

**AMENDED IN RED**

By: Tammara Scott

Date: 1 June 2021



ENVIRONMENTAL FLOODPLAIN WORKS

Received by EDQ  
3 March 2021

RM2S1 ROSS RIVER SOUTH  
BANK UPSTREAM OF  
ROONEY'S BRIDGE

# STRATEGIC SITE MANAGEMENT PLAN

PLANS AND DOCUMENTS  
referred to in the PDA  
DEVELOPMENT APPROVAL

Approval no: DEV2021/1175

Date: 7 June 2021



PREPARED AND PRESENTED BY

ENVIRONMENTAL CONTRACTORS DAVID COLEY AND JASON LANGE ON  
BEHALF OF THE ENVIRONMENTAL FLOODPLAIN RECOVERY GROUP -  
TOWNSVILLE CITY COUNCIL



---

# TABLE OF CONTENTS

THIS DOCUMENT IS INTENDED TO CONSOLIDATE ALL ENVIRONMENTAL CONSIDERATIONS ASSOCIATED WITH RECOVERY WORKS

**This site specific environmental recovery plan focuses on key environmental, operational and safety management tasks that make the project work from day-to-day. It centres on field-based roles and functional and practical management of the site. This document assists in capturing work methods, inform site personnel and also provide information to requesting agencies or organisations involved in the project.**

1. SITE HISTORY AND IMPACTS
  2. RECOVERY OBJECTIVES AND WORKS DESCRIPTION
  3. PROJECT TIMELINE
  4. SOIL EROSION AND SEDIMENT CONTROL
  5. SOIL EROSION
  6. TRAFFIC MANAGEMENT
  7. PLANT & EQUIPMENT LIST
  8. MATERIAL RECOVERY AND REUSE
  9. MATERIAL RECOVERY AND REUSE
  10. PROTECTING AND ENHANCING SITE VEGETATION
  11. AMPLIFYING FISH HABITAT AND MIGRATION
  12. ON-GROUND REPORTING AND METRICS
  13. SAFETY SYSTEMS FRAMEWORK
  14. STANDARD SYMBOLS GUIDE
  15. KEY PERSONNEL AND CONTACTS
-

# SITE HISTORY AND MONSOON IMPACTS

SOUTH BANK IN 1977  
BEFORE LANDFILL  
CONSTRUCTION.  
SOURCE: QLD GLOBE



SOUTH BANK ON  
AUGUST, 2018. SOURCE:  
QLD GLOBE



SOUTH BANK AFTER  
2019 MONSOON EVENT.  
NOTE VEGETATION  
LOSS.  
SOURCE: TCC DRONE  
IMAGERY



## HISTORIC DISTURBANCE AND MODIFICATIONS

The Ross River upstream of Rooney's Bridge is situated within a large meander which is migrating downstream under the governing geomorphic forces. At this location, several hard constraints have been introduced as a result of anthropogenic activity, these being: Rooney's Bridge; Capped Landfill (now Bicentennial Park) at Hermit Park; and Rock revetment of the bank adjacent Bicentennial Park. The main works are immediately upstream of the North Coast Railway and involve the conjoint widening of the river on the south bank [Oonoomba PDA] and north bank [Bicentennial Park]. The south bank works have been designed principally to integrate with and replicate the upstream river terrace that is protected from erosion by marine plant cover i.e. mangroves and salt couch. The overall widening of the river in this reach will reduce the flow velocity and potential for erosion upstream of the North Coast Railway during future flood events.

# RECOVERY OBJECTIVES AND WORKS DESCRIPTION

Works will be required to control the stream bed level, stabilise stream meanders and protect stream banks. Natural Channel design practices will be used where possible and revegetation works will be completed in collaboration with community. The riparian area at this site suffered slumping, scouring and vegetation loss from both river and overland flow.

## Objectives:

- Estimated 1,000 cubic meters of sediment per event and associated nutrients prevented.
- Enhance resilience to future events including assisted native vegetation regeneration.

## Project Breakdown:

The project will include terracing, battering, bank stabilisation and revegetation works. This includes gully and contour bank repair. Details of the bank stabilisation and erosion prevention works include:

- Reprofilng of overland flow paths,
- Soil testing and site investigations,
- Surveying and site layout including path shifting,
- Construction site preparation
- Earthworks for creating river terraces
- Site stabilisation with erosion prevention measures
- Velocity and Stormwater Management works such as revegetation.

