



Sunwater Limited

Rookwood Weir Annual Turtle Nest Protection Report 2025 – Year 1

October 2026

Document History and Status

Revision	Date	Prepared by	Reviewed by	Client Reviewer
Rev 0	04/02/2026	Amelia Elgar	Patrice Brown	Paddy Kehoe
Rev 1	23/02/2026	Amelia Elgar	Patrice Brown, Dr Natalie Clarke	Karen Reid
Rev 2	9/10/2026	Amelia Elgar	Dr Natalie Clarke	
Name of Project:		Sunwater Turtle Nest Protection Service		
Client Reference:		23SW00112/05		
Client:		Sunwater Limited		
Client Project Manager:		Paddy Kehoe		
Name of Document:		2025 Sunwater Annual Turtle Nest Protection Report – Year 1		
TUNUBA PTY LTD Project Manager:		Amelia Elgar		
Tunuba Pty Ltd Project No.:		T23062.5		



2A / 45 Derby Street
Rockhampton Q 4700
P 07 4994 3418
E info@tunuba.com.au
W tunuba.com.au

Website

www.Tunuba.com.au

Table of Contents

Document History and Status	i
Table of Contents	ii
1 Introduction	1
1.1 Aim and objectives	1
1.1.1 Conservation outcomes and success criteria	1
1.1.2 Purpose of this Report	5
2 Nesting Ecology	6
2.1 White-throated Snapping Turtle	6
2.2 Fitzroy River Turtle	6
3 Methodology	7
3.1 Timeline	7
3.2 Management Actions	9
3.2.1 Priority Nest Protection Areas	9
3.2.2 Habitat Protection	9
3.2.3 Broad-scale predator control	9
3.2.4 Nest Protection	9
3.2.5 Hatching Success	13
3.2.6 Mortality of threatened species (eggs)	14
3.3 Pre-offset Baseline and Success Criteria	14
3.3.1 Pre-offset Baseline	14
3.3.2 Success Criteria	15
3.4 Responsible Persons	17
3.4.1 Tunuba Nest Protection Team	18
3.4.2 Permits	18
4 Results	20
4.1 Timeline	20
4.2 Priority Nest Protection Areas	22
4.2.1 2025 PNPAs	22
4.2.2 Accessibility of PNPA's throughout the nesting season	31
4.3 Habitat Protection	34
4.3.1 Installation of Electric Fencing	34
4.3.2 Removing/Controlling Terrestrial and Aquatic Weeds	34
4.4 Nest Protection	37
4.4.1 2025 Nesting Activity	37
4.4.2 WTST and FRT Nests	44

4.4.3	Species Identification Approach	44
4.4.4	Spatial Patterns in Nesting Activity	51
4.4.5	Nest Predation and Disturbance	52
4.5	Hatching Success	61
4.5.1	2025 Hatching success outcomes	61
4.6	Limitations	66
5	Success Criteria	67
6	Discussion and Recommendations	73
6.1	Nesting Habitat Suitability and Nesting Activity	73
6.2	Nest Predation Outcomes and Contributing Factors	73
6.3	Hatchling Recruitment	73
6.4	Unexpected Adverse Events	74
6.5	Adaptive Management Recommendations	74
7	References	75
	Limitations	77
	APPENDIX A: Tunuba Team and Appointed Subconsultant's CVs	
	APPENDIX B: Freshwater Turtle Conservation Training Certificates	
	APPENDIX C: Research Permits and Animal Ethics Approval	
	APPENDIX D: 2025 Tunuba Reconnaissance Survey Report Brief	
	APPENDIX E: 2025 Pre-nesting Season Datasheets	
	APPENDIX F: 2025 Nesting Season Datasheets	
	APPENDIX G: 2025 Hatching Success Datasheets	

1 Introduction

1.1 Aim and objectives

1.1.1 Conservation outcomes and success criteria

The purpose of the 2025 ANP Plan was to implement the management actions to fulfil the approval conditions and offset obligations required for the inundation of turtle nests associated with Rookwood Weir, as required by EPBC Act Approval Conditions 4 and 5 and CG Condition Appendix 2, Schedule 1 (b) (DoEE 2017). The 2025 ANP Plan provided the framework for the implementation of nest protection management actions to achieve the conservation outcomes and performance criteria outlined in the WTST Nest Protection Plan (GHD 2022b) and the FRT Nest Protection Plan (GHD 2022c) (refer to **Table 1.1**).

Table 1.1: WTST and FRT Management Objectives and Performance Criteria for Rookwood Weir Project

Conservation Outcomes	Performance Criteria	
Maintenance of functional turtle nesting habitat	Nesting habitat suitability	Suitable nesting habitat present within, upstream and/or downstream of Rookwood Weir as defined by the presence of high, suitability, confirmed and/or functional nesting banks.
	Nesting activity	Confirmed turtle nesting occurring at one or more PNPA within, upstream and/or downstream of Rookwood Weir.
Reduction in nest predation	Predator control	Successful implementation (>95%) of planned predator control measures/annual reduction in predator abundance within target area ¹ .
	Predator activity	80% reduction in evidence of predator activity at Priority Nest Protection Areas ¹ .
	Nest predation rate	90% reduction in predation of turtle nests compared to pre-offset success at PNPAs.
Increased recruitment of hatchlings into the population	Hatchling recruitment	90% increase in recruitment of hatchlings into the population compared to pre-offset success.
¹ Not included within 23SW00112/005 works package and therefore is not part of the 2025 ANP Report.		

The management objectives and performance criteria as described in **Table 1.1** align with the management strategies of the Commonwealth and State Government recommended conservation actions for the WTST and the FRT (refer to **Table 1.2**). The Commonwealth and State Government management strategies for the WTST and FRT that were supported through the implementation of the 2025 ANP Plan are **highlighted in bold** in **Table 1.2**.

Table 1.2: Commonwealth and State Government Conservation Management Strategies

Relevant conservation advice and plans	Commonwealth and State Government management strategies
Approved National Recovery Plan for the White-throated Snapping Turtle (<i>Elseyia albagula</i>) (Commonwealth of Australia, 2020).	Strategy 1 (Substantially improve the recruitment of hatchlings and juveniles into the population): • Design a hatchery or nest protection program to release large numbers of hatchlings into the rivers; • Determine the survivorship of hatchlings from wild nests and captive incubated nests; • Evaluate the success of the hatchery program; • Search for and map nesting sites in each catchment; • Identify the extent and nature of threats to nests and hatchlings at the local and sub-catchment levels; • Develop an effective means to control predators of eggs over a catchment scale; • Determine the impact of introduced or translocated stocked fish on the turtle; and • Monitor trends in population structure and abundance.
	Strategy 2 – Decrease adult/subadult mortality and injury rates, and reduce barriers to movement along riverine habitats: • Determine rates and sources of mortality and injury; • Identify high risk (existing) water infrastructure and explore options to facilitate safe passage; • Design (new) water infrastructure to allow the movement of turtles upstream and downstream with minimal injury and mortality; • Monitor changes in turtle injury/mortality rates in response to management actions; and • Monitor the movement of the species near in-stream barriers.
	Strategy 3 – Improve stream flow and habitat quality throughout the species' distribution: • Identify habitat requirements and movement patterns; • Determine the impact of river regulation on the survivorship of hatchlings and juveniles; and • Identify and locate areas of optimal or suboptimal habitat.

Relevant conservation advice and plans	Commonwealth and State Government management strategies
	Strategy 4 – Increase public awareness and participation in conservation of the species and its habitat: • Develop and implement a broad strategy to raise awareness and educate the general public about conservation for the species; • Develop and implement a targeted strategy to promote the use of citizen science in relation to conservation for the species; and • Establish proactive ongoing roles for Traditional Owners in conservation and management actions for the species.
	Strategy 5 – Improve the collation and availability of data to inform recovery actions: • Collate all population information in a database and maintain long-term; and • Maintain a register of research, monitoring and management actions and resulting reports.
	Strategy 6 - Undertake all research and monitoring with Animal Ethics approval and relevant permits under the Qld Nature Conservation Act, 1992.

1.1.2 Purpose of this Report

The purpose of this 2025 Annual Nest Protection Report (2025 ANP Report) is to communicate the results from the implementation of the 2025 ANP Plan, undertaken by Tunuba, during the period of August 2025 to January 2026. All management actions and their activities were undertaken in accordance with the 2025 ANP Plan, which were developed to target key threatening processes of high nest predation and low population recruitment for both species, as outlined by EPBC Act Approval Conditions 4 and 5 and CoG Condition Appendix 2, Schedule 1 (b) (DoEE 2017), fulfilling the approval conditions and offset obligations required for the inundation of turtle nests associated with Rookwood Weir.

The 2025 ANP report included:

- Introduction – project background, legislative requirements and purpose of Nest Protection Management Plans;
- Management actions – location and description of Priority Nest Protection Areas and justification for selection, description of habitat protection and broad scale predator control measures implemented during the pre-nesting season;
- Nest monitoring and protection – description of nest protection monitoring conducted throughout the nesting season; details of all confirmed nests and protection measures implemented;
- Hatching success – hatching success results and recruitment into the population;
- Discussion – monitoring and evaluation of the Nest Protection Management Plan in accordance with the performance objectives and measure of success for each conservation outcomes. Relevant results of Broad-Scale Turtle Population Monitoring and Turtle Movement Study;
- Compliance with success criteria – assessment of results against success criteria and identification of any non-compliance triggering contingency program corrective actions; and
- Correction actions – recommendations for adaptive management.

2 Nesting Ecology

2.1 White-throated Snapping Turtle

Nesting of the WTST is primarily restricted to sand and loam alluvial deposits, however this can vary depending on site environmental conditions. Nests are generally laid on the front face and top of steep slopes, are an average of 5 metres (m) from the water's edge and 3 m above the water level (McDougall *et al* 2014; Hollier 2010, Hamann *et al* 2007). Nesting can however occur up to 60 m from the water's edge and over 8 m above the water level (Limpus *et al* 2011a). WTST lay the largest eggs (both width and length) for any species of freshwater turtle in Queensland. WTST average egg size is approximately 5.29 centimetres (cm) in length and 3.20 cm in width (Limpus *et al* 2011b, Legler (1985) and Hamann *et al* 2007). The WTST has an extended breeding season with peak nesting occurring from April to August and hatching generally occurring September to December after embryonic diapause over Winter (Limpus *et al* 2011b). Nesting aggregations occur with females often returning to the same nest areas each year. The lack of hatchling recruitment and juvenile turtles within the population suggests that there has been little recruitment into the population over a long period of time (< 2 %) (Hamann *et al* 2007).

2.2 Fitzroy River Turtle

Nesting is generally restricted to alluvial sand/loam banks, which are deposited during flood events. Banks are relatively steep, low density of ground/ understory vegetation and partial shade cover appear to be preferred (Limpus *et al* 2011a). Nesting generally occurs approximately 5 to 6 m from the water's edge (Hamann *et al* 2007; Limpus *et al* 2011a). Females can lay two or more egg clutches per year between August and December within hatching occurring during Summer (November to February) (Limpus *et al* 2011a). Their average egg size is approximately 3.2 cm in length and 2.4 cm in width (Limpus *et al* 2011a, Legler 1985 and Hamann *et al* 2007).

3 Methodology

3.1 Timeline

The timing of implementation of the management actions was central to the effectiveness of the 2025 ANP Plan. WTST and FRT have distinct nesting seasons, with different periods of pre-nesting, nesting and hatching activities. **Table 3.1** below shows the nesting season timeline for WTST and FRT as outlined in the 2025 ANP Plan, including the expected onset of nesting (pre-nesting), peak activity (nesting season), and the anticipated hatching period (hatching season). This information provided the foundation for scheduling monitoring visits, allocating resources, and determining when nest protection activities were most likely to be effective.

Table 3.1: 2025 Nesting Season Timeline for WTST and FRT

2025 Nesting Season Timeline		WTST	FRT
2025	Jan		
	Feb	Pre-nesting	
	Mar		
	Apr		
	May	Nesting	
	Jun		Pre-nesting
	Jul		
	Aug		
	Sept	Hatching	Nesting
	Oct		
	Nov		
	Dec		Hatching
2026	Jan		

Through the development of the Rookwood Weir Operations Species Management Plan (GHD 2022a), including the WTST Nest Protection Plan (GHD 2022b) and the FRT Nest Protection Plan (GHD 2022c), a framework of nest protection activities (herein referred to as management actions) were derived to ensure the required conservation outcomes in accordance with the Project's EPBC Approval Conditions 4 and 5 (DoEE 2017).

Table 3.2 summarises the proposed management actions associated with each phase of the nesting season. Aligning the management actions with the species-specific nesting timelines ensured that the program was delivered in a structured, strategic manner and supported consistent achievement of the ANP Plan's performance criteria.

Table 3.2: 2025 Proposed Timing of Management Actions for WTST and FRT (Tunuba 2025a)

Management Actions		WTST	FRT	Annual Meetings	Annual Reports	Monthly Reports	
2025	Jan			Nest Protection Planning Meeting 2025	Annual Nest Protection Plan		
	Feb	Priority Nest Protection Areas and Habitat Protection		Interface with SQP (Pre-start Meeting)		Continuous Reporting of Monthly Datasheets	
	Mar						
	Apr	Nest Protection					
	May						
	Jun		Priority Nest Protection Areas and Habitat Protection				
	Jul						
	Aug		Nest Protection				
	Sept	Hatching Success					
	Oct						
	Nov	Hatching Success					
	Dec						
	2026	Jan					
Feb					Annual Nest Protection Report		

3.2 Management Actions

This section describes the commitments made by the 2025 ANP Plan (Tunuba 2025a). Implementation of the plan is dependent on land access arrangements between Sunwater and the landholders.

3.2.1 Priority Nest Protection Areas

The PNPAs will be determined annually during the annual planning meeting held in January each year. PNPAs will be identified based on previously confirmed nesting sites, nesting habitat suitability, access requirements, landholder agreements and suitability/condition of the site for nesting. The PNPAs will be located within one or more of the following regions of the Project Area:

- Inundation Area;
- Upstream of the inundation area to the terrestrial offset area at Foleyvale Crossing, and/ or
- Downstream of the Weir to Hanrahan's Crossing.

3.2.1.1 Accessibility of PNPA's throughout the nesting season

As per Sunwater's Operations SMP and Nest Protection Management Plans, the specific location/s of the PNPAs are expected to change over the five years that the Nest Protection Plan is implemented. Initial PNPAs will be established following first filling of the impoundment as well as any flooding events that occur. These initial areas are expected to align with confirmed aggregated nesting areas identified during pre-clearance surveys (refer to GHD 2022b and GHD 2022c). Throughout the five years of the Nest Protection Plan, the condition, suitability, and use of these areas by turtles for nesting will be monitored and alternative PNPAs may be identified and established based on natural and/or Project-related fluctuations in habitat suitability and actual use by turtles for nesting. These factors will also influence the number and size of the PNPAs established annually.

3.2.2 Habitat Protection

The condition of nesting habitat suitability of the PNPAs will be restored annually (depending on weather, flood conditions and access), during pre-nesting season commencing for both turtle species (WTST - Feb/Mar and FRT - June/July) by undertaking the following specific management activities:

- Installation of electric fencing (e.g., a perimeter of fence, dependent on access and space) around a nest or aggregation of nests within PNPAs to protect against predators and exclude other forms of potential turtle nest disturbance such as cattle and/or vehicles; and
- Removing/controlling terrestrial and aquatic weeds using a hand pulling method, where practicably possible, from within the PNPAs to facilitate turtle access to the area for nesting.

Habitat protection events will be recorded as per the *Pre-nesting Season Datasheet* provided in the 2025 ANP Plan (Tunuba 2025).

3.2.3 Broad-scale predator control

Broad scale predator control is part of the Sunwater Rookwood Weir Feral Pest Management Scope (23SW00112/007) and is not included in the 2025 ANP Plan. Refer to the Sunwater Annual Feral Pest Management Plan (Tunuba 2025b) for details on broad-scale predator control for the Project.

3.2.4 Nest Protection

PNPAs will be monitored regularly (indicative frequency of three times per week (GHD 2022b and GHD 2022b)) during peak nesting season for WTST (April to August) and FRT (August to December) for the purposes of identifying and protecting individual nests. Nesting for both the WTST and FRT are triggered by rainfall and where possible, monitoring is to occur during/and or immediately following rainfall events (GHD 2022b; GHD 2022c). Sunwater currently has a weather station set up within the Weir impoundment (-23.53928, 150.01744). When a rainfall event has occurred Tunuba will check-in with Sunwater to confirm rainfall event amount, and if at least 10 – 20 millilitres (ml) of rainfall has occurred, the turtle nest team will mobilise to site (upon access approval by Sunwater) within 24 hours

– 48 hours, or as soon as practically possible and safe to do so, to check for nesting sites within the PNPAs.

Each PNPA will be examined for signs of nesting and predator activity (which includes the presence of turtle tracks, test hole diggings, nests and predated eggshells), using a single strip transect walking parallel to the water's edge, as per the standard methodology outlined in Limpus *et al* 2011a. The number of transects required within each PNPA will vary according to the size of the bank, appropriate nesting substrate for each turtle species and access. Transects will vary in length and width according to bank morphology and will cover all potentially suitable nesting habitat within the PNPA. The aim of these transects is to cover as much nesting habitat as possible within the PNPAs, as safely and as practically possible.

3.2.4.1 Installation of Nest Protection Mesh

If signs of nesting are present, and a nest is located within the PNPA, nest protection mesh (50 mm) will be installed over the nest (refer to **Photograph 3.1**), to minimise predation. Nest protection mesh will also be applied to any nests observed opportunistically within or downstream of the Weir where land access permits.



Photograph 3.1: Example - Nest protection mesh (50mm) fitted over nesting site, held down with four sand pegs in each corner. Photograph courtesy of GHD 2022b, GHD 2022c.

Nest protection mesh will be laid central over the nest and pegged at each corner with sand pegs (250 mm) on an angle directed away from the nest in order to avoid the egg clutch. Nests will be GPS recorded and flagged with a piece of bamboo installed into the sand one metre from the nest/mesh. Photographs will be taken of the nest in relevant location to where it is situated within the bank.

Results of each nesting survey undertaken, details of nests detected, and protection activities implemented will be documented as per the *Nesting Season Datasheet* provided in the 2025 ANP Plan (Tunuba 2025).

3.2.4.2 Identification of Turtle Eggs

During nest protection activities (installation of nest protection mesh) eggs will be identified largely through reference of size. When a nest has been identified, before applying the nest protection mesh, the first top layer of sand (approximately 20 cm) will be removed to expose the top egg within the nest clutch. To identify the species of egg, using callipers, the length and width of the egg will be carefully measured (ensuring no movement of the egg occurs) and recorded as per the Nesting Record datasheet provided in Tunuba 2025.

To determine the species of egg, **Figure 3.1** and **Table 3.3** will be checked to reference the egg size and determine the potential species of turtle. WTST nesting season does not overlap with the FRT nesting season and WTST are known to have a larger egg size than the FRT. However, FRT and Krefft's

River turtle (*Emydura macquarii krefftii*) both nest during Spring and the eggs of these species overlap in size and shape. Within the range of egg overlap, viewing of hatchlings is required to distinguish between the two species. Fragments of shell predated and/or hatched eggs cannot be distinguished between these two species. Nests confirmed as FRT will only be done so where whole egg measures can be confidently identified as this species due to their smaller size (refer to **Figure 3.1**). Where egg measurements overlapped in size with the Krefft's River turtle, these nests will be identified as potential FRT or Krefft's River turtle.

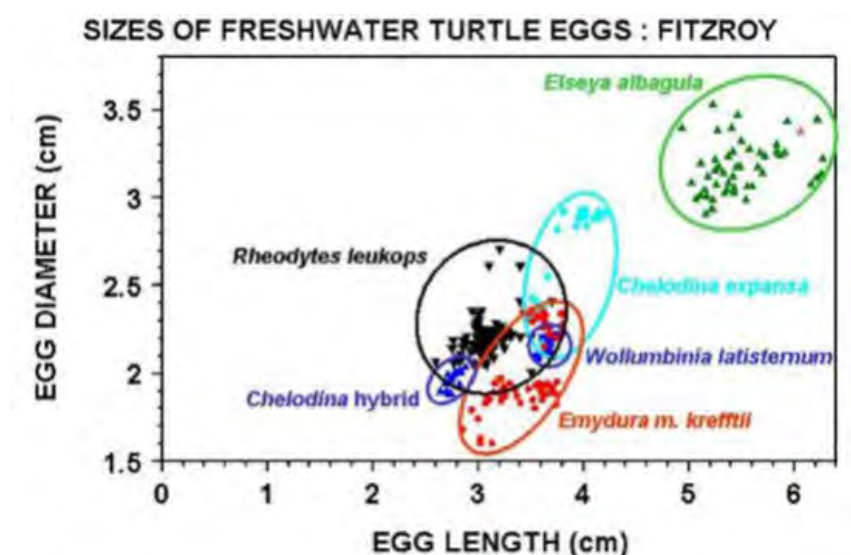


Figure 3.1: Sizes of Freshwater Turtle Eggs in the Fitzroy catchment (Limpus et al 2011b)

Table 3.3: Average and range measurements of WTST, FRT and Krefft's River turtle eggs for identification purposes

Species	Average		Range	
	Length	Width	length	width
WTST ¹	5.29 cm	3.20 cm	4.74 - 5.8 cm	2.92 - 3.94 cm
FRT ¹	3.2 cm	2.4 cm	2.6-3.7 cm	1.9-2.7 cm
Krefft's River turtle ¹	3.3 cm	2.1 cm	2.85 – 3.81 cm	1.60 – 2.36 cm
¹ References include Limpus <i>et al</i> 2011a, Legler 1985 and Hamann <i>et al</i> 2007.				

3.2.4.3 Installation of Communal Nest Cages

If a nest with eggs is identified in a location which is subject to inundation or a high likelihood of inundation, the nest will be relocated to a communal nest cage (refer to **Photograph 3.2**). Handling and relocation of eggs will occur in accordance with approval conditions of Research Permit (scientific) P-SPP-100896361 and Animal Ethics approval AEC CA-2025-07-1980 (refer to **Appendix A**). Note, these permits are held by Tunuba's sub-consultant CQG Consulting (CQG).

The communal nest cage will be located as close to the riverbank as possible and will ensure they are located in an area that is not at threat of further inundation from flooding. The communal cages are to be made from aluminium frames cut to size and include five panels of the following sizes:

- 1 x (2000 mm x 1000 mm panel);
- 2 x (2000 mm x 500 mm panel); and
- 2 x (1000 mm x 500 mm panel).

The communal cage will be installed on site within an appropriate area/substrate for WTST and FRT. The communal cage will be joined together with star pickets and zip ties and sunken into the substrate approximately 200 mm deep (refer to **Photograph 3.2**). The size of the cage will be determined based on the number of nests which require relocation with approximately 20 cm gap to be allowed between nests. The top panel will be act as a door to access into the cage and will be locked with a padlock at all times when field teams are not using. Signage will be installed on the cage and will include the following information:

- Cage number and date;
- Cage ownership and contact details for enquiries;
- Permit number; and
- Reason for deployment '*This cage is part of the Sunwater Rookwood Weir Turtle Nest Protection Program.*'



Photograph 3.2: Example - Nest protection cage that will be used as a communal nest protection for nest that need removal and relocation.

3.2.4.4 Egg relocation to communal cage

The following steps will be taken to relocate the eggs to a communal nest cage from the original identified nest (approved methodology under Research Permit (Scientific) P-SPP-100896361) and AEC approval CA-2025-07-1980:

1. Communal nest protection cage will be installed on site within the PNPA prior to any egg removal;
2. Once a communal nest protection cage is installed, careful excavation of turtle nest eggs is required. Prior to commencing excavation of eggs, ensure that all materials required to transporting the eggs are readily available and situated in a location (i.e. in front of nest and team member undertaking the nest excavation) that the eggs can easily be put into for relocation, i.e. plastic ice-cream containers/ yoghurt containers. Containers need to be placed directly in front of the team member so minimal movement is made when placing egg from nest into container. A small amount of sand can be laid in the bottom of the container to assist with holding the egg in place;
3. Removal of the eggs from the nest involves slowly and carefully excavating (by hand only) the sand out of the nest cavity until the top of the first egg is exposed (20 mm). Extreme caution is to be taken at all times to ensure eggs are not dislodged from position in nest to avoid embryo dislocation. All hand movement during excavation and extraction of eggs is to be done slowly, careful and with deliberate intent – i.e. the field team member is to know where the eggs are to be moved to before removal from the nest;
4. Once the egg is exposed enough and is able to be removed out of nest, the orientation of the egg is extremely important and is to be noted by the excavator, this can be achieved

- by placing a mark with a soft tipped pen on the top of the egg, lifting the egg up and placing it into the container the same way it was orientated in the nest;
5. Once all eggs are in the container, the container is then lifted and kept in the same orientation whilst it is transported to the communal nest cage. It is vitally important to keep the container orientated as to how it was when the eggs were placed in the container from the nest (i.e. moving the container around in different orientations as the eggs are transported to the communal cage may dislodge the embryo and destroy the egg). This may mean the team member has to move around the container to keep eggs in same orientation whilst transported; and
 6. When the communal nest cage is reached, the relocation nest is to be dug to the same depth and formation as nest was found, i.e. WTST nests angle back slightly to allow ramp for hatchlings to emerge (pers comms D Limpus). Flagging tape is to be placed at the bottom of the nest with nest ID and date. GPS location recorded. Eggs are to be buried back into relocation nest with the same orientation as they were found.

Results of each nesting survey undertaken, details of nests detected, and protection activities implemented will be documented as per Tunuba (2025) *Nesting Season Datasheet*.

3.2.5 Hatching Success

Hatching success of individual nests will be recorded throughout the hatching season for WTST (September to December) and FRT (November to February). Monitoring will include the excavation of the nests to the top of the first egg to check for evidence of hatching. Physical excavation of hatched nests will be conducted by a field team member based on the timing and abundance of nests laid during the nesting season with hatching success monitoring conducted within two weeks of the expected date of hatching of each nest. Results of each hatching success survey will be documented as per the Tunuba (2025) Hatching Success Datasheet.

During the hatching season for both WTST and FRT, Tunuba's Suitably Qualified Person (SQP) will supervise Tunuba field team members, in undertaking hatching success monitoring. This will involve the SQP being present on site (two-days (including travel) to audit two hatching success monitoring surveys per year (one survey for each species). The SQP will assess monitoring activities against the agreed methodology in the ANP Plan and Research Permit approval conditions for Research Permit (Scientific) P-SPP-100896361. The SQP will advise the frequencies of hatching success monitoring required and confirm when the fencing and cages can be removed when hatching is completed. A brief field summary e-mail will be issued by Tunuba to Sunwater following each SQP hatching success audit survey event.

3.2.5.1 Camera Monitoring

Monitoring nests may include the use of remote cameras (provided by Sunwater) to record emergence of hatchlings. If possible and liaising with the Sunwater Feral Pest Management Contractor to place one remote camera within each PNPA to capture hatchling emergence. Ideally, remote cameras will be attached to permanent feature (such as a tree) and positioned to focus on recording the target species emergence. The camera and solar panel will be secured using a strap. Cameras will be located so as to not impeded usual activities or functionality of the feature it is attached to.

Each camera is to have a GPS location recorded and a tag indicating:

- Camera number;
- Camera ownership;
- Contact details for enquiries; and
- Reason for deployment '*This camera is part of the Sunwater Rookwood Weir Turtle Nest Protection Program*'.

Following placement by the Sunwater Feral Pest Management Contractor, the location of each camera will be provided to Sunwater to pass onto landholders. Each camera will be serviced, checked for functionality and have data downloaded every four months, or when timing allows in conjunction with the Turtle Nest Protection activities within the PNPAs. When safe to do so the cameras will be removed prior to flooding events.

3.2.5.2 Hatched Nests

The number of eggs from which hatchlings have successfully emerged will be recorded and compared to the total number of eggs laid as per the Tunuba (2025) Hatching Success Datasheet.

3.2.5.3 Predated Eggs

Predated eggshell and evidence of predators (e.g. tracks and scats) will also be recorded and photographed as per the Tunuba (2025) Hatching Success Datasheet. Nests that have not hatched at the time of survey will be covered over and reassessed during subsequent monitoring.

At the end of the hatching success monitoring, predator protection cages and electric fencing (if permitted by the landholder to be installed) will be removed prior to wet season flow events.

3.2.6 Mortality of threatened species (eggs)

In the event that an egg is dislodged from its nest or destroyed/cracked/crushed from handling methods (herein referred to as an unexpected adverse event) the following communication procedures will take place:

1. Sunwater and the Tunuba Project Manager will be notified and provided information of the unexpected adverse event (i.e. incident details, location, date, time, GPS coordinates and photographs);
2. Tunuba will notify the Authority Holder on the permit (CQG) and the authority holder must report mortality of the species prescribed under the *Nature Conservation Act 1992* to QPWSresearchpermits@destsi.qld.gov.au within seven days and the Animal Ethics Committee within 72 hours (with a detailed report written within seven days);
3. CQG will submit notification to QPWS Research Permits and AEC, Sunwater will also be provided with copies of the submission documentation of the record; and
4. Tunuba will undertake an incident report process internally to review the events that took place which may have contributed to the mortality. The incident report will be provided to Sunwater for review also, and adaptive measures will be put in place to ensure the incident is not repeated.

3.3 Pre-offset Baseline and Success Criteria

3.3.1 Pre-offset Baseline

As required by EPBC Act Condition 3, pre-clearance surveys for turtle nesting activity were undertaken within, upstream and downstream of Rookwood Weir from 2019 to 2021 (GHD 2022b and GHD 2022c). The turtle nesting surveys extended from below Hanrahan Crossing, approximately 18 km downstream of Rookwood Weir, to above Foleyvale Crossing, approximately 65 km upstream of Rookwood Weir.

Throughout the duration of the seasonal turtle nesting surveys, 46 potential turtle nesting sites were assessed for turtle habitat suitability with 34 of the nesting sites found to have confirmed evidence of turtle nesting (refer to **Table 2**). Four additional sites were assessed as having 'high', two with 'medium', and six with 'low' suitability for turtle nesting (refer to **Table 2**).

Overall trends of nesting habitat suitability indicated a high level of habitat suitability for nesting across all sites demonstrated by the number of nests and eggs recorded during the survey period (GHD 2022b and GHD 2022c).

Total number of nests recorded each year included: 2019 – at least 27 nests with at least 69 eggs + fragments 2020 – at least 130 nests with at least 417 eggs + fragments 2021 – at least 247 nests with at least 917 eggs + fragments (GHD 2022b and GHD 2022c).

Predation rates were not calculated per nesting bank during the pre-offset surveys, however, predation rates were very high with 100% nest predation recorded in 2019 and 92% in 2020. In 2021, 21 intact nests (8.5 % of the 247 nests recorded in 2021) were identified within 24 hours of being laid and nest protection mesh applied). Only one nest was found to have naturally hatched in 2021 (99.6% predation rate) (GHD 2022b and GHD 2022c).

Over the course of the three years of preclearance survey, a total of 11 turtle nests were observed to have hatched without nest protection, leading to an overall nesting success rate off 2.7% (GHD 2022b and GHD 2022c). Due to the low numbers of nests found intact (not predated), hatching success was only calculated as a relative overall percentage and not disaggregated per species, nesting bank or survey methodology.

3.3.2 Success Criteria

The success of the 2025 ANP Plan was evaluated against the performance criteria for each conservation outcome (as per GHD 2022b and GHD 2022c). These results informed the suitability of the management actions and the requirement for adaptive management considering new information and developments in technology.

It is acknowledged that the size and location of the 2025 PNPAs differ to those monitored during the pre-offset baseline surveys. In addition, the number, frequency and timing of monitoring surveys conducted throughout 2025 differ to that completed during the pre-offset surveys. As a result, the success criteria from the two monitoring periods are not directly comparable. However, given pre-offset conditions indicated close to 100% predation with very low recruitment of hatchlings at all sites, the success criteria presented for nest predation rates and hatchling success for 2025 are indicative of offset success.

3.3.2.1 Suitable Nesting Habitat

Measures of success: Suitable nesting habitat present within, upstream and/or downstream of Rookwood Weir as defined by the presence of high suitability and confirmed and/or functional nesting banks.

Evaluation methodology: Based on the description of the PNPAs as recorded during/prior to the nesting season and results of the nest protection and hatching success monitoring, a nesting habitat suitability rating was assigned for each PNPA (refer to **Table 3.4**).

Table 3.4: Nesting Habitat Suitability Ratings for PNPA

Nesting Habitat Suitability	Description
Low	• Riverbank with a relatively low gradient slope; and/or • Predominately unsuitable substrate (e.g.) Gravel); and/or • High density of ground scrub layer vegetation cover; and/or • High density of weed species; and/or • High density of predator activity.
Medium	• Riverbank with a relatively medium to steep slope; and/or • Predominately sand/loan substrate; and/or • Medium ground/scrub layer vegetation cover; and/or • Medium density of terrestrial/ aquatic weed species; and/or • Medium density of predator activity.

Nesting Habitat Suitability	Description
High	• Riverbank with a relatively steep slope; and/or • Sand/loam substrate; and/or • Low ground/scrub layer vegetation cover; and/or • Low abundance of terrestrial /aquatic weed species; and/or • Low abundance of predator activity.
Confirmed	Riverbank in which direct evidence of turtle nesting (e.g. turtle nest or predated eggshell) is observed.
Functional	Riverbank where turtle nests successfully hatched leading to recruitment of hatchlings into the population.

3.3.2.2 Nesting Activity

Measure of success: Confirmed turtle nesting occurring at one or more PNPA within, upstream and/or downstream of Rookwood Weir.

Evaluation methodology: Nesting activity including presence/absence of confirmed turtle nesting (as defined in **Section 4.5.4 of the 2025 ANP Plan**), number of confirmed turtle nests laid, and distribution of nesting activity (i.e. number of separate nesting banks and location in relation to Rookwood Weir). Measure of success was determined based on results of nest protection and hatching success monitoring.

3.3.2.3 Nest Predation Rate

Measure of success: 90% reduction in predation of turtle nests compared to pre-offset success.

Evaluation methodology: Nest predation rates within the PNPAs and recruitment of hatchlings into the population, as defined by number of nests that wholly or partially predated, was determined throughout the nesting season (refer to **Section 4.5.4 and 4.5.5 of the 2025 ANP plan**). The percentage of nests predated within PNPAs will be compared to the percentage of nest predation recorded during the pre-clearance surveys prior to Weir operation (2019 – 2022).

3.3.2.4 Hatchling Recruitment

Measure of success: 90% increase in hatchling success and recruitment of hatchlings into the population compared to pre-offset success.

Evaluation methodology: Hatching success of nests laid within the PNPAs and recruitment of hatchlings into the population, as defined by number of nests that wholly or partially hatch and the percentage of successful hatchlings within each nest, will be determined throughout the nesting season (as defined in **Section 4.5.5 of the ANP Plan**). Hatchling success and recruitment into the population within PNPAs will be compared to success and recruitment into the population recorded prior to Weir operation to be defined following completion of final pre-clearance surveys in 2022 (GHD 2022b and GHD 2022c).

3.4 Responsible Persons

All staff and contractors associated with the Project are required to abide by relevant legislation and comply with all procedures outlined in the 2025 ANP Plan. Persons involved in the Project prohibited from carrying out any activities that cause or is likely to cause, environmental harm unless the person(s) is involved take all reasonable and practicable measures to prevent or minimise harm (the General Environmental Duty). Parties who had active roles in the ANP Plan are outlined in **Table 3.5**.

