QUEENSLAND COURTS

OFFICE OF THE STATE CORONER

FINDINGS OF INQUEST

CITATION:	**Inquest into the death of Nelani Ciara Koefer**
TITLE OF COURT:	Coroner's Court
JURISDICTION:	Mackay
FILE NO(s):	2008/165
DELIVERED ON:	17 March 2016
DELIVERED AT:	Mackay
HEARING DATE(s):	7 – 9 December 2015
FINDINGS OF:	Magistrate D O'Connell, Coroner
CATCHWORDS:	CORONERS: Inquest – Child aged four years drowned when rubber dam fixed to weir ruptured – cause of failure in rubber dam – downstream area used for recreation – recommendations addressing safety of dam and weir operations

REPRESENTATION:

Counsel Assisting:	Mr J M Aberdeen
Sunwater Ltd:	Mr C Chowdhury (instructed by Barry Nilsson Lawyers)
Trelleborg Engineered Systems Australia:	Mr M O'Sullivan (instructed by Gaden Lawyers)
Office of Industrial Relations:	Mr B McMillan (instructed by Crown Law)
Ms Amy Koefer:	Self-represented

[1]. On 23 November 2008 Nelani Koefer died whilst wading in shallow water below the Bedford weir. She was there with her mother when, without any warning, an inflatable rubber dam used to increase the height of the weir failed catastrophically releasing a large volume of water in an uncontrolled way. This released water caused just shin deep water where they were swimming to rapidly become inundated. Despite her 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.

[2]. This inquest examines the circumstances of the failure of the rubber dam, its manufacture and repair leading up to that day, whether these inflatable dams are appropriate, and what steps can be taken to prevent the incidents repetition.

Tasks to be performed

[3]. My primary task under the Coroners Act 2003 is to make findings as to who the deceased person is, how, when, where, and what, caused them to die[1]. In Nelani's case there is no real contest as to who, when, where, or what caused her to die. The real issues are directed to the how she died, that is why the dam wall failed.

[4]. The second task in any inquest is for the coroner to make comments on anything connected with the death investigated at an inquest that relate to public health or safety, the administration of justice, or ways to prevent deaths from happening in similar circumstances in the future[2].

[5]. The third task is that if I reasonably suspect a person has committed an offence[3], committed official misconduct[4], or contravened a person's professional or trade, standard or obligation[5], then I may refer that information to the appropriate disciplinary body for them to take any action they deem appropriate.

[6]. In these findings I address these three tasks in their usual order, section 45 Findings, section 46 Coroners Comments, and then section 48 Reporting Offences or Misconduct. I have used headings, for convenience only, for each of these in my findings.

Standard of Proof

[7]. A coronial investigation is not a trial, nor prosecution. It is necessary, if there is satisfactory evidence, for the coroner to reach conclusions based on that evidence. The standard of proof is based on the sliding scale[6]. As any allegation becomes more serious, such as having committed an offence, or an allegation

[1] Coroners Act 2003 s. 45(2)(a) – (e) inclusive
[2] ibid s.46(1)
[3] Ibid s.48(2)
[4] Ibid s.48(3)
[5] Ibid s.48(4)
[6] commonly referred to as the *Briginshaw* scale

which might cause harm to an individual or entity's reputation, then a greater 'strictness' of proof is required[7] before a conclusion is able to be reached.

Factual Background & Evidence

[8]. There are a significant number of matters which are not controversial, nor in dispute. The Bedford weir had been in place on the Mackenzie River for some years. The weir itself is constructed from concrete and is a fixed height. Because it is a weir[8], rather than a dam, it was fitted with an inflatable rubber barrier to allow it to retain more water as required or to be deflated during seasonal rain events so it did not cause upstream flooding.

[9]. The inflatable rubber barrier had a design of approximately 1.2 m in height, and spanned the width of the weir. There were two tenders submitted, and Trelleborg, then called Queensland Rubber, was the successful tenderer. It was suggested[9] that the serviceable life of the particular rubber barrier was 30 years.

