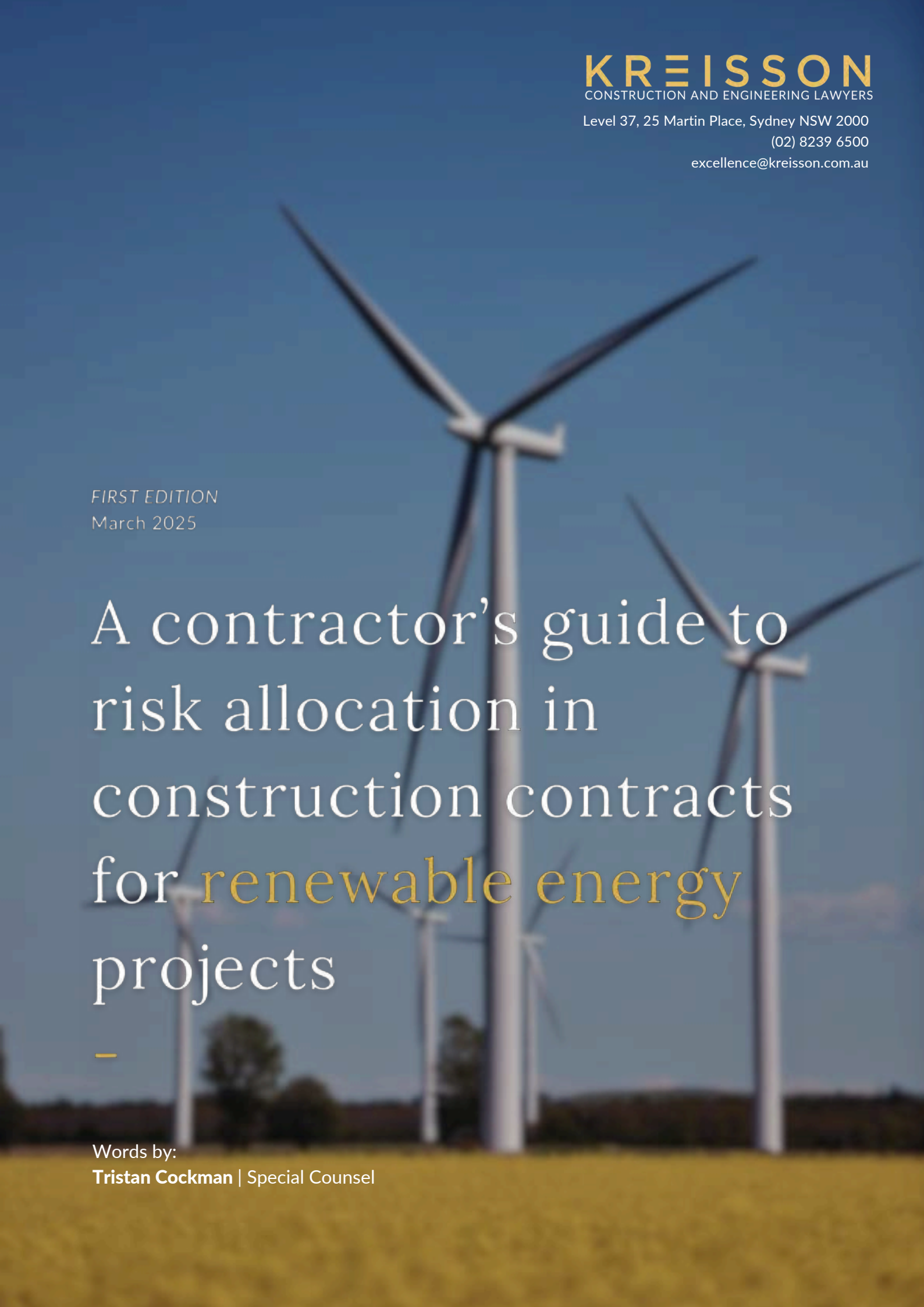

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A contractor's guide to risk allocation in construction contracts for renewable energy projects

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Preface

This eBook is designed for civil contractors working within the renewable energy sector or considering entering this growing and dynamic market. It seeks to bridge a gap in publicly available resources by providing a practical guide to understanding and allocating risks in construction contracts specific to renewable energy projects.