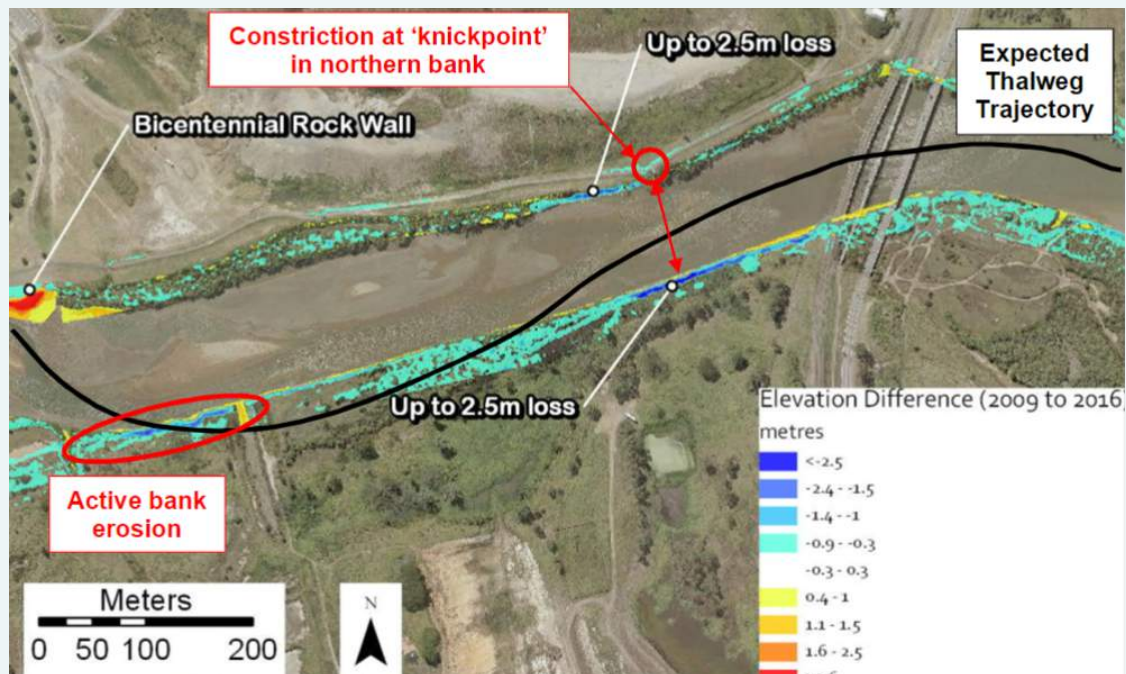


Figure 1: AECOM Design Review

## OONOONBA PDA DEVELOPMENT SCHEME:

The planned environmental recovery works are consistent with the Oonoonba [Priority] Urban Development Area (UDA) Development Scheme including the Vision for managing environmental values [see text box below].

### *Manage environmental values by:*

- retaining significant trees in public areas;
- enhancing the marine habitat, preserving the river sandbank;
- applying best practice water sensitive urban design;
- striking a balance between natural and built elements considering land form, climate and ecology to maximise environmental conservation, amenity and contribute to the desired landscape character. [p.3]

The fourth dot point is extremely pertinent following the 2019 flood event given the need to protect the built environment by appropriately planning for and considering the “land form, climate and ecology” of the site. The proposed environmental recovery works will also contribute to the Vision for; Being a liveable community and Promoting planning and design excellence.

