

# OPPORTUNITY

## Risk Engineering News

QUARTERLY NEWSLETTER-December 2018—Volume 3 Edition 4

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## Risk Engineering Society

### President's Welcome

Hello colleagues in RISK and welcome to our final edition of OPPORTUNITY vol. 3 for 2018. Thank you to all those who have contributed to the Newsletter during the year and also those that are still working on items for future newsletters.

The REBOK Project Committee is meeting this month to plan for 2019. We welcome Susan Olsen to the team. Susan will help coordinate the team and provide support for our REBOK events. It is pleasing to see that some of our REBOK webinar events are getting upwards of 700 participants. The REBOK is taking shape and will be released for promotion toward the middle of 2019.

Each RES Chapter has been very active during 2018 with CPD programs, many of which have had a webinar option. Chapters are now well into planning for 2019.

The RISK/PCC2019 Sydney conference has a current call for abstracts out. We have many keynote and invited speakers, Follow our progress on LinkedIn. The detail program will be announced early in 2019.

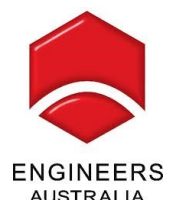
We look forward to continuing to receive news of interest from our wider membership for publication in 2019 editions of OPPORTUNITY. Also please visit or post discussions on the RES LinkedIn Group. If you are not connected to the RES Group here is the link to the discussion [page](#)

Seasons greetings and wishing you all a safe and healthy start to 2019

Regards

Geoff Hurst (President)

\*The Risk Engineering Society is a Technical Society of Engineers Australia. For Engineers Australia members, please remember to nominate your membership of RES when you renew your membership.



# Take and manage risk to achieve project success (Part 4)

*Good risk management can make an invaluable contribution to the success of construction and engineering projects. Gareth Byatt\* outlines some good practices in project risk management.*

Following on from the September 2018 edition of 'OPPORTUNITY'

Part 4 will cover 'Leading in Safety'.

The function of the so-called Safety leader is to determine which organisational metrics to measure and monitor to encourage learning, improve response and to anticipate needs and actions. To be in a position to achieve this, we must first be in a position to understand the problem and then we can define the problem and see the opportunities.

The function of the Safety leader is to help their organisations (companies) realise that safety cannot be considered as a single priority or be considered separately from other aspects of a company's performance. Having separate foci may be a practical necessity, but it should not be done without a perspective that can unify or integrate the separate interests and understand how they interact and depend on each other.

The primary driver in industry is cost, and consequential profit. If Safety leaders are not dealing with a business case approach, then

they must rely on the moral dimension of unwanted outcomes. To understand modern day complexity requires serious study; Safety leaders therefore need to be involved in the learning and sharing of Safety as a science across all disciplines.

In the next issue we will cover part 5 'Organisational Trends'

## **Failures of Structural Timber Appurtenant Assemblies**

*We have an international member expert interested in a local partner to prepare a paper for the RISK and PC Conference in May 2019 at the Sydney ICC on the area of interest related to: Failures of Structural Timber Appurtenant Assemblies.*

*If you are, or know of an engineering colleague who is knowledgeable in this area of Risk Engineering practice and would like to collaborate with our friend, please write your expression of interest to: Subject "Failures of Structural Timber Appurtenant Assemblies"*

[res@engineersaustralia.org.au](mailto:res@engineersaustralia.org.au)

