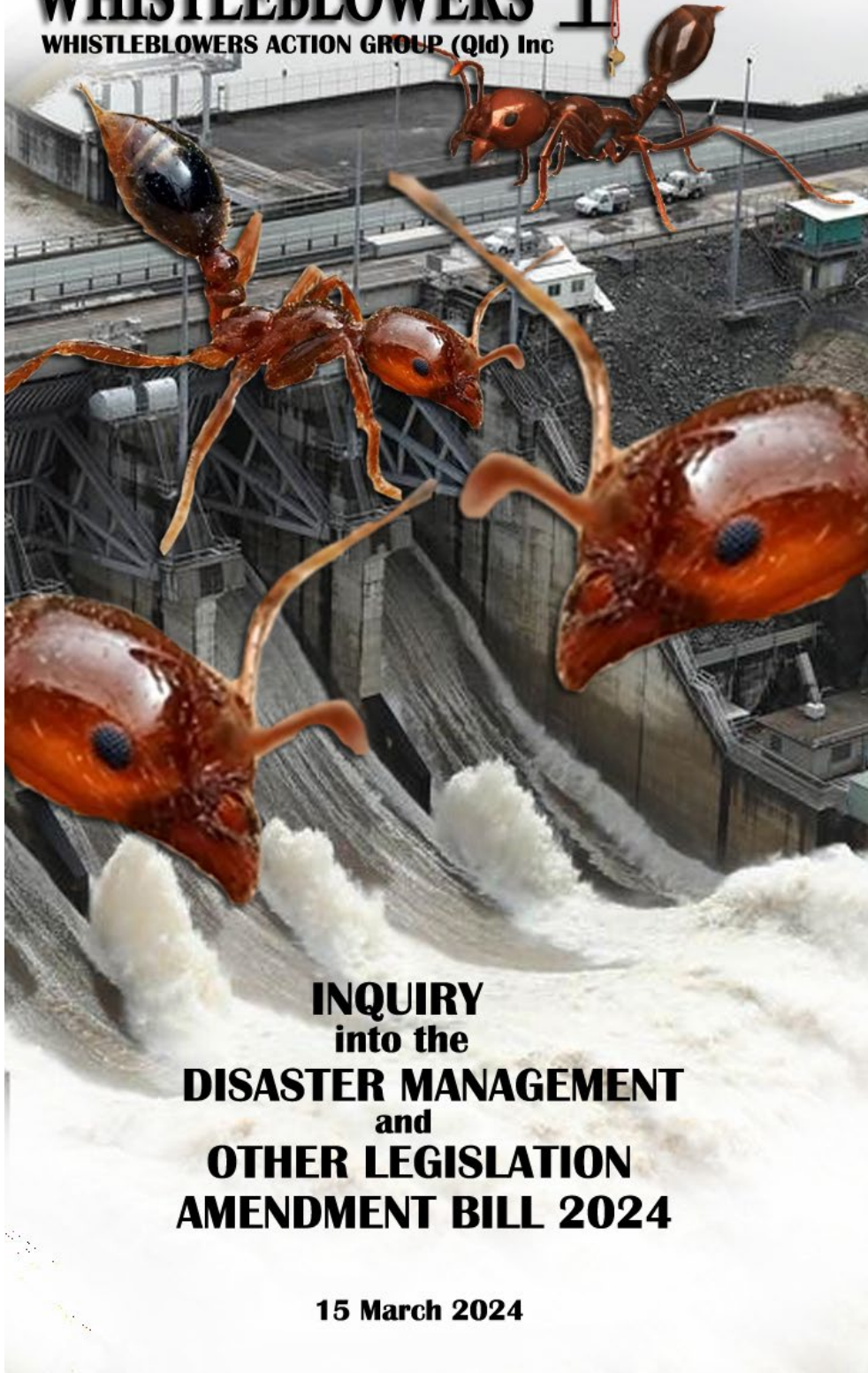


Disaster Management and Other Legislation Amendment Bill 2024

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QUEENSLAND WHISTLEBLOWERS

WHISTLEBLOWERS ACTION GROUP (Qld) Inc



INQUIRY into the DISASTER MANAGEMENT and OTHER LEGISLATION AMENDMENT BILL 2024

15 March 2024

QUEENSLAND WHISTLEBLOWERS

Whistleblowers Action Group (Qld) Inc

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15 March 2024

Dear Chair
Community Safety and Legal Affairs Committee

SUBMISSION: Inquiry into the Disaster Management and Other Legislation Amendment Bill 2024

