure ongoing effectiveness of noise control measures.	All
14	If the above-stated controls are found to be insufficient in achieving contractual and legislative requirements, re-assess all reasonably practical mitigation measures. Additional mitigation to consider includes: • revised construction methodologies • re-programming of high noise impact construction activities • inclusion of respite periods during high noise/vibration generating works • installation of operational noise treatments at sensitive receivers, such as air conditioners and double-glazing windows.	Project Construction Lead
15	Construction lighting will be designed and installed to avoid sensitive receptor impacts, including intrusive noise from lighting equipment.	Project Engineer
16	Consultation will be conducted with community stakeholders on the likely impacts of vibration for high-risk activities and applicable mitigation strategies.	Stakeholder Relations Advisor
17	Ensure all vibration risks are considered as part of the development of construction area plans.	Project Construction Lead
18	Work practices predicted to generate non-compliant vibration will be amended before commencing works to avoid vibration impacts.	Project Engineers
19	All equipment is serviced and maintained according to the original equipment manufacturer's recommendations. Where the manufacturer's requirements are not available, then industry best practice maintenance will be applied.	Supervisor
20	Notify the Supervisor and environment team of unexpected vibration increases immediately.	All
21	Blasting activities are designed to avoid impacts relating to vibration and blast plans are prepared in accordance with AS2187.2 2006 Appendix J.	Project Construction Lead
22	Dilapidation surveys will be completed for designated properties and assets, as applicable.	Project Construction Lead
23	All plant, machinery and equipment to be switched off when not in use, where practicable. Construction methods with minimal ground vibration should be adopted where practical.	Supervisors

No.	Mitigation measure/control	Accountability
24	Plant, machinery and equipment will be fitted with appropriate mufflers/silencers.	Supervisor
25	Pre-start checks on vehicles, plant and machinery to include checking for excess noise emissions.	Supervisors
26	Sensitive receptors i.e. local residents to be informed of approved night works at least 48 hours in advance of commencement.	Project Engineer Stakeholder Relations Advisor
27	Vehicle movements on site restricted to within the site working hours, unless approved otherwise.	All

5.3.4 Monitoring and reporting

Monitoring and reporting	Responsibility	Frequency
Weekly site environmental inspection.	Project Engineer Environmental Lead	Weekly
Investigate if a noise complaint is received and implement correction actions if the complaint is valid i.e. related to noise from works.	Supervisors Environmental Lead	As required
Ambient noise monitoring may be conducted if a valid complaint is received and/or when requested by Sunwater or the administering authority.	Project Engineer Environmental Lead	As required

5.3.5 Corrective actions

Stop noise generating activities if a valid complaint is received and implement noise control measures before recommencing work.

Corrective actions for excessively noisy plant/machinery include provision of silencing/dampening, servicing or replacing acoustic bunds/shields/barriers, enclosures or alternation of work practices/timing, relocating or rescheduling noise works.

Cease vibration generation works if a valid complaint is received. Investigate alternative options e.g. relocate activity, use a lower vibratory effort with more passes, lighter equipment, etc.

5.4 Air quality sub-plan

5.4.1 Objectives

Objective	Performance criteria and indicators
Prevent/minimise impacts on air quality from the works	No substantiated air quality related complaints received.
	No non-compliances with legislative and other obligations.

5.4.2 Aspects and potential impacts

Aspect	Potential impact
Burning of waste materials	Release of harmful gases and particulates impacting air quality and human health NB: Waste and other excess/surplus materials must not be disposed of by burning without written consent from Sunwater.
Chemical fumes	Release of volatile organic compounds from paints, solvents and other chemicals.
Concrete production and use	Emissions of dust and particulates during mixing and application affecting air quality.
Construction vehicle traffic	Increased air pollution from vehicle exhaust affecting local air quality.
Dust emissions from construction	Air quality degradation, potential respiratory issues for humans and wildlife, degradation of sensitive ecological areas outside the project footprint.

Aspect	Potential impact
Emissions from machinery	Release of pollutants like carbon dioxide, nitrogen oxides and particulate matter contributing to air pollution and climate change.
Fuel combustion	Emission of greenhouse gases and other pollutants contributing to air pollution and climate change.

5.4.3 Mitigation measures

No.	Mitigation measure	Accountability
1	Air quality management requirements will be considered when developing construction area plans and work packs.	Project Construction Lead Project Engineers
2	Establish stabilised access, rumble grids, wash bays or similar for site exits to minimise mud on public roads. Sweepers must be used periodically to clean public roads where mud has been deposited.	Project Engineer
3	Ensure site traffic speed limits are determined and implemented to minimise dust generation.	Project Construction Lead Supervisor
4	Vegetation and other soil disturbance will be minimised to reduce erosion hazards. Rehabilitation, seeding or grassing will occur as soon as practical following disturbance.	Project Construction Lead Engineers & Supervisors
5	Disturbed areas and haul roads will be treated with dust suppressants e.g. water trucks or chemical suppressants, especially in high risk areas and/or during high risk days.	Supervisors
6	Report any occurrences of increased dust to supervisor immediately.	All
7	All construction plant and equipment will be maintained so they do not emit visible smoke for any period greater than: • 10 consecutive seconds for plant not registered for use on public roads • 5 consecutive seconds for plant registered for use on public roads.	Project Engineer Supervisors Subcontractors
8	Burning of any materials is not permitted onsite without written approval from Sunwater.	All
9	Conduct task observations as per project schedule to ensure ongoing effectiveness of air quality management measures.	Environmental Lead Supervisors Subcontractors
10	All truck loads or dusty truck bodies to be covered before entering a public road.	Supervisors
11	All vehicles/equipment to be switched off when not in use.	All
12	Diesel generators and/or stationary plant to be located away from sensitive receptors or where emissions may accumulate e.g. low-lying areas.	Supervisors
13	Equipment operators to minimise drop heights when loading material into trucks or onsite stockpiles/hoppers.	Supervisors
14	General dust lift off strategies include: • cover or stabilise any long-term (>28 days) stockpiles that generate dust emissions. • dusty materials delivered in bulk bags, bags or tarped upon delivery. • lower site speed limits • solar/electric equipment as an alternative to diesel • progressive rehabilitation including monitoring and corrective action on completion of works • additives in water carts (subject to environmental risk assessment of additive) • site facilities placed to create wind breaks e.g. shipping containers upwind of stockpile areas • soil binders for exposed areas • evaluate dust generating activities if likely to cause nuisance during dry, windy conditions.	Environmental Lead Supervisors Subcontractors

No.	Mitigation measure	Accountability
15	Prestart vehicle/equipment inductions to ensure emissions are checked and not excessive.	Project Engineers Supervisors
16	Review adequacy of dust suppression measures and planned activities if windy or stormy weather conditions are forecast (safety aspects also to be considered).	Environmental Lead Supervisors
17	Suspend or alter works creating a dust hazard during high wind conditions.	Environmental Lead Supervisors
18	Vehicle/mobile equipment access restricted to designated areas, roads and formed tracks.	All
19	Air quality monitoring to be undertaken in accordance with the project requirements and/or any regulatory approval conditions.	Environmental Lead or delegate

5.4.4 Monitoring and reporting

Monitoring and reporting	Responsibility	Frequency
Site environmental inspection.	Environmental Lead or delegate	Weekly
Visual assessment of wind speed and direction during work shifts to enable high wind warnings to be issued if required. Report any adverse wind conditions to manage any future complaints to be investigated.	Supervisors	Ongoing
Upon receipt of a valid dust / odour complaint an incident must be raised and an investigation carried out	Supervisor Environmental Lead or delegate	If/when required
Undertake monthly dust depositional monitoring in accordance with AS/NZS 3580.10.1 Methods for sampling and analysis of ambient air – Determination of Particulates – Deposited Matter – Gravimetric method. The frequently used threshold for nuisance dust is 120 mg/m^2/day, averaged over one month, which equates to 4 g/m^2/month.	Environmental Lead	Monthly

5.4.5 Corrective actions

Water truck to suppress excess dust emissions.

Stop dust generating works if a complaint is received and verified. Implement effective dust control measures before recommencing work.

Stabilisation measures used on erosive soils, stockpiles, exposed areas if/as required.

Additional dust suppression strategies to be implemented if significant dust emissions are observed.

5.5 Cultural heritage sub-plan

5.5.1 Objectives

Objective	Performance criteria and indicators
Comply with relevant legislative requirements and accepted standards	No harm/disturbance of cultural heritage objects/sites.
Project activities must comply with cultural heritage management provisions	Unexpected finds procedure implemented and any finds promptly reported in the first instance to the Environment Lead.

5.5.2 Aspects and potential impacts

Aspect	Potential impact
Demolition of buildings	Damage of cultural heritage.
Access or traversing unsurveyed project areas	Disturbance to unknown sensitive sites or locations.
General construction works	Damage and/or loss of cultural heritage artifacts.
NOTE: No unmitigated heritage items are identified within the disturbance footprint of the works. No disturbance permitted without prior cultural heritage survey and/or clearance provided by Sunwater's Cultural Heritage Manager.	

5.5.3 Mitigation measures

No.	Mitigation measure	Accountability
1	Ensure all risks to heritage features of the project are considered as part of the development of construction area plans and work packs. Any cultural heritage monitoring will be described in the permitting process and work pack in line with the duty of care requirements and the executed project cultural heritage management agreements (CHMAs).	Project Engineers
2	All site personnel will undertake an Induction which includes cultural awareness and heritage training, including any project-specific management obligations.	Environment and Safety Leads Construction Manager
3	Obtain relevant pre-commencement work permits e.g. Permit to Clear, Permit to Dewater, Permit to Enter No-go Zone, Permit to Work Outside of Standard Hours. All necessary approvals will be obtained before commencing any works in areas of known or potential heritage items.	Project Construction Lead Project Engineers and Supervisors
4	All cultural heritage items and places to be protected will be fenced/flagged and signposted as no-go zones and marked up on site environmental plans. These sites will be shown on site plans and communicated to relevant workforce. Entry to protected areas will only be permitted following Paradise Alliance Environment Lead approval.	Project Engineers and Supervisors All
5	Work will cease upon the discovery of any unexpected find which may be a heritage item. Unexpected finds will be managed in accordance with the unexpected finds procedure – refer to Appendix F. No works will be allowed to continue until a permit or clearance has been received from the relevant authority (as applicable) and Sunwater.	All
6	If required by project obligations or risk assessment, vibration monitoring will be undertaken for works near heritage areas.	Environmental Lead or delegate
7	Formal documented engagement will be maintained with relevant heritage groups or Traditional Owners throughout the project.	Environmental Lead Community and Stakeholder Lead
8	Construction works at or near heritage locations will be inspected and monitored in accordance with project obligations.	Environmental Lead
9	Implement relevant mitigations as required and agreed in any CHMAs prepared for the project and as directed by Sunwater.	Environmental Lead

5.5.4 Monitoring and reporting

Heritage monitoring is performed in compliance with legal and contract requirements. Where monitoring determines a non-conformance has occurred, a non-conformance report and/or incident report and corrective actions will be raised.

Monitoring and analysis of data will be carried out by a suitably qualified person. Evidence of competence will be retained. It is the accountability of the Environment Lead or delegate to ensure all monitoring is performed according to these requirements.

Monitoring and reporting	Responsibility	Frequency
Aboriginal cultural heritage assessments, surveys and monitoring will be in accordance with the *Aboriginal Cultural Heritage Act 2003* (Qld), Aboriginal Cultural Heritage Duty of Care Guidelines and executed CHMAs with the respective Traditional Owner groups.	Sunwater / Project Engineers	As required
Regular inspection of the works to ensure procedures and precautions are in place to minimise the risk to unexpected cultural heritage finds.	Environmental Lead or delegate	As required
Supervisor to be advised if items of cultural heritage significance are identified	All	If/when required
Alliance Manager or appointed delegate to report the discovery of cultural heritage to Sunwater for further reporting to the relevant Traditional Owners, Department or Queensland Police (as applicable).	Alliance Manager Environmental Lead	As required
Alliance Manager or appointed delegate to report the discovery of remains to the Sunwater Project Director (or delegate) for further reporting to the Queensland Police and any other relevant authority.	Alliance Manager Environmental Lead	As required

5.5.4.1 Corrective actions

Ensure work activities are contained within areas previously cleared through a cultural heritage monitoring program or notified as cleared by the relevant Traditional Owners.

Prevent any further disturbance of the cultural heritage object(s) or area.

Await cultural heritage management/corrective requirements from the relevant Traditional Owners.

5.6 Hazardous substance sub-plan

5.6.1 Objectives

Objective	Performance criteria and indicators
Prevent or minimise as far as reasonably practicable impacts to surrounding land and water values resulting from project activities.	No non-conformance with legislative requirements.
	Storage and handling of flammable and combustible liquids to comply with AS1940-2017.
	No contamination to land or water resulting from project activities.

5.6.2 Aspects and potential impacts

Aspect	Potential impact
Chemical spills	Contamination of soil and water bodies harming aquatic life and terrestrial habitats.
Concrete and construction activities	Chemical runoff leading to water pollution impacting aquatic species and water quality.
Fuel leaks from machinery	Soil and water contamination posing risks to plants and animals.
Improper disposal of hazardous waste	Pollution leading to long-term soil and water contamination affecting ecosystem health.
Industrial solvents and lubricants	Chemical contamination of soil and water posing risks to local flora and fauna.
Storage of hazardous materials	Potential leaks or spills contaminating nearby soil and water bodies.
Use of pesticides/herbicides	Runoff into nearby water bodies, causing harm to aquatic ecosystems and decreasing water quality.

5.6.3 Mitigation measures

No.	Mitigation measure/control	Accountability
1	Establish and maintain:	Environmental and H&S Leads

No.	Mitigation measure/control	Accountability
	• a register of hazardous chemicals used on the project • an Emergency Services Register of all hazardous chemicals and their locations and quantities that is accessible at all times by emergency services • a file that includes the relevant SDS and the hazardous chemicals risk assessment for all hazardous chemicals approved for purchase and use on the project.	
2	Ensure all workers who will be required to purchase, use, store or dispose of hazardous chemicals are trained in hazardous materials and dangerous goods risk assessment and SDS including: • the use, storage and disposal of hazardous chemicals • signage and emergency provisions • any health surveillance or atmospheric monitoring required • spills containment and management, including the use of land and aquatic spill kits.	Construction Manager Environmental Lead H&S Lead
3	Hazardous chemicals are to be stored in a bunded area with a minimum holding capacity of 110 per cent of the largest container within the bund, or 25 per cent of the total capacity of all containers within it, whichever is the greatest. All required placarding is to be installed at the entrance to the project and at the storage areas.	Project Engineers, Supervisors Environmental Lead H&S Lead
4	As part of the Work Pack Risk Assessment, incorporate relevant controls from the Construction Area Risk Review, identify additional hazards, assess the risks and further develop controls to eliminate/minimise risks to workers when working with hazardous substances.	Project Engineers
5	Ensure spill kits are: • of adequate type and volume for the materials stored, as well as potential operational spills • located adjacent to all hazardous substance storage units in refuelling and maintenance areas • are located at worksites close to waterways and are specific for aquatic use.	Supervisors/ Environmental Lead
6	Refuelling will only occur at approved refuelling locations and with appropriate controls in place. Controls may include hydrocarbon (hydrophobic) spill kits, drip trays and designated fuel areas.	Supervisors
7	Containment devices, including bunds, separators and catch trays, will be used where there is a risk of spillage.	Supervisors
8	Regular inspections will be carried out to assess the storage and handling of hazardous materials.	Project Engineers Supervisors Environmental Lead H&S Lead
9	Undertake routine maintenance of plant and equipment to prevent fuel leaks, visible exhaust emissions or other maintenance issues.	Project Engineers Supervisors
10	An Emergency Response Plan which incorporates a spill response procedure will be maintained for the project.	Alliance Manager Environment Lead
11	Chemicals will be securely stored in appropriate impermeable, bunded area or compliant storage container at least 50 m from any named watercourse or major drainage line where practicable.	Supervisors
12	Spill preparedness and response: • All spills are to be contained and cleaned up and reported. • Contact emergency services in the event of a spill that cannot be safely contained by on site staff/resources. • Spill-impacted soil requires removal and disposal at a licensed location. • Suitably stocked and sized spill kits to be provided at all chemical storage areas, fuelling areas and work areas. • Waste from spill clean-up is to be disposed of as per regulated waste disposal requirements.	Supervisors

No.	Mitigation measure/control	Accountability
13	Stationary equipment with the potential to leak e.g. generators will be provided with secondary containment e.g. spill tray or suitable spill pads, and a spill kit.	Supervisors
14	Vehicles and fuels: • Plant and vehicles (equipment) mobilising to site will undergo a pre-mobilisation check by a suitably experienced person to ensure equipment is in good working order and in a serviceable condition. • Any service trucks will be equipped with a spill kit, appropriate permits and containers for new and used servicing liquids. • Daily pre-start checks of vehicles and machinery and stationary fuelled equipment to include checks for oil and fuel leaks. Leaking vehicles and machinery will not be operated until the leak is rectified. • Emergency or minor servicing must only occur in designated bunded hardstand areas using spill trays/mats. If in situ response is required, spill trays/mats and spill kits must be available and used. • Equipment or vehicle refuelling areas should be at least 100 m from any watercourse or major drainage line where practicable, and, if not in a dedicated impermeable and contained refuelling zone, spill trays or similar should be used. • Fuel tankers will be fitted with spill prevention devices (nozzle cut-off valve and emergency stop button) and spill kits. • Refuelling hoses must be fitted with a stop valve at the nozzle end. • Refuelling of vehicles and machinery must always be supervised/attended. • Used or spent fluids from maintenance activities are to be collected in sealed, labelled containers and stored in established chemical storage areas prior to collection for disposal at a licensed facility. • Vehicles and machinery to be serviced as per the manufacturer's recommendations.	Supervisors
15	Waste liquids to be collected in sealed, labelled containers and stored in chemical storage areas prior to collection for disposal at a licensed facility.	Supervisors
16	Working volumes of chemicals are to be stored in appropriate spill pallets/trays and kept away from drainage lines and watercourses as far as possible.	Supervisors

5.6.4 Monitoring and reporting

Monitoring and reporting	Responsibility	Frequency
Inspect hazardous substance storage areas for compliance (bunding, segregation, labelling).	Supervisor/ Environmental Lead / H&S Lead	Weekly
Check availability and condition of spill kits near storage/work areas.	Supervisor/ Environmental Lead	Weekly
Verify availability and accessibility of current SDS.	Supervisor/ Environmental Lead/ H&S Lead	Monthly and before first use
Check that containers are correctly labelled and in good condition.	Supervisor/ Environmental Lead	Weekly
Monitor use of required PPE during handling.	Supervisor/H&S Lead	During handling activities
Inspect hazardous waste segregation, storage, and labelling.	Supervisor/ Environmental Lead	Weekly
Staff to report any improper storage, handling or spills, or suspected contamination.	All Personnel	Immediately
Report any potential or actual exposure incidents.	Affected Personnel/ Supervisor	Immediately
Supervisor to be advised immediately of any spills or incidents.	Supervisor	If/when required
Report non-compliance with disposal procedures.	Supervisor/ Environmental Lead	As required

5.6.5 Corrective actions

Immediately rectify any non-compliant storage conditions e.g. place in bunded area, segregate incompatible substances.