[10]. The barrier was installed and within two years had started to develop problems with ruptures in the form of tears in the fabric. Over the course of a number of years the various ruptures were repaired by the process of cold vulcanising, or hot vulcanising[10]. These repairs had various degrees of success, but what the evidence clearly established was that the external patching was not solving the cause of the problem, rather it was only addressing the resultant problems when these manifested themselves by tearing the external surface of the rubber bladder. Continual patching and maintenance was required as more tears in the fabric occurred over time.

[11]. Investigation of why these tears were occurring eventually led to a number of options being proposed for a more permanent solution. The investigation showed that there were internal "creases"[11], which were effectively tears, along the internal surface of the membrane in an area where a fin had been attached on the exterior surface of the inflatable membrane. The fin was an essential design component to stop a vibration, or harmonic, occurring as water spills over the bladder. What had occurred, which was not apparent[12] at the time but was later detected through extensive investigation after the

[7] See annexure 'A', where I set out certain legal matters. The issue will hold very little understanding for the deceased's family so I do not include it within the body of these Findings, rather as an Annexure to the findings.
[8] I may stand corrected but weirs only contain water to the natural limits of the watercourse banks, whereas a dam inundates, or submerges, land adjoining and outside the banks of a watercourse.
[9] the manufacturer stated this in correspondence to Sunwater when the longevity of the rubber bladder was brought into question between the parties before the incident occurred. There was no suggestion that 30 years was in some way a specific guarantee of operational performance duration, rather I viewed it as an expected performance duration for the product. Nothing greatly turns on this at the inquest
[10] which is a more complex process requiring a heated iron to be used to bond a rubber patch over the rupture on the rubber surface of the inflatable barrier. It is easy to imagine how difficult this process is to get correct when it is performed on the inflatable dam walls whilst it remains in position across the river
[11] this is merely my term for the internal, apparently hairline, cracks in the rubber membrane
[12] or perhaps more correctly stated not then identified

November 2008 incident, was that the rubber membrane had been held, or folded, at too "tight" a radius during its manufacture when the fin was applied to the outside. In layman's terms this had cause minute cracks to occur on the inner surface of the rubber membrane. These cracks then allowed the internal air, which was under slightly greater pressure than the atmospheric air, to escape into the fabric folds, which air then found its way along the fabric layers until it came to a "weak spot", such as a join, and worked its way to the outer surface.

[12]. The repair implemented in about 2003 was for a strip of rubber to be placed on the inner lining of the tube. The strip was about 30 cm wide, and was bonded into place to cover over the cracks from the manufacturing process. After this difficult process was implemented the rubber bladder had a fairly uneventful service life for a few years.

[13]. Regrettably, on a hot and sunny day, on 23 November 2008, a section of the fabric dam ruptured, reportedly with a loud bang. It quickly deflated to allow water to flow over it in an uncontrolled fashion described as a wall of water about one metre in depth. Persons who were then wading in the water of the concrete spillway, known as the 'gusher', became trapped by the quickly rising water. They were later able to be saved by boat. Nelani who was wading with her mother about 230 metres downstream from the wall was washed from the arms of an adult as she was being moved out of the rapidly rising stream. By all reports the water spilled over very quickly, such that it was nearly impossible to escape.

Investigations into the incident

[14]. The police conducted report into the incident, but these were later overtaken by the appropriate department WHSQ. A comprehensive report was prepared. It was a difficult and complex investigation which required specialist examination of why the rubber dam failed. It is a credit to that investigator that the report was completed within 12 months even though it was a large and difficult task[13].

Identified shortcomings in the Rubber Dam, and its repair

[15]. There is no doubt that the source, or cause, of the failure was that found by an expert to have occurred during the manufacture of the product when the rubber was formed at 'too tight' a radius for its tolerances when the fin was attached. This was actually, and quite properly, conceded[14] by the manufacturer at the inquest, and accords with the expert's opinion.

[13] indeed just removing the rubber dam required a temporary roadway to be constructed below the weir and heavy lifting equipment brought in to remove it in sections, before it was transported to Brisbane to be examined. This gives some indication of the complexity of the task that was undertaken. Notwithstanding the complexity it is pleasing to see that such a difficult investigation can be performed, and a final report prepared, within 12 months of the incident occurring.