Introduction

This submission, in the short time available for submissions to be presented, has adopted a focus upon the issue in the existing Act and in the Bill to **'Prevention'** of disasters. Our perspective is that this first principle in the four purposes of the Act has priority over the others, because of the benefits to be won from effective prevention programs and from the better demonstrations of effectiveness in the performances of government in the other three principles of the legislation over recent times

Aim

Our submission identifies problems for any effectiveness in preventing disasters, as the priority in our view for necessary legislation in Disaster Management. The submission then examines

- what may be the necessities of undertaking this priority,
- how the proposed legislation may assist achievement of such a priority,
- any amendments to or expansions of proposed legislation that may give further assistance, and then
- whether the legislation is enough or can by itself achieve what is merited by disasters which Queenslanders must face or evade.

Discussion

Case Studies. This submission presents two case studies of matters rising to or awaiting the occurrence of major disasters. The matters are well known to Queensland and have been given good coverage in news media and professional exchanges, they show the failures that have already occurred in Queensland and in the management of these matters prior to past events, and they presently project as failures in the making, being positioned for a repeat of what has happened before.

Those two areas from which our particular case studies are advanced are:

- Invasive flora and fauna, and
- Flooding

Lessons to be learned from these and other examples can be gained, we submit, from the activities undertaken regarding these potential disasters, in

- Researching the technical issues involved in the causes and the effects of the disaster
- Information about the causes and effects going to the responsible authorities and the public
- Investigations / inquiries, both into the causes and effects of any potential disaster, and also into activities directed at prevention of potential inquiries

Invasive Fauna Example – The Fire Ant

The Disaster. Invasion of south east Queensland by the red imported fire ant is a disaster under the Act (s13) because of

- the injury and illness that affects humans,
- the loss of life by persons caused by anaphylactic shock
- the loss of use, and of safe use, of houses, yards, public areas and other areas of the environment, and
- widespread property loss (including restrictions on use, financial costs, revenue losses) and damage in undertaking recovery and suppression operations according to government requirements.

which thereby constitute a serious disruption to the community.

In Queensland, the affected areas during grew during the Fire Ant program, 2001 to 2023, from 40K hectares to 800K hectares (Swepson)

The Problem with Prevention. The problem with prevention regarding the fire ant disaster is a difference in opinion on the strategy to be adopted in managing the disaster.

Disaster Management Options. Options as to managing the risks of further expansion of the invasion were and are:

- By an **Eradication** attempt, focussed on treating known infested areas to eliminate all areas of infestation, versus,
- By a **Containment** program, to combine treating known infested areas with movement controls to prevent the spread of fire ants from known infested area into uninfested areas.

Current Management Option. To date, the fire ant program appears to have been mainly (and has been termed) an eradication program, with a focus on treatment. The very large and expanding growth in new area infestations over the last two decades are a result of a lack of measures to prevent the spread of fire ants, and speak to whether or not that eradication program has been effective or ineffective with respect to eradication.

Independent scientific advice favoured a containment strategy. Government managers favoured a eradication strategy. That difference in opinion appears to be one between scientific expertise and experience, versus the purposes of government managers.

Scientific Consultations and Reviews. Scientific expertise gained from countries with longer experience in managing fire ant infestations has maintained a constant, many times repeated recommendation that Eradication was and is not achievable, and the best option was and is to adopt a Containment program.

The history of scientific reviews and recommendations have been set out by a former Senior Policy Officer for the program agency

TABLE 1: SUMMARY OF EXTERNAL SCIENTIFIC EXPERT ADVICES AND REVIEWS (Swepson, 2023)

Year	Source	Finding / Recommendation / Advice
2001	International & national scientists	Fire ants were too entrenched to eradicate – recommended tightly containing and suppressing infestations with systematic aerial baiting
2002	Independent scientific review	The program did not have data on what areas had been treated or not, and what was the treatment; many problems listed
2003	Program auditor	There was a scarcity of performance measures against outcomes
2004	Science review	Were surprised by claim of program killing 99.4% of nests when they could see fire ants surviving near ‘ground zero’
2006	Science Review	The treatment program was ‘poor and ineffective’
2009	Science Review	Surveillance methods are inadequate. Treatment methods are questionable
2013	Program auditor	Reports are just narratives, did not report against fit-for-purpose performance indicators
2015	Independent Review	Program cannot show how it has and will use funds and staffing to best effect
2017	Qld Audit Office	The program did not have a functioning information system, and did not collect data on specific measurable performance indicators