Obtain missing or update outdated SDS.

Replace damaged or incorrectly labelled containers.

Implement spill response procedures immediately for any spills or leaks e.g. contain the source, use spill kits to clean up, use appropriate PPE, etc.

Stop work involving the substance if unsafe handling or inadequate PPE is observed. Provide correct PPE and training.

In case of exposure, follow first aid instructions on the SDS and seek medical attention as required. Report the incident immediately.

Isolate areas affected by significant spills or releases and assess the nature and extent of the contamination.

Ensure all hazardous waste is disposed of via licensed contractors according to regulations.

Investigate incidents and non-conformances to determine root causes and implement preventative actions e.g. review and update practices and procedures, provide additional training.

Notify relevant external authorities if required by regulations or permit conditions.

5.7 Waste and resource sub-plan

5.7.1 Objectives

Objective	Performance criteria and indicators
Comply with relevant legislative requirements and acceptable standards	Appropriate temporary waste storage facilities are established. No contamination of land or water as a result of improper project waste management. No adverse impact on visual amenity or complaints from adjacent landholders regarding waste management.
Manage waste appropriately to reduce risks and resource use/disposal and maximise recycling and reuse	All wastes appropriately recycled and/or disposed of in accordance with applicable legislation (refer to Section 2.2 above) and requirements in line with site activities being undertaken.
	Waste streams are tracked, recorded and reported to Sunwater as required under contract.

5.7.2 Aspects and potential impacts

Aspect	Potential impact
Construction and operational processes	Soil and water contamination.
Construction debris	Negative impacts to visual amenity. Impacts to water quality and ecosystems.
Plant maintenance	Soil and water contamination.
Operation and maintenance of offices, crib huts and camp facilities	Unnecessary load on landfill availability. Encouragement of pests and vermin into the project area.

5.7.3 Mitigation measures

No.	Mitigation measure/control	Accountability
1	All relevant licences are to be obtained for waste management activities including handling or storage of waste, reuse or disposal.	Project Construction Lead/ Environmental Lead

No.	Mitigation measure/control	Accountability
2	Waste management requirements will be considered when developing Construction Area Plans and Work Packs.	Project Construction Lead Project Engineers
3	All wastes will be classified, stored, tracked, transported and treated in accordance with contractual and regulatory requirements, including the use of licensed transporters and treatment facilities.	Environmental Lead
4	Storage containers i.e. bins, skips, tanks, etc. will be provided at each work area in sufficient numbers to facilitate segregation of waste at the source of generation.	Project Engineer Supervisors
5	Containers are clearly signposted to inform all project personnel of the correct material to be placed within each bin type. Containers are emptied regularly to ensure good housekeeping and minimise waste contamination of project sites.	Project Engineers and Supervisors All
6	Waste concrete management measures will be implemented in accordance with contractual and approval obligations, including the establishment and use of concrete washout facilities. An adequate number of washout pits relevant to the amount of concreting works occurring will be maintained.	Construction Manager Project Construction Lead Supervisor
7	All waste data will be collated and tracked using material tracking forms.	All
8	Conduct task observations as per project schedule to ensure ongoing effectiveness of waste management measures.	Construction Manager Environmental and H&S Leads Project Engineers and Supervisor Subcontractors
9	All waste must be removed from site upon completion of works and the site left in a clean and tidy condition.	Supervisors
10	Chemical wastes may be stored in impervious, clearly labelled containers at designated chemical storage areas until disposal can be arranged.	Supervisors
11	Washdowns including for concrete, spent drill mud etc. to be conducted in a designated, bunded and lined area (as relevant).	Supervisors
12	Ensure correct quantities/sizes of materials ordered to minimise waste.	Project Construction Lead Project Engineers and Supervisors
13	General waste to be stored in designated sealed waste receptacles.	Supervisors
14	Good housekeeping to be maintained across site and litter placed in general waste skips/bins.	Supervisors
15	Lubricating oil from construction vehicles will be sent for recycling if practical.	Supervisors
16	No wastes will be disposed of onsite, except for clean fill and concrete in approved areas with appropriate permits and controls.	Supervisors
17	As required, drill muds produced by the drilling operations are held within a built-for-purpose control basin or clarification tanks. These holding facilities will hold the drill mud mixture, and will be emptied as needed, and disposed of at an accredited waste removal facility (Hervey Bay disposal facility via vacuum truck).	Project Engineers Supervisor
18	Only biodegradable drill muds will be used.	Supervisor
19	Temporary bunding to be constructed around each drill head and core handling area to manage spillages, as necessary and subject to site conditions.	Project Engineer Supervisor
20	Drill muds to be recirculated to recycle and reduce waste volumes.	Supervisor
21	Suitable volume trays to be placed at end of the core barrel during core blow out to return muds to recirculation tank to avoid any uncontrolled spillage to the drilling area.	Supervisor
22	Settling tanks are to be used as necessary to drop out solids and aid liquid recirculation.	Project Engineer Supervisor

No.	Mitigation measure/control	Accountability
23	Where appropriate, use a manoeuvrable vacuum excavation trailer. Trailer to be used to usher drilling waste from point of drilling to holding pits or disposal transportation.	Project Engineer Supervisor
24	Any remaining sludge waste and residue from within the bunded area around the drill rig that is deemed not suitable for on-site disposal will be collected by sucker truck and removed from site to a licensed waste disposal facility.	Supervisor
25	Waste waters such as treated effluent will be reused or disposed of in accordance with licensing – refer to water quality sub-plan.	Supervisor
26	Waste data is to be collected on the project to allow monthly reporting of: • quantity of each type of waste sent to landfill • quantity of each type of waste recycled • quantity of each type of waste reused • quantity of each type of hazardous/regulated waste generated on the project and: ○ method of treatment and disposal ○ location of treatment and disposal ○ copies of records confirming the legal transport, treatment and disposal ○ measurement of any reduction in waste generation that has been achieved. The quantity of waste in each solid waste stream will be measured by weight and liquid waste stream by volume, with records provided by the waste transport contractor. Alternative measures may only be used when an economical alternative is not available.	Environmental Lead or delegate
27	Implementation of the waste management hierarchy of avoid, reduce, reuse, recycle, recover wherever possible, with disposal as the final option.	Environment Lead Supervisor

5.7.4 Monitoring and reporting

All relevant information is included in the Monthly Report.

Monitoring and reporting	Responsibility	Frequency
Regular inspection of waste generation points and segregation bins.	Supervisor/ Environmental Lead	Daily
Inspection of waste storage areas for cleanliness and containment.	Supervisor/ Environmental Lead	Weekly
Check waste transport dockets/records for compliance.	Environmental Lead	Weekly / Monthly
Staff to report any overflowing bins or improper waste disposal.	All personnel	As required
Supervisor to be advised of any spills or leaks from waste areas.	Supervisor	As required
Environmental Officer to report significant non-compliance issues.	Environmental Lead	As required
Report waste volumes/metrics as per project requirements.	Environmental Lead	Monthly/quarterly

5.7.5 Corrective actions

Ensure waste is correctly segregated at source.

Clean up any spills or leaks from waste containers immediately using appropriate spill kits and PPE.

Arrange for additional waste collections if bins are consistently overflowing before scheduled pickups.

Provide re-training or toolbox talks to personnel found incorrectly disposing of waste. Investigate causes of non-compliance e.g. insufficient bins, lack of awareness, and implement preventative measures.

Update the Waste Management Plan if procedures are found to be ineffective.

If a significant uncontrolled release of hazardous waste occurs, stop work in the area until the situation is managed.

5.8 Biosecurity sub-plan

5.8.1 Objectives

Objective	Performance criteria and indicators
Prevent and minimise the introduction of new restricted invasive weed and pest species due to the works	No new weed or pest species introduced.
	No increase to existing weed or pest species abundance and distribution.

5.8.2 Aspects and potential impacts

To prevent and minimise the spread of restricted invasive weed and pest species due to the Works and to meet the general biosecurity obligation and other legal requirements. Activities conducted as part of Early Works that have the potential to impact biosecurity are provided below.

Aspect	Potential impact
Contaminated equipment	Introduction of pathogens or invasive species via construction equipment, impacting soil and water quality, land use and agriculture.
Improper waste disposal	Spread of pests and diseases, contamination of local environments, and harm to native wildlife.
Introduction of invasive species	Disruption of local ecosystems, loss of native species and alteration of habitat. Degradation of ecosystems.
Livestock and agricultural impact	Potential spread of agricultural pests and diseases, affecting local farming and food security.
Movement of soil and vegetation	Transfer of invasive plant species or pathogens, affecting native plant communities and soil health.
Spread of diseases	Transmission of diseases to local wildlife, potentially affecting biodiversity and ecosystem health.
Water contamination	Introduction of harmful microorganisms or pollutants into water bodies, affecting aquatic life and water quality.
Use of pesticides/herbicides	Chemical runoff into nearby water bodies, affecting aquatic ecosystems and water quality.

5.8.3 Mitigation measures

No.	Mitigation measure	Accountability
1	Access to vegetated areas and areas outside the construction footprint is prohibited.	All
2	Any listed materials with a fire ant movement risk coming from fire ant biosecurity zones must only be brought to site with a valid biosecurity instrument.	All
3	Any machinery or equipment coming from fire ant biosecurity zones must have a proof of washdown provided before it arrives at site.	All
4	Contractors and subcontractors to wash down vehicles and equipment and submit washdown records before entering the site.	Supervisors
5	Established weeds in the construction area should be sprayed several weeks before works commence, if possible.	Supervisors Subcontractors
6	Fill remaining at the completion of works is to be removed off-site or, in consultation with the Environment Lead, re-used on site, shaped and seeded with native species to minimise weed establishment.	All
7	Litter, included food and other putrescible waste, to be placed in designated sealed bins to avoid attracting fauna. Feeding of fauna and/or pest species e.g. feral cats and dogs is prohibited.	Supervisors

No.	Mitigation measure	Accountability
8	Materials e.g. soil, mulch, aggregate etc. to be sourced from existing onsite stockpiles or licensed suppliers and must be certified pathogen free i.e. free of weed species/seeds.	All
9	No soil is to be pushed up into vegetated areas, and soil disturbance within retained vegetation will be kept to a minimum, to avoid weed recruitment.	All
10	On non-Sunwater sites, weed hygiene declarations and washdown should be provided where required based on landholder entry agreements.	All
11	Restricted weed species e.g. Parthenium and Giant Rat's Tail growing on or adjacent to roads, stockpiles and active work areas are to be managed to prevent further spread.	Supervisors/ Environmental Lead Subcontractors
12	Pre and post-disturbance assessments are to be undertaken. Regular (minimum six-monthly) inspection will determine appropriate treatments. Any herbicide/pesticide spraying and/or treatment is to be approved by Sunwater before use.	Supervisor
13	Vehicles/machinery entering a site must be clean and free of all soil and vegetative matter prior to arriving on site.	Project Engineers
14	Vehicles and mobile equipment to use only designated areas, including roads and tracks.	Project Engineers Supervisor
15	Washdown records to be sighted on commencement of each rotation for any vehicles that have left the site.	Supervisor
16	Weed management strategies will target Restricted Matters declared under the *Biosecurity Act 2014* to limit the spread and impact of these matters by reducing, controlling or containing it, where practicable.	Project Construction Lead/ Environmental Lead/ Subcontractors
17	The design of the TPAV will consider management measures to deter and or exclude pests such as pigs for occupant safety.	TPAV Design team

5.8.4 Monitoring and reporting

Monitoring and reporting	Responsibility	Frequency
Daily/weekly site environmental inspection (daily during the initial establishment phase then weekly thereafter).	Supervisors Environmental Lead or delegate	Daily/weekly
Weed washdown records for all vehicles entering the site to be completed and retained on file.	All	As required
Sightings of new weed species to be reported to Alliance environmental team.	All	Daily/weekly
Weed and pest levels to be monitored at least six-monthly across all areas of the project and treatments undertaken to manage any increase in levels.	Supervisors	Six-monthly

5.8.5 Corrective actions

Alliance to coordinate treatment of new weed infestations as required.

Review and implement washdown procedures.

Vehicles and/or machinery to be washed down on request of Site Supervisor if there is an indication of bringing pests and weeds onto site.

5.9 Community and stakeholder sub-plan

5.9.1 Objectives

Objective	Performance criteria and indicators
Minimise impacts of the Early Works's construction for affected communities and workers	Local communities impacted by the project and residents of properties within and adjacent to the project area are informed of construction works.
	Community complaints are responded to in a timely manner.

5.9.2 Aspects and potential impacts

Aspect	Potential impact
Community engagement	Community uninformed about Early Works resulting in missed employment and commercial opportunities.
Construction impacts – amenity	Impacts to the immediate amenity surrounding the Early Works areas from construction activities such as increased traffic, noise and strain on local resources/ services

5.9.3 Mitigation measures

No.	Mitigation measure	Accountability
1	Implement the Stakeholder Engagement Plan for the Early Works	All
2	All relevant personnel to undertake adequate training covering the requirements of the CEMP regarding community liaison, incidents and complaints.	All
3	Engage individual landowners and relevant stakeholders on mitigation measures for dust, noise and vibration impacts.	Stakeholder Engagement Lead
4	Engage with individual landowners who have temporary construction activities on their properties regarding rehabilitation requirements in accordance with the conditions of their individual access agreements.	Stakeholder Engagement Lead
5	Engage with individual landholders, regional councils and other relevant stakeholders regarding weed and pest management.	Stakeholder Engagement Lead
6	If community infrastructure is closed due to the Early Works, reinstate these facilities following completion of construction in line with the commitments made to stakeholders as part of previous consultation.	Stakeholder Engagement Lead
7	Implement the traffic safety measures from the transport sub-plan.	Site Supervisor

5.9.4 Monitoring and reporting

Monitoring and reporting	Responsibility	Frequency
Review and evaluate performance of the Stakeholder Engagement Plan.	Stakeholder Engagement Lead	Annual
Complaints and enquiries to be reported as described in this CEMP and as part of the monthly report.	Stakeholder Engagement Lead	Ongoing
Monitoring for visual amenity, air, noise and vibration in line with the air quality, noise and vibration, and waste sub-plans.	Environment Lead or delegate	Ongoing

5.9.4.1 Corrective actions

Complaints managed in accordance with the complaints handling procedure as documented in the Stakeholder Engagement Plan in Appendix B of this CEMP.

Annually review the Stakeholder Engagement Plan to ensure methods and approach continue to align with the communication and engagement needs of stakeholders and the community.

5.10 Traffic sub-plan

5.10.1 Objectives

Objective	Performance criteria and indicators
Traffic is managed to avoid or minimise and mitigate impacts on road safety and traffic flow, property access, existing road conditions	Safe and efficient access is maintained for road users and the community.
	Timely information about any changes to traffic and transport conditions is provided to relevant stakeholders.
Traffic access for emergency services to construction worksites and adjoining properties is maintained throughout the construction phase	Minimal nuisance and safety effects on local communities.
Traffic is managed to avoid or minimise and mitigate impacts on amenity	Complaints responded to in a timely and considerate manner in accordance with Section 3.4.

5.10.2 Aspects and potential impacts

Aspect/activity	Potential environmental impact
Haulage of materials, plant and equipment	Noise generated by traffic on roads.
	Dust generated by traffic on roads.
	Damage to/degradation of road condition i.e. unreasonable loads imposed on existing roads.
	Disruption and delays experienced by existing road users.
Movement of site personnel	Noise generated by traffic on roads.
	Dust generated by traffic on roads.
Works within road corridors	Temporary road closures and traffic diversions cause delays and disruption.

5.10.3 Mitigation measures

No.	Mitigation measure	Accountability
1	Design has considered: • site has adequate parking facilities located outside road corridors (road reserves) • ingress/egress in accordance with requirements of emergency service vehicle access.	Project Construction Lead Project Engineers
2	Measures to reduce Early Works-related road traffic, such as staging development of the TPAV to respond to construction workforce needs and bussing workers to and from site and TPAV on rosters where necessary.	Project Construction Lead
3	Undertake construction activities within the nominated hours of work to comply with contractual and legal requirements.	Project Engineers and Supervisors
4	As far as practicable, limit traffic movements to daylight hours.	Project Engineers and Supervisors
5	Haulage vehicles only travel on designated haulage routes.	Project Construction Lead
6	Vehicle/mobile equipment access restricted to designated areas, roads and formed tracks.	All
7	Excess-dimensional loads e.g. oversize and/or overmass will be received in compliance with the requirements of Heavy Vehicle National Law operating conditions.	Project Engineer

8	Traffic guidance schemes (TGSs) will be developed for specific work areas and may include: • operational controls for site access points • details of temporary traffic control devices, reduced speed limits, etc. • provisions to be implemented at the request of emergency services relating to traffic and public safety and/or emergency vehicle access.	Project Engineer
9	TGSs to be implemented by authorised and qualified traffic controllers.	Project Engineer
10	Construction occurring near, or encroaching on, a road reserve will be in a manner agreed to by the relevant authority and/or regulatory body and conform to statutory requirements.	Project Construction Lead Project Engineers
11	Implement temporary road closures and/or traffic controls e.g. stop/gos where relevant.	Project Engineers and Supervisors
12	Access to construction sites by emergency service vehicles will be maintained at all times.	Supervisors
13	In relation to dust: • adequate application of water or other means of dust suppression • cease dust generating activities if likely to exceed the goals during dry, windy conditions • sealing traffic areas within worksites where practicable • ensure trucks transporting material e.g. spoil, fill, etc. on public roads are covered to prevent wind-blown dust during transportation and cleaned down prior to exit from the worksite to prevent spills of loose material onto public roadways.	Project Engineers and Supervisors
14	All truck loads or dusty truck bodies to be covered before entering a public road.	Supervisor
15	Establish stabilised access, rumble grids, wash bays or similar for site exits to minimise mud on public roads. Sweepers must be used periodically to clean public roads where mud has been deposited.	Project Engineers and Supervisors
16	Notification and updates are provided to relevant stakeholders regarding traffic movements and changes to access and transport arrangements.	Stakeholder Advisor
17	All vehicles and equipment will be serviced and maintained according to manufacturer's recommendations.	Supervisors

5.10.4 Monitoring and reporting

Monitoring and reporting	Responsibility	Frequency
Visual inspection of local roads to identify any unauthorised areas of use and disturbances, mud at egress of site or damage caused by construction-related traffic activities.	Supervisor Environmental Lead or delegate	Daily/weekly
Visual inspection of dust levels on windy days and during dusty activities to check dust levels and the effectiveness of controls.	Supervisor Environmental Lead or delegate	Daily/weekly
Upon receipt of a valid complaint an incident must be raised and an investigation carried out.	Supervisor Environmental Lead or delegate	As required
Monitoring compliance with TGS and associated permits as required.	Supervisor	As required in TGS/Permit

5.10.4.1 Corrective actions

Stop dust generating works if a complaint is received, then verified, and implement effective dust control measures before recommencing work.

