

## President's Message

### Total System Viewpoint

Hello everyone, and welcome to the Winter edition of *Value Times*

We've recently been working through the principles involved in getting best 'value for money' and in this edition, we'll continue that theme.

As I've said, the Institute is in the business of helping people and organisations achieve best 'value for money', regardless of the activity.

In the last two editions of *Value Times*, I've written about the need to separate *value* from *money* which is the first principle — some find it very surprising — but this goes to the heart of the matter.

Remember Daniel Bernoulli's comment way back in 1738: "The value of an item must not be based on its price but rather on the utility which it yields."

It's the separation of monetary value from the utility or usefulness that the item delivers — whether that item is a cog in a machine or a whole new hospital.

So far, we've covered the first four principles, and in this edition, I'm moving on to the fifth, which is: *Keep the whole system in mind*.

My thoughts go back immediately to a completely designed new hospital on which we conducted a Value Management Study.

The design was abandoned after looking at the wider system.

A whole new proposal was put forward to re-develop the existing hospital to deliver the healthcare needed. It was an action

item from the Value Management workshop that led to the discovery.

The action item was to explore the broader healthcare system for other possibilities.

This led to the realisation that the healthcare system requirements could be met by upgrading the existing hospital with resulting savings of millions of dollars, and also a huge reduction in risks associated with buying and developing new land.

In checking out other systemic solutions, we need to consider opportunities across the whole system, not just within the narrow boundary of the situation being considered.

This, I've discovered, is the single most repeated error — that of not exploring other possibilities, system-wide.

There might be a broader system solution — as there was with the hospital — that could eliminate the need for the project altogether.

By considering possibilities beyond the currently defined boundary, we will immediately provide a more comprehensive understanding of the context of the defined problem together with other possible solutions.

Taking a broader view of the system also encourages us to think about wider system solutions.

We are trying to get 'the system' — whatever that system may be — to work as well as possible.

In the case of the hospital, we were simply urging the team to look for the best

healthcare solution. We always want to consider options that go beyond the currently perceived boundaries.

An advantage of seeking broader systemic solutions is that more people are drawn into the discussion.

This, in turn, leads to a greater number and range of ideas, some of which may be advantageous to the project.

There's no question that taking a wider systemic view enables better decision-making. Projects are viewed differently by doing this.

Simply by asking questions such as "what system is this a part of?" can radically change things.

We can certainly explore other systemic options — but there's one catch! *You must do it early*.

It is imperative that questions about systemic issues are asked early in the piece. If not, we might find that an opportunity to improve 'value for money' has been lost, because so much time has been invested in the current proposal and there's no time to go back.

So there we have it. Another principle in the journey to achieve best 'value for money'. We can do this on all projects, providing it's done early enough.

This is just another way to help clients achieve best 'value for money'. More next time.

**Dr Roy Barton**  
President, IVMA

## Facilitator's Casebook

### Achieving Sustainable Outcomes in Sugar Processing

In the past 25 years, David Baguley has facilitated hundreds of Value Management Workshops. In this column, David will highlight the versatility of the Value Management process and tools by sharing Case Studies that demonstrate how 'value for money' can be delivered in different ways.

*This Value Management Study sought an energy solution to provide a 2.4MW electricity supply to a Sugar Mill. It concluded by recommending that a 30MW energy supply system that powered the Mill as well as approximately 18,000 houses was the most financial and economical solution for the Mill and the community.*

#### Situation

The author and his client developed a process for conducting pre-feasibility studies with a range of potential Joint Venture partners.

The client, an energy producer, wished to explore business opportunities with large energy consuming plants such as Paper and Sugar Mills to optimise total energy usage.

A Sugar Mill had bagasse-fired boilers providing steam to a small turbo-alternator (2.4 MW), to plant drives, to the sugar production process and to an ethanol plant.