Table 3.5 Roles and Responsibilities of Personnel Associated with the ANP Plan

Role	Responsibility
Sunwater Operations General Manager	• Operate Rookwood Weir in compliance with all legal requirements including approval conditions relating to the WTST and FRT; • Allocate adequate resources and staff to allow effective implementation of the ANP Plan; and • Report environmental incidents to DETSI where required.
Sunwater Operations Environmental Manager	• Inform Tunuba of Sunwater's obligations under the ANP Plan; • Approve selection of Priority Nest Protection Areas prior to the start of each season; • Coordinate and oversee completion of the ANP Plan Report and DETSI Animal Breeding Register; • Monitor, manage and report on corrective actions required to achieve conservation outcomes; and • Report environmental incidents to the Sunwater Operations Manager for Action.
Tunuba Nest Protection Team (Tunuba and CQG)	• Obtain licences and permits required to implement the ANP Plan (CQG); • Implement relevant actions as per 2025 ANP Plan; • Record details of management actions implemented and data collected; • Support completion of 2025 ANP Plan Report and 2025 DETSI Animal Breeding Register; and • Support annual monitoring and evaluation of 2025 ANP Plan against performance criteria measure of success for each conservation outcome for each species.
Tunuba Nest Protection Team (SQP) (GHD)	• Participate in annual planning meeting with Tunuba and Sunwater's Representative (incl. review and discussion of annual Turtle Nest Protection report): ○ attend annual planning meeting (nest and habitat protection); ○ provide direction and consultation in the meeting on proposed priority nest protection areas and turtle nest and habitat protection activities; and ○ provide direction and consultation, as a suitably qualified person, on turtle nest protection and habitat protection activities as required under the EPBC Approval (EPBC 2009/5173). • Review and provide endorsement/approval of the Annual Nest Protection Plan; • Interface with SQP: ○ The SQP will hold a prestart meeting with the Tunuba Senior Ranger and Senior Ecologist to go over details of the ANP Plan

Role	Responsibility
	and ensure requirements are clear (including reporting and monitoring requirements). • Supervision of Hatching Success Monitoring: - o SQP to supervise Tunuba, as nest protection contractor, when Tunuba undertake hatching success monitoring; - o SQP to deliver a two-day (including travel) audit of two hatching success monitoring surveys per year (one survey for each species); - o SQP to assess monitoring activities against the agreed methodology in the ANP Plan and any permit/approval methodology/conditions; - o SQP to advise the frequencies of hatching success monitoring required and confirm when the fencing and cages can be removed when hatching is completed; and - o SQP to develop a brief field summary e-mail was supplied to Sunwater following each survey event. • Review of Annual Nest Protection Report: - o SQP to review the 2025 ANP Report and provide endorsement/approval the 2026 ANP plan.

3.4.1 Tunuba Nest Protection Team

Tunuba Nest Protection team members curriculum vitae (CVs) were involved in the Turtle Nest Protection works for 2025 are provided in **Appendix A**. These team members have undertaken freshwater turtle conservation training as stipulated by Sunwater with freshwater turtle experts Duncan Limpus and Kymberly Robinson from Aquatic Environmental in June 2025. The turtle conservation training included freshwater turtle species identification, embryology, nest detection, egg handling and nest protection methodology. Evidence of competency of the Tunuba team members that have completed the turtle conservation training with Aquatic Environmental are attached in **Appendix B**.

3.4.2 Permits

The Tunuba Nest Protection team work under the following permits and animal ethics committee (AEC) approvals (refer to **Table 3.6**) (held and endorsed by Tunuba's subconsultant, CQ Environmental Pty Ltd (CQG)) to conduct the 2025 ANP management actions:

- General Research Permit (WA0034267) and AEC amendment approval (CA 2025/01/1922); and
- Research Permit (Scientific) (P-SPP-100896361) and AEC approval (CA-2025-07-1980).

An endorsement letter from CQ Environmental for Tunuba to work under the above permits and a copy of the permits and their respective animal ethics approvals have been provided in **Appendix C**.

Table 3.6: Tunuba Nest Protection Team Permits and Animal Ethics Approvals

Permit No.	Animal Ethics Approval	Management Action
WA0034267	CA 2025/01/1922	• Habitat Protection; and • Nest Protection (excluding egg handling, egg removal and relocation).
P-SPP-10896361	CA-2025-07-1980	• Nest Protection (egg handling, removal and relocation of nest eggs to a communal nest cage); and • Hatching success monitoring activities.

4 Results

4.1 Timeline

Table 4.1 details the timing of management actions completed for the 2025 nesting season, which for some activities differed to the proposed plan detailed in **Table 3.2**.

The first year of the Turtle Nest Protection Program provided valuable insights into program implementation across a large and complex river system. Establishment activities, access arrangements and environmental conditions informed several adaptive management improvements that will be applied in future years. These refinements are expected to enhance monitoring coverage, increase opportunities for nest protection and further strengthen conservation outcomes for target turtle species.

Table 4.1: Management Actions Completed for the 2025 Nesting Season

Year	Month	WTST Management Actions	FRT Management Actions	Annual Meetings	Annual Reports	Monthly Reports
<u>2025</u>	Jan					
	Feb					
	Mar	PNPAs Identified through Reconnaissance Survey		Nest Protection Planning Meeting 2025		Pre-nesting Datasheets
	Apr					Pre-nesting Datasheets
	May				Annual Nest Protection Plan DRAFT submitted	
	Jun					
	Jul			Interface with SQP Meeting	Annual Nest Protection Plan FINAL submitted	
	Aug		Habitat Protection and Nest Protection			Pre-nesting/ Nesting Datasheets
	Sept					Nesting Datasheets
	Oct					Nesting Datasheets
	Nov		Hatching Success			Nesting / Hatching Datasheets
	Dec					Hatching Datasheets
<u>2026</u>	Jan					Hatching Datasheets
	Feb				Annual Nest Protection Report	

4.2 Priority Nest Protection Areas

4.2.1 2025 PNPAs

PNPAs selected for the 2025 ANP Plan were identified during the 2025 Annual Nest Protection Planning Meeting (ANP Planning Meeting) and refined following the reconnaissance survey conducted on 29 to 30 March 2025. The six PNPAs selected for the 2025 season are listed in **Table 4.3** and shown in **Figure 4.1**.

As mentioned, the selected PNPAs were further investigated for habitat suitability during a reconnaissance survey conducted by Tunuba and Sunwater on 29 and 30 March 2025 (refer to **Table 4.3** and **Appendix C**) which identified potential nesting sites and nesting habitat suitability for the WTST and FRT. During the reconnaissance survey, PNPAs were recorded as per the GHD 2022b and GHD 2022c Pre-nesting Season Datasheet (refer to **Appendix D**).

The PNPAs selected align with historically confirmed aggregated nesting areas documented in the White-throated Snapping Turtle Nest Protection Plan (GHD 2022b) and the Fitzroy River Turtle Nest Protection Plan (GHD 2022c).

Table 4.3: 2025 Priority Nest Protection Area's identified during Reconnaissance Survey (Tunuba 2025a) (March 2025)

Site ID	Locality in relation to Rookwood Weir	Latitude, Longitude	Nesting Bank Suitability and Remarks	Recommendations	Nesting Bank Photo
Rookwood immediately downstream of Weir (RWDS)	Downstream of Rookwood Weir	-23.538947 150.013389	High suitability and historical nesting There was a minor amount of erosion on lower sections of the sand bank observed during the survey. Good sections of moderate gradient fine sands up to heights of 4.2 m above current water mark (likely around 5.0 m at normal water mark). There were cattle tracks identified adjacent to the nesting bank as well as pig tracks sighted on the bank. There were no aquatic weeds present, however, there was some (10 - 40%) coverage of terrestrial weeds and grasses. This is currently the most suitable bank for WTST nesting within the broader Project Area.	It is recommended that searches are conducted on the downstream lower bank (DLB) area for WTST and FRT nesting (i.e. up to 200 m downstream where banks are characterised as moderately sloped and are predominantly sand). However, this area does have extensive grass cover which may inhibit turtle nesting within the bank. It is recommended that terrestrial weed control activities are undertaken on this bank and consideration given to installing an electric fence to exclude cattle from areas supporting aggregated nesting.	

Site ID	Locality in relation to Rookwood Weir	Latitude, Longitude	Nesting Bank Suitability and Remarks	Recommendations	Nesting Bank Photo
Rookwood immediately upstream of Weir (Gogango creek) (RWUS)	Within Rookwood Weir Impoundment	-23.558094 149.980992	Low suitability Banks within the Gogango Creek reach have previously been identified as WTST nesting areas (previous sites G1 and G2) but nest areas are now below FSL. The upper sections of the bank that are above FSL are comprised of silts, have extensive ground cover consisting of grasses and small woody debris, with low to moderate gradient slopes. It is likely that WTST will still use these reaches to nest, however nesting would likely be sparse and very difficult to identify with the extensive ground cover and no distinctive bank sections that they would target. There were cattle tracks and pig tracks identified on the bank. There were no aquatic weeds present, however, there was extensive (>75%) coverage of terrestrial weeds and non-native grasses. There are currently no suitable banks within the Weir pool that	It is recommended that the particular attention is paid to any pig disturbance at >3 m above the water level along banks (i.e. indicative of WTST nests), particularly, banks along the downstream right bank (DRB) directly upstream of the Gogango creek confluence. If identified, it is recommended to further investigate pig disturbance within the PNPA for shell fragments and if noted, these areas earmarked for future inspections. No specific nesting bank management actions are recommended for this site.	

Site ID	Locality in relation to Rookwood Weir	Latitude, Longitude	Nesting Bank Suitability and Remarks	Recommendations	Nesting Bank Photo
			would be considered as either a medium or high likelihood nesting bank habitat for WTST or FRT.		
Hanrahan's crossing (Hanrahan's)	Downstream of Rookwood Weir	- 23.46091 150.01902	Medium to high suitability The sand bank has extended several hundred metres further downstream with the re-distribution / erosion of sands from the back of the sand bar. There was also an extension of cobble bank sections compared to historic assessment. The bank extends approximately 65 m from the water's edge to the channel bank and was between 2.5 to 4.5 m above normal water level. However, there has been a reduction in bank slopes with most sections considered low gradient. Despite the bank condition showing slight degradation, these banks are still considered to be of medium to high suitability for both WTST and FRT. There are areas of moderately sloped sands up to 4 to 5 m in	It is recommended that terrestrial weed control activities are undertaken on the main nesting bank and additional areas for WTST nesting identified. Electric fencing is not recommended here due to public access and recreational use. WTST nesting has previously been identified (refer to GHD 2022c and GHD 2022d) here so it is recommended to search and protect this area.	

Site ID	Locality in relation to Rookwood Weir	Latitude, Longitude	Nesting Bank Suitability and Remarks	Recommendations	Nesting Bank Photo
			height between the identified bank and causeway (i.e. as you drive along the cobble track). There is potential for WTST to traverse over sections of cobbles and utilise these areas. It is recommended that these sections are also searched for nesting activity and protection activities considered. The furthest upstream section of the Hanrahan's bank was underwater during the site inspection. There was no evidence of cattle disturbance in the immediate area, however, pig tracks were identified on the bank. Aquatic weeds were absent but terrestrial weeds and grasses were low (1-10%) coverage.		

Site ID	Locality in relation to Rookwood Weir	Latitude, Longitude	Nesting Bank Suitability and Remarks	Recommendations	Nesting Bank Photo
Foleyvale Crossing (Upstream) (Foleyvale Upstream)	Upstream of Rookwood Weir	-23.535449 149.703991	Medium suitability (low suitability for WTST, high suitability for FRT) Significant erosion has occurred to the key sand bank located approximately 1 km upstream of the Foleyvale Crossing. While the bank was still comprised predominantly of sands (80% overall), the bank height is now only 0.8 m above currently water level (likely about 1.8 m above normal water level), which is sub-optimal. Further, the bank has been degraded through scouring by flow. Vegetated bank sections beyond the accumulated sands are covered with very thick grasses / Lomandra and substrate of the back bank is composed of silts / clays. This bank would be considered as low suitability for WTST but has a high suitability for FRT. There was no evidence of cattle disturbance in the immediate area, however, pig tracks were	It is recommended that terrestrial weeds are monitored and controlled, if required, on this bank. Electric fencing is not recommended here due to the site being a public location.	

Site ID	Locality in relation to Rookwood Weir	Latitude, Longitude	Nesting Bank Suitability and Remarks	Recommendations	Nesting Bank Photo
			identified on the bank. Aquatic weeds were absent but terrestrial weeds and grasses had low (1-10%) coverage.		
Foleyvale Crossing (Far Upstream) (Foleyvale Far Upstream)	Upstream of Rookwood Weir	- 23.534405, 149.664112	High suitability With the higher water levels experienced during March 2025 survey, access was not possible for a further 6 km upstream of Foleyvale Crossing (upstream) to a bank that was initially assessed in 2019. This site had more suitable nesting habitat for WTST and ready vehicle access through arrangement with Sunwater (Sunwater has indicated that an access agreement exists for this property). Further assessment via Google imagery indicates that there are also sections of sand bank that extend further upstream around the bend (i.e. within 1 km from out waypoint). There was no evidence of cattle or pig disturbance in the immediate area. Aquatic weeds	It is recommended that this bank should replace the Foleyvale Crossing (upstream) bank that was identified for potential nest protection activities. It is recommended that terrestrial weeds are monitored and controlled, if required, on this bank. This bank should be monitored for evidence of cattle and pigs in the future and consideration given to installing an electric fence if required.	

Site ID	Locality in relation to Rookwood Weir	Latitude, Longitude	Nesting Bank Suitability and Remarks	Recommendations	Nesting Bank Photo
			were absent but terrestrial weeds and grasses had low (1-10%) coverage.		
The Pocket (The Pocket)	Within Rookwood Weir impoundment	-23.645559; 149.933723	Low to medium suitability A small sand bank was identified on an in-stream island approximately 2.7 km upstream of the Pocket (in proximity to previous assessed nesting bank P4). The bank was comprised predominantly of coarse sands and was approximately 1 m in height, with low gradient slopes. This bank had low to medium suitability as a nesting bank but only for FRTs in the absence of other suitable nesting banks in the area. This bank is not suitable for WTST nesting. There was no evidence of cattle disturbance in the immediate area, however, pig tracks were identified on the bank. Aquatic weeds and terrestrial weeds and grasses had low (1-10%) coverage.	It is recommended that this bank is searched for evidence of nesting. It is recommended that particular attention to any pig disturbance at >3 m above the water level along banks (i.e. indicative of FRT nests). If identified, it is recommended that the team further investigate the pig disturbance for shell fragments and if noted, these areas earmarked for future inspections. No specific nesting bank management actions are recommended for this site.	



Legend

 Rookwood Weir at Full Supply

Priority Nest Protection Areas and Nesting Suitability

-  High Nesting Suitability
-  Medium Nesting Suitability
-  Low Nesting Suitability

Waterways

-  Named Waterways
-  Unnamed waterways

Roads

-  Highway
-  Major Road

N

Scale 1:120,000 (A3)

0 1.5 3 6

Kilometres

Coordinate System: GDA2020 MGA Zone 55

Figure 4.1

Sunwater Limited

Rookwood Weir Turtle Nest

Protection Works

2025 PNPAs



180 Quay Street, Rockhampton Q 4700
PO Box 8384, Allenstown 4700
Ph: +61 7 4922 9252 Fax: +61 7 4922 0195

Project No: 23062
Map No: 23062-20
Revision: Rev0
7 May 2025

4.2.2 Accessibility of PNPA's throughout the nesting season

During the 2025 nesting season access was limited and survey conditions were highly variable at times, which had a direct influence on Tunuba's ability to access PNPA's and conduct management actions (refer to **Table 4.4**).

Early in the season (Feb – April), several high-flow events restricted safe boat access and nesting banks became inundated and delayed commencement of management actions (i.e. habitat protection). Later in the year (August – November), conditions shifted in the opposite direction, with very low water levels - particularly in the upper reaches of the impoundment (e.g. at Foleyvale Far Upstream), preventing vessel access to some upstream nesting banks and reducing monitoring opportunities.

Between 26 September and 24 October, a significant algal bloom outbreak occurred within Rookwood Weir impoundment, which restricted access as stipulated by Sunwater due to safety concerns for the Tunuba team. This limited Tunuba's ability to survey and protect nests during the FRT nesting period.

Furthermore, contractual budget limits and travel time between PNPA's meant the team could generally visit only one PNPA per week. During peak FRT nesting, limited revisit frequency meant that some new nests could not be reached before predators, and several nests were predated before protection activities could occur.

Table 4.4: PNPA accessibility throughout the 2025 nesting season

Site ID	PNPA accessibility
RWDS	- Monitoring of PNPA commenced in July/August 2025; - Between 26 September and 24 October, a significant algal bloom outbreak occurred within Rookwood Weir impoundment, creating significant safety concerns for the team and limited the Tunuba's access ability to survey and protect nests during the FRT nesting period. No monitoring was undertaken within RWDS during this time; and - Late October monitoring recommenced within PNPA and continued through to the end of the FRT hatching season within PNPA.
RWUS	
Hanrahan's	- Monitoring of PNPA commenced in July/August 2025; - No access restrictions (i.e. algal bloom impacts or high flow events) impacted on monitoring works for the 2025 season; and - Monitoring of PNPA commenced in August 2025 and continued through to the end of the FRT hatching season within PNPA.
Foleyvale Upstream	- Monitoring of PNPA commenced in July/August 2025; - July 2025, access via the River was not considered practical at that time due to low water levels, and it was recommended that habitat protection and nest protection activities not be conducted at these PNPA; - September 2025, Tunuba gained access to a vessel capable of safely reaching Foleyvale Upstream PNPA. Sunwater endorsed the use of this vessel and this PNPA was reinstated for monitoring during the FRT nesting season; and - Monitoring of this PNPA continued through to the end of the FRT hatching season.
Foleyvale Far Upstream	- Monitoring of PNPA commenced in July/August 2025; - July 2025, access via the River was not considered practical at that time due to low water levels, and it was recommended that habitat protection and nest protection activities not be conducted at these PNPA; - September 2025, Tunuba gained access to a vessel capable of safely reaching Foleyvale Far Upstream PNPA. Sunwater endorsed the use of this vessel and this PNPA was reinstated for monitoring during the FRT nesting season; - Mid - October 2025; very low water levels prevented vessel access to this PNPA and continued monitoring of this PNPA was restricted; and - Jan 2025; after substantial rainfall, water levels rose to an accessible level and PNPA was monitored for hatching success and demobilisation of nest protection mesh.

Site ID	PNPA accessibility
The Pocket	• Monitoring of PNPA commenced in July/August 2025; • July and August 2025; river levels at The Pocket fluctuated throughout the FRT nesting season, and nesting banks were frequently inundated during July and August. Due to the persistent inundation risk, the Pocket was removed as a PNPA for the 2025 nesting season; and • In November 2025, downstream of The Pocket was opportunistically surveyed when water levels receded, and nesting activity was recorded.

4.3 Habitat Protection

4.3.1 Installation of Electric Fencing

There was no installation of electric fencing permitted within any of the PNPAs during the 2025 nesting season, due to limitations with landholder agreements, Sunwater did not endorse installation of fencing within any of the PNPAs.

4.3.2 Removing/Controlling Terrestrial and Aquatic Weeds

During the pre-nesting season for both turtle species (WTST - Feb/Mar and FRT - June/July), minimal removal of terrestrial and aquatic weeds were required, this was largely due to weather and flood conditions early in the season which stripped a lot of vegetation from the banks. As temperatures increased later in the year (Sept/October), some regrowth of grasses and low vegetation occurred, however, this was consistently managed and kept under control by the team conducting weed pulling during the nesting surveys. Refer to **Table 4.5** for a summary of habitat protection measures undertaken for each PNPA.

Table 4.5: 2025 Habitat Protection Management Actions Undertaken within PNPAs

Site ID	Locality	Latitude, Longitude	Habitat Protection Recommendations (March recon survey)	2025 Habitat Protection Actions
RWDS	Downstream of Rookwood Weir	-23.538947, 150.013389	This area has extensive grass cover which may inhibit turtle nesting within the bank. It is recommended that terrestrial weed control activities are undertaken on this bank and consideration given to installing an electric fence to exclude cattle from areas supporting aggregated nesting.	As temperatures increased later in the year, some regrowth of grasses and low vegetation occurred. Weed pulling of terrestrial grasses was completed ad hoc during nesting surveys in an around areas where nests were identified within the PNPA. Terrestrial weeds were managed to ensure PNPAs remained accessible to nesting turtles and there were no weeds in and around protected nests. No aquatic weeds were present throughout the nesting season that impeded turtle access to the banks. Electric fencing was not installed within this PNPA.
RWUS	Within Rookwood Weir	-23.558094 149.980992	No specific nesting bank management actions are recommended for this site.	As temperatures increased later in the year, some regrowth of grasses and low vegetation occurred. Weed pulling of terrestrial grasses was completed ad hoc during nesting surveys in an around areas where nests were identified within the PNPA. Terrestrial weeds were managed to ensure PNPAs remained accessible to nesting turtles and there were no weeds in and around protected nests. No aquatic weeds were present throughout the nesting season that impeded turtle access to the banks. Electric fencing was not installed within this PNPA.
Hanrahan's	Downstream of Rookwood Weir	-23.46091 150.01902	It is recommended that terrestrial weed control activities are undertaken on the main nesting bank and additional areas for WTST nesting identified.	As temperatures increased later in the year, some regrowth of grasses and low vegetation occurred. Weed pulling of terrestrial grasses was completed ad hoc during nesting surveys in an around areas where nests were identified within the PNPA. Terrestrial weeds were managed to ensure PNPAs remained

Site ID	Locality	Latitude, Longitude	Habitat Protection Recommendations (March recon survey)	2025 Habitat Protection Actions
			Electric fencing is not recommended here due to public access and recreational use.	accessible to nesting turtles and there were no weeds in and around protected nests. No aquatic weeds were present throughout the nesting season that impeded turtle access to the banks. Electric fencing was not installed within this PNPA.
Foleyvale Upstream	Upstream of Rookwood Weir	-23.535449 149.703991	It is recommended that terrestrial weeds are monitored and controlled, if required, on this bank. Electric fencing is not recommended here due to the site being a public location.	Weeds were very minimal on these banks throughout the year. No terrestrial weed given the deep shade and sandy substrate prevalent throughout the PNPAs. Electric fencing was not installed within this PNPA.
Foleyvale Far Upstream	Upstream of Rookwood Weir	-23.534405, 149.664112	It is recommended that terrestrial weeds are monitored and controlled, if required, on this bank. This bank should be monitored for evidence of cattle and pigs in the future and consideration given to installing an electric fence if required.	Weeds were very minimal on these banks throughout the year, sandy shading bank with not a lot of weed growth. Electric fencing was not installed within this PNPA.
The Pocket	Within Rookwood Weir	-23.645559; 149.933723	No specific nesting bank management actions are recommended for this site.	This PNPA was removed from monitoring due to the fluctuation in River levels. No habitat protection undertaken here.

4.4 Nest Protection

4.4.1 2025 Nesting Activity

Nesting activity for the 2025 season was recorded across all PNPAs included in the 2025 ANP Plan (refer to **Figure 4.2 – Figure 4.7, Table 4.6** and **Appendix D**). Nests were recorded as they were found. Field records provided by the Tunuba field team showed that all nests that were protected did not undergo predation. All predated nests recorded by the Tunuba field team were found as surveying the PNPAs (i.e. they were not protected and found predated).

Table 4.6: 2025 nesting activity recorded within PNPAs

PNPA	Total Nests Protected	Total Nests partially Predated then Protected	Total Nests Found Predated	Total Nests Recorded
RWDS	10	3	32	45
RWUS	2	1	64	67
Hanrahan's	23	1	39	63
Foleyvale Upstream	19	4	9	32
Foleyvale Far Upstream	5	3	0	8
The Pocket	6	0	6	12
Total	65	12	150	227



Legend

Watercourse lines

Major - perennial

Turtle nest activity
recoded within PNPA

Rookwood US Weir Pool
Relocation Site

N

Scale 1:2,500 (A3)

0

30

60

90

Metres

Coordinate System: GDA2020 MGA Zone 55

Figure 4.2

Sunwater Limited

Rookwood Weir Turtle Nests
Protection Project

Rookwood Weir (Downstream) PNPA

Turtle Nest Activity



Project No: 23062
Map No: 23062-32
Revision: Rev0
4 February 2026



Legend

Watercourse lines

- Major - perennial
- Minor - perennial
- ▲ Turtle nest activity recorded within PNPA

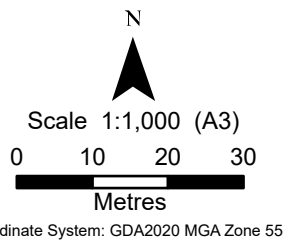


Figure 4.3

Sunwater Limited

**Rookwood Weir Turtle Nests
Protection Project**

Rookwood Weir (Upstream) PNPA

Turtle Nest Activity



**Project No: 23062
Map No: 23062-32
Revision: Rev0
4 February 2026**



Legend

Roads
Local

Watercourse lines
Major - perennial

Turtle nest activity
recoded within PNPA

Communal Cage

N

Scale 1:4,500 (A3)

060120180

Metres

Coordinate System: GDA2020 MGA Zone 55

Figure 4.4

Sunwater Limited

**Rookwood Weir Turtle Nests
Protection Project**

Hanrahan's Crossing PNPA

Turtle Nest Activity

TUNUBA

Project No: 23062

Map No: 23062-32

Revision: Rev0

4 February 2026



Legend

Watercourse lines

Major - perennial

Turtle nest activity
recoded within PNPA

Communal Cage

N

Scale 1:2,500 (A3)

0306090

Metres

Coordinate System: GDA2020 MGA Zone 55

Figure 4.5

Sunwater Limited

**Rookwood Weir Turtle Nests
Protection Project**

Foleyvale Upstream PNPA

Turtle Nest Activity



Project No: 23062
Map No: 23062-32
Revision: Rev0
4 February 2026



Legend

Watercourse lines

- Major - perennial
- Turtle nest activity recorded within PNPA

N

Scale 1:2,000 (A3)

0 30 60 90

Metres

Coordinate System: GDA2020 MGA Zone 55

Figure 4.6

Sunwater Limited

Rookwood Weir Turtle Nests Protection Project

Foleyvale Far Upstream PNPA

Turtle Nest Activity



Project No: 23062
Map No: 23062-32
Revision: Rev0
4 February 2026



Legend

Watercourse lines

- Major - perennial
- Turtle nest activity recorded within PNPA

N

Scale 1:12,500 (A3)

0 180 360 540

Metres

Coordinate System: GDA2020 MGA Zone 55

Figure 4.7

Sunwater Limited

Rookwood Weir Turtle Nests Protection Project

The Pocket PNPA

Turtle Nest Activity



Project No: 23062
Map No: 23062-32
Revision: Rev0
4 February 2026

4.4.2 WTST and FRT Nests

Due to the late commencement of the implementation of the 2025 ANP Plan (outside of Tunuba's control), the peak WTST nesting period had largely passed and WTST nesting activity was close to ceasing by the time the Tunuba team were approved by Sunwater to commence management activities. One WTST nests was recorded and protected during the 2025 season (refer to **Figure 4.8 – Figure 4.13** and **Table 4.7**). As a result, the WTST nest protection component of the 2025 ANP Plan could not be delivered in its entirety as designed during 2025.

In contrast, the commencement of the 2025 ANP Plan coincided with the start of the FRT nesting season in August, allowing for timely detection of nests, species identification, and protection of FRT nests in accordance with the ANP Plan requirements (refer to **Figure 4.8 – Figure 4.13** and **Table 4.7**).

4.4.3 Species Identification Approach

To identify turtle nests using eggs measurements, species were using the morphometric ranges specified in 2025 ANP and stated in **Section 3.2.4** of this report, following a hierarchical decision process that prioritises the most diagnostic measurement. WTST eggs are substantially larger than both FRT and Krefft's eggs, preventing any realistic risk of misclassification. Egg width was treated as the primary discriminator because it provides the clearest separation between FRT and Krefft turtle species. Where egg width fell within the overlap zone (2.0- 2.3 cm), length was used as the secondary diagnostic measurement in accordance with the 2025 ANP Plan ranges: eggs with lengths that fell only within FRT range (2.6–2.84 cm) were classified as FRT, eggs with lengths that fell only within Krefft range (>3.7 cm) were classified as Krefft's, and eggs with lengths that fell within both species' ranges (2.85–3.7 cm) were recorded as "potential FRT/Krefft nests". Where width was already diagnostic, length did not override the width-based assignment.

Table 4.7: Summary Nests Protected during 2025 Nesting Season

PNPA	WTST Nests ¹	Confirmed FRT Nests ¹	Potential FRT/Krefft Nests ¹	Kreffts Nests ¹	Unknown Species Nests ¹	Total Nests ¹
RWDS	0	4	9	0	0	13
RWUS	1	1	1	0	0	3
Hanrahan's	0	6	17	1	0	24
Foleyvale Upstream	0	6	11	4	2	23
Foleyvale Far Upstream	0	3	5	0	0	8
The Pocket	0	3	2	0	1	6
Total	1	23	45	5	3	77

¹ Includes partially predated nests: these were nests that were found unprotected and predated, and still had viable intact eggs that were then protected by the Tunuba team



Legend

Watercourse lines

Major - perennial

Turtle Species Nesting Activity

▲ FRT

▲ FRT/Kreff

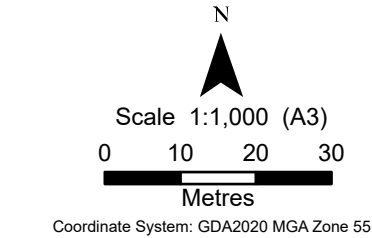


Figure 4.8

Sunwater Limited

**Rookward Weir Turtle Nests
Protection Project**

Rookwood Weir (Downstream) PNPA

Turtle Species Nesting Activity



**Project No: 23062
Map No: 23062-33
Revision: Rev0
4 February 2026**



Legend

Watercourse lines

- Major - perennial
- Minor - perennial

Turtle Species Nesting Activity

- FRT/Krefft
- Kreffft
- WTST

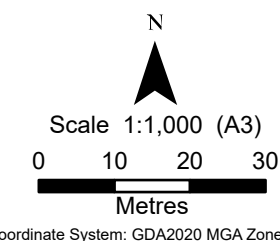


Figure 4.9

Sunwater Limited

Rookward Weir Turtle Nests
Protection Project

Rookwood Weir (Upstream) PNPA

Turtle Species Nesting Activity



Project No: 23062
Map No: 23062-33
Revision: Rev0
4 February 2026



Legend

Roads

Local

Watercourse lines

Major - perennial

Turtle Species Nesting Activity

FRT

FRT/Kreff

Kreff

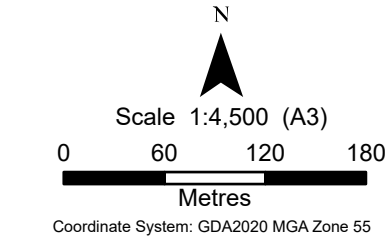


Figure 4.10

Sunwater Limited

**Rookward Weir Turtle Nests
Protection Project**

Hanrahan"s Crossing PNPA

Turtle Species Nesting Activity



**Project No: 23062
Map No: 23062-33
Revision: Rev0
4 February 2026**



Legend

Watercourse lines

Major - perennial

Turtle Species Nesting Activity

FRT

FRT/Krefft

Krefft

Unknown

N

Scale 1:2,000 (A3)

0306090

Metres

Coordinate System: GDA2020 MGA Zone 55

Figure 4.11

Sunwater Limited

Rookward Weir Turtle Nests
Protection Project

Foleyvale Upstream PNPA

Turtle Species Nesting Activity

Project No: 23062
Map No: 23062-33
Revision: Rev0
4 February 2026



Legend

Watercourse lines

Major - perennial

Turtle Species Nesting Activity

▲ FRT

▲ FRT/Kreff

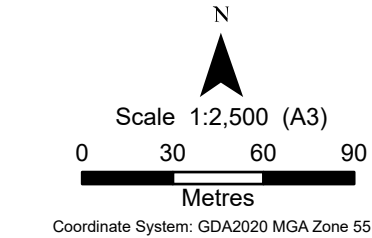


Figure 4.12

Sunwater Limited

**Rookward Weir Turtle Nests
Protection Project**

Foleyvale Far Upstream PNPA

Turtle Species Nesting Activity



**Project No: 23062
Map No: 23062-33
Revision: Rev0
4 February 2026**



Legend

Watercourse lines

Major - perennial

Turtle Species Nesting Activity

▲ FRT

▲ FRT/Kreff

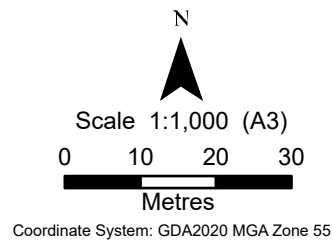


Figure 4.13

Sunwater Limited

**Rookward Weir Turtle Nests
Protection Project**

The Pocket PNPA

Turtle Species Nesting Activity



**Project No: 23062
Map No: 23062-33
Revision: Rev0
4 February 2026**

4.4.3.1 Installation of Communal Cages

Communal cages were installed throughout the 2025 nesting season in locations where turtle nests were considered in a high-risk area or subject to inundation (namely, Hanrahan's and Foleyvale Upstream) (refer to **Figure 4.4** and **Figure 4.5**).

Table 4.8 summarises the number of nests that were identified within PNPAs subject to inundation or a high-risk of being tampered with.

Table 4.8: Summary of Nests Relocated to a Communal Cage

PNPA	Total		
	Nests Protected ¹	Number of Nests Moved to Communal Cage	Number of Nests with Protective Mesh
RWDS	13	0	13
RWUS	3	0	3
Hanrahan's	24	19	5
Foleyvale Upstream	23	5	18
Foleyvale Far Upstream	8	0	8
The Pocket	6	0	6
Total	77	24	53

4.4.4 Spatial Patterns in Nesting Activity

Spatial patterns observed during the 2025 season indicate that both WTST and FRT utilised multiple PNPAs across the Project Area (refer to **Figures 4.8 to 4.13**).

WTST nesting (albeit predated nests) was recorded at RWDS, RWUS, Hanrahan's and The Pocket, while FRT nesting occurred at all monitored PNPAs.

Aggregated nesting - defined as multiple nests occurring in close proximity along the same bank - was evident at RWDS, RWUS, Hanrahan's and Foleyvale Upstream. The most pronounced clustering of FRT nests occurred at Hanrahan's and Foleyvale Upstream, where multiple nests were recorded within concentrated sections of preferred nesting habitat (refer to **Figures 4.10 to Figure 4.11**). These areas represent high-use nesting zones.

Additional spatial observations include:

- Rookwood immediately upstream (RWUS) and downstream (RWDS) of the Weir supported both WTST and FRT nesting, indicating continued use of these reaches despite variable access conditions;
- Foleyvale Far Upstream supported fewer nests but still demonstrated consistent FRT nesting presence; and
- The Pocket supported both WTST and FRT nesting during opportunistic monitoring, despite being removed as a PNPA earlier in the season due to fluctuating river levels.

4.4.5 Nest Predation and Disturbance

Nest Predation was recorded across multiple PNPAs during the 2025 nesting season (refer to **Figure Figures 4.14** to **Figure 4.19**, **Table 4.9** and **Appendix E**). A total of 162 nests were found predated during the 2025 season across all monitored PNPAs (. The predation dataset represents all nests found predated prior to discovery. During the 2025 nesting season, no nests were recorded by the Tunuba field team as being predated after nest protection measures were installed.