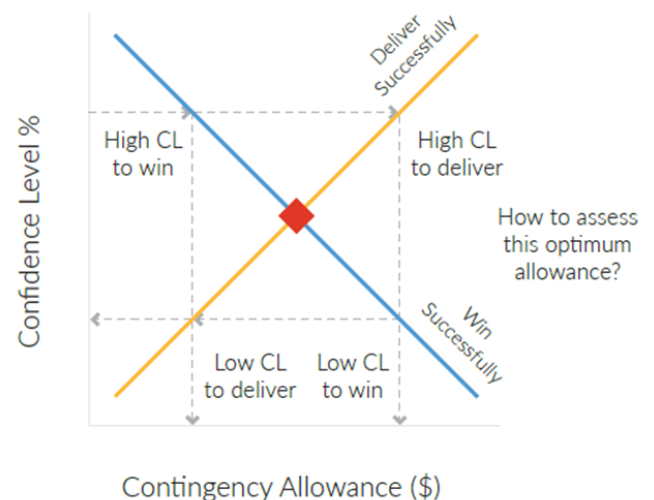
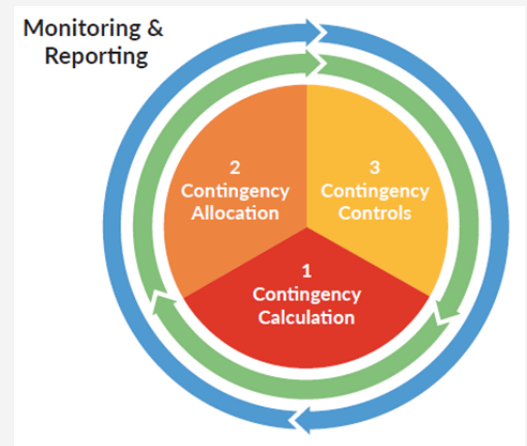
# RES Contingency Guideline News

KEY CONCEPTS ENABLING MEM?

The 1<sup>st</sup> Edition of the RES Contingency Guideline was published in May 2016. Considering the dynamic nature of this subject – as well as changing government requirements, the maturity of the risk engineering profession and industry necessities – it is the intent of the RES executive committee to periodically review and update this Guideline, to ensure its quality and to keep it up-to-date with new developments in contingency assessment and management.

Following a comprehensive development and industry consultation, the 2<sup>nd</sup> Edition of the RES Contingency Guideline will be published soon following an additional two weeks public consultation. Some of the recent changes include:

- More process maps to make navigation throughout the document easier
- More and better aligned definitions with other good industry practices
- More methods of cost contingency determination
- Further details on the recommended method of First Principles Risk Analysis (FPRA)
- Impact of the objective and subjective uncertainties on contingency management
- Tips of effective QRA and risk workshop facilitation
- Contingency X Factor for winning and delivering projects successfully
- Further details on project cost overruns and schedule delays
- Contingency management throughout the project lifecycle
- Contingency management for project, program and portfolio
- Tools and software for contingency management





# Program Portfolio Effect and Collapse of RCR Tomlinson

Author: Pedram Danesh-Mand

Earlier in Nov, Lendlease engineering and services business hit with pre-tax provision of about \$450m – in addition to \$220m loss in the year to Jun 2018. The industry and profession was still trying to better understand the causes and lessons learnt from Lendlease's loss while the spectacular collapse of EPC contractor RCR Tomlinson after raising \$100m in capital shocked everyone again!

The company's strategy of bidding aggressively for solar farms, undercutting competitors to win 13 of them and control 20% of the solar market in such a short period of time, has been blamed for its failure.

Many believe more collaborative "alliance-style" contracts will be the solution. I disagree, because while the type of contract will definitely have impacts on establishing platform for sharing risks between parties, I really believe in the absence of sufficient and adequate risk assessment, transferring the risks will not be the best way of risk management for maximum value.

In this article, I would like to briefly highlight another important aspect of risk and contingency management across project portfolio, i.e. Modern Portfolio Theory (MPT) and Program Portfolio Effect (PPE), for EPC contractors, like RCR Tomlinson.

For many successful EPC contractors with a reasonable portfolio of projects, bidding on EPC projects with P50-P70 (i.e. 50% to 70% confidence level for schedule and cost success) is quite common in Australia. Let's dig a bit deeper here.

Table below (AFCAA Handbook 2007) presents an example for analysis of portfolios sized with 5, 10, or 20 projects with high dispersion. The table shows assumptions of projects funded at probabilities of 50, 60, 70, and 80%. The third column shows the overall portfolio confidence level of each case with the projects uncorrelated.

Let's test RCR's case study (assuming 10 projects) against this.

Considering their strategy of bidding aggressively for solar farms, we can assume (in the best case!) the Project Probability was at 60%.

With 0.25% Correlation, this means 61% probability at their portfolio. Although it may look reasonable initially, but quite interestingly if they got it just 10% wrong, i.e. Project Probability of 50% (which based on my experience on these projects I can definitely assure you it's very easy to get it wrong that much!), the Portfolio Probability will drop to 36% from 61%!

