Secretary - PDI

From: Ken Pearce [redacted]
Sent: Tuesday, 31 March 2020 1:32 PM
To: Secretary - PDI
Subject: Submission to Inquiry

Dear Mr Horton,

Thank you for the opportunity to provide further advice to the Inquiry. I comment as follows:

In order to address the Inquiry's Terms of Reference you will have to identify the reasons why:

1. the public sector discontinued the practice of strategic risk management in the mid to late 1980s;
2. the public and private sectors will not employ dam engineers;
3. developers do not subject the work of new engineering graduates to peer review;
4. the ANCOLD guidelines are so far below industry best practice standards;
5. the consultants consider that facilities built to industry best practice standards do not meet existing ANCOLD guidelines; e.g. Wivenhoe Dam
6. the water bureaucracy are turning facilities built to international best practice standards into hazards; e.g. Wivenhoe Dam
7. the Board of Professional Engineers do not require that dam engineers plan and design new large dams; and operate, remedy, and refurbish existing large dams;
8. the bulk water bureaucracy did not learn from the death of the little girl at Bedford Weir; the Millennium Drought, the flood devastation in the Brisbane River Valley in 2011; the flood devastation in the Callide Valley in 2013 & 2015; the flood devastation of Townsville last year; and the disasters at many other dams.

Dam engineers conventionally are professional engineers who practice dam engineering. They are civil engineers specialising in the areas of planning and design of new dams, and the operation, remediation and refurbishment of existing dams.

Bureaucrats progressively took over the Queensland Government's bulk water supply agency from 1986. By the mid to late 1990s, the agency had completely lost its dam engineering expertise, and the capacity to function professionally. Sunwater was spun out of the agency in 2000, and was very involved with ANCOLD at the outset. Sunwater has attempted to function by seeking the collective advice of professionals working in associated fields – this is clearly evident in the Paradise Dam Technical Review Panel. The water bureaucracy are effectively working as the dam engineers.

The situation appears to be that the bureaucrats decided to build a concrete overflow dam at the Paradise site. They engaged civil engineers rather than dam engineers to design and construct the facility. Had they engaged dam engineers then the engineers would have immediately put up a 'red flag', advising against the wisdom of building at that site. It is speculated that this is the reason why the bureaucracy discarded, and will not employ people with dam engineering expertise – they simply *get in the way*. It is not the fault of the civil engineers, as they simply did not know any better.

The bureaucrats did not realise how major an undertaking it would be, to build such a dam at the site, without the dam posing a risk to the downstream community. They built a structure that may have to contend with floods more than twice as big as the probable maximum flood at Wivenhoe Dam, without giving any real consideration to the dissipation of the energy flowing over the dam. This is a major issue that should dictate the design of the facility. The probable maximum discharge is eight times that of Wivenhoe Dam.

Other major issues include:

1. flooding implications for the downstream community;
2. the design of the dam, and dissipator;
3. the building of a dam on two shear zones in relatively close proximity to numerous known earthquake epicentres;
4. the building of a major dam in close proximity to significant bends in the river;
5. cross flow on the spillway;
6. building the dam without stripping the abutments;
7. building the dam upstream of an apparent choke;
8. the long run effectiveness of the grout curtain, and the upstream membrane; and
9. the absence of a gallery in the dam.

The area has experienced a number of earthquakes comparable to the 1989 Newcastle earthquake that killed 13 people and injured more than 160.

Finally, could you please provide me with a copy of Dr Schrader's papers, “Erosion of Concrete in Hydraulic Structures”; and the “Compendium of Case Histories”. I was unable to find them on the internet.

Kind regards,

Ken Pearce

Mobile: [redacted]