[14] even though their counsel may, quite rightly in my view, make this concession, it is still a task I must determine on the facts as I cannot simply abrogate my responsibilities to what the parties may concede

[16]. As I stated earlier after the rubber bladder was placed in service various methods of hot and cold vulcanising was used whenever cracks appeared in the exterior surface. What must be understood is the external cracks are the result of air escaping through the fractures from the inside. The escaping air then travels along the seams, or other weak spots, and eventually makes its way to the outside surface. What was evident was that the location of the air exiting on the exterior may have no corresponding crack directly beneath it on the interior surface, that is, directly underneath the exterior fracture. The evidence was that escaping air could travel anywhere along the length of the more than 200 metres of the rubber dam. Of course this essentially meant that the repairs were simply 'patches' of the exterior, and they were not treating the source of the problem on the interior surface. It was said, and I accept, that a patch on the exterior might work well at that location, but the air will simply find its way further along the membrane to the next weak spot and escape there.

[17]. As I said earlier eventually the source of the problem was located and a rubber piece vulcanised on the interior of the fabridam. This was a difficult and complex repair but essentially this was a fix and only relatively few failures occurred for a period of four years after it was completed.

Events on the day

[18]. It is interesting to examine the events just prior to the failure when Nelani died. It was reported by a member of the public[15] who was below the dam wall, whose observations I accept, that they observed a tear, or split, in the exterior surface from which they saw protruding what looked like a 'bubble'. It was evidently quite pronounced because they could see it clearly from well over 20 metres away, and from a position well below the weir wall. They said they observed this bubble for some days before the incident. In my view this bubble would clearly have been evident had there been regular inspections at that time by the dam operators. Seeing such a bubble would clearly have caused alarm to any responsible dam operator employee.

[19]. On the day the fabridam collapsed those present said they heard a loud 'bang', much like a gunshot, which would accord with the protruding rubber membrane suddenly bursting[16]. Immediately after the sound was heard the fabridam wall at one end then quickly deflated and the water, in an uncontrolled fashion, simply flowed over the top. A man who was in his four wheel drive vehicle below the dam wall did not even have time to drive back along the bush track near the river, rather he simply drove his vehicle up a steep incline to escape the rapidly rising water. It is evident that the flooding occurred very quickly.

[15] Mr Scott Becker

[16] And the evidence was that the membrane was not fabric reinforced, so could stretch up to 300% (and I accept this is just a representative figure, but I do not require an expert to advise me of this stretching capability. Fabric reinforced rubber has very minimal stretch. A crude analogy, from my experience, is the stretching properties evident in a bicycle's rubber tyre tube (which can easily be inflated to over 300% of its functional size) versus a rubber tyre, which has very little stretch capabilities as it is fabric reinforced.

[20]. It is clear to me, from the evidence of witnesses, that no time existed to move people out of the area below the dam wall once the dam failed. Clearly the appropriate approach is to ensure people do not enter such a potentially dangerous area in the first place, but that itself does pose a conundrum as the area appears enticing, with knee deep water and a gentle flowing stream, very attractive on a hot day with summer approaching in central western Queensland.

[21]. There was raised at the inquest the question of whether employees of Sunwater could have done more to 'move people on' who swam, or undertook recreational activities, below the dam wall. I accept that employees occasionally would attempt to move people that they saw in the area, but I also accept that employees reported they were sometimes subject to abuse if they attempted this. I do not see that there is any requirement of Sunwater to have to conduct regular patrols by their employees to prevent people undertaking recreational activities in this area, particularly as people could use the area at any hour of the day or night. Additionally employees have no recognised authority or power to move people on, that authority resides in the police. There is further comment in relation of this aspect in my recommendations.

[22]. It should be remembered that the dam operator provided, and maintained, at a safe distance from the wall, a suitable recreation area on the banks of the water held by the weir. This recreation area had a boat ramp and public facilities with toilets and barbecue areas. Indeed Nelani's mother said that they used this area earlier in the day before going for 'just one last swim' on their way home. As there are adequate and appropriate facilities provided for the public, there is no reason that people should be placing themselves in a position of potential danger by using the area beneath the dam wall. Accordingly appropriate steps need to be taken in the area subject to inundation below the dam wall to highlight the dangers to unsuspecting members of the public, and those who may not be familiar with the dangers which could present themselves. Accordingly steps need to be taken to prevent people from using areas below a dam wall for recreational activities. I comment further on the practical steps which can be taken later in my Recommendations.