# PROJECT TIMELINE

THIS SECTION INCLUDES THE PROJECT PROCESSES, IMPLEMENTATION, AND EXECUTION.

| TASK                                                                                                       | START DATE | END DATE |
|------------------------------------------------------------------------------------------------------------|------------|----------|
| <b>PHASE 01</b><br>WHOLE OF CATCHMENT IMPACT<br>ASSESSMENTS, FUNDING<br>ACQUISITION AND WORKS<br>APPROVALS | FEB 2019   | DEC 2019 |
| <b>PHASE 02</b><br>DESIGN, APPROVALS AND<br>STAKEHOLDER ENGAGEMENT                                         | OCT 2019   | AUG 2020 |
| <b>PHASE 03</b><br>ON-GROUND WORKS, COMMUNITY<br>REVEGETATION, AND MONITORING<br>AND EVALUATION            | MAR 2020   | JUN 2022 |

# LAYOUT PLAN & SOIL MANAGEMENT DURING WORKS

## SOIL EROSION AND SEDIMENT CONTROL MANAGEMENT PLAN

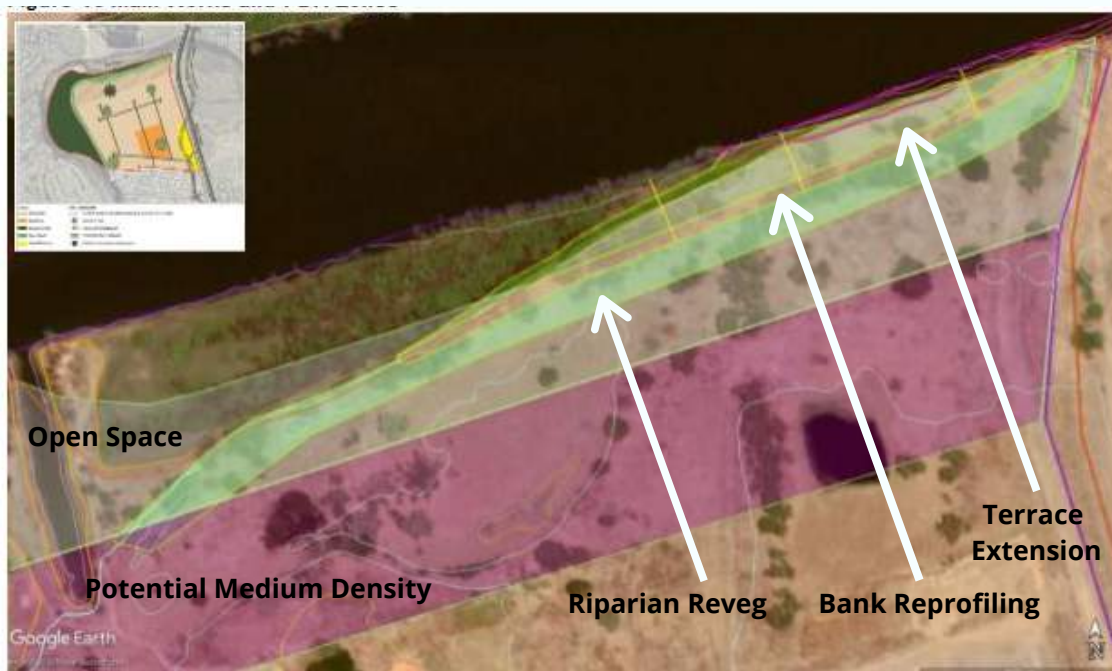


Figure 2: Main works and PDA Zones

The project site has been assessed as a low risk site to soil loss given the works are restorative in nature and primarily involve coarse aggregates and rock within the River bed. Works will be completed outside of the Townsville wet season (November to April inclusive) and best practice temporary controls will be delivered on site.

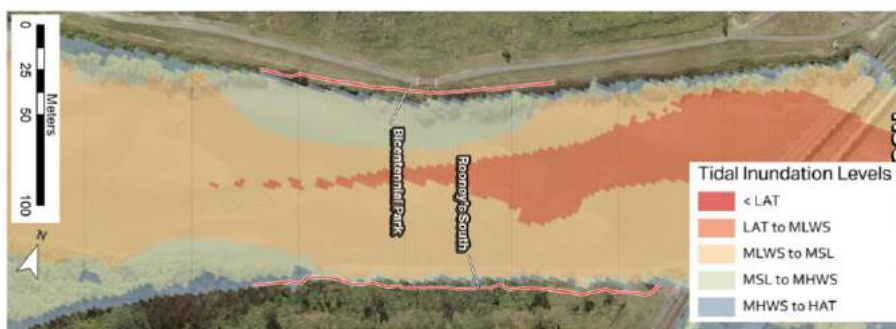


Figure 3. Estimated tidal inundation extents

We shall conduct evaluation activities and use success or performance indicators to measure the progress of the project plan.



