

## **Inquest into the death of Nelani Ciara Koefer**

Nelani Ciara Koefer was four years of age when she died on 23 November 2008 whilst wading in shallow water below the Bedford Weir. She was there with her mother when, without warning, an inflatable rubber dam used to increase the height of the weir failed and released a large volume of water which caused the area where they were swimming in to rapidly become inundated. Despite Nelani's mother's efforts to move her to high ground, Nelani was swept from the arms of an acquaintance as she was being taken to higher ground. She was located deceased a short distance further down the river the following day.

Coroner David O'Connell delivered his findings of inquest on 17 March 2016.

The Queensland Government responds to recommendations directed to government agencies at inquests by informing the community if a recommendation will be implemented or the reason why a recommendation is not supported.

The department named in this response will provide implementation updates until the recommendation is delivered. Further information relating the implementation of recommendations can be obtained from the responsible minister named in the response.

### **Recommendation 1**

SunWater remove, and not reinstate, the rubber fabridams manufactured by Queensland Rubber/Trelleborg.

Response and action: the recommendation is implemented.

Responsible agency: Department of Water and Energy Supply, supported by SunWater Limited.

On 26 September 2016 the Minister for Main Roads, Road Safety and Ports and Minister for Energy, Biofuels and Water Supply responded:

Fabridams are a type of inflatable rubber bag (tube-type structure) that sits on top of the crest of a weir that increases the height of the weir wall, and holds back additional water by increasing the capacity of the weir.

All rubber fabridams used by SunWater, irrespective of the manufacturer, were deflated after the death of Nelani Koefer and have remained out of service since. SunWater will decommission all fabridams and has no intention to ever recommission any for future use.

This was a decision taken by the SunWater CEO immediately after the incident resulting in the death of Nelani Koefer, as a precautionary measure pending further investigations. The subsequent investigations recognised the inherent risks that exist with rubber fabridams, therefore SunWater undertook a precautionary risk elimination position on these types of dams.

SunWater had rubber fabridams manufactured by Queensland Rubber /Trelleborg at both Bedford and Dumbleton Weirs, and rubber fabridams manufactured by other companies at Mirani and Claude Wharton Weirs. The failed rubber fabridam at Bedford Weir was removed as part of the investigation by the Division of Workplace Health and Safety.

The options, estimated costs, and likely effect on water prices, to remove each of SunWater's rubber fabridams was recently discussed with SunWater's local government, mining, industrial and

irrigation customers. The removal of the deflated bags associated with each of its rubber dams has been planned and costed by SunWater with an anticipated completion date of October 2017.

**On 21 March 2017 the Minister for Main Roads, Road Safety and Ports and Minister for Energy, Biofuels and Water Supply responded:**

In regard to Bedford Weir, there are two fabridams. It should be noted that the failed fabridam was removed in 2008, and the second fabridam was deflated.

Removal works of deflated fabridams at Bedford, Dumbleton and Mirani Weirs were suspended following the onset of the 2016-17 wet season, as the weirs were overtopping (this means the water was flowing over the fabridams fixed to the top of the weir walls thereby preventing their safe removal).

The deflated fabridam at Claude Wharton Weir has been removed.

Removal works at Bedford, Dumbleton and Mirani Weirs will resume after the 2016-17 wet season.

**On 18 September 2017 the Acting Minister for Main Roads, Road Safety and Ports and Minister for Energy, Biofuels and Water Supply responded:**

Fabridams at the Claude Wharton Weir were successfully removed in December 2016.

Bedford Weir had one of its two fabridam bags removed as part of the Workplace Health and Safety investigation works. The remaining bag has been deflated and it is scheduled to be removed by the end of September 2017, pending river levels falling sufficiently to ensure a safe workplace. The removal of all supporting mechanical and electrical works at Bedford Weir was completed on 30 August 2017, thereby making the remaining fabridam inoperable.

The fabridam bags at Mirani and Dumbleton Weirs have been deflated with no intention to reinflate them. Because both Mirani and Dumbleton Weirs have been overflowing since January 2016 and December 2016 respectively, there has been no opportunity to safely conduct works. A contractor was engaged in August 2017 to complete the on-river works to remove the fabridams pending river levels falling sufficiently to allow their safe removal. However, regardless of river levels, the associated mechanical and electrical controls are scheduled for removal by the end of September 2017.

Bedford Weir - The safe removal of the second fabridam is scheduled for completion by the end of September.

Mirani and Dumbleton Weirs - SunWater's contractor remains ready to remove the fabridams once river conditions allow access for their safe removal.

**On 13 March 2018 the Minister for Natural Resources, Mines and Energy responded:**

The remaining deflated and non-operational fabridam at Bedford weir was removed in late September 2017.

The deflated and non-operational rubber fabridams at Mirani and Dumbleton weirs remain in place as river levels have not allowed for safe removal of the bags. A number of options have been explored to remove fabridams while water was flowing over the weir crest. The final determination was that there was an unacceptable level of risk to health and safety of staff and contractors to proceed with underwater removal. The controls to inflate the fabridams have been decommissioned and removed and Sunwater has no physical ability or intention to reinflate the fabridams.