[23]. One aspect that caused me concern was what appeared to be inadequate regular visual inspection of the fabric of the rubber dam. Clearly dam operators should have a policy to conduct visual inspections at regular intervals[17]. No doubt dam operators will address this issue, or have an appropriate policy in the dam operator's manual.

[24]. Lastly I simply make one very brief observation. I appreciate that due to the problems experienced with this fabridam that the dam operator was then exploring a replacement, and steel gates were considered the most appropriate. It appeared that this was progressing, albeit slowly, in implementing change, but the delay, for whatever reason, means that no action was concluded. From

[17] and not simply rely upon the recorded hours that mechanical blowers operated. The evidence was the blower hours were used as an indication of holes or tears in the fabric. To me that is a rather crude method of measurement when a visual inspection was not difficult.

a simple economic point of view it was clear to me that there was a clear business case, I would consider financially overwhelming, that the more expensive steel flap gates, even though they have a higher initial capital outlay, provided the best solution when viewed over the product's life cycle[18]. It is most unfortunate that investigations did not manifest into action[19].

List of Inquest Issues Answers

Coroners Act s. 45(2): 'Findings'

[25]. Dealing with the list of issues for this inquest the answers are as follows:-

[26]. Issue 1.

My primary task is the information required by section 45(2) of the *Coroners Act 2003*, namely:

a. Who the deceased person is – Nelani Ciara Keofer[20],
b. How the person died – Nelani died due to the sudden, and uncontrolled release of water due to the rupture failure of a fabridam, on top of a weir,
c. When the person died – 23 November 2008[21],
d. Where the person died – approximately 235 metres downstream of the Bedford Weir, on the Mackenzie River, via Blackwater[22], and
e. what caused the person to die – drowning[23]

[27]. Issue 2.

a. When was the fabridam first installed on Bedford Weir?
b. What was the fabridam's expected service life when it was first installed?

The fabric dam was first installed in approximately September 1997. Its' then serviceable life was estimated, or claimed, to be approximately 30 years.

[28]. Issue 3.

a. What maintenance (if any) was carried out during the service life of the fabridam (including periodic inspections and non-destructive testing)?
b. Was the maintenance carried out adequate under all of the circumstances?

[18] One hardly needs an MBA degree to see this, it would be evident to any student of 'Economics 101'.
[19] quite possibly there are good reasons why, but nothing particular in this regard was floated at the inquest
[20] See exhibit A1 QPS Form 1
[21] See exhibit A2 Life Extinct Form
[22] See exhibit A2 Life Extinct Form
[23] See exhibit A3, Form 3 Autopsy Certificate

The maintenance carried out appeared to be undertaken simply "as required" whenever there developed a tear or leak. This was until the internal rubber membrane was installed, which greatly cut down upon maintenance demands. After hearing the evidence I formed the view that the maintenance undertaken was not adequate as it failed to address the root cause of the problem, which root cause was partially addressed by the insertion of the rubber membrane in approximately October 2003. This proved to be a better solution, as opposed to patching, but in reality it did not fully address the problem caused during manufacture.

[29]. Issue 4.

a. Did the fabridam "fail", or leak, at any time prior to 23rd November 2008?
b. If it failed, or leaked, what repairs were required and were these repairs appropriately completed and tested?

The fabridam certainly failed, or leaked, prior to 23 November 2008. It was repaired on many occasions, and quite frequently, until the internal gusset was inserted. It certainly appeared to me that the system of testing for leaks was to merely monitor the number of hours that the compressors ran to generate sufficient inflation pressure for the rubber bladder. There was also some inspections conducted, though they appeared to be sporadic. Certainly there was no suggestion that any formal inspection regime was being undertaken, such as weekly or fortnightly.

