

5 December 2023

Our ref: 4856-23L_NS_Summary

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Dear Jared

NORTH STAR VEGETATION HEALTH MONITORING SUMMARY (NOVEMBER 2023)

The North Star *Quoya zonalis* vegetation monitoring was undertaken as planned during 30 August-3 September 2023 by Louisa Carlsson and Stephen Kern. The other required components were completed during 13 – 21 November 2023 by Louisa Carlsson and Emily Mayhew, incorporating *Quoya zonalis* seed collection and the monitoring of the remaining Main Line Rail Sites.

Monitoring was undertaken according to the Fortescue's *Iron Bridge Vegetation Health Monitoring and Management Plan* (662NS-0000-PL-EN-0004 Rev 1) and was consistent with previous monitoring.

SIGNIFICANT POOL VEGETATION HEALTH MONITORING

Seven existing significant pool vegetation sites were monitored and six new sites (three potential impact and three reference) were established. The pools differ in phreatophytic species as follows:

Impact

- Central Creek Pool - *Eucalyptus camaldulensis*
- Cow Spring - *Melaleuca argentea*
- Fig Pool - *Melaleuca argentea*
- Site 12 Pool - *Eucalyptus victrix*
- NS_VH_PGDV_I1 - *Eucalyptus victrix* (some *Eucalyptus camaldulensis*, not monitored).
- NS_VH_PGDV_I2 - *Eucalyptus victrix* (some *Eucalyptus camaldulensis*, not monitored).
- NS_VH_PGDV_I3 - *Eucalyptus victrix*.

Reference

- Camp Pool - both *Melaleuca argentea* and *Eucalyptus camaldulensis*
- Dirty Water Pool - *Melaleuca argentea*
- Echo Pool - both *Melaleuca argentea* and *Eucalyptus camaldulensis*
- NS_VH_PGDV_R1 - *Eucalyptus victrix*
- NS_VH_PGDV_R2 - *Eucalyptus camaldulensis* (some *Eucalyptus victrix*, not monitored).
- NS_VH_PGDV_R3 - *Eucalyptus victrix* (some *Eucalyptus camaldulensis*, not monitored).

The results of the leaf water potential (ψ) monitoring for 2023 are shown below in **Figure 1**. Preliminary analysis indicates that the leaf ψ results of the monitoring species are largely within the range expected for trees not experiencing water stress.

Secondary parameters of visual health were recorded for all marked trees. A review of the data indicates no significant changes to the visual health of trees or vegetation condition of the monitoring sites since 2019. Several monitoring trees at various sites were observed to be dead from either fire or other natural causes; these were replaced with nearby alternative trees.

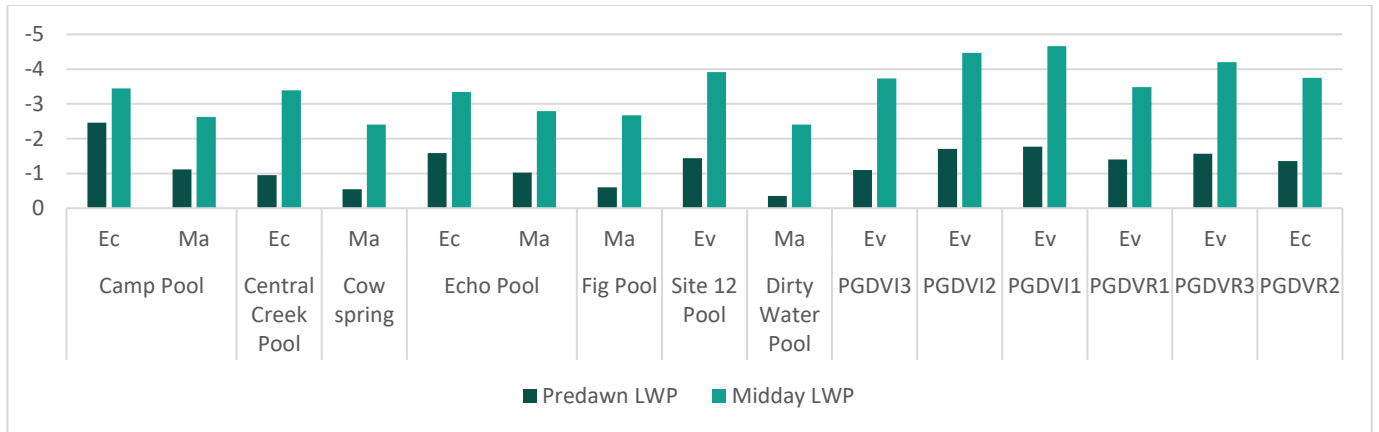


Figure 1: Mean leaf ψ at North Star significant pools sites in December 2023

The location details for the six newly established sites are outlined in **Table 1**.