TABLE 2: AGENCY ADVICES ON PERFORMANCE OF ERADIVATION PROGRAM (Swepson, 2023)

Year	Source	Finding / Recommendation / Advice
2003	Consultative Cttee	Eradication was possible
2003	Consultative Cttee	Progress towards eradication to date has been excellent
2004	Program	Program was killing 99.4% of nests
2005	Consultative Cttee	Progress towards eradication had been excellent
2006	Consultative Cttee	Progress towards eradication had been excellent
2006	Consultative Cttee	Started blaming poor performance on funding issues
2009	Consultative Cttee	It was premature to cease the pursuit of eradication
2013	Consultative Cttee	Did not commission another audit of the program until 2019

Agency scientists did provide opinion to the authorities that 'Eradication' was possible.

In 2020, however, CSIRO then entered into the scientific argument, criticising in strong terms the non-compliance of movement control with the Regulation in Queensland. NSW, then Victoria, announced that they would no longer accept Queensland issued certifications of fire ant free potted plants.

Other Factors. At least three other factors may have had influence in holding the choice of strategy to an Eradication program for those two decades:

- Conflicts of Interest
- Shortcomings in Monitoring and Reporting
- Investigation and Inquiry

Conflicts of Interest. As it was an Eradication program, Queensland and its agency benefitted from 90% funding of the program coming from the Federal Government and other State Governments. A program termed as a Containment program did not qualify for any funding support, and Queensland would have had to fund all costs. Of the methods for conducting an Eradication program, the Queensland Government decided on a method allowing large employment of unskilled workers, which may have had political benefits. The effectiveness of a large slow ground force – termed herein a '*feet-on-ground*' method - for achieving Eradication was a principal cause of explanations of the failures by the Eradication strategy.

Reporting. The Eradication program gave reports upon its progress that disclosed the difficulties being experienced with eradicating the fire ants. Scientific reviews and audits were also adverse (see Table 1). These program reports, however, appear not to have been forwarded to authorities external to Queensland. This may have impacted upon the decision-making of external authorities deciding to continue funding the Eradication program. A summary of the favourable reports that were being made to external authorities, while the scientific reviews were making adverse findings and recommending a switch from eradicating to a containment approach, are shown in Table 2

Monitoring. Associated with this communication issue, the reports that were received were being criticised for not collecting the reliable and consistent performance data necessary to undertake a full and proper review or audit of the program's effectiveness and of its benefit-cost standing.

Investigation and Inquiry. These aspects of monitoring and reporting became the subject of public interest disclosures which led to investigations including one of Queensland's integrity bodies. It has been alleged that Queensland's integrity body, instead of investigating the disclosure that unfavourable information held within the agency was not being communicated to external authorities with responsibility for assessing and funding the program, may have investigated whether or not the program had reported the unfavourable information internally within the agency. The integrity body then dismissed the disclosure about external reporting on the findings made about internal reporting. QWAG is not aware of any denial by the integrity body that this is what was done.

Summary. Science appears to have been losing, to this date, the argument of Eradication versus Containment, despite the facts about the enormous spread of the fire ant infestation imported into Queensland but now being exported out of Queensland into at least NSW. Science may appear to have been dominated by interests focussed away from the purpose of the Disaster Management Act, namely, the Act's primary purpose of preventing the risk of the fire ant disaster spreading to new areas.

Flooding Example – Operating Wivenhoe Dam

The Disaster. Wivenhoe Dam is an unsafe, dual purpose gated dam. It has been described by an Inquiry into the 2011 Flood as the most dangerous infrastructure in Queensland. Because it is unsafe if it is overtopped – a rockfill wall at risk of washing out, leading to a flood wave going down the Brisbane River affecting 200,000 people and their property – the operation of the Dam during flooding has a Save-the-Dam procedure to be followed if a target condition is reached by any flood. A flood event in 2011 led to \$2.3 billion in losses and damages when the Save-the-Dam condition was reached. A class action by victims of the flooding led to damages being received of \$440, 000.