This example indicates how modest increases in each project's cost-risk exposure (i.e., 'shaving' risk dollars by reducing each project's probability) can lead to a significant reduction of a portfolio's probability of meeting its funding level. In other words, I may conclude that they were likely running their projects on about 36% confidence level across the portfolio!

To access the full article please click on the link : [Here](#)

		Portfolio Probability	
#Projects	Project Probability	No Correlation	0.25 Correlation
5	50%	38%	40%
5	60%	61%	59%
5	70%	80%	78%
5	80%	94%	92%
10	50%	32%	36%
10	60%	62%	61%
10	70%	87%	83%
10	80%	98%	96%
20	50%	24%	32%
20	60%	65%	61%
20	70%	94%	86%
20	80%	99%	98%

# ***Control Measures for Pipeline Safety***

## ***Management clarified***



*Author Susan Jacques*

The new AS 2885.6 Pipelines – Gas and liquid petroleum, Pipeline Safety Management, was published in late 2018, forming a new part of the suite of seven parts that make up AS 2885.

The AS 2885.6 Standard is new to the suite, bringing together the safety management process previously described throughout the other parts, for the lifecycle of a pipeline, managing its safety from concept to design through operation and abandonment, which could be many decades or more.

The AS 2885 approach to risk management is very much focussed on identifying and controlling the threats that could make a pipeline fail.

AS 2885 considers not necessarily the “process upsets” (which is what a HAZOP and other safety study methods are for), nor the “personnel upsets” (which is what JHAs are for), but rather focusses on another type or risk, being “public upsets”, where the innocent bystander is affected by a failure of the buried high-pressure structure, through no action of their own. The failure could be caused by external interference, such as excavator bucket teeth accidentally hitting the pipeline, by unmitigated corrosion, or by a natural event such as landslide, earthquake or flooding erosion. Pipeline failure due to these threats could have consequences for the safety of the public nearby, which goes beyond responsibilities to the process plant workers who are generally more conscious of the hazards and risks of working in that environment.

New pipelines are therefore designed to effectively control anticipated threats by such treatments as sufficient pipe wall thickness, high strength material, and sufficient depth of cover. The process described in AS 2885.6 helps to reassure the stakeholders that all threats have been identified and suitably controlled by design, or by risk assessment to a level of as low as reasonably practicable.

Existing pipelines that were built through rural fields many years ago are now experiencing new threats from becoming part of the built environment. But for these existing pipelines, the ‘big three’ control measures – wall thickness, material characteristics, and depth of cover – are already set and are therefore very expensive or cost prohibitive to change. Pipeline operators grapple with managing these threats and keeping the risks as low as reasonably practicable, through methods described in AS 2885.6. Many control methods for existing pipelines rely on procedural measures such as additional stakeholder engagement, additional signage, and for protection from excavator impact, installation of additional physical barriers that may prevent contact with the pipeline.

AS 2885.6 is available from Standards Australia distribution arm, SAI Global. Contact Susan Jaques via LinkedIn if you’d like further information about the AS 2885 suite of Standards.



## RISK ENGINEERING & PROJECT CONTROLS CONFERENCE 2019

ICC | SYDNEY | AUSTRALIA | 15 - 17 MAY 2019

### CALL FOR ABSTRACTS - RISK/PCC 2019

Following many years of successful RISK conferences and a very successful Project Controls conference at the ICC in 2017, the biennial RISK conference that was due to be held in 2018 is now scheduled to run concurrently with PCC 2019 delivering exceptional value to members.

On behalf of the RES and ACES Executive Committees, [we cordially invite you to submit an abstract](#) proposal for a presentation of about 30 to 45 minutes for committee's consideration. It is an event of 2019 for the risk engineering and project controls professionals to share experiences and celebrate successes. For further enquiries, please email the below link:

[risk-pcc19@engineersaustralia.org.au](mailto:risk-pcc19@engineersaustralia.org.au)

To Submit Your Abstract Please Click [Here](#)

#### RES COMMITTEE

Geoff Hurst (President)

Brian Truman (Immediate Past President)

David Cox (Treasurer)

Pedram Daneshmand (Sydney)

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Praneet Mehra (Western Australia)

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### CPD Professional Development

For EA members, RES Technical presentations contribute to your CPD. Ensure you register for the events and sign the attendance register.



### Risk Engineering Society

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