Additional dust suppression strategies to be implemented if significant dust emissions are observed.

Review haul routes and consider alternative routes and timing of haulage.

Review TGSs and implement additional controls.

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Appendix A
CPB Environmental Policy

Environment Policy

Purpose

This Policy sets out our environmental management commitments for managing environmental risks, exceeding our environmental compliance obligations, and avoiding environmental impacts.

Application

This Policy applies to all employees, and third parties controlled by the business, including alliances, joint ventures and consortia where the business exerts management control. It applies to all sections of the organisation.

To achieve our environmental management objectives, we will:

- Demonstrate a visible commitment to our One HSE Cultural Framework and take all reasonably practicable measures to prevent pollution and protect the environment.
- Ensure adequate environmental management resources are assigned, and continually improve the CPB Management System and our environmental performance.
- Set environmental objectives, targets and key performance indicators that are monitored at least annually.
- Identify, document, control, and monitor our Significant Environmental Aspects.
- Procure goods and services to maximise sustainable opportunities and innovate to reduce greenhouse gas emissions and implement climate change mitigation
- Evaluate our environmental performance through regular inspections and audits.
- Measure, record and optimise energy & water re-use efficiencies, together with maximising circular economy opportunities.
- Report and investigate environmental incidents with the aim of preventing a recurrence.
- Implement contingency planning and emergency response strategies to avoid environmental damage.
- Communicate and educate our teams to enable a good understanding of their environmental legal obligations.

Policy Information

Owner:	Group Manager, Environment, CPB Contractors
Approved By:	General Manager – SHEQS & Rail Safety, CPB Contractors
Effective date	31 August 2022

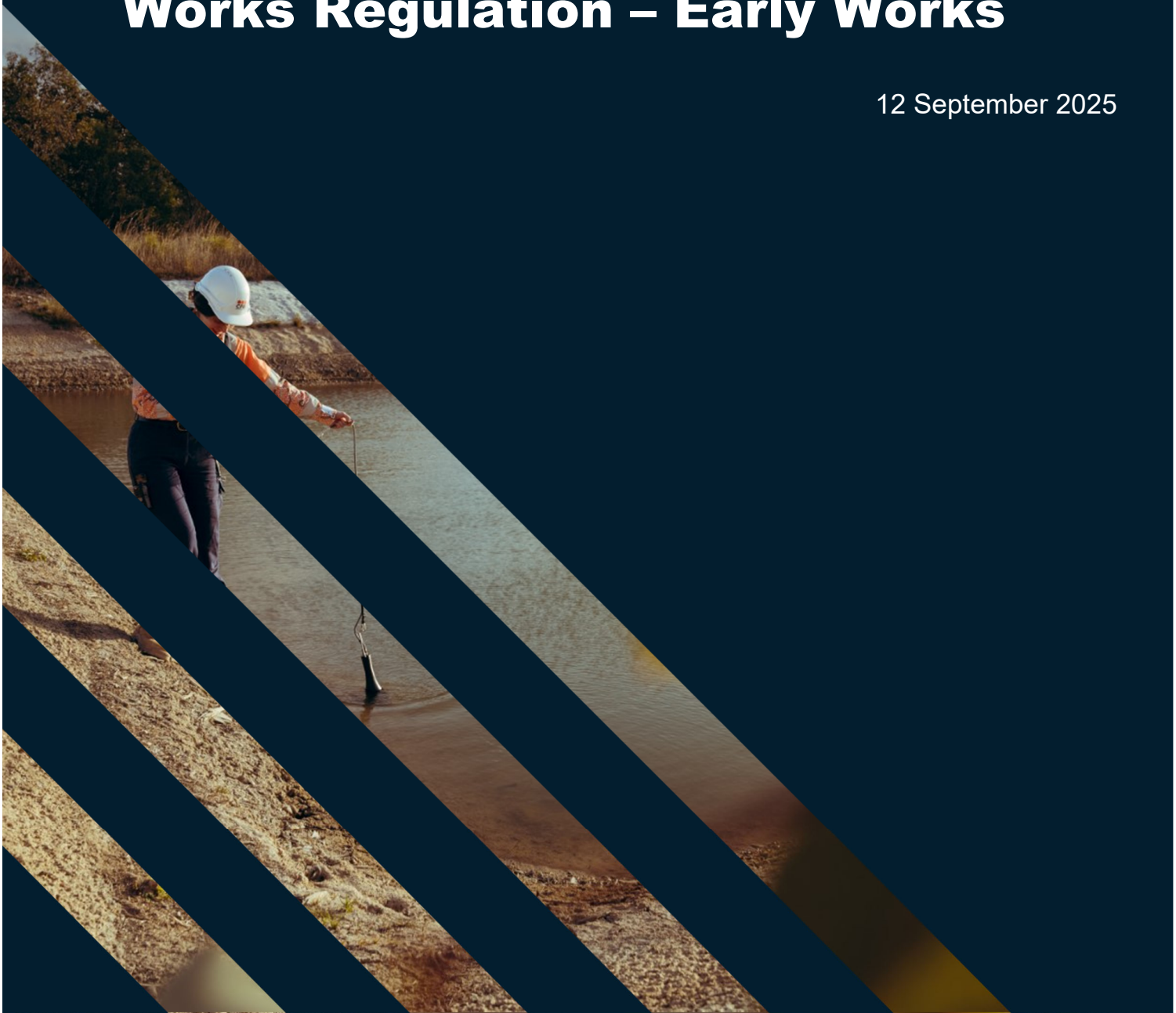
Appendix B
Stakeholder Engagement Plan

Paradise ALLIANCE

Appendix B Stakeholder Engagement Plan

Works Regulation – Early Works

12 September 2025



Works Regulation – Early Works Management Plan

Appendix B Stakeholder Engagement Plan

Doc No.: PDIP-PAL-PW-ENV-PL-000001
Revision Date: 12 September 2025
Revision: 0

Contents

1. Introduction

This plan sets out how the Paradise Dam Improvement Project (PDIP) will continue to work closely with key stakeholders and community for the Early Works activities.

1.1 Goal and objectives

The engagement goal for the PDIP Early Works is to maintain constructive stakeholder relationships during planning and delivery.

Specific engagement objectives are to:

- understand the views of stakeholders and provide opportunities for input
- identify and mitigate issues
- provide timely, accurate and relevant information to impacted community and stakeholders
- build project understanding and generate support.

1.2 Communication and engagement approach

Our approach considers and builds on the significant engagement undertaken with stakeholders and the community over previous years as well as opportunities to forge new relationships moving forward. The communication and engagement approach for the PDIP Early Works works is underpinned by the Sunwater stakeholder engagement principles shown in Figure 1. These five engagement principles align with the organisation's purpose, strategy and values, and will guide our interactions throughout the Early Works to ensure our communication and engagement activities are effective and meaningful.

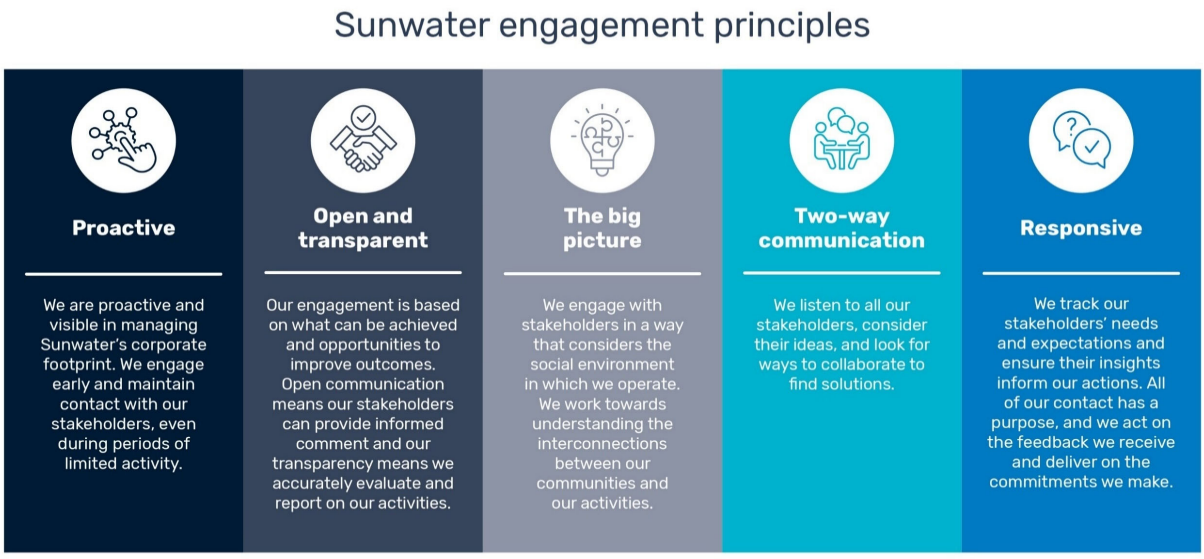


Figure 1: Stakeholder engagement principles for PDIP Early Works

1.3 Early Works key issues

This plan has been developed with consideration of key issues that have the potential to impact or be of interest to stakeholders in the planning and delivery of the PDIP Early Works, as follows:

- Minimising disruption to landholders – Given the nature of the works and the regional and remote setting, the Early Works may have amenity and access impacts on landholders where quarry investigations are planned, and amenity impacts on those landholders/leaseholders in proximity to the TPAV and site establishment.

- Minimising disruption to local communities and visitors including recreation users and road users – The Early Works may have amenity impacts at and in the vicinity of Paradise Dam, and on local roads leading to Paradise Dam.
- Meeting the information needs of stakeholders including Sunwater customers and the broader community – There is high interest in the PDIP schedule and progress.

The project will work to understand and mitigate these impacts and ensure stakeholders are provided with sufficient information about the nature and duration of impacts and the measures in place to manage them.

2. Community and stakeholder engagement overview

The left bank of the Burnett River at Paradise Dam abuts the Good Night Scrub National Park and is on Bailai, Gurang, Gooreng Gooreng, Taribelang Bunda (BGGGTB) People Country, within the Bundaberg Regional Council (BRC) area. The right bank has recreational access, is on Wakka Wakka Country, and is in North Burnett Regional Council (NBRC). Communities downstream and most of Sunwater Bundaberg Water Supply Scheme customers are located mostly in the BRC area.

2.1 Stakeholder identification

Early Works stakeholders have been identified based on potential direct and indirect impacts, as well as the long history of engagement around Paradise Dam.

Identified stakeholders include:

- Government Ministers and elected representatives
- Federal and State Government agencies and departments
- local governments, primarily BRC and NBRC
- Bundaberg Water Supply Scheme customers
- Paradise Dam Reference Group (PDRG) members, including representatives from local grower groups, local councils, local environmental groups and chambers of commerce
- Traditional Owners represented through First Nations BGGGTB Registered Native Title Body Corporate and Wakka Wakka Native Title Aboriginal Corporation
- directly affected landholders/leaseholders within quarry investigation areas
- directly affected landholders in proximity to the accommodation village
- impacted local road users on Paradise Dam Road and other connecting haulage routes
- Biggenden and Childers local businesses and chambers of commerce e.g. accommodation providers, local restaurants and other small business
- Paradise Dam recreation users, local and visiting e.g. boating, camping, fishing, motorcycle touring clubs
- potentially impacted communities downstream from Paradise Dam and beyond Good Night Scrub National Park (with reduced, but potential for amenity impacts)
- members of the community and other community groups
- local and regional media
- suppliers and contractors
- emergency services and agencies
- service utility providers such as Ergon Energy.

2.1 Early Works stakeholder engagement activities

Targeted communication and engagement has been undertaken to date to inform stakeholders and the community about the Early Works:

- PDRG updates, including from the Office of the Coordinator-General
- meetings with NBRC and BRC
- targeted meetings with identified landholders (quarry investigation locations and adjacent to the TPAV location)
- project updates at meetings with Traditional Owners
- community newsletter/project updates to project subscribers
- project website updates
- project Facebook page posts.

These activities, and others such as information sessions and site tours will continue throughout the Early Works.

2.2 Communication tools

At a minimum, the following communication tools will continue to be used during the Early Works:

- project (community) hotline and inbox
- notification letters to directly affected residents
- project webpages (Sunwater website)
- community newsletter/project updates
- feedback forms
- social media
- advertising
- project collateral
- timelapse, videography, drone and still photography
- Notification of Works
- signage
- project contact cards.

The project will periodically review communication tools to ensure they are effective and meet the needs of stakeholders. All feedback will be securely documented in Consultation Manager – a stakeholder management and reporting software. Sunwater and Paradise Alliance will maintain this database to record all consultation activities conducted throughout the project.

To ensure clear communication, only nominated representatives approved by Sunwater will be involved in consultation with external stakeholders during the Early Works.

Site personnel will be advised to direct all public enquires to **paradise.dam@sunwater.com.au** or 07 3120 0270.

3. Early Works stakeholder and community action plan

Table 1 sets out a high-level stakeholder and community action plan that will be undertaken to support Early Works activities. Please note, specific mitigation and monitoring measures relevant to community and stakeholders are outlined in sub-plans in Section 5 of the Early Works CEMP.

This stakeholder and community action plan will be supported by specific and targeted actions for discrete activities and for specific stakeholders as required, for example once a preferred quarry location has been selected.

This plan will be reviewed and updated in response to stakeholder feedback and as the Early Works progress to ensure any new or emerging issues and opportunities are captured.

Table 1: Early Works stakeholder and community action plan

Project activity/issue	Communication/mitigation action	Tools and tactics	Implementation
Planning	• Identification of sensitive receptors • Continued consultation with potentially impacted stakeholders • Engagement with landholders neighbouring the TPAV • Development of site signage • Development of stakeholder content for site inductions • PDRG briefings • Council briefings • Traditional Owner briefings • Advance notice to managers of Paradise Dam Recreation Area • Engagement with service utility providers	• One-on-one engagement • Regular meetings or briefings in person or online • Land access agreements • Options agreements • Phone calls • Letters	Prior to site mobilisation
Geotechnical investigations	• Council and community notice in advance of works in public areas that may impact access to recreation areas	• Site signage • Social media • Website updates	Minimum seven days notice before work starts
Before site activity begins at Paradise Dam for: • construction of the TPAV • construction, testing and commissioning of the concrete batching plants	• Confirm environmental monitoring activities, locations, frequency of monitoring and data captured. • Communicate monitoring approach with sensitive receptors. • Ongoing engagement with community and stakeholders about the timing and extend of works and any impacts • Support early communication and engagement to maximise industry involvement in the project including potential sub-contractors, suppliers and jobseekers.	• Site signage • One-on-one engagement • Regular meetings or briefings in person or online • Letter box drops • Social media advertising • Website updates • Project maps • Workshops • Supplier capability and capacity workshops /training • Industry events	Minimum seven days notice before work starts

Project activity/issue	Communication/mitigation action	Tools and tactics	Implementation
During site activity at Paradise Dam	• Site team inductions to highlight stakeholder engagement approach, complaints handling, media management and acceptable behaviour. • Proactive sharing of relevant monitoring data with identified sensitive receptors and facilitate early resolution of emerging issues. • Site teams to direct all media enquiries to media@sunwater.com.au or 07 3120 0047. • Site teams to direct all other community and stakeholder enquiries to PDIP community hotline 07 3120 0270 and email paradise.dam@sunwater.com.au. • Establish and maintain regular, proactive two-way communication regarding project activities, milestones and opportunities. • Early and ongoing engagement to build relationships and trust, and ensure community and stakeholder needs are considered.	• Site signage • One-on-one engagement • Regular meetings or briefings in person or online • Phone calls/text messages • Variable message signage • Letter box drops • Website updates • Social media advertising • Site visits / tours	Ongoing during site activity
Significant haulage on roads leading to Paradise Dam	• Advance/timely notification of haulage activities where there are expected impacts to local roads, private property access or deliveries are required out of hours.	• One-on-one engagement • Regular meetings or briefings in person or online • Variable message signage • Letter box drops • Phone calls/text messages • Social media advertising	Minimum seven days notice before work starts
Public road closure for Early Works	• Early engagement with the local road authority regarding approvals and impacts to the road network. • Early engagement and advance notice to stakeholders and community including residents and road users about road closure plans including alternate routes and duration of impact, and minimise impacts where possible.	• One-on-one engagement • Regular meetings or briefings in person or online • Variable message signage • Letter box drops • Phone calls/text messages • Social media advertising • Traffic Management Plan	Minimum seven days notice before work starts
Changes to recreation access	• Develop and implement a supporting action plan to manage changes in recreation access if required during the Early Works. Raise awareness and understanding of the need and timing of planned closure periods. • Note recreational access will be reinstated on completion of PDIP.	• Briefings for councils and recreation area staff • Signage • Social media advertising	Minimum 14 days notice before changes commence

Project activity/issue	Communication/mitigation action	Tools and tactics	Implementation
Quarry investigations – prior to any investigations on non-Sunwater land	• Develop and maintain constructive relationships with landowners whose property is accessed for project-related investigations and activities and potential quarry development. • Direct engagement with impacted landholders about works on their property and timing of activities. • Inform adjacent landowners, community and stakeholders of activities that may be visible, high impact or out-of-hours as well as the proposed management/ mitigations for activities e.g. trial-blasts may be audible or visible.	• Development of Land Access Agreements • Land access protocols • Letterbox drops and works notifications • One-on-one engagement • Regular meetings or briefings in person or online • Phone calls • Emails • Notice of Entry letters	In advance of investigations Minimum two days notice to neighbours of trial-blast
Ongoing	• Continue to provide timely and relevant updates on project activities to ensure stakeholders and community have equal access to project opportunities and where possible can participate. • Identify, manage or mitigate impacts to stakeholder and community, respond to feedback and consider stakeholder needs and expectations to improve project performance.	• Information sessions • Site visits • Project communications via website, social media, advertising and other channels • Briefings/meetings • Working groups	Ongoing

4. Enquiries and complaints

A proactive, responsive and consistent approach to identifying and handling enquiries and complaints is critical to managing project issues and risks. Resolution of complaints should occur at the earliest opportunity and align with Sunwater's engagement principles.