Figure 4. Riverbank at site of recovery works

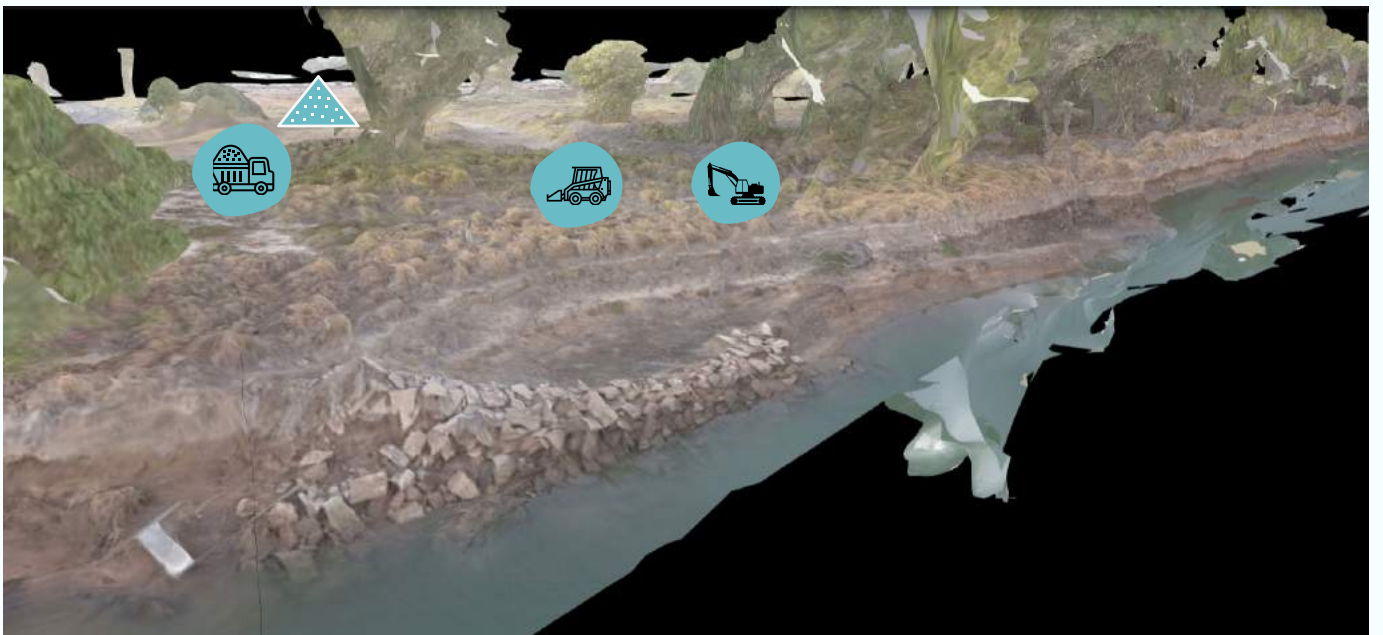
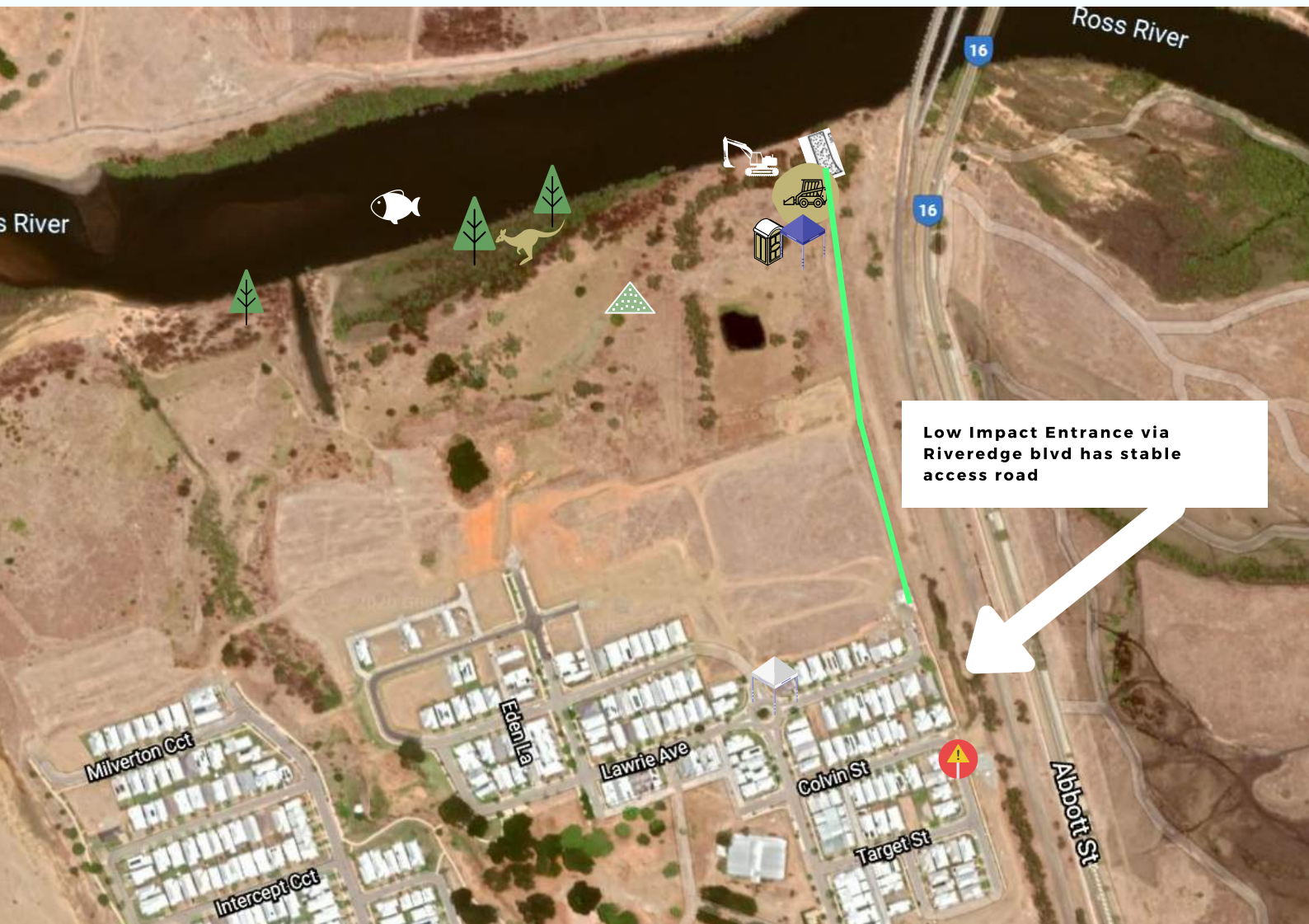