Table 4.9: Summary of number of nests predated per PNPA

PNPA	Total Nests Recorded	Total Nests Found Partially Predated	Total Nests Found Fully Predated	Nest Predation Rate ²
RWDS	45	3	32	77.77%
RWUS	67	1	64	97.01%
Hanrahan's	63	1	39	63.49%
Foleyvale Upstream	32	4	9	40.63%
Foleyvale Far Upstream	8	3	0	37.50%
The Pocket	12	0	6	50.00%
Total	227	12	150	71.00%

The total number of nests predator per predator are outlined in **Table 4.10** and the total number of eggs predated per predator species is outlined in **Table 4.11**.

Predation patterns were strongly influenced by PNPA access constraints related to an algal bloom outbreak in September/October 2025 (late September through to late October), which inhibited the team to conducted nest protection activities due to health and safety concerns. This also coincided with a peak nesting events within the RWDS and RWUS PNPA and Hanrahan's PNPA.

Across all PNPAs the main predator of turtle nests identified was Goanna followed by Echidna. Other evidence of predators within the PNPAs included pig diggings along the upper banks of Foleyvale PNPAs and RWUS, and goanna tracks within the nesting banks of Hanrahan's.

² Nest predation rate (%) = Total nests predated (Partially predated nests + fully predated nests) / total number of nests recorded x 100

Table 4.10: Summary of number of predated nests per predator per PNPA

PNPA	No. of nests predated by						Total number of nests predated
	Water rat	Echidna	Echidna or Water rat	Goanna	Pig	Unidentifiable	
RWDS	1	18	6	2	0	8	35
RWUS	0	7	7	50	1	0	65
Hanrahan's	3	19	4	0	1	13	40
Foleyvale Upstream	1	4	1	1	0	6	13
Foleyvale Far Upstream	2	0	0	0	0	1	3
The Pocket	0	0	1	0	0	5	6
Total	7	48	19	53	2	33	162

Table 4.11: Summary of number of predated eggs per predator per PNPA

PNPA	No. of eggs predated by						Total number of eggs predated
	Water Rat	Echidna	Echidna or Water rat	Goanna	Pig	Unidentifiable	
RWDS	18	188	51	19	0	70	346
RWUS	0	120	117	734	26	0	997
Hanrahan's	45	313	62	0	18	12	450
Foleyvale Upstream	0	44	18	22	0	86	170
Foleyvale Far Upstream	8	0	0	0	0	fragments	8
The Pocket	0	0	10	0	0	76	86
Total	71	665	258	775	44	244	2057



Legend

Watercourse lines

Major - perennial

Turtle Nest Predation Activity

Nest predation

Partially predated

N

Scale 1:1,000 (A3)

0 10 20 30

Metres

Coordinate System: GDA2020 MGA Zone 55

Figure 4.14

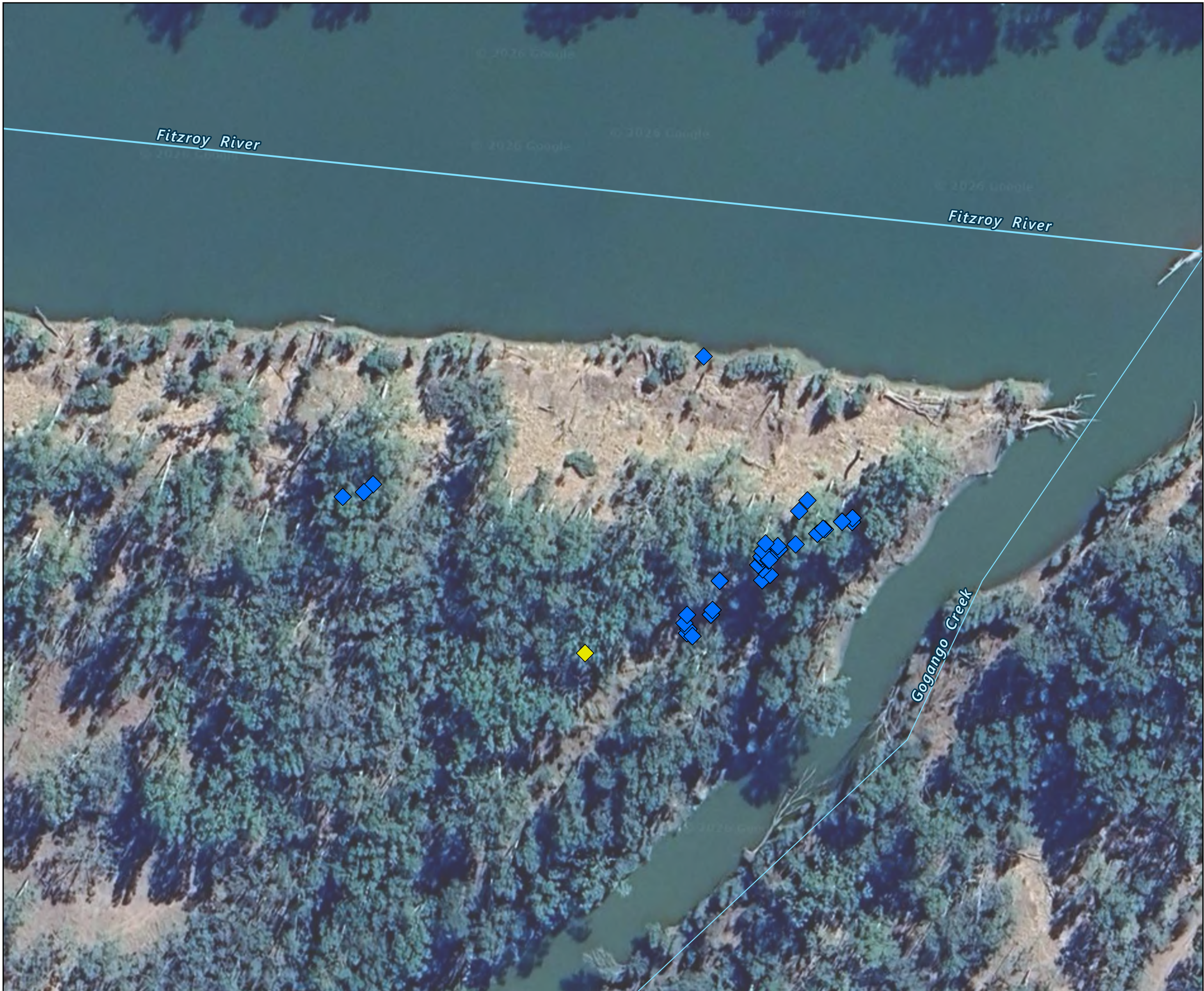
Sunwater Limited

Rookwood Weir Turtle Nest Protection Project

Rookwood Weir (Downstream) PNPA

Nest Predation Activity

Project No: 23062
Map No: 23062-34
Revision: Rev0
4 February 2026



Legend

Watercourse lines

- Major - perennial
- Minor - perennial

Turtle Nest Predation Activity

- Nest predation
- Partially predated

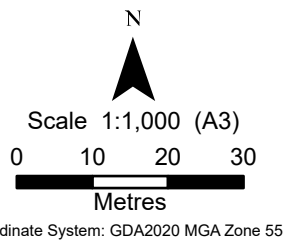


Figure 4.15

Sunwater Limited

Rookwood Weir Turtle Nest
Protection Project

Rookwood Weir (Upstream) PNPA

Nest Predation Activity



Project No: 23062
Map No: 23062-34
Revision: Rev0
4 February 2026



Legend

Roads

— Local

Watercourse lines

— Major - perennial

Turtle Nest Predation Activity

◆ Nest predation

◆ Partially predated

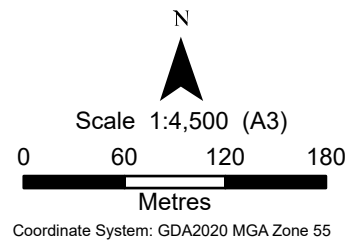


Figure 4.16

Sunwater Limited

Rookwood Weir Turtle Nest
Protection Project

Hanrahan"s Crossing PNPA

Nest Predation Activity



Project No: 23062
Map No: 23062-34
Revision: Rev0
4 February 2026



Legend

Roads

— Secondary

Watercourse lines

— Major - perennial

Turtle Nest Predation Activity

◆ Nest predation

◆ Partially predated

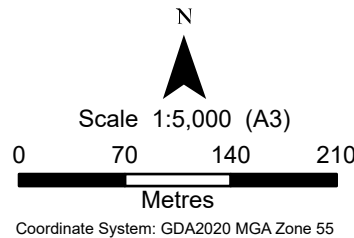


Figure 4.17

Sunwater Limited

**Rookwood Weir Turtle Nest
Protection Project**

Foleyvale Upstream PNPA

Nest Predation Activity



Project No: 23062
Map No: 23062-34
Revision: Rev0
4 February 2026



Legend

Watercourse lines

Major - perennial

Turtle Nest Predation Activity

Nest predation

Partially predated

N

Scale 1:1,000 (A3)

0 10 20 30

Metres

Coordinate System: GDA2020 MGA Zone 55

Figure 4.18

Sunwater Limited

Rookwood Weir Turtle Nest Protection Project

Foleyvale Far Upstream PNPA

Nest Predation Activity

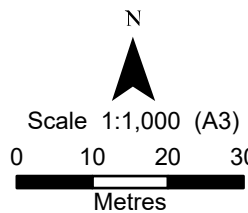
Project No: 23062
Map No: 23062-34
Revision: Rev0
4 February 2026



Legend

Turtle Nest Predation Activity

-  Nest predation
-  Partially predated



Coordinate System: GDA2020 MGA Zone 55

Figure 4.19

Sunwater Limited

**Rookwood Weir Turtle Nest
Protection Project**

The Pocket PNPA

Nest Predation Activity



**Project No: 23062
Map No: 23062-34
Revision: Rev0
4 February 2026**

4.4.5.1 Unexpected Adverse Events

Two unexpected adverse events (UAEs) occurred during the implementation of the 2025 ANP plan that required immediate welfare-based intervention and formal notification under the Project's approved permits. All events were managed in accordance with the Australian Code for the Care and Use of Animals for Scientific Purposes (Australian Code) and the conditions of:

- DETSI Scientific Research Permit P-SPP-100896361; and
- AEC Approval CA-2025-07-1980.

Both UAEs were formally notified by CQG (as permit authority holders) to DETSI and the AEC in accordance with the mandatory reporting requirements of these permits.

Emergency Rescue of Exposed Hatchlings (14 November 2025)

During routine hatching success monitoring at RWDS PNPA, the Tunuba Nest Protection Team encountered a FRT nest on 14 November 2025 that appeared to have been actively destroyed by a goanna (goanna tracks present). Fourteen hatchlings were found dead on the sand surface, and eight live hatchlings remained at the bottom of the exposed nest chamber in direct sunlight and at immediate risk of mortality.

Handling of hatchlings is not authorised under Scientific Research Permit P-SPP-100896361 or AEC Approval CA-2025-07-1980; however, the team enacted a time-critical welfare intervention consistent with the Principle of Refinement under the Australian Code. The live hatchlings were carefully collected, monitored, and released safely at the river's edge. No biometric data were collected.

This event was reported to both the AEC and DETSI as required under CA-2025-07-1980 and P-SPP-100896361. Feedback was provided by AEC and DETSI, commending Tunuba and CQG of their quick thinking efforts and a request was made by DETSI that an emergency handling protocol be added to the 2026 ANP Plan, no requirement for amendment of permit to handle turtles was required.

Unexpected Adverse Event – Cattle Trampling of Eggs at Rookwood Weir Upstream Relocation Site (19 December 2025)

On 26 November 2025, due to anticipated high-flow event which would cause inundation to protected nests within RWDS PNPA, seven nests were relocated from RWDS and transferred to a relocation site, selected by Sunwater, Rookwood Upstream Weir Pool (the Relocation Site (located at -23.5427323, 150.0147276)) (refer to **Figure 4.2**), left bank, approximately 217 metres upstream from the Rookwood Weir.

The Tunuba Nest Protection Team assessed the site as suboptimal and communicated these concerns; however, it was confirmed by Sunwater that this site was the only available option. Electric fencing could not be installed due to the absence of an agreement between Sunwater and the agistee. Communal cages could not be installed due to the rocky substrate preventing anchoring. Mesh protection was installed over nests as the only available nest protection option and endorsed by GHD's SQP.

During routine monitoring on 19 December 2025, six of the seven relocated nests were found to have been partially trampled by cattle, resulting in partial egg mortality (refer to **Table 4.12**). Some of the protected nests also had evidence of hatching (refer to **Table 4.12**).

Table 4.12: RWDS Cattle trampling impacts to relocated nests

PNPA	Total Nests Recorded	Total Nests Destroyed	Total Nests found Partially Destroyed	Total Number of Eggs	Total Number of Eggs Destroyed	Total Number Hatched
RWUS Weir Pool Relocation Site	6	1	5	91	59	32

This event was documented and formally notified by the authority holder, CQG, to both DETSI and the AEC in accordance with the reporting requirements of P-SPP-100896361 and CA-2025-07-1980.

Sunwater notified DCCEEW and DETSI on 23 December 2025.

The Tunuba team is assessing the feasibility of seeking an AEC amendment to allow for egg incubation where relocation sites cannot be adequately protected.

4.5 Hatching Success

4.5.1 2025 Hatching success outcomes

Hatching success was assessed for all accessible protected nests across PNPAs between November 2025 through to January 2026. Only protected nests that could be accessed and contained hatching success data (i.e. evidence of hatched eggs and/or unviable eggs within clutch) were included in this assessment.

Of the 77 nests protected during the 2025 nesting season, 51 protected nests were assessed for hatching success (refer to **Table 4.13** and **Appendix F**). The remaining portion of nests that could not be assessed for hatching success were largely due to environmental and logistical constraints limiting timely access to PNPAs for hatching success monitoring. Fluctuations in water levels restricted access to several PNPAs during the hatching period (namely, Foleyvale Far Upstream and the Pocket) and reduced frequency of visits to PNPAs due to contractual budget constraints reducing physical evidence of hatching events (i.e. eggshell fragments) were no longer detectable. This challenge is widely documented in turtle monitoring literature, where hydrological fluctuations, predation, and delayed access frequently result in nests that cannot be reliably assessed for hatching outcomes (Espinoza et al. 2022; Hunter et al. 2023; Chessman 2017).

The following PNPAs were excluded from this assessment:

- **Foleyvale Far Upstream:** Access was restricted throughout the season due to fluctuating river levels. Although nests remained protected by mesh, the site could only be reached once water levels rose sufficiently for vessel access in January 2026, which was at the end of the hatching season. Only shell fragments were present, and hatching success could not be reliably assessed; and
- **The Pocket:** River levels fluctuated throughout the FRT nesting season, and nesting banks were frequently inundated during July and August. Due to the persistent inundation risk, The Pocket was removed as a PNPA for the 2025 season. When water levels briefly receded in November 2025, downstream areas were opportunistically surveyed and nests were found close to hatching. Rising water levels prevented a timely return to assess hatching outcomes.

Hatching success rate was also influenced by instances where nests were found hatched within the PNPA that had not been protected. This was observed at the following PNPAs:

- RWDS (3 nests hatched, unprotected and not predated, total of 49 eggs, 41 hatched, 8 unviable);
- RWDS Unexpected Adverse Event (UAE) (refer to **Section 4.6**) (1 nest partially predated with 14 hatchlings predated, 8 hatchlings alive);

- Hanrahan's: (1 nest hatched, unprotected and not predated, 14 eggs hatched and all eggs viable); and
- Foleyvale Upstream (1 nest hatched, unprotected and not predated, 12 eggs hatched and 4 eggs unviable).

Table 4.13: 2025 Hatching Recruitment Success within PNPAs (November 2025 – January 2026)

PNPA³	Total Number of Protected Nests	Total Nests Assessed for Hatching Success	Total Number of Eggs from Assessed Nests	Number of Eggs Unviable	Number of eggs predated	Number of Eggs Moved to Communal Cage	Total Number of Eggs Hatched	Hatching Success Rate
RWDS	6	8 ⁴	149	0	8	NA	127	85.23%
RWUS	3	2	32	7	0	NA	25	78.13%
Hanrahan's	24	20	389	47	0	375	342	87.92%
Foleyvale Upstream	23	26	427	53	0	53	374	87.59%
Foleyvale Far Upstream	8	NA	NA	NA	NA	NA	NA	NA
The Pocket	6	NA	NA	NA	NA	NA	NA	NA
RWUS Relocation Site	7	5	91	59 ⁵	NA	NA	32	35.16%
Total	77	51	1,088	107	8	428	900	82.72%

³ Foleyvale Far Upstream PNPA and the Pocket PNPA were not included in this assessment due PNPA access restrictions at the time of monitoring (refer to **Section 4.5.1**)

⁴ Includes four of the seven protected nests, as well as three nests found hatched and unprotected and additional hatchlings rescued from unprotected nest during UAE (see **Section 4.4.5.1**)

⁵ Unviable due to cattle trampling event

Overall, most protected nests within the assessed PNPAs achieved a high emergence rate percentage, with variation between PNPAs reflecting differences in clutch viability and the number of nests available for assessment.

4.5.1.1 Camera Monitoring

One monitoring camera was installed within Foleyvale Upstream PNPA. Footage from the remote camera positioned above this nest was checked for relevant images and hatchling emergence was confirmed (refer to **Photograph 4.1 - 4.3**).



Photograph 4.1: Foleyvale Upstream camera monitoring - emergence of turtle hatchling captured (timestamp 14/11/2025 11:42 pm)



Photograph 4.2: Foleyvale Upstream camera monitoring - emergence of turtle hatchling captured (timestamp 15/11/2025 8:08 pm)



Photograph 4.3: Foleyvale Upstream – camera monitoring - emergence of turtle hatchling captured (timestamp 15/11/2025 10:51 pm)

4.5.1.2 Hatching Success SQP Audit

Hatching success audit was undertaken on 11 December 2025 by Dr Natalie Clark, as the SQP, whom supervised/audited Tunuba, as nest protection contractor, in undertaking hatching success monitoring as part of the Rookwood Weir Specification of Services: Turtle Monitoring (Sunwater, November 2023). The audit was conducted at the Foleyvale Upstream PNPA. During the audit, the SQP assessed monitoring activities against the agreed methodology in 2025 ANP Plan and permit/approval methodology/conditions. The condition of the PNPA was observed and success of habitat and nest protection activities discussed with the Tunuba and Sunwater teams to inform the subsequent annual planning meeting.

The results of the audit indicated that the condition of the PNPA was suitable for turtle nesting. Terrestrial and aquatic weeds within and adjacent to the PNPA were observed to be minimal and not restricting turtle access or impacting confirmed turtle nesting. Some evidence of predator activity was observed in the form of pig tracks and some moderate cattle activity. The communal nest protection cage that had been installed within the PNPA was observed to be located within a suitable position at the top of the bank slope and within sandy substrate known to be suitable for turtle nesting.

During the audit, one nest within the communal cage was excavated, with evidence of 15 eggs: six successfully hatched, six unviable, and three containing deceased hatchlings partially emerged. No clear cause of hatchling mortality was identified; substrate conditions were suitable and there was no indication of hatchling entrapment from the communal cage. Maggots present in decomposing eggs may have contributed to the three hatchling mortalities. Tunuba confirmed this was the first recorded instance of deceased hatchlings within a protected nest.

Two nests protected with plastic mesh were also inspected by the Tunuba team. The plastic mesh was installed over the nests and identification markings assigned in accordance with the ANP Plan. The team were observed to excavate the nest to the top of the first egg in accordance with the permit approval methodology/conditions. One nest had not hatched and the eggs were recovered. Footage from the remote camera positioned above this nest was checked for relevant images. Hatchling tracks were observed within the vicinity of the second nest however, whole eggs remained within the nest chamber, so the nest was recovered to prevent disturbance.

Protected nests located at the Foleyvale Crossing Far Upstream PNPA were inaccessible during the audit due to low water levels. A discussion was held on the number of predated nests found within the Foleyvale Crossing Upstream and Far Upstream PNPAs and the challenges of reaching the sites before predation occurs.

Recommendations provided to the Tunuba nest protection team during the audit included:

- The communal cage within the PNPA could be removed as all relocated nests had hatched;
- When recovering nests, moist sand from the excavated nest should be carefully set aside and used to recover nests, rather than dry surface sand;
- Plastic nest protection mesh located within the Foleyvale Crossing Far Upstream PNPA is to be removed once access to the site is possible;
- Data on protected nests (such as number of eggs with clutch and approximate date of laying) should be available in the field during the hatching surveys to inform the assessment of hatching success (e.g. number of eggs successfully hatched vs total laid); and
- The frequency of nest protection monitoring is to be reviewed for 2026 with reduced frequency proposed to occur at the start of the nesting season and during the hatching season to allow increased monitoring during the peak nesting periods. Increase monitoring frequency during the peak nesting periods would reduce the time between nest laying and nest protection and therefore reduce the rate of predation prior to nest detection.

4.6 Limitations

- This report is based solely on the information collected and recorded by the Tunuba nest protection team during the 2025 nesting and hatching season;
- All findings rely on the observations, photographs, and data collected by the Tunuba rangers, which may vary depending on field conditions and detectability;
- Hatching success could only be assessed for nests where clutch size and post-hatching evidence were observable at the time of inspection. Several PNPA became inaccessible during the FRT hatching season due to environmental and access constraints, preventing timely return to some nests. For other nests, physical evidence of hatching (e.g., eggshell fragments, emergence holes) had degraded or were no longer visible by the time nests were monitored for hatching;
- Access to some PNPA was restricted due to changing river levels, preventing timely assessment of all nests;
- Post-hatching evidence (eggshells, membranes, emergence holes) degrades quickly and was not always visible when sites were accessed;
- Predation and cattle activity disturbed some nests, removing or scattering evidence needed to assess hatching success;
- Clutch size was not recorded for all protected nests, only the first top egg was measured. Clutch size was only estimated after hatching event, limiting the ability to calculate hatching success accurately at times;
- Monitoring frequency and timing meant some nests hatched between visits, with potential for hatching evidence to be lost before inspection; and
- Environmental conditions (substrate type, moisture, vegetation cover) affected visibility and detectability of nest remains.

5 Success Criteria

The success of the 2025 ANP Plan was evaluated against the approved performance success criteria for each conservation outcome listed in **Section 3.3** (as per GHD 2022b and GHD 2022c). **Table 5.1** to **Table 5.4** assesses whether the implementation of the 2025 ANP Plan has achieved the success criteria (through the evidence provided in **Section 4**) and whether the contingency program threshold (refer to Tunuba 2025a) has been triggered requiring corrective actions.

Table 5.1: Evaluation of the Nest Habitat Suitability against the conservation outcome performance criteria (as per GHD 2022b and GHD 2022c)

Item	Success Criteria	Outcome and Evidence	Corrective Action Required & Contingency Program Threshold
Nest Habitat Suitability	Suitable nesting habitat present within, upstream and/or downstream of Rookwood Weir as defined by the presence of high suitability and confirmed and/or functional nesting banks.	Success criteria achieved - High suitability of nesting habitat for WTST was present at all six PNPAs in 2025; - WTST nests were confirmed at four of the six PNPAs (within, upstream and downstream of Rookwood Weir), and high suitability of nesting habitat was identified at two of the six PNPAs; - High suitability nesting FRT was present at all six PNPAs in 2025 (within, upstream and downstream of Rookwood Weir); and - FRT nests were recorded at every PNPA, and functional or confirmed nesting habitat was identified.	No corrective action required

Table 5.2: Evaluation of 2025 PNPA nest activity monitoring against the conservation outcome performance criteria (as per GHD 2022b and GHD 2022c)

Item	Success Criteria	Outcome and evidence	Corrective Action Required & Contingency Program Threshold
Nesting Activity	Confirmed turtle nesting occurring at one or more PNPA within, upstream and/or downstream of Rookwood Weir.	Success criteria achieved	No corrective action required
		RWDS Nesting activity: Confirmed Evidence: - Confirmed predated WTST turtle nests within PNPA; - Four confirmed FRT nests recorded within PNPA; - Nine confirmed potential FRT/Kreffft's turtle nests recorded within PNPA; and - Aggregated nesting present- defined as multiple nests occurring in close proximity along the same bank - was evident at RWDS.	

Item	Success Criteria	Outcome and evidence		Corrective Action Required & Contingency Program Threshold
		RWUS	Nesting activity: Confirmed Evidence: - Confirmed WTST turtle nests (predated) within PNPA; - Confirmed FRT nests recorded within PNPA; and - Aggregated nesting present- defined as multiple nests occurring in close proximity along the same bank - was evident at RWUS.	
		Hanrahan's	Nesting activity: Confirmed Evidence: - Six confirmed FRT nests recorded within PNPA; 17 confirmed potential FRT/Krefft's turtle nests recorded within PNPA; - One confirmed Krefft's nests recorded within PNPA; and - Aggregated nesting present- defined as multiple nests occurring in close proximity along the same bank - was evident at Hanrahan's.	
		Foleyvale Upstream	Nesting activity: Confirmed Evidence: - Six confirmed FRT nests recorded within PNPA; 11 confirmed potential FRT/Krefft's turtle nests recorded within PNPA; - Four confirmed Krefft's nests recorded within PNPA; - Two nests recorded within PNPA that were unidentifiable; and - Aggregated nesting present- defined as multiple nests occurring in close proximity along the same bank - was evident at Foleyvale Upstream.	

Item	Success Criteria	Outcome and evidence		Corrective Action Required & Contingency Program Threshold
		Foleyvale Far Upstream	Nesting activity: Confirmed Evidence: - Three confirmed FRT nests recorded within PNPA; - Five confirmed potential FRT/Kreffft's turtle nests recorded within PNPA; and - Aggregated nesting present- defined as multiple nests occurring in close proximity along the same bank - was evident at Foleyvale Far Upstream.	
		The Pocket	Nesting activity: Confirmed Evidence: - Confirmed predated WTST turtle nests within PNPA; - Three confirmed FRT nests recorded within PNPA; - Two confirmed potential FRT/Kreffft's turtle nests recorded within PNPA; - Two nests recorded within PNPA that were unidentifiable; and - Aggregated nesting present- defined as multiple nests occurring in close proximity along the same bank - was evident at Foleyvale Far Upstream.	

Table 5.3: Evaluation of 2025 PNPA nest activity monitoring against the conservation outcome performance criteria (as per GHD 2022b and GHD 2022c)

Item	Success Criteria	Outcome and Evidence	Corrective Action Required & Contingency Program Threshold
Nest Predation	90% reduction in predation of turtle nests compared to pre-offset success (pre offset success for FRT ~97% predation rate).	Success criteria was not achieved - A 90% reduction in nest predation requires the pre-clearance predation rate of approximately 97% to be reduced to around 9.7%; and - The 2025 ANP Plan recorded a predation rate higher than 9.7% at each of the PNPAs (refer to Section 4.4.5), which does not meet the success criterion of a 90% reduction relative to the pre-offset baseline.	Corrective action required – contingency program triggered. The 90% reduction in nest predation (target ~9.7% from a ~97% baseline) was not achieved across the PNPAs selected for 2025–26 season. The predation rate at each of the PNPAs was due to several reasons: - A number of PNPAs experienced the impacts of the algal bloom during the October FRT nesting season which restricted both land and water access to several PNPAs, preventing timely installation of nest protection and precluding the use of electric fencing at high-risk sites; - These constraints are recognised in the WTST and FRT Nest Protection Management Plans as circumstances outside the control of Sunwater and Tunuba; - In line with the contingency program, the 2026 ANP Plan will strengthen early-season access planning, enable rapid-deployment nest protection, and assess fencing feasibility at accessible PNPAs; and - It is also worth noting that of the nests protected, a 100% reduction in predation occurred - so the protection methods were effective at reducing predation. The criteria were not met because not all nests were protected before predation occurred.

Table 5.3: Evaluation of 2025 PNPA hatchling recruitment success rates against the conservation outcome performance criteria (as per GHD 2022b and GHD 2022c)

Item	Success Criteria	Outcome and evidence		Corrective Action Required & Contingency Program Threshold
Hatchling Recruitment	90% increase in recruitment of hatchlings into the population compared to pre-offset hatchling recruitment success rate of ~ 2.7%	Success criteria achieved		No corrective action required Even though the success criteria were achieved within the assessed PNPA's, it is important to note that recruitment was also influenced by unviable eggs and cattle trampling due to the absence of electric fencing the within relocation site.
		RWDS	During the 2025 ANP monitoring program, RWDS PNPA recorded a hatchling recruitment success rate of 85.23%. The 2025 hatchling success rate exceeded the pre-offset success rate of 2.7%.	
		RWUS	During the 2025 ANP monitoring program, RWUS PNPA recorded a hatchling recruitment success rate of 78.13%. The 2025 hatchling success rate exceeds the pre-offset success rate of 2.7%.	
		Hanrahan's	During the 2025 ANP monitoring program, Hanrahan's PNPA recorded a hatchling recruitment success rate of 87.92%. The 2025 hatchling success rate exceeds the pre-offset success rate of 2.7%.	
		Foleyvale Upstream	During the 2025 ANP monitoring program, Foleyvale Upstream PNPA recorded a hatchling recruitment success rate of 87.59%. The 2025 hatchling success rate exceeds the pre-offset success rate of 2.7%.	
		Foleyvale Far Upstream	Not included in the 2025 performance criteria assessment (refer to Section 4.5.1)	
		The Pocket	Not included in the 2025 performance criteria assessment (refer to Section 4.5.1)	

6 Discussion and Recommendations

The 2025 nesting season represented the first full year of implementation of the Rookwood Weir ANP Plan following impoundment. The outcomes of the program demonstrate that the management framework established under the WTST and FRT Nest Protection Plans are functioning effectively in several key areas, while also highlighting environmental and logistical constraints that influenced the ability to meet all performance criteria.

6.1 Nesting Habitat Suitability and Nesting Activity

Suitable nesting habitat for both the WTST and FRT was present across all six PNPAs, consistent with the performance criteria. Confirmed nesting occurred for WTST at four PNPAs and for FRT at all six PNPAs. These results indicate that the PNPAs selected for Year 1 remain functional nesting habitat following impoundment and that both species continue to utilise these areas for reproduction. The distribution of nests across upstream, downstream, and inundation-adjacent sites suggests that habitat availability has been maintained despite hydrological and habitat changes associated with the Weir.

6.2 Nest Predation Outcomes and Contributing Factors

The overall nest predation rates per PNPA did not meet the performance criterion requiring a 90% reduction relative to the pre-offset baseline. The primary contributing factor was restricted access to several PNPAs during the peak FRT nesting season due to a severe algal bloom in October 2025. This prevented timely installation of nest protection mesh and unfortunately the installation of electric fencing was not possible due to no landholder agreements with Sunwater. The season demonstrated that the current nest protection methodology (protection mesh and cages) were 100% effective in preventing predation of nests that were protected.

Furthermore, the results also highlighted that the program is highly sensitive to access limitations, and that without reliable land and water access, nest protection cannot be implemented at the scale or frequency required to achieve the predation reduction target.

6.3 Hatchling Recruitment

Despite the access limitations, hatchling recruitment was high, with 900 hatchlings emerging from 1,088 eggs (82.72% hatching recruitment rate). This exceeds the performance criterion requiring a $\geq 90\%$ increase from the pre-offset baseline (i.e. pre-offset baseline of $\sim 2.7\%$ to $\geq 5.7\%$). The high recruitment rate demonstrates the effectiveness of nest protection measures where access was possible and indicates that the program is achieving its objective of increasing hatchling recruitment into the population.

Hatching success rates for eggs that were transferred to communal cages (Hanrahan's PNPA and Foleyvale Upstream PNPA) remained high relative to the number of unviable eggs. The small proportion of unviable eggs recorded across these sites is consistent with the natural variability reported for freshwater turtle nesting ecology, where hatching success commonly ranges from 60 - 90% and can vary from 0 - 100% depending on environmental conditions (Limpus et al. 2011; Tucker et al. 1998; Doody et al. 2004). Factors such as moisture levels, temperature fluctuations, hydrological conditions, and nest-specific characteristics are well-documented drivers of embryonic development in freshwater turtles. Unviability at these levels has also been routinely observed in comparable conservation programs (Limpus et al. 2011c; Tucker et al. 1998; Doody et al. 2004). Overall, the hatching success achieved at both sites reflects effective nest protection and falls within expected ranges for Australian freshwater turtle species.

For PNPAs where disturbance risk is high (e.g., cattle accessing the riverbanks) when electric fencing cannot be implemented (due to limitation in land holder access agreements), artificial incubation should be considered as an emergency response option to prevent total clutch loss. In these circumstances, artificial incubation provides a secure, controlled alternative that enables eggs to be

safeguarded when in-situ protection is not feasible, ensuring nests remain protected during periods of elevated risk.

6.4 Unexpected Adverse Events

Two unexpected adverse events (UAEs) occurred during the season, both of which were managed in accordance with AEC Approval CA-2025-07-1980 and DETSI Scientific Research Permit P-SPP-100896361. Both events were formally notified to Sunwater, AEC and DETSI as required.

The first UAE involved emergency rescue of exposed FRT hatchlings following a predation event. Although handling of hatchlings is not authorised under the AEC approval, the intervention was necessary to prevent imminent mortality and was undertaken solely for welfare purposes.

The second UAE involved egg mortalities at a sub-optimal relocation site following cattle trampling. The relocation site was identified as suboptimal at the time of relocation, and electric fencing could not be installed due to landholder agreement constraints. This event highlights the importance of pre-planned relocation site suitability to ensure secure protection measures where nests are relocated.

6.5 Adaptive Management Recommendations

The outcomes of the 2025 ANP report highlight several areas for refinement to improve program effectiveness in subsequent years:

- PNPA selection should be selected based upon nesting banks that do not experience large fluctuations in river levels and remain relatively exposed and stable throughout the nesting season;
- Earlier identification and negotiation of alternative land access routes to 2026 PNPA's;
- To prevent cattle trampling of nests, installation of electric fencing should be installed;
- Selection of PNPA's should take into account presence of cattle and likelihood of electric fencing installation (in relation to landholder agreements). Furthermore, electric fencing is not to be installed in areas that become inaccessible during floods as the fencing will need to be removed prior to flooding and reinstated post flooding;
- Access constraints were the main limitation to nest protection this season, highlighting the need for earlier planning of alternative routes and timely confirmation of access arrangements;
- PNPA selection and monitoring should prioritise PNPA's with reliable alternative access routes during high-flow events;
- Relocation site suitability requires more rigorous assessment in the pre-planning phase of monitoring works to ensure that relocated nests can be relocated into suitable substrate, adequately protected from predators and other disturbances (i.e. cattle) prior to each nesting season commencing. Electric fencing feasibility should be reviewed for high-risk PNPA's, including early negotiation of landholder agreements;
- Emergency intervention protocols should be formalised within the ANP Plan and through an AEC permit amendment (if required) to ensure rapid, compliant responses to welfare-critical situations (such as emergency handling of hatchlings and incubation of eggs during emergency situations);
- A review of the frequency of nest protection monitoring, the current frequency of once per week per PNPA is not sufficient during the peak nesting period to protect 90% of the nests that are laid; and
- Improved forecasting and contingency planning for flow event (high and low) related access restriction.

Overall, the 2025 season provides a strong foundation for adaptive management. While predation outcomes were constrained by environmental conditions, nesting activity, habitat suitability, and hatchling recruitment results demonstrate that the program is achieving key conservation objectives and is well-positioned for improved performance in subsequent years.

