

JANUARY FLOODS, 2011

WIVENHOE DAM.

I have observed the imbroglia about the operation of the Wivenhoe Dam Radial Spillway Gates with more than a passing interest. It would appear to me that partaking in a "Search for the guilty" would be futile because, as usual, the "system" will produce a "Punishment of the innocent" and "Glory for the uninvolved"

Suffice it to say the following treatise offers a solution to the problems that have occurred. The authority of the author of this document to make such a statement is defined in the following photograph of a plaque which once adorned the spillway lookout at Wivenhoe Dam.



The author of this document is the ultimate line of the "Pecking Order".

Please be aware of the following disclaimer " The proposals contained in this document are based on inadequate information as a result of the bizarre ,even grotesque, attitude of the controlling authority SEQ Water.

1 in 100 A.E.P as opposed to the commonly used 1 in 100 year and so on..

It is my contention that the latter representation including the word "year" can lead to a dangerous wrong interpretation. ——(Once such an event occurs it must be about 80 years at least until a similar event occurs???)

The second proposal is to correct the history of Wivenhoe Dam so that the purpose/ purposes of the dam is clarified.

In the mists of antiquity (late1960's) a new source of domestic water supply was being planned for Brisbane and surrounds. Two damsites were available ,namely Wivenhoe and Wolf-dene. Wivenhoe got the nod because it possessed a better potential for flood mitigation!

In 1972 resumption negotiations commenced with the owner of the largest amount of af-fected land. In 1973 formal resumptions of the land involved commenced.

January 1974, the infamous Brisbane floods

In 1974 detailed design of the dam commenced obviously with the flood mitigation capabili-ties enhanced as much as possible.

In April 1977 construction of the dam commences. (Stage 1).

In April 1978 construction continues (Stage 2)

In 1979, construction deferred because of financial constraints

In 1980, construction recommenced (Stage 3)

In August 1983 final closure of the dam and permanent water storage commences.

In December 1984 Dam civil works complete.

In August 1984? Installation and testing Radial Spillway Gates complete.

Sometime after January 2000 , figures for the Probable **Maximum Flood** revised upwards.

Hence the need for the emergency "Fuse Plugs".

The third proposal is to make structural corrections. It is not plainly obvious to the author of this document as to why the "Fuse Plugs" were located entirely in the flood storage of Wivenhoe Dam and thus in effect reducing the flood storage of the dam.

Why not locate the three fuse plugs in the wave margin from El. 77.0 to El. 79.0 as fol-lows??

Fuse Plug No 1	Activation Level El.77.20
Fuse Plug No 2	Activation Level El. 77.70
Fuse Plug No 3	Activation Level El. 78.20

Such an adjustment would maintain the flood margin at the original levels!!

An additional spillway located near Saddle Dam No 2 has long been rumoured! Perhaps the construction of an additional conventional spillway (Crest Level in the range El.73.0 to El. 74.0) should be considered.?)

And now are the pertinent recommendations concerning the operation of the Radial Spillway Gates

(1) There should be a **ritual burning** of all copies of the present operating manual. This would be seen to remove the symbolic “crutch” of the operating bureaucracy and possibly indicate that some initiative is required during gate operation. The only more verbose and cumbersome document I can think of is a Kevin Rudd speech. Perhaps the bureaucrat who blacked out large sections of the eventually released did us all a favour!

(2) Any future gate opening documentation is to be regarded as a set of “guidelines” and no more.

(3) The **prime objective** of any set of gate operation is the structural integrity of the dam. (I would have thought this was blatantly obvious!)

(4) a secondary objective is to have when the event is over a Full Supply of water available for domestic usage (after all this was the original reason for the dam!). However it should be easily reached as it defines the level at which the gates are closed.

(5) A further secondary objective is flood mitigation of downstream flooding by sympathetic gate operation where possible.

(6) It should be recognized that when at the dam $\text{Outflow Rate} < \text{Inflow Rate}$, then the downstream river is obtaining a benefit regardless of the flows from Lockyer Creek or the Bremer River. This is the case when the level in Wivenhoe Dam is rising!

(7) The Gate Operator should remember the adage “you can not win them all”! The author has the perception that during the January floods the gate operator tried to win them all and ended up nearly losing everything.

(8) Now to refine and improve the gate operating schedule. For this purpose we shall define a “Unit of Opening” as 1 Gate raised 0.5 metres vertically. As a rough guide this will discharge downstream about 50 cumec (Cumec=Cubic metres per second)

With opening of the gates the openings should be symmetrical (or as close as possible) about the longitudinal centreline of the spillway. For example an opening of two units could be

No 3 Gate x 2 Unit

or No 2 Gate x 1 Unit & No 4 Gate x 1 Unit

or No 1 Gate x 1 Unit & No 5 Gate x 1 Unit

and so on.

Now for the case of the water level in the dam rising:- Should the water level rise by **0.2 metre** then the operator should consider the option of raising the gates. If the rise occurred in less than 5 hours then a raising of the gates of 2 Units should be considered.

If the time for the water level to rise **0.2 metres** is greater than five hours then perhaps raising the gates by 1 Unit is more suitable.

This matrix of gate operation is easily remembered as the “**.2 x 2 matrix**.”

If the dam water level is falling then after a fall of **0.2 metre** then the gates can be closed by 2 units depending on the time taken (< 5 hours). Quite a simple system really

These are only guidelines, but a point of caution is that moving the gates in the opposite direction to the movement of the water level is a **perilous manoeuvre**.

Operation of the gates can be quite successfully done with the following

- (a) A continuous feed of the water level in the dam
- (b) Graph Paper
- © Pencils
- (d) Ruler
- € Eraser.

And finally who should actually make the decisions about the Gate operation. Well certainly **not a committee** (de facto or otherwise). It has to be a **very independent person**. When choosing from a selection of applicants I would be very wary of anybody with a smooth ,professional C.V.!

In conclusion, to support my assertions above I have quite a few spread sheets which are available to anybody at no charge. I hope that the results of the inquiry are positive but alas I fear that this will not be the case. However I can guarantee on thing—”the Lawyers will get ever richer”. For no particular reason other than the space is available this is how the Wivenhoe Dam Spillway looked in December, 1981

Ian Chalmers B.E., B. Econ



WIVENHOE DAM

CONSTRUCTING AUTHORITY - THE CO-ORDINATOR GENERAL

THE CO-ORDINATOR GENERAL

SIR SYDNEY SCHUBERT
B.E. Honors 1st SA, Dip. Bus. Admin.,
Dip. Highway Traffic, F.I.E. Austl.
F.R.S.C.E. F.A.I.M.

DIRECTOR TECHNICAL DIVISION
DIRECTOR ENGINEERING BRANCH

J.J. MULHERON B.E. Grad. Dip. Bus. Admin., M.I.E. Austl.
P.M. PHILLIPS B.E., M.I.E. Austl.

DESIGN AND CONSTRUCTION SUPERVISION - QUEENSLAND WATER RESOURCES COMMISSION

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ASSISTANT COMMISSIONERS

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W. M. SHARP B.E., M.I.E. Austl.
C. G. TAGGART A.A.M.C.

DIRECTOR CONSTRUCTION DIVISION
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SENIOR ENGINEER CIVIL DESIGN
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AND ELECTRICAL DESIGN
SENIOR ENGINEER SPECIAL PROJECTS
PROJECT ENGINEER
SUPERVISING ENGINEER

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K. D. NUTT B.E., M.I.E. Austl.
P. K. McMAHON B.E., M.I.E. Austl.
R. RUSSO M.E., M.I.E. Austl.
C. W. P. McLEOD A. Dip. Elect. Eng., Dip. W&S. Eng., M.I.E. Austl.
T. D. FENWICK B.E., M.I.E. Austl., I.C.E.
J. F. MIENERT B.E., M.I.E. Austl.
I. A. CHALMERS B.E., B. Econ., M.I.E. Austl.