Figure 4. Primary working areas to reduce noise, dust and traffic movements. Strategic loading zones, vegetation buffers and access setbacks will assist with limiting noise and soil disturbance. Please see standard symbols - section 6.

Appropriate measures will be taken to ensure soil management and sediment control practices are in place at all times and the project plans are followed to limit impacts of erosion or undesirable sediment or soil loss from site. Any earth that is moved or extracted on site will be placed at a nearby set down zone which will later be reused on site (See environmental material recovery and reuse section on Page 8).

# LIMITING TRAFFIC IMPACTS

## TRUCK HAULAGE ROUTE AND BENEFICIAL REUSE



To be viewed with see standard symbols - section 6.

TRAFFIC SHOULD UTILISE ABBOTT STREET PRIMARILY FOR NORTH AND SOUTH DIRECTIONS. ABBOTT ST LEADS STRAIGHT TO THE BRUCE HIGHWAY.

Entering or exiting the project site via the outermost roads will limit dust and noise impact and maximise sealed road access. Other access points may be assessed throughout the project. Plant and equipment sourced have also been selected to limit the noise and disturbance on site whilst also minimising the total time on site. The location of the bankside recovery works is at a distance that will create minimal to no disturbance to nearby residents in Oonoonba and Railway Estate. Trucks leaving site will be instructed to check tyres for any debris and a watertruck will be on call if dust becomes a disturbance. Project teams will explore using resource stockpiles to provide additional dust and noises attenuation.