Such flooding, and worse if the Dam fails, thereby constitutes a serious disruption to the community, and is therefore a disaster under the Disaster Management Act.

Problem with Prevention. The problem with prevention regarding the operation of Wivenhoe Dam (and Somerset Dam at risk of failing if overtopped, by another mechanism) is a difference in opinion on the rationale to be adopted in controlling the flood passing through (and possibly over) the Dam.

Disaster Management Options. Options as to managing the risks of floods overtopping the Dam were:

- By basing decisions on determined Dam inflows from rainfalls already fallen and measured – termed the Rain-on-Ground [hence 'RonG'] approach – a strategy focussed upon avoiding higher Dam releases than would be required if the future rainfalls are overestimated, versus,
- By risk management, basing decisions on the most probable future rainfall [Rule 1] but making provisions for the worst case [Rule 2] – termed the Forecast Based Operations [hence FBO] – a strategy primarily focussed on adapting releases as best possible from the most probable rainfall to whatever rainfall occurs.

Current Management Option. In 2009, the Government approved the use of Forecast Based Operations [FBO] for floods through Wivenhoe Dam, rather than the RonG rationale that had been used to that time. The operators, however, were never trained in the use of FBO for floods threatening the Dam. When such a flood occurred in 2011, the operators went against the Manual and the FBO therein required, and used the RonG rationale. A class action by victims proved to a court that using FBO would have reduced damages by approximately \$1billion. During that class action and since that decision, however, the operators have continued to use RonG.

That difference in opinion appears to be one favouring a rationale that is understood by the operators in preference to a better performed FBO rationale in which the operators have not been trained and may not have an understanding.

Expert Opinions and Demonstrations of Performance. Two studies indicate the superiority of the FBO operational rationale that is not being used. Those two studies are:

- Simulations of the 2011 Brisbane River Flood submitted to the courts in support of claims by victims in the class action (Christensen, 2017)
- Case study by the Dam operators for a situation where the Dam failed (SEQWater, 2021)

Christensen’s Simulations using FBO. The simulations by this US expert produced in his 2017 report, and his 22 days of cross-examination by three primary barristers in the class action trial (Rodriquez, 2018), may demonstrate the **‘best that could be achieved’** using FBO. This **‘best’** was what was sought by those who introduced these FBO concepts into the operation of Wivenhoe Dam in the 2009 Manual. In his approach, Dr Christensen appears to have followed the two primary Rules of Risk Management,

- Rule 1: Decisions be based on the most probable case
- Rule 2: Provisions be made for the worst case

adopted by others (eg JCoS, 2007) in USA, as per the FBO rationale had been developed in that country.

Figure 1 shows the releases actually used when controlling outflows using the RonG rationale, against the releases when using FBO.

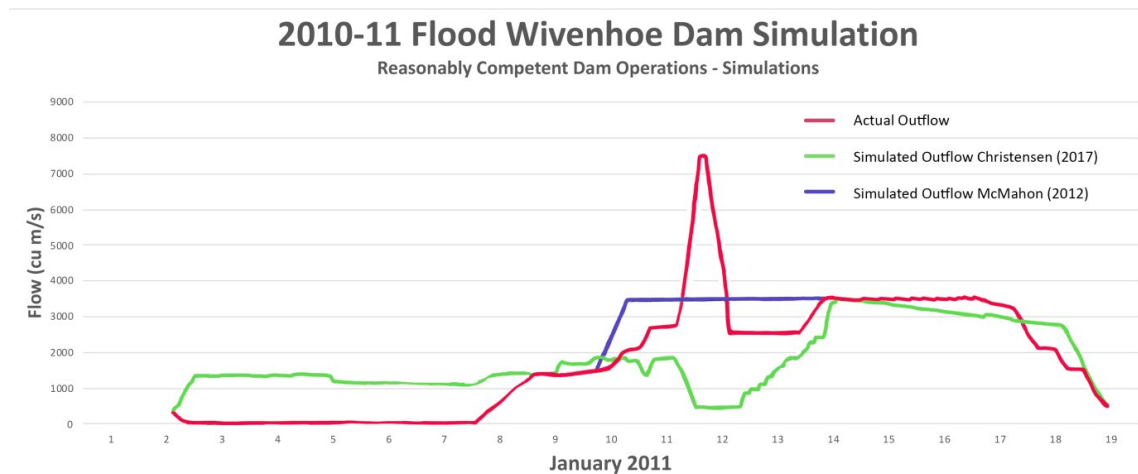


Figure 1: Comparison of Dam Releases with FBO vs RonG Operational Rationales

Dr Christensen’s simulations, termed ‘counterfactuals’ before the court, demonstrated that direct damages incurred in the 2011 event would have been reduced from \$2.3 billion to \$1.3 billion if the FBO based 2009 Wivenhoe Manual had been followed. Indirect damages were not allowed by the proceedings. The reductions when using FBO, in the flood characteristics causing the damages, direct and indirect, over what actually happened in 2011 using RonG, included:

- The trigger level for the Wivenhoe Lake to adopt Save-the-Dam operations was not reached in the simulation, where the trigger level was exceeded by a metre in the actual event which used RonG;
 - The simulated peak outflow from the Dam was 3500 cumecs, compared with an actual 7460m³/s cumecs during the 2011 flood – a 53% reduction;
 - The outflow from Wivenhoe Dam coinciding with the peak of the downstream tributary was only 460 cumecs; compared with 7460m³/s cumecs during the actual 2011 event – a 94% reduction.
- The peak flow at the confluence of the rivers, vicinity Moggill, using RonG during the actual event in 2011 was 9776 cumecs, but by using FBO, the peak was 6227 cumecs, – a 36% reduction.

NSW Court of Appeal summarised the status of Dr Christensen’s evidence (Basten et al, 2021; para144):
His expertise was properly accepted by the primary judge. ... Although there was much dispute over Dr Christensen’s methodology, some of these issues were resolved at an interlocutory stage and errors corrected. As to matters of substance, the primary judge accepted Dr Christensen’s evidence on a number of outstanding matters which are no longer in dispute

In this case, RonG caused the flood to reach the Save-the-Dam trigger whereas FBO enabled this trigger to be avoided. The second case study by SEQWater was about a situation where the Dam wall was overtopped when using RonG and failure initiated, when using FBO avoided Dam failure.

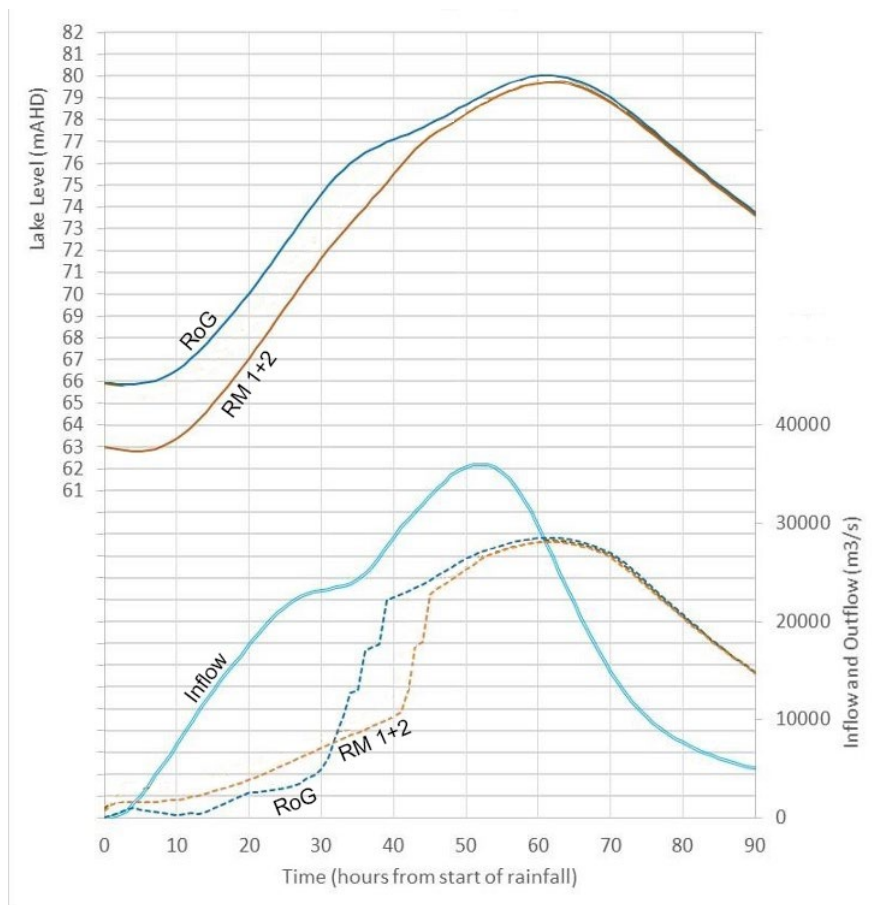


Figure 2: SEQWater (2021)’s Comparison of FBO (here ‘RM1+2’) and RonG (here ‘RoG’)