These interactions present an opportunity to improve and enhance project performance with future communication and engagement activities to be informed by feedback, designed to support involvement in the project and de-escalate issues.

The enquiry and complaint management process for the Early Works is detailed below. External notifications of complaints and incidents are to be undertaken in accordance with Section 2.6.8.2 of the Early Works CEMP.

4.1.1 Contact details

Early Works enquiries and complaints may be received through the following Sunwater and Alliance channels:

- Customer Support team – **customersupport@sunwater.com.au** or phone 13 15 89
- Site-based or regional team – phone, email, or direct/face to face
- PDIP stakeholder relations team – **paradise.dam@sunwater.com.au** or 07 3120 0270
- Community email address – **community@sunwater.com.au**
- Media team email – **media@sunwater.com.au** or phone 07 3120 0047

4.1.2 Enquiry and complaint management

All complaints, queries and comments received from stakeholders, including members of the public, must immediately be directed to the Sunwater PDIP stakeholder relations team by phone on 07 3120 0270, and followed with an email confirmation to **paradise.dam@sunwater.com.au**.

The PDIP stakeholder relations team will triage enquiries and complaints and take the necessary action to investigate as relevant. All complaints and enquiries received will be documented within Consultation Manager with the following information recorded:

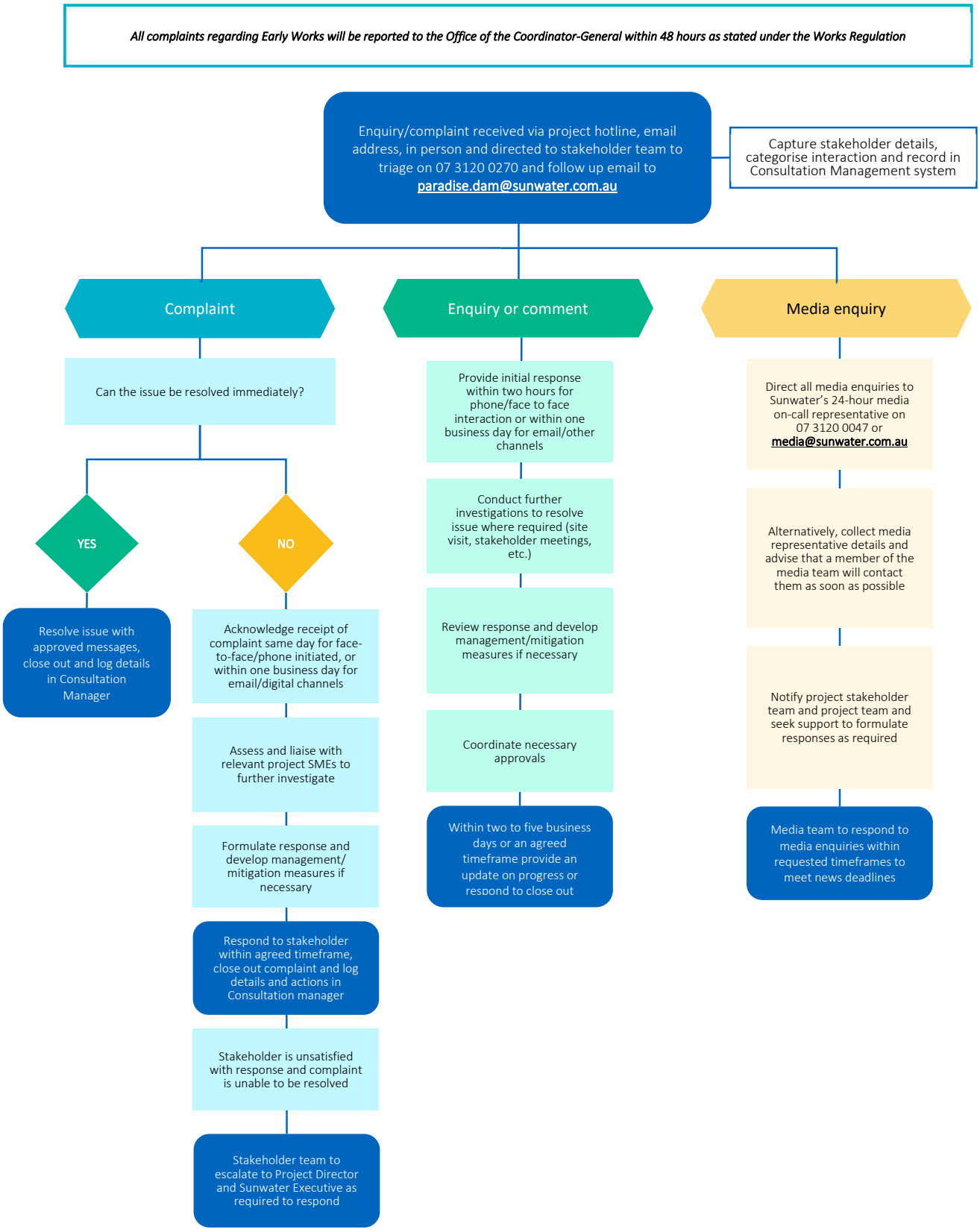
- date and time the complaint was received
- name and contact details of the stakeholder
- nature of the complaint
- investigations undertaken
- responsible team member to action complaint
- conclusions formed
- actions taken to resolve.

Any complaints regarding the Early Works must be provided to the OCG team within 48 hours of receiving the complaint as conditioned under the Works Regulation.

If the complaint is associated with an actual or potential environmental impact, the details of the complaint should also be forwarded to the Sunwater PDIP environment team for investigation and reporting (as per Early Works CEMP section 2.6).

Complaints will be managed following the flowchart depicted in Figure 2 below.

Figure 2: Enquiry and complaint management flowchart



4.1.3 Response timeframes

Each incoming enquiry/complaint will be triaged by the stakeholder relations team for response by the project team. Table 2 sets out the timeframes for responses based on method of contact and nature of enquiry or complaint.

Table 2: Enquiry and complaint classification and response times

Method of contact	Response times
Email or online channels	• Acknowledge receipt within one business day. • Simple enquiries or complaints to be closed out same day. • Enquiries and complaints requiring more complex investigation to be closed out within two-five business days or as agreed. • If this cannot be achieved, provide progress updates within agreed timeframes while the matter is further investigated and a resolution is formed
Phone or face-to-face	• Acknowledge within two hours for face-to-face or phone • Simple enquiries or complaints to be closed out same day. • Enquiries and complaints requiring more complex investigation to be closed out within two-five business days or as agreed. • If this cannot be achieved, provide progress updates within agreed timeframes while the matter is further investigated and a resolution is formed.

5. Reporting

The following reporting will be utilised during the Early Works to track progress and facilitate ongoing evaluation and improvement of communication and engagement activities:

- monthly reporting from Sunwater's Consultation Manager system
- weekly, monthly and quarterly project reports.

Appendix C
Baseline Water and Air Quality Monitoring Program

Baseline monitoring
Air and water quality monitoring

Water quality monitoring program

Table 1: Water quality monitoring

Monitoring type	Frequency	Locations	Analytes	Discharge criteria
Onsite captured waters – water quality	Where discharge offsite is required	Where triggered	Refer ESCP	Refer ESCP
Baseline surface water quality – Phase 1	Monthly	Refer Figure 1 & Table 2	Refer Appendix A	N/A
Baseline surface water quality – Phase 2	Monthly	Refer Figure 1 & Table 2	Refer Table 3	N/A

Table 2: Baseline water quality monitoring locations

Name	Upstream or downstream	Location and description	Sensitivity	Parameters	Latitude/ longitude
WQ01 Boat ramp	Upstream	WQ01 Boat ramp (outer). In the recreation area – on flat area to the west of the larger public boat ramp. Sample taken from bank.	Current – local runoff and recreational impacts only. May be indicative of Finney Creek outflows. Future – upstream of proposed works.	Reduced suite	-25.35782, 151.9123
WQ02 Dam spillway	Upstream – from dam wall platform	WQ02 Dam spillway. From access platform on existing Paradise Dam wall. Adjacent fishway. Note: may be influenced by algal growth and shading from dam wall.	Current – current operational aspects, including irrigation and storm flow events. Future – potential demolition works, windblown contaminants from other works once new dam wall work levels rise. Any runoff from upstream works (e.g. Ops complex, new secondary spillway construction.	Full suite	-25.3512, 151.9195

Name	Upstream or downstream	Location and description	Sensitivity	Parameters	Latitude/ longitude
WQ03 Causeway	Downstream	WQ03 upstream causeway (also known as PD TW). From or adjacent existing causeway.	Current – operational releases, geotechnical works. Future – Major project risks downstream of new dam wall.	Reduced suite	-25.34818, 151.9199
WQ04 BR riffle	Downstream	WQ04 Burnett River riffle. Riffle section – just downstream of ponded area after causeway. Only accessible if no or low overspill and causeway operational	Current – operational releases, geotechnical works, Allen Creek outflow. Future – Major project risks downstream of new dam wall, especially construction causeway and any construction impacts along Allen Creek.	TSS/turbidity correlation	-25.34668, 151.9212
WQ05 BR 1	Downstream	WQ05 Burnett River 1: Riverbank area – easily accessible location approx. 800m downstream of current dam. Only accessible if no or low overspill and causeway operational	Current – operational releases, geotechnical works, Allen Creek outflow. Future – Major project risks downstream of new dam wall, construction causeway and construction impacts along Allen Creek. Just downstream of proposed workshop area (Lot 2)	TSS/turbidity correlation	-25.34514, 151.9222
WQ06 BR River Rd	Downstream	WQ06 Burnett River - River Road. Riverbank area – at end of River Road (unsealed and partially eroded council road).	Current – operational releases, geotechnical works, Allen Creek outflow. Future – Major project risks downstream of new dam wall, construction causeway and construction impacts along Allen Creek. Downstream of proposed laydown areas and TPAV and wastewater irrigation zone (proposed) (Lot 2).	Full suite	-25.32621, 151.9352
WQ11 AC P Rd	Upstream	WQ11 – Allen Creek at Paradise Road Just downstream of rocked level crossing. Ephemeral so water may not always be available.	Current – inflows from Burnett Water and surrounding lands – overland, creek and gully flows. Future – potential quarry haul route, depending on final quarry location.	Reduced suite	-25.35556, 151.9272

Name	Upstream or downstream	Location and description	Sensitivity	Parameters	Latitude/ longitude
WQ12 AC PD Rd	Upstream	WQ12 – Allen Creek Paradise Dam Road Just downstream of Paradise Dam Road culverts. Access from Lot 2.	Current – inflows from Burnett Water and surrounding lands, including private property (rural land use with water allocation (lot 24) – overland, creek and gully flows. Future – potential quarry haul route, depending on final quarry location, new Paradise Dam Rd crossing (bridge) for heavy vehicles, construction traffic along Paradise Dam Road.	Full suite	-25.34993, 151.9252
WQ13 – AC MS 1	Mid-stream	WQ13 – Allen Creek midstream 1 Access from Lot 2.	Current – inflows Allen Creek – rural property uses and from Burnett Water and surrounding lands, including – overland, creek and gully flows. Future – Potential impact from future concrete batch plant.	TSS/ turbidity correlation	-25.35088, 151.9228
WQ15 – AC at BR	Downstream	WQ15 – Allen Creek at Burnett River From Lot 2 –confluence of Allen Creek with Burnett River. May be influenced by overspill and releases from dam. Access restricted due to terrain, access only by foot after high rainfall.	Current – inflows Allen Creek – rural property uses and from Burnett Water and surrounding lands, including – overland, creek and gully flows. Flows from Burnett River can flow into Allen Creek during high flow conditions. Future – Major project risks downstream of new dam wall, concrete batch plant and stockpile areas, construction causeway and any construction impacts along Allen Creek. Further downstream of potential quarry haul route, depending on final quarry location, new Paradise Dam Road crossing (bridge) for heavy vehicles, construction traffic along Paradise Dam Road.	TSS/ turbidity correlation	-25.34689, 151.9218

Note: Sites WQ07, WQ08, WQ09, WQ10 and WQ14 have been retired and will not be reported against.

Table 3: Baseline Water Quality Monitoring Program-Phase 2 (From January 2026) (Sampled Monthly)

Parameter	Units of Measure	Parameter Family	Reduced Suite
Fluoride	mg/L	Anions	
Total Anions	meq/L	Anions	
Sulfate as SO4	mg/L	Anions	
Chloride	mg/L	Anions	
Chlorophyll a	mg/m³	Biological	
Total Cations	meq/L	Cations	
Calcium (Total)	mg/L	Cations	Y
Magnesium (Total)	mg/L	Cations	Y
Potassium (Total)	mg/L	Cations	Y
Sodium (Total)	mg/L	Cations	Y
Calcium-Filtered (Dissolved)	mg/L	Cations	
Magnesium-Filtered (Dissolved)	mg/L	Cations	
Potassium-Filtered (Dissolved)	mg/L	Cations	
Sodium-Filtered (Dissolved)	mg/L	Cations	
Sodium Adsorption Ratio	-	Cations	
Dissolved Oxygen Concentration	mg/L	Field	Y
Dissolved Oxygen Saturation	%	Field	Y
Electrical Conductivity	us/cm	Field	Y
pH	pH Unit	Field	Y
Redox Potential (Oxidation Reduction Potential)	mv	Field	Y
Temperature	°C	Field	Y
Total Dissolved Solids	mg/L	Field	Y
Turbidity	NTU	Field	Y
Particulate Size Analysis (PSA)	%	Fine Sediments	
C10 - C14 Fraction	µg/L	Hydrocarbons	
C10 - C36 Fraction (sum)	µg/L	Hydrocarbons	
C15 - C28 Fraction	µg/L	Hydrocarbons	
C29 - C36 Fraction	µg/L	Hydrocarbons	
C6 - C9 Fraction	µg/L	Hydrocarbons	
Aluminium-Filtered (Dissolved)	mg/L	Metals	
Arsenic-Filtered (Dissolved)	mg/L	Metals	
Cadmium-Filtered (Dissolved)	mg/L	Metals	
Chromium-Filtered (Dissolved)	mg/L	Metals	
Copper-Filtered (Dissolved)	mg/L	Metals	
Nickel-Filtered (Dissolved)	mg/L	Metals	
Lead-Filtered (Dissolved)	mg/L	Metals	
Zinc-Filtered (Dissolved)	mg/L	Metals	
Iron-Filtered (Dissolved)	mg/L	Metals	
Manganese-Filtered (Dissolved)	mg/L	Metals	
Hexavalent Chromium-Filtered (Dissolved)	mg/L	Metals	
Aluminium (Total)	mg/L	Metals	Y
Arsenic (Total)	mg/L	Metals	Y
Cadmium (Total)	mg/L	Metals	Y
Chromium (Total)	mg/L	Metals	Y
Copper (Total)	mg/L	Metals	Y
Nickel (Total)	mg/L	Metals	Y
Lead (Total)	mg/L	Metals	Y
Zinc (Total)	mg/L	Metals	Y
Iron (Total)	mg/L	Metals	Y
Manganese (Total)	mg/L	Metals	
Hexavalent Chromium (Total)	mg/L	Metals	
Ammonia as N	mg/L	Nutrients	
Dissolved Organic Phosphate	mg/L	Nutrients	
Dissolved Organic Phosphorus as P	mg/L	Nutrients	
Nitrate as N	mg/L	Nutrients	
Nitrite + Nitrate as N	mg/L	Nutrients	Y
Nitrite as N	mg/L	Nutrients	
Organic Nitrogen as N	mg/L	Nutrients	
Reactive Phosphorus as P	mg/L	Nutrients	
Total Kjeldahl Nitrogen as N	mg/L	Nutrients	Y
Total Nitrogen as N	mg/L	Nutrients	Y
Total Phosphorus as P	mg/L	Nutrients	Y
Total Nitrogen as N - Filtered (Dissolved Total Nitrogen)	mg/L	Nutrients	
Inorganic Nitrogen as N - Filtered (Dissolved inorganic Nitrogen)	mg/L	Nutrients	
Total Kjeldahl Nitrogen as N (TKN) - Filtered	mg/L	Nutrients	
Total Phosphorus - Filtered (Dissolved Total Phosphorus)	mg/L	Nutrients	
2.4-D	µg/L	Pesticides/Herbicides/Insecticides	
Ametryn	µg/L	Pesticides/Herbicides/Insecticides	
Atrazine	µg/L	Pesticides/Herbicides/Insecticides	
Chlorpyrifos	µg/L	Pesticides/Herbicides/Insecticides	

Diuron	µg/L	Pesticides/Herbicides/Insecticides	
Fipronil	µg/L	Pesticides/Herbicides/Insecticides	
Fluroxypyr	µg/L	Pesticides/Herbicides/Insecticides	
Haloxyfop	µg/L	Pesticides/Herbicides/Insecticides	
Hexazinone	µg/L	Pesticides/Herbicides/Insecticides	
Imazapic	µg/L	Pesticides/Herbicides/Insecticides	
Imidacloprid	µg/L	Pesticides/Herbicides/Insecticides	
Isoxaflutole	µg/L	Pesticides/Herbicides/Insecticides	
Metolachlor	µg/L	Pesticides/Herbicides/Insecticides	
Metribuzin	µg/L	Pesticides/Herbicides/Insecticides	
Metsulfuron Methyl	µg/L	Pesticides/Herbicides/Insecticides	
Pendimethalin	µg/L	Pesticides/Herbicides/Insecticides	
Simazine	µg/L	Pesticides/Herbicides/Insecticides	
Tebuthiuron	µg/L	Pesticides/Herbicides/Insecticides	
Terbuthylazine	µg/L	Pesticides/Herbicides/Insecticides	
MCPA	µg/L	Pesticides/Herbicides/Insecticides	
Terbutryn	µg/L	Pesticides/Herbicides/Insecticides	
Triclopyr	µg/L	Pesticides/Herbicides/Insecticides	
Bicarbonate Alkalinity as CaCO3	mg/L	Physical	
Carbonate Alkalinity as CaCO3	mg/L	Physical	
Hydroxide Alkalinity as CaCO3	mg/L	Physical	
Total Alkalinity as CaCO3	mg/L	Physical	
Total Hardness as CaCO3	mg/L	Physical	
Suspended Solids (SS)	mg/L	Physical	**Y**
Total Dissolved Solids @180°C	mg/L	Physical	

Water quality monitoring locations

Legend

- Water quality monitoring locations
- Roads
- Major watercourse
- Minor watercourse
- Paradise Dam
- National park
- Cadastre

1:18,000 @ ISO A4

0 100 200 300 400

Metres

Map Projection: Universal Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

N

Paradise ALLIANCE

Revision 0

Date 23/09/2025

FIGURE 1

Data source: Sunwater: Paradise Dam (2024); PA: water quality monitoring locations (2025); DNRMMRRD: roads (2021), watercourse (2023), national park, cadastre (2025); World Imagery: Maxar Basemaps_LatestStateProgram_AllUsers: .