## COINCIDING COASTAL RECOVERY WORKS

The Stage 2 Coastal works operation of transferring sand from Ross River at The Village will coincide with the RM2S1 Environmental recovery works project. The Coastal Recovery Works is the second stage of ongoing coastal recovery which involves the extraction of beach sand from a large sand deposit adjacent to Milverton Circuit, the Village. Please see the separate Strategic Management Plan for the stage 2 coastal recovery project for an overview of the upstream project.



## PROPOSED PLANT AND EQUIPMENT FOR RM2S1

### CONSTRUCTION IMPLEMENTATION:

- Construction supervisor
- Plant operator/s
- Plant: 22t Excavator
- Plant: skid steer loader
- Plant: mini tipper 3-6t



### REVEGETATION:

- revegetation contractor
- hydro-mulch truck
- revegetation labourers
- water trailer
- minor plant



### MONITORING & EVALUATION

- M & E Contractor

---

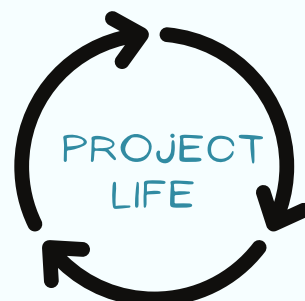
# ENVIRONMENTAL MATERIAL RECOVERY AND REUSE

## BENEFICIAL REUSE, ADAPTIVE SITE MANAGEMENT AND INNOVATION PLAN



COST SAVINGS  
AND EFFICIENCIES

ON-GROUND  
LEARNINGS



### PROJECT INNOVATIONS

The adaptive nature of the project and environmental setting allows project managers and the associated working group to explore, study and innovate in the project area during the course of the works. To optimise and maximise the onsite potential, best-practice methods of beneficial reuse with soil, vegetation and other natural resources will be explored if opportunity exists within the project scope.

Innovations made over the course of the project may include:

- environmental material reuse and recycling
- carbon and combustion reduction
- strategic stockpiling and optimised plant movements
- habitat and vegetation enhancement
- education and communication

Based on previous projects, these innovations are being further analysed for application at this project site.

---

# ENVIRONMENTAL MATERIAL RECOVERY AND REUSE

## BENEFICIAL REUSE, ADAPTIVE SITE MANAGEMENT AND INNOVATION PLAN



The planned environmental recovery works are consistent with the Oonoonba (Priority) Urban Development Area (UDA) development Scheme including the Vision for managing environmental values.

### **Vegetation and site materials will be reused:**

Native trees and salt couch will remain untouched in the recovery works with only invasive, non-native vegetation being extracted in the works zone, and transformed into a soil product on site in a set down area. Additional plant matter, weeds and earth material extracted during the reprofiling of the riverbank will be placed in the set down area with the vegetation. The organic site materials will then be processed through a Groundswell process turning the extracted organic material into a soil product.

### **Set down space and reuse process:**

The temporary space for set down of environmental materials will be located away from the native vegetation zones. This space has been assessed to be an optimal area for plant matter placement and set down area for weeds and vegetated materials for conversion into soil. Which will be reused on site for soil profiling with added beneficial properties for carbon and nutrient storage of the new soil profile. This will ensure that there is a strike in balance between the natural and built environment considering land form, climate and ecology. Materials will remain on site establishing a balanced system where nothing is removed nor added.

### **Site rubbish from works:**

There will be a rubbish bin on site for small items which will be collected weekly or when at capacity. For larger items of rubbish, site supervisors will be contacted to arrange collection by Waste Services.

---

# PROTECTING AND ENHANCING SITE VEGETATION

## USING STRONG SOIL SCIENCE, BIOMIMMICRY PRINCIPALS AND LOW IMPACT WORKS

The project site has undergone extensive soil analysis through exploratory test pits, sieving, cohesion testing groundwater reporting. This work has enabled an understanding of the chemistry, structure, biology and grain size distribution of the site sand deposits. This information has been used in conjunction with high resolution drone surveillance data in order to give highly calibrated and site specific recommendations for finished project levels.

Environmental teams have conducted a number of site visits to ensure finished bed restoration levels strike an important balance between ecological restoration, flood conveyance and vegetation management.