Power used in the process was supplied from the turbo-alternator and also purchased from the grid. The internal power was only available during the annual crushing season that lasted between 20 and 22 weeks.

#### Process

Using a series of workshops, the author facilitated an understanding of the issues and opportunities, the development of technical options, the refinement of options to a viable commercial proposal, and the marketing of the proposal to key decision-makers in the various organisations.



Sugar Mill, Queensland

The study team included members of the Sugar Mill owner's Technical and Commercial staff, the energy producer, the Department of Environment and potential service providers.

The team challenged the need to restrict energy production to only the sugar-crushing season when bagasse was available.

The boilers in the Sugar Mill were capable of being fired with a number of biomass fuel sources: biomass refers to an energy source that is naturally self-sustaining.

The prime alternative biomass source identified was the green waste produced in Queensland's southeast corner and normally transferred to land fill or burnt.

#### Outcome

The team recommended the installation of a 30 MW turbo-alternator and boiler that was sufficient to supply the electrical and steam needs of the Mill and distillery and export 'green energy' equivalent to the annual usage of more than 18,000 average homes.

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*“Improving the viability of the Sugar Mill ensured the survival of the local sugar producers and their workforce.”*

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This project will displace sufficient coal-fired generation to reduce overall carbon dioxide emissions by about 130,000 tonnes per year.

About 100 jobs were created during the 21-month construction period. Permanent jobs will also be created, including fuel supply contractor personnel when the plant is operational.

# 2032 Brisbane Olympics

## Background

In July 2021, the International Olympics Committee awarded the 2032 Olympic and Paralympic Games to the city of Brisbane, Queensland.

The Games will be held from 23 July to 8 August, predominantly in Brisbane but also in some regional locations.

They will generate a significant influx of tourists, athletes and support crews, media and foreign dignitaries.

Consequently, the Queensland Government will invest in the upgrading of Brisbane City infrastructure as well as transport and road systems between the Sunshine Coast and the Gold Coast.

Brisbane's 2032 Olympics will be the first Games contractually obliged to operate in a 'climate positive' manner, which is part of a bid to avoid the legacies of huge debts and abandoned stadiums faced by some previous host cities.

Operationally, this means that the Brisbane Olympics will have to offset more carbon emissions than it produces.

An important background to this challenge is that in 2022-23 Queensland obtained 74% of its electricity from fossil fuels and 26% from low emissions renewable energy.

By contrast, in the same period South Australia's energy sources were exactly reversed: 26% from fossil fuels, 74% from renewable energy.

Whilst details of how 'climate positive' operation will be achieved are still to be resolved, Brisbane's battery electric Metro bus system and the completion of the Cross River Rail Line in 2026 will contribute to achieving this objective.

However, even with the new Cross River Rail, Brisbane will have a relatively limited rail network capacity when compared to other cities that have hosted the Olympic Games.

## Review of Venues

In late 2023 a number of issues remained unresolved in regard to which venues were to be used for the various sports and the actions required to deliver these venues to Olympic Games' standards.

The Premier of Queensland, Stephen Miles, commissioned a 2-month long

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*"The Brisbane Olympics will have to offset more carbon emissions than it produces."*

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review by an independent panel led by former Brisbane Lord Mayor, Graham Quirk.

However, the review did not consider temporary venues and overlay, athlete villages, the International Broadcasting Centre and Main Press Centre and minor upgrades that may be necessary for existing sports venues.

The final report from the review was provided to the Minister for State Development and Infrastructure on 15 March 2024.

*Continued on page 4*

Improving the viability of the Sugar Mill ensured the survival of the local sugar producers and their workforce.

The problem of a glut of biomass at Council refuse dumps and landfills throughout the region will be solved for many years by the commissioning of this project

The condenser is cooled by tertiary treated water from the local Council's Waste Water Treatment Plant. This same reclaimed water is purified in the cogeneration plant's de-mineralised water plant for use in the boiler-steam turbine water cycle.