7 References

- Approved National Recovery Plan for the White-throated Snapping Turtle (*Elseya albagula*). (2020). Commonwealth of Australia.
- Chessman, B. C. (2017). Ecology and conservation of freshwater turtles in Australia. *Australian Zoologist*, 38(3), 396–408.
- Department of the Environment. (2013). *Matters of National Environmental Significance: Significant Impact Guidelines 1.1 Environment Protection and Biodiversity Conservation Act 1999*. Australian Government.
- Department of Environment and Energy. (2017). *Approval Conditions: Lower Fitzroy River Infrastructure Project, Queensland (EPBC 2009/5173)*.
- Doody, J. S., Georges, A., Young, J. E., and Pauza, M. (2004). Environmental impacts on nest success in a tropical freshwater turtle. *Oecologia*, 139, 467–474.
- Earthtrade. (2022). *Sunwater: Rookwood Weir Offset Strategy (Version 10)*. Prepared for Sunwater, Brisbane.
- Earthtrade. (2023). *Sunwater: Rookwood Weir Project EPBC 2009/5173 Turtle Habitat Enhancement Program: Expanded Feral Pest Animal Management Plan*.
- Espinoza, T., Smar, C., and Limpus, D. (2022). *Freshwater Turtle Nesting Ecology and the Influence of Hydrological Variability in Regulated Rivers of Eastern Australia*. Queensland Department of Regional Development, Manufacturing and Water, Brisbane.
- GHD. (2015). *Lower Fitzroy River Infrastructure Project Environmental Impact Statement*. Report prepared for Gladstone Area Water Board and Sunwater.
- GHD. (2022a). *Rookwood Weir Operations Species Management Plan (RWW-GHD-ENV-MP-003)*. Report prepared for Sunwater Limited.
- GHD. (2022b). *White-throated Snapping Turtle Nest Protection Plan (WTSTPP) (RWW-GHD-ENV-MP-002)*. Report prepared for Sunwater Limited.
- GHD. (2022c). *Fitzroy River Turtle Nest Protection Plan (FRTTP) (RWW-GHD-ENV-MP-0001)*. Report prepared for Sunwater Limited.
- GHD. (2022d). *Rookwood Weir Turtle Management and Conservation Outcomes Report (RWP-GHD-ENV-RP-0020)*. Report prepared for Sunwater Limited.
- GHD. (2024). *Rookwood 2022 Turtle Movement Study: Annual Report*. Report prepared for Sunwater Limited.
- Hamann, M., Schauble, C. S., Limpus, D. J., Emerick, S. P., and Limpus, C. J. (2007). *Management Plan for the Conservation of Elseya sp. (Burnett River) in the Burnett River Catchment*. Report prepared for the Queensland Environmental Protection Agency.
- Hollier, C. (2010). *The Effect of Different Water Release Volumes on the Survival of Incubating Eggs of Elseya albagula, Central Queensland*. Mini-thesis for Bachelor of Natural Resource Management, University of Melbourne.
- Hunter, D., Spencer, R. J., and Welsh, M. (2023). Predation, access constraints and monitoring limitations in freshwater turtle conservation programs. *Wildlife Research*, 50(4), 345–357.
- Legler, J. M. (1985). Australian chelid turtles: reproductive patterns in wide-ranging taxa. In G. Grigg, R. Shine, and H. Ehmann (Eds.), *The Biology of Australasian Frogs and Reptiles* (pp. 117–123). Surrey Beatty and Sons, Chipping Norton.
- Limpus, C. J., Limpus, D. J., Parmenter, C. J., Hodge, J., Forrest, M. J., and McLachlan, J. (2011a). *The Biology and Management Strategies for Freshwater Turtles in the Fitzroy Catchment, with Particular*

Emphasis on Elseya albagula. Department of Environment and Resource Management, Queensland Government.

Limpus, C. J., Limpus, D. J., Hollier, C., Savige, M., and McAllister, D. (2011b). *Survey of Freshwater Turtle Populations and Nesting Habitat, Tartrus Weir Turtleway Project, September–December 2011*. Department of Environment and Heritage Protection, Queensland Government.

Limpus, C. J., Limpus, D. J., Parmenter, C. J., and Hodge, J. (2011c). The biology and management of the White-throated Snapping Turtle *Elseya albagula* in the Burnett River, Queensland. *Memoirs of the Queensland Museum – Nature*.

McDougall, A., Espinoza, T., Hollier, C., Limpus, D., and Limpus, C. (2014). A risk assessment approach to manage inundation of *Elseya albagula* nests in impounded waters: A win–win situation. *Journal of Environmental Management*, 55. <https://doi.org/10.1007/s00267-014-0411-y> (doi.org in Bing)

Sunwater. (2023). *Rookwood Weir Specification of Services: Turtle Nest Protection Service*. Contract 23SW00112/005.

Tucker, A. D., Limpus, C. J., McCallum, H. I., and McDonald, K. R. (1998). Nesting ecology of freshwater turtles in the Burnett River, Queensland. *Wildlife Research*, 25, 415–426.

Tunuba (2025a). *Sunwater Annual Turtle Nest Protection Plan*.

Tunuba (2025b). *Sunwater Annual Feral Pest Management Plan*.

Limitations

This ANP Plan has been prepared for the use of the client, Sunwater, for the purpose of this commission only.

Tunuba Pty Ltd takes no responsibility and disclaims all liability for any loss or damage that any party may suffer as a result of using or relying on any such information or recommendations contained in this ANP Plan.

To the maximum extent permitted by law Tunuba Pty Ltd expressly disclaims responsibility for or liability arising from:

- Any error in, or omission in connection with assumptions; or
- Reliance on the report by a third party, or use of the report other than for the purpose stated.

The ANP Plan relates only to the project described herein and must be reviewed by a competent expert before being used for any other purpose. Tunuba Pty Ltd accepts no responsibility for other use of the data.

Should further information become available regarding the conditions of the PCAs, Tunuba Pty Ltd reserves the right to review and update the ANP Plan in the context of the additional information.

No section or element of this document may be removed, reproduced, electronically stored or transmitted in any form without the written permission of Tunuba Pty Ltd. All rights reserved.

This ANP Plan is based on information issued and supplied to Tunuba Pty Ltd by others as well as publicly available information.

APPENDIX A:

Tunuba Team and Appointed Subconsultant's CVs

Amelia Elgar

Senior Ecologist

Amelia is a senior ecologist and project manager with experience conducting ecological surveys, intensive fauna trapping for EVNT species, habitat assessments, significant impact assessments, environmental approvals and vegetation assessments.

Amelia has extensive remote field work experience conducting and coordinating and led remote intensive targeted fauna surveys for listed threatened fauna species and conducted remote field based ecological surveys targeting both flora and fauna as per State and federal guidelines. Amelia has a valued skill set in flora and fauna ecology and species identification, working across a diverse range of environments from tropical rainforests of Far North Queensland to the remote open country of Central Queensland.

Amelia is the approved authority holder of CQG's research permits. Amelia has a strong knowledge of commonwealth and state environmental legislation and approvals and has experience in writing impact assessment reports and technical report writing. Amelia has worked on numerous significant impact assessments and conducted field-based studies for listed threatened species such as Koala, Greater Glider and Northern Quoll.

Amelia is a Suitably Qualified Person (SQP) under the Nature Conservation Act 1992 (NC Act) to conduct Protected Plant Flora Surveys as per regulatory guidelines. She has completed formal training in Regional Ecosystem and BioCondition assessments.

Amelia is a trained conservation detection dog handler and has worked with conservation detection dogs on a Northern Quoll trapping program during the EIS and construction phase of a wind farm project in Far North Queensland.

Amelia is a CQG project manager and manages the CQG fauna Spotter Catcher (FSC) team including FSC project management and runs regular training and upskilling for staff in ecology field skills.



Specialisations

- Significant Impact Assessments for EPBC listed species
- Environmental Impact Assessment for EPBC listed species
- Ecological desktop assessments and constraints mapping
- Terrestrial fauna and flora surveys and intensive terrestrial fauna trapping for EVNT species
- Conservation detection dog handler
- Fauna spotter Catcher services and training
- Technical report writing

Qualifications

- Bachelor of Science (Honours) (2013), Griffith University
- Bachelor of Science (Conservation and Ecology) (2012), James Cook University
- Venomous snake handling certification
- Freshwater Turtle Conservation Training (Aquatic Environmental)

Amelia Elgar

Senior Ecologist

Career Summary



- **2022 to current** – CQG Consulting – Senior Ecologist
- **2019 to 2022** – CQG Consulting – Ecologist
- **2017 to 2019** – Four Elements Consulting – Ecologist
- **2016 to 2017** – RPS Consulting – Field Ecologist
- **2014 to 2015** – Conservation Volunteers Australia – Team Leader

Relevant Project Experience

Laing O'Rourke

Australia-Singapore Military Training Initiative (ASMTI) Facilities Project

- Input into Koala EPBC Significant Impact Assessment and methodology for targeted survey design
- Desktop database assessments for environmental constraints mapping/ regional ecosystems / threatened vegetation communities and EVNT species in accordance with State and Federal Government Guidelines within the ASMTI Shoalwater Bay Training Area (SWTBA) project footprint
- Field work located in rough and remote terrain
- Ground truthing regional ecosystems / threatened vegetation communities and EVNT species in accordance with State and Federal Government Guidelines
- Habitat condition assessment
- Protected plants flora survey as a SQP in accordance with State Government Guidelines
- Passive fauna surveys in accordance with State and Federal Government Guidelines
- Waterway health assessments in accordance with State and Federal Government Guidelines.
- Identification of weeds and pest animals listed under the Biosecurity Act 2014 (Qld)
- On-site ecological data capture and data management
- Involvement in GIS output for environmental constraints mapping
- ASMTI SWBTA Post Wet Ecological Survey Report
- ASMTI SWBTA DDR Gap Analysis Report
- Updates to the ASMTI SWBTA Environmental Report
- Other ecological survey reports within the ASMTI SWBTA footprint
- Project management

Ratch

Mt Emerald Wind Farm Project

- Terrestrial fauna surveys for threatened species identified during EIS component of Project, conducted over two years in accordance with the State and Federal Government guidelines, including intensive trapping, radio collaring and tracking of Northern Quolls, night vision surveys for Spectacle Flying Fox and diurnal bird surveys
- Trained and worked as a Detection Dog Handler for Northern Quoll during clearance survey work
- Floristic surveys in accordance with the State and Federal Government guidelines, including Core-veg surveys and BioCondition assessments
- Bird and Bat collision monitoring
- Data analysis and reporting

Queensland Alumina Limited

Alternative Discharge Significant Impact Assessment

- Desktop database assessments for environmental constraints mapping/ regional ecosystems / threatened vegetation communities and EVNT species in accordance with State and Federal Government Guidelines
- Significant Impact Assessment report

Metro Mining

Bauxite Hills Skardon River

- Pre-clearance surveys.
- Fauna spotter catcher services.
- Flora surveys including BioCondition assessments in accordance with the State Government guidelines.

Amelia Elgar

Senior Ecologist



Mount Mackenzie Mines

Mount Mackenzie Gold Project

- Mount Mackenzie Significant Impact Assessment Report
- Mount Mackenzie Environmental Assessment report
- Desktop database assessments for environmental constraints mapping/ regional ecosystems / threatened vegetation communities and EVNT species in accordance with State and Federal Government Guidelines
- Pre-wet and post-wet ecological surveys to confirm presence/likelihood of State and Federal Matters of Environmental Significance
- Ground truthing regional ecosystems / threatened vegetation communities and EVNT species in accordance with State and Federal Government Guidelines
- Identification of weeds and pest animals listed under the Biosecurity Act 2014 (Qld)
- On-site ecological data capture and data management

Mount Panorama Extractive Industry

Mount Panorama Site Assessment

- Ecological investigation to identify potential environmental constraints within Project Area
- Desktop database assessments for environmental constraints mapping/ regional ecosystems / threatened vegetation
- Ground truthing regional ecosystems / threatened vegetation communities and EVNT species in accordance with State and Federal Government Guidelines
- Protected plants flora survey as a SQP in accordance with State Government Guidelines
- Assessment of the presence of mapped TEC within Investigation Area
- Evaluation of the nature conservation values within Project Area
- Mount Panorama Ecological Investigation Report

GRC Pastoral

Riverview PMAV Assessment

- Vegetation assessment to confirm suitability of applying for a Property Map of Assessable Vegetation (PMAV) over newly purchased property
- Desktop database assessments for environmental constraints mapping/ regional ecosystems / threatened vegetation communities and EVNT species in accordance with State and Federal Government Guidelines
- Ground truthing regional ecosystems / threatened vegetation communities and EVNT species in accordance with State and Federal Government Guidelines
- Identify areas that are not consistent with mapped regional ecosystems for the conversion to either Category X or least concern regional ecosystems
- Identification of weeds and pest animals listed under the Biosecurity Act 2014 (Qld)
- On-site ecological data capture and data management
- Riverview PMAV Application Report
- Submission of PMAV application to DES on behalf of client

Laing O'Rourke

Australia-Singapore Military Training Initiative (ASMTI) Facilities Project – Precinct B and C Fauna Spotter Catcher Package.

- Tunuba Project Manager for Precinct B and C Fauna Spotter Catcher package
- Management of field teams, resourcing, reporting and budget management
- On site threatened species management in accordance with State and Federal Government Guidelines
- Training of field teams
- Pre-clearance reports
- Post-clearance reports
- Threatened Fauna Records

Amelia Elgar

Senior Ecologist



Queensland Parks and Wildlife (Tunuba)

Zamia Walking Track Upgrade - Protected Plant Flora Survey

- Desktop database searches to inform ecological constraints for field survey
- Conducted and led protected plant flora surveys as a SQP in accordance with the State Government guidelines
- Ground truthing regional ecosystems / threatened vegetation communities and EVNT species in accordance with State and Federal Government Guidelines
- Zamia Walking Track Upgrade Protected plant flora survey report in accordance with the State Government guidelines

Acciona Construction Australia

Alliance Rookwood Weir Project

- Project manager for Fauna Spotter Catcher services supplied to Project
- Coordination of field teams for pre-clearance ecological surveys and fauna spotter catcher services during clearing works, budgeting and liaising with Alliance and civil contractors
- Remote on-ground field work as fauna spotter catcher, working alongside heavy machinery
- Development of Weed Management Plan for the project
- Rookwood Weir Project pre-clearance reports
- Rookwood Weir Project post-clearance reports

ERTECH

Roads and Tracks Upgrade in Shoalwater Bay Military Training Area (SWBTA)

- Ground truthing regional ecosystems / vegetation communities in accordance with the State and Federal Government guidelines
- Pre-clearance surveys
- Fauna spotter catcher services
- Weed identification
- Data management
- Ertech post-clearance reporting

Balfour Beatty United Group

Cardwell Powerline Construction Project

- Environmental Compliance Audits
- Pre-clearance surveys
- Environmental Inductions for construction staff

Downer FKG

Shoalwater Bay Training Area Remediation Project Bush Huts Ecological Survey

- Project management input involving the coordination of field teams, budgeting and liaising with client
- Desktop database searches to inform ecological constraints for field survey
- Ground truthing regional ecosystems / threatened vegetation communities and EVNT species in accordance with State and Federal Government Guidelines
- Habitat condition assessment
- Protected plants flora survey as a SQP in accordance with State Government Guidelines
- Passive fauna surveys in accordance with State and Federal Government Guidelines
- Identification of weeds and pest animals listed under the Biosecurity Act 2014 (Qld)
- Onsite data capture and data management
- Interpretation of data capture for reporting output
- AECOM DFKG JV Bush Huts Ecological Report

The Caves Quarry CQ Pty Ltd

The Caves and Palm Tree Quarries Biosecurity Management Plan

- Conducted and lead field investigation to identify weeds and pest animals listed under the Biosecurity Act 2014 (Qld)
- Developed Biosecurity Management Plan for the project

Department of Transport and Main Roads

Rockhampton Ring Road High Risk Areas Pre-clearance surveys (Crest Assured)

- Pre-clearance ecological surveys including habitat features and invasive species assessment
- Rockhampton Ring Road High Risk Areas pre-clearance reporting

Isaac Regional Council

Erosion Protection Rock Revetment Wall

- Ecological survey of marine vegetation for temporary and permanently disturbed areas in accordance with the State and Federal Government guidelines
- On-site GIS mapping

Nikki Cannon

Senior Ecologist

Nikki is a senior ecologist with experience in remote rural settings and a passion for conserving native flora and fauna.

Nikki led several flora and fauna surveys for projects throughout Central Queensland. These surveys have included targeted fauna surveys, fauna trapping, Fauna Spotter Catcher (FSC) duties, detailed BioCondition and RE Verification, protected plants, weed and pest surveys and marine plant surveys.

Nikki is confident and comfortable in fauna tracking, capture, identification and handling as a result of five years undertaking trapping, scat and sign searches, spotlighting and spotter catcher works.

Since 2019 Nikki has been undertaking pre- clearance surveys and Fauna Spotter Catcher works in a wide range of habitats across central Queensland. Nikki began managing FSC projects in 2022.

Nikki has been involved feral pest management in varying capacities including mustering feral goats and sheep, culling feral deer, undertaking pest animal surveys and coordinating feral animal surveillance.

Nikki has worked on major infrastructure projects across central Queensland including the Fitzroy to Gladstone Pipeline, Shoalwater Bay Military Training Area Expansion, Rockhampton Ring Road, Boulder Creek Windfarm and Rookwood Weir. She is comfortable and experienced in rural agricultural settings from owning, working and living on agricultural properties.

She has experience in weed management and weed surveys coordinating projects such as the weed management of the Shoalwater Bay Military Training Area expansion and undertaking weed surveys for the Fitzroy to Gladstone Pipeline project.

Nikki is passionate about biosecurity and is well aware of the risks that it carries from her work in high-risk regions like the Shoalwater Bay military training area. In 2022 and 2024, she attended the Australian Biosecurity Symposium on the Gold Coast learning from industry professionals.



Specialisations

- Flora surveys (BioCondition and RE verification)
- Fauna surveys (Dawn, dusk, spotlighting and targeted fauna surveys, and fauna trapping)
- Pre-clearance and fauna spotter catcher works

Qualifications

- Bachelor of Environmental Science (Water Management) 2019, Central Queensland University
- Freshwater Turtle Conservation Training, 2024
- Remote Area First Aid 2022 CPR 2025
- Control Weeds, 2021
- Transport and Store Chemicals, 2021
- Prepare and Apply Chemicals to Control Pest, Weeds and Diseases, 2021
- Standard 11, 2020
- Inspect and Clean Machinery for Plant and Animal and Soil Material, 2020
- Infection Control Training - COVID-19, 2020
- Venomous Snake Handling, 2019
- White Card, 2019
- Operate and Maintain 4WD, 2019
- Queensland Recreational Firearms Licence, Category A & B, 2018
- PADI Divemaster, 2007
- PADI Project AWARE Reef Fish Identification, 2006

Nikki Cannon

Environmental Scientist



Career Summary

- July 2024 to current – CQG Consulting, Senior Ecologist
- Jan 2020 to June 2024 – CQG Consulting, Environmental Scientist
- Apr 2019 to Jan 2020 – CQG Consulting, Environmental Field Technician

Relevant Project Experience

Tunuba

- Project Management
 - Mentorship of Tunuba Rangers
- Boulder Creek Wind Farm*
- Fauna Spotter Catcher Services
 - Working alongside Machinery
 - Ecological advice and preclearance surveys
 - Protected Plant Identification and survey
- Australia-Singapore Military Training Initiative*
- Providing FSC services
 - Biosecurity Management Trial
 - Site inspections and assessment
- Sunwater Rookwood Weir Feral Pest Management*
- Develop and implement feral pest management plan
 - Coordinate feral pest management activities including setting up camera traps, training rangers and coordinating subcontractors

Gladstone Ports Corporation

Pest Management Survey

- Accompanying UAV pilots on an aerial survey of an island to identify pest flora and fauna species
- Recording observations from vessel during UAV surveys
- Analyzing UAV footage to identify pest fauna and flora, and target areas for on foot investigations.

Various Confidential Clients

Fauna Trapping and Targeted Koala and Glider Surveys

- Field team lead
- Day light, dusk and nighttime searches for koalas targeting habitat and food trees to search for koalas, their scat and scratches
- Thermal camera and spotlight searches
- Nighttime listening surveys identifying and recording mammal calls from koalas and various glider species
- Fauna trapping
- Dawn and dusk bird surveys

Jamworth

Targeted Koala and Wallum Froglet Survey

- Dusk and night time spotlighting
- Call play back
- Thermal camera searches
- Active searches for koala scat and sign
- Active searches for Wallum froglets
- Setting of audio MOTH devices for recording calls

Long Island Station

Feral Animal Control

- Mustering feral goats with helicopters, ATV, UTV, motorbikes and dogs
- Yarding, drafting and determining health status for sale suitability
- Removing feral deer and sheep from paddocks and yards
- Transporting of sale goats to mainland by barge
- Transporting of female and young feral goats to pasture for inoculation and domestic use
- Loading sale stock onto transport trucks
- Using minimal stress handling techniques (encouraging natural movement, respecting flight zones, allowing stock to rest and recover) to ensure stock comfort and quality
- Feral deer, goat and sheep culling

Domestic Stock Handling

- Mustering, yarding, drafting, inoculating, tagging, weaning, husbandry and general care of stud and commercial goats and cattle
- Mothering up displaced kids
- Planning watering, fencing, pasture improvement and grazing areas

PMAV and Vegetation Assessments

- Ecological surveys
- Regional Ecosystem verification and BioCondition transects
- PMAV Reporting

Nikki Cannon

Senior Ecologist



Confidential Client

Targeted Koala Surveys

- UAV surveys targeting koalas using thermal imaging and RGB cameras
- Day light, dusk and nighttime searches for koalas targeting habitat and food trees to search for koalas, their scat and scratches
- Nighttime listening surveys identifying and recording mammal calls from koalas and various glider species

Laing O'Rourke

Australia-Singapore Military Training Initiative

- Ecology surveys
- Flora and fauna surveys
- Conducting BioCondition assessments, secondary flora surveys and AusRivAS waterway assessments
- Conducting dusk, dawn and spotlighting surveys for fauna
- Logistical organization and planning of fauna trapping program

Gladstone Area Water Board

Ecological Investigations – various projects

- Project management
- Field team lead
- Undertake ecological investigation of proposed pipeline placement
- Targeted fauna surveys

McConnell Dowell BMD Joint Venture

Fitzroy to Gladstone Pipeline

- Field team lead
- Weed surveys
- Ecological surveys
- FSC Services

Acciona Construction Australia

Rookwood Weir Project

- Pre-clearance surveys
- Conducting weed surveys
- Providing FSC services

Rockhampton Regional Council

Bird Management

- Coordinating bird dispersal and survey program for Lakes Creek Road Landfill
- Reporting on results of dispersals and surveys.

Queensland Alumina Limited

Water mouse Trapping

- Trapping of water mouse in an intertidal habitat zone to determine species presence / abundance
- Identifying potential habitat areas to target

Various Clients

Fauna Spotter Catcher Services

- Project management
- Undertaking pre-clearance surveys
- Providing FSC services for terrestrial and aquatic clearing zones
- Developing pre and post clearance reports

Cézanne Hamilton

Environmental Scientist



Cézanne is an experienced environmental scientist with a strong foundation in field-based ecological monitoring, data analysis, and environmental education. With a background in water quality sampling, aquatic assessments, and community engagement, Cézanne blends scientific expertise with a passion for sustainability and public outreach.

Cézanne has recently completed her project management training and is now developing the capability to take on her own projects. She also completed AUSRIVAS training in Canberra, gaining competency in habitat mapping, field sheet data collection, and macroinvertebrate sample collection and processing. With a background in Environmental Science, Cézanne has specialised expertise in water quality chemistry, ecological monitoring, and environmental assessment. She is experienced in the collection, preparation, and analysis of water samples.

As an Environmental Monitoring Officer with a regional council, Cézanne was responsible for sampling and analysing water quality, including water quality meter use, laboratory analysis, and ecological assessments such as vegetation surveys, macroinvertebrate sampling, periphyton monitoring, fish surveys, and offshore marine testing.

Cézanne has also contributed to environmental education as a contractor to local council, delivering programs on waste minimisation and freshwater quality. She has designed and led workshops, field trips, and community events, communicating science in an accessible and engaging way.

Specialisations

- Environmental monitoring (freshwater and coastal water sampling)
- Aquatic ecology and water chemistry
- Waste and resource recovery
- Fauna Spotter Catcher services
- Ecological desktop assessments
- Technical Report writing and planning

Qualifications

- Bachelor of Science (Geography and Environmental Science)
- Construction White Card
- Level one first aid certified
- Venomous Snake Handling and Awareness Course
- Certificate of Freshwater Turtle Conservation training
- New Zealand Coastguard Day Skippers certificate
- Kayak skills and water safety
- Attended Mountains to Sea Conservation Trust freshwater and marine conservation conference
- AUSRIVAS macroinvertebrate training

Associations

- Institute of Environment Australia and New Zealand (EIANZ)

Cézanne Hamilton

Environmental Scientist



Awards

- Northland Regional Council Environmental Awards:
- Youth environmental Leader Award (June 2022)
- Environmental action in the Community (July 2023)
- Environmental action to address climate change (July 2023)
- Te Tohu Mataua – Supreme Award (July 2023)

Career Summary

- **April 2025 to current** – CQG Consulting – Environmental Scientist (Level 2 consultant)
- **February 2025 – April 2025** – Mackay Regional Council Sustainability Officer
- **Dec 2022 – Mar 2024** – Wasteless – Waste Ambassador
- **Jun 2021 – Mar 2024** – CBEC EcoSolutions – Community Compost Connection Mentor
- **Sept 2020 – Mar 2024** – CBEC EcoSolutions – Environmental Educator for waste minimisation and water education.
- **Feb 2023 – Jul 2023** – Te Pukenga/Northtec – Level 5 Environmental Issues Tutor
- **Nov 2019 – April 2020** – Northland Regional Council – Environmental Monitoring Officer
- **Nov 2018 to Mar 2019** – Northland Regional Council – Coastal Monitoring Intern

Relevant Project Experience

Tertiary Projects

University of Auckland, New Zealand

Coastal processes and geomorphology

- Conducted an experiment on the effects of short-time scale erosion of beach sediment on beaches with a high tidal range.
- Experiment was conducted using the erosion pin method, measuring erosion or sediment accumulation by steel rods (pins) inserted into the beach sediment.
- Collated data of beach sediment movement across four beaches.
- Compiled a scientific report demonstrating the conclusions of the experiment.

Local Government

Community, Business and Environment Centre (CBEC) – Ecosolutions

Whangarei District Council Know Water Education Programme

- Delivering in-class lessons on water quality, water treatment, wastewater processes and water testing.
- Collecting water samples and macroinvertebrate samples from waterways to

use for education purposes. Educating how to ID macroinvertebrates and use MCI pollution scoring index to determine water quality health.

- Demonstrating water filtering processes and testing water quality parameters for safe drinking water.
- Organising and delivering fieldtrips to water treatment plant, wastewater treatment plant and treatment wetlands.

Northland Regional Council (NRC)

New Zealand

LAWA Safe to Swim recreational bathing site monitoring – freshwater and coastal.

- Physiochemical measurements taken using ProDSS Multiparameter Digital Water Quality Meter
- Survey123 site assessment surveys
- Collecting microbial water samples testing for Escherichia coli (E. coli)

Monthly State of Environment (SoE) monitoring

- Physiochemical measurements (ProDSS Multiparameter Digital Water Quality Meter)
- Survey123 site assessment surveys

Cézanne Hamilton

Environmental Scientist



- Microbial water samples testing for Escherichia coli (E. coli)
- Entering data and compare results against national guidelines such as the National Policy Statement for Freshwater (NPS-FW)
- Landholder engagement/ remote access to private land

Monthly State-of-the-Environment periphyton and macroinvertebrate monitoring programme

- Physiochemical measurements (ProDSS Multiparameter Digital Water Quality Meter)
- Biomass (chlorophyll a) sampling
- Freshwater macroinvertebrate sampling (Stark sampling protocols at both hard-bottom and soft bottom rivers)
- National Rapid Habitat Assessments
- Landholder engagement/ remote access to private land.

Northland's River Water Quality and Ecology Monitoring Plan (RWQEMP).

- Aquatic fish sampling using fyke nets and Gee Minnow Traps.
- Assisted in electrofishing fish sampling.
- Handling and measuring of aquatic fish species.
- Documenting individual fish species and collating the field results for the RWQEMP.
- Remote access to waterways on private and public land.

Te Pukenga/Northtec

Tutor for level 5 Environmental Issues paper

- Creating and delivering weekly lectures on current local and global environmental issues
- Reviewing and grading students reports and assignments
- Managing student workload, class delivery and maintaining a high standard of student pass success rate

Private industry

URBEX East Point Development

Environmental monitoring

- Collected groundwater samples using a pump, purging sampling technique, recording in-situ water quality parameters (pH, EC, DO, ORP, temperature) with a YSI ProDSS
- Collected surface water samples for microbial, metals and organics testing.

Queensland Sugar Limited (QSL) -Mackay Sugar Terminal

Environmental monitoring

- Collected groundwater samples using the HydraSleeve passive sampling technique, recording in-situ water quality parameters (pH, EC, DO, ORP, temperature) with a YSI ProDSS
- Compiled laboratory results, validated data and prepared client-ready reports summarising findings and compliance status.

QLD Hydro – Pioneer-Burdekin Pumped Hydro

Environmental Services

- Collected representative soil samples, ensuring quality control and chain-of-custody procedures for laboratory analysis of potential hydrocarbon and heavy metal contaminants
- Conducted on-site inspections to identify potential contamination sources, sampling locations, and site conditions

Sunwater – Rookwood Weir

Turtle nest and habitat protection plan

- Completed specialised training in turtle nest protection of two EPBC protected species.
- Analysed and collated habitat protection data sheets
- Conducted habitat surveys to identify turtle nesting sites, implementing protection measures, and relocating nests where necessary.
- Carried out field surveys of habitat banks, recording turtle tracks, predator activity and nest location.
- Undertook detailed field assessments including egg and nest measurements



Staff Profile

Matthew Brookes

Ranger Coordinator

Matthew is a traditional owner passionate about contributing to land and sea management, cultural heritage preservation and sustainable practices.

Matthew joined Tunuba in early 2025 and has quickly become an integral part of the team. In his current role, he is responsible for managing staff and coordinating resources to ensure the successful delivery of projects.

Prior to his work with Tunuba, Matthew served as a Ranger Development Coordinator in East Arnhem Land, where he led teams in conducting field activities across remote land and sea environments. His diverse background spans environmental conservation, construction, and business management, equipping him with a well-rounded skill set for working in dynamic and challenging conditions.

Matthew has contributed to a wide range of environmental projects, including serving as a fauna spotter catcher. He is also trained and accredited in chemical application for weed control. His technical capabilities include proficiency in using Survey123, which is essential for conducting surveys and reporting to clients, ensuring they have the necessary evidence for project work completion.

Career Summary

- **Mar 2025 to current** – Tunuba Pty Ltd – Ranger Coordinator
- **Nov 2023 to Mar 2025** – Gon-Dal Aboriginal Corporation - Mutjun Ranger Development Coordinator
- **Sep 2023 to Nov 2023** – Gon-Dal Aboriginal Corporation – Grounds and Maintenance Officer



Specialisations

- Field Team Coordination and Resource Management
- Data Collection and Management
- Weed Treatment & Surveillance Surveys
- Remote Location Work
- Fauna Spotter Catcher

Qualifications

- Commercial Operators Licence G243237
- First Aid Certificate
- Construction Industry White Card
- Perform High Risk Work Licence
- Forklift Licence
- 4WD Complex Operations & Recovery
- Category A&B Longarm Licence
- Venomous Snake Handling & Awareness
- Fire Extinguisher Training
- Inspect & clean machinery, tools, & equipment to preserve biosecurity
- ACDC Licence
- Fauna Spotter Catcher
- Freshwater Turtle Conservation Training



Staff Profile

Matthew Brookes

Ranger Coordinator

Relevant Project Experience

Stanwell

Weed Treatment Services

- Targeted weed management activities within the designated Buffer Zone (Nature Refuge)
- Identifying invasive species, selecting appropriate herbicides, and applying treatments using the weed spray unit, trailer or backpacks in accordance with environmental guidelines
- Clear and consistent communication with the Client
- Data collection for reporting purposes, including maintaining spray records, photo monitoring, and GPS
- Weed & Seed inspections on vehicles

Healthy Land and Water

Green Fire Breaks

- Site preparation for planting
- Scheduling of team members and allocation of equipment for efficient delivery of project activities
- Landscaping project maintenance
- Ensuring all data is accurately documented, contributing to regular reporting and client updates
- Planting as per client guidelines
- Taking photos for reporting

Aula Energy

Boulder Creek Wind Farm – Fauna spotter catcher

- Coordination of staff and resources
- Fauna Spotter Catcher – inspection and removal of animals from the path of machinery
- Data collection for reporting purposes
- Signing off on safety documentation
- Weed & Seed inspections on vehicles

Downer

Defence SWBEA Precinct B Weed Management

- Targeted treatment of weed species in alignment with client management plans
- Ensuring compliance with environmental and safety guidelines
- Coordination of field staff and logistical resourcing
- Liaising with Client for property access
- Field data collection using Survey123
- Sign off on all required safety documentation, including JSEA
- Weed & Seed inspections on vehicles, preventing cross-site contamination

Sunwater

Rookwood Weir – Turtle Monitoring

- Install acoustic hydrophones for monitoring endangered freshwater turtle species
- Install remote cameras for monitoring turtle movement
- Utilise PIT tag readers to record movement of tagged turtles
- Undertaking inspections of the turtle passage during various river cycle conditions
- Inspections of trash screens and inlets - regular maintenance
- Data collection for reporting

Rookwood Weir – Turtle Protection

- Install temporary fencing around nesting areas at the start of the season
- Onsite monitoring of nests during and post flood events
- Procurement and installation of steel nest cages over identified nests
- Removal of cages and fencing at the end of the season
- Data collection for reporting

Rookwood Weir – Feral Animal Control

- Coordination of staff and resources
- Complete training
- Set up camera traps across several properties adjacent to the Fitzroy River
- Collect camera traps

Rookwood Weir - Water Quality Monitoring

- Routine monitoring of 12 locations
- Sampling for example: dissolved oxygen, chlorophyll, nitrate, etc.
- Using sampling equipment – ensuring no contamination
- Wearing of PPE
- Taking samples that follow the sampling methodology as per regulations
- Taking samples to courier service to be delivered express to Laboratory for analysis

Buthera Broome

Ranger

Buthera (Buzz) is a highly experienced Indigenous Ranger with a strong background in environmental land and waterway management, conservation work, and remote work operations.

Buzz brings a valuable combination of cultural knowledge, practical field skills, and a deep commitment to protecting Country. Known for his reliability, strong work ethic, and environmental stewardship, Buzz supports sustainable land management practices and promotes respectful, effective partnerships between Traditional Owners, stakeholders, and project proponents.

He has played a key role in a wide range of environmental and infrastructure projects. His work has included freshwater turtle monitoring, water quality sampling, environmental site assessments, weed management, vegetation mapping, fire support, and rehabilitation of culturally and environmentally significant sites. Buzz is experienced working across diverse landscapes, including wetlands, waterways, transport corridors, and remote bushland.

Buzz also has 4 years FIFO experience working as a rail technician in Karratha, where he applied his practical skills in demanding field conditions to support the safe operation and maintenance of heavy rail infrastructure. This role strengthened his ability to work efficiently in remote locations and collaborate within multidisciplinary teams under strict safety and environmental standards.

He holds a Commercial Operator's Licence, ACDC certification, White Card, and a Certificate II in Rail Infrastructure, qualifying him to work safely and effectively across a range of environments. He is also trained in snake handling, 4WD operation, turtle handling, and biosecurity-compliant machinery inspection and cleaning, supporting efforts to manage invasive species and maintain ecological integrity.