SEQWater Case Study of Dam Failure. In this case study, SEQWater compared the performance of RonG and FBO (using both Rules of Risk Management -here indicated by 'RM1&2') in responding to a flood that achieved Dam failure when using RonG. Figure 2 has been plotted without an intermediate case where FBO is used with Rule 1 practices only (see Tables 1 and 2). Note that the RoG line rises above RL 80m, that is, above the level of the Dam wall, but that the FBO line (marked 'RM1+2') only reaches to RL79.74. Clearly, RonG operations lead to Dam overtopping and failure, whereas FBO operations avoid Dam overtopping and failure (if the Fuse Plugs hold). The situation is caused by an average 2 day rainfall of 980mm, less than rainfalls recorded at locations north of Cairns during the recent cyclone Jasper.

TABLE 1: SCENARIO COMPARISON:- RAIN-on-GROUND versus RISK MANAGEMENT (refer Figure 3)

Scenario	Rain-on-Ground Forecast	Rainfall forecast influences immediate opening of spillway gates	Lowered initial lake level & rainfall forecast influences immediate opening of spillway gates
Simulation Abbreviation	[RonG]	[RM 1 only]	[RM 1&2]
Initial lake level (m AHD)	65.9m	65.9m	63.0m
Time gates fully opened	33 hours	4 hours	4 hours
Time 1 st fuse plug breach	33 hours	39 hours (6 hours later)	41 hours (8 hours later)
Time 2 nd fuse plug breach	35 hours	41 hours (6 hours later)	42 hours (7 hours later)
Time 3 rd fuse plug breach	38 hours	42 hours (4 hours later)	44 hours (6 hours later)
Peak lake level (m AHD)	80.04m	79.84m (0.2m lower)	79.74m (0.3 lower)
Time of peak lake level	61 hours	61 hours	62 hours
Source: SEQWater (2021) – the 2021 Manual			

TABLE 2: FLOOD WARNING TIMES SEQWATER'S EXTREME FLOOD CASE STUDY in 2021 MANUAL

Event	Rain-on-Ground Simulation	Risk Management Rules 1&2 Simulation
Flood Peak	3-12 hours (as a determined prediction)	63 hrs (as a most likely forecast)
Fuse Plug 1 breached	12 hours (as a determined prediction)	41 hrs (as a most likely forecast)
Dam Failure by Overtopping	3-12 hours (as a determined prediction)	63 hrs (as a worst case within BOM's range of forecasts)

The other advantage gained with the FBO operational rationale here is that 63 hours of warning of the Dam failure disaster are gained (a minimum 27 hours of daylight) by authorities and those under threat, whereas the warning with using RonG is reduced to 3-12 hours (daylight time is not assured). The warning times for RonG simulations of floods threatening Dam failure have a maximum of about 12 hours (SEQWater 2021, s J.4e), and have been as low as 3 hours, as occurred in the 2011 flood for the trigger to the Save-the-Dam strategy (SEQWater, 2011; Ayres et al, 2022). We are informed for this case study that the warning time for the fuse plug breach was 12 hrs (SEQWater, 2021, s K.6.1, p143).

Note that fuse plugs are sections of the rockfill Dam wall designed to be washed out and thus allowing greater releases from the Dam, as part of saving the Dam. Fuse plugs when washed out have caused total Dam failure. SEQWater's case study assumes that all fuse plugs hold to their controlled geometries.

Two matters seem most relevant for any comparison of outcomes and performances by operational rationales:

- **Flood Peak.** The RonG result gave a peak of 80.4m AHD, overtopping Wivenhoe. The RM simulation using Rules 1 & 2 gave a peak of 79.74m AHD, giving a 260mm freeboard against overtopping.
- **Flood Warning.** The RM simulation [RM 1&2] allowed usable warning times for responding to any disaster, warning times that the RonG simulation could not provide for areas immediately downstream of the Dam (see Table 2).

