The
VALUE
TIMES

INSTITUTE OF VALUE MANAGEMENT AUSTRALIA
Ensuring better value for money

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President's Message

Culture is Everything

Hello Everyone,

Welcome to the Spring 2020 Newsletter.

From time-to-time in these articles, I've written about organisational culture, including project culture, arguing that it is a major factor in helping or hindering efforts to achieve best 'value for money'.

In particular, I've highlighted the words of the management guru Peter Drucker, who is credited with coining that now-classic phrase, "Culture eats strategy for breakfast".

We continually reinforce this principle, in our teaching and practice, by strongly emphasising that we can have in place all of the latest management techniques and equipment, but if we do not have the appropriate 'culture' then we will reduce opportunities to achieve best 'value for money'.

I recently came across an article in The Australian newspaper in which the headline included these words: "culture is everything". This naturally caught my attention! The full headline read: Australian Ethical's John McMurdo says 'culture is everything'.

The author of the article was Joyce Moullakis, Senior Banking Reporter to The Australian. In the article, John McMurdo is quoted as saying that he and his company held a strong view that "culture is everything". He said that it is "intrinsically linked" to financial performance, with controversies at Rio Tinto and AMP underscoring key risks around the destruction of 'value'.

Rio Tinto announced the exit of CEO Jean-Sebastien Jacques and two executives as a result of an investor backlash against its destruction of the ancient Juukan Gorge rock shelters in the Pilbara. "It does cause serious destruction of value when these issues flare up, so that's exactly what we have an eye on," McMurdo said.

"Rio, and AMP before it, clearly show where society's and investors' expectations are at. They want action, which translates into real change that will stop the same terrible mistakes and misconduct recurring. That means action well beyond an apology and a few bonus cuts."

When McMurdo talks about "value", he is, of course, referring to the monetary value of shares on the stock market. But whether we're talking about the monetary value of shares or value for money for products and services this matter of "organisational culture" remains critical.

The Hayne Royal Commission into banking also called for organisational cultural change. This was triggered by dishonest and sometimes criminal behaviour by banking and finance organisations.

Case after case showed that customers were not getting good or, in some cases any, value for money for the fees they were being charged. The Commissioner's final report recommended deep organisational cultural change across the whole sector.

"Culture eats strategy for breakfast"

Project teams exhibit their own organisational culture, too. It's not just large organisations — and it really does affect 'value for money'.

It's crucial that Value Management facilitators are alert to this so as to help build positive cultures and mitigate the potential effects of negative cultures.

Typical negative project-examples include people not speaking up for fear of being put down or, maybe, failing to encourage communication with people outside of the immediate project team.

I could add many more examples to the list, but I'm sure that you get the idea.

Many of the steps that we put in place in the Australian Standard [for Value Management – AS4183:2007] as part of the Value Management process help to create a positive working culture.

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These steps include building shared knowledge and understanding of requirements from multiple perspectives including all key stakeholders. The keyword here is "shared", and it's crucial!

Creating and evaluating a host of ideas about how to achieve the desired outcomes also is a way to build a positive culture if such sessions are well conducted. Then, as the Value Management process continues, there is further broad engagement in selecting an option that is judged to deliver best 'value for money'.

"... if we do not have the appropriate 'culture' then we will reduce opportunities to achieve best 'value for money"

There can be no question that leaders frame and drive culture. This applies to CEOs of large organisations as well as to Project Managers and Team Leaders. This vital matter of organisational culture sits over and above all of the procedures and techniques that are essential parts of planning, design, procurement and operations.

The pursuit of best 'value for money' starts here!

Dr Roy Barton
President, IVMA

Paradise Dam Improvements Options Assessment

This article is Part One of a two-part review of options assessment for Paradise Dam.

In Part One an analysis of the dam's background, problems, and the long-term options considered for dam improvement works is provided.

In Part Two, the options assessment process will be reviewed with the application of the Value Management study method.