Buzz continues to apply his knowledge and skills to protect Country, contribute to sustainable land care practices, and support the leadership of Traditional Owners in environmental management.



Specialisations

- Environmental Monitoring
- Turtle Monitoring
- Water Quality
- Biosecurity and Pest Management
- Data Collection and Management
- Remote Location Work

Qualifications

- Construction Industry White Card
- 4WD Complex Operations & Recovery
- Inspect & clean machinery, tools, & equipment to preserve biosecurity
- ACDC Licence
- Fauna Spotter Catcher Training
- Freshwater Turtle Training
- Venomous Snake Handling & Awareness
- Commercial Operators Licence
- Cert II in Rail Infrastructure



Buthera Broome

Ranger

Career Summary

- **Jan 2025 to current** – Tunuba Pty Ltd – Ranger
- **2020 to 2025** – Pilbara Rail Maintenance – Rail Technician
- **2020** – T6 Rail – Rail Technician

Relevant Project Experience

Stanwell

Weed Treatment Services

- Targeted weed management activities within the designated Buffer Zone (Nature Refuge)
- Identifying invasive species, selecting appropriate herbicides, and applying treatments using the weed spray unit, trailer or backpacks in accordance with environmental guidelines
- Clear and consistent communication with the Client
- Data collection for reporting purposes, including maintaining spray records, photo monitoring, and GPS
- Weed & Seed inspections on vehicles

Healthy Land and Water

Green Fire Breaks

- Site preparation for planting
- Landscaping project maintenance
- Ensuring all data is accurately documented, contributing to regular reporting and client updates
- Planting as per client guidelines
- Taking photos for reporting

Aula Energy / DT Infrastructure (DTI)

Boulder Creek Wind Farm – Fauna spotter catcher

- Fauna Spotter Catcher – inspection and removal of animals from the path of machinery
- Data collection for reporting purposes
- Signing off on safety documentation
- Weed & Seed inspections on vehicles

Downer

Defence SWBEA Precinct B Weed Management

- Targeted treatment of weed species in alignment with client management plans
- Ensuring compliance with environmental and safety guidelines
- Liaising with Client for property access

- Field data collection using Survey123
- Weed & Seed inspections on vehicles, preventing cross-site contamination

Sunwater

Rookwood Weir – Turtle Monitoring

- Install acoustic hydrophones for monitoring endangered freshwater turtle species
- Install remote cameras for monitoring turtle movement
- Utilise PIT tag readers to record movement of tagged turtles
- Inspections of the turtle passage during various river cycle conditions
- Inspections of trash screens and inlets - regular maintenance
- Data collection for reporting

Rookwood Weir – Turtle Protection

- Install temporary fencing around nesting areas at the start of the season
- Onsite monitoring of nests during and post flood events
- Procurement and installation of steel nest cages over identified nests
- Removal of cages and fencing at the end of the season
- Data collection for reporting

Rookwood Weir – Feral Animal Control

- Complete training
- Set up camera traps across several properties adjacent to the Fitzroy River
- Collect camera traps

Sunwater

Rookwood Weir - Water Quality Monitoring

- Routine monitoring of 12 locations
- Sampling for example: dissolved oxygen, chlorophyll, nitrate, etc.
- Using sampling equipment – ensuring no contamination
- Taking samples that follow the sampling methodology as per regulations

Staff Profile



Buthera Broome

Ranger

- Taking samples to courier service to be delivered express to Laboratory for analysis

Department of Transport and Main Roads

Water Quality

- Water sampling at 8 local sites
- Data collection for reporting
- Using sampling equipment – ensuring no contamination
- Wearing of PPE
- Taking samples that follow the sampling methodology as per regulations
- Taking samples to courier service to be delivered express to Laboratory for analysis

McConnell Dowell BMD Constructions

Joint Venture (MBJV)

Fitzroy to Gladstone Pipeline – Weed Management

- Field data collection using Survey123
- Targeted treatment of weed species in alignment with management plans
- Ensuring compliance with environmental and safety guidelines
- Weed & Seed inspections on vehicles, preventing cross-site contamination

Sheldon Edmund

Senior Ranger

Sheldon is Tunuba's Senior Ranger with over 20 years of experience in vegetation and fauna management as well as a lifetime of traditional ecological knowledge.

Sheldon is a Darumbal man who is passionate about mentoring the younger community in ways we can integrate science with traditional ecological knowledge for the betterment of the environment and for development outcomes. Sheldon is an experienced fauna spotter catcher with skills in fauna handling, species identification and capture and relocation techniques. He has worked on a range of both large and small scale remote projects. He is experienced in fauna habitat assessment and identification of breeding places and he has been trained in the use of field tables for data collection.

He is a qualified and experienced arborist, having previously worked for Rockhampton Regional Council and a Rockhampton-based tree service, where he led teams in conducting vegetation management activities, including species identification, tree health assessments, lopping and pruning, removal of trees, transplanting and translocation of trees, quoting, reporting and maintenance of plant and equipment.

Sheldon has an impressive collection of work experience and knowledge of animals, plants and nature. He has demonstrated through working at Tunuba that he can provide his input on projects and apply his skills through practical methods in collaboration with western scientific methodology.

Sheldon has a Cert IV in Horticulture (Arboriculture) and an intermediate chainsaw certificate. He is also an experienced cultural heritage officer, having undertaken cultural heritage surveys and monitoring for Darumbal Enterprises. He is one of the senior Darumbal rangers and mentors and trains young people in caring for country. Sheldon is a sought-after field team member with a love for the outdoors and a passion for sharing knowledge.



Specialisations

- Fauna and Flora identification
- Fauna habitat assessment
- Identification of breeding places
- Turtle nest pre-clearance surveys
- Data collection and management
- Fauna spotter catcher
- Weed surveillance surveys
- Weed treatment
- Remote location work
- Crocodile Awareness Training

Qualifications

- Fauna Spotter Catcher
- Cert. IV in Horticulture (Arboriculture)
- Construction Industry White Card
- PUA 20713 Certificate II in Public Safety (Fire Fighting Operations)
- Working at Heights and Elevated Work Platform
- Cert. Intermediate Chainsaw
- Cert. Venomous snake handling course
- ChemCert (ACDC licence)
- Inspect and Clean Machinery for Plant and Animal and Soil Material, 2020

Sheldon Edmund

Senior Ranger



Relevant Project Experience

SWBTA Australia-Singapore Military Training Initiative (ASMTI) Facilities Project

Precinct B and C Fauna Spotter Catcher works

- Pre-clearance surveys identifying habitat features, breeding places and invasive species.
- Fauna Spotter Catcher – safe capture, handling and relocation of terrestrial wildlife during vegetation clearing within construction footprints;
- Fauna Spotter Catcher - safe capture, handling and relocation of aquatic fauna during dewatering works in culverts
- Working closely with heavy machinery and plant with correct use of positive communications
- Data collection using Survey123 ArcGIS
- Working in rough and remote terrain
- Generation of pre and post clearance reports
- Assisting with ecological investigations including flora and fauna and weed surveys
- Field-based identification of native plants and wildlife, habitat assessment
- Assisting with waterway habitat assessments
- Weed and pest animal surveys
- Weed treatment along 500km of internal fencing and tracks and around facilities over a four year period
- Construction of fences

BMD Rockhampton Airport Apron Construction project

- Pre-clearance surveys identifying habitat features, breeding places and invasive species
- Fauna Spotter Catcher – safe capture, handling and relocation of terrestrial wildlife during vegetation clearing within construction footprints
- Working closely with heavy machinery and plant with correct use of positive communications
- Data collection using Survey123 ArcGIS

Rookwood Weir Project

- Pre-clearance surveys identifying habitat features, breeding places and invasive species
- Fauna Spotter Catcher – safe capture, handling and relocation of aquatic fauna during large scale river diversion works during construction phase of the Wier
- Supervision and management of field team assisting with Fish Salvage works
- Fauna Spotter Catcher - safe capture, handling and relocation of terrestrial wildlife during vegetation clearing within construction footprints
- Working closely with heavy machinery and plant with correct use of positive communications
- Turtle nest pre-clearance surveys and monitoring for threatened turtle species (White throated snapping turtle and Fitzroy River Turtle)
- Data collection using Survey123 ArcGIS
- Weed surveillance surveys and treatment
- Working in rough and remote terrain

Bravus (Adani) Mine Access Road (CQG)

- Provide pre-clearance surveys, (including identification of habitat values and features)
- Fauna spotter catcher services – safe capture, handling and relocation of terrestrial wildlife during vegetation clearing within construction footprints)
- Post-clearance surveys
- Data collection using Survey123 ArcGIS
- The Caves Quarry (Tunuba)
- Weed treatment at the Caves and Palm Tree quarries
- Weed surveillance follow up surveys and treatments
- Data collection using Survey123 Arc GIS
- Gladstone to Monto Rd Floodway's Restoration Project (CQG)
- Provide pre-clearance surveys, (including identification of habitat values and features)
- Fauna Spotter Catcher – safe capture, handling and relocation of terrestrial wildlife during vegetation clearing within construction footprints;
- Data collection using Survey123 ArcGIS

Sheldon Edmund

Senior Ranger



Rockhampton Regional Council

- Kershaw Gardens post cyclone clean up,
- General maintenance and services of plant and equipment
- Tree health assessment
- Maintain and care for trees
- Treating trees with fertilisers and insecticides
- Removal of dead or decaying trees and transplanting or translocation of trees

McConnell Dowell BMD Joint Venture Fitzroy to Gladstone Pipeline Sept-current

- Fauna Spotter Catcher - inspection and removal of animals from the path of machinery
- Fish salvaging, dewatering and relocation
- Vehicles inducted to MBJV systems
- Data collection for reporting purposes
- Uploading data for reporting
- Ensuring work vehicle is inspected/cleared for weeds and seeds

McConnell Dowell BMD Joint Venture Fitzroy to Gladstone Pipeline Jan-Feb 2024

- Weed treatment for the Right of Way passage
- 3D Safety Induction
- Vehicles inducted onto MBJV systems
- Having SDS / SWMS available in vehicle
- Contacting Client to confirm access
- Data collection for reporting purposes
- Uploading data for reporting
- Ensuring work vehicle is inspected/cleared for weeds and seeds
- Accessing properties off road by buggy and by foot

Sunwater Rookwood Weir Water Quality Monitoring Jan-Feb 2024

- Routine monitoring of 12 locations
- Sampling for example: dissolved oxygen, chlorophyll, nitrate, etc.
- Using sampling equipment – ensuring no contamination
- Wearing of PPE
- Taking samples that follow the sampling methodology as per regulations
- Taking samples to courier service to be delivered express to Laboratory for analysis

Sunwater Rookwood Weir – Turtle Capture Surveys October 2024 - Current

- Set traps for endangered freshwater turtle species
- Identify potential nesting areas for endangered freshwater turtle species
- Handle and measure large sized endangered freshwater turtle species
- Pack and care for monitoring equipment in the vessel.

Sunwater Rookwood Weir – Feral Animal Control 2024 to current

- Complete training
- Set up camera traps across several properties adjacent to the Fitzroy River
- Collect camera traps

Healthy Land and Water – Green Fire Breaks – November 2024 – Current

- Preparation of site for planting
- Landscaping project maintenance
- Data Collection for reporting
- Planting as per client guidelines
- Taking photos for reporting

Stanwell Power Station – Weed Treatment Services October 2024 - Current

- Weed treatment for the Buffer Zone (Nature Refuge)
- Data collection for reporting purposes
- Ensuring work vehicle is inspected/cleared for weeds and seeds
- Use of Weed Spray Unit / Weed Spray Trailer / Back Packs for chemical application
- Maintaining spray records and GPS
- Photo monitoring
- Protected plant identification and conservation

Boulder Creek Wind Farm – Weed Treatment January 2025 to current

- Weed treatment
- Weed identification
- Data collection for reporting purposes
- Ensuring work vehicle is inspected/cleared for weeds and seeds
- Use of Weed Spray Unit / Weed Spray Trailer / Back Packs for chemical application
- Completing spray records



Staff Profile

Stephen Upkett Ranger

Stephen is a multi-skilled Indigenous Ranger with a strong foundation in land management, environmental protection, and field operations.

Stephen brings a culturally grounded approach to Country, backed by a broad suite of practical qualifications and safety training across construction, conservation, and resource sectors. He is experienced in supporting environmental and infrastructure projects across various terrains, including bushland, waterways, and rail corridors.

Stephen holds a Construction Industry White Card and is trained in 4WD complex operations and recovery, enabling confident navigation and vehicle recovery in remote and challenging conditions. He has completed accredited training in biosecurity procedures, including the inspection and cleaning of machinery, tools, and equipment to prevent the spread of invasive species.

Stephen holds broad qualifications including a Certificate I in Construction, Certificate I in Engineering, Certificate II in Resources & Infrastructure Work Preparation, and a Certificate IV in Fitness, supporting a high level of physical capability, site awareness, and operational readiness. He has also completed an Aurizon Rail Corridor Induction, demonstrating preparedness for work in rail environments with a focus on safety, coordination, and infrastructure awareness.

Stephen's combination of skills enables a well-rounded, on-Country approach to environmental monitoring, habitat restoration, wildlife protection, and effective collaboration with Traditional Owners, project teams, and other key stakeholders.



Specialisations

- Environmental Monitoring
- Biosecurity and Pest Management
- Data Collection and Management
- Remote Location Work

Qualifications

- Construction Industry White Card
- 4WD Complex Operations & Recovery
- Inspect & clean machinery, tools, & equipment to preserve biosecurity
- ACDC Licence
- Fauna Spotter Catcher Training
- Freshwater Turtle Training
- Venomous Snake Handling & Awareness
- Cert I in Construction
- Cert I in Engineering
- Cert IV in Fitness
- Cert II in Resources & Infrastructure Work Preparation
- Aurizon Rail Corridor Induction



Stephen Upkett

Ranger

Career Summary

- **Mar 2025 to current** – Tunuba Pty Ltd – Ranger
- **2018 to Mar 2025** – Deadly Choices – Role

Relevant Project Experience

Stanwell

Weed Treatment Services

- Targeted weed management activities within the designated Buffer Zone (Nature Refuge)
- Identifying invasive species, selecting appropriate herbicides, and applying treatments using the weed spray unit, trailer or backpacks in accordance with environmental guidelines
- Clear and consistent communication with the Client
- Data collection for reporting purposes, including maintaining spray records, photo monitoring, and GPS
- Weed & Seed inspections on vehicles

Healthy Land and Water

Green Fire Breaks

- Site preparation for planting
- Landscaping project maintenance
- Ensuring all data is accurately documented, contributing to regular reporting and client updates
- Planting as per client guidelines
- Taking photos for reporting

Aula Energy / DT Infrastructure (DTI)

Boulder Creek Wind Farm – Fauna spotter catcher

- Fauna Spotter Catcher – inspection and removal of animals from the path of machinery
- Data collection for reporting purposes
- Signing off on safety documentation
- Weed & Seed inspections on vehicles

Sunwater

Rookwood Weir – Feral Animal Control

- Complete training
- Set up camera traps across several properties adjacent to the Fitzroy River
- Collect camera traps

McConnell Dowell BMD Constructions Joint Venture (MBJV)

Fitzroy to Gladstone Pipeline – Weed Management

- Field data collection using Survey123
- Targeted treatment of weed species in alignment with management plans
- Ensuring compliance with environmental and safety guidelines
- Weed & Seed inspections on vehicles, preventing cross-site contamination



Staff Profile

Kobe Watts

Field Team Supervisor Ranger

Kobe is an experienced and passionate Indigenous Ranger deeply committed to caring for country through a balance of traditional knowledge and modern land management practices.

Kobe is a respected Field Team Supervisor and Ranger with deep cultural ties to Country and a strong commitment to protecting land, sea, and wildlife for future generations. He combines traditional ecological knowledge with contemporary land and sea management practices, supporting both cultural heritage and environmental health.

With extensive hands-on experience in remote bush and coastal environments, Kobe has conducted environmental surveys, monitoring of ecosystem health, protecting sacred sites, and implementing biosecurity protocols. His leadership ensures that field operations are carried out safely, efficiently, and with cultural integrity.

As a certified Open Water, Advanced, and Rescue Diver, Kobe contributes to underwater research, reef health assessments, and marine debris clean-ups. With both a Boat Licence and Commercial Operators Licence, he plays a critical role in marine operations.

Kobe is trained in sea and freshwater turtle conservation, venomous snake awareness, and fauna spotter catcher protocols, allowing him to relocate wildlife during clearing or development works. His calm, safety-first approach ensures both animal welfare and crew safety in the field.

Kobe has worked closely with community members, Traditional Owners, researchers, and partner organisations. He is known for fostering collaboration and sharing knowledge. During his time at Darumbal People Aboriginal Corporation (DPAC), Kobe also played a key role in community education and engagement, delivering workshops and cultural talks to schools, council, ranger groups, Defence, and industry.

Kobe's work is grounded in respect for culture, Country and future generations. As a trusted leader, he brings dedication, professionalism, and cultural insight to every aspect of his role, helping guide the team towards a more sustainable and culturally strong future.



Specialisations

- Land & Marine Environmental Monitoring
- Marine Conservation and Diving Operations
- Biosecurity and Pest Management
- Community Engagement
- Team Leadership
- Data Collection and Management
- Remote Location Work
- Cultural Heritage Protection and Education

Qualifications

- First Aid Certificate
- Construction Industry White Card
- 4WD Complex Operations & Recovery
- Inspect & clean machinery, tools, & equipment to preserve biosecurity
- ACDC Licence
- Fauna Spotter Catcher Training
- Sea Water Turtle Training
- Freshwater Turtle Conservation Training
- Venomous Snake Handling & Awareness
- Drone Pilot
- Open Water Diver
- Advanced Open Water Diver
- Rescue Diver
- Boat Licence
- Commercial Operators Licence



Staff Profile

Kobe Watts

Field Team Supervisor Ranger

Career Summary

- **Feb 2025 to current** – Tunuba Pty Ltd – Field Team Supervisor Ranger
- **Jan 2023 to current** – AIMS – Field Team Operations
- **Oct 2024 to Feb 2025** – Tunuba Pty Ltd – Ranger
- **2019 to Oct 2024** – Darumbal People Aboriginal Corporation – TUMRA Ranger
- **2017 to Oct 2024** – Darumbal People Aboriginal Corporation – Cultural Heritage Facilitator/Ranger
- **Jan 2023 to Feb 2023** – CSIRO – Field Research Assistant

Relevant Project Experience

Stanwell

Weed Treatment Services

- Targeted weed management activities within the designated Buffer Zone (Nature Refuge)
- Identifying invasive species, selecting appropriate herbicides, and applying treatments using the weed spray unit, trailer or backpacks in accordance with environmental guidelines
- Clear and consistent communication with the Client
- Data collection for reporting purposes, including maintaining spray records, photo monitoring, and GPS
- Weed & Seed inspections on vehicles

Healthy Land and Water

Green Fire Breaks

- Site preparation for planting
- Scheduling of team members and allocation of equipment for efficient delivery of project activities
- Landscaping project maintenance
- Ensuring all data is accurately documented, contributing to regular reporting and client updates
- Planting as per client guidelines
- Taking photos for reporting

Aula Energy / DT Infrastructure (DTI)

Boulder Creek Wind Farm – Fauna spotter catcher

- Coordination of staff and resources
- Fauna Spotter Catcher – inspection and removal of animals from the path of machinery
- Data collection for reporting purposes
- Signing off on safety documentation
- Weed & Seed inspections on vehicles

Sunwater

Rookwood Weir – Turtle Monitoring

- Install acoustic hydrophones for monitoring endangered freshwater turtle species
- Install remote cameras for monitoring turtle movement
- Utilise PIT tag readers to record movement of tagged turtles
- Inspections of the turtle passage during various river cycle conditions
- Inspections of trash screens and inlets - regular maintenance
- Data collection for reporting

Rookwood Weir – Turtle Protection

- Install temporary fencing around nesting areas at the start of the season
- Onsite monitoring of nests during and post flood events
- Procurement and installation of steel nest cages over identified nests
- Removal of cages and fencing at the end of the season
- Data collection for reporting

Rookwood Weir – Feral Animal Control

- Coordination of staff and resources
- Complete training
- Set up camera traps across several properties adjacent to the Fitzroy River
- Collect camera traps

Staff Profile



Kobe Watts

Field Team Supervisor Ranger

Sunwater

Rookwood Weir - Water Quality Monitoring

- Routine monitoring of 12 locations
- Sampling for example: dissolved oxygen, chlorophyll, nitrate, etc.
- Using sampling equipment – ensuring no contamination
- Taking samples that follow the sampling methodology as per regulations
- Taking samples to courier service to be delivered express to Laboratory for analysis

Downer

Defence SWBEA Precinct B Weed Management

- Targeted treatment of weed species in alignment with client management plans
- Ensuring compliance with environmental and safety guidelines
- Coordination of field staff and logistical resourcing
- Liaising with Client for property access
- Field data collection using Survey123
- Sign off on all required safety documentation, including JSEA
- Weed & Seed inspections on vehicles, preventing cross-site contamination

McConnell Dowell BMD Joint Venture

Fitzroy to Gladstone Pipeline Weed

Treatment June 2024 - current

- Weed treatment for the Right of Way passage
- 3D Safety Inductions
- Having SDS/SWMS available in vehicle
- Contacting client to confirm access
- Data collection for reporting purposes
- Uploading data for reporting
- Vehicles inducted to MBJV systems
- Signing off on safety documentation
- Vehicle to be weed/seed clean for access to project site
- Accessing properties off road by buggy and by foot



Dr Natalie Clark

Technical Director - Aquatic Fauna Passage and Ecology



Location

Brisbane, QLD, Australia

Experience

16+ years

Qualifications/Accreditations

- Dr Philosophy (Hons) 2008
- B/Science (Zoology and Marine Biology) 2002

Key technical skills

- Aquatic fauna passage
- Threatened turtles and water infrastructure
- Ecological impact assessment
- Threatened species management

Memberships

- Suitability qualified fishway ecologist
- GHD Animal Ethics Committee
- Australian inclusion and diversity committee
- Neurodiversity Employee Resource Group

Relevant experience summary

Natalie is a GHD's lead aquatic ecologist with 17+ years' experience in aquatic ecosystem monitoring, impact assessment, threatened species management and aquatic fauna passage. Natalie completed her PhD on the impacts of river damming on freshwater turtle species and she has extensive experience in the design and implementation of freshwater turtle research projects and field surveys. Survey capabilities include in-field capture and handling of turtles, tagging of individuals for mark recapture, remote telemetry, nesting surveys and turtle nest protection. Natalie has supported Sunwater with the delivery of the Rookwood Weir project for more than 15 years. Specifically, Natalie led the design of the turtle passage infrastructure, the turtle protection design features, developed and implemented the TMS during Baseline and Construction phases, and developed the project SMP's and approvals including the Operations Phase TMS methodology and associated success criteria. Natalie has detailed knowledge and understanding of project design and operation, the approval conditions and the expectations of the regulators in relation to the TMS. This knowledge of the project, combined with her technical knowledge of the species and threatened species management, has allowed her to develop solutions to successfully deliver for the Rookwood Weir project for over a decade.

Rookwood Weir Turtle Movement Study and Turtle Passage Infrastructure – Turtle Monitoring Program

Technical Lead / Project Manager

Sunwater | Rookwood Weir, QLD, Australia

- Turtle Monitoring Program.
Design and implementation of a turtle movement study. Project involved monitoring the movement behaviour of threatened turtle species via satellite, acoustic and mark-recapture telemetry. Data was collected and analysed to inform the design of turtle passage infrastructure.
- Turtle passage infrastructure design
Natalie led the design process for the development of the first specifically designed turtle ramp in Australia. This process involved developing design criteria to target two threatened turtles and extensive engagement with Government Agencies and the Design Team. Success criteria and an operational

phase monitoring program were developed to monitor and assess the success of the design during project operation.

- Safe aquatic fauna passage
Natalie led the design process for the provision of safe fish and turtle passage at Rookwood Weir. This process involved assessment and rating of risks from weir design and operation and development of design protection features.
- Turtle management
Natalie led the development of Construction and Operational Species Management Plans, Nest Protection Plans and Offset Strategy/Management Plans for the threatened white-throated snapping turtle and Fitzroy River turtle.
- Turtle nest identification and protection – Natalie completed surveys within, upstream and downstream of Rookwood Weir to identify potential turtle nesting habitat and turtle nests. These surveys included detailed surveys of the Riverslea, Rookwood, Foleyvale and Hanrahan nesting bank

prior to pre-construction and construction activities. Turtle nests found were identified and protected with mesh.

Rookwood Weir Offsets Management Plan, Sunwater

Natalie was the technical lead for the development of an offsets management plan for threatened turtle species. Scope of work included identification of on-ground projects, multi-criteria assessment of options, engagement with Commonwealth and State government agencies, selection and development of final offset and development of offset management plan.

Rookwood Weir Environmental Approvals

Aquatic Ecology and Approvals Lead |

Natalie was the Aquatic Ecologist and Approvals Lead for the Rookwood Weir project over the 12 year period of the project design and construction. In addition to leading the delivery of the aquatic ecology EIS chapters and technical reports, Natalie supported Sunwater with obtaining secondary approvals and biodiversity offsets. During the detailed design phase, Natalie led the fishway design process for development of low- and high-level locks. Extensive engagement with DAF and the design team was undertaken to successfully obtain the project Development Approval for waterway barrier works. The innovative fish lock was also designed to support the project infrastructure sustainability council Excellent design rating for the project.

Wyaralong Dam Project

Technical Lead and Project Manager |

Natalie was the Technical Lead and project manager for the management of freshwater turtles during construction and operation of Wyaralong Dam. Key responsibilities included: development of a turtle management plan to manage potential impacts of dam construction and operation on freshwater turtle populations. Construction and operation phase turtle monitoring undertaken, engagement with dam operators, managers and regulators, critical assessment of monitoring results against program objectives legislative requirements, reporting to demonstrate compliance with approval conditions and management of project to time, budget, safety and quality requirements. Field surveys included turtle capture and tagging and turtle nesting surveys. Research published within Australian Journal of Zoology: <https://www.publish.csiro.au/ZO/ZO17082>

Urannah PHES Aquatic Fauna Passage Design and Environmental Approvals

Technical and Approvals Lead |

Natalie was the Technical Lead for the aquatic flora, fauna and fish passage components of a large scale EIS including two PHES locations. Expensive field surveys for aquatic flora and fauna values were designed and undertaken. Technical reports and EIS

chapters were produced for each component of the project and included description of impacts, proposed avoidance and mitigation measures, assessment of significance and calculation of biodiversity offsets. Extensive engagement with the design engineer, client, fish passage biologist and Commonwealth and State regulators occurred throughout the project. Natalie led the fishway design process including identification of potential feasible fishway design options for PHES operations and completion of a multi-criteria assessment to identify the preferred solutions for the provision of safe and adequate upstream and downstream fish passage. Engagement with DAF was undertaken throughout the design process and the project assessed against State Code 18 Constructing and raising a waterway barrier in fish habitats.

Borumba Dam PHES and Pioneer Burdekin PHES Lower Reservoirs Aquatic Fauna Passage Design

Technical Lead |

Natalie led the fishway design assessment for the lower reservoir of the Borumba Dam PHES and the lower reservoir of the Pioneer-Burdekin PHES. Background information on the existing waterway, hydrology, aquatic fauna species and migration requirements were investigated. Natalie led a multi-disciplinary workshop of key stakeholders to identify potentially feasible aquatic fauna passage designs for the site and PHES operation. The benefits and constraints of each design were identified, and options assessed in a multi-criteria assessment to identify the preferred solution for the site to inform the business case. A multi-design aquatic fauna passage system was developed to accommodate the threatened fish and turtle species present at the sites. Design features for minimisation of aquatic fauna injury and mortality were also developed and advice provided for how to manage aquatic fauna passage during construction. Engagement with DAF occurred to discuss PHES specific impacts and design solutions.

Big Rocks Weir EIS and Fish Passage

Technical Lead |

Natalie led the ecology component of the EIS for Big Rocks Weir within the Burdekin River Catchment. Seasonal baseline surveys for ecological values were designed and implemented to meet Terms of Reference requirements. Technical reports were prepared following each field survey event and an EIS chapter developed with detailed description of matters of national, state, local and culturally important values, impact assessment of project design, construction and operation, detailed avoidance, mitigation and management measures, and completion of significant residual impact assessments. Management of aquatic fauna onsite included development of concept designs for aquatic fauna passage and extensive engagement with regulators.

Abbot Point – Cumulative Ecological Impact Assessment

Leadership Team |

Port of Abbot Point | Abbot Point, QLD, Australia

Natalie was part of the leadership and technical team undertaking a cumulative impact assessment (CIA) for five projects proposed for development at the Port of Abbot Point, Queensland. Project involved the assessment of cumulative impacts on key ecologically sensitive receptors including the Great Barrier Reef World Heritage Area, marine turtle nesting habitat, migratory shorebirds and the Caley Valley Wetland. Mitigation measures were identified and assimilated into impact management for individual projects as well as the cumulative development scenario. Recommendations for detailed design requirements were developed to achieve compliance with Australian Standards and best environmental practice. A key outcome included delivery of a Joint Environmental Monitoring Framework, specifying minimum requirements for all proponents to support management of potential cumulative environmental impact risks.

Cooby and Cressbrook Dam Upgrade Projects

Technical Lead |

Natalie facilitated the ecology assessment and fishway design process for dam upgrade works at Cooby and Cressbrook Dams. A detailed literature review and field surveys were undertaken to inform baseline conditions and the development of ecological objectives for the provision of fish passage within the Upper Brisbane and Balonne-Condamine Catchments. A fish migration model was prepared and fishway design specification and success criteria development to inform the fishway design process. A feasibility assessment of fishway designs was undertaken including assessment of water security and ecological benefit of fishway operation scenarios. Engagement with DAF was conducted to discuss the fishway design process and the ecological benefits on offsite fish passage and offsite mitigation. Offsite fishway mitigation measures were investigated.

Burdekin Falls Dam Raising Project

Technical Lead |

Natalie was the Technical Lead for an environmental assessment of Burdekin Falls Dam to support the dam raising project. Project involved the identification of aquatic ecological values present during the dry season within the existing water storage area, proposed inundation areas and downstream affected environment. Values identified included Matters of National, State and Local Environmental Significance and biosecurity threats.

Three Rivers Environmental Impact Assessment

Technical Lead Aquatic Ecology |

Natalie was the Ecology Lead for the Three Rivers Water Infrastructure Project. The project involved the

identification of aquatic ecological values within the Flinders River catchment, assessment of impacts and environmental management for an irrigated cropping project and water supply.

Burdekin Falls Dam Raising Project – Ecological Impact Assessment

Technical Lead Aquatic Ecologist

Sunwater | Burdekin Falls Dam, QLD, Australia

Project involved the identification of aquatic ecological values present during the dry season within the existing water storage area, proposed inundation areas and downstream affected environment. Values identified included matters of National, State and Local Environmental Significance and biosecurity threats.

Abbot Point – Cumulative Ecological Impact Assessment

Senior Ecologist

Port of Abbot Point | Abbot Point, QLD, Australia

Natalie was part of the leadership and technical team undertaking a cumulative impact assessment (CIA) for five projects proposed for development at the Port of Abbot Point, Queensland. Project involved the assessment of cumulative impacts on key ecologically sensitive receptors including the Great Barrier Reef World Heritage Area, marine turtle nesting habitat, migratory shorebirds and the Caley Valley Wetland. Mitigation measures were identified and assimilated into impact management for individual projects as well as the cumulative development scenario. Recommendations for detailed design requirements were developed to achieve compliance with Australian Standards and best environmental practice. A key outcome included delivery of a Joint Environmental Monitoring Framework, specifying minimum requirements for all proponents to support management of potential cumulative environmental impact risks.

Coondoo Creek Bridge Replacement Project – Ecological Assessment and Threatened Species Management

Technical Lead

TMR | Coondoo Creek, QLD, Australia

Project involved the assessment of aquatic ecological values, assessment of impacts and ecological management associated with bridge replacement construction works and operation. Located in an area of high ecological significant management measures were developed to minimise risk to threatened species and habitats including the Australian lungfish, Mary River cod, Mary River turtle and white-throated snapping turtle.

A EPBC referral was prepared and approved with commendations from the Department of Environment. Species management programs and water quality plans were prepared to manage impacts during project construction.

Experience prior to joining GHD

- **Fauna Spotter, Queensland** – Rescue and relocation of terrestrial and aquatic fauna.
- **PhD Research, Queensland** – Investigations into the influence of changing environmental conditions on the behaviour and ecology of freshwater turtles.
- **Freshwater Ecosystem Monitoring, Mary River, Queensland** – Design and implementation of freshwater ecosystem monitoring programs in the Mary River.
- **Biological Monitoring, various Rivers** – Biological monitoring of freshwater turtle populations in the Brisbane, Mary, Burnett and Fitzroy Rivers;
- **Turtle Nesting Surveys and Nest Protection, Mary and Fitzroy River** – Identification and protection of freshwater turtle nests along the Mary and Fitzroy Rivers including training by Dr Col Limpus.



Chris Pietsch

Principal Aquatic Ecologist

Blue Earth Environmental Pty Ltd, Ninderry QLD

Career Overview

Chris is an aquatic ecologist with over nineteen years' experience working in both private enterprise and state government. During this period he has been integrally involved within a diverse range of projects assessing aquatic ecosystems throughout Queensland, New South Wales, Papua New Guinea and Indonesia.

Chris's passion and main field of knowledge is within the research and management of freshwater ecosystems. He has substantial experience in baseline aquatic surveys for major infrastructure development projects, environmental impact assessments, also small to large scale stream health assessments, including a key role on Southeast Queensland's Ecosystem Health Monitoring Program (EHMP) and many Receiving Environment Monitoring Programs (REMPs).

Chris has had considerable experience within the assessment of freshwater EVNT turtle, fish and crayfish species within Queensland. Additionally, he is a qualified senior electrofisher, accredited in AUSRIVAS, and is skilled within the collection and interpretation of data for surface waters, stream sediments and chemical concentrations of biota samples.

Career History

2017 to Present - Director / Principal Aquatic Ecologist at *Blue Earth Environmental Pty Ltd*

2014 to 2017 - Senior Aquatic Ecologist / Aquatic Product Manager at *Ecosure Pty Ltd*

2012 to 2014 - Freshwater Scientist on the *Ecosystem Health Monitoring Program (EHMP, Queensland Government)*

2006 to 2012 - Aquatic Ecologist at *BMT WBM Pty Ltd*

Education / Qualifications

- Bachelor of Applied Science, Southern Cross University, 2004
- Australian River Assessment System (AUSRIVAS) Accreditation, University of Canberra, 2013
- Senior electrofishing operator (>1000 starts)
- Commercial vessel operator (Coxswain grade 3)
- Commercial drone operator (RePL & ReOC)

Areas of Expertise

- Assessment of freshwater ecosystems
- Environmental impact assessment
- Water quality and stream sediment assessment
- Electrofishing (boat and backpack)
- Implementation of large scale freshwater monitoring programs
- Remote field logistics
- Macroinvertebrate taxonomy
- Dewatering / Aquatic salvage

Relevant freshwater turtle project experience

Chris has undertaken a vast array of projects involving the capture of freshwater turtles over the course of his nineteen-year career, including over 30 aquatic ecology baseline studies at an EIS level of assessment. He has extensive experience in applying suitable capture techniques and identification of freshwater turtle species. He has captured a number of species of conservation significance, including Irwin's turtle (*Elseya irwini*) (Urannah Project 2020 – 2022), white throated snapping turtle (*Elseya albagula*) (Rookwood Weir Project 2017-present, Mount Rawdon pumped hydro EIS 2021-2023, Arrow Bowen Pipeline Assessment 2014 – 2015, Baralaba South Coal Mine EIS 2010) and Fitzroy River turtle (*Rheodytes leukops*) (Rookwood Weir Project 2017-present). Chris has also been involved in refining specific techniques to capture of *R. leukops* in sections of river where traditional snorkelling and muddling techniques are not suitable due to the occurrence of estuarine crocodile.