Ash, which forms from non-combustible material such as dirt, is left over after

burning biomass in a boiler. This will be removed from the site on trucks to be used as a soil conditioner in landscaping work.

The wastewater from the boiler and from the condenser cooling system is passed through wastewater treatment ponds and then used to water the crops for the local cane farms.

## Lesson Learnt

This project and other similar projects with Sugar and Paper Mills are demonstrating that a commercially viable project can also deliver significant environmental and social benefits to both the local and global communities.

Achieving this 'triple bottom line' outcome required a structured process to enable the incubation and acceptance of new ideas that challenged conventional thinking and the courage of the developers to fund such projects.

Value Management conducted by an independent facilitator provided this structure and was critical to the success of this and several other studies involving multiple stakeholders at the pre-feasibility stage.

## David Baguley

Chair Appointments and Accreditation Committee  
IVMA

## 2032 Brisbane Olympics

Continued from page 3

### Summary of Sports Venues

Venue	Report Findings	Government response
<b>Indoor Sports Centres</b>		
Breakfast Creek Indoor Sports Precinct (Albion)	New venue to proceed in alternate location at Boondall or Zillmere.	Recommendation accepted, with the size of this venue dependent on further analysis.
Moreton Bay Indoor Sport Centre	Recommended to proceed and investigate increasing the size of the centre.	Recommendation accepted.
Logan Indoor Sports Centre	Recommended to proceed.	Recommendation accepted.
Sunshine Coast Indoor Sports Centre	Recommended to proceed.	Recommendation accepted.
<b>Chandler Sports Precinct</b>		
Brisbane Aquatic Centre	Recommended to proceed and minimise disruption during construction.	Recommendation accepted.
Anna Meares Velodrome and BMX supercross track	Recommended to proceed.	Recommendation accepted.
Chandler Indoor Sports Centre	Recommended to proceed.	Recommendation accepted.
<b>Paddle Venues</b>		
Wyaralong Flat Water Centre	Recommended to proceed with further consideration of exact siting at Wyaralong.	Recommendation accepted.
Redland Whitewater Centre	Recommended to proceed.	Recommendation accepted subject to the continued support from Redland City Council.
<b>Regional Stadiums</b>		
Barlow Park (Cairns)	Recommended to proceed.	Recommendation accepted
Toowoomba Sports Ground	Stadium facility upgrade not to proceed. Consider other events to be held in the region.	Recommendation accepted
<b>Other Venues</b>		
Brisbane International Shooting Centre (Belmont)	Recommended to proceed with investigations for greater community use.	Recommendation accepted.
Sunshine Coast Mountain Bike Centre	Recommended to proceed.	Recommendation accepted.
Sunshine Coast Stadium	Recommended to proceed.	Recommendation accepted.
Suncorp Stadium (Brisbane Football Stadium)	No recommendation provided.	Government will investigate upgrade options.

### Venues not in scope of sport venue review with no changes to previous plans

Alexandra Headland, Ballymore Stadium, Broadbeach Park Stadium, Broadwater Parklands, Brisbane Convention and Exhibition Centre, Brisbane Entertainment Centre, Brisbane Showgrounds, Coomera Indoor Sports Centre, Gold Coast Convention and Exhibition Centre, Gold Coast Sport and Leisure Centre, Gold Coast Stadium, Ipswich Stadium, Manly Boat Harbour, Royal Queensland Golf Club, South Bank Parklands (Piazza, Cultural Forecourt), Queensland Tennis Centre, Townsville Stadium, Victoria Park/Barrambin

The report made 30 recommendations, 27 of which were accepted by the Queensland State Government.

In presenting the report, Premier Miles stated, "This review was one of my very first acts as Premier of Queensland and was driven by what Queenslanders told me was important to them — bang for buck and a lasting legacy."