The question of whether the repairs were appropriately completed and tested is a little more involved, and I will not comment specifically on whether individual repairs were successful, other than to highlight that it appears very clear that the rubber bladder itself was defective from the outset and no surface repair, whether hot or cold vulcanising, adequately remedied this, because it simply cannot address the defect created during its' manufacture.

[30]. Issue 5.

a. How and why did the fabridam fail on the 23rd November 2008?

As I stated earlier in my reasons, the fabric dam failed due to the outer lining bursting or tearing, caused by the defects, namely hairline cracking, which occurred in the inner lining and were created during the manufacture process.

[31]. Issue 6.

Having regard to:-

a. The public interest in ensuring the ongoing availability of sufficient supplies of water throughout the State; and

b. The risks to public health and safety posed by the existence of fabridams, should fabridams be used to increase the holding capacity of a body of water such as a weir?

Clearly my answer is "No", these particular fabric dams should not be used. I elaborate on this further in my recommendations.

[32]. Issue 7.

> Did the design, construction and/or maintenance of this fabridam have any impact on its risk of failure or collapse?

In very short compass, the construction and maintenance of this fabric dam did impact on its risk of failure or collapse. There was no evidence before me that its design caused its failure. The reasons for my conclusion are detailed elsewhere in my findings.

[33]. Issue 8.

> Were there areas downstream from the weir within an inundation area where people pursued recreational activities?

The evidence was clear that members of the public readily swam, and fished immediately below the dam wall, and even in the area some hundreds of metres away from the dam wall, downstream. The public using this area below the dam wall was certainly known to employees of Sunwater, who on occasions would speak to these people and attempt to move them on.

[34]. Issue 9.

> a. Should potential inundation areas be mapped and the maps displayed for the public at strategic downstream locations?
> b. Was warning signage in the vicinity of Bedford Weir adequate to secure public safety as at the 23rd November 2008?

Certainly there is benefit in a dam operator undertaking appropriate studies to determine the areas of inundation below a dam wall where a fabric dam is used to temporarily raise the level of water stored. There is benefit in these areas be mapped, and appropriate warning signs being erected. I speak further about this in my recommendations.

After hearing the evidence, and in view of my recommendations, I consider that the warning signage in the vicinity of Bedford were inadequate to secure public safety as at 23 November 2008. This is because the signage was placed at, or on, the wall itself, which may be appropriate for those persons swimming immediately below the wall, but would be inadequate for those people who entered the water a few hundred metres below the dam wall itself, yet these people are still within the dangerous inundation zone.

[35]. Issue 10.

a. What were the main reasons that the prosecution of Sunwater Limited for a regulatory offence took 4 years 11 months;

b. Could that prosecution process be rendered more efficient if a defendant was required to state, or plead, its defence so that the "real issues" are identified and progressed?

As was succinctly explained[24] by counsel for WHSQ, the main reason that the prosecution took nearly 5 years was due to the complexity of the engineering issues, and the changing landscape of case law on the issue which then occurred in Australia, but impacted on the nature of this prosecution. I accept the explanation given, and hopefully I sufficiently converted those events that occurred which gave an apparent[25] delay of the prosecution adequately into layman's terms so the family could understand.

Accordingly nothing further need be explored in relation to this issue at this inquest.

Coroners Act s. 46: 'Coroners Comments' (Recommendations)

[36]. This incident does provide the opportunity to recommend important improvements aimed at reducing the risk to users downstream of weirs.

[37]. Certain aspects are very clear, indeed agreed by Sunwater. The inflatable rubber dams designed and manufactured by Trelleborg clearly demonstrated deficiencies in their manufacture within less than two years of their claimed 30 year lifespan. The inflatable rubber dams located at Bedford weir and Dumbleton weir, are recommended to be removed[26] and never again placed in service. Sunwater indicated that there are two other inflatable rubber dams, at different locations elsewhere in Queensland, but these were manufactured by Bridgestone Marubeni. There have not been reported any particular issues with those inflatable rubber dams, and Bridgestone Marubeni was not a party to the inquest, so I make no comment, nor can there be drawn any adverse inference against the rubber dams manufactured by that company[27].