Chris has also work alongside several freshwater turtle specialist and been provided training in a number of aspects, including:

- Turtle measurement and tagging procedures by Professor Craig Franklin (University of Queensland) and Dr Natalie Clarke (GHD);
- *R. leukops* and *E albagula* nest identification, nest data collection and nest protection techniques by Dr Natalie Clarke (GHD) and Paul Humphreys (Paul's previous role as supervisor on Greening Australia's Alligator Creek nest protection project for *R. leukops*)

Since 2017, Chris has been integrally involved within the Rookwood Weir Project within the lower Fitzroy River Basin, Central Queensland. Chris has been tasked as field team lead, responsible for:

- Capture of two freshwater turtle species of conservation significance (*R. leukops* and *E albagula*);
- Attaching tracking equipment, including acoustic tags, pit tags, monel foot tags and carapace notching
- Nesting bank assessments to determine both the suitability and occurrence of nesting within the weir footprint and proposed offset areas.

Over the course of the project, Chris has independently identified 1000's of predated and non-predated turtle nests. He has also identified many suitable nesting banks for both *R. leukops* and *E albagula* outside the known key banks of Rookwood, Hanrahan's and The Pocket. Chris has also walked extensive sections of bank within the inundation area and has identified alternate sections of bank that localised populations *E albagula* utilise.

Selected Project Experience

Aquatic baseline and impact assessments

Northern Silica Project – EIS Baseline surveys (2023 – 2024), Cape Flattery, BMT / Diatreme, *Role: aquatic ecology field assessments*

Senex Range Gas Project, EIS Baseline Surveys (2024), Client: DPM EnviroSciences / Senex, *Role: Aquatic ecology field assessments, macroinvertebrate processing*

Boomer Green Energy Hub – EIS Baseline Surveys (2023), central Queensland, Client: DPM EnviroSciences / Attexo, *Role: Aquatic ecology field assessments, macroinvertebrate processing*

Mt Rawdon Pumped Hydro project (2021- 2023), south-east Queensland, Client: Freshwater Ecology, *Role: field ecologist*

Wandoan Coal Project (2022 - 2023), central Queensland, Client: DPM EnviroSciences / Glencore, *Role: Aquatic ecology field assessments, macroinvertebrate processing*

Atlas baseline aquatic ecological surveys (2022) central Queensland, Client: Freshwater Ecology / Senex, *Role: Aquatic ecology field assessments*

Urannah Project - EIS Baseline Surveys (2020 – 2022), central Queensland, Client: GHD, *Role: Aquatic field lead responsible for survey design and surveys, technical review.*

Greater Valeria and Valeria South – EIS Baseline Surveys (2019- 2021), central Queensland, Client: DPM EnviroSciences / Glencore, *Role: Aquatic ecology and ground water dependant ecosystem field assessments, macroinvertebrate processing and reporting*

Inland Rail – EIS Baseline Surveys for: Gowrie to Helidon; Helidon to Calvert, and; Calvert to Kagaru (2020-2021), south-east Queensland, Client: Freshwater Ecology / ARTC, *Role: field ecologist*

Wide Bay Pipeline – Gregory River Aquatic Ecological Assessment (2020-2021), Wide Bay–Burnett, Client: Arcadis, *Role: Aquatic technical lead responsible for aquatic field surveys and reporting*

Urannah Dam EIS Baseline Surveys - aquatic ecology (2020), central Queensland, Client: GHD, *Role: Aquatic ecologist responsible for survey design and post-wet surveys*

Middlemount Coal – Southern extension EIS – Baseline Surveys (2019-2020) central Queensland, Client: DPM EnviroSciences / Resource Strategies, *Role: Aquatic ecology and ground water dependant ecosystem field assessments and macroinvertebrate processing*

Somerset Dam Upgrade – Aquatic Ecological Assessment (2019) south-east Queensland, Client: AECOM, *Role: Undertake field and desktop assessments to determine likely impacts of Somerset Dam on aquatic biota communities and benefits for providing enhanced fish passage within upgrade works*

Beerwah East MDA – Environmental Assessment and Strategy (2018 - 2019), south-east Queensland, Client: NGH Environmental, *Role: Aquatic technical lead responsible for aquatic field surveys and reporting*

Environmental Assessment – Albert River Catchment Rehabilitation Program (2018), south-east Queensland, Client: City of Gold Coast, *Role: Technical lead - Field lead, Data analysis; Lead author*

Olive Downs South and Wilunga Project – EIS Baseline Surveys (2017 -2018), central Queensland, Client: DPM EnviroSciences / Pembroke Resources, *Role: Aquatic ecology field assessments, macroinvertebrate processing and reporting*

Facing Island Environmental Surveys (2017), central Queensland, Client: Gladstone Ports Corporation, *Role: Aquatic technical lead, Primary author (aquatic ecology)*

Luscombe Weir Baseline (2014 – 2015), south-east Queensland, Client: City of Gold Coast, *Technical lead - Field lead, Data analysis; Lead author*

Arrow Bowen Pipeline Environmental Assessment (2014 – 2015), central Queensland, Client: Arrow Energy. *Role: Aquatic discipline lead, Data analysis, Lead author of AVSR (Aquatic Values Survey Report)*

Gladstone New Fuels Development Project - Stage 2A EIS (2014), central Queensland, Client: Resource Strategies, *Role: Aquatic technical lead - Field lead, Data analysis, Lead author*

Baralaba South Coal Mine EIS, Baralaba North EMP, Baralaba TEP (2011 – 2012), central Queensland, Client: The Minserve Group & Cockatoo Coal Limited, *Role: Aquatic field lead, Data analysis, Co-author*

Pacific Highway Upgrade – Devils Pulpit EIS (2009-2010), northern New South Wales, Client: Hyder Consulting and NSW Roads and Traffic Authority, *Role: Field lead, Data analysis, Co-author*

Woori Coal Mine EIS (2010 – 2012) south-west Queensland, Client: The Minserve Group & Cockatoo Coal

Limited, *Role: Field operator, Data analysis, Co-author*

Bloodwood Creek EIS- Baseline data collection (2010), central Queensland, Client: The Minserve Group & Cockatoo Coal Limited, *Role: Field operator, Data analysis, Co-author*

Coal Mine Expansion Feasibility Study (2010), Kalimantan, Indonesia, Client: Straits Asia, *Role: Field operator; Data analysis, Logistics, Co-author*

Landsborough to Nambour Rail Alignment EIS (2007 – 2008), south-east Queensland, Client: ARUP, *Role: Field lead, Data analysis, Co-author*

North Stradbroke Bore Field and Pipeline EIS (2007), south-east Queensland, Client: Southern Regional Pipeline Pty Ltd, *Role: Field lead, Data analysis, Co-author of baseline report*

Caboolture to Maroochydore Corridor Study (CAMCOS) – REF and EIS (2007), south-east Queensland, Client: ARUP, *Role: Aquatic Ecology Field lead, Data analysis, Co-author*

Gladstone to Fitzroy Pipeline EIS (2007 – 2008), central Queensland, Client: ARUP, *Role: Field lead, Data analysis, Co-author*

Wyaralong Dam EIS (2006 – 2007), south-east Queensland, Client: Parsons Brinckerhoff, *Role: Field operator, Data analysis, Co-author*

State Government

Ecosystem Health Monitoring Program (2012 – 2014), south-east Queensland, DSITI / Healthy Waterways, *Role: Scientist, responsible for leading field teams, data cohesion and QAQC, EHMP Report Card data analysis and reporting; training of electrofishing operators*

Fitzroy Enhanced Environmental Monitoring Program (2012 – 2013), central Queensland, DSITI, *Role: Field operator, Co-author, Trainer*

Freshwater Fish Assessments

Targeted boat electrofishing surveys (2023), south-east Queensland, Client: Department of Agriculture and Fisheries, *Role: responsible for undertaking targeted surveys for cod on various impoundments within south-east Queensland and subsequent reporting*

Thomson River Weir boat electrofishing surveys (2023), central-west Queensland, Client: NGH, *Role: responsible for undertaking targeted boat-based electrofishing surveys for EIS baseline.*

Big Rocks Weir EIS Baseline Surveys - aquatic ecology (2021), central Queensland, Client: GHD, *Role: Aquatic subcontractor responsible for boat and backpack electrofishing*

Wide Bay Pipeline – Gregory River Aquatic Waterway Barrier Assessment (2020-2021), Wide Bay–Burnett, Client: Arcadis, *Role: Aquatic technical lead responsible for aquatic field surveys and reporting*

Cressbrook and Cooby Dam Upgrades (2020), south-east Queensland, GHD, *Role: Boat based electrofishing surveys to determine fish species assemblages and occurrence of angling species.*

Somerset Dam Upgrade – Aquatic Ecological Assessment (2019) south-east Queensland, Client: AECOM, *Role: Undertake field and desktop assessments to determine likely impacts of Somerset Dam on aquatic biota communities and benefits for providing enhanced fish passage within upgrade works*

Tilapia control programs (2019 – 2020), south-east Queensland, Various clients, *Role: Field work undertaking capture of Mozambique Tilapia*

Byron Bay Development Application – Assessment of EVNT fish species (2017), Northern New South Wales, Client: Australian Wetlands Consulting, *Role: Field assessment, Desktop assessment of likelihood of occurrence*

Calliope River Fish Habitat Restoration Project (2017), central Queensland, Client: DAF, *Role: Desktop assessments*

Robina West Lake Tilapia Electrofishing – proof of concept (2014), south-east Queensland, Client: City of Gold Coast, *Role: Project manager, Field lead, Data analysis, Primary author*

Sunshine Coast Airport Expansion IAS (2010), south-east Queensland, Client: ARUP, *Role: Field lead for freshwater fish assessment, Primary author for freshwater fish assessments*

Targeted aquatic fauna assessments

Turtle Movement Study (2017- present), central Queensland, Client: GHD / SunWater, *Role: Field lead in an ongoing study using acoustic tracking to determine the movement patterns of two freshwater turtle species of conservation significance (Rheodytes leukops and Elseya albagula)*

Peel River Drought Protection Works – Platypus assessments (2021), Client: DPM EnviroSciences, *Role: Field surveys*

Species Management Program Addendum - Swamp Crayfish *Tenuibranchiurus glypticus* (2017), south-east Queensland, Client: CR2SM / Fulton Hogan Seymour Whyte Joint Venture, *Role: Primary author, Site investigations lead*

Halfway Creek Platypus Management Plan (2016), northern New South Wales, Client: Civil, Mining and Construction Pty Ltd, *Role: Field investigations, Primary Author*

Fish tissue collection

Viva Energy Australia PFAS assessment (2018 - 2020), south-east Queensland, Client: AECOM, *Role: Collection of biota, water and sediment samples, reporting*

Cairns Airport – Targeted PFAS sampling program (2019), north Queensland, Client: AECOM, *Role: Collection of biota, water and sediment samples*

Army Aviation Centre Oakey (AACO) PFAS Environmental Investigation (2018), south-east Queensland, Client: AECOM, *Role: Aquatic ecologist subcontracted to capture fish and retain tissue samples*

Diet and concentration of contaminants within captured Mozambique Tilapia (2016), south-east Queensland, Client: City of Gold Coast, *Role: Project manager, Field lead, Data analysis, Primary author*

Port of Botany Fish Tissue Collection Program (2015), Sydney, Client: WSP Group, *Role: Aquatic discipline lead, Field logistics, Data quality and collection, Statistical analysis, Reporting*

OK Tedi Mining Limited Pipeline Rupture Investigation (2011 – 2012), PNG, Client: PNG Mineral Resources Authority, *Role: Aquatic field lead, Data analysis, Co-author*

Frieda River Baseline Aquatic Biology Monitoring Program (2011 – 2012), PNG, Client: Xstrata Copper, *Role: Aquatic field lead, Data analysis, Co-author*

Mining

Orbelo Mine REMP (2022 - 2023), south-east Queensland, Client: Orbelo Pty Ltd, *Role: Design and implementation of REMP*

QCoal Northern Hub Mines (Sonoma, Cows, Jax and Drake Mines) – REMP (2018 - 2023), central Queensland, Client: Freshwater Ecology / QCoal, *Role: field ecologist*

Cameby Downs REMP (2019 - 2023), Surat Basin, Client: DPM EnviroSciences, *Role: Field personnel and macroinvertebrate processing*

Lady Annie REMP (2019, 2022), north Queensland, Client: Ecosure, *Role: lead field ecologist*

Capcoal REMP (2019) central Queensland, Client: GHD / Anglo America, *Role: Lead field ecologist*

Middlemount Coal REMP (2019) central Queensland, Client: GHD / Middlemount Coal, *Role: Lead field ecologist*

Eagle Downs REMP (2018), central Queensland, Client: Freshwater Ecology / AMEC, *Role: Field ecologist*

Gregory Crinum Mine REMP (2010 – 2011), central Queensland, Client: BMA Coal, *Role: Project manager, Field lead, Data analysis, Primary author*

Goonyella Riverside Mine ongoing aquatic assessments / TEP / REMP (2006 -2011), central Queensland, Client: BMA Coal, *Role: Field operator, Data analysis, Reporting*

Peak Downs Mine REMP (2010), central Queensland, Client: BMA Coal, *Role: Field operator, Data analysis, Reporting*

Poitrel Mine REMP (2010), central Queensland, Client: BMA Coal, *Role: Field operator, Data analysis, Reporting*

Goonyella Riverside Mine Local Water Quality Guidelines Development (2009), central Queensland, Client: BMA Coal, *Role: Data analysis, Reporting*

Aquatic salvage and other freshwater assessments

Mt Crosby aquatic fauna relocation (salvage) (2023), south-east Queensland, Client: Wild Environmental, *Role: Boat based electrofishing to capture and translocate lungfish and other species.*

Emerald WWTP fauna recovery (salvage) (2021), central Queensland, Client: GHD / Central Highlands Regional Council, *Role: Field lead responsible for the capture and relocation of 2,000 freshwater turtles within settling ponds.*

Black Swan Lake fauna relocation (salvage) (2021) south-east Queensland, Client: Biodiversity Australia, *Role: Lead Aquatic Ecologist, lead author of an Aquatic Biota Salvage Strategy.*

Burleigh to Palm Beach Motorway Upgrade (salvage) (2021) south-east Queensland, Client: Biodiversity Australia, *Role: Lead Aquatic Ecologist, lead author of an Aquatic Biota Salvage Strategy.*

North Pine aquatic fauna relocation (salvage) (2020) south-east Queensland, Client: Freshwater Ecology on behalf of Seqwater, *Role: Field Aquatic Ecologist*

Somerset Dam aquatic fauna relocation (salvage) (2020) south-east Queensland, Client: Freshwater Ecology on behalf of Seqwater, *Role: Field Aquatic Ecologist*

Ewen Maddock aquatic fauna salvage (salvage) (2020) south-east Queensland, Client: Freshwater Ecology on behalf of Seqwater, *Role: Field Aquatic Ecologist*

Sideling Creek aquatic fauna relocation (salvage) (2020) south-east Queensland, Client: PCA ground engineering, *Role: Field Aquatic Ecologist, lead author of an Aquatic Biota Salvage Strategy, reporting*

Sideling Creek fish survey and aquatic fauna relocation (salvage) (2020) south-east Queensland, Client: Ecosure on behalf of Seqwater and Fulton Hogan, *Role: Field Aquatic Ecologist*

Paradise Dam aquatic fauna salvage (salvage) (2020) south-east Queensland, Client: Freshwater Ecology on behalf of SunWater, *Role: Field Aquatic Ecologist*

Bruce Highway Upgrade – Aquatic Fauna Relocation Program (salvage) (2017 – 2018) south-east Queensland, Client: CR2SM / Fulton Hogan Seymour Whyte Joint Venture, *Role: Lead Aquatic Ecologist, Lead author of an Aquatic Biota Salvage Strategy and dewatering reports.*

Paradise Road Upgrade (salvage) (2017) south-east Queensland, Ecosure / Georgiou, *Role: Dewatering lead, Primary Author for Aquatic Biota Salvage Strategy and dewatering reports*

Holcim dewatering (salvage) (2016) New South Wales, Ecosure / Holcim Pty Ltd, *Role: Lead Aquatic Ecologist undertaken dewatering of several on-site storage facilities, reporting*

Paradise road Upgrade (salvage) (2016) south-east Queensland, Ecosure / Georgiou, *Role: Dewatering large dam in development footprint, Primary Author for dewatering reports*

Training

- AUSRIVAS accreditation, University of Canberra
- Senior Operator Electrofishing (>1000 starts), Completed 'Principles and Techniques of Electrofishing' provided by the US Fish and Wildlife Service
- Project Management Short Course, BMT Group
- Primer Multivariate Analysis Short Course, La Trobe University
- Standard 11 Induction
- Advanced 4WD Training (TLIC2025A; RIIVEH305D; PMASUP236B)
- Defensive Driver Training (TLIC1051A; RIIVEH201D)
- Senior First Aid Certificate, First Aid First (HLTFA211A, completed January 2023)
- CPR Refresher Course, First Aid First (HLTCPR211A, completed February 2025)
- Advanced Remote Area First Aid (PUAOPE010A, SRXFAD005A)
- HUET Helicopter Underwater Escape Training (PMA OHS 214B)
- Elements of Shipboard Safety

Licences

- Queensland Driver's License (Marine, Medium Rigid Truck, Car)
- Commercial vessel certificate (Coxswain grade 3, near coastal)
- Commercial drone licence, <7Kg Remote Pilot Licence (RePL)
- Construction Card (White Card 2079391)
- Marine Radio License (OMC 036715)
- Advanced Open Water Diving License (PADI)

Lauren Pratt BMARST (HONS)

Senior Aquatic Ecologist



Location

Brisbane, Queensland

Experience

16 years

Qualifications/Accreditations

- Bachelor of Marine Studies (Marine Biology and Ecology) Honours (2006)
- AusRivAS accredited (2018)
- Coxswains Near Coastal 3
- Remote Pilot's Licence (RePL) and Radio Licence (AROC)

Key technical skills

- Aquatic ecological assessment and field surveying
- Threatened species habitat assessments and targeted surveys
- Stygofauna sampling and assessment
- Waterway barrier works assessment
- Environmental impact and risk assessment
- Receiving environment monitoring programs

Relevant experience summary

Lauren Pratt is a Senior Aquatic Ecologist with 16 years' experience in freshwater, marine, and estuarine ecosystem monitoring. Lauren is currently project manager of the Rookwood Weir Operations Phase Turtle Monitoring Study (2024–2029), assessing the effectiveness of turtle passage infrastructure and protection features for the white-throated snapping turtle (*Elseya albagula*) and Fitzroy River turtle (*Rheodytes leukops*). Her work includes targeted turtle surveys, tagging (acoustic transmitters, PIT tags, monel foot tags, carapace notching), and nesting bank observations and searches across a 30 km reach equipped with acoustic hydrophones. Lauren has also conducted turtle nesting bank searches for several major infrastructure and water projects including the Urannah Water Scheme EIS, Capricornia PHES Project, Big Rocks Weir EIS. These projects involved ecological baseline assessments and targeted surveys for conservation-significant aquatic species, often in remote and environmentally sensitive areas. Lauren's expertise spans habitat assessments, water and sediment quality monitoring, and threatened species surveys, with a strong focus on remote and ecologically sensitive areas. She is highly skilled in survey design, data interpretation, and delivering clear, fit-for-purpose technical reporting across government and private sector projects.

Project experience

Rookwood Weir Operations Phase Turtle Monitoring Study 2024-2029

Tunuba | Rockhampton Region, QLD.

GHD were engaged by Tunuba on behalf of Sunwater to assess the effectiveness of the Rookwood Weir turtle passage infrastructure and turtle protection design features against agreed success criteria, and provide information on the relative abundance, dynamics, health and movement behaviour of the white-throated snapping turtle (*Elseya albagula*) and Fitzroy River turtle (*Rheodytes leukops*) population within the vicinity of Rookwood Weir. Targeted surveys for the two turtle species, identification and tagging of animals with acoustic transmitters and identification

(PIT tags, monel foot tags and carapace notching) is completed twice yearly. An acoustic hydrophone array was designed and deployed over a 30 km reach. Data was downloaded and acoustic hydrophones have been maintained since 2017. Opportunistic observations and searches of turtle nesting banks was undertaken to supplement broad-scale turtle monitoring assessments. Lauren is the project manager and undertook fieldwork, data entry and analysis and reporting for this project.

Rookwood Weir Turtle Movement Study 2017-2023

Sunwater | Rockhampton Region, QLD.

GHD were engaged by Sunwater to complete a turtle movement study (TMS). The TMS was designed and implemented as an approval condition associated with

the construction and operational activities of Rookwood Weir on the Fitzroy River, Central Queensland. The TMS targeted two threatened turtle species, white-throated snapping turtle (*Elseya albagula*) and Fitzroy river turtle (*Rheodytes leukops*). Targeted surveys for the two turtle species, identification and tagging of animals with acoustic transmitters and identification (PIT tags, monel foot tags and carapace notching) was completed twice yearly. An acoustic hydrophone array was designed and deployed over a 30 km reach. Data was downloaded and acoustic hydrophones have been maintained since 2017. Turtle nest pre-clearance surveys were undertaken prior to the commencement of construction works. Annual reports were written describing turtle movement prior to and during construction. Lauren was the project manager and undertook fieldwork, data entry and analysis and reporting for this project.

Lake Manchester Significant Impact Assessment
SEQWater | South -East Queensland Region, QLD.

SEQWater were investigating options to commence water releases from Lake Manchester in to Cabbage Tree Creek. Seqwater engaged GHD to undertake preliminary technical assessments to investigate the feasibility of this option and Significant Impact Assessment undertaken for the Australian Lungfish (*Neoceratodus forsteri*) and platypus (*Ornithorhynchus anatinus*). Potential residual impacts were assessed in association with a change in the volume and frequency of water releases from the dam and the associated changes to water flows within Cabbage Tree Creek. A report was prepared to describe the potential impacts of the proposed works upon the two listed species in accordance with the relevant guidelines to inform approval requirements. Lauren provided technical advice for this project.

Urannah Water Scheme EIS
Bowen River Utilities | Mackay Region, QLD.

GHD was engaged by Bowen River Utilities to undertake environmental investigations of the Urannah Dam study area. The project footprint, wider study area and desktop survey extent were assessed for ecological values including protected areas, waterways providing for fish passage, aquatic habitat and condition, macrophytes and riparian vegetation, aquatic fauna and conservation significant species. Several baseline reports were written with subsequent EIS chapters currently in development. Lauren undertook the fieldwork, data entry and analysis and reporting for this project.

Capricornia PHES Project
Capricornia Energy Hub | Mackay Region, QLD.

Capricornia Energy Hub engaged GHD to complete environmental approvals and ecological baseline assessments for a proposed new pumped hydro-electric scheme north-west of Eungella. Lauren led the

field surveys for the baseline ecology surveys and prepared baseline aquatic ecology reports to support the EIS. This included targeted surveys for MNES, MSES and MLES matters including the estuarine crocodile, platypus, Irwin's turtle, softspine catfish, small head grunter and waterways providing for fish passage. Lauren also completed data analysis and significant impact assessments for inclusion in the reports.

Big Rocks Weir Business Case & EIS
Townsville Enterprise Limited | Charters Towers Region, QLD

Townsville Enterprise Limited required aquatic ecology assessments of the Burdekin River where Big Rocks Weir and associated saddle dams are proposed to be constructed. These surveys included habitat assessment, in-situ water quality and surveys for fish, turtle and platypus. Surveys were carried out during pre-wet and post-wet conditions with targeted surveys for the endemic fish species small-headed grunter and softspine catfish also completed. Lauren led the fieldtrips, completed data entry and analysis and reporting. Reporting involved desktop reviews, interpretation of field results, impact assessment and mitigation measures.

Confidential Project EIS
CPB | Charters Towers Region, QLD.

CPB commissioned GHD to conduct an aquatic ecological assessment to identify environmental values, inform design decisions and recommend appropriate mitigation of potential ecological constraints of a confidential project. Surveys include habitat assessments, water quality monitoring, fish, turtle and stygofauna surveys. Lauren subsequently completed a technical report and EIS. Lauren led the field surveys, completed data entry and analysis and reporting for this project.

Environmental Impact Statement, Aquatic Ecology Assessment
Walton Coal | Central Highlands Region, QLD.

This project involved an assessment of aquatic ecology for baseline monitoring of a mining lease. Aquatic ecology (aquatic habitat, aquatic plants, macroinvertebrates, stygofauna and freshwater fish), and water quality (in situ and analytical water quality) were surveyed. The assessment considered aquatic matters of national, state and local environmental significance, and included both desktop and field survey assessment methods. Lauren was the fieldtrip leader and completed data analysis for this project.

APPENDIX B:

Freshwater Turtle Conservation Training Certificates

Certificate of Freshwater Turtle Conservation Training

presented to Amelia Elgar

This certificate recognises that you have received training in:

Freshwater turtle species identification

Safe handling of eggs

Protection of nests

Recording of turtle nesting data

19-20 June 2025

Date

Duncan Limpus

Trainer

Director

Position

Aquatic Environmental Pty Ltd



Certificate of Freshwater Turtle Conservation Training

presented to Nikki Cannon

This certificate recognises that you have received training in:

Freshwater turtle species identification

Safe handling of eggs

Protection of nests

Recording of turtle nesting data

2-3 October 2024

Date

Duncan Limpus

Trainer

Director

Position

Aquatic Environmental Pty Ltd



Certificate of Freshwater Turtle Conservation Training

presented to Cexanne Hamilton

This certificate recognises that you have received training in:

Freshwater turtle species identification

Safe handling of eggs

Protection of nests

Recording of turtle nesting data

19-20 June 2025

Date

Duncan Limpus

Trainer

Director

Position

Aquatic Environmental Pty Ltd



Certificate of Freshwater Turtle Conservation Training

presented to Matthew Brooks

This certificate recognises that you have received training in:

Freshwater turtle species identification

Safe handling of eggs

Protection of nests

Recording of turtle nesting data

19-20 June 2025

Date

Duncan Limpus

Trainer

Director

Position

Aquatic Environmental Pty Ltd



Certificate of Freshwater Turtle Conservation Training

presented to Buxx Broome

This certificate recognises that you have received training in:

Freshwater turtle species identification

Safe handling of eggs

Protection of nests

Recording of turtle nesting data

19-20 June 2025

Date

Duncan Limpus

Trainer

Director

Position

Aquatic Environmental Pty Ltd



Certificate of Freshwater Turtle Conservation Training

presented to Sheldon Edmund

This certificate recognises that you have received training in:

Freshwater turtle species identification

Safe handling of eggs

Protection of nests

Recording of turtle nesting data

2-3 October 2024

Date

Duncan Limpus

Trainer

Director

Position

Aquatic Environmental Pty Ltd



Certificate of Freshwater Turtle Conservation Training

presented to Kobe Watts

This certificate recognises that you have received training in:

Freshwater turtle species identification

Safe handling of eggs

Protection of nests

Recording of turtle nesting data

2-3 October 2024

Date

Duncan Limpus

Trainer

Director

Position

Aquatic Environmental Pty Ltd



Certificate of Freshwater Turtle Conservation Training

presented to Leroy Richards

This certificate recognises that you have received training in:

Freshwater turtle species identification

Safe handling of eggs

Protection of nests

Recording of turtle nesting data

19-20 June 2025

Date

Duncan Limpus

Trainer

Director

Position

Aquatic Environmental Pty Ltd



Certificate of Freshwater Turtle Conservation Training

presented to Stephen Upkett

This certificate recognises that you have received training in:

Freshwater turtle species identification

Safe handling of eggs

Protection of nests

Recording of turtle nesting data

19-20 June 2025

Date

Duncan Limpus

Trainer

Director

Position

Aquatic Environmental Pty Ltd



Certificate of Freshwater Turtle Conservation Training

presented to *zac Richards*

This certificate recognises that you have received training in:

Freshwater turtle species identification

Safe handling of eggs

Protection of nests

Recording of turtle nesting data

19-20 June 2025

Date

Duncan Limpus

Trainer

Director

Position

Aquatic Environmental Pty Ltd



APPENDIX C:

Research Permits and Animal Ethics Approval

Permit

Section 211 of Nature Conservation (Animals) Regulation 2020

Research Permit

This wildlife authority is issued under the following legislation: Nature Conservation (Animals) Regulation 2020.

Permit number: WA0034267

Valid from: 21 May 2021 to 20 May 2026

Activity: Taking a protected animal for scientific purposes

Role	Name	Registered address	
Principal Holder:	CQ ENVIRONMENTAL PTY LTD	Cattle House 180 Quay St ROCKHAMPTON CITY QLD 4700 Australia	
Person In Charge:	Amelia Elgar		
Business name:		ABN/ACN	107574514
Activity location/licensed premises	State of Queensland		

Schedule

Family or Species or Schedule	Details	Category	Quantity	Unit
Schedule	Animals as per the Nature Conservation (Animals) Regulation 2020 Schedule 1	Parts/Products	As per condition	

Adam Northam
Department of Environment and Science
Delegate of the administering authority
Nature Conservation Act 1992

Enquiries:
Wildlife Assessment Team
Email: wildlife@des.qld.gov.au
Postal Address: PO Box 102, Toowoomba, QLD, 4350

Date issued: 21 May 2021



Notice of Decision

Section 211 of Nature Conservation (Animals) Regulation 2020

This notice is issued by the administering authority to advise of a statutory decision on a permit application

To: CQ ENVIRONMENTAL PTY LTD
Cattle House
180 Quay St
ROCKHAMPTON CITY
QLD 4700
Australia

Our reference: APP0074199

Dear Sir/Madam

Re: Decision made in relation to your application

Your application received on 19 April 2021 has been assessed and the decision in regards to your application is specified below:

Permit applied for	Permit number	Decision
Research Permit, Taking a protected animal for scientific purposes	WA0034267	GRANTED

Your application for a permit has been granted, the conditions of approval are attached.

Your permit reference is WA0034267.

Please note that for the approval, this Notice of Decision and the relevant attachments constitute the permit documentation. Please retain this approval documentation for your records.

Included with this notice is advice on review and appeal processes that may be available to you. Should you seek a review or appeal, you are advised to seek independent advice before taking such action.

Should you have any queries in relation to this notice, please refer to the contact details below.

Adam Northam
Department of Environment and Science
Delegate of the administering authority
Nature Conservation Act 1992

Enquiries:
Wildlife Assessment Team
Email: wildlife@des.qld.gov.au
Postal Address: PO Box 102, Toowoomba, QLD, 4350

Date granted: 21 May 2021

Attachments:

Permit:

Information notice: Statutory decision on a permit application under the Nature Conservation (Animals) Regulation 2020

Nature Conservation Legislative Requirements and Conditions

Legislative Requirements

- SPPLR01 Permission must be obtained from the landholder prior to commencing activities on freehold/leasehold land.
- SPPLR02 This permit (or a copy plus proof of identity of the permit holder) must be carried while engaged in any activity authorised by the permit. Additional assistants can be authorised by the permit holder to undertake the listed activities.
- Additional assistants must carry a copy of the permit endorsed by the Holder with the additional assistants' name and residential address and must carry a form of current coloured photographic identification.
- SPPLR06 Note that the permit holder may require the relevant ABBBS certification under Australian Government provisions and is advised to seek further information before operating under this permit.
- SPPLR07 It is the permit holder's responsibility to obtain Animal Ethics Committee approval, where this is required. The relevant legislation is administered by Biosecurity Queensland, a service of the Department of Agriculture and Fisheries.
- SPPLR10 Activities carried out under this authority apply to non-protected areas only.

Custom Condition

- SPCC00 (S) A return of operations is required to be sent to the department on the approved form, if this is not submitted a penalty may be given.
- You may also if you are a registered customer of the department's on-line licensing system, enter limited details of activities carried out under the authority directly into the licensing system at <https://www.business.qld.gov.au/running-business/environment/connect>
- You must still complete the hard copy form that requires full details of all activities carried out under the authority. The required details must be provided within 10 business days of the anniversary date of the permit each year the permit is in force, and within 10 business days of the expiry date.
- This information is to be supplied to the Permit and Licensing Team, via mail at GPO Box 2454, Brisbane Queensland 4001 or sent electronically to wildlife.operations@des.qld.gov.au
- Please see the Whole of Government website <https://www.qld.gov.au/environment/plants-animals/wildlife-permits/science-education> to find the Wildlife data return information sheet for assistance when completing the required forms: the return of operations form and the final report template required under your licence.

Conditions

- SPPM00 This permit authorises the holder to conduct surveys, make observations, capture process and release protected species of reptiles, amphibians, mammals, birds and invertebrates.
In order to investigate and collect presence/absence data of all fauna species in particular any significant species that enables the works program to take into consideration any environmental sensitivities as described in the application.
- SPPM03 Activities authorised by this permit must be conducted in accordance with the methods detailed in the Terrestrial Vertebrate Fauna Survey Guidelines for Queensland
- SPPM04 Animals are to be released unharmed at the point of capture within 24 hours of capture.
- SPPM05 All possible care must be taken when capturing/releasing the animals to prevent injury or death to the animal. The department is to be notified, within 24 hours, of any injuries associated with the project.
Any accidental mortality during capture or subsequent handling is to be reported as soon as possible in writing via email to wildlife.operations@des.qld.gov.au
- SPPM07 The Queensland Museum has first refusal of any material resulting from mortality.
- SPPM08 Traps must be clearly labelled with the permit holder's name and telephone number.
- SPPM09 Traps must not be placed in an area that could flood during the trapping session.
- SPPM10 Animals must be released at a time of day appropriate to the behaviour of the species.
- SPPM12 The permit holder is to ensure that all the provisions of the (Queensland) Technical manual - Interim hygiene protocol for handling amphibians are observed.
The Technical manual is available from the department website at: Technical manual Interim hygiene protocol for handling amphibians (des.qld.gov.au)
- SPPM13 Care must be taken when repositioning logs and rocks to prevent animal injuries and to avoid causing habitat disturbance.
- SPPM14 Fish species prescribed by the Nature Conservation (Animals) Regulation 2020 must be released immediately.
- SPPM15 Invertebrates prescribed by the Nature Conservation (Animals) Regulation 2020 must be released immediately.

- SPPM17 No protected animals are to be killed for use under this permit.
- SPPM18 The Queensland Museum must be given first refusal of any endangered, vulnerable or near threatened species and any excess material.
- SPPS01 This permit authorises activities to occur on locations within Queensland with the exception of:
- i. where native title has been determined (either exclusively or non-exclusively), and
 - ii. where a native title claim has been made.

Information Sheet

This information sheet is issued by the Department of Environment and Science to advise of a statutory decision on a permit application under the *Nature Conservation Act 1992* (the Act).