The Mirani and Dumbleton weir rubber fabridams are expected to be removed by October 2018. The safe removal is dependent upon in-river levels reducing to below the crest, the timing of which is unpredictable and related to a number of factors, not least of which being the weather. As such, Sunwater retains a watching brief on the water levels and will mobilise to complete the works at the earliest opportunity available.

**On 13 September 2018 the Minister for Natural Resources, Mines and Energy responded:**

SunWater monitored water levels at Mirani and Dumbleton weirs, however no opportunity was available to allow access to the river to undertake physical removal of the deflated non-operational fabridams.

SunWater will continue to monitor river levels and weather forecasts and should suitable conditions arise to allow safe access, SunWater will remove the two remaining fabridams.

**On 28 March 2019 the Minister for Natural Resources, Mines and Energy responded:**

The remaining deflated and non-operational fabridam at Mirani Weir was removed in early November 2018.

The removal of the deflated and non-operational fabridam at Dumbleton Weir scheduled for December 2018 was postponed due to sustained rainfall and the increased river level.

As a Bureau of Meteorology predicted the seasonal rainfall period will extend into April 2019, the removal of the deflated and non-operational fabridam at Dumbleton Weir is scheduled to start in late-April 2019. The work is expected to be complete in mid-May 2019, weather permitting.

**On 4 June 2020 the Minister for Natural Resources, Mines and Energy responded:**

Sunwater has removed fabridams that were in use at Bedford, Mirani, and Claude Wharton Weirs.

The fabridam at Dumbleton Weir, which is deflated and non-operational, was unable to be removed in 2019 due to high water levels. All ancillary equipment has been decommissioned and removed. Sunwater has no intention to reinflate the fabridam, nor is it possible to do so.

Sunwater will monitor Dumbleton Weir water levels in 2020 and remove the fabridam when water levels drop sufficiently to allow for safe access.

**On 21 December 2020 the Minister for Regional Development and Manufacturing and Minister for Water responded:**

The recommendation to remove — and not reinstate — the rubber fabridams manufactured by Queensland Rubber/Trelleborg was implemented.

Sunwater has now deflated and removed all fabridams that were in use at Bedford, Dumbleton, Mirani and Claude Wharton weirs.

**Recommendation 2**

SunWater investigate, and implement if appropriate, steel gates of an appropriate design for use on the Bedford Weir.

Response and action: the recommendation is implemented.

Responsible agency: Department of Water and Energy Supply, supported by SunWater Limited.

On 26 September 2016 the Minister for Main Roads, Road Safety and Ports and Minister for Energy, Biofuels and Water Supply responded:

SunWater implemented this recommendation when it investigated whether steel gates are appropriate for use on the Bedford Weir. An analysis was undertaken in 2010 that identified three engineering options for replacement of the rubber fabridam. These concepts included various gate or shutter configurations.

In 2014, a further study examined the impact of the three options for SunWater's water supply schemes that had inflatable rubber dams at the time of Nelani Koefer's death. (A water supply scheme is a system that is used to deliver water to communities, farms and industry, and often includes dams and weirs, rivers, channels and pipelines, all used as part of that water storage and delivery system.)

The three options were:

- Option 1: Do not replace the rubber fabridam's storage capacity (meaning how much extra water the fabridam allowed the weir to hold) and decommission (or remove) the existing fabridams from service.
- Option 2: That the additional capacity provided by the rubber fabridams, could be met by installing another structure, such as a gate.
- Option 3: Do nothing and exclude the decommissioning of the rubber fabridams.

The options study found that:

- For the Nogoia MacKenzie Water Supply Scheme, the reduced capacity of Bedford Weir (due to deflation of the rubber fabridam) had no real impact on water supplies to most of SunWater's customers.
- For the Pioneer Water Supply Scheme, the use of fabridams to increase capacity was not required because the scheme's performance currently meets customer requirements. If demand for water increases in the future, SunWater will need to investigate other options for the storage capacity of this system and further consult with customers to discuss the likely costs and benefits.
- For the Burnett Water Supply Scheme, there is no need for the immediate reinstatement, or replacement, of rubber fabridams – as it is considered to be too costly to undertake such works and there is no intention of doing so at this time.

The options study recommended a preference for Option 1 which is to decommission, but not replace, the rubber fabridams in the three schemes examined.

There is little support from water customers for incurring additional costs associated with replacing the rubber fabridams with alternative structures like steel flap gates or shutters. As a result SunWater does not plan to replace rubber fabridams at Bedford Weir, or at any other location where rubber fabridams have been deflated. However, the option of replacing the fabridams with alternative structures remains open to SunWater in the future and will be reviewed again prior to the Queensland Competition Authority setting SunWater's new pricing structure. The review is scheduled to commence during 2018–19 and will include an analysis of water usage by SunWater's customers and its operational performance data.