Restorative works will maximise estuarine flora and fauna habitat for this important reach of the Ross River. Reinstatement of pre-event bed levels and flow paths will also relieve erosive forces and velocities on the eroding outer edge of the River. An integrated approach to soil, water and vegetation is intrinsic for project success.

The project also aims to reduce cost and re-purpose site organics using accelerated biomimicry principals. It is proposed that Humus building projects will be established nearby to build high value topsoil enhancing products available for site based beneficial re-use.



---

# AMPLIFYING FISH HABITAT AND MIGRATION POTENTIAL

THIS SECTION INCLUDES THE METHODS OF VELOCITY MANAGEMENT  
AND CREATIVE RESTORATION TO MAXIMISE ECOLOGICAL OUTCOMES



WE HAVE PARTNERED WITH SOIL SCIENTISTS,  
STORMWATER EXPERTS, REVEGETATION EXPERTS AND  
FISH ECOLOGISTS ON THIS PROJECT

# ON-GROUND DAILY/WEEKLY MONITORING POTENTIAL

ON-GROUND STAFF OR SITE SUPERVISORS/MANAGERS CAN TRACK VARIOUS OPERATIONAL METRICS TO INFORM WORK EFFICIENCIES AND PROJECT TIMELINES

## Onsite metrics during operations include:

- daily or weekly haulage weights of machinery and plant
- amount of travel for machinery and plant
- amount of vegetation or soil disturbed onsite
- amount of debris removed/or treated
- amount and info on conrols established/added
- amount of public/ community engaged
- amount of daily risk factored and prevented
- amount of optimisations made

## Monitoring and evaluation metrics at project completion include:

- M of bank stabilised
- M of bank revegetated
- # of trees planted
- # of trees established
- M2 of soil ameliorated
- M3 of debris removed and \ or treated
- # of storm water diversion treatments installed.
- M of pathway altered

# REPORTING TOOLS

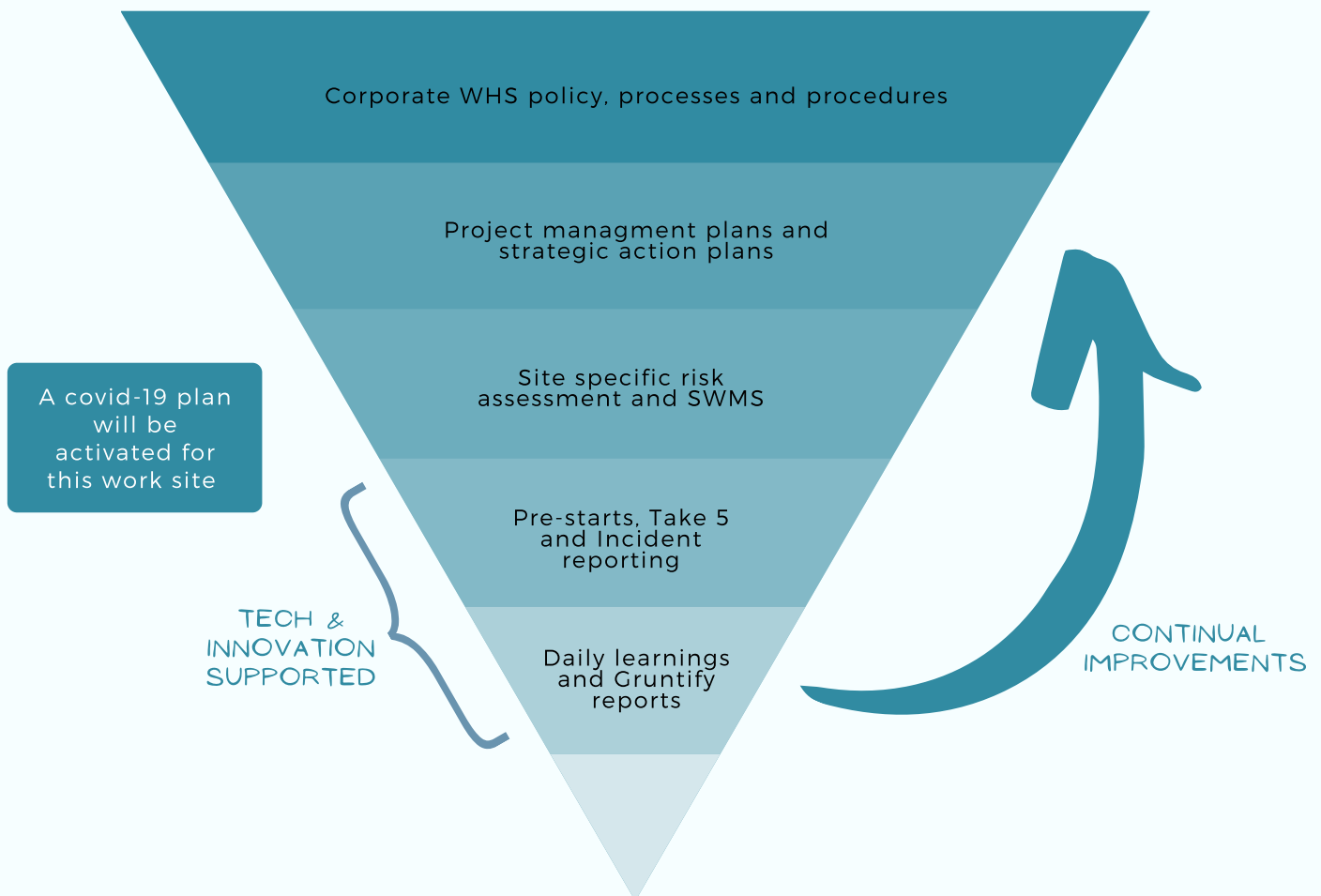
GROUND STAFF WILL UTILISE AN IN-HOUSE REPORTING SOFTWARE THAT CAN PRODUCE SUITABLE REPORTS FOR SAFETY, OPERATION EFFICIENCIES AND INCIDENTS. OFFICERS CAN TAKE DOWN IMPORTANT INFORMATION AND PHOTOS, AND COLLATE IT IN ONE PLACE, ANYTIME AND ANYWHERE.