When assessing an application for a license, permit or other authority, the chief executive must have regard to the following matters under the following laws:

Section 241(1) of the Nature Conservation (Animals) Regulation 2020

- (a) whether the chief executive is restricted from granting the authority under chapter 5 part 1 or chapter 4, parts 3 to 18;
- (b) whether the applicant is a suitable person to hold the authority;
Note - See also division 2
- (c) the impact the activities proposed to be carried out under the authority may have on the conservation of native wildlife;
- (d) the effect the grant of the authority may have on the fair and equitable access to nature, in particular, the ecologically sustainable use of wildlife;
- (e) any contribution the applicant proposes to make to the conservation of nature;
- (f) any relevant Australian or international code, instrument, protocol or standard or any relevant intergovernmental agreement;
- (g) the precautionary principle;
- (h) public health and safety;
- (i) the public interest;
- (j) any recovery plan for an animal to which the authority is proposed to apply;
- (k) for an animal authority, other than a renewable licence, proposed to commence immediately after an existing animal authority of the same type expires—
 - (i) whether the existing animal authority was obtained on the basis of false or misleading information; and
 - (ii) whether the holder of the existing animal authority, or a relevant person for the holder, has failed to comply with a condition of the existing animal authority;
- (l) any other matter stated in a conservation plan as a matter the chief executive must have regard to when considering an application for the authority.

Section 241(2) of the Nature Conservation (Animals) Regulation 2020

Without limiting subsection (1), the chief executive may have regard to anything else the chief executive considers appropriate to achieve the object of the Act.

Section 241 of the Nature Conservation (Animals) Regulation 2020

The chief executive cannot –

- a) grant a wildlife authority to a person if the Nature Conservation (Animals) Regulation 2020 or a conservation plan states the chief executive cannot grant the authority to the person or to any person.

Note – See also section 137 of the Act

**Amendment request for an approved project****Please Note:**

Any proposed change to a project must be submitted to an Animal Ethics Committee (AEC) for approval.

If a person uses or allows an animal to be used for a scientific purpose other than in accordance with the AEC approval, that person is acting **without** approval and, therefore, unlawfully.

Text boxes will expand automatically to accommodate entry. Please do not delete headers or footers. Lodge this form in WORD format by email in the first instance. Either insert a digitised signature as an image or send a pdf of the signature page with the request.

1. Applicant details

Name: Amelia Elgar		
Organisation: CQ Environmental T/A CQG Consulting		Centre: Rockhampton
Postal Address: 180 Quay Street Rockhampton		
Phone: 0749229252	Mobile: NA	E-Mail: admin@cqgroup.com.au , amelia.elgar@cqgroup.com.au

2. Project Details

Title of the Project	AEC Application Reference Number
Wildlife Projects	CA 2025/01/1922

3. Amendment

In plain English, answer each of the questions listed below. Remember that you have to convince the AEC that, with the proposed changes, the project remains justified and adheres to the principles of replacement, reduction and refinement.

Any amendment request involving a change in personnel **must** have table(s) from Section 6.1 and/or 6.2 completed as applicable for the newly nominated personnel and attached to this document. (These tables are available from the AEC staff). New staff should also complete the 'Using animals in science' MyLO course.

What changes do you want to make?

(Compare the proposed changes with your original proposal as approved by the AEC, citing the relevant section number)

Staff members from our Joint venture business (Tunuba Pty Ltd) will be working under CQG's permit (WA0036247) to conduct turtle nest monitoring, protection and relocation activities. As such, we would like to update the details of each the Tunuba team members who will be working under our AEC permit.

Why do you want to make these changes?

So Tunuba team members are approved to work under our AEC permit.

What are the likely consequences of these changes?

(Describe how these changes may impact on the animals and the project and how you propose to deal with each impact)

Negligible. All team members involved in these works have undergone a two-day intensive Freshwater Turtle Conservation Training with Senior Ecologist, Duncan Limpus, who is renowned as a Freshwater turtle expert. The training involved species identification (tracks, nest and egg), embryology, practical and examination as well as handling nests and eggs (relocation of nests, nest protection and fencing), on river practical and examination (nest protection and egg handling and relocation).

Furthermore, when out in the field conducting these works, team members will be accompanied by an SQP or Senior Ecologist who is experienced in turtle nest protection works as the team members gradually develop their skills and expertise.

Signature of the Applicant (or its duly authorised agent)	
Please print name if signing as a duly authorised agent	Amelia Elgar
Date	23/05/2025

4. AEC Decision

The amendment has been considered by the AEC and is: Approved
Summary of decision request: (office use only)
The addition of the Tunuba staff (as listed) to the AEC approval.

Comments/Reasons/Conditions:	
Name of AEC	Community Access
AEC Address	Ecosciences Precinct, 41 Boggo Road, Dutton Park Qld 4102
Name of AEC Chair	Lex Turner
Chair contact details	T: 07 3708 8507 M: 0427 001 427 lex.turner@daf.qld.gov.au
Signature	
Date of Decision	26 May 2025

Information Notice

Notice of decision

Enquiries: Permissions Management
Email: QPWSresearchpermits@des.qld.gov.au
Phone:
Our reference: C-PFPSPP-100896362

CQ ENVIRONMENTAL PTY LTD
Cattle House
180 Quay St
ROCKHAMPTON CITY QLD 4700
Email:

Attention: Amelia Elgar

Research / Education Application

I refer to your application for a Research Permit (Scientific) dated 13-Jun-2025.

Authority applied for	Authority Number	Decision
Research Permit (Scientific) issued under the provisions of the <i>Nature Conservation (Animals) Regulation 2020</i>	P-SPP-100896361	Granted

When assessing an application, regard must be given to the authorising legislation. These matters have been considered and conditions have been imposed on the authority. Please ensure that you and your agents are familiar with these conditions.

You, or your agents, must carry a copy of the authority whilst conducting the approved activity. You are also reminded that the onus is on you to re-apply for the continuation of the authority at least two months prior to the expiry date.

Please be aware that you can be fined for not complying with authority conditions as well as the *relevant legislation*. Penalties include on-the-spot fines and significant penalties can be imposed against breaches of legislation. Failure to comply with authority conditions may result in further action such as an infringement notice, suspension or cancellation of the authority or prosecution.

Review and appeal

There are review provisions in the authorising legislation that this decision was made under that are available to you, should you be dissatisfied with the original decision, and noting the following:

- An application for an internal review of the original decision must be made in writing using the approved form within 28 days after being given this notice.
- The application must be supported by sufficient information to decide the application.
- The application for internal review does not stay the decision made.

- If the review is being carried out under the *Nature Conservation Act 1992* the chief executive must review the original decision within 28 days of receiving the application and provide you with a decision.
- If the review is being carried out under the *Recreation Area Management Act 2006* the chief executive must provide you with a decision within 14 days of making the review decision.
- If the review is being carried out under the *Forestry Act 1959* the chief executive will notify you of the decision within 28 days.
- The application can be located at www.qld.gov.au/environment/parks/management/request-for-internal-review

If you are dissatisfied with the internal review decision, then under the relevant legislation you may appeal to the Queensland Civil and Administrative Tribunal (QCAT).

Yours sincerely



Signature

11-Jul-2025

Date

Delegate: Gareth Newman
Queensland Parks and Wildlife Service
Department of the Environment, Tourism, Science & Innovation

Research Permit (Scientific)

Department of the Environment, Tourism, Science & Innovation

Section S211 of the Nature Conservation (Animals) Regulation
2020

AUTHORITY No. P-SPP-100896361

This Authority will remain in force for the following term, unless sooner surrendered or revoked:

TERM: 12-Jul-2025 TO 11-Jul-2030

AUTHORITY HOLDER: CQ ENVIRONMENTAL PTY LTD
ABN/ACN: 61107574514 / 107574514
PERSON IN CHARGE: Amelia Elgar
ADDRESS: Cattle House 180 Quay St ROCKHAMPTON CITY QLD 4700

Approved Location and Purpose:

Activity (s)	Species Details		
	Species/Schedule	Quantity	Details
Research / Education Additional Details: Monitoring and protection of turtle nests in the Rookwood Weir impoundment area. - Installation of mesh over nests - Relocation of at risk nests to a fenced communal nest area. - Hatching success surveys including nest interference to photograph eggs.	white-throated snapping turtle - <i>Elseya albagula</i>	Minimum: Maximum: Unit: Other	Parts/Products Eggs and nests only. Does not include handling of live turtles. No quantity is set due to the nature of the activity.
	Fitzroy River turtle - <i>Rheodytes leukops</i>	Minimum: Maximum: Unit: Other	Parts/Products Eggs and nests only. Does not include handling of live turtles. No quantity is set due to the nature of the activity.
Authorised Area / Location (s)			
Thirsty Creek RoadGOGANGO QLD 4702 Additional Details: Rookwood Weir impoundment area			



Signature

11-Jul-2025

Date

Gareth Newman
Delegate of the Chief Executive of the Department of the Environment, Tourism, Science & Innovation

CONDITIONS - RESEARCH INVOLVING VERTEBRATE ANIMALS

ANIMAL ETHICS COMMITTEE APPROVAL

1. The Authority Holder must hold Animal Ethics Committee approval from a registered animal ethics approval committee.

MORTALITY OF THREATENED SPECIES

2. The Authority Holder must report mortality of any threatened species prescribed under the *Nature Conservation Act 1992* to QPWSresearchpermits@detsi.qld.gov.au and wildlife.operations@detsi.qld.gov.au within 7 days.

OFFER SPECIMENS TO QUEENSLAND MUSEUM (VERTEBRATE)

3. The Authority Holder must offer (and provide if requested) appropriately preserved (can include frozen), labelled specimens of vertebrate vouchers and duplicates of all genetic tissue samples to the Queensland Museum when permitted activities conclude (Note: Please contact QM Curators and Collection Managers via: Discovery-Centre@qm.qld.gov.au)

CONDITIONS - SCIENTIFIC RESEARCH/ EDUCATIONAL

ACTIVE SEARCHING

4. The Authority Holder must ensure no wildlife is harmed when repositioning logs and rocks if moved.

FAUNA RESEARCH

5. No protected animals are to be killed for use under this permit.

FINAL REPORT

6. A research authority report must be submitted on the standard departmental reporting form within 10 business days prior to the expiry date. This is to be submitted via Online Services or email QPWSresearchpermits@detsi.qld.gov.au.

LABELLING EQUIPMENT

7. The Authority Holder must clearly label all equipment used and any equipment left unattended with the Authority Holder's name, telephone number and authority number.

NEST MONITORING DATA SHEETS

8. The Authority Holder must email copies of nest monitoring data sheets to the DETSI Aquatic Research and Monitoring team at tsadmin@detsi.qld.gov.au.

REMOVING EQUIPMENT

9. The Authority Holder must immediately remove equipment that is no longer in use (unless otherwise authorised).

RESEARCH ACTIVITY

10. Unless otherwise stated, all practices and procedures undertaken pursuant to this permit are to be in accordance with those details contained in and attached to the Application for a Research permit lodged with the department on 13 June 2025 and document titled *23062.5 Detailed methodology for CQG Research Permit.pdf* emailed on 2 July 2025.

RETURN OF OPERATIONS

11. The Authority Holder must submit a return of operations on the approved form within 20 business days after each period of 12 months; and if this authority ends within 12 months of being granted, a return of operations must be given within 20 business days of the expiry of this Authority. The return of operations must be submitted via online services.

SITE IDENTIFICATION MARKERS

12. The Authority Holder must ensure that site identification markers are:

- (a) minimalist and visually unobtrusive.
- (b) not permanently fixed to vegetation or built infrastructure (unless otherwise authorised).
- (c) removed immediately upon completion of approved activities (unless otherwise authorised).

CONDITIONS - STANDARD

BIOSECURITY

13. All collection and handling equipment, items of clothing (including footwear) and vehicles must be cleaned before and after each separate collection activity.

14. The Authority Holder must comply with Queensland Vehicle and Machinery Clean down procedures relevant to vehicle types used. (https://www.daf.qld.gov.au/__data/assets/pdf_file/0011/58178/cleandown-procedures.pdf)

DISPLAY OF AUTHORITY

15. This authority (or a copy plus proof of identity of the Authority Holder) must be carried while engaged in any activity authorised by the permit. Additional assistants can be authorised by the Authority Holder to undertake the listed activities.

AUTHORISED ACTIVITY LOCATION

16. Activities carried out under this authority apply to non-protected areas only.

INSURANCE

17. For the Term of this Authority,

(a) The Authority Holder must take out and maintain the following insurances:

- (i) where required by law, insurance under the *Workers' Compensation and Rehabilitation Act 2003*, or its equivalent under another jurisdiction with the consent of the Chief Executive; and

- (ii) where not covered under clause (a)(i), accident insurance sufficient to cover workers, volunteers and eligible persons (as defined under the *Workers' Compensation and Rehabilitation Act 2003*) with the consent of the Chief Executive; and
- (iii) a public liability insurance policy for not less than \$20 million on a claims occurring basis in respect of the death of, or injury to persons, or loss or damage to property; and
- (iv) any other insurances as reasonably required by the Chief Executive.

(b) The Authority Holder must ensure that the insurance policies required under this clause are with:

- (i) an Appropriate Insurer; or
- (ii) if the Authority Holder is globally or self-insured, another insurer with the written approval of the Chief Executive.

(c) The Authority Holder must ensure that in relation to the insurable interests under this clause, insurance policies are effected (either by the Authority Holder or by a third party) to cover all invitees, employees, contractors, agents, members or clients of the Operator, and the State is named as an interested party.

(d) Before undertaking any activities on the Relevant Area, the Authority Holder must have in place all insurances required by this clause.

(e) In any circumstance where the insurances required under this Authority are cancelled, altered or expire before the expiry date of this Authority, the Authority Holder must cease all activities on the Relevant Area until such time as alternative insurance policies that comply with the requirements of this clause have been obtained.

(f) The Authority Holder must provide copies of certificates of currency for the insurances required under this clause if requested by the Chief Executive, acting reasonably.

(g) If the Authority Holder is an individual or sole trader, then clause (a)(i) is satisfied if the Authority Holder maintains:

- (i) personal accident insurance covering all medical treatment, hospitalisation, and medical expenses; and
 - (ii) income protection insurance; and
 - (iii) death and disability insurance;
- equivalent to the coverage and entitlements provided to employees under the statutory provisions of the *Workers Compensation and Rehabilitation Act 2003 (Qld)*.

(h) Where the Authority Holder –

- (i) is a Commonwealth, State or Territory government department, agency or statutory body; and
- (ii) is a self-insurer; and
- (iii) has provided the Chief Executive with a certificate from an appropriately authorised officer to that effect.

the Authority Holder is deemed to have complied with this clause.

(i) If the Authority Holder breaches its obligations under this clause, the Chief Executive may immediately terminate this Authority by written notice to the Authority Holder.

COMPLIANCE WITH LAWS

18. The Authority Holder must at their own expense punctually comply with all statutes, ordinances, local laws, regulations or rules in force at the time, which apply to the Relevant Area and adjoining land and/or the Authority Holder's use of the Relevant Area and adjoining land.

AUTHORITY HOLDER'S AUTHORITY, POWER AND ABILITY

19. The Authority Holder must have the power, authority and ability to be issued this authority and must perform its obligations under this authority with all due skill, care and diligence.

NO LIABILITY FOR CONSEQUENTIAL OR INDIRECT LOSS

20. The State and its Representatives will not in any circumstances (including for negligence) be liable for any loss of revenue, loss of profit, loss of anticipated savings or business, loss of opportunity (including opportunity to enter into or complete arrangements with third parties), loss of data or goodwill, loss of reputation, or any indirect or consequential loss, whether arising in contract, tort (including negligence) or otherwise, in connection with this Authority.

NO WARRANTY AND RISK

21. The Chief Executive does not warrant that the approved estates and sites are free from defect or are safe, fit, suitable or adequate for the permitted use. To the full extent permitted by law, all warranties as to fitness, suitability and adequacy implied by law are expressly negated.

22. The Authority Holder uses the Relevant Area entirely at its own risk and must first check the Relevant Area to ensure that it is suitable for the Approved Activities under this Authority before undertaking any Approved Activities.

INTERPRETATION

In this Authority

- (a) headings are for convenience only and do not affect interpretation; and unless the context indicates a contrary intention:
- (b) any term or expression to which a meaning is assigned by an Act has the meaning so assigned when used in this Authority;
- (c) **person** includes an individual, the estate of an individual, a corporation, an authority, an association or a joint venture (where incorporated), a partnership and a trust;
- (d) a reference to a party includes that party's executors, administrators, successors and permitted assigns, including persons taking by way of novation and, in the case of a trustee, includes a substituted or an additional trustee;
- (e) any reference to a document (including this Authority) is to that document as varied, novated, ratified or replaced from time to time;
- (f) a reference to a statute includes its delegated legislation and a reference to a statute or delegated legislation or a provision of either includes consolidations, amendments, re-enactments and replacements;
- (g) a reference to a schedule, attachment or annexure is a reference to a schedule, attachment or annexure to or of this Authority, and a reference to this Authority includes all schedules, attachments and annexures to it;
- (h) **includes** in any form is not a word of limitation;
- (i) a reference to **\$** or **dollar** is to Australian currency;
- (j) a word importing the singular includes the plural (and vice versa), and a word indicating a gender includes every other gender;

- (k) if a word or phrase is given a defined meaning, any other part of speech or grammatical form of that word or phrase has a corresponding meaning; and
- (l) The Purpose must be undertaken in accordance with the provisions of any relevant Act, Regulation or Zoning Plan;
- (m) where the day on or by which any thing is to be done, is not a business day, that thing must be done on or by the next succeeding day which is a Business Day

DEFINITIONS

Act means a reference to the *Nature Conservation Act 1992*, *Marine Parks Act 2004*, *Forestry Act 1959*, *Recreation Areas Management Act 2006*, *Biodiscovery Act 2004*.

Appropriate Insurer means an insurer which -

- (a) is authorised under the *Insurance Act 1973* (Cwth);
- (b) is registered with the Australian Prudential Regulation Authority as an authorised insurer; and
- (c) has a Standard & Poor's rating of no less than A-.

Approved Location means all locations, zones and areas listed under this authority.

Authority means this document and all annexures to this document.

Business Day means any day in the State of Queensland that is not a Saturday, Sunday or Public Holiday.

Chief Executive means the chief executive, or his/her delegate including local departmental officers where applicable, of the Department responsible for the relevant act and its instruments under which the authority is being issued.

Day limits mean the maximum number of clients, guides and free of charge visitors that may access an approved visitor site on any calendar day.

Forest Area means State Forest, Timber Reserve or Forest Reserve managed under the *Forestry Act 1959* "FA" that contains the authority area.

Group limits mean the maximum number of clients, guides and free of charge visitors in any group.

Improvements mean all development works including any vegetation clearing and all buildings, structures, erections and other infrastructure if authorised under this authority for the authorised area.

Location means the land over which the authority applies as defined in the table labeled "**Approved Location and Purpose**" listed above.

Management Plan means any document detailing management guidelines as required under the relevant Act.

Marine Park means a marine park declared, or taken to be declared, under the *Marine Parks Act 2004*.

Month means calendar month.

'People at any one time' limits mean the maximum number of clients, guides and free of charge visitors that may access an approved visitor site at any one time.

Protected Area means the protected area as defined by the *Nature Conservation Act 1992* that contains the authorised area.

Purpose means an approved activity or permission.

Queensland Parks & Wildlife Service means a Division of the Department of the Environment, Tourism, Science & Innovation

Queensland Parks & Wildlife Service Managed Area means an area declared under the *Nature Conservation Act 1992*, *Marine Parks Act 2004*, *Forestry Act 1959* and *Recreation Areas Management Act 2006*.

Representative means an employee, agent, officer, director, contractor, sub-contractor or other authorised representative of a party.

State means the State of Queensland.

Authorities and permits include licences, approvals, permits, authorisations, certificates, sanctions or equivalents/similar as required by legislation.

Approved Activity means the activity(s) authorised under this permit, as described in the Permitted Location and Activity Details of this permit.

Approved Form means the approved form for the purpose of providing return of operations and final reports to the department, which as at the date of issue of this permit is located at <https://www.qld.gov.au/environment/parks/permits/science-education>.

Landholder has the same meaning as in the Schedule of the *Nature Conservation Act 1992*(Qld).



Tunuba Pty Ltd
2A, 45 Derby Street
Rockhampton
QLD 4700

09/10/2026

To Whom It May Concern,

This letter is formal evidence that, I, Amelia Elgar, as the authority holder of CQ Environmental Pty Ltd (trading as CQG Consulting) research permits and animal ethics (AE) approvals (General Research Permit (WA0034267) and AE approval (CA 2025/01/1922) and Research Permit (Scientific) (P-SPP-100896361) and AE approval (application submitted, to be provided)), endorse and approve employees from Tunuba Pty Ltd (Tunuba) to work under the above permits, to carry out the required scope of works for the Sunwater Rookwood Weir Turtle Nest Protection scope (refer to Tunuba 2025 Annual Nest Protection Plan).

Tunuba employees endorsed to work under the above permits and AE approvals include:

- Matthew Brookes (Tunuba Ranger Coordinator);
- Buthera (Buzz) Broome (Tunuba Senior Ranger);
- Sheldon Edmund (Tunuba Senior Ranger);
- Stephen Upkett (Tunuba Ranger);
- Kobe Watts (Tunuba Ranger);
- Leroy Richards (Tunuba Ranger); and
- Zac Richards (Tunuba Ranger).

Kind Regards,

Amelia Elgar
Senior Ecologist
CQG Consulting

APPENDIX D:

2025 Tunuba Reconnaissance Survey Report Brief

Technical Memorandum

Revision	Date	Prepared by	Reviewed by	Client Reviewer
Rev 0	04/02/2026	Amelia Elgar	Patrice Brown	
To:		Paddy Kehoe – Sunwater Limited		
From:		Amelia Elgar – Tunuba Pty Ltd		
Tunuba Pty Ltd Project No.:		T23062.5		
Client Reference:		23SW00112/05		
TUNUBA PTY LTD Project Manager:		Amelia Elgar		
Name of Document:		2025 Sunwater Turtle Nest Reconnaissance Survey – 29-30 March 2025		

1 Background

A turtle nest reconnaissance survey was conducted on 29 - 30 March 2025 by Tunuba Pty Ltd (Tunuba) and Sunwater Limited (Sunwater) to travel to the four 2025 Priority Nest Protection Areas (PNPAs) that were selected during the Annual Turtle Nesting Meeting to visually assess the suitability of banks for turtle nesting and identify evidence of turtle nesting activity. The four PNPAs include immediately upstream and downstream from the weir, Hanrahan's Crossing, Gogango Creek and upper reaches of Foleyvale (~2 kilometres (km) upstream of Foleyvale Crossing). The Pocket was also assessed for suitability given this site historically supported aggregated nesting of both the Fitzroy River turtle (FRT) and white-throated snapping turtle (WTST). Foleyvale Crossing (far upstream) was also assessed as this bank was previously surveyed in 2019 for nesting habitat suitability and availability of access.

The survey was conducted by Chris Pietsch, as the Suitably Qualified Person (SQP), with Tunuba Ranger, Matt Brookes, and Paddy Kehoe, from Sunwater. The suitability of banks for turtle nesting were assessed as per the management requirements within the Fitzroy River Turtle Nest Protection Plan (FRTNPP) and White-throated Snapping Turtle Nest Protection Plan (WTSTNPP), with consideration of a range of parameters including location, connectivity to the river, size, slope, substrate composition, vegetation cover, weed density, predator activity, disturbance and evidence of turtle nesting activity. At the time of the survey, the Mackenzie River and Fitzroy River were experiencing higher flows. The Riverslea gauge showed a water level of 13.07 metres (m) which is 0.22 m above the baseflow height (adjusted for the construction the Rookwood Weir). Hanrahan's Crossing gauge showed a water level of 3.08 m which is 1.33 m above baseflow height. Results were recorded on the Pre-nesting Season Data Sheet. In addition, each of the PNPAs were examined for signs of nesting and predator activity (which included the presence of turtle tracks, diggings, nests and predated eggshells) using a single strip transect parallel to the water's edge, as per the standard methodology of Limpus et al., 2011.

2 Field Results

No evidence of turtle nesting was observed during the field survey at any of the PNPAs. An assessment of nesting suitability at each of the four PNPAs identified:

- Rookwood immediately downstream of weir to have a high suitability for nesting and is also a historical nesting site;
- Hanrahan's Crossing had a medium to high suitability for nesting;
- Foleyvale Crossing (upstream) had a medium suitability for nesting; and
- Rookwood immediately upstream of weir (Gogango Creek) had a low suitability for nesting.

Table 2.1 provides details on the current condition of potential turtle nesting banks within the PNPAs. The current suitability of each bank is summarised and recommendations for nest protection activities provided. It is understood that the purpose of this information is to support plans to be prepared by Tunuba and to inform the selection of PNPAs and Feral Pest Planned Priority Control Areas during the annual planning meeting (conducted as part of the separate operational phase monitoring scope). Refer to **Appendix A** for the completed Pre-nesting Data sheets and **Appendix B** for the raw data field sheets.

Table 2.1: Field Summary results of the PNPAs investigated during the 2025 Turtle nest reconnaissance survey conducted on 29 to 30 March 2025

Site ID	Latitude, Longitude	Nesting Bank Photo	Nesting Bank Suitability and Remarks	Recommendations
Rookwood immediately downstream of weir	-23.538947 150.013389		High suitability and historical nesting There was a minor amount of erosion on lower sections of the sand bank observed during the survey. Good sections of moderate gradient fine sands up to heights of 4.2 m above current water mark (likely around 5.0 m at normal water mark). There were cattle tracks identified adjacent to the nesting bank as well as pig tracks sighted on the bank. There were no aquatic weeds present, however, there was some (10-40%) coverage of terrestrial weeds and grasses. This is currently the most suitable bank for WTST nesting within the broader study area (refer to Figure 4.1).	It is recommended that searches are conducted on the downstream lower bank (DLB) area for WTST and FRT nesting (i.e. up to 200 m downstream where banks are characterised as moderately sloped and are predominantly sand). However, this area does have extensive grass cover which may inhibit turtle nesting within the bank. It is recommended that terrestrial weed control activities are undertaken on this bank and consideration given to installing an electric fence to exclude cattle from areas supporting aggregated nesting.

Site ID	Latitude, Longitude	Nesting Bank Photo	Nesting Bank Suitability and Remarks	Recommendations
Rookwood immediately upstream of weir (Gogango Creek)	-23.558094 149.980992		Low suitability Banks within the Gogango Creek reach have previously been identified as WTST nesting areas (previous sites G1 and G2) but nest areas are now below FSL. The upper sections of the bank that are above FSL are comprised of silts, have extensive ground cover consisting of grasses and small woody debris, with low to moderate gradient slopes. It is likely that WTST will still use these reaches to nest, however nesting would likely be sparse and very difficult to identify with the extensive ground cover and no distinctive bank sections that they would target. There were cattle tracks and pig tracks identified on the bank. There were no aquatic weeds present, however, there was extensive (>75%) coverage of terrestrial weeds and non-native grasses. There are currently no suitable banks within the weir pool that would be considered as either a medium or high likelihood nesting bank habitat for WTST or FRT.	It is recommended that the particular attention is paid to any pig disturbance at >3 m above the water level along banks (i.e. indicative of WTST nests), particularly, banks along the downstream right bank (DRB) directly upstream of the Gogango Creek confluence. If identified, it is recommended to further investigate pig disturbance within the PNPA for shell fragments and if noted, these areas earmarked for future inspections. No specific nesting bank management actions are recommended for this site.

Site ID	Latitude, Longitude	Nesting Bank Photo	Nesting Bank Suitability and Remarks	Recommendations
Hanrahan's Crossing	- 23.46091 150.01902		Medium to high suitability The sand bank has extended several hundred metres further downstream with the re-distribution / erosion of sands from the back of the sand bar. There was also an extension of cobble bank sections compared to historic assessment. The bank extends approximately 65 m from the water's edge to the channel bank and was between 2.5 to 4.5 m above normal water level. However, there has been a reduction in bank slopes with most sections considered low gradient. Despite the bank condition showing slight degradation, these banks are still considered to be of medium to high suitability for both WTST and FRT. There are areas of moderately sloped sands up to 4 to 5 m in height between the identified bank and causeway (i.e. as you drive along the cobble track). There is potential for WTST to traverse over sections of cobbles and utilise these areas. It is recommended that these sections are also searched for nesting activity and protection activities considered.	It is recommended that terrestrial weed control activities are undertaken on the main nesting bank and additional areas for WTST nesting identified. Electric fencing is not recommended here due to public access and recreational use.

Site ID	Latitude, Longitude	Nesting Bank Photo	Nesting Bank Suitability and Remarks	Recommendations
			The furthest upstream section of the Hanrahan's bank was underwater during the site inspection. There was no evidence of cattle disturbance in the immediate area, however, pig tracks were identified on the bank. Aquatic weeds were absent but terrestrial weeds and grasses were low (1-10%) coverage.	WTST nesting has previously been identified (refer to GHD 2022c and GHD 2022d) here so it is recommended to search and protect this area.
Foleyvale Crossing (upstream)	-23.535449 149.703991		Medium suitability (low suitability for WTST, high suitability for FRT) Significant erosion has occurred to the key sand bank located approximately 1 km upstream of the Foleyvale Crossing. While the bank was still comprised predominantly of sands (80% overall), the bank height is now only 0.8 m above currently water level (likely about 1.8 m above normal water level), which is sub-optimal. Further, the bank has been degraded through scouring by flow. Vegetated bank sections beyond the accumulated sands are covered with very thick grasses / Lomandra and substrate of the back bank is composed of silts / clays. This bank would be considered as low suitability	It is recommended that terrestrial weeds are monitored and controlled, if required, on this bank. Electric fencing is not recommended here due to the site being a public location.

Site ID	Latitude, Longitude	Nesting Bank Photo	Nesting Bank Suitability and Remarks	Recommendations
			for WTST but has a high suitability for FRT. There was no evidence of cattle disturbance in the immediate area, however, pig tracks were identified on the bank. Aquatic weeds were absent but terrestrial weeds and grasses had low (1-10%) coverage.	
Foleyvale Crossing (far upstream)	- 23.534405, 149.664112		High suitability With the higher water levels experienced during March 2025 survey, access was not possible for a further 6 km upstream of Foleyvale Crossing (upstream) to a bank that was initially assessed in 2019. This site had more suitable nesting habitat for WTST and ready vehicle access through arrangement with Sunwater (Sunwater has indicated that an access agreement exists for this property). Further assessment via Google imagery indicates that there are also sections of sand bank that extend further upstream around the bend (i.e. within 1 km from out waypoint). There was no evidence of cattle or pig disturbance in the immediate area.	It is recommended that this bank should replace the Foleyvale Crossing (upstream) bank that was identified for potential nest protection activities. It is recommended that terrestrial weeds are monitored and controlled, if required, on this bank. This bank should be monitored for evidence of cattle and pigs in the future and consideration given to installing an electric fence if required.

Site ID	Latitude, Longitude	Nesting Bank Photo	Nesting Bank Suitability and Remarks	Recommendations
			Aquatic weeds were absent but terrestrial weeds and grasses had low (1-10%) coverage.	
The Pocket (far upstream)	-23.645559; 149.933723		Low to medium suitability A small sand bank was identified on an in-stream island approximately 2.7 km upstream of the Pocket (in proximity to previous assessed nesting bank P4). The bank was comprised predominantly of coarse sands and was approximately 1 m in height, with low gradient slopes. This bank had low to medium suitability as a nesting bank but only for FRTs in the absence of other suitable nesting banks in the area. This bank is not suitable for WTST nesting. There was no evidence of cattle disturbance in the immediate area, however, pig tracks were identified on the bank. Aquatic weeds and terrestrial weeds and grasses had low (1-10%) coverage.	It is recommended that this bank is searched for evidence of nesting. It is recommended that particular attention to any pig disturbance at >3m above the water level along banks (i.e. indicative of FRT nests). If identified, it is recommended that the team further investigate the pig disturbance for shell fragments and if noted, these areas earmarked for future inspections. No specific nesting bank management actions are recommended for this site.

3 Recommendations

From the 2025 March Turtle Nest Reconnaissance survey, the following recommendations are provided:

- Foleyvale Crossing (far upstream), which has a high suitability for turtle nesting, is selected as a Priority Nest Protection Area in lieu of Foleyvale Crossing (upstream), which only has medium suitability; and
- Rookwood immediately upstream of weir (Gogango Creek): Tunuba team to record any pig disturbance at >3 m above the water level along banks (i.e. indicative of WTST nests). In particular, banks along the downstream right bank (DRB) directly upstream of the Gogango Creek confluence. If identified, it is recommended that the team further investigate the pig disturbance for shell fragments and if noted, these areas earmarked for as a future Priority Nest Protection Area.

Yours sincerely,



Amelia Elgar
Senior Ecologist
Tunuba Pty Ltd

Limitations

This report has been prepared for the use of the client, Sunwater, for the purpose of this commission only.

Tunuba Pty Ltd takes no responsibility and disclaims all liability for any loss or damage that any party may suffer as a result of using or relying on any such information or recommendations contained in this report.

To the maximum extent permitted by law Tunuba Pty Ltd expressly disclaims responsibility for or liability arising from:

- Any error in, or omission in connection with assumptions, or
- Reliance on the report by a third party, or use of the report other than for the purpose stated.

The report relates only to the project described herein and must be reviewed by a competent expert before being used for any other purpose. Tunuba Pty Ltd accepts no responsibility for other use of the data.

This report does not provide a complete assessment of the environmental status of the site but is limited to the scope defined herein.

Should further information become available regarding the conditions of the Study Area, Tunuba Pty Ltd reserves the right to review the report in the context of the additional information.

No section or element of this document may be removed, reproduced, electronically stored or transmitted in any form without the written permission of Tunuba Pty Ltd. All rights reserved.

APPENDIX A:

Pre-nesting Data Sheets

Pre-nesting Season Data Sheet

Date:	30/03/2025
Survey Team Members:	Chris Pietsch, Paddy Kehoe, Matthew Brookes
Location: (latitude and longitude)	Latitude: - 23.534405 Longitude: 149.664112
Priority Nest Protection Area: (name and site identification number)	Foleyvale Crossing, far upstream, Mackenzie River.
Weather conditions:	Dry, sunny to partly cloudy. Evidence of recent heavy rainfall.
Photograph reference numbers: (north, east, south and west at 50m intervals along the bank)	 South  West

	 North-west		
Bank profile (m):	Height: Currently 2.5m (currently in high flow – would usually be an extra 1.0m)	Length: 100+ m	Width: 65+ m
Average bank slope: (vertical (89–90°); steep (60–80°); moderate (30–60°); low (10–30°) and; flat (<10°))	10% steep (60–80°), 30% moderate (30–60°), 60% low (10–30°)		
Average bank composition (%):	Cobble/pebble (%): 15	Gravel (%): 15	Coarse sand (%): 70
	Fine sand (%): 0	Slit/cay (%): 0	Other (%): 0
Riparian canopy vegetation: (None (none); little (1–10%); some(10–50%); moderate (50–75%) and extensive (>75%))	Ground cover: little (1-10%)	Scrub cover: some (10-50%)	Canopy Cover: some (10-50%)
Weed density: (little (1–10%); some (10 - 50%); moderate (50–75%) and extensive (>75%))	Overall density: little (0-10%)	Density per species: NA	

Evidence of predator activity: <i>(little (1–10%); some (10–25%); moderate (25–50%) and extensive (>50%))</i>	Overall activity per species (%): No signs evident in nesting area.	Upper bank activity per species (%): NA	Mid bank activity per species (%): NA
	Lower bank per species activity (%): 0		
Evidence of cattle activity: <i>(little (1–10%); some (10–25%); moderate (25–50%) and extensive (>50%))</i>	Overall activity (%): No signs evident in nesting area.	Upper bank activity (%): NA	Mid bank activity (%): NA
	Lower bank per species activity (%):NA		
Flow level: <i>(None (isolated pools); low (<watermark); moderate (=watermark); high (>watermark); flood)</i>	High (>watermark) - potentially in flood.		
Habitats adjacent: <i>(deep pool (>0.5 m); shallow pool (<0.5 m); run; riffle)</i>	Deep pool (>0.5m), shallow pool (<0.5m), and run.		