### **Recommendation 3**

SunWater engage with the Crown, and if appropriate the Local Government Association of Queensland, to establish an agreement to allow the placement of warning signs in appropriate areas downstream of the weirs and dams that they operate.

Response and action: the recommendation is implemented.

Responsible agency: Department of Water and Energy Supply, supported by SunWater Limited.

On 26 September 2016 the Minister for Main Roads, Road Safety and Ports and Minister for Energy, Biofuels and Water Supply responded:

As the geographical locations of SunWater's dams and weirs predominantly adjoin local government roads, SunWater needs to obtain licences for all signs on roads in each local government area. Each licence will permit the signs to be placed on the road, and will include the required approvals and provisions for all necessary operational and maintenance arrangements.

SunWater prepared a generalised draft licence for consultation with the Local Government Association of Queensland and selected councils. SunWater expects to receive feedback on the draft licence, and make any necessary amendments, before commencing discussions with individual councils in 2016.

SunWater will also finalise licenses with landholders allowing it to place signs on private land which abuts infrastructure owned and operated by SunWater, including recreational areas used by the public.

Once SunWater has determined the placement for its warning signs, it will know if it is necessary to engage with the Crown to place signs on state-owned roads and other areas where necessary, by June 2017.

**On 21 March 2017 the Minister for Main Roads, Road Safety and Ports and Minister for Energy, Biofuels and Water Supply responded:**

Sunwater has undertaken an audit of all dam and weir sites to record their location and signage requirements.

The Water Legislation Dam Safety Amendment Bill 2016 includes a provision granting SunWater a head of power to erect a sign on public land (being state or local government owned land) to warn individuals of the risk of entering land in an area downstream of dams and weirs. At this stage, SunWater has not identified the need to erect signs on private land.

SunWater will erect all required signs on SunWater-owned land by June 2017.

At this point, no sites has been identified requiring signage to be placed on state or local government land. However, it is noted that the dam safety amendment legislation will provide the mechanism for this should it be required after 1 July 2017.

**On 18 September 2017 the Acting Minister for Main Roads, Road Safety and Ports and Minister for Energy, Biofuels and Water Supply responded:**

An amendment to section 36 of the Water Supply (Safety and Reliability) Act 2008, which took effect on 1 July 2017, enables SunWater to erect warning signs on State or local government land downstream of weirs and dams. The legislation provides the mechanism for the placement of signage, should it be required, and therefore a formal agreement with local government is no longer required. However, SunWater has identified no such sites requiring the erection of downstream safety signage.

Should additional sites requiring downstream safety signage be identified, SunWater will contact the relevant State or local authority in line with the legislative mechanism provided.

#### **Recommendation 4**

SunWater install and maintain appropriate signage to warn people of the risks that exist in conducting any activities in areas below the walls of dams and weirs that they operate. Placement of signage will depend on the topography and configuration at each location, but signage should be placed where they are readily seen by members of the public. No doubt the signs shall also include pictograms warning of these dangers.

Response and action: recommendation is implemented.

Responsible agency: Department of Water and Energy Supply, supported by SunWater Limited.

On 26 September 2016 the Minister for Main Roads, Road Safety and Ports and Minister for Energy, Biofuels and Water Supply responded:

In July 2016, SunWater completed a review of its signs and notices. As part of this review, new signs were designed to warn the community of the dangers associated with unexpected and sudden releases of water and flooding. The new signs will warn the public that high waves, or fast moving water, may result in serious injury or death. SunWater has yet to install the new signs because the design of the mounting for the signs is being checked against the requirements of the Building Code of Australia.

SunWater is developing a standard for photographing and locating signs on GPS. It will record information on the type and condition of signs in its asset management systems to enable their routine auditing and to identify locations requiring new signs.

New signs of the approved standard will be installed at locations downstream of dams and weirs within the potential areas of impact should a sudden release of water occur. Because of the large number of dams and weirs involved (and an even larger number of sites accessible to the public within the bed and the banks of the associated rivers), installation of new signs, and replacement or refurbishment of existing signs, is not anticipated to be completed until June 2017.

**On 21 March 2017 the Minister for Main Roads, Road Safety and Ports and Minister for Energy, Biofuels and Water Supply responded:**

The SunWater standard has been developed and distributed to all SunWater operations personnel to dictate a consistent approach and ensure appropriate signage is used in all instances.

SunWater is aiming for compliance with the June 2017 deadline, weather permitting.

**On 18 September 2017 the Acting Minister for Main Roads, Road Safety and Ports and Minister for Energy, Biofuels and Water Supply responded:**

SunWater has completed warning sign installation and is maintaining appropriate signage to warn people of the risks that exist in conducting any activities in the areas below the walls of its dams and weirs. Signs have been photographed and locations are in the process of being captured on a map.

SunWater will continue to conduct regular audits and maintain warning signage at locations downstream of its dams and weirs. This will form part of SunWater's business as usual activities.