With renewable energy markets expanding rapidly and traditional civil contracting markets experiencing stagnation or decline, understanding how to navigate risks in this sector has never been more important.

By offering insights into risk prioritisation and allocation, this guide aims to empower contractors to negotiate contracts more effectively and mitigate potential pitfalls.

Introduction

The renewable energy sector presents significant opportunities for civil contractors, but it also introduces unique challenges, particularly in the allocation of risk. Unlike traditional construction, where contractual risks have well-established norms, renewable energy projects bring new complexities—such as grid connection uncertainties, long-term performance liabilities and supply chain disruptions.

This guide aims to help contractors navigate these challenges by providing a structured approach to risk allocation in renewable energy construction contracts. Using widely recognised frameworks such as the Abrahamson Principles and Bunni Criteria, this eBook examines who should bear which risks and why. By understanding these concepts, contractors can better negotiate contract terms, protect their business interests and ensure successful project delivery.

With renewable energy markets rapidly expanding and traditional civil contracting sectors stagnating, now is the time for contractors to build their knowledge and position themselves for success. This guide serves as both an introduction and a practical resource for managing risks effectively in this evolving industry.

While this guide provides general principles for risk allocation in renewable energy projects, contractors should be aware that local laws may override certain risk allocations. The principles discussed here should be read in conjunction with the governing law of the contract, site-specific regulations and applicable dispute resolution frameworks.

Chapter 1: Prioritising risks in construction contracts

Understanding risk in contracts

Risk in construction contracts is inherent and unavoidable. Given the complex nature of renewable energy projects, contracts cannot address every conceivable risk. Consequently, contractors must prioritise risks based on their potential impact and likelihood of occurrence. A structured approach is required to ensure significant risks are identified and mitigated.

The risk equation

Risk is often conceptualised as a function of likelihood and impact.[1] Even a low-probability event may constitute a substantial risk if its potential consequences are severe. Conversely, frequent but low-impact risks may be deemed lower in priority. This principle underpins the importance of methodical risk evaluation to ensure that significant threats to a project's success are adequately addressed.

For subcontractors, the risk equation is particularly relevant because they often operate under constraints imposed by the principal contractor's schedule and deliverables.

[1]Standards Australia, AS/NZS ISO 31000:2018, 'Risk Management – Guidelines' (2018).

For instance, a delay in receiving critical materials may have a low likelihood but could severely disrupt a subcontractor's ability to meet deadlines, resulting in penalties or reputational damage. Subcontractors must therefore assess risks not only within their direct control but also those influenced by the broader project environment.

The risk assessment matrix

A risk assessment matrix offers a systematic framework for evaluating and categorising risks effectively.[2] By plotting likelihood against impact, risks can be classified into tiers to determine and prioritise responses strategies effectively. An example is:

Likelihood	Impact	Risk level
High	High	Critical (immediate action required)
High	Low	Moderate (monitor closely)
Low	High	Significant (mitigation planning needed)
Low	Low	Minimal (observation required)

For subcontractors, the matrix helps in identifying critical dependencies and potential bottlenecks and in ensuring that effective risk management strategies are in place. For example, if a subcontractor's work relies on the timely completion of prior tasks by others, any delays could significantly affect their operations.

[2]Nigel J Smith, Tony Merna and Paul Jobling, *Managing Risk: In Construction Projects* (Blackwell Publishing, 2nd ed, 2006).

By identifying such risks early, subcontractors can advocate for contingency measures or renegotiate terms to reflect shared responsibilities. The matrix also aids in aligning expectations with the principal contractor, ensuring that all parties are aware of and prepared for key risks.