Paradise Dam, constructed between 2003 and 2005, is a 300,000 megalitre (ML) storage comprising a 52-metre high, roller-compacted concrete gravity structure on the Burnett River, approximately 80 kilometres southwest of Bundaberg, Queensland.

The dam provides 124,000 ML Medium Priority (MP) agriculture and 20,000 ML High Priority (HP) industry and community water allocations annually.

The dam filled in 2010 and suffered some damage in a 2011 flood. This flood may have made the dam more susceptible to damage from a 1-in-200-year flood in 2013.

A two-year safety review report after the damage from the 2013 flood was completed in 2016. The report identified concrete defects in the dam and the need for a major redesign of the spillway.

A commission of inquiry report into the troubled Paradise Dam went before the Queensland State Cabinet in early 2020. Simultaneously, Bundaberg-region farmers appealed for a delay in plans to reduce the dam's spillway level by 5m before the 2020/21 wet season because of safety concerns. However, work is currently proceeding to reduce the spillway level by 5.8m.

The Queensland Government engaged Building Queensland to assess the long-term options for dam improvement works for Paradise Dam. The need to assess options is a common objective of a Value Management study.

Options assessment

The options assessment involved a multi-criteria assessment (MCA) of several options including:

Option 1A
RL67.6m, maintaining the constructed maximum primary spillway height.

Option 2
RL62.2m, reducing the maximum primary spillway height by 5m.

Option 3A
RL57.6m, reducing the maximum primary spillway height by 10m plus alternative water supply options.

Option 4A
An optimised spillway level between 5m and 10m.

The important elements identified to define long-term options included:

- confirming water demand
- establishing water security requirements
- resolving the dam safety issue.

These elements are interconnected, involving features that are highly uncertain. The best dam option solution is not readily obvious.

Water demand is from agriculture, industry and urban needs. Agriculture comprises the main water demand and is generally

based on the area of agriculture, types of agriculture and rainfall deficits which vary from year to year.

The reporting notes that perennial tree crops (e.g. macadamia, avocado) have significantly different risk-characteristics to low announced water allocations when compared to annual crops.

The reporting appears to grapple with water security. From an irrigator's perspective water security would generally involve two aspects. Firstly, sufficient water each year (rainfall and water allocation) to support a financially-viable agricultural output and secondly, a water allocation reliability that would address a potential rainfall shortfall, which could last months or years, to avoid an unsustainable financial loss or a loss of perennial trees.

Water security is premised on the yield available from the different options of water storage volumes.

The dam owner, SunWater, advised the yields (converted to MP equivalents (ML/year)) for the different storage options. The reported estimated yields are a constant nominal value for each year to 2050.

However, the reporting does not explain how the estimated yields have been determined. It is presumed the yields from the dam for the different storage options would be based on hydrology modelling using nominally 100 years of runoff records to determine a long-run average of water availability.

Resolving the dam safety issue is related to the final height of the spillway including determining the repair works needed to meet safety requirements at an acceptable cost. A higher spillway level ensues a larger storage volume but results in a larger dam wall safety risk and a higher cost to rectify. Hence the Building Queensland options assessment seeks to determine a final optimum dam spillway level.

The MCA process focussed on the key criteria of dam safety, water security and the indicative cost of the options. The MCA scoring for dam safety identified:

- Option 1A might achieve a risk position below the Australian National Committee on Large Dams (ANCOLD) life safety limit of tolerability
- Option 2 may achieve a risk position below the ANCOLD life safety limit of tolerability and may achieve a 'as low as reasonably practicable' (ALARP) risk level
- Option 3A is adequate to achieve a risk position below the ANCOLD life safety limit of tolerability and would likely achieve ALARP
- Option 4 is expected to have a risk position between options 2 and 3A.

In summary, dam safety options 1A and 2 had equal worst scoring, option 3A the best and option 4 scoring between option 2 and 3A.