Table 1: New monitoring site locations in GDA 94 Z50

Site	Description	Easting	Northing
PGDVI1	Photo Point		
	T1		
	T2		
	T3		
	T4		
	T5		
	T6		
	T7		
	T8		
	T9		
	T10		
PGDVI2	Photo Point		
	T1		
	T2		
	T3		
	T4		
	T5		
	T6		
	T7		
	T8		
	T9		
	T10		

Site	Description	Easting	Northing
PGDVI3	Photo Point		
	T1		
	T2		
	T3		
	T4		
	T5		
	T6		
	T7		
	T8		
	T9		
	T10		
PGDVR1	Photo Point		
	T1		
	T2		
	T3		
	T4		
	T5		
	T6		
	T7		
	T8		
	T9		
	T10		
PGDVR2	Photo Point		
	T1		
	T2		
	T3		
	T4		
	T5		
	T6		
	T7		
	T8		
	T9		
	T10		
PGDVR3	Photo Point		
	T1		
	T2		
	T3		
	T4		
	T5		
	T6		
	T7		
	T8		
	T9		
	T10		

SEED HARVEST SUMMARY

Seed harvest was undertaken by hand removal of fruiting bodies, ensuring that no plant material was taken that may destroy or jeopardise the survival of the parent plant. Fruits from each individual plant were stored separately in small envelopes. Each sample was labelled with collection date, population number (e.g. 'Pop 77 (6)') and individual plant number (e.g. 'M290').

Seed was collected from 19 individual plants which are part of population 77. Seed availability was considered to be poor and other populations visited for seed collection were observed to not carry any seed. Plant locations are summarised in **Table 2** and **Map 1**.

Table 2: Locations of plants that seed was harvested from in GDA 94 Z50

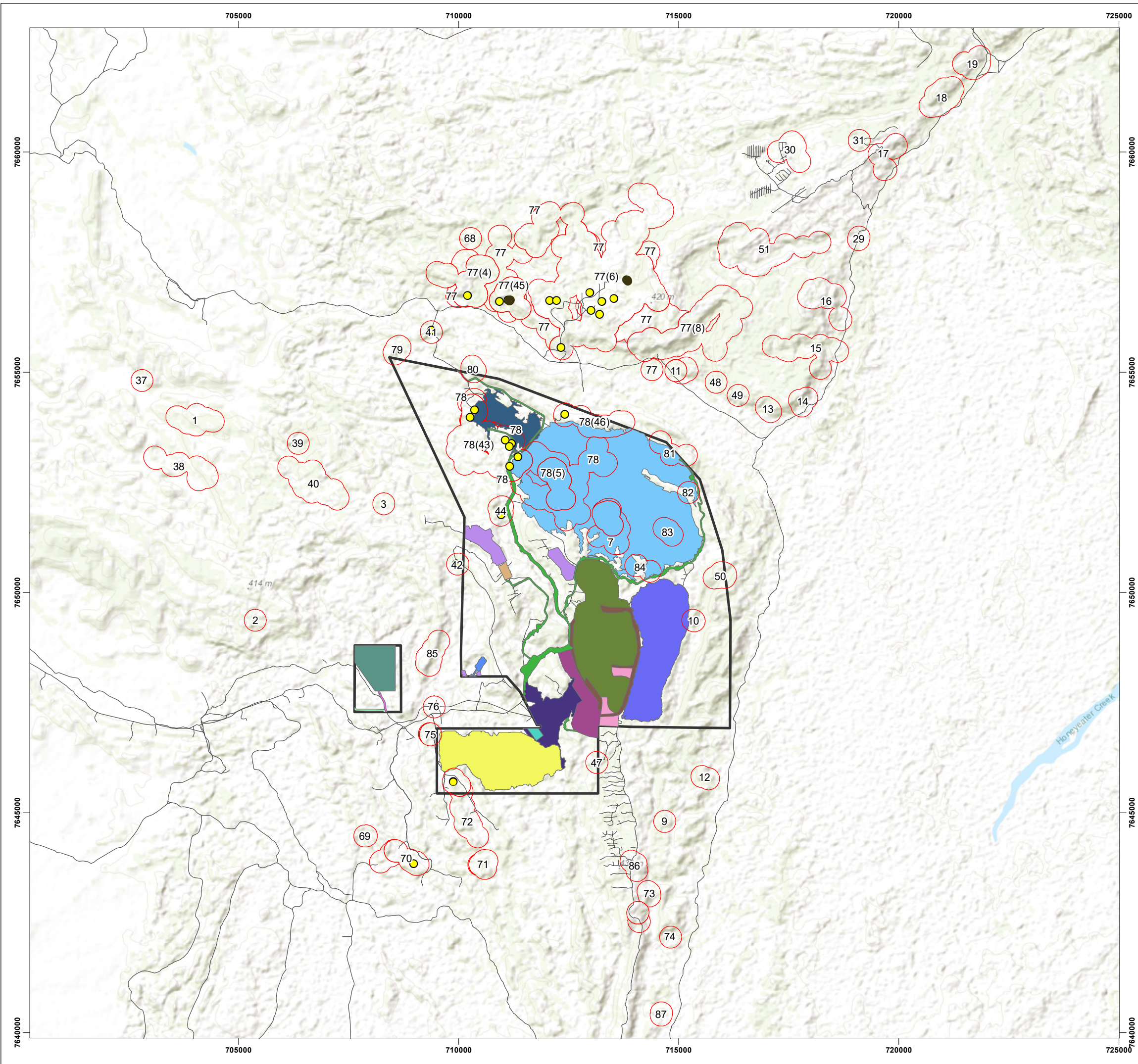
Population	Plant	Easting	Northing
77 (6)	M290		
	M291		
	M292		
77 (45)	M075		
	M076		
	M076A		
	M078		
	M079		
	M080B		
	M084		
	M085		
	M273		
	M274		
	M278		
	M279		
	M280		
	M284		
	M285		
	M286		