Habitat Protection activities

Activity	Date implemented	Location (lat/longs)	Details

Pre-nesting Season Data Sheet

Date:	30/03/2025
Survey Team Members:	Chris Piestch, Paddy Kehoe, Matthew Brookes
Location: (latitude and longitude)	Latitude: -23.535449 Longitude: 149.703991
Priority Nest Protection Area: (name and site identification number)	Foleyvale Crossing (upstream), Mackenzie River.
Weather conditions:	Dry, sunny to partly cloudy.
Photograph reference numbers: (north, east, south and west at 50m intervals along the bank)	 North  West

	 South		
Bank profile (m): **Bank has been recently inundated, heavily eroded in comparison to previous seasons	Height: 0.8m	Length: 280m	Width: 35m
Average bank slope: (vertical (89–90°); steep (60–80°); moderate (30–60°); low (10–30°) and; flat (<10°))	Flat (<10°)		
Average bank composition (%):	Cobble/pebble (%): 5	Gravel (%): 15	Coarse sand (%): 20
	Fine sand (%): 60	Slit/cay (%): 0	Other (%): 0
Riparian canopy vegetation: (None (none); little (1–10%); some(10–50%); moderate (50–75%) and extensive (>75%))	Ground cover: Little (0-10%)	Scrub cover: Some (10-50%)	Canopy Cover: little (0-10%)
Weed density: (little (1–10%); some (10 - 50%); moderate (50–75%) and extensive (>75%))	Overall density: little (0-10%)	Density per species: 100% thick grasses/Lomandra	

Evidence of predator activity: <i>(little (1–10%); some (10–25%); moderate (25–50%) and extensive (>50%))</i>	Overall activity per species (%): moderate (25-50%) light use of nesting area	Upper bank activity per species (%): NA	Mid bank activity per species (%): NA
	Lower bank per species activity (%): NA		
Evidence of cattle activity: <i>(little (1–10%); some (10–25%); moderate (25–50%) and extensive (>50%))</i>	Overall activity (%): no signs evident in immediate area	Upper bank activity (%): NA	Mid bank activity (%): NA
	Lower bank per species activity (%): NA		
Flow level: <i>(None (isolated pools); low (<watermark); moderate (=watermark); high (>watermark); flood)</i>	High (>watermark)		
Habitats adjacent: <i>(deep pool (>0.5 m); shallow pool (<0.5 m); run; riffle)</i>	Deep pool (>0.5m), shallow pool (<0.5m) and run.		

Habitat Protection activities

Activity	Date implemented	Location (lat/longs)	Details

Pre-nesting Season Data Sheet

Date:	29/03/2025		
Survey Team Members:	Chris Piestch, Paddy Kehoe, Matthew Brookes		
Location: (latitude and longitude)	Latitude: -23.558094 Longitude: 149.980992		
Priority Nest Protection Area: (name and site identification number)	Gogango mouth (previous sites G1 and G2) Rookwood weir, Fitzroy River		
Weather conditions:	Overcast. The site was wet due to recent heavy rainfall.		
Photograph reference numbers: (north, east, south and west at 50m intervals along the bank)	 		
Bank profile (m): **Was no suitable sand banks within 500m reach above Gogango Creek	Height: 2-2m	Length: Bank is below the full supply level (FSL)	Width: Bank is below the full supply level (FSL)
Average bank slope:	Low (10-30°)		

(vertical (89–90°); steep (60–80°); moderate (30–60°); low (10–30°) and; flat (<10°))			
Average bank composition (%):	Cobble/pebble (%): 0	Gravel (%): 0	Coarse sand (%): 0
	Fine sand (%): 0	Slit/cay (%): 100	Other (%): 0
Riparian canopy vegetation: (None (none); little (1–10%); some(10–50%); moderate (50–75%) and extensive (>75%))	Ground cover: Extensive (>75%)	Scrub cover: Extensive (>75%)	Canopy Cover: moderate (50-75%)
Weed density: (little (1–10%); some (10 - 50%); moderate (50–75%) and extensive (>75%))	Overall density: extensive (>75%)	Density per species: NA	
Evidence of predator activity: (little (1–10%); some (10–25%); moderate (25–50%) and extensive (>50%))	Overall activity per species (%): Moderate (20-50%) - light use of nesting bank (pig disturbance)	Upper bank activity per species (%): NA	Mid bank activity per species (%): NA
	Lower bank per species activity (%): NA		
Evidence of cattle activity: (little (1–10%); some (10–25%); moderate (25–50%) and extensive (>50%))	Overall activity (%): Moderate (20-50%) - light use of nesting bank	Upper bank activity (%): NA	Mid bank activity (%): NA
	Lower bank per species activity (%): NA		
Flow level: (None (isolated pools); low (<watermark); moderate (=watermark); high (>watermark); Flood)	High (>watermark)		
Habitats adjacent: (deep pool (>0.5 m); shallow pool (<0.5 m); run; riffle)	Deep pool (>0.5m)		

Habitat Protection activities

Activity	Date implemented	Location (lat/longs)	Details

Pre-nesting Season Data Sheet

Date:	30/03/2025
Survey Team Members:	Chris Piestch, Paddy Kehoe, Matthew Brookes
Location: (latitude and longitude)	Latitude: - 23.46091 Longitude: 150.01902
Priority Nest Protection Area: (name and site identification number)	Hanrahan's Crossing, Fitzroy River
Weather conditions:	Overcast. The site was wet from recent rainfall.
Photograph reference numbers: (north, east, south and west at 50m intervals along the bank)	 North  East

			
	South	West	
Bank profile (m):	Height: 2.5m **Bank has experienced recent erosion	Length: 390m	Width: 55m
Average bank slope: (vertical (89–90°); steep (60–80°); moderate (30–60°); low (10–30°) and; flat (<10°))	Low (10–30 °)		
Average bank composition (%):	Cobble/pebble (%): 30	Gravel (%): 20	Coarse sand (%): 50
	Fine sand (%): 0	Slit/cay (%): 0	Other (%): 0
Riparian canopy vegetation: (None (none); little (1–10%); some(10–50%); moderate (50–75%) and extensive (>75%))	Ground cover: Little (1–10%)	Scrub cover: Little (1–10%)	Canopy Cover: 0
Weed density: (little (1–10%); some (10 - 50%); moderate (50–75%) and extensive (>75%))	Overall density: little (0–10%)	Density per species: NA	

Evidence of predator activity: <i>(little (1–10%); some (10–25%); moderate (25–50%) and extensive (>50%))</i>	Overall activity per species (%): Moderate (25-50%) pig disturbance	Upper bank activity per species (%): NA	Mid bank activity per species (%): NA
	Lower bank per species activity (%): (0-10)%		
Evidence of cattle activity: <i>(little (1–10%); some (10–25%); moderate (25–50%) and extensive (>50%))</i>	Overall activity (%): No signs in the immediate area.	Upper bank activity (%): NA	Mid bank activity (%): NA
	Lower bank per species activity (%): NA		
Flow level: <i>(None (isolated pools); low (<watermark); moderate (=watermark); high (>watermark); flood)</i>	High (>watermark)		
Habitats adjacent: <i>(deep pool (>0.5 m); shallow pool (<0.5 m); run; riffle)</i>	Deep pool (>0.5m), shallow pool (<0.5m), run and riffle		

Habitat Protection activities

Activity	Date implemented	Location (lat/longs)	Details

Pre-nesting Season Data Sheet

Date:	29/03/2025
Survey Team Members:	Chris Piestch, Paddy Kehoe, Matthew Brookes
Location: (latitude and longitude)	Latitude: -23.538947 Longitude: 150.013389
Priority Nest Protection Area: (name and site identification number)	Rookwood, immediately below the weir. Fitzroy River
Weather conditions:	Overcast. The site was wet due to recent heavy rainfall.
Photograph reference numbers: (north, east, south and west at 50m intervals along the bank)	 North  South

	 		
	East West		
Bank profile (m):	Height: 4.2m	Length: 130m	Width: 38m
Average bank slope: (vertical (89–90°); steep (60–80°); moderate (30–60°); low (10–30°) and; flat (<10°))	70% was moderate (30–60°) and 30% was low (10–30°).		
Average bank composition (%):	Cobble/pebble (%): 0	Gravel (%): 0	Coarse sand (%): 0
	Fine sand (%): 95	Slit/cay (%): 5	Other (%): 0
Riparian canopy vegetation: (None (none); little (1–10%); some (10–50%); moderate (50–75%) and extensive (>75%))	Ground cover: some (10–50%)	Scrub cover: little (1–10%)	Canopy Cover: 0
Weed density: (little (1–10%); some (10 - 50%); moderate (50–75%) and extensive (>75%))	Overall density: Some (10–40%)	Density per species: NA	

Evidence of predator activity: <i>(little (1–10%); some (10–25%); moderate (25–50%) and extensive (>50%))</i>	Overall activity per species (%): Moderate (25-50%)	Upper bank activity per species (%): NA	Mid bank activity per species (%): NA
	Lower bank per species activity (%):NA		
Evidence of cattle activity: <i>(little (1–10%); some (10–25%); moderate (25–50%) and extensive (>50%))</i>	Overall activity (%): little (0-10%) found adjacent to nesting area.	Upper bank activity (%): NA	Mid bank activity (%): NA
	Lower bank per species activity (%): NA		
Flow level: <i>(None (isolated pools); low (<watermark); moderate (=watermark); high (>watermark); flood)</i>	High (>watermark)		
Habitats adjacent: <i>(deep pool (>0.5 m); shallow pool (<0.5 m); run; riffle)</i>	Deep pool (>0.5m), shallow pool (<0.5m), run and riffle		

Habitat Protection activities

Activity	Date implemented	Location (lat/longs)	Details

Pre-nesting Season Data Sheet

Date:	29/03/2025
Survey Team Members:	Chris Piestch, Paddy Kehoe, Matthew Brookes
Location: (latitude and longitude)	Latitude: 23° 38.7326 Longitude: 149° 56.0246
Priority Nest Protection Area: (name and site identification number)	The Pocket (far upstream), Fitzroy River
Weather conditions:	Overcast. The site was wet from recent rainfall.
Photograph reference numbers: (north, east, south and west at 50m intervals along the bank)	 North  East

	 South		
Bank profile (m):	Height: 1m	Length: 30m	Width: 15m
Average bank slope: (vertical (89–90°); steep (60–80°); moderate (30–60°); low (10–30°) and; flat (<10°))	Low (10–30°		
Average bank composition (%):	Cobble/pebble (%): 10	Gravel (%): 10	Coarse sand (%): 70
	Fine sand (%): 0	Slit/cay (%): 10	Other (%): 0
Riparian canopy vegetation: (None (none); little (1–10%); some(10–50%); moderate (50–75%) and extensive (>75%))	Ground cover: <i>little (1–10%)</i>	Scrub cover: <i>little (1–10%)</i>	Canopy Cover: <i>little (1–10%)</i>
Weed density:	Overall density: little (0-10%)	Density per species: NA	

<i>(little (1–10%); some (10 - 50%); moderate (50–75%) and extensive (>75%))</i>			
Evidence of predator activity: <i>(little (1–10%); some (10–25%); moderate (25–50%) and extensive (>50%))</i>	Overall activity per species (%): <i>moderate (25–50%), light use of nesting area.</i>	Upper bank activity per species (%): NA	Mid bank activity per species (%): NA
	Lower bank per species activity (%): NA		
Evidence of cattle activity: <i>(little (1–10%); some (10–25%); moderate (25–50%) and extensive (>50%))</i>	Overall activity (%): no signs evident in nesting area	Upper bank activity (%): NA	Mid bank activity (%): NA
	Lower bank per species activity (%): NA		
Flow level: <i>(None (isolated pools); low (<watermark); moderate (=watermark); high (>watermark); flood)</i>	None (isolated pools)		
Habitats adjacent: <i>(deep pool (>0.5 m); shallow pool (<0.5 m); run; riffle)</i>	Deep pool (>0.5 m)		

Habitat Protection activities

Activity	Date implemented	Location (lat/longs)	Details

APPENDIX B:

Raw data field sheets

Turtle Nesting Data

Sample details

Site: <i>Hanrahan's</i>	Date: <i>30/03/2025</i>	Latitude: <i>23.46091</i>
Waterway: <i>Fitzroy rv.</i>	Personnel: <i>CP, PK, MB</i>	Longitude: <i>150.01902</i>

Turtle occurrence / Nesting habitat suitability

Evidence of turtle nesting	YES / NO <i>(NO)</i>
LOW	nesting banks with a relatively low gradient slope and/or predominantly unsuitable substrate (e.g. gravel)
<i>MEDIUM</i>	nesting banks with a relatively medium to steep slope, predominantly sand/loam substrate and/or medium to high vegetation cover
HIGH	nesting banks with a relatively steep slope, sand/loam substrate and low vegetation cover
CONFIRMED	nesting banks in which direct evidence of turtle nesting was observed (e.g. predated egg shell)
HISTORICAL	nesting banks in which direct evidence of turtle nesting has been confirmed in previous studies

Nesting bank characteristics

Habitats adjacent:	deep pool (>0.5m)	shallow pool (<0.5m)	run	riffle	
Flow level	none (isolated pool)	Low (< watermark)	Moderate (= watermark)	High (> watermark)	Flood
Av. bank composition	cobble / pebble (30 %)	gravel (20 %)	coarse sand (50 %)	fine sand (10 %)	silt / clay (— %)
Av. bank slope	vertical (80-90°)	steep (60-80°)	moderate (30-60°)	low (10-30°)	flat (<10°)
Bank height (m)	mostly 2.5 back section 4.5		Bank width (perpendicular to channel): 55	Bank length: 390	
Ground cover:	N (none)	L (1-10%)	S (10-50%)	M (50-75%)	E (>75%)
Riparian cover	N	L	S	M	E
Cattle disturbance	heavy use of nesting bank	light use of nesting bank	tracks / use adjacent nesting bank	no signs evident in immediate area	
Pig disturbance	heavy use of nesting bank	light use of nesting bank	tracks / use adjacent nesting bank	no signs evident in immediate area	

Map

- Bank has been eroded in past few months

Turtle Nesting Data

Sample details

Site: <i>Rookwood below weir</i>	Date: <i>29/03/2025</i>	Latitude:
Waterway: <i>Fitzroy.</i>	Personnel: <i>CP, PK, MB</i>	Longitude:

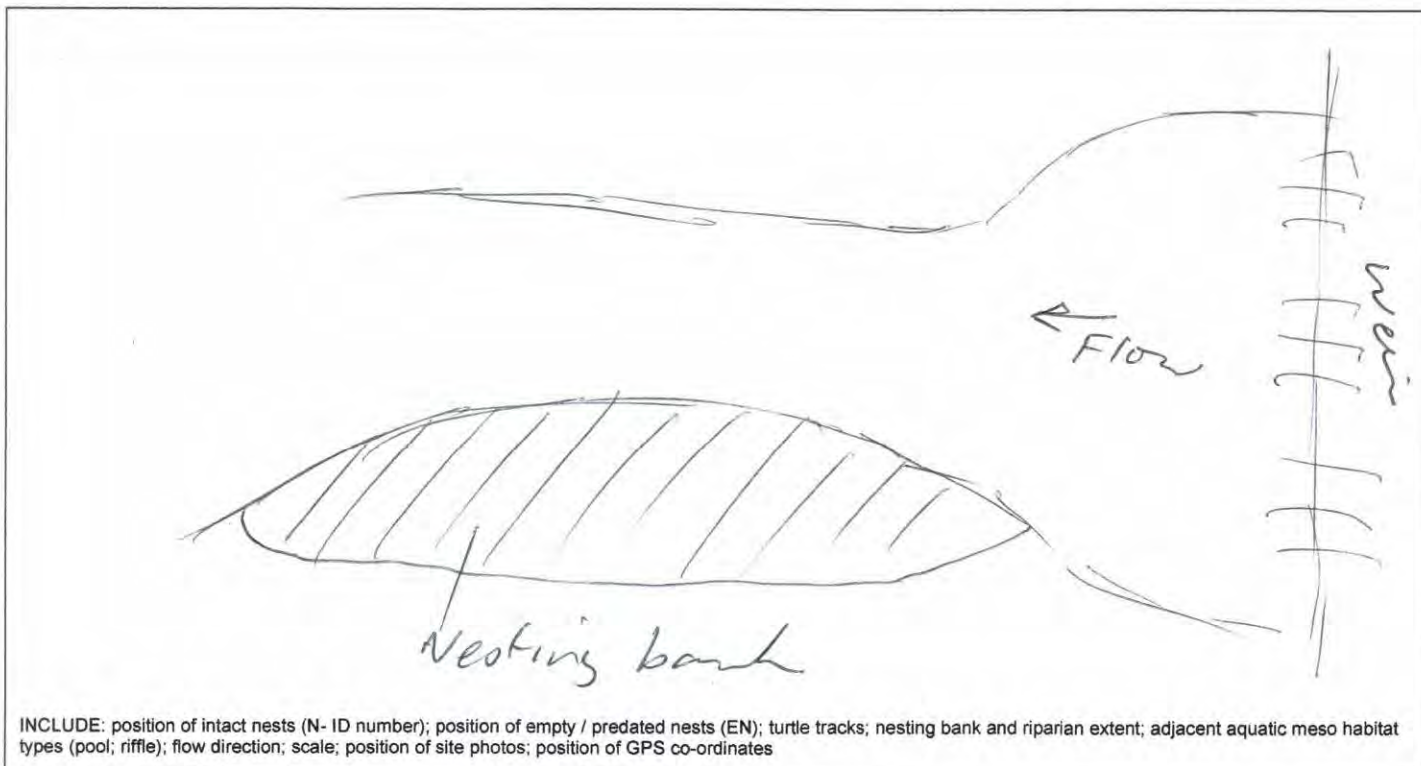
Turtle occurrence / Nesting habitat suitability

Evidence of turtle nesting	YES / <u>NO</u>
LOW	nesting banks with a relatively low gradient slope and/or predominantly unsuitable substrate (e.g. gravel)
MEDIUM	nesting banks with a relatively medium to steep slope, predominantly sand/loam substrate and/or medium to high vegetation cover
<u>HIGH</u>	nesting banks with a relatively steep slope, sand/loam substrate and low vegetation cover
CONFIRMED	nesting banks in which direct evidence of turtle nesting was observed (e.g. predated egg shell)
<u>HISTORICAL</u>	nesting banks in which direct evidence of turtle nesting has been confirmed in previous studies

Nesting bank characteristics

Habitats adjacent:	deep pool (>0.5m)	shallow pool (<0.5m)	run	riffle	
Flow level	none (isolated pool)	Low (< watermark)	Moderate (= watermark)	High (> watermark)	Flood
Av. bank composition	cobble / pebble (%)	gravel (%)	coarse sand (%)	fine sand (95 %)	silt / clay (5 %)
Av. bank slope	vertical (80-90°)	steep (60-80°)	moderate (30-60°) 70%	low (10-30°) 30%	flat (<10°)
Bank height (m)	4.2		Bank width (perpendicular to channel): 38	Bank length: 130m	
Ground cover:	N (none)	L (1-10%)	S (10-50%)	M (50-75%)	E (>75%)
Riparian cover	N	L	S	M	E
Cattle disturbance	heavy use of nesting bank	light use of nesting bank	tracks / use adjacent nesting bank	no signs evident in immediate area	
Pig disturbance	heavy use of nesting bank	light use of nesting bank	tracks / use adjacent nesting bank	no signs evident in immediate area	

Map



INCLUDE: position of intact nests (N- ID number); position of empty / predated nests (EN); turtle tracks; nesting bank and riparian extent; adjacent aquatic meso habitat types (pool; riffle); flow direction; scale; position of site photos; position of GPS co-ordinates

Turtle Nesting Data

Sample details

Site: Banks 91/92 in wai pool	Date: 22/03/2025	Latitude: <i>500m reach upstream of Gogango</i>
Waterway: Fitzroy R	Personnel: CP, PK, MB	Longitude: <i>ck confluence (DRB)</i>

Turtle occurrence / Nesting habitat suitability

Evidence of turtle nesting	YES / NO <i>(DRB)</i>
LOW	nesting banks with a relatively low gradient slope and/or predominantly unsuitable substrate (e.g. gravel)
MEDIUM	nesting banks with a relatively medium to steep slope, predominantly sand/loam substrate and/or medium to high vegetation cover
HIGH	nesting banks with a relatively steep slope, sand/loam substrate and low vegetation cover
CONFIRMED	nesting banks in which direct evidence of turtle nesting was observed (e.g. predated egg shell)
HISTORICAL	nesting banks in which direct evidence of turtle nesting has been confirmed in previous studies

Nesting bank characteristics

Habitats adjacent:	deep pool (>0.5m)	shallow pool (<0.5m)	run	riffle	
Flow level	none (isolated pool)	Low (< watermark)	Moderate (= watermark)	High (> watermark)	Flood
Av. bank composition	cobble / pebble (— %)	gravel (— %)	coarse sand (— %)	fine sand (— %)	silt / clay (100 %)
Av. bank slope	vertical (80-90°)	steep (60-80°)	moderate (30-60°)	low (10-30°)	flat (<10°)
Bank height (m)	2.3m av.		Bank width (perpendicular to channel): 0/?	Bank length: ? / NA / 0	
Ground cover:	N (none)	L (1-10%)	S (10-50%)	M (50-75%)	E (>75%)
Riparian cover	N	L	S	M	E
Cattle disturbance	heavy use of nesting bank	light use of nesting bank	tracks / use adjacent nesting bank	no signs evident in immediate area	
Pig disturbance	heavy use of nesting bank	light use of nesting bank	tracks / use adjacent nesting bank	no signs evident in immediate area	

Map

→ No suitable bank, previous sand bank used by WTST to nests is now below FSL

→ No suitable sand banks in 500m reach on DRB above Gogango creek - or on either bank with Gogango creek (assessed 1km into creek)

Turtle Nesting Data

Sample details

Site: <i>Pocket for UPS.</i>	Date: <i>29/03/2025</i>	Latitude: <i>23° 38.7326'</i>
Waterway: <i>Fitzroy</i>	Personnel: <i>CP + PK + MB</i>	Longitude: <i>149° 56.0247'</i>

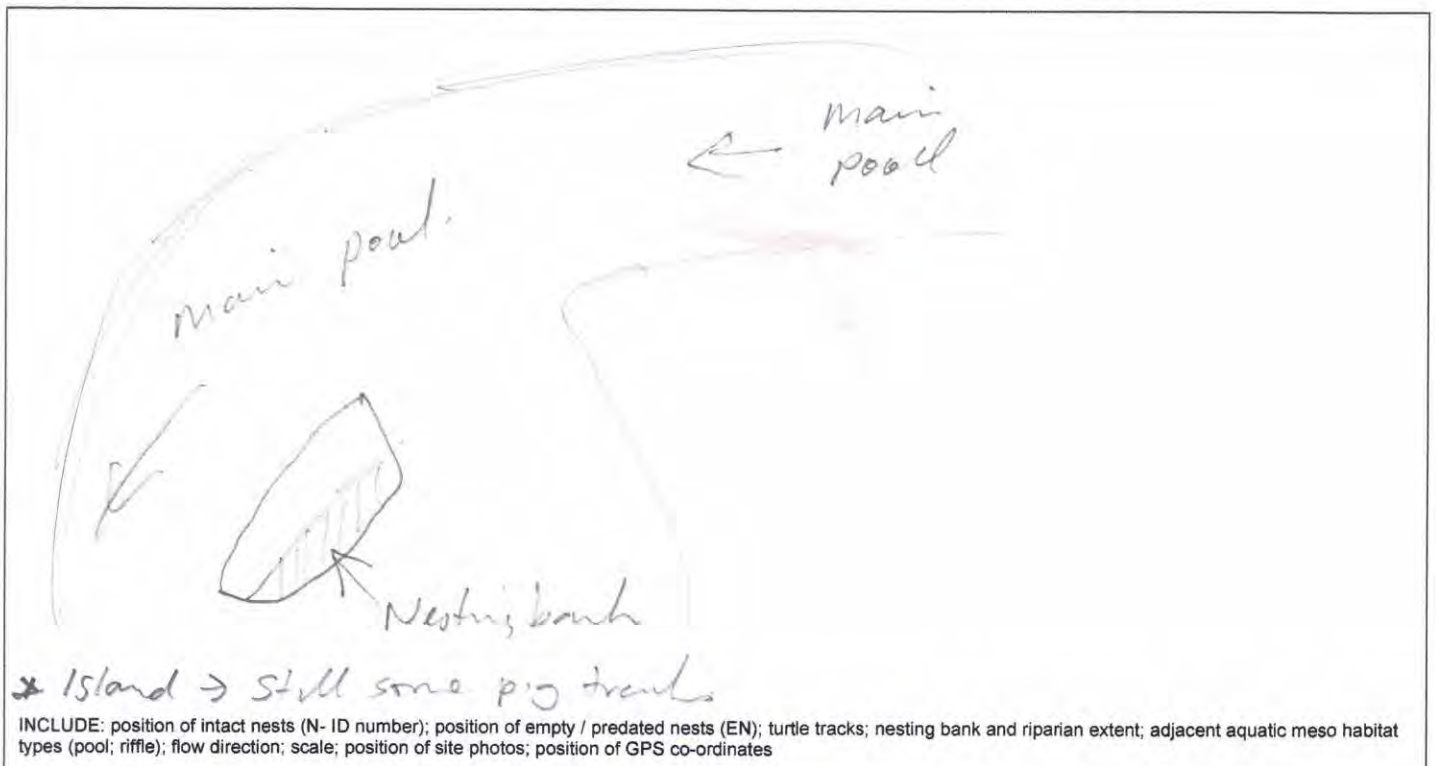
Turtle occurrence / Nesting habitat suitability

Evidence of turtle nesting	YES ☒ NO
LOW	nesting banks with a relatively low gradient slope and/or predominantly unsuitable substrate (e.g. gravel)
<i>Lack of other habitat</i> MEDIUM	nesting banks with a relatively medium to steep slope, predominantly sand/loam substrate and/or medium to high vegetation cover
HIGH	nesting banks with a relatively steep slope, sand/loam substrate and low vegetation cover
CONFIRMED	nesting banks in which direct evidence of turtle nesting was observed (e.g. predated egg shell)
HISTORICAL	nesting banks in which direct evidence of turtle nesting has been confirmed in previous studies

Nesting bank characteristics

Habitats adjacent:	deep pool (>0.5m)	shallow pool (<0.5m)	run	riffle	
Flow level	none (isolated pool)	Low (< watermark)	Moderate (= watermark)	High (> watermark)	Flood
Av. bank composition	cobble / pebble (10 %)	gravel (10 %)	coarse sand (70 %)	fine sand (— %)	silt / clay (10 %)
Av. bank slope	vertical (80-90°)	steep (60-80°)	moderate (30-60°)	low (10-30°)	flat (<10°)
Bank height (m) 1.0m		Bank width (perpendicular to channel): 15		Bank length: 30	
Ground cover:	N (none)	L (1-10%)	S (10-50%)	M (50-75%)	E (>75%)
Riparian cover	N	L	S	M	E
Cattle disturbance	heavy use of nesting bank	light use of nesting bank	tracks / use adjacent nesting bank	no signs evident in immediate area	
Pig disturbance*	heavy use of nesting bank	light use of nesting bank	tracks / use adjacent nesting bank	no signs evident in immediate area	

Map



Turtle Nesting Data

Sample details

Site: <i>Foleyvale 45</i>	Date: <i>30/03/2025</i>	Latitude: <i>23.535449</i>
Waterway: <i>Mackenzie Rv.</i>	Personnel: <i>CP, PK, MB</i>	Longitude: <i>149.703991</i>

Turtle occurrence / Nesting habitat suitability

Evidence of turtle nesting	YES / <u>NO</u>
LOW	nesting banks with a <u>relatively low gradient</u> slope and/or predominantly unsuitable substrate (e.g. gravel)
<u>MEDIUM</u>	nesting banks with a relatively medium to steep slope, <u>predominantly sand/loam substrate and/or medium to high vegetation cover</u>
HIGH	nesting banks with a relatively steep slope, sand/loam substrate and <u>low vegetation cover</u>
CONFIRMED	nesting banks in which direct evidence of turtle nesting was observed (e.g. predated egg shell)
HISTORICAL	nesting banks in which direct evidence of turtle nesting has been confirmed in previous studies

Nesting bank characteristics

Habitats adjacent:	deep pool (>0.5m)	shallow pool (<0.5m)	run	riffle	
Flow level	none (isolated pool)	Low (< watermark)	Moderate (= watermark)	High (> watermark)	Flood
Av. bank composition	cobble / pebble (5 %)	gravel (15 %)	coarse sand (20 %)	fine sand (60 %)	silt / clay (— %)
Av. bank slope	vertical (80-90°)	steep (60-80°)	moderate (30-60°)	low (10-30°)	flat (<10°)
Bank height (m)	0.8		Bank width (perpendicular to channel):	35	Bank length: 280
Ground cover:	N (none)	L (1-10%)	S (10-50%)	M (50-75%)	E (>75%)
Riparian cover	N	L	S	M	E
Cattle disturbance	heavy use of nesting bank	light use of nesting bank	tracks / use adjacent nesting bank	no signs evident in immediate area	
Pig disturbance	heavy use of nesting bank	light use of nesting bank	tracks / use adjacent nesting bank	no signs evident in immediate area	

Map

→ Bank has been recently inundated, heavily eroded in comparison to previous seasons.

→ back of bank silts with high cover of grasses + lomandra.

data from June 2019

Turtle Nesting Data

Sample details

Site: <i>Foleyvale Fm v/s</i>	Date: <i>30/03/2025</i>	Latitude: <i>-23.534405</i>
Waterway: <i>Mackenzie Rv.</i>	Personnel: <i>CP, PK, MB</i>	Longitude: <i>149.664112</i>

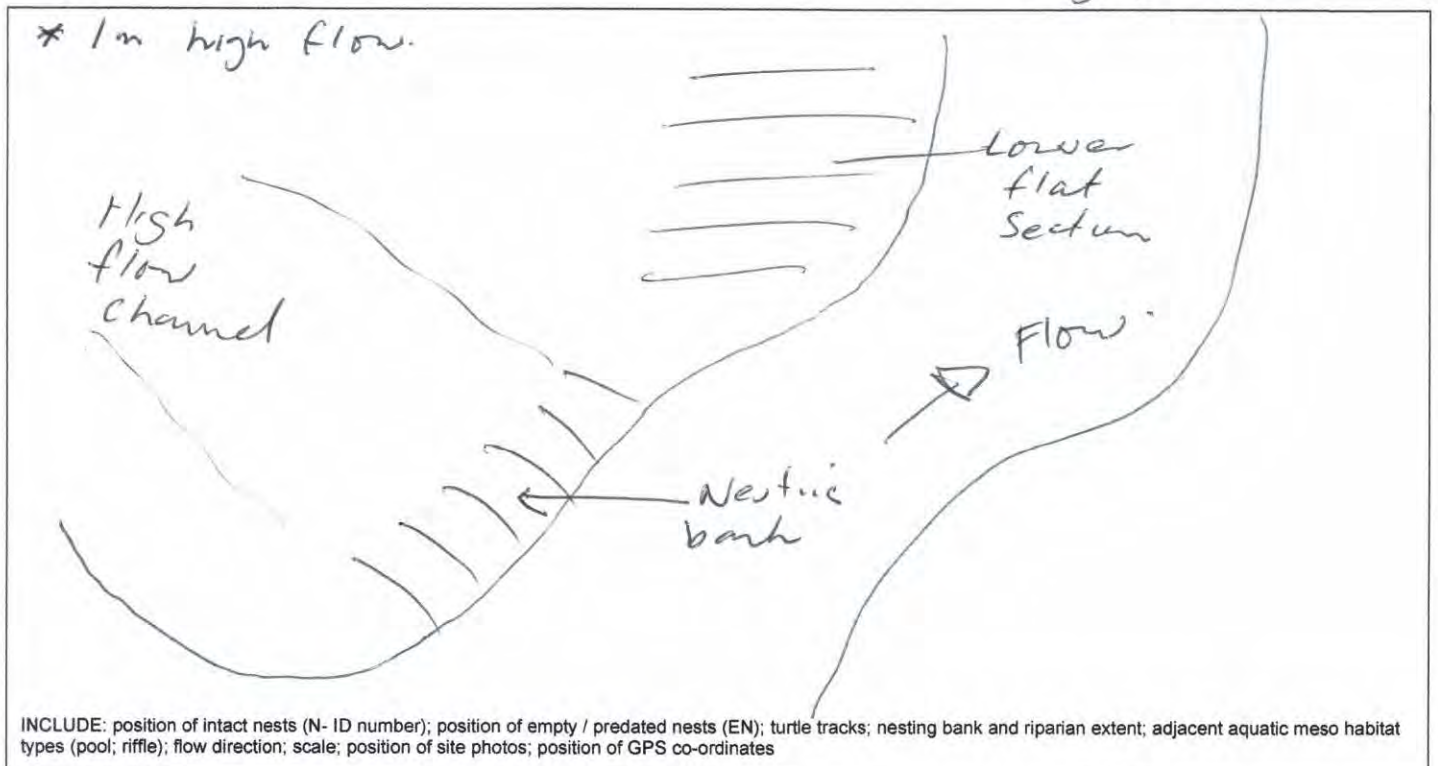
Turtle occurrence / Nesting habitat suitability

Evidence of turtle nesting	YES <u>NO</u>
LOW	nesting banks with a relatively low gradient slope and/or predominantly unsuitable substrate (e.g. gravel)
MEDIUM	nesting banks with a relatively medium to steep slope, predominantly sand/loam substrate and/or medium to high vegetation cover
<u>HIGH</u>	nesting banks with a relatively steep slope, sand/loam substrate and low vegetation cover
CONFIRMED	nesting banks in which direct evidence of turtle nesting was observed (e.g. predated egg shell)
HISTORICAL	nesting banks in which direct evidence of turtle nesting has been confirmed in previous studies

Nesting bank characteristics

Habitats adjacent:	<u>deep pool (>0.5m)</u>	<u>shallow pool (<0.5m)</u>	<u>run</u>		riffle
Flow level	none (isolated pool)	Low (< watermark)	Moderate (= watermark)	<u>High</u> (> watermark)	Flood ?
Av. bank composition	cobble / pebble (<i>15</i> %)	gravel (<i>15</i> %)	coarse sand (<i>70</i> %)	fine sand (<i>0</i> %)	silt / clay (<i>—</i> %)
Av. bank slope	vertical (80-90°)	<u>steep</u> (60-80°) <i>10%</i>	<u>moderate</u> (30-60°) <i>30%</i>	<u>low</u> (10-30°) <i>60%</i>	flat (<10°)
Bank height (m) <i>Currently 2.5m add extra 1.0m</i>		Bank width (perpendicular to channel): <i>65m</i>		Bank length: <i>100 + lower ~ 50m</i>	
Ground cover:	N (none)	<u>L</u> (1-10%)	S (10-50%)	M (50-75%)	E (>75%)
Riparian cover	N	L	<u>S</u>	M	E
Cattle disturbance	heavy use of nesting bank	light use of nesting bank	tracks / use adjacent nesting bank	<u>no signs evident in immediate area</u>	
Pig disturbance	heavy use of nesting bank	light use of nesting bank	tracks / use adjacent nesting bank	<u>no signs evident in immediate area</u>	

Map



APPENDIX E:

2025 Pre-nesting Season Datasheets

APPENDIX F:

2025 Nesting Season Datasheets

APPENDIX G:

2025 Hatching Success Datasheets