The MCA scoring for water security identified the same raw scores for options 1A and 2. Reporting stated where options had yield higher than the maximum aggregate demand, their score was capped to ensure that significant excesses of unused water would be not counted as a benefit. This indicates any stored volume above RL62.2m does not enhance water security (i.e. option 1A).

In summary options 1A and 2 had the highest water security scores, followed by option 3A and option 4 the lowest.

The MCA scoring for indicative cost scored option 1A the lowest (i.e. highest cost option), and option 3A the highest score (i.e. lowest cost option) followed by options 4 and 2. Minor criteria of recreational use, environmental risk, and social and cultural risks were also scored for the MCA process.

In relation to the total MCA scoring, option 3A had the highest score and option 1A the lowest, options 2 and 4 in between. However, if indicative cost was excluded from the scoring – option 1A had the highest score (i.e. highest technical score).

The reporting concluded the options essentially had similar total scores and a preferred option could not be determined at this stage. Further, it appears the MCA process has not resolved the connections of dam storage volume (yield) with irrigators' water reliability needs.

Essential works

The Queensland Government has instructed the lowering of the spillway at Paradise Dam by 5.8m to improve its stability and the safety of downstream communities. Other significant improvement works will then follow.

It appears the government is not prepared to risk the dam to another wet season and a potential 1-in-200-year flood event which has a 0.5% probability of occurrence. Six

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Paradise Dam Improvements Options Assessment

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wet seasons have passed since the 2013 flood. The probability of a 1-in-200-year flood event occurring in this six-year period was 3%.

It is probably not coincidental that the 5.8m spillway lowering corresponds to the MCA scoring conclusion that stored water above this level does not enhance water security. But irrigators and the Bundaberg region community appear to question this position and believe the full storage volume might be needed for water security. There is also concern that once the spillway is lowered it might be unlikely that it would be raised in the future.

Further investigations and options assessment

The options assessment report indicates further technical work and investigation is to be undertaken by SunWater. In parallel, Building Queensland will undertake a more targetted demand assessment to build on the service needs, demand estimates and options assessment work, and confirm projected demands and further investigate the yield required to meet water security expectations.

The reporting indicated it would be prudent to investigate the possibility of establishing an interim allocation product (e.g. a product that is more reliable than MP, but less reliable than HP) and pricing. This product would enable irrigators of perennial tree crops to purchase and use an efficient portfolio of water allocations that better meets their needs and risk-profile than the current MP allocation regime.

The further work will allow government to consider and decide upon the preferred long-term option(s) by the end of 2020. It will also inform completion of an accelerated detailed business case by the end of 2021 to recommend a final investment decision to government for the preferred long-term option for Paradise Dam.

Consultation with local stakeholders is planned and will be important to achieving a shared understanding of demand assessments, yield and water security expectations. The further technical work must demonstrate the yield modelling for each of the dam storage volume long-term options and provide stakeholders with an understanding of the yield outcomes over an extended period including realistically expected dry periods (i.e. years).

