Impacts of January 2023 flood on Martuwarra Fitzroy River floodplain system at Fitzroy Crossing

Nik Callow1 Thiaggo Tayer2 Lauren Greening3 Simon Rodgers3 Samantha Setterfield2

1Centre for Water and Spatial Science, UWA School of Agriculture and Environment, The University of Western Australia

2 Resilient Landscapes Hub - National Environmental Science Program, UWA School of Agriculture and Environment, The University of Western Australia

3 Department of Water and Environmental Regulation

* **This abstract is for an Oral or Poster (happy with either)**
* **Proposed Session: Geomorphic Hazards/Risk Management (??)**

# ABSTRACT

Martuwarra Fitzroy River experienced the highest flood on record in January of 2023, significantly impacting the community of Fitzroy Crossing. Ex-Tropical Cyclone Ellie slowly tracked across the region, with event rainfall totals highest at the Diamond Gorge station 823mm (7-day rainfall from 27/12/2022, est >1:2,000 yr AEP), but varied from 200-800mm (estimated AEP of ~1:500 years) for the 46,132 km2 catchment above the town. Peak flows exceeded all previous records (by ~2m), peaking at a stage of 15.81m with an estimated peak instantaneous discharge ~50,000 m3sec-1. Many houses within the Fitzroy Crossing town were inundated and while others escaped the flooding, the town became an island on the multi-channel Martuwarra floodplain. The flood destroyed the main bridge, isolating the east Kimberly region from road transport for many months.

As part of the flood response, important geomorphic questions have emerged concerning the extent of river erosion from the 2023 event, future risks to the community, impacts and resilience of the other channels including the riparian vegetation and multi-channel floodplain that characterises this river system. Results from aerial and satellite mapping document the event impacts and historical context. Together with other data from key agencies, this provides a geomorphic insight into the flood impacts of the 2023 event on the Fitzroy River floodplain system and Fitzroy Crossing community.