The Miles government made the following decisions in respect of the three major sports venues:

- The Gabba stadium: Vital maintenance work is to proceed. (The review recommendation was to maintain to standard and then fully demolish until a different new stadium is built in a new location.)
- Brisbane Arena: Proceed with the venue in a new location within Roma Street Parklands (as recommended by the Review).
- Queensland State Athletics Centre (QSAC): Investigate upgrades to this highly utilised community and high-performance venue for Games and legacy use. (The Review recommendation was not to use QSAC as a Games venue but to construct a new stadium at Victoria Park.)

Other venue considerations were summarised as follows:

### Olympic Venues agreed following the Review

The State opposition Liberal National Party has concurred with the major Gabba decision — which is perhaps just as well as a State Election is due in October this year.

Further, planning, design and construction of the \$2.7 billion Gabba upgrade would have taken an estimated eight years thus being impractical in the currently available timeframe.

Any change of sports venue requires consultation with Games Delivery Partners, including the Australian Government, and

final games approval from the Brisbane 2032 Organising Committee, the International Olympic Committee (IOC) and the International Paralympic Committee (IPC).

### The Independent Delivery Authority

On 23 May 2024 the Queensland Parliament passed a bill that created the Games Venue and Legacy Delivery Authority.

The newly formed Authority will be responsible for delivering new and upgraded venues for the Games, in turn, providing substantial community benefits throughout Queensland.

Operating as a statutory body under legislation, the Authority will have autonomy over its funds, operational independence, and a flexible structure while remaining accountable to public sector scrutiny.

An interim CEO will soon be appointed, and recruitment for up to seven independent directors for the Board overseeing the authority is expected to begin shortly, with appointments scheduled for September this year.

The initial work of the Authority will be development of a Games Coordination Plan within 12 months, and a Transport and Mobility Strategy within 18 months of establishment.

### What next?

Eight years might seem like a long time to prepare the infrastructure and operational procedures required for the Brisbane Olympics but, as seen from the forgoing, there is still much work to do:

- to scope most of the projects in coordination with the sports' and Olympic authorities' requirements
- then to be followed by development of project briefs
- concept and detailed design
- tendering

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*“The construction industry nationally is suffering from a shortage of labour and high prices for a large range of materials.”*

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- construction, and
- commissioning.

The construction industry nationally is suffering from a shortage of labour and high prices for a large range of materials.

There is also a requirement that completed facilities are put to the test by successfully hosting at least one major international or national sporting event prior to the Games themselves.

This requires identifying and coordinating all the stakeholders involved in providing infrastructure and managing the Games themselves as well as ‘end users’ of the facilities.

Media worldwide lauded the success of the Sydney 2000 Olympic and Paralympic Games and they provided the “benchmark for the spirit of the Games” for the 2012 London Olympics where the organising committee “attempted in several ways to emulate what the Sydney Organising Committee did”.

Value Management was applied extensively to the development of sporting and other facilities, transportation and management of the Sydney Olympic Games in 2000.

It revealed a myriad of detailed information essential to the comprehensive completion and operation of transportation, design and management of the facilities themselves.

Value Management provided a coordinated approach to the life-cycle of facilities,

including their ongoing use by the Australian community after the Games.

Value Times ran four ‘Value for Money Retrospective’ articles on how ‘value for money’ was delivered in the Sydney Olympic Games.

Articles on the studies that demonstrate the complexity of the tasks are included in the following editions of Value Times: Autumn 2021, Winter 2021, Spring 2021 and Summer 2022.

These publications can be accessed directly from **Value Times highlights** on the front page of the Institute of Value Management Australia website: <https://ivma.org.au>

### John Bushell

Chair Publications and Events Committee IVMA

## Rapid Bridge Construction

*Extreme weather conditions are damaging and destroying bridges and other major infrastructure globally. This Australian invention enables bridges to be replaced rapidly and economically.*

InQuik modular bridges were developed in Australia in 2017. Over 200 bridges have been constructed in Australia, the USA and the Solomon Islands.