These are primary examples of what has been termed '*the mathematics*' of the advantages of FBO over RonG operational rationales for unsafe, dual purpose, gated dams under threat of failure from overtopping by a flood, at least for a flood with particulars similar to the 2011 Brisbane River flood and SEQWater's case study scenario.

Despite these advantages demonstrated to be held by FBO, SEQWater has continued, as recently as February 2022, to use RonG to operate Wivenhoe Dam.

Other Factors. At least three other factors may have had influence over SEQWater in holding to the choice of RonG as the operational rationale for controlling floods through Wivenhoe Dam, the most dangerous infrastructure in Queensland, in floods posing potential for disaster. The three factors are:

- Conflicts of Interest
- Disfunction across relevant authorities
- Investigation and Inquiry

Conflicts of Interest. Seqwater (2021) was published two months after the class action was decided. There still may have been a feeling of reputation loss by the authorities, professional entities and / or their consultancy firms, given the claims thereafter discredited about RonG – principal examples of such claims were:

- flood flows and depths would have been greater if RonG was not used - Dr Christensen showed that the RonG rationale missed the opportunity to reduce flows and levels and save \$1billion in damages
- the results achieved by using RonG were near to the best possible - the simulation on Figure 1 indicated that FBO using just Rule 1 of Risk Management, and FBO using Rules 1 and 2, were far

superior in the reductions in flows and water depths that the FBO rationale achieved in the counterfactuals.

Disfunction. The Queensland Flood Commission of Inquiry [QFCI] reported a number of inadequacies that were identified in the preparations for flooding undertaken by the government, by single organisations with responsibilities for flood related functions, by the technical control managers working in support of the operators, and by the operators.

By Government – an unfortunate hiatus in government oversight of the preparedness of dams and agency operators for flood events (QFCI, 2012;p604); no single agency had overarching responsibility regarding flood mitigation (QFCI, 2012; p600); and organisations being incapable of agreeing upon their respective roles (QFCI, 2011;p50);

By single agencies – using a floodable (access) flood operations centre (QFCI, 2011;p43); adopting communications practices that were in breach of the Flood Manual (QFCI, 2011;p54); failing to provide reports on the annual review of the Flood Manual for a decade, in breach of their agreement (QFCI, 2011;p41); and the Qld Flood Risk Audit being silent on key flood mitigation issues, including the ability of Seqwater to comply with its flood mitigation manuals in respect of Wivenhoe (QFCI, 2012;p604);

By Technical Control authorities within an agency – the operators were not supported by access to damage curves, the flow equations for releases through the fuse plugs, a hydrodynamic model (one used to exist, but was not updated when a platform changed), or a hydraulic model of the Bremer River (QFCI, 2011; p42); and,

By the operators – a lack of agreement on the definition of ‘urban inundation’.

The 2022 flood may have given rise to indicators that relevant authorities may again be suffering some disfunction in important respects. This is because, although SEQWater is continuing to use RonG as its basis for flood operations, the Regulatory Body used FBO (at least Rule 1 of FBO), and the Government has implemented a practice from Rule 2 of Risk Management by directing a major reduction in the Water Supply compartment behind the Wivenhoe Dam.

Reviews, Investigation and Inquiry. In 2011-12, a quasi-judicial inquiry was held into the operation of Wivenhoe Dam for the January 2011 Flood. While the detection of disfunction may be to the credit of the Inquiry and the SEQWater investigations and reviews that preceded the Inquiry, there may be indicators that the performance of the Inquiry was sub-optimum. Some shortcomings that may have caused the Inquiry to miss some attention to the FBO alternative, that may have needed to have been identified by that Inquiry, include:

- **Expertise in Risk Management.** The failure to call experts in risk management and FBO to review the flood operations and give evidence to the issue;
- **Dismissal of Victims.** The failure to give standing before the Inquiry to the victims from the Brisbane floodplain who had received advices and encouragements by experts and experienced practitioners to take civil action, after the victims were refused permissions to present expert evidence; and,

- **Refusal of Submissions.** The failure to publish and take evidence from risk management experts and experienced practitioners who sought to help the Inquiry through personal and organisational submissions.

Expertise in Risk Management. Only one of the experts selected for giving opinion and evidence to the Inquiry listed risk management as one of their areas of expertise. That professional was brought near to the issue by Counsel Assisting but not asked questions about the relative performance of FBO and RonG.