It is worth noting that risk matrices can be developed in greater detail, incorporating quantitative probability assessments and financial exposure analysis. However, for the purposes of this guide, we use a simplified approach to focus on practical application rather than highly technical modelling.

Chapter 2: Guiding principles for risk allocation

Once a risk is identified as requiring action, the next step involves determining which party should bear responsibility. Two commonly referenced frameworks are the Abrahamson Principles and the Bunni Criteria:

The Abrahamson Principles

Formulated by Max Abrahamson, these principles advocate for assigning risks to the party best positioned to manage them.[3] As outlined in Abrahamson's work, these principles suggest that a construction risk should be allocated to the party:

- best able to control the risk;
- best able to insure against the risk or include it in their prices to the other party or their customers;
- that enjoys the economic benefit of taking the risk;
- where it is in the interests of efficiency;
- where it is otherwise practicable to do so.

The Bunni Criteria

Developed by Dr. Nael Bunni and discussed extensively in his text *Risk and Insurance in Construction*, the Bunni Criteria refine the Abrahamson Principles.[4] These criteria suggest that risk allocation should consider:

- which party can best foresee the risk;
- which party can best control the risk and its consequences;
- which party can best bear the risk;
- which party ultimately benefits or suffers the most if the risk occurs.

[3]MW Abrahamson, *Engineering Law and the ICE Contracts* (CRC Press, 4th ed, 1980).); Max W Abrahamson, 'Risk Management' [1983] *International Construction Law Review* 241.
[4]Nael G Bunni and Lydia B Bunni, *Risk and Insurance in Construction* (Routledge, 3rd ed, 2022).

While these frameworks provide structured methods for risk allocation, it is important to note that they can be highly detailed and technical. For practical purposes, this guide presents a simplified version suited to contractors without requiring deep familiarity with complex risk assessment methodologies.

Chapter 3: Evolving subcontracting culture in building and construction v renewable energy

In the Australian building and construction industry, subcontracting culture has evolved to shift most project risks onto subcontractors. This is driven by various factors, including:

- **Legal advice** – Lawyers, whether inexperienced or overly cautious in their duty, often push for extensive risk transfers onto subcontractors;
- **Financial caution** – Financiers and lenders require project structures that minimise risks for principal contractors or developers, inadvertently burdening subcontractors with risk;
- **Tender pressures** – Principals, holding significant bargaining power, push the most favourable contract terms at the time of tender.

While this approach creates contracts that appear well-structured on paper, it does not always guarantee the successful delivery of a project on time and within budget. A contract overly weighted against the subcontractor may lead to:

- **Delays** – If subcontractors struggle with excessive risks, disputes and claims can arise, slowing down project progress;
- **Cost overruns** – Subcontractors may inflate their pricing to account for high-risk exposure or fail to deliver altogether, leading to additional costs in rework or project delays;
- **Reduced market participation** – Contractors and suppliers may avoid engaging in projects where the risk profile is too unfavourable.

However, in renewable energy, traditional contracting practices may need reconsideration due to unique industry factors:

1. Inexperience in renewable energy

Many contractors and subcontractors come from traditional sectors (e.g., civil construction, electrical, mechanical) and may not fully understand the specific risks involved in renewable energy projects. This lack of experience can lead them to underestimate issues such as:

- Environmental conditions that affect performance;
- Grid connection challenges;
- Maintenance and operational risks.

2. Significant liability risks

The consequences of failure in renewable energy projects can be substantial. For instance:

- A faulty installation may impact its expected operational life;
- Grid stability issues can lead to regulatory penalties or forced shutdowns;
- High voltage and electrical safety risks.

3. Risk v reward for contractors

If a subcontractor undertakes similar tasks in a traditional sector (e.g., earthworks for a commercial building) but faces significantly higher liabilities in renewable energy (e.g., earthworks for access tracks over undulating land, which may lead to volume miscalculations, erosion control challenges or increased stabilisation requirements), they may see limited financial incentives to participate in the sector.