[38]. There is clearly a requirement for Sunwater to provide a reliable, and sufficient, water supply to industry, agriculture, and persons within the catchment area who rely on the water supply. Weirs can be entirely suitable, where dams may be inappropriate. It is noted that Sunwater prior to this incident in 2008[28] were already investigating the replacement of the inflatable rubber dams with steel gates. A design known as flap gates were considered the most appropriate. Whilst their initial cost was estimated at an

[24] and counsel for the Department maintained a brevity of questioning during the inquest, and an admirably succinct address on this issue.
[25] but in reality it was not real
[26] Curiously they remain, still bolted, on the weir crest even though I was assured there is no expectation that they again be placed in service
[27] And any media coverage of this inquest needs to be clear on this issue
[28] They had commissioned, and received, a Discussion Paper dated June 2008, for replacement of the rubber dams with the preferred option of flap gates

approximately 25% more capital outlay, it is very evident that their lifecycle[29] costs are much lower, and indeed would present a more reliable, and in the long-term, more economic, solution. Flap gates satisfy all of the required criteria for a weir in this location. They should be the option now implemented by Sunwater if the weir's wall design permits when replacing the inflatable dams at Bedford, and very likely Dumbleton weir.

[39]. Storage of water in dams or weirs provide a great many recreational benefits[30] to local communities, and indeed provide a very attractive recreational area for the public. In no way am I critical of dams or weirs being used for recreational pursuits, and there was no suggestion at all during the inquest that the 'Ski Gardens' area located upstream of the dam wall was in any way unsuitable as a recreational area. The only concern was with activities below the wall of the weir. Clearly the most obviously dangerous area is immediately below the weir wall in what was termed the 'gusher', or what might be considered a small spillway. It is immediately adjacent to the wall. Despite signs in this area members of the public would regularly pursue activities in the gusher, despite what many would consider an obvious danger. Perhaps the attraction was that the water in this area was generally just 30 cm deep[31].

[40]. There is also the attraction of what appears to be a controlled flow of water below the weir in the natural riverbed, where the Keofer's were enjoying their late Saturday afternoon. Again the water in this area was just shin deep, or perhaps 30 cm deep, and it was an area of the riverbed which was quiet and attractive. It was within 230 metres of the weir wall and so would readily, and quickly, be affected by any significant uncontrolled discharge of water from the weir, as occurred on this day. It is not a difficult task for appropriate signage to be erected warning of the dangers, and for people not to pursue activities in this area.

[41]. The signage issue had been identified by Sunwater, indeed they were then already engaged in discussions with the local council at the time the incident occurred. The particular issue slowing progress was the right to erect signage in an area that Sunwater did not own, nor control. I appreciate this and what was explored at the inquest was that there needs to be a standard agreement, or Memorandum of Understanding[32], between the State of Queensland[33] and dam operators, and likewise between the Local Government Association and dam operators[34] to permit dam operators to erect appropriate signage. Signage would be at the dam operator's cost, including maintenance, and simply be to warn members of the public of the dangers that exist in areas that are likely to be flooded below the dam wall. Clearly a universal agreement covering these matters is better than the delay and expense of ad-hoc agreements being

[29] An elementary economic costing consideration for capital works
[30] Swimming, boating, water skiing, fishing, kayaking and canoeing, just to name a few on-water pursuits
[31] Evidence of Mr Becker who admitted he was sliding down the gusher that afternoon, and when the uncontrolled release occurred he, and others with him, became trapped near the wall by the outpouring water.
[32] Being the bureaucratic term
[33]The Crown
[34] where local government land is relevant

negotiated on every occasion required. I recommend that this be pursued. Hopefully, with some common-sense, this could be concluded and implemented within six months. I do not see it as a complicated, nor difficult, issue.

[42]. It is very clear to me that fencing, or barriers of any type, to prevent people accessing the natural watercourse below a weir wall is not an effective solution. Clearly during flood events fences are readily damaged and in fact could prove to be a danger or cause greater flooding. Individuals need to exercise a degree of responsibility, and their own judgement[35], should they choose to ignore warning signs which are well-placed, explain the dangers, and are well maintained.