WQ06
Cherelly Orchard Road
Paradise Dam Road
Bowden Creek
Burnett River
WQ05
Good Night Scrub National Park
WQ04
WQ15
Kalliwa Road
WQ03
WQ12
WQ13
WQ02
WQ11
Dead Horse Creek
Paradise Creek
Paradise Road
Potts Creek
WQ01

\\ghdnet\GHD\AU\Brisbane\Projects\41\12605789\GIS\Maps\Deliverables\12605789_PDIP_CEMP.aprx - 12605789_014_CEMP_WaterQualityMonitoring

Air and water quality monitoring

Air quality monitoring program

Table 4: Air quality monitoring

Monitoring type	Frequency	Locations	Analytes	Criteria
Depositional dust – nuisance	Monthly	Refer Figure 2 & Table 6	Total Insoluble Matter	Deposition limit: 4 g/m2/month. Monitored in accordance with ASNZS 2580.10.1

Table 5: Air quality monitoring locations

Monitoring Location Name	Location	Latitude/ Longitude	Sensitivity
DG1 Ops lookout	Within operations compound	-25.354788, 151.919283	Current – lookout, kiosk, caretaker's house, operations. Will show if future gauge needed at lower boat ramp level. Future – potential temporary operations centre.
DG2 Lot2_shed	Adjacent shed and workshop	-25.343635, 151.926052	Current – old shed, workshop and office on Lot 2, residence. Future – likely use of buildings and area for site offices, work zones, etc.
DG3 TPAV Receptor	In-between TPAV proposed location and sensitive receiver (R&P Campbell)	-25.330595, 151.933253	Current – tree buffer zone, Campbell residence (occupied). Future – TPAV, residence (occupied).
DG4_GNSNP	Area just west of dam wall and close to Good Night Scrub National Park	-25.348026, 151.916118	Current – dam infrastructure, national park (sensitive receptor – fauna, protected vegetated and visitors). Future – as above.

Depositional dust monitoring locations

Legend

- Dust deposition gauges
- Major watercourse
- Minor watercourse
- Roads
- Paradise Dam
- National park
- Cadastre

1:18,000 @ ISO A4

0 100 200 300 400

Metres

N

Map Projection: Universal Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

Paradise ALLIANCE

Revision **0**

Date **23/09/2025**

FIGURE 2

Data source: Sunwater: Paradise Dam (2024); PA: depositional dust monitoring locations (2025); DNRMMRRD: roads (2021), watercourse (2023), national park, cadastre (2025); World Imagery: Maxar Basemaps_LatestStateProgram_AllUsers: .

DG1
DG2
DG3
DG4
Paradise Dam Road
Cherelly Orchard Road
Bowden Creek
Burnett River
Good Night Scrub National Park
Kalliwa Road
Potts Creek
Paradise Creek
Dead Horse Creek
Paradise Road

\\ghdnet\GHD\AU\Brisbane\Projects\41\12605789\GIS\Maps\Deliverables\12605789_PDIP_CEMP.aprx - 12605789_015_CEMP_DustMonitoringLocations

Appendix A – Phase 1 Water Quality Analytes

Table 1: Baseline Water Quality Monitoring Program - Phase 1 (January-December 2025) (Sampled Monthly)

Parameter	Units of Measure	Parameter Family
Chloride	mg/L	Anions
Sulfate as SO4	mg/L	Anions
Total Anions	meq/L	Anions
Ionic Balance	%	Anions/Cations
Chlorophyll a	mg/m³	Biological
E.coli	cfu/ml	Biological
Faecal Coliforms/Thermotolerant Coliforms	cfu/100ml	Biological
Total Coliforms	cfu/100ml	Biological
Total Heterotrophic Plate Count	cfu/100ml	Biological
Calcium (Total)	mg/L	Cations
Calcium-Filtered (Dissolved)	mg/L	Cations
Magnesium (Total)	mg/L	Cations
Magnesium-Filtered (Dissolved)	mg/L	Cations
Potassium (Total)	mg/L	Cations
Potassium-Filtered (Dissolved)	mg/L	Cations
Sodium (Total)	mg/L	Cations
Sodium Adsorption Ratio	-	Cations
Sodium-Filtered (Dissolved)	mg/L	Cations
Total Cations	meq/L	Cations
Dissolved Oxygen Concentration	mg/L	Field
Dissolved Oxygen Saturation	%	Field
Electrical Conductivity	us/cm	Field
pH	pH Unit	Field
pH Redox	pH Unit	Field
Redox Potential	mV	Field
Temperature	°C	Field
Total Dissolved Solids	mg/L	Field
Turbidity	NTU	Field
Particulate Size Analysis (PSA)	%	Fine Sediments
>C10 - C16 Fraction	µg/L	Hydrocarbons
>C10 - C16 Fraction minus Naphthalene (F2)	µg/L	Hydrocarbons
>C10 - C40 Fraction (sum)	µg/L	Hydrocarbons
>C16 - C34 Fraction	µg/L	Hydrocarbons
>C34 - C40 Fraction	µg/L	Hydrocarbons
Benzene	µg/L	Hydrocarbons
C10 - C14 Fraction	µg/L	Hydrocarbons
C10 - C36 Fraction (sum)	µg/L	Hydrocarbons
C15 - C28 Fraction	µg/L	Hydrocarbons
C29 - C36 Fraction	µg/L	Hydrocarbons
C6 - C10 Fraction	µg/L	Hydrocarbons
C6 - C10 Fraction minus BTEX (F1)	µg/L	Hydrocarbons
C6 - C9 Fraction	µg/L	Hydrocarbons
Ethylbenzene	µg/L	Hydrocarbons
meta- & para-Xylene	µg/L	Hydrocarbons
Naphthalene	µg/L	Hydrocarbons
ortho-Xylene	µg/L	Hydrocarbons
Sum of BTEX	µg/L	Hydrocarbons
Toluene	µg/L	Hydrocarbons
Total Xylenes	µg/L	Hydrocarbons
Aluminium (Total)	mg/L	Metals
Aluminium-Filtered (Dissolved)	mg/L	Metals
Antimony (Total)	mg/L	Metals
Antimony-Filtered (Dissolved)	mg/L	Metals
Arsenic (Total)	mg/L	Metals
Arsenic-Filtered (Dissolved)	mg/L	Metals
Barium (Total)	mg/L	Metals
Barium-Filtered (Dissolved)	mg/L	Metals
Cadmium (Total)	mg/L	Metals
Cadmium-Filtered (Dissolved)	mg/L	Metals
Chromium (Total)	mg/L	Metals
Chromium-Filtered (Dissolved)	mg/L	Metals
Cobalt (Total)	mg/L	Metals
Cobalt-Filtered (Dissolved)	mg/L	Metals
Copper (Total)	mg/L	Metals
Copper-Filtered (Dissolved)	mg/L	Metals

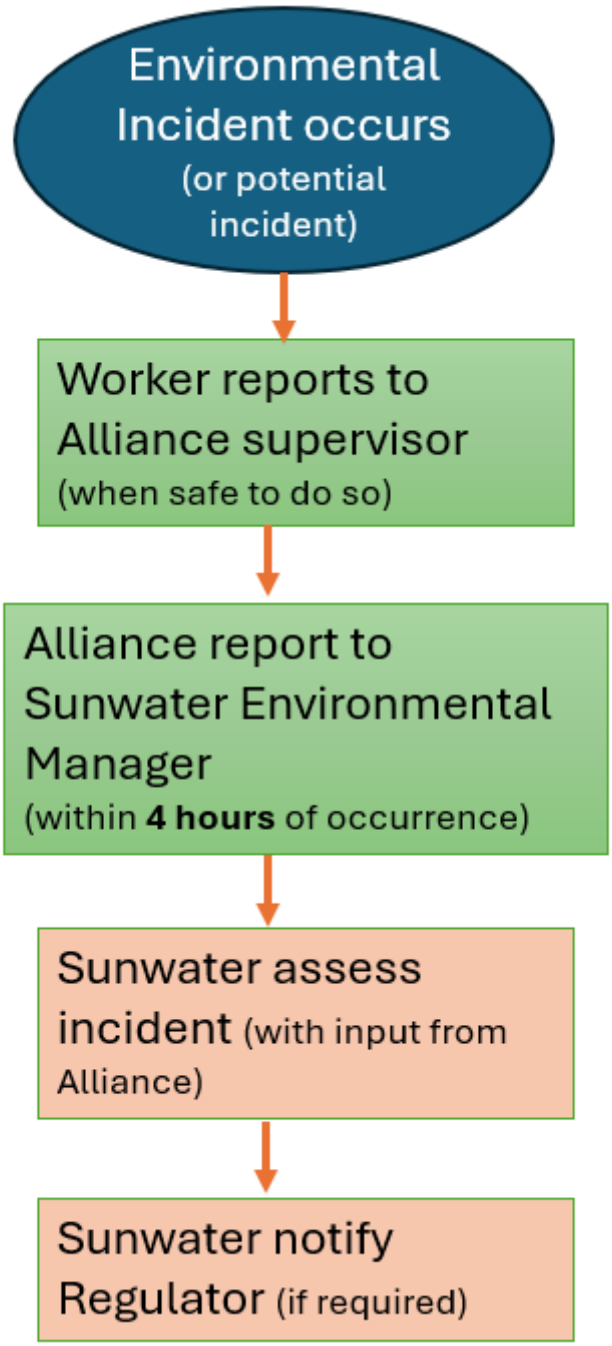
Hexavalent Chromium	mg/L	Metals
Hexavalent Chromium-Filtered (Dissolved)	mg/L	Metals
Iron (Total)	mg/L	Metals
Iron-Filtered (Dissolved)	mg/L	Metals
Lead (Total)	mg/L	Metals
Lead-Filtered (Dissolved)	mg/L	Metals
Manganese (Total)	mg/L	Metals
Manganese-Filtered (Dissolved)	mg/L	Metals
Mercury (Total)	mg/L	Metals
Mercury-Filtered (Dissolved)	mg/L	Metals
Molybdenum (Total)	mg/L	Metals
Molybdenum-Filtered (Dissolved)	mg/L	Metals
Nickel (Total)	mg/L	Metals
Nickel-Filtered (Dissolved)	mg/L	Metals
Selenium (Total)	mg/L	Metals
Selenium-Filtered (Dissolved)	mg/L	Metals
Vanadium (Total)	mg/L	Metals
Vanadium-Filtered (Dissolved)	mg/L	Metals
Zinc (Total)	mg/L	Metals
Zinc-Filtered (Dissolved)	mg/L	Metals
Ammonia as N	mg/L	Nutrients
Ammonium as N	mg/L	Nutrients
Dissolved Organic Phosphate	mg/L	Nutrients
Dissolved Organic Phosphorus as P	mg/L	Nutrients
Nitrate as N	mg/L	Nutrients
Nitrite + Nitrate as N	mg/L	Nutrients
Nitrite as N	mg/L	Nutrients
Organic Nitrogen as N	mg/L	Nutrients
Reactive Phosphorus as P	mg/L	Nutrients
Total Kjeldahl Nitrogen as N	mg/L	Nutrients
Total Nitrogen as N	mg/L	Nutrients
Total Phosphorus as P	mg/L	Nutrients
2.4.5-T	µg/L	Pesticides/Herbicides/Insecticides
2.4.6-T	µg/L	Pesticides/Herbicides/Insecticides
2.4-D	µg/L	Pesticides/Herbicides/Insecticides
2.4-DB	µg/L	Pesticides/Herbicides/Insecticides
2.4-DP	µg/L	Pesticides/Herbicides/Insecticides
2.6-D	µg/L	Pesticides/Herbicides/Insecticides
3-Hydroxy Carbofuran	µg/L	Pesticides/Herbicides/Insecticides
4-Chlorophenoxy acetic acid	µg/L	Pesticides/Herbicides/Insecticides
4OH-TPN as Chlorothalonil	µg/L	Pesticides/Herbicides/Insecticides
Abamectin	µg/L	Pesticides/Herbicides/Insecticides
Acephate	µg/L	Pesticides/Herbicides/Insecticides
Alachlor	µg/L	Pesticides/Herbicides/Insecticides
Aldicarb	µg/L	Pesticides/Herbicides/Insecticides
Ametryn	µg/L	Pesticides/Herbicides/Insecticides
Aminopyralid	µg/L	Pesticides/Herbicides/Insecticides
Amitraz	µg/L	Pesticides/Herbicides/Insecticides
Asulam	µg/L	Pesticides/Herbicides/Insecticides
Atrazine	µg/L	Pesticides/Herbicides/Insecticides
Atrazine-desethyl	µg/L	Pesticides/Herbicides/Insecticides
Atrazine-desisopropyl	µg/L	Pesticides/Herbicides/Insecticides
Azinphos-ethyl	µg/L	Pesticides/Herbicides/Insecticides
Azinphos-methyl	µg/L	Pesticides/Herbicides/Insecticides
Azoxystrobin	µg/L	Pesticides/Herbicides/Insecticides
Bendiocarb	µg/L	Pesticides/Herbicides/Insecticides
Benomyl	µg/L	Pesticides/Herbicides/Insecticides
Bensulfuron methyl	µg/L	Pesticides/Herbicides/Insecticides
Bensulide	µg/L	Pesticides/Herbicides/Insecticides
Boscalid	µg/L	Pesticides/Herbicides/Insecticides
Brodifacoum	µg/L	Pesticides/Herbicides/Insecticides
Bromacil	µg/L	Pesticides/Herbicides/Insecticides
Bromophos-ethyl	µg/L	Pesticides/Herbicides/Insecticides
Bromoxynil	µg/L	Pesticides/Herbicides/Insecticides
Butachlor	µg/L	Pesticides/Herbicides/Insecticides
Carbaryl	µg/L	Pesticides/Herbicides/Insecticides
Carbendazim (Thiophanate methyl)	µg/L	Pesticides/Herbicides/Insecticides
Carbofenothion	µg/L	Pesticides/Herbicides/Insecticides
Carbofuran	µg/L	Pesticides/Herbicides/Insecticides
Carboxin	µg/L	Pesticides/Herbicides/Insecticides
Carfentrazone-ethyl	µg/L	Pesticides/Herbicides/Insecticides
Chlorantraniliprole	µg/L	Pesticides/Herbicides/Insecticides
Chlorfenvinphos	µg/L	Pesticides/Herbicides/Insecticides
Chloroxuron	µg/L	Pesticides/Herbicides/Insecticides
Chlorpyrifos	µg/L	Pesticides/Herbicides/Insecticides
Chlorpyrifos-methyl	µg/L	Pesticides/Herbicides/Insecticides
Chlorsulfuron	µg/L	Pesticides/Herbicides/Insecticides
Clopyralid	µg/L	Pesticides/Herbicides/Insecticides

Coumaphos	µg/L	Pesticides/Herbicides/Insecticides
Cyanazine	µg/L	Pesticides/Herbicides/Insecticides
Cyproconazole	µg/L	Pesticides/Herbicides/Insecticides
Cyprodinil	µg/L	Pesticides/Herbicides/Insecticides
Cyromazine	µg/L	Pesticides/Herbicides/Insecticides
Demeton-O	µg/L	Pesticides/Herbicides/Insecticides
Demeton-O & Demeton-S	µg/L	Pesticides/Herbicides/Insecticides
Demeton-S	µg/L	Pesticides/Herbicides/Insecticides
Demeton-S-methyl	µg/L	Pesticides/Herbicides/Insecticides
Diazinon	µg/L	Pesticides/Herbicides/Insecticides
Dicamba	µg/L	Pesticides/Herbicides/Insecticides
Dichlobenil	µg/L	Pesticides/Herbicides/Insecticides
Dichlorprop-P	µg/L	Pesticides/Herbicides/Insecticides
Dichlorvos	µg/L	Pesticides/Herbicides/Insecticides
Diclofop-methyl	µg/L	Pesticides/Herbicides/Insecticides
Dicofol	µg/L	Pesticides/Herbicides/Insecticides
Difenoconazole	µg/L	Pesticides/Herbicides/Insecticides
Diflubenzuron	µg/L	Pesticides/Herbicides/Insecticides
Diflufenican	µg/L	Pesticides/Herbicides/Insecticides
Diketonitrile (DKN)	µg/L	Pesticides/Herbicides/Insecticides
Dimethoate	µg/L	Pesticides/Herbicides/Insecticides
Diphenamid	µg/L	Pesticides/Herbicides/Insecticides
Disulfoton	µg/L	Pesticides/Herbicides/Insecticides
Diuron	µg/L	Pesticides/Herbicides/Insecticides
Endothal	µg/L	Pesticides/Herbicides/Insecticides
EPN	µg/L	Pesticides/Herbicides/Insecticides
EPTC	µg/L	Pesticides/Herbicides/Insecticides
Ethion	µg/L	Pesticides/Herbicides/Insecticides
Ethoprophos	µg/L	Pesticides/Herbicides/Insecticides
Etridiazole	µg/L	Pesticides/Herbicides/Insecticides
Fenamiphos	µg/L	Pesticides/Herbicides/Insecticides
Fenarimol	µg/L	Pesticides/Herbicides/Insecticides
Fenchlorphos (Ronnel)	µg/L	Pesticides/Herbicides/Insecticides
Fenitrothion	µg/L	Pesticides/Herbicides/Insecticides
Fenoxycarb	µg/L	Pesticides/Herbicides/Insecticides
Fensulfothion	µg/L	Pesticides/Herbicides/Insecticides
Fenthion	µg/L	Pesticides/Herbicides/Insecticides
Fipronil	µg/L	Pesticides/Herbicides/Insecticides
Flamprop methyl	µg/L	Pesticides/Herbicides/Insecticides
Fluometuron	µg/L	Pesticides/Herbicides/Insecticides
Flupropanate	µg/L	Pesticides/Herbicides/Insecticides
Fluroxypyr	µg/L	Pesticides/Herbicides/Insecticides
Flusilazole	µg/L	Pesticides/Herbicides/Insecticides
Formothion	µg/L	Pesticides/Herbicides/Insecticides
Fosetyl Aluminium	µg/L	Pesticides/Herbicides/Insecticides
Haloxyfop	µg/L	Pesticides/Herbicides/Insecticides
Hexaconazole	µg/L	Pesticides/Herbicides/Insecticides
Hexaflurate	µg/L	Pesticides/Herbicides/Insecticides
Hexazinone	µg/L	Pesticides/Herbicides/Insecticides
Imazapic	µg/L	Pesticides/Herbicides/Insecticides
Imazapyr	µg/L	Pesticides/Herbicides/Insecticides
Imidacloprid	µg/L	Pesticides/Herbicides/Insecticides
Indoxacarb	µg/L	Pesticides/Herbicides/Insecticides
Iodosulfuron methyl	µg/L	Pesticides/Herbicides/Insecticides
Iprodione	µg/L	Pesticides/Herbicides/Insecticides
Irgarol	µg/L	Pesticides/Herbicides/Insecticides
Isoproturon	µg/L	Pesticides/Herbicides/Insecticides
Isoxaflutole	µg/L	Pesticides/Herbicides/Insecticides
Malathion	µg/L	Pesticides/Herbicides/Insecticides
MCPA	µg/L	Pesticides/Herbicides/Insecticides
MCPB	µg/L	Pesticides/Herbicides/Insecticides
Mecoprop	µg/L	Pesticides/Herbicides/Insecticides
Metalaxyl	µg/L	Pesticides/Herbicides/Insecticides
Metalaxyl-M	µg/L	Pesticides/Herbicides/Insecticides
Metaldehyde	µg/L	Pesticides/Herbicides/Insecticides
Methidathion	µg/L	Pesticides/Herbicides/Insecticides
Methiocarb	µg/L	Pesticides/Herbicides/Insecticides
Methomyl	µg/L	Pesticides/Herbicides/Insecticides
Metolachlor	µg/L	Pesticides/Herbicides/Insecticides
Metribuzin	µg/L	Pesticides/Herbicides/Insecticides
Metsulfuron Methyl	µg/L	Pesticides/Herbicides/Insecticides
Mevinphos	µg/L	Pesticides/Herbicides/Insecticides
Molinate	µg/L	Pesticides/Herbicides/Insecticides
Monocrotophos	µg/L	Pesticides/Herbicides/Insecticides
Myclobutanil	µg/L	Pesticides/Herbicides/Insecticides
Naftalofos	µg/L	Pesticides/Herbicides/Insecticides
Napropamide	µg/L	Pesticides/Herbicides/Insecticides
Nicarbazin	µg/L	Pesticides/Herbicides/Insecticides