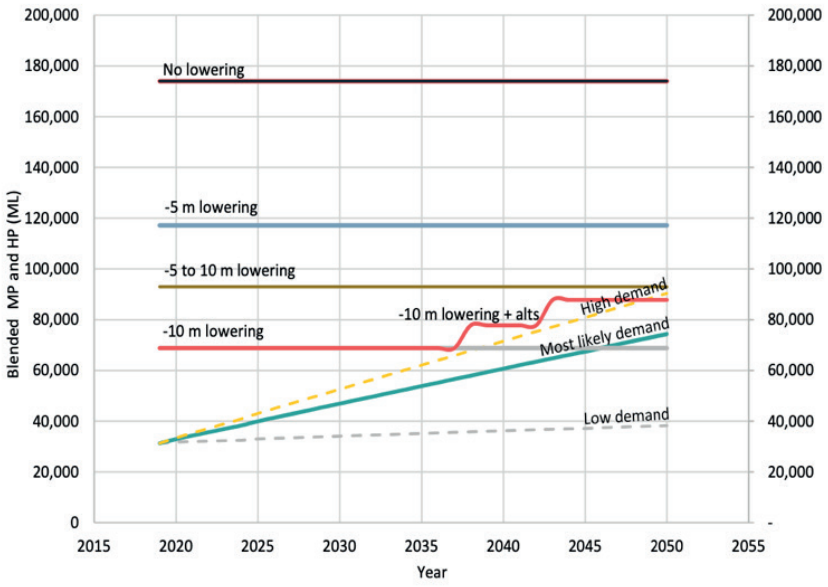


Figure ES1. Estimated demand and yield ML/year (demands converted to MP equivalent)

Value for money assessment

The further work should review the MCA process to determine the preferred long-term option. A technical assessment of the options should be undertaken, separate from cost, to present a technical ranking of options.

The cost of the options should be considered in a financial assessment to determine a financial ranking of the options. A 'value for money' assessment should then be undertaken to determine an overall ranking of options.

The MCA process is technically based on two main criteria – dam safety and water security. Not surprisingly, the reported MCA results had similar total scores between the options as the scores generally balanced each other out for these two main criteria.

The MCA process should consider scoring at a sub-criteria level to enhance scoring differentiation. The MCA process should also consider other important engineering criteria, namely dam functions and delivery surety. The weightings of the MCA criteria should be determined by the paired comparison process in preference to a subjective weighting assessment.

The MCA process could be strengthened by 'value for money' processes including facilitated Value Management studies with stakeholders to clarify the dam's Value Statement. This will ensure a structured and robust options analysis and assessment process to determine an agreed preferred long-term option.

In Part Two, the features of the options assessment process will be considered in more detail including how it can be undertaken as part of the Value Management study process to ensure a 'value for money' outcome for the Paradise Dam preferred long-term option selection.

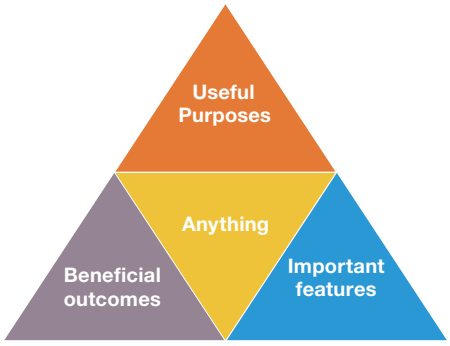
Michael Ord
Director, IVMA

Where to now Australia?

We are used to applying the value triangle to projects, programs, processes and products but how does it stack up at a strategic level and could it be of use in charting a post-Covid recovery?

"We have to achieve enormous environmental, social and economic goals with the most efficient use of resources possible"

The Covid-19 pandemic, consequential recession and the massive borrowing to which Australia and most developed countries have committed have produced a perfect storm. We have to achieve enormous environmental, social and economic goals with the most efficient use of resources possible in a limited time.



Critical, and condition precedent, to economic recovery is the rapid reduction in human-induced greenhouse gases which the Secretary General of the United Nations, Antonio Guterres, has stated must reduce by 7.6% each year for the next 10 years.

The United Nations advised in October this year that accelerating global warming (climate change) had resulted in three quarters of a billion more people being affected by catastrophic events of nature over the past two decades than in the preceding 20 years.

The organisation warned that government failure to take climate change seriously was "willfully destructive" and that, as a consequence, planet Earth is becoming uninhabitable for millions of humans.

So how might the Value Triangle assist in achieving this monumental endeavour? To start the ball rolling:

Useful Purpose: 1 Survival.
Beneficial Outcomes:

1. A more stable planetary environment with reduced environmental damage
2. Significantly improved human and animal health
3. Reduction in inequality
4. Increased employment opportunities
5. Reduced economic damage.

Important Features:

1. Equitable distribution of benefits
2. Individual, organisational and national cooperation
3. Reduction in conflict.

In assessing Beneficial Outcomes at this global scale, it is necessary to ask, 'beneficial to whom?'. Beneficial to flora and fauna? Beneficial to society and nations generally? Beneficial to business? Beneficial primarily to elite groups (e.g. economically advantaged)?