[43]. Of course there are certain people in society who will choose to ignore such signage and continue to pursue recreational activities in these areas. Avid fishermen[36] and kayakers seeking out turbulent water are individuals who spring to mind. There is little that a dam operator can practically do to prevent their activity except conducting regular and extensive patrols, but this is not practical[37]. In relation to patrols perhaps it would be beneficial if dam operators could develop a policy for their staff to educate them on being vigilant to check for activity by the public in areas below dam walls (or even around the walls,) which are considered hazardous. The policy should cover that officers should speak to these people, explain the risk to them, and ask them to leave the area. If these people choose to ignore the request to move on then the police are the appropriate authority to act. 'Move on' powers is not an authority which I consider should be vested in employees of dam operators. I merely make this observation, and it is not a formal recommendation.

[44]. Accordingly the Recommendations are:

a. that Sunwater remove, and not reinstate, the rubber fabridams manufactured by Queensland Rubber/Trelleborg;

b. that Sunwater investigate, and implement if appropriate, steel gates of an appropriate design for use on the Bedford weir;

c. that Sunwater engage with the Crown, and if appropriate the Local Government Association of Queensland, to establish an Agreement[38] to allow the placement of warning signs in appropriate areas downstream of the weirs and dams that they operate; and

d. that Sunwater install and maintain, appropriate signage to warn people of the risks that exist in conducting any activities in areas below the

[35] Indeed deaths from persons crossing flooded roads continue in the Central Qld Coroner's area, despite very widespread media coverage of the '*if it's flooded, forget it*", campaign".
[36] And I can on occasions be included in this category, alas more the 'avid', than the 'fisherman'.
[37] most activity persons such as fishermen and kayakers would occur at times which are afterhours to most dam operators employees work rosters. There is no formal power to 'move on' people, only the Queensland Police Service has this authority
[38] or Memorandum of Understanding as it is termed

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[39] warning of these dangers.

Coroners Act s. 48: 'Reporting Offences or Misconduct'

[45]. The Coroners Act section 48 imposes an obligation to report offences or misconduct.

[46]. It was not suggested, nor recommended, to me by any party at the inquest that any further person or entity should be referred for investigation of an indictable or other offence. Accordingly I make no such referrals under section 48.

Magistrate O'Connell
Central Coroner
Mackay
17 March 2016

[39] This shall ensure they are readily understood by children and non-English speaking visitors to Australia, because as a coroner in Regional Queensland tragically I see too many instances where foreign visitors lose their life simply because they fail to appreciate the non-evident dangers in Australia's environment, whether it be the ocean, rivers, creeks, or even dams.

Annexure 'A'

And as counsel for Trelleborg appeared to press the issue in addresses it is perhaps convenient that I set out the Coroners Court standard of proof so that they appreciate that I have carefully considered the issue raised.

Section 37(1) of the Coroners Act 2003 lays down the basic proposition with respect to evidentiary issues at inquest:

"The Coroners Court is not bound by the rules of evidence, but may inform itself in any way it considers appropriate."

The first thing to notice about the subsection is that, by using the expression "not bound", it does not require that the Court have no regard whatsoever to the "rules of evidence", rather it has been described as:-

"The tribunal is not bound by the rules of evidence … and may inform itself in such a manner as it thinks appropriate. This does not mean that the rules of evidence are to be ignored. The more flexible procedure provided for does not justify decisions made without a basis in evidence having probative force."[1]

It must also be borne in mind that the rules of evidence are not lightly to be dispensed with in the tasks of both receiving and weighing evidence at an inquest:

Secondly, the expression "rules of evidence" is not further explained within the *Coroners Act 2003*. But it must be qualified, in the first place, by other sections of the Act which lay down specific procedures with respect to matters which usually fall within the expression "rules of evidence". An example is the specific procedure prescribed by section 39 of the Act which governs the issue of self-incrimination.

Further qualifications may arise, by implication, from the inherent nature of the inquest under the Act. The Coroners Court is a Court of Record; it contemplates representation of interested parties by legal practitioners; it assumes a process involving formal public hearings[1], the taking of evidence upon oath, and the cross-examination of witnesses[1]; it is subject to a system of review by a superior Court; it has the power to punish for contempt of Court[1]; and it is presided over by a Coroner who holds judicial office[1]. In addition, a Coroner is bound, in all of his or her duties, by the requirements of natural justice[1].