Nitralin	µg/L	Pesticides/Herbicides/Insecticides
Norflurazon	µg/L	Pesticides/Herbicides/Insecticides
Novaluron	µg/L	Pesticides/Herbicides/Insecticides
Omethoate	µg/L	Pesticides/Herbicides/Insecticides
Oryzalin	µg/L	Pesticides/Herbicides/Insecticides
Oxamyl	µg/L	Pesticides/Herbicides/Insecticides
Oxyfluorfen	µg/L	Pesticides/Herbicides/Insecticides
Paclobutrazole	µg/L	Pesticides/Herbicides/Insecticides
Parathion	µg/L	Pesticides/Herbicides/Insecticides
Parathion-methyl	µg/L	Pesticides/Herbicides/Insecticides
Pebulate	µg/L	Pesticides/Herbicides/Insecticides
Penconazole	µg/L	Pesticides/Herbicides/Insecticides
Pendimethalin	µg/L	Pesticides/Herbicides/Insecticides
Phorate	µg/L	Pesticides/Herbicides/Insecticides
Picloram	µg/L	Pesticides/Herbicides/Insecticides
Pirimicarb	µg/L	Pesticides/Herbicides/Insecticides
Pirimiphos-ethyl	µg/L	Pesticides/Herbicides/Insecticides
Pirimiphos-methyl	µg/L	Pesticides/Herbicides/Insecticides
Prochloraz	µg/L	Pesticides/Herbicides/Insecticides
Profenofos	µg/L	Pesticides/Herbicides/Insecticides
Promecarb	µg/L	Pesticides/Herbicides/Insecticides
Prometryn	µg/L	Pesticides/Herbicides/Insecticides
Propachlor	µg/L	Pesticides/Herbicides/Insecticides
Propamocarb	µg/L	Pesticides/Herbicides/Insecticides
Propanil	µg/L	Pesticides/Herbicides/Insecticides
Propargite	µg/L	Pesticides/Herbicides/Insecticides
Propazine	µg/L	Pesticides/Herbicides/Insecticides
Propiconazole	µg/L	Pesticides/Herbicides/Insecticides
Propyzamide	µg/L	Pesticides/Herbicides/Insecticides
Prothiofos	µg/L	Pesticides/Herbicides/Insecticides
Pyraclostrobin	µg/L	Pesticides/Herbicides/Insecticides
Pyrasulfatole	µg/L	Pesticides/Herbicides/Insecticides
Pyrazophos	µg/L	Pesticides/Herbicides/Insecticides
Pyrimethanil	µg/L	Pesticides/Herbicides/Insecticides
Pyriproxyfen	µg/L	Pesticides/Herbicides/Insecticides
Pyroxsulam	µg/L	Pesticides/Herbicides/Insecticides
Quinclorac	µg/L	Pesticides/Herbicides/Insecticides
Rimsulfuron	µg/L	Pesticides/Herbicides/Insecticides
Siduron	µg/L	Pesticides/Herbicides/Insecticides
Silvex (2.4.5-TP/Fenoprop)	µg/L	Pesticides/Herbicides/Insecticides
Simazine	µg/L	Pesticides/Herbicides/Insecticides
Spirotetramat	µg/L	Pesticides/Herbicides/Insecticides
Sulfotep	µg/L	Pesticides/Herbicides/Insecticides
Sulprofos	µg/L	Pesticides/Herbicides/Insecticides
Tebuconazole	µg/L	Pesticides/Herbicides/Insecticides
Tebuthiuron	µg/L	Pesticides/Herbicides/Insecticides
Temephos	µg/L	Pesticides/Herbicides/Insecticides
Terbacil	µg/L	Pesticides/Herbicides/Insecticides
Terbufos	µg/L	Pesticides/Herbicides/Insecticides
Terbuthylazine	µg/L	Pesticides/Herbicides/Insecticides
Terbutryn	µg/L	Pesticides/Herbicides/Insecticides
Tetrachlorvinphos	µg/L	Pesticides/Herbicides/Insecticides
Tetraconazole	µg/L	Pesticides/Herbicides/Insecticides
Thiamethoxam	µg/L	Pesticides/Herbicides/Insecticides
Thiobencarb	µg/L	Pesticides/Herbicides/Insecticides
Thiodicarb	µg/L	Pesticides/Herbicides/Insecticides
Thiometon	µg/L	Pesticides/Herbicides/Insecticides
Toltrazuril	µg/L	Pesticides/Herbicides/Insecticides
Triadimefon	µg/L	Pesticides/Herbicides/Insecticides
Triadimenol	µg/L	Pesticides/Herbicides/Insecticides
Triazophos	µg/L	Pesticides/Herbicides/Insecticides
Trichlorfon	µg/L	Pesticides/Herbicides/Insecticides
Trichloronate	µg/L	Pesticides/Herbicides/Insecticides
Triclopyr	µg/L	Pesticides/Herbicides/Insecticides
Trifloxystrobin	µg/L	Pesticides/Herbicides/Insecticides
Trifloxysulfuron-sodium	µg/L	Pesticides/Herbicides/Insecticides
Trifluralin	µg/L	Pesticides/Herbicides/Insecticides
Trinexapac Ethyl	µg/L	Pesticides/Herbicides/Insecticides
Vernolate	µg/L	Pesticides/Herbicides/Insecticides
Bicarbonate Alkalinity as CaCO3	mg/L	Physical
Biochemical Oxygen Demand	mg/L	Physical
Carbonate Alkalinity as CaCO3	mg/L	Physical
Chemical Oxygen Demand	mg/L	Physical
Free Chlorine	mg/L	Physical
Hydroxide Alkalinity as CaCO3	mg/L	Physical
Non-Carbonate (Perm) Hardness as CaCO3	mg/L	Physical
Suspended Solids (SS)	mg/L	Physical
Total Alkalinity as CaCO3	mg/L	Physical

Total Chlorine	mg/L	Physical
Total Dissolved Solids @180°C	mg/L	Physical
Total Hardness as CaCO3	mg/L	Physical
Turbidity	NTU	Physical
Acenaphthene	µg/L	Polycylic Aromatic Hydrocarbons
Acenaphthylene	µg/L	Polycylic Aromatic Hydrocarbons
Anthracene	µg/L	Polycylic Aromatic Hydrocarbons
Benz(a)anthracene	µg/L	Polycylic Aromatic Hydrocarbons
Benzo(a)pyrene	µg/L	Polycylic Aromatic Hydrocarbons
Benzo(a)pyrene TEQ (zero)	µg/L	Polycylic Aromatic Hydrocarbons
Benzo(b+j)fluoranthene	µg/L	Polycylic Aromatic Hydrocarbons
Benzo(g.h.i)perylene	µg/L	Polycylic Aromatic Hydrocarbons
Benzo(k)fluoranthene	µg/L	Polycylic Aromatic Hydrocarbons
Chrysene	µg/L	Polycylic Aromatic Hydrocarbons
Dibenz(a.h)anthracene	µg/L	Polycylic Aromatic Hydrocarbons
Fluoranthene	µg/L	Polycylic Aromatic Hydrocarbons
Fluorene	µg/L	Polycylic Aromatic Hydrocarbons
Indeno(1.2.3.cd)pyrene	µg/L	Polycylic Aromatic Hydrocarbons
Naphthalene (Ex SVOC)	µg/L	Polycylic Aromatic Hydrocarbons
Phenanthrene	µg/L	Polycylic Aromatic Hydrocarbons
Pyrene	µg/L	Polycylic Aromatic Hydrocarbons

Appendix D
Regulatory Notifications for Environmental Incidents


Environmental Incident occurs (or potential incident)
Worker reports to Alliance supervisor (when safe to do so)
Alliance report to Sunwater Environmental Manager (within **4 hours** of occurrence)
Sunwater assess incident (with input from Alliance)
Sunwater notify Regulator (if required)

Appendix E
Rehabilitation Management Plan Framework

Paradise ALLIANCE

Paradise Dam Improvement Project

Works Regulation – Early Works Rehabilitation Management Plan Framework

Doc No: PDIP-PAL-PW-ENV-MP-000003
Sunwater Limited
10 October 2025

Contents

1. Introduction

This management plan is a framework that describes the strategies to be implemented by the project during its rehabilitation phase.

Rehabilitation objectives for the project include:

- For temporary areas, the land is returned at the completion of the project to as near as practicable the pre-disturbance condition.
- The overriding principle for rehabilitation is, where practical, returning the land to a state where it is stable, self-sustaining and will only require maintenance commensurate with the proposed final land use. Where practical, the post-construction land use will be a self-sustaining vegetation community using appropriate pasture (exotic), native grasses, and plantings of trees and shrubs where applicable. This plan does not apply to areas proposed to be landscaped as part of any post-project uses.

1.1 Purpose

This rehabilitation plan has been prepared to address rehabilitation requirements during the project.

The purpose of the plan is to:

- ensure compliance with the requirements of any applicable approvals, relevant environmental legislation and best practice guidelines
- meet the objectives of the individual landholder agreements for temporary areas (refer to property-specific land access agreements)
- ensure rehabilitation objectives from stakeholder engagement are considered
- where possible, describe indicators and rehabilitation completion criteria
- detail methods and processes to allow the project to be rehabilitated to a safe and stable condition
- describe progressive and interim rehabilitation processes and procedures
- disturbed land will be rehabilitated so that it is non-polluting and self-sustaining or to a condition where the maintenance requirements are limited
- establish a rehabilitation monitoring program.

Due to different types of activities, disturbances and land uses across the project, there is a need for a diversified approach to rehabilitation. Each site and location will require specific rehabilitation measures to ensure disturbed land is returned to its agreed land use at the completion of the construction phase of the project.

This plan is applicable to all employees and contractors working on the project.

1.2 Scope and limitations

This report has been prepared for Sunwater Limited by the Paradise Alliance which comprises Sunwater Limited, GHD Pty Ltd and Elevate Joint Venture and may only be used and relied on by Sunwater Limited and the Alliance participants for the purpose agreed between the Alliance and Sunwater Limited as set out in this report.

The Alliance otherwise disclaims responsibility to any person other than Sunwater Limited arising in connection with this report. The Alliance also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by the Alliance in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. The Alliance has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by the Alliance described in this report. The Alliance disclaims liability arising from any of the assumptions being incorrect.

The Alliance has prepared this report on the basis of information provided by Sunwater Limited and others who provided information to the Alliance (including government authorities), which the Alliance has not independently verified or checked beyond the agreed scope of work. The Alliance does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

Accessibility of documents

If this report is required to be accessible in any other format, this can be provided by Paradise Alliance upon request and at an additional cost if necessary.

1.3 Definition of terms

Table 1 Definition of terms

Term	Definition
ANZECC	Australian and New Zealand Environment and Conservation Council
CEMP	Construction Environmental Management Plan (of which this document is an appendix).
Concrete	Concrete foundations of posts and stanchions.
Construction site representative	The designated Paradise Alliance site representative.
Design site representative	The designated representative of the design partner within the Alliance.
Drawings	The drawing set relevant to general works.
Drill seeding	A mechanical method of planting seeds directly into the soil using a machine called a seed drill or drill seed.
Environmental site representative	The designated Paradise Alliance environmental representative.
EP Act	Environmental Protection Act 1994
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999
EPP	Environmental Protection Policy
EP Regulation	Environmental Protection Regulation 2019
ERA	Environmentally relevant activity
Hydroseeding	A process of applying seed, mulch or fertiliser in a water-based slurry to promote revegetation.
Herbicide	Used to control/eliminate weeds.
Mulch	Material applied to soil surface to retain moisture, minimise weeds, and improve soil quality.
NC Act	Nature Conservation Act 1992

Term	Definition
NC Regulation	Nature Conservation (Wildlife Management) Regulation 2006
NEPM	National environment protection measures
NPI	National pollutant inventory
Rehabilitation	Restore disturbed land to a vegetated and/or functional condition like its intended state.
SDPWO Act	State Development and Public Works Organisation Act 1971
Topsoil	Surface soil which has organic material.
TPAV	Temporary person accommodation village
VM Act	Vegetation Management Act 1999
WRR Act	Waste Reduction and Recycling Act 2011

2. Relevant documents

This plan should be read in conjunction with the:

- Construction Environmental Management Plan

3. Legal and other obligations

3.1 Overview

The regulation of rehabilitation is primarily the responsibility of state and territory governments which regulate and manage rehabilitation in accordance with their respective legislation, policies and guidelines. The Commonwealth Government is responsible for national legislation, strategies and policy frameworks for rehabilitation.

A summary of related legislation and best practice guidelines that may apply during rehabilitation are summarised below. It should be noted that this section is not an exhaustive list and will be updated by the construction contractor as part of finalising this plan.

3.2 Commonwealth legislative requirements

3.2.1 *Environment Protection and Biodiversity Conservation Act 1999*

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places defined as matters of national environmental significance.

Matters of national environmental significance include:

- World Heritage (s12 and s15A of the EPBC Act)
- Listed threatened species and communities
- Listed migratory species
- National heritage places
- Ramsar wetlands of international significance
- Nuclear actions
- Commonwealth marine areas
- The Great Barrier Reef Marine Park
- a water resource, in relation to coal seam gas development and large coal mining development.

Under the EPBC Act, actions that have, or are likely to have, a significant impact on a matter of national environmental significance are referred to the Australian Government Minister for the Environment to determine if an approval is required.

3.2.2 *National Environment Protection Measures (Implementation) Act 1998*

National environment protection measures (NEPMs) set out agreed national objectives for protecting or managing particular aspects of the environment such as air and water quality, land contamination, hazardous wastes, and the reuse and recycling of materials. The National Pollutant Inventory (NPI) NEPM provides the framework for the development and establishment of the NPI, which is an internet database designed to provide publicly available information on the types, and amounts of certain substances, being emitted to the air, land, and water.

3.3 Queensland legislative requirements

3.3.1 *Environmental Protection Act 1994*

The key legislation in relation to environmental protection in Queensland is the *Environmental Protection Act 1994* (EP Act), which identifies effective management strategies as part of an integrated management approach to environment protection and ecologically sustainable development.

The EP Act is the principal legislation for the protection and management of environmental values within Queensland. The EP Act aims to protect the natural environment and associated ecological systems and processes, while allowing for sustainable development.

The EP Act imposes a 'general environmental duty' (s319) on any person engaged in an activity that has the potential to cause environmental harm to "take all reasonable care and practicable measures to prevent or minimise environmental harm". The EP Act also imposes a 'duty to notify' (s320) upon any person who becomes aware that their activities, or the activities of somebody working with them, has caused or threatens to cause environmental harm.

3.3.1.1 Environmental Protection Regulation 2019

The *Environmental Protection Regulation 2019* (EP Regulation) prescribes the regulatory framework for managing the impacts of industrial, agricultural and resource development projects on the environment. The EP Regulation defines environmentally relevant activities (ERAs), which are activities that may potentially cause environmental harm and require approval.

3.3.1.2 Environmental Protection (Water) Policy 2009

The Environmental Protection (Water and Wetland Biodiversity) Policy 2009 (EPP (Water and Wetland Biodiveristy)) provides a framework to develop water quality guidelines to protect Queensland waters and prevent pollution. The EPP (Water and Wetland Biodiversity) achieves the objectives of the EP Act to protect Queensland's waters while supporting ecologically sustainable development.

3.3.1.3 Environmental Protection (Air) Policy 2019

The Environmental Protection (Air) Policy 2019 (EPP (Air)) specifies air quality indicators and goals to protect the environmental values. The purpose of the EPP (Air) is achieved by:

- identifying environmental values to be enhanced or protected
- stating indicators and air quality objectives for enhancing or protecting the environmental values
- providing a framework for making consistent, equitable and informed decisions about the air environment.

3.3.2 *Waste Reduction and Recycling Act 2011*

The *Waste Reduction and Recycling Act 2011* (WRR Act) aims to promote waste avoidance and reduction and to encourage resource recovery and efficiency. The WRR Act provides a strategic framework for managing wastes by establishing a waste and resource management hierarchy. The WRR Act repealed the *Environmental Protection (Waste Management) Policy 2000* (Qld) and amended the EP Act and EP Regulation to modernise waste management and resource recovery practices in Queensland. It promotes waste avoidance, resource recovery and efficiency by improving ways of reducing and dealing with waste, including allowing for introduction of a price signalling approach i.e. waste levy.