Daily and weekly reporting behaviours will act as a catalyst for improving and adpating safety, operational and environmental systems as the work progresses through the life of the project.



# SAFETY SYSTEMS FRAMEWORK

A SAFETY FRAMEWORK COVERING WHS OVER THE RECOVERY PROGRAM HAS BEEN ESTABLISHED TO MAINTAIN SAFE OUTCOMES



The Project Manager will manage risk in accordance with AS/NZS ISO 3100:2009 risk management principles. All operational risks will be identified and ranked using council's Enterprise Wide Risk Management Framework.

To foster a continually safe working environment, this framework will be adaptive as we progress and learn of new ways to continually improve the safety standards of the project. This will ensure safety for staff, community and the environment.

**PROJECT MANAGEMENT, WEATHER, ENVIRONMENTAL & SOCIAL ASPECTS ARE INCLUDED IN RISK IDENTIFICATION. WITH CONSISTENCY AND CONTINUAL IMPROVEMENTS, A SAFE PROJECT WILL FOLLOW.**

# STANDARD SYMBOLS FOR RESTORATION WORKS

A CHART OF STANDARD SYMBOLS HAS BEEN CREATED FOR GUIDANCE

## Erosion and Sediment Control



Material stockpile



Channel lining



Culvert/bridges



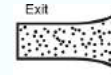
Drainage controls



Instream flow control



Erosion control



Entry/exit controls



Inlet controls

Erosion and Sediment control standard symbols listed above are exemplary and non-specific to type of control for each control measure. Please see ESC in appendix for specific types.

## Site plant & equipment



Portaloos



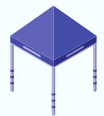
Excavator



Moxy or loading truck



Skid steer



Marquee or smoko area/work area

## Traffic and safety controls



Traffic controller



Traffic diversion equipment



Public and site signage



Mesh fencing

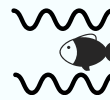
## Site vegetation, fauna, habitats and monitoring



Protection zone



Fish habitat protection zone



Fish migration area



Fauna habitat and migration area



Monitoring

---

# KEY PERSONELL AND CONTACTS

Townsville City Council Inquiries - 13 48 10

Department of Agriculture and Fisheries - 13 25 23

Adam King - Townsville City Council 04 071 717 15

Jason Lange - Environmental Contractor, Townsville City Council  
0448131344

Melanie Wosner - Townsville City Council 0407112780