Taking into account all of these factors, there can be no room for doubt that, although the issue of a standard of proof commonly finds it place within the expression "rules of evidence", the Legislature, in passing the *Coroners Act* 2003, contemplated that the findings to be made by a Coroner would be made by reference to a legally-recognized standard of proof. It is also clear that the common law recognised only two standards of proof – the criminal standard (beyond reasonable doubt) and the civil standard (usually described in terms of the balance of probabilities).

The *Coroners Act 2003* was passed with the specific intention of separating the coronial process from the criminal justice process; and it follows that the applicable standard of proof at an inquest must be the civil standard *i.e.* upon the balance of probabilities[1].

Pursuant to section 14 of the Act, the State Coroner is empowered to make Guidelines for the assistance of Coroners in carrying out their duties. Chapter 9 of these Guidelines reflect the appropriate standard of proof in respect of coronial findings at inquest. Importantly, they also draw attention to the potential, with respect to issues which may carry adverse consequences for a particular person, for the Coroner to be satisfied of their existence to a higher level of satisfaction:

"The particulars a Coroner must if possible find under s45 need only be made to the civil standard but on the sliding Briginshaw scale. That may well result in different standards being necessary for the various matters a coroner is required to find. For example, the exact time and place of death may have little significance and could be made on the balance of probabilities. However, the gravity of a finding that the death was caused by the actions of a nominated person would mean that a standard

approaching the criminal standard should be applied because even though no criminal charge or sanction necessarily flows from such a finding, the seriousness of it and the potential harm to the reputation of that person requires a greater degree of satisfaction before it can be safely made".

To take one particular example of what is called the "sliding" scale of proof – the commission of a crime - Justice Dixon, in *Helton v Allen* endorsed a direction by the trial judge that:

"When a crime is charged in a civil trial it must be proved strictly because the degree of proof required in a civil trial depends upon the magnitude of the thing that is in issue, and when a crime is in issue you will not lightly find that a crime has been committed, and according as the crime is grave you shall require a greater strictness of proof".

[Underlining emphasis added]

Perhaps the most helpful explanation of the nature of the "stricter proof" which may be required before a finding carrying serious consequences can be made was that provided by Justice Dixon himself in *Briginshaw v Briginshaw*:

"The truth is that, when the law requires the proof of any fact, the tribunal must feel an actual persuasion of its occurrence or existence before it can be found. It cannot be found as a result of a mere mechanical comparison of probabilities independently of any belief in its reality. No doubt an opinion that a state of facts exists may be held according to indefinite gradations of certainty; and this has led to attempts to define exactly the certainty required by the law for various purposes. Fortunately, however, at common law no third standard of persuasion was definitely developed. Except upon criminal issues to be proved by the prosecution, it is enough that the affirmative of an allegation is made out to the reasonable satisfaction of the tribunal. But reasonable satisfaction is not a state of mind that is attained or established independently of the nature and consequence of the fact or facts to be proved. The seriousness of an allegation made, the inherent unlikelihood of an occurrence of a given description, or the gravity of the consequences flowing from a particular finding are considerations which must affect the answer to the question whether the issue has been proved to the reasonable satisfaction of the tribunal. In such matters 'reasonable satisfaction' should not be produced by inexact proofs, indefinite testimony, or indirect inferences. Everyone must feel that, when, for instance, the issue is on which of two dates an admitted occurrence took place, a satisfactory conclusion may be reached on materials of a kind that would not satisfy any sound and prudent judgment if the question was whether some act had been done involving grave moral delinquency".

In an inquest, of course, there can be no suggestion of any finding that a particular person has committed a crime, or that a person may be civilly liable for something; but the strictness of proof referred to in *Helton v Allen* applies equally to any coronial findings of fact from which it could be inferred that a person might have committed an offence, or might have done something which would adversely reflect upon that person's character.

The above should be adequate for the parties to appreciate that their concerns, quite appropriately raised, on evidence, admissibility, and weight, has been appropriately considered by me.