The WRR Act provides a strategic framework for managing wastes through a waste and resource management hierarchy, as listed below in the preferred order to be considered:

- avoid unnecessary resource consumption.
- reduce waste generation and disposal.

- reuse waste resources without further manufacturing
- recycle waste resources to make the same or different products
- recover waste resources, including the recovery of energy
- treat waste before disposal, including reducing the hazardous nature of waste
- dispose of waste only if there is no viable alternative.

Under Queensland's WRR Act, priority wastes are those with high disposal impacts (such as toxicity or greenhouse gas emissions), social impacts (such as community concern or amenity), or whose recovery would present resource savings or business opportunities. The WRR Act enables the Queensland government to work with industry and the community in identifying priority wastes in the state and determine – through a process of consultation – the most appropriate management options for each priority.

3.3.2.1 Waste Reduction and Recycling Regulation 2011

The *Waste Reduction and Recycling Regulation 2011* sets out the mechanisms to achieve the objectives of the WRR Act, mainly in relation to waste levies. The key provisions of the regulation include:

- fees for applications under the WRR Act
- management of used packaging materials
- details about who is required to plan and report about waste management.

3.3.3 *Nature Conservation Act 1992*

The *Nature Conservation Act 1992* (NC Act) provides the framework for the creation and management of protected areas including:

- national parks
- conservation parks
- resources reserves
- nature refuges
- coordinated conservation areas
- wilderness areas
- World Heritage management areas
- international agreement areas
- protection of native species.

In accordance with the NC Act, all native flora and fauna species are protected which imposes special rules to protect native wildlife outside national parks and other protected areas:

- All native mammals (except dingoes), reptiles, amphibians, birds, some butterflies and some native plants are protected wildlife. It is unlawful to take, kill, injure or trap protected wildlife unless authorised (s88).
- A permit or licence is required for the harvesting, taking, keeping or display of protected wildlife.
- A special licensing system for native birds applies.
- Licences are required to take, keep or sell a limited number of protected plants.

Some plant and animal species are declining in numbers and are at risk of extinction due to a range of threatening processes. These species may be listed as threatened species at state level under the NC Act.

3.3.3.1 Nature Conservation (Wildlife Management) Regulation 2006

The *Nature Conservation (Wildlife Management) Regulation 2006* (NC Regulation) details provisions of the NC Act that are applicable for regulating activities in protected areas or impacting on protected species. The

NC Regulation details the permit and licensing system for the taking or keeping of native wildlife.

The NC Act defines the following:

- Take – includes:

  In relation to a plant:

  i. Gather, pluck, cut, pull up, destroy, dig up, fell, remove or injure the plant or any part of the plant; or

  ii. Attempt to do an act mentioned in sub-paragraph (i) above.

- Keep – in relation to a cultural or natural resource or wildlife, includes have in possession, or under control, in any place (whether for the use or benefit of the person in relation to whom the term is used or another person), even though another person has the actual possession or custody.

3.3.4 *Vegetation Management Act 1999*

The *Vegetation Management Act 1999* (VM Act) regulates the lawful clearing of vegetation in Queensland by allowing certain low risk clearing activities and routine maintenance activities to proceed without a development approval, while permitting all other clearing activities to proceed through the application of a development approval.

In accordance with the VM Act there are four methods for allowing clearing activities to proceed if the clearing activity is not defined as prohibited. These methods include:

- activities considered ‘exempt clearing work’
- activities managed under an accepted development clearing code
- activities managed under an ‘area management plan’
- activities managed under a development approval.

The management of vegetation regulated under the VM Act should be read in conjunction with the *Planning Act 2016*.

3.3.5 *State Development and Public Works Organisation Act 1971*

The *State Development and Public Works Organisation Act 1971* (SDPWO Act) facilitates timely, coordinated and environmentally responsible infrastructure planning and development to support Queensland's economic and social progress. The SDPWO Act also provides state planning and organisational legislation that aids in the delivery of ecologically sustainable development.

3.4 Local legislative requirements

Interference with vegetation i.e. pruning, damage or clearing may be regulated by a local government under its respective planning scheme and/or local law. Where requirements of vegetation management are not stipulated within a local government planning scheme and/or local law, requirements of vegetation management must continue to be managed in accordance with State legislation.

3.5 Strategy, policies and guidelines

3.5.1 ANZECC Guidelines for Fresh and Marine Water Quality

The Australian and New Zealand Environment and Conservation Council (ANZECC) Guidelines for Fresh and Marine Water Quality provide guidance on the management of water quality for natural and semi-natural water resources in Australia and New Zealand.

The water quality management framework is at the core of the guidelines and provides users with a systematic approach to the management and assessment of water quality. The framework connects all the information needed to manage water quality for natural and semi-natural water resources. Key elements embedded in the framework are:

- community values
- conceptual models
- guideline values
- monitoring
- stakeholder involvement
- weight of evidence
- location.

3.5.2 National Waste Policy: Less waste, more resources

The National Waste Policy (EPHC, 2009) supports annual reporting of waste emissions to land, air and water through the NPI. Facilities that emit or consume greater than threshold amounts of 93 nominated substances are required to report their emissions to the NPI database to provide stakeholders and government agencies with information on the type and quantity of substances emitted to land, water and air. It is unlikely that the project would trigger thresholds for NPI reporting.

4. Roles and responsibilities

4.1 Overview

Preliminary roles and responsibilities for rehabilitation activities for the project are presented below in Table 2. In accordance with the guideline:

- position descriptions will contain responsibilities and accountabilities for environmental compliance and management
- detail authorities for relevant roles for environmental compliance and management
- performance against environmental compliance and management requirements will be part of the annual performance review and linked to remuneration and promotion of managers.

4.2 Roles and responsibilities

4.2.1 Nominated roles

- Alliance – All participants within the Alliance, namely CPB, Georgiou, GHD and Sunwater (personnel within the Alliance)
- Alliance Quality Manager – The manager within the Alliance responsible for project quality
- Construction Site Representative – CPB or Georgiou construction representatives
- Design Site Representative – GHD or other design subconsultants
- Environmental Site Representative – Alliance environmental representative
- Sunwater – Sunwater (personnel in the owner's team), external to the Alliance.

Table 2: Roles and Responsibilities

Role	Responsibility
Alliance leadership team	• Ensure compliance with all legal requirements including requirements of environmental and planning approvals. • Ensure that requirements of this plan are incorporated into engineering and procurement processes, and that these processes do not conflict with environmental performance requirements. • Ensure that adequate resources are available to meet all compliance requirements and implement the requirements of this plan. • Demonstrate a visible and proactive commitment to environmental issues. • Ensure systems are developed to implement this plan, maintain compliance and demonstrate leading practice in rehabilitation. • Monitor close-out of corrective actions. • Review outcomes of incident investigations. • Facilitate rehabilitation planning review.
Alliance contract management and procurement team	• Ensure that procurement and contracting strategies reflect environmental performance requirements. • Incorporate environmental performance requirements into contracts. • Ensure that contractors have necessary experience and hold relevant approvals in relation

	to remediation and rehabilitation. • Review environmental performance credentials of potential contractors. • Demonstrate a visible and proactive commitment to HSS issues.
Alliance environment team	• Provide advice to management, procurement and design teams in relation to environmental requirements. • Conduct regular audits and checks of environmental performance. • Maintain and further develop this plan. • Manage remediation and rehabilitation in accordance with the requirements of this plan. • Communicate to relevant site personnel legal and other requirements relevant to remediation and rehabilitation through ongoing toolbox talks. • Manage and supervise remediation and rehabilitation contractors to ensure all legal requirements are met. • Review and update this plan in response to significant changes in relevant legal, environment, community or other internal and external requirements. • Monitor and report on compliance against all project approvals and commitments. • Track changes in legislation, policy and other obligations and ensure these are incorporated into environmental compliance and management requirements and communicated to relevant managers and staff. • Conduct incident investigations, report to senior management on environmental performance including compliance, non-compliance, incidents and near misses with potential or actual environmental harm. • Raise corrective actions for any non-compliance with this plan, approval conditions or in response to results of incident investigations. • Facilitate the monitoring and implementation of measures outlined in this plan.
Alliance construction managers and supervisors	• Implement and comply with all relevant requirements of this plan. • Integrate environmental management requirements into work procedures and practices. • Provide initial responses to emergencies involving potential environmental impacts. • Participate in incident investigations. • Provide all documentation to Sunwater as requested and required by legislation. • Inform Sunwater of any non-compliance with project approvals or legislation as they become aware.

5. Post-construction land use and rehabilitation

The overall goal of rehabilitation is to reinstate land to the pre-disturbance land use unless otherwise agreed to by Sunwater, the landholder and the administering authority.

The final rehabilitation goals will be determined according to the following hierarchy, in order of preference:

- avoid disturbance that will require rehabilitation
- reinstate a “natural” ecosystem as similar as possible to the original ecosystem
- develop an alternative outcome with a higher economic value than the previous land use
- reinstate previous land use e.g. grazing or cropping
- develop a lower value land use (if this is acceptable to relevant stakeholders).

Remediation and rehabilitation will commence as soon as an area is no longer needed for the construction of the project.

5.1 Rehabilitation objectives

To ensure that the project fulfils its environmental, economic and social responsibilities, the following objectives apply to rehabilitation:

- Consultation and engagement with relevant stakeholders and landholders to ensure rehabilitation objectives consider engagement outcomes.
- The sites will be safe to humans and wildlife.
- Rehabilitation will aim to create stable landforms with similar land use capability and or suitability that existed prior to the disturbance unless an alternative end land use is pre-determined and or agreed.
- Disturbed land will be rehabilitated so that it is non-polluting and self-sustaining or to a condition where maintenance requirements are limited.
- Vegetation cover will be established to reduce rates of erosion and sediment loss to levels similar to the surrounding undisturbed landscape.
- The objectives of the individual landholder agreements for temporary areas will be met (refer to property-specific land access agreements).

Rehabilitation will also aim, where practical, to:

- address potential environmental impacts
- achieve the highest practicable level in the rehabilitation hierarchy
- identify post land uses that are acceptable to the community, local government and any other relevant stakeholders.

In order to achieve the abovementioned objectives, short-, medium- and long-term objectives are required. The following sections details the short-, medium- and long-term remediation and rehabilitation objectives for the project.

5.1.1 Short-term objectives

Rehabilitation objectives in the short term are to:

- progressively reshape and stabilise disturbed areas
- provide short-term erosion control measures

- manage soil to ensure suitability and beneficial reuse during remediation and rehabilitation
- ameliorate wastes and soils as necessary to address physical and chemical constraints to revegetation and erosion stability.

5.1.2 Medium-term objectives

Rehabilitation objectives in the medium term are to:

- establish species from surrounding native vegetation communities to provide groundcover and structural stability
- demonstrate rehabilitation succession in comparison with surrounding landscape sites
- reduce reliance on structural drainage and erosion control methods through landform design and construction that lends itself to the surrounding fluvial and landscape processes.

5.1.3 Long-term objectives

Rehabilitation objectives in the long term are to:

- monitor rehabilitation areas to ensure succession of planted native vegetation with functionality toward surrounding native vegetation communities
- apply adaptive management measures if natural succession is not occurring
- demonstrate rehabilitation performance and success.

5.2 Rehabilitation types

To achieve the short-, medium- and long-term remediation and rehabilitation objectives for the project, both temporary and permanent rehabilitation will be required.

5.2.1 Temporary reinstatement

The objective of temporary reinstatement is to provide temporary stabilisation and protection to exposed areas or temporary stockpiles. Remediation and rehabilitation of temporarily disturbed areas must be undertaken no later than one month after the area is no longer required. Stockpiles that will remain bare for more than one month will be stabilised with temporary grass cover such as a sterile seed mix or a physical cover. Note, rehabilitation of high-risk areas such as waterway crossings and areas with high erosion risk must be undertaken immediately after the area is no longer required for construction use.

5.2.2 Permanent rehabilitation

Permanent rehabilitation will occur after construction to areas impacted by the project and in accordance with requirements of project approvals and this plan. Rehabilitation will occur once areas are no longer required as part of the project. Permanent rehabilitation will involve the reinstatement of areas used to support construction.

5.2.2.1 Progressive rehabilitation

Progressive rehabilitation will be completed during construction and involves the staged restoration of disturbed areas. Progressive rehabilitation will commence as soon as possible when areas become available within the project disturbance area. The main features of the progressive rehabilitation process are:

- construction of stable areas that incorporate appropriate water management structures e.g. drains, contour banks, etc.
- selective soil testing of sub and topsoils
- use of suitable topsoil for spreading over available areas
- ripping of soils to water promote infiltration and minimise runoff

- seeding with an appropriate seed mix (grass, shrub and tree species) before commencement of the wet season, where practical, to maximise the benefits of subsequent rainfall
- application of appropriate fertiliser or other soil ameliorants for plant establishment, if required
- watering where needed and efficient.

6. Rehabilitation strategy

For the purposes of this plan, the project has been divided into four discrete rehabilitation components/zones. These include:

1. temporary work/laydown areas (including stockpile sites, access tracks and waterway crossings)
2. concrete batching plants and concrete delivery systems
3. TPAV and offices
4. quarry investigation areas.

6.1 Site-specific rehabilitation plans

Before commencing rehabilitation in line with the requirements of this document, site-specific plans will be developed. The plans will detail all the required and agreed rehabilitation measures accompanied by a scaled drawing specific to the site to be rehabilitated. As an example, these may be generic for multiple geotechnical investigation sites or laydowns on a property but will be specific for the following locations:

- TPAV
- batch plant
- areas to remain for a construction or operational future use i.e. hardstand or laydown.

6.2 Rehabilitation components

All components suitable for reuse at the existing operations will be reused. Otherwise, recyclable materials will be recovered and non-recyclable components will be disposed of at appropriately licensed facilities.

Redundant below-ground services will be removed as required for recontouring or relandscaping works or if considered likely to cause future pollution/contamination or impact to future land use/values.

The below sections provide a summary of the infrastructure components that will require rehabilitation.

6.2.1 Temporary work/laydown areas

Temporary infrastructure will be closed, decommissioned and rehabilitated following completion of construction. Temporary use areas include:

- laydown/stockpile areas
- general construction areas
- temporary access tracks and waterway crossings.

The following steps will be undertaken during the rehabilitation of temporary work and laydown areas:

- selective soil testing
- smooth over surfaces to minimise ponding from depressions from machinery
- reinstate contours and overland flow paths
- de-compacted and sub-soils ripped
- test and treat topsoil stored for greater than six months with additives based on agronomy advice
- where required, undertake temporary ground stabilisation options as follows:
  - placement of mulch (less than 100 mm thick) over disturbed areas +/- suitable seed mix
  - use of secured geofabric or jute matting +/- suitable seed mix
  - hydromulch with a suitable seed mix

- soil binder.

The use of the above-ground stabilising methods will need to be cognisant of future use of the land by Sunwater Operations. The seed mix will be selected based on pre-existing condition of the area, proximity to native vegetation and any specific owner's requirements as directed.

6.2.2 Concrete batching plants

The following steps will be completed when rehabilitating concrete batching plants onsite:

- remove all buildings, services and structures
- trenches, artificial swale drains, ponds, basins and other areas will be backfilled
- subsoil will not be contaminated with general rubbish or any foreign material
- a suitable and clean backfill material will be imported where subsoils cannot be reused. Excess subsoil material will be disposed of appropriately or stockpiled for use in future rehabilitation or respread elsewhere in consultation with landowners, avoiding mixing with topsoil
- re-establishing surface drainage lines, and natural depression, reinstating to a land surface that is consistent with surrounding land natural features
- de-compacted and sub-soils ripped
- treat topsoil as determined from testing with ameliorants
- where required, undertake temporary ground stabilisation options as follows:
  - placement of mulch (less than 100mm thick) over disturbed areas
  - use of secured geofabric or jute matting
  - hydromulch (refer stockpile requirements above)
  - soil binder.

Fuel and chemical storage will be managed in accordance with the hazardous substance sub-plan of the CEMP. Areas of potential contamination from activities will be assessed, managed, and remediated in accordance with legislation and owner requirements. Areas of existing contamination will be avoided where practical or managed in accordance with statutory and owner requirements.

6.2.3 TPAV and offices

TPAVs and offices required to be rehabilitated no longer than twelve months from the final required use. The following will occur prior to final rehabilitation:

- remove all buildings, services and structures
- fuel storage areas will be assessed for contamination and managed according to statutory and owner requirements and ultimately rehabilitated in line with the rehabilitation principles
- trenches, artificial swale drains, ponds, basins and other areas will be backfilled (if not requested by the landholder to remain post-construction)
- subsoil will not be contaminated with general rubbish or any foreign material
- a suitable and clean backfill material will be imported where subsoils cannot be reused
- excess subsoil material will be disposed of appropriately or stockpiled for use in future rehabilitation or respread elsewhere in consultation with landowners, avoiding mixing with topsoil
- re-establishing surface drainage lines, and natural depression, reinstating to a land surface that is consistent with surrounding land natural features
- minimising erosion and sediment runoff, ensuring that water flows in cohesion with the surrounding landscape and contour features
- subsoil surface must be ripped (up to 300 mm) before re-spreading topsoil. Ripping assists with binding soil layers, helps with infiltration, reduces the volume and velocity of runoff and helps with seed germination

- ripping will be excluded on tree protection zones and under drip lines, minimising impacts on roots systems
- in line with soil testing results, ameliorants will be added to enhance revelation opportunity
- topsoil will be respread over ripped subsoil in even layers, at a thickness of 50 to 100 mm
- topsoil layer must be left rough rather than smooth and compacted, minimising erosion and increasing infiltration
- topsoil will be tested and ameliorants added in line with topsoil testing to enhance revegetation.

6.2.4 Quarry investigation areas

Rehabilitation will occur in accordance with any landholder access agreement conditions. General considerations for the rehabilitation of all quarry investigation areas will include:

- surfaces are stable and free from loose rock faces
- suitable native species of vegetation for the location are established and sustained for earthen surfaces
- potential for erosion is minimised
- the quality of water, including seepage, released from the site does not cause adverse environmental harm
- potential for environmental nuisance cause by dust is minimised
- the water quality of any residual water body does not have potential to cause environmental harm
- the final landform is stable and protects public safety
- remove all buildings, services and structures
- any excavations or test holes will be backfilled
- where excavations cannot be backfilled, they will be contoured to allow free drainage
- subsoil will not be contaminated with general rubbish or any foreign material. Topsoil should not be used for backfilling
- excess subsoil material will be disposed of appropriately or stockpiled for use in future rehabilitation or respread elsewhere in consultation with landowners, avoiding mixing with topsoil
- re-establishing surface drainage lines, and natural depression, reinstating to a land surface that is consistent with surrounding land natural features
- minimising erosion and sediment runoff, ensuring that water flows in cohesion with the surrounding landscape and contour features
- minimising the potential for subsidence or erosion gullies to occur
- where backfill material does not completely reinstate the area, the backfill will be placed and contoured so that stable outfalls at lowest points should allow the water to drain away in the area with the natural contours or the surrounding landscape.