Identifying and articulating how benefits may be received will be essential if people are to be enrolled and committed to achieving agreed, high-level objectives. Achieving the right balance and communicating it – with the absence of any 'fake news' – will be critical to achieving the Useful Purpose.

By way of background we should look at the fossil fuel industry's early 1980s climate projections.

In 1982, Exxon predicted that by about 2060, carbon dioxide levels would reach around 560 parts per million — double the preindustrial level — and that this would push the planet's average temperatures up by about 2°C over then-current levels.

One look at the Exxon graph below will reveal that this year, with atmospheric carbon dioxide levels at 413 parts per million and having passed the 1.1°C average global surface temperature rise in 2015, Earth is very close to the company's dire predictions.

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Where to now Australia?

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So where should a post-Covid recovery start? Perhaps a quick SWOT analysis of Australia's position might assist.

Strengths

- A generally well-educated population.
- Immigrants providing skills, experience and contacts with other nations.
- Australian research has led the dominant low-emissions energy technology development – photovoltaic panels.
- Australians are renown for being early adopters of new technology.

Weaknesses

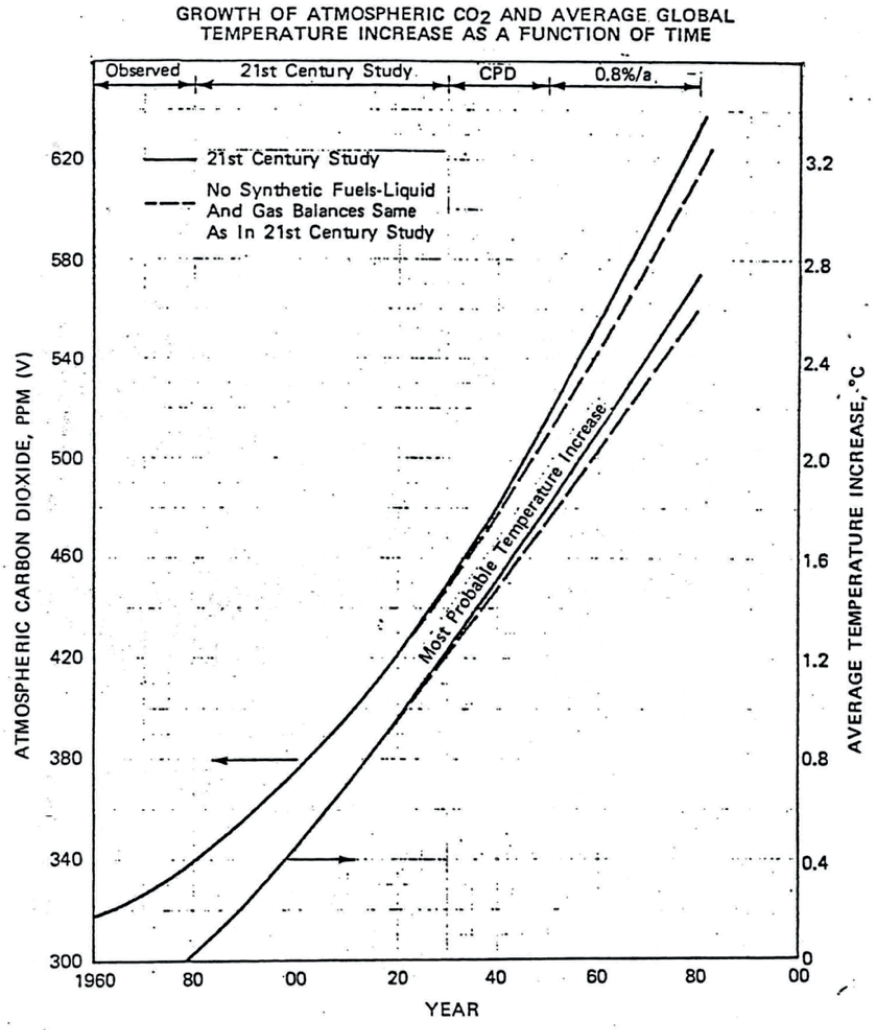
- Australia historically has a highly variable climate.
- Increasing social inequality.
- Dysfunctional management of Australia's critical resource – water.
- Heavy reliance on the export of raw materials for value-adding to occur overseas.