The system is used for road and rail bridges, marine works (jetties and wharves) and defence installations (bridges and bunkers) and can be configured to meet any required local construction codes.

The first InQuik bridge to be constructed, a 9-metre long, 8-metre wide structure, was completed in one month, compared to the usual three-to-four-month timeline for traditional bridges.

InQuik, based in Pyrmont, New South Wales, has patented its bridge system in more than 88 countries worldwide and has received recognition both locally and overseas for its innovation.

The system provides prefabricated bridge spans, headstocks, abutments, wing walls and blade piers comprising permanent metal formwork surrounding a reinforcing steel matrix.

Modular bridge components provide the basis for the rapid speed of bridge design, manufacture and delivery of materials to site. Special component sizes can be produced if required.

The bridge components can be placed with a crane of far lower capacity than would be required by precast concrete components.

Once in place concrete is poured into the self-supporting formwork to form a monolithic bridge construction.

The permanent steel formwork comprises one of three systems depending on the degree of corrosion protection required and preferred bridge aesthetics:



Solomon Islands Bridge

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*“InQuik has received recognition both locally and overseas for its innovation.”*

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- **Magnelis**, made by ArcelorMittal Europe. This is a proprietary product that is steel coated with an alloy of zinc, aluminium and magnesium which has far superior corrosion resistance properties to zinc galvanised steel, especially in marine environments.
- **Redcore Weathering Steel** made by BlueScope Steel is a high strength formwork cladding material that develops a stable oxide patina on the surface of the steel. When used in the appropriate environment, this patina enhances the corrosion resistance of the steel compared to conventional uncoated steels, effectively ‘weathering’ the steel in a natural way.
- **Stainless Steel** For 3mm thick 316 grade stainless steel, the estimated time

for pitting to penetrate 1mm is 260 years in a marine environment implying that the formwork is likely to outlast the bridge structure.

In the United States these bridge structures are delivered by a strategic partnership between InQuik and Commercial Metals Company.

The 2023 Federal Infrastructure Investment and Jobs Act and Bridge Investment Program presents an opportunity for the partnership to receive some of the allocated \$US40 billion over 5 years of funding for bridge projects.

Bridges constructed under this Act are subject to submission of a satisfactory Bridge Investment Program Benefit-Cost Analysis.

In this regard the ability to rapidly design and construct InQuik bridges will permit the structure to be operational sooner than would be the case with more conventional construction.

This has the potential to deliver a premium economic benefit for users of the structure especially on busy roads and rail lines.

Advantages of InQuik structures are:

- Permanent formwork/cladding can provide the most appropriate protection from deterioration depending on the environment
- Factory prefabrication of formwork and reinforcing steel ensures accurate dimensions and optimal quality control
- Structures can be configured to comply with local standards
- InQuik bridges deliver a minimum 100-year bridge life
- Quick completion of a bridge or marine structure from the time of identification of need as a result of modular design

standardised manufacture and fast construction method

- Less down time for users of the structure when compared with conventional construction
- Minimal or zero joints that can permit salt and water ingress
- The modular components are easily transportable to the worksite
- Small numbers of relatively low-skilled labor are required for most of the on-site work — a particular benefit in isolated locations

- No temporary formwork support is needed
- Bridge construction occurs from above, with minimal need to work under the bridge, thus improving worker safety and reducing environmental impact
- On-site crane capacity is lower than that required for precast concrete bridge components
- Pouring all concrete on-site permits a fully integrated abutments/bridge deck structure providing greater damage resistance to flooding and earthquakes
- The use of permanent formwork results in low maintenance costs for the structures.

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*“This has the potential to deliver a premium economic benefit for users of the structure especially on busy roads and rail lines.”*

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Murphy's Bridge, Eurobodalla Shire, NSW

**John Bushell**

Chair Publications and Events Committee  
IVMA