7. Soil management

A range of soil types occurs within the project footprint and due to the varied properties of soil types, soils will need to be managed by their soil management group to promote efficient and successful rehabilitation. Before rehabilitation commences, topsoil and subsoil testing as prescribed by a suitably qualified person has to be undertaken to provide the following information:

- subsoils
  - mechanical treatments required such as ripping
  - ameliorants required i.e. gypsum and lime for incorporation including technique for application
- topsoils
  - mechanical treatments required such as ripping
  - ameliorants required i.e. gypsum and lime for incorporation including technique for application.

Topsoil contains most of the nutrients and water required by plants and supports seed growth and germination. The chemical and physical properties of topsoil can be easily altered by handling and storage methods. Site clearance and construction will involve stripping topsoil and associated vegetation to create areas for the new infrastructure. This can result in the loss of topsoil quantity and quality through incorrect stripping, prolonged soil exposure, erosion, nutrient leaching and loss of fertility. Before commencing soil stripping it is necessary to plan the source of topsoil for rehabilitation to maximise direct re-spreading and to minimise the length of time that soil is stockpiled.

Where rehabilitation work is proposed, a shortage of topsoil is inevitable in some areas. In such areas, additional topsoil may need to be sourced from suppliers or alternative management measures may be required to overcome the potential shortfalls.

Appropriate topsoil management during construction and rehabilitation is critical to the successful rehabilitation of disturbed areas. Topsoil management during construction, operation and rehabilitation will include activities such as vegetation clearing, topsoil stripping, subsoil removal, stockpiling, reprofiling, ripping and de-compacting, and soil amelioration.

7.1 Stockpiling

It is vital that topsoil is stripped and stored appropriately, irrespective of the type of disturbance. Care must be exercised when stripping topsoils to minimise mixing soil types and soil layers. In cases where the subsoil must be disturbed, it is essential that subsoil and topsoil be stockpiled separately, with a separation distance to ensure they are not mixed during construction or rehabilitation works. Designated subsoil and topsoil stockpile locations will be determined prior to construction work.

The objectives of stockpiling are to:

- minimise damage and maintain fertility of stockpiled material
- ensure soil is stockpiled in a manner that will preserve its biological and chemical properties
- ensure soils are used for rehabilitation purposes
- ensure stockpiles have minimal impact on surrounding environmental values.

The following actions will be implemented when creating stockpiles:

- gaps will be left at appropriate intervals to allow for drainage and permit the movement of vehicles and fauna
- topsoil stockpiled for an extended period (longer than three months) should be revegetated as soon as possible by direct seeding with grasses to maintain biological activity and prevent weeds from growing and to prevent soil loss through erosion
- where both topsoil and subsoil are stripped and stockpiled, topsoil stockpiles will be clearly signposted for

easy identification

- weeds on the stockpiles will be monitored and controlled to prevent establishment and spread
- soil will be stockpiled close to where it is stripped in a manner that does not block diversion or natural drainage flow paths
- stockpiles will be located where they will not be disturbed by other activities
- erosion and sediment control measures will be implemented.

7.1.1 Unsuitable/surplus materials

Table 3 below describes the proposed approach to unsuitable and surplus earthen materials.

Table 3: Approach to unsuitable and surplus earthen materials.

Material	Future use	Considerations
Waste rock from trial blasts for quarry investigations	• Stockpile for future use onsite • Lawful disposal off-site • Reuse off-site in accordance with project approvals • Reuse in rehabilitation/landscaping	• Contaminated land investigations • Project approval conditions • Legislative requirements • Sunwater Operations consultation and/or landholder requirements
General surplus spoil	• Stockpile for future use onsite • Lawful disposal offsite • Reuse off-site in accordance with project approvals • Reprofile stockpile, stabilise and remain in situ. • Reuse in rehabilitation/landscaping	• Contaminated land investigations • Project approval conditions • Legislative requirements • Sunwater Operations consultation and/or landholder requirements • Flood impacts • Soil testing for suitability of prescribed future use
Access Track / Hardstand Materials	• Stockpile for future use onsite • Lawful disposal off-site • Reuse off-site in accordance with project approvals • Re-se in rehabilitation/landscaping	• Contaminated land investigations • Project approval conditions • Legislative requirements • Sunwater Operations consultation and/or landholder requirements
Clean Concrete	• Crush to suitable size for re-use / clean fill • Stockpile for future use onsite • Lawful disposal offsite • Re-use offsite in accordance with project approvals • Re-use in Rehabilitation / Landscaping	• Project approval conditions • Legislative requirements • Sunwater Operations consultation and/or landholder requirements

7.1.2 Soil amelioration

Soil amelioration will be determined based on soil test results across the project footprint. Soil amelioration is more likely to be required where grazing and cropping is the final desired land use, as the addition of fertiliser to soils required for native vegetation may not be beneficial to native species and could instead create conditions suitable for weed growth. Soil amelioration techniques that may be used include:

- addition of organic or inorganic fertilisers
- addition of gypsum or lime
- incorporation of mulch, compost or other organic matter.

7.2 Weed treatments

As part of rehabilitation preparations, weed treatments will be undertaken to eradicate weeds in rehabilitation zones through a combination of techniques, dependent on areas. This may include:

- hand chipping of emergent weeds by a planting/rehabilitation team
- spot spraying with a shield
- wanding weeds in native areas to limit pesticide use
- spraying areas with pre-emergent herbicide if recommended for rehabilitation in areas of high weed infestation
- spraying of agricultural lands for pasture weeds.

Only non-residual herbicides will be considered for use and each of the rehabilitation zones will be assessed for suitability for herbicide application. Herbicides and treatment techniques, contractors and permits will be confirmed by the environmental site representative.

7.2.1 Herbicide application

Specialist herbicides will be used for herbaceous weed control and on cut stumps of woody weeds, which are to be approved by the environmental site representative. Methods of application of herbicides will avoid runoff and waterbody contamination. Use of herbicides will be carried out in accordance with the manufacturer's direction.

8. Revegetation

Progressive rehabilitation of disturbed areas will be undertaken as soon as possible after the completion of construction activities. Vegetation rehabilitation will use grasses, herbs, and woody plants. Any species selection and placement will consider bushfire risk, cattle consumption safety, stakeholder engagement outcomes and landholder requirements.

Revegetation methods for all types of disturbed land normally consist of the following practices:

- respreading stockpiled or freshly stripped topsoil
- contour ripping
- application of appropriate fertiliser or other soil conditioners for plant establishment after soil chemical analysis, if required
- depending on rehabilitation method, either natural regeneration, seeding with an appropriate seed mix or planting of native species endemic to the area.

8.1 Planting of trees and shrubs

Preparation and planning for revegetation will include confirming details of the species of trees, shrubs and groundcovers to be used and the planting matrix or densities to meet the expectations for rehabilitation.

8.1.1 Supply of plants

A species list and plant numbers to be propagated will be shared with suitable local nurseries. Nurseries will be encouraged to propagate tubestock/virocells from seed of local provenance to improve likelihood of success.

8.1.2 Planting

Requirements for tubestock planting are:

- species to be selected for planting will be sourced from local provenance seed, where available
- tubestock will be planted in the early wet season (December – February)
- spacing will be determined according to the species and design specification, but will typically be 4-6 m apart for most tree species.
- tubestock will be watered immediately after planting
- mulch will be placed around tubestock but should not touch the stems
- koala food trees must be planted in koala connectivity rehabilitation and landscape areas (batch plant area)
- maintenance (including watering) and performance monitoring
- weed management
- fencing or other exclusion methods may be required following planting to prevent grazing or pest damage.

8.2 Seeding

8.2.1 Seed mixes and fertiliser

8.2.1.1 Sterile mix

A sterile mix is suitable for establishing an interim vegetative cover in native areas for erosion control and weed competition. It is compatible with native revegetation techniques and may be supplemented with native seed.

It comprises:

- sterile ryegrass – 20 kg/ha (winter)
- sterile ryecorn – 20 kg/ha (winter)
- sterile Japanese millet – 40 kg/ha (summer)
- organic fertiliser (Dynamic Lifter) – 100 kg/ha

8.2.1.2 Long-term site seed mix

The following seed mix has been requested by the owner for use on the Paradise Dam site associated with revegetation of the early works e.g. geotechnical trenches.

- Japanese millet - 40kg/ha (Summer)
- annual ryegrass – 40kg/ha (Winter)
- Brachiaria signal grass – 10kg/ha
- Katambora Rhodes grass – 10kg/ha
- organic fertiliser (Dynamic Lifter) – 100 kg/ha

8.2.1.3 Agriculture seed mix(es)

Agricultural seed mixes and fertiliser are developed in consultation with the relevant landowners. These may be applied with a drill seeder or hydomulcher.

8.2.1.4 Native seed mix

Native seed mixes will be used as relevant and available and will be reflective of the appropriate regional ecosystems.

8.3 Natural regeneration

In select areas, trees and shrubs will be allowed to regenerate naturally. Natural regeneration will be used to rehabilitate areas containing flora species of conservation significance if the soil is not removed. There are slight differences in the techniques for natural revegetation of certain species, based on the species natural regeneration processes in response to fire and other natural disturbances. Specific rehabilitation techniques will be developed by a suitably qualified person for areas that are selected for natural regeneration prior to rehabilitation.

9. Rehabilitation success criteria

This applies to all areas referred to in this document:

- Rehabilitation has been completed in accordance with the site-specific developed plan and approvals.
- Photo monitoring shows the land features blend in with the surrounding area.
- No rills or erosion is identified; landform is stable.
- No areas of ponding.
- All significantly disturbed land is reinstated.
- Grasses/vegetative ground covers will be deemed established when at least eight square metres of live rooted growth appears in every 10 square metres of the area grassed.
- Plantings established and < 30% plant mortality.
- Ground covers such as mulch blankets, fabric/jute, stone and timber remain intact/in place.
- Weeds are not considered ground cover.
- No contamination or waste is evident.

10. Monitoring and maintenance

The following monitoring and maintenance regime will be implemented during rehabilitation and after rehabilitation until the land has met the relevant completion criteria, Section 12.

Maintenance means care of areas by accepted horticultural practices and the rectification of any defects. This includes, but will not be limited to:

- mowing/slashing
- watering
- fertilising
- weeding
- pest and disease control
- staking and tying
- replanting, including reseeding grass areas.
- pruning.

10.1 Monitoring

The design of the rehabilitation monitoring program, including the location and extent of monitoring sites, will be determined by a suitably qualified person to ensure that sufficient data are collected to quantify likely impacts resulting from the project.

10.2 Rehabilitation maintenance

The Alliance will fully maintain all landscape construction items and plant materials from the time of planting and through the Defects Liability Period. The Alliance will present the site at all times during the maintenance period in a clean and tidy condition to the satisfaction of the environment site representative.

All plants to be in a healthy, vigorous growing condition upon completion of maintenance period.

It is expected that the maintenance of native rehabilitation areas will be more involved than for agricultural lands and areas treated with a low invasive seed mix. Follow-up maintenance e.g. replacement of tubestock losses, re-seeding, weed control, removal of tree guards, watering, etc. will be the equivalent of 30-50 per cent of the initial rehabilitation effort.

Rehabilitation maintenance must ensure survival of rehabilitated areas including ensuring any ground treatments, ameliorants and watering are implemented to ensure long-term survivability of any revegetated areas. This may include replacing previously revegetated areas.

10.2.1 Erosion and sediment control

Erosion and sediment loss can have an adverse effect on soil productivity and its associated values. The following could result in failure of rehabilitation and may require further rehabilitation works to stabilise eroded areas:

- undermining of remaining structures (such as fences)
- stream bank erosion.
- downstream sedimentation
- decline in fertility through loss of soil structure

- increased dust generation and poor rehabilitation outcomes.

Erosion levels are expected to be more significant in the coarser textured soils, where there is little structure and organic matter to assist in binding the soil. Deep clay soils (groups C and D) have a low to moderate erosion rating when undisturbed. However, as the subsoils can be sodic to strongly sodic, these soils are prone to erosion due to clay dispersion where soil is exposed through vegetation removal. Such soils can be particularly prone to gully and tunnel erosion and will be identified during soil testing.

Where required, remedial works will be completed post rehabilitation. Erosion and sediment control will be guided by site specific erosion and sediment control plans. Erosion and sediment control devices will be constructed and maintained in accordance with IECA Best Practice Erosion and Sediment Control Guidelines 2008.

10.2.2 Liability for replacement of plants

All plant materials which die during the maintenance period due to effect of weather, lack of water, disease or any cause within the control of the Alliance, will be replaced at its expense.

Damage to plants due to vandalism or unusual environmental conditions during the maintenance period will be assessed and the environment site representative notified immediately, who will decide on what action will be taken.

10.2.3 Pasture maintenance

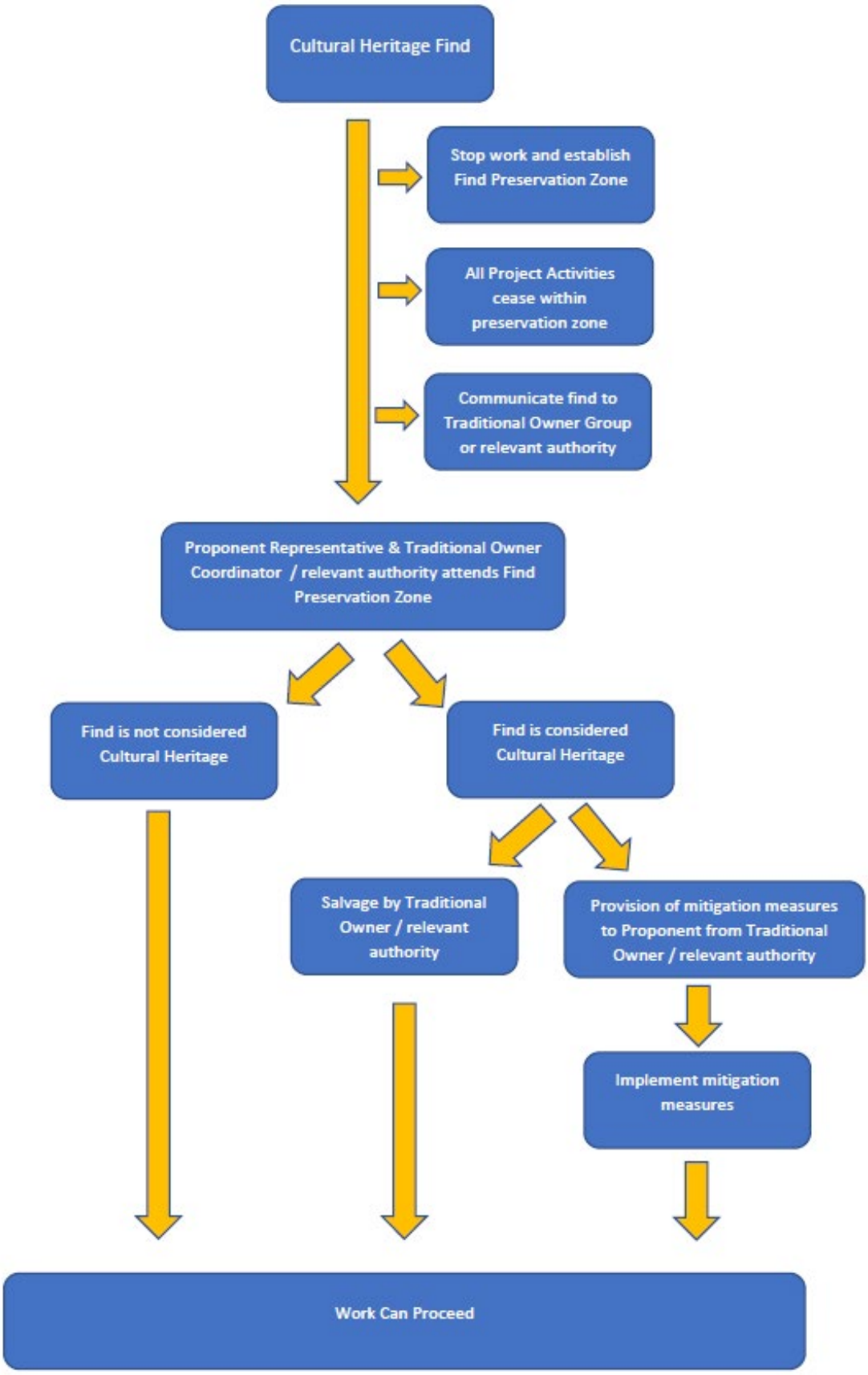
Agricultural lands that have been restored to pasture will be handed back to the landowner once they have reached a satisfactory standard and are no longer required for any further project-related activities. If there is a delay in handover and the pasture areas require maintenance, such as slashing to reduce fire risk, an agricultural contractor will be engaged to carry out the necessary works. Similarly, areas treated with a low-invasive seed mix may also require slashing as part of ongoing maintenance prior to handover.

11. Rehabilitation completion criteria

The completion criteria will apply to all areas irrespective of the type of infrastructure that was located on the site. However, there may be certain infrastructure that will require specific criteria due to the nature of disturbance. The rehabilitation completion criteria will be developed and documented in the site-specific plans and consider :

- rehabilitation has been completed in accordance with the site-specific developed plans and approvals
- photo monitoring shows the land features blend in with the surrounding area
- no rills or erosion is identified; landform is stable
- no areas of ponding
- all significantly disturbed land is reinstated
- grasses/vegetative ground covers will be deemed established when at least eight square metres of live rooted growth appears in every 10 square metres of the area grassed
- plantings established and < 30 per cent plant mortality
- ground covers such as mulch blankets, fabric/jute, stone and timber remain intact/in place
- weeds are not considered ground cover
- no contamination or waste is evident.

Appendix F
Cultural Heritage Unexpected Finds Procedure


Cultural Heritage Find
Stop work and establish Find Preservation Zone
All Project Activities cease within preservation zone
Communicate find to Traditional Owner Group or relevant authority
Proponent Representative & Traditional Owner Coordinator / relevant authority attends Find Preservation Zone
Find is not considered Cultural Heritage
Find is considered Cultural Heritage
Salvage by Traditional Owner / relevant authority
Provision of mitigation measures to Proponent from Traditional Owner / relevant authority
Implement mitigation measures
Work Can Proceed