A shift in contracting philosophy—one that better aligns risk-sharing with real project challenges—could encourage better contractor engagement and project outcomes.

Chapter 4: Common risks in renewable energy projects

Renewable energy projects come with a unique set of challenges that can derail progress if not effectively managed. Unlike traditional construction, where risks are well understood, the renewable sector introduces complexities that require a different approach to risk allocation. Below are some key risks subcontractors must navigate to ensure project success.

1. The unpredictability of grid connection – A risky waiting game

One of the biggest hurdles in renewable energy projects is connecting to the power grid.

Unlike traditional building projects, where completion means handing over a functional structure, renewable energy developments must integrate with an often-overburdened electricity network. The risks here are significant:

- Network operators impose strict technical requirements that may change mid-project;
- Delays in approvals can push out timelines and increase holding costs;[5]
- Failure to meet grid compliance can lead to penalties or an inability to export power.

For subcontractors involved in electrical work, substation construction, or cabling, these uncertainties translate into potential cost overruns and prolonged project schedules, often with no clear contractual protection.

2. Environmental and site risks – When the land fights back

The location of a renewable energy project can present unforeseen challenges that are not evident at the contract stage.

[5]Australian Energy Market Operator, *2022 Integrated System Plan* (Report, June 2022).

Many developments take place in remote or rural locations, where ground conditions, weather and environmental factors create major risks:

- Rocky or unstable terrain can lead to costly excavation and foundation redesigns;
- Flooding or erosion can impact access roads, delaying material deliveries;
- Unmapped indigenous heritage sites or protected ecosystems may halt works indefinitely.

For civil contractors and earthworks specialists, these risks mean that a seemingly straightforward job can quickly require additional resources, redesigns, or workarounds—adding complexity and cost.

3. Performance risk in renewables – The gap between design and reality

Renewable energy projects are often built on ambitious performance promises—whether it is solar panels achieving a certain efficiency or wind turbines generating a forecasted output.

The problem?

These assumptions do not always hold up in real-world conditions. Contractors frequently face risks such as:

- Design changes that push liability down the chain;
- Unrealistic performance guarantees that require subcontractors to deliver beyond practical limits;
- Long-term performance warranties that are difficult to control once the project is operational.

Electrical and mechanical subcontractors, in particular, must be cautious of contracts that place performance responsibility on them long after their work is completed.

4. Procurement and supply chain risks – Getting the right equipment at the right time

Renewable energy projects rely heavily on specialised equipment—solar panels, wind turbines, batteries, inverters, transformers and high-voltage cables.

The challenge?

These items often come from global suppliers, making procurement a critical risk affected by circumstances such as:

- Pandemic-related shortages and geopolitical instability;
- Long lead times that cause project delays;
- Price volatility, especially with currency fluctuations and material shortages;
- Defective or non-compliant equipment that stalls project progress.

Subcontractors who rely on specific materials must factor in these risks, as contracts may not provide relief for supply-related delays beyond their control.

5. Financial risks – The payment chase and cost exposure

Getting paid on time is a challenge in any sector, but renewable energy projects introduce additional financial risks that subcontractors must navigate:

- Delays in milestone payments can strain cash flow, especially for smaller subcontractors;
- Liquidated damages clauses may pass down from the developer to subcontractors, making them financially responsible for project delays they did not cause;
- Broad indemnity clauses can expose subcontractors to liabilities far beyond their control.

Without careful contract negotiation, subcontractors can find themselves exposed to financial burdens that were unexpected.

6. Workforce and safety risks – Managing people in high-risk, remote locations

Many renewable energy projects are built in remote areas, requiring skilled labour that may not be readily available.[6] This creates challenges in:

- Finding and retaining workers willing to travel to and stay on-site;
- Managing fatigue and safety risks in high-risk environments (e.g., high-voltage installations);
- Complying with complex safety regulations, particularly when working with new technologies.