A maximum of 10% of mature seeds was collected from plants outside the area approved under Ministerial Statement 993, in accordance with licensing conditions.

Seed harvest timing was considered slightly late, however, this was considered a minimal constraint as individual plants were observed to only have minimal flowering or fruiting material (if at all) during the annual monitoring event (August/September 2023).

Seed was transported to Perth and will be supplied to Tranen Revegetation Systems where it will be placed in long term cold storage facilities (<5° C and <20% relative humidity) and tracked using their SeedTracker database to track all seed deposits and withdrawals. A portion (20%) of the seed was removed for submission to the Threatened Flora Seed Centre prior to handover.

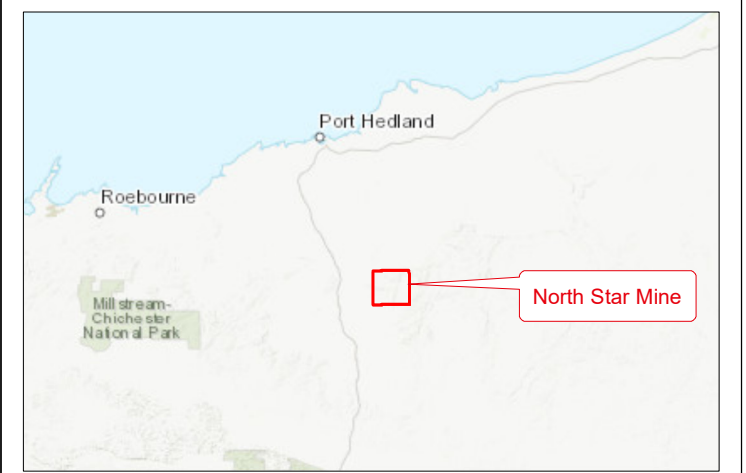
During previous monitoring events seed was collected from mature plants outside of the known boundary of population 47. While individual plants within population 47 were found to not have reproduced during 2023, efforts were made to capture locations of all individual plants situated outside of the known population boundary (**Table 3**).



LEGEND

- Site**
- *Quoya zonalis* Seed Harvest Locations
 - *Quoya zonalis* Monitoring Sites
 - *Quoya zonalis* Populations
 - FMG Tracks
- Mine Infrastructure**
- Camp
 - Camp Access Road
 - Canning Basin Pipeline
 - Dry Rejects
 - Explosives Storage
 - Haul Road
 - Landfill
 - Low Grade Ore Stockpile
 - OPF
 - Pits
 - Powerline
 - ROM
 - Return Water
 - Roads
 - TSF
 - Topsoil Stockpile
 - Waste Dump
 - Water Ponds

DATASOURCES:
 SOURCE DATA: ECOSCAPE (2023), FMG (2021)
 AERIAL: ESRI WORLD TOPOGRAPHIC MAP
 SERVICE LAYERS: SOURCES: ESRI, HERE, GARMIN, INTERMAP, INCREMENT P CORP., GEBCO, USGS, FAO, NPS, NRCAN, GEOBASE, IGN, KADASTER NL, ORDNANCE SURVEY, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), (C) OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY



QUOYA ZONALIS SEED HARVEST

COORDINATE SYSTEM: GDA 1994 MGA ZONE 50
 PROJECTION: TRANSVERSE MERCATOR
 DATUM: GDA 1994
 UNITS: METER

SCALE: 1:85,000 @ A3

PROJECT NO: 4758-22

REV	AUTHOR	APPROVED	DATE
00	LC	LA	04/12/2023