Dismissal of Victims. A small community immediately downstream of the Dam were given standing before the Inquiry, with representation by a barrister. The many times greater number of victims living on the Brisbane River floodplain in Brisbane's City and Suburbs were refused this benefit. As the class action showed, the victims had a case to be answered and were acting from a superior understanding of the causes of the flooding. That understanding was never allowed to influence the Inquiry directly, though some matters were raised through the media.

Submissions from Risk Management Experts and Practitioners. A submission from Risk Frontiers, then associated with the University of NSW, was published by the Inquiry. That submission made criticisms of the RonG approach at the higher level. Submissions critical of the detail of the operations conducted using RonG, and submissions providing constructs of argument of which the Inquiry appeared to be unaware, were made in multiple submissions after the Inquiry released its Interim Report. Criticisms of the Inquiry Interim Report were determined by the Inquiry staff to be 'insults' which needed to be withdrawn from the submissions if the submissions were to be published. Warnings too were given. Points of criticism about the truthfulness of some claims, the thinking about rationales, and perceptions of matters raised in the interim report may appear now to have been validated, either in the Final Report by the Inquiry or in the Class Action, and thus may likely have assisted the Inquiry at an earlier time to an improvement in its outcomes.

Summary. Science, with Dam operations too, appears to have been losing to this date within the agency the argument of Rain-on-Ground versus Forecast Based Operations, despite the facts about the sizeable advantage in probable outcomes that most likely will be gained when using FBO. Science may appear to have been dominated by interests focussed away from the purpose of the Disaster Management Act, namely, of preventing the risk of a flood wave descending down upon Brisbane and Ipswich from a Dam failure by a flood overtopping the wall of Wivenhoe Dam.

Lessons Drawn

From these two case studies, the patterns to events (with some variations to those patterns) can be identified, with a purpose then of this Inquiry asking itself what the Disaster Management Act and its administration can do to influence the patterns to a better outcome.

A first observation is that

managers and knowledge practitioners internal to an agency (including its consultants) can defeat the weight of expertise and demonstrations of superiority that can be assembled against any disaster-prone program or strategy that those internal managers and practitioners are defending, such as the *feet-on-ground* method against fire ants, and the *rainfall-on-ground* rationale against Dam failure.

What can Disaster Management do about this? It is recommended that:

Disaster Management [hence DM] could make a Register of In Mind Disasters [hence IMD] that Queensland is facing where prevention is the responsibility of government. Fire Ant spread and Dam failure could be two of them, with other Dams (not all) and other invasive fauna and flora (not all) added to each of these two categories of Registered IMDs.

DM will then have set itself into a position where it could:

- Impose technical and financial audit requirements on registered In Mind Disasters, to be paid for by an agency charged to be the principal for the disaster prevention responsibility with respect to that IMD;
- Select independent practitioners to conduct these audits;
- Report performance of agencies in meeting recommendations of technical and financial audits, and report upon any onset of disfunctional behaviours where multiple agencies are involved around one agency held to be the principal agency regarding the disaster prevention responsibility for a Registered IMD;
- Become an entity with standing before any judicial or quasi-judicial inquiry, enabled then to
 - bring all relevant science and decision-making procedures to the prevention of the Registered IMD
 - ensure the direct or indirect participation of victims and other stakeholders in inquiries and investigations
 - become an option for whistleblowers to make anonymous or open disclosures outside of an agency that may be, or may be perceived to be, suppressing information about the potential for disaster
 - make disclosures to integrity bodies of more serious matters of conduct

A second observation is that

Existing provisions for the DM Act to set standards could be directed at setting procedures that could then become the subject of scientific and financial audit. The use of these standards by principal agencies for registered IMD would influence those agencies to best practice in responding to lower order disastrous events not Registered as IMD's

In making these observations, it is understood that politics has the processes and power to override the mechanisms that agencies might establish to best serve the public. The practice, however, of requiring **'two signatures'** to approve a course of action in lieu of one signature works well in minimising error

and / or dissuading fraud in the management of funds and resources. A **‘two signature’** system that the above recommendation generates within Disaster Management, signatures by DM and by the principal agency responsible for any Registered IMD, would similarly act to minimise error and / or dissuade any fraud in the prevention of Registered In Mind Disasters.

G Harris
President

Point of Contact: Secretary G McMahon; [REDACTED]

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