

SUBMISSION FOR APPLICATION FOR FUNDING – FLOOD RESILIENCY PLAN PROJECT AND DYNAMIC FLOOD INTELLIGENCE SYSTEM – BARRON DELTA PROJECT

83/4/4 | #7413824

RECOMMENDATION:

That Council:

1. Retrospectively endorses the submission of the application for funding under the Disaster Ready Fund – Round 2 for a Flood Resiliency Plan project (Phases 1 & 2); and
2. Retrospectively endorses the submission of the application for funding under the Queensland Resilience and Risk Reduction Funding Program for the Dynamic Flood Intelligence System – Barron Delta Project (Phase 3 seed funding); and
3. Delegates authority to the Chief Executive Officer in accordance with the *Local Government Act 2009* to finalise any and all matters relating to the above application, including the execution of associated funding agreements should Council's application/s be successful.

INTERESTED PARTIES:

James Cook University (JCU)
WMS Engineering
Bureau of Meteorology (BoM)
Cairns Airport Pty Ltd
MSF Sugar
Cairns River Improvement Trust
Terrain NRM
Regional Development Australia Tropical North

Note: The identification of interested parties is provided on a best endeavours basis by Council Officers and may not be exhaustive.

EXECUTIVE SUMMARY:

Tropical Cyclone Jasper (TCJ) and associated rainfall and flooding caused widespread devastation across our region in December 2023. We know catchment behaviours and characteristics dictate various vulnerabilities depending on warning times, extents, time isolated due to heights, channel widths and receding speed. All these elements greatly affect the impacts of flooding and our ability to effectively recover and rebuild. As we continue to recover from the impacts of this extreme weather event, we shift focus to how we can now prepare for and better manage floods of the future.

Funding opportunities have been identified to advance projects that reduce, mitigate, and manage the risks of disasters and to make communities and infrastructure more resilient to disasters.

Funding applications were submitted, and this report seeks retrospective approval for funding submissions to:

- \$1,089,400 requested through the Disaster Ready Fund (DRF) – Round 2 for refreshed flood modelling and development of a Flood Resiliency Plan (FRP) with James Cook University as a delivery partner – applications closed 20 March 2024.
- \$495,000 requested through the Queensland Resilience and Risk Reduction Fund (QRRRF) 2023/24 for the Dynamic Flood Intelligence System – Barron Delta Project (DFIS) – extended applications closed 16 February 2024.

Details of the submissions are included within the body of this report. The projects are currently listed in the respective draft capital works budget.

BACKGROUND:

On Wednesday, 13 December 2023 at 8:00pm, TCJ crossed the coast near Wujal Wujal as a Category Two system. At the time the system crossed the coast (and the preceding 24 hours) the concern was focused on storm tide surge (cyclone and King tide) not riverine flooding.

Rising water began widespread impact across the region by 14 December and by Sunday 17 December, the Barron River peaked at approximately 14 metres on the Myola gauge resulting in a circa 1% AEP (Q100) flood event in the Barron Delta which spans Caravonica, Lower Freshwater, Yorkey's Knob Beach, Holloway's Beach and Machan's Beach with adjacent infill to the Cairns International Airport and associated infrastructure.

The volume of rain experienced had a devastating impact on the region, with 2.2 meters of rainfall was recorded in the Cairns catchment. The Barron River peaked at 4.4 metres, well above the previous record of 3.8 metres.

FUNDING SUBMISSION DETAILS

Phases 1 & 2 Flood Resiliency Plan - DRF Submission

Completion of phase 1 will deliver our flood study and will underpin our response to flood risk. It is a prerequisite of Phase 2, which involves the delivery the FRP.

Phase 1 Refreshed Flood Modelling

Phase 1 Refreshed flood modelling is centred around updated topographical data taking changes in the Barron Delta riverine characteristics into account. New data is required to scientifically validate and rigorously test our existing flood modelling and flood risk maps and is an essential first step in identifying how to plan for, manage, and respond to future events across the Local Government Area (LGA).

Findings from this process will be used to rebuild the dataset for other key catchments across the Cairns LGA, with the updated information informing a review of hazard risk mitigation and implementation plans. This refreshed dataset will serve as the foundation for developing resilience tools aimed at assisting communities and first responders in better preparing for and making informed decisions about flood risks during significant rainfall events.

Phase 2 Develop Flood Resiliency Plan

The delivery of a Flood Resiliency Plan involves contemporising our approach with respect to geology, river sediment transports, riverine behaviour and training works, sediment transport and beach nourishment, channel migration, bank stability, land use management.

The project will improve evidence-based decision making by delivering a baseline of current climate impacts across the river catchments of the Cairns LGA. The FRP is aimed at informing local priorities for climate adaptation and resilience actions and enable accurate modelling of risks in future. This plan will take an integrated approach, recognising that the most effective way of building flood resilience is to integrate the full spectrum of catchment planning; from community awareness and evacuation routes; to flood resilient home design and city planning and development controls; to large-scale revegetation and climate change modelling.

DRF criteria

The DRF is the Australian Government's flagship disaster risk reduction initiative which will fund a diverse set of projects in partnership with states and territories to deliver medium-term and long-term national outcomes, investing up to \$1 billion over the next five years.

The DRF Round 2 (2024-25) will deliver up to \$200m for disaster risk reduction and resilience initiatives. Projects successful under this fund will deliver resilience initiatives to reduce the risk of disaster impacts and ensure that communities are in the best possible position for recovery when disaster does occur.

The Queensland Reconstruction Authority (QRA) is the lead agency coordinating Queensland's application for the DRF and seek project applications that increase the understanding of disaster impacts, increase resilience, build capacity and capability, and reduce disaster risk. Applicants must demonstrate how the project:

- **increases the understanding of natural hazard disaster impacts**, as a first step towards reducing disaster impacts in the future;
- **increases the resilience, adaptive capacity and/or preparedness** of governments, community service organisations and affected communities to minimise the potential impact of natural hazards and avert disasters; and
- **reduces the exposure to risk, harm and/or severity of a natural hazard's impacts**, including reducing the recovery burden for governments and vulnerable and/or affected communities.

Applications require 50% co-contribution (cash or in-kind) towards the proposed project.

Applications for the DRF fund closed on 20 March 2024 with successful projects intended to be announced from July 2024.

Phase 3 Flood Resiliency Plan - QRRRF Submission – Dynamic Flood Intelligence System, Barron Delta Project (DFIS)

Phase 3 involves delivery of a real time prediction tool that provides the LDMG-CR the ability to predict impacts as they occur based on live data. This goes far beyond what is currently available to the community of Cairns as during the TCJ event. This online solution will enable access to analysed multi-stream evidence thus significantly increasing the region's capability to plan for evacuation considerations, public messaging, and predicted damage assessments and prioritisation.

Phase 3 cannot commence until Phase 1 is completed in its entirety, with this in mind QRRRF funding has been sought to enable Council officers to begin investigations required to inform the scope of Phase 3.

The QRRRF submission seeks seed funding to undertake necessary lead in work to identify a bespoke computer modelling program tailored to synthesise various data sources to provide a multi-stream assessment of flood dynamics in real time. The project encompasses identification of telemetry instrumentation types and locations required to address the need for adequate flood warning forecasting.

QRRRF criteria

The QRRRF is a Queensland Government initiative which helps communities mitigate and manage the risks associated with natural disasters. The QRRRF is funded by the Commonwealth and Queensland governments as part of its five-year National Partnership Agreement on Disaster Risk Reduction, which started in 2019-20. The Queensland Reconstruction Authority (QRA), under the Resilience and Risk Reduction Funding Guidelines 2023-24, will administer the 2023-24 component of the QRRRF with \$13.1 million available in this fifth and final round of the program.

The program has a maximum funding allocation limit of \$2 million per project, although the total cost of the project may be more than \$2 million. Applicants must provide a minimum 5% co-contribution (cash or in kind) towards the total project cost.

Eligible applicants were invited to submit grant applications by the closing date of 20 December 2023, however due to the extenuating circumstances experienced by TC Jasper and associated flooding event, a late application by Council was submitted on 16 February 2024 with an announcement of application outcomes to be made by 30 June 2024.

COMMENT:

These projects enable swift identification of specific threats and exploration of various adaptation pathways crucial for the region's resilience planning. The projects will also deliver contemporary data to consider changes in our understanding of flooding, its impacts and its management, lessons learnt from flood events, and trends in changes of exposure and vulnerability.

The project's resource allocation encompasses employment of a specialised Engineer/Project Manager committed to project delivery for its duration.

Letters of Support for the DRF submission have been received from a number of agencies across all levels, including:

- The Hon. Warren Entsch MP
- The Hon. Michael Healy MP
- The Hon. Craig Crawford MP
- MSF Sugar
- Cairns River Improvement Trust
- Department of Transport and Main Roads
- Terrain NRM
- Regional Development Australia Tropical North

OPTIONS:

Option 1 (recommended)

That Council:

1. Retrospectively endorses the submission of the application for funding under the Disaster Ready Fund – Round 2 for a Flood Resiliency Plan project (Phases 1 & 2); and
2. Retrospectively endorses the submission of the application for funding under the Queensland Resilience and Risk Reduction Funding Program for the Dynamic Flood Intelligence System – Barron Delta Project (Phase 3 seed funding); and
3. Delegates authority to the Chief Executive Officer in accordance with the *Local Government Act 2009* to finalise any and all matters relating to the above application, including the execution of associated funding agreements should Council's application/s be successful.

Option 2:

That Council:

1. Does not support the Dynamic Flood Intelligence System – Barron Delta Project (DFIS) and requests further information from Council officers before reconsidering the matter.
2. Does not support the Flood Resiliency Plan (Phases 1 & 2) and requests further information from Council officers before reconsidering the matter.

CONSIDERATIONS:

Risk Management:

As with all projects, there is a risk that actual costs may differ from estimated and budgeted costs. These risks are mitigated and managed in accordance with Council's

normal project management processes.

Modelling outputs and products will be available for sharing across various key stakeholders and the LDMG-CR for improved disaster management efforts and resilience planning.

Council Finance and the Local Economy:

The DRF funding application seeks to deliver:

- Phase 1 – Refreshed flood modelling
- Phase 2 – Flood Resiliency Plan

The submission budget summary includes:

Total Commonwealth funding requested (Ex GST)	\$1,089,400	49%
Total co-contribution offered (Ex GST)	\$1,140,900	51%
Financial co-contribution	\$614,774	28%
In-Kind co-contribution	\$526,126	24%
Total Project Value	\$2,230,300	100%

The total in-kind contribution of \$526,126 includes \$24,726 of in-kind provided by JCU as the delivery partner. The financial co-contribution of \$614,774 is allocated in the draft capex budget for years 2024/25 and 2025/26.

The in-kind contribution offered has been allocated from the Feasible Alternatives Assessment Report - Migration and Adaptation Options paper, the Fit for Purpose Risk Assessment for Flood Hazards, the Freshwater Creek Model Peer Review all undertaken as part of the groundwork for the Towards 2050 Growth Strategy. Additionally, the Barron River Event Summary Report, commissioned immediately following the December flooding event to summarise rain and stream gauge data and debris surveys, will also contribute to the in-kind component.

The QRRRF funding application seeks to deliver:

- Phase 3 (Seed funding only) – Dynamic Flood Intelligence System (DFIS)

The submission budget summary includes:

Total Commonwealth funding requested (Ex GST)	\$495,000	
Total co-contribution offered (Ex GST)	\$200,000	
Financial co-contribution	\$ 0.00	
In-Kind co-contribution	\$200,000	
Total Project Value	\$695,000	100%

The QRRRF fund requires a minimum 5% co-contribution of the total project costs. This submission does not include a cash co-contribution. The in-kind contribution for the grant application was estimated to be a maximum of \$200,00 based on the budget allocated to the Freshwater Creek Flood Warning System (FCFWS) at the time of submission.

The Freshwater Creek Flood Warning System (FCFWS)

The FCFWS is considered an early pilot for establishment of a system at one prominent location. The system is intended to process and integrate multiple data sources (including, rain gauges, river levels, satellite and radar data) to allow for automated flood forecasting and rate of rise predictions. The system will provide advanced warnings of Copperlode Falls Dam (CFD) Emergency Action Plan (EAP) activations and the associated downstream consequences of these events.

Community and Cultural Heritage:

The project provides updated flood modelling, which will assist in achieving effective mitigation of current and future flood risk, build community flood resilience and inform pathways to drive reduction of flood risk to people and property.

Natural Environment:

The FRP will drive a contemporary approach to flood resiliency which includes ecosystem health as a criterion when assessing physical flood risk mitigation options. This approach will ensure options are considered from a holistic approach taking into account a balanced range of issues. Flood mitigation options will also be assessed against traditional criteria, to ensure accountability in any recommendations made. The plan will consider natural floodplain solutions such as revegetation, re-engaging the floodplain, and naturalisation of waterways that ensure ecosystem health.

Corporate and Operational Plans:

The projects align to the 'Shaping the Future' vision and has relevance to the following strategic goals in Council's Corporate Plan:

1. **Design of Liveability** by enhancing community wellbeing, safety, and natural disaster resilience, and;
2. **Robust Economy** by inspiring innovation and embracing new technologies.

Cairns Regional Council's Disaster Recovery Plan is currently being drafted by the Local Recovery Committee.

Links to other Council strategic documents and projects include:

- Towards 2050 Growth Strategy;
- LDMP Cairns Region (2022);
- Cairns Fit for Purpose Flood Risk Assessment (BMT and Meridian Urban, 2023);
- Freshwater Creek Flood Intelligence Scoping Study (GHD, 2022);

CONSULTATION:

Collaboration partnership for Delivery of Phase 1

Council has partnered with JCU in the delivery of Phase 1. JCU's involvement will be led by the Earth and Environmental Science research team. The research portfolio's primary focus is hydrological response behaviour of tropical catchments, especially catchments which experience distinct rainfall seasonality and extreme natural events such as river

floods, tsunamis and tropical cyclones and specialises in post-event surveys both in Australia and overseas.

The project has received a number of letters of support from various key stakeholders who share an interest in the outcomes.

ATTACHMENTS:

NIL



Tyron Curcuruto
Executive Manager Strategic Asset Management & Planning



Mark Wuth
Director Cairns Infrastructure & Assets