Opportunities

- Continue research into low-emissions technologies in agriculture, energy, and transportation.
- Generate low-cost renewable energy to power the economy.
- Refine some raw materials here rather than overseas using low-cost local energy.
- Utilise low-cost energy to create export energy e.g. electricity, ammonia, hydrogen.

Threats

- Australia is the developed nation most at risk as a consequence of global warming as existing climate variability becomes more extreme as temperatures continue to rise (125 less-developed nations are at even greater risk).
- China seeking to broaden its source of iron ore to include newly developed deposits in West Africa, which may reduce imports from Australia.
- China has announced a goal of achieving net zero emissions by 2060 which will impact its fossil fuel imports from Australia.
- China is threatening to add to the barley, beef and wine bans by reportedly ordering its heavy industries to reduce the use of Australian coking and thermal coal.



1982 Exxon internal briefing document

Exxon's private prediction of the future growth of carbon dioxide levels (left axis) and global temperature relative to 1982 (right axis)

- Inaction by the Federal Government despite the Reserve Bank of Australia repeatedly warning that climate change will have a "profound" financial impact.

The present government-appointed representatives from a small section of the Australian economy, the gas industry, to propose the recovery from the Covid-induced recession is the very opposite of the multi-stakeholder Value Management approach. The recommendations of this narrowly focussed Covid-19 Commission proposed a gas-led recovery that will continue Australia's high per-capita greenhouse gas emissions and result in wasted capital and 'stranded assets'.

Time and options for Australia to begin to act to effectively reduce its exposure to global warming and to take commercial advantage of the significant rewards to be gained from investment in a low-emissions technology are running out.

But isn't all this 'blue sky stuff' risky? Yes, but despite last year's Covid induced recession, many low-emissions technology companies have done spectacularly well.

Forbes magazine reported in October this year that NextEra, a wind and solar energy company, became the largest energy company in the US when it overtook Exxon by market capitalisation. Further, investment a decade ago in NextEra would have delivered a return on capital of 600%, the same investment in Exxon would have returned negative 25%.

One year ago US investor, David Leitch, assembled an investment portfolio of global renewable energy shares across 36 companies and 14 countries. The mean

"But isn't all this 'blue sky stuff' risky?"

12-month return was 99%, the median 31%. Six Australian companies made a return of 29%. Companies in four countries (India, Israel, Canada and the US) made aggregate returns of over 150%. Of course, past performance is no guarantee of future performance!

Electric car company Tesla produces a fraction of the number of cars that conventional carmakers produce yet it is presently valued at more than the next five biggest car producers combined.

This year global management consultancy, McKinsey & Company, advised that for every million dollars of capital invested, five more jobs would be produced in renewable energy than if it were to be invested in fossil fuels. And there are no ongoing fuel bills to pay!

Economist Ross Garnaut has described Australia's low-emissions and reduced climate risk future in his book Superpower:

"The fog of Australian politics on climate change has obscured a fateful reality: Australia has the potential to be an economic superpower of the future post-carbon world."

If we fail to realise these opportunities, we will have failed to achieve what our 'primitive' ancestors achieved – a better world for our children and grandchildren than the one we inherited.

There is much in the Value Management approach that can be used to chart a safer and more prosperous future for Australia than the one that currently beckons.

Critical will be consultation with a wide range of stakeholders to ensure that their interests, contributions and commitment are incorporated in the considerations and actions.

We have no time to lose.

John Bushell
Chair, Publications and Events Committee, IVMA