

The Importance of Local Knowledge and Perspectives for Managing Water on Norfolk Island

Anna Scott

Introduction

Norfolk Island faces severe water scarcity. The Island has experienced significant reductions in long-term groundwater recharge and streamflow due to reductions in rainfall¹. This is compounded by the lack of water governance, with households and businesses being responsible for the capture and storage of their water resources².

Hydrological assessments conducted by CSIRO¹ and Monash University (Monash) and The University of Newcastle³ include options to improve Norfolk Island's water security. Although these hydrological assessments were assisted by some community members, there was no community-wide engagement undertaken to inform them. Inclusion of local knowledge and perspectives is crucial for increasing the adaptability and resilience of small island communities⁴. This study aims to fill this gap by gathering local knowledge and perspectives about how to secure Norfolk Island's water now and in the future.

Research Aims

This research is guided by the following aims:

- (1) Investigate what the community have observed to be the key drivers of Norfolk Island's water scarcity
- (2) Discern how the community manages water scarcity in their household/industry
- (3) Examine how the community perceived the management of the 2019/2020 Water Emergency
- (4) Investigate the community's views on the water management strategies included in CSIRO and Monash's hydrological assessments
- (5) Explore alternative management strategies to improve Norfolk Island's water security.

Methods

In January 2024, 16 interviews and 13 focus groups were conducted with 57 participants. There were slightly more females (54.4%; 45.6% male), and participants ranged from 18-88 years (mean=53.7; median=61). Participants were recruited by snowballing and advertisement via the local newspaper and Facebook Noticeboard. The project was approved by The University of Queensland Human Research Ethics Committee (2023/HE001928).

Key Recommendations for Water Management

- 1. More targeted consultation and engagement** about the most effective ways to implement the interventions as ranked by participants, **considering** the positive views, concerns and recommendations of participants.
- 2. Further investigation and evaluation** of alternative strategies and interventions proposed by participations, in terms of their feasibility and effectiveness in preventing water scarcity.
- 3. Further research into the most appropriate water governance** for Norfolk Island, including how it can be operationalised.

Interviews and focus groups were guided by a series of questions which addressed the study aims and were audio-recorded. The audio recordings were manually transcribed, before being coded in NVivo. The transcripts were deductively coded for aims and questions, and inductively coded for themes.

Drivers of Norfolk Island's Water Scarcity

Participants proposed a wide range of issues driving Norfolk Island's water scarcity. These were sorted into: Planning and Governance; Socio-economic; and Environmental drivers. It should be noted that participants often did not attribute Norfolk Island's water scarcity to one driver, but a combination of several drivers.

Planning and Governance drivers include limited catchment and storage in dwellings, tourism accommodation and rental properties, limited financial assistance for installing rainwater tanks, population growth, unregulated groundwater extraction, increasing tourism industry (e.g. cruise ships) and lack of good quality coordination from the local government.

Socio-economic drivers include costs of rainwater tanks and water-saving home appliances, limited human resources, failing and ageing water infrastructure within the community (e.g. town sewerage system), limited infrastructure maintenance, increased affluence and access to water enabling greater consumption, and the vulnerability associated with being a remote community.

Environmental drivers include changing rainfall patterns and increasing evaporation rates, water quality, soil quality and permeability, inadequate land management and increased builds and concreting decreasing water infiltration. Additionally, two participants suggested that there is a lack of rainwater and bore water to farm commercially. However, other participants have observed that this is dependent upon where the farms are located, as participants noted that the amount of rainfall and soil quality varies across the island.

Managing Water: Domestic, Industrial and during Emergencies

Participants provided perspectives of how the Norfolk Island community manage water scarcity in domestic, industrial and council environments. Participants' perceptions of the 2019/2020 Water Emergency, including the experience of consultation and the effectiveness of the desalination plant, were also examined. Participants suggested that more community consultation and targeted consultation with the different industries was required to inform the management of the 2019/2020 Water Emergency. The results indicate that water governance on Norfolk Island requires more cross sectoral collaboration, in addition to increased integration of local knowledge and perspectives.

Most participants recalled that overall, the community responded positively to the Australian Defence Force desalination plant, as the situation was dire and the community needed water. It can be suggested that the desalination plant provided the Norfolk Island community with a safety net during the last month of the Water Emergency, however there needed to be more consultation surrounding its use, access and impact on the marine environment to avoid negative stigma.

Hydrological Assessment Interventions

Participants were given a list of 7 water management interventions from the hydrological assessments (4 water management interventions and 3 rainwater tank interventions) and were asked to rank them in order which they considered to be most effective in reducing Norfolk Island's water scarcity. Participants also provided their perspectives on these interventions, which were sorted into positive views, concerns and recommendations. Rankings showed that rainwater harvesting through rainwater tank interventions was favoured by participants due to their familiarity with this method. Additionally, they could be managed at the community-level without ongoing government involvement.

Alternative Interventions

Alternative strategies and interventions were proposed by participants to alleviate Norfolk Island's water scarcity. There were a wide range of strategies and interventions proposed which require further investigation and evaluation in terms of feasibility and effectiveness in preventing water scarcity.

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Email: anna.scott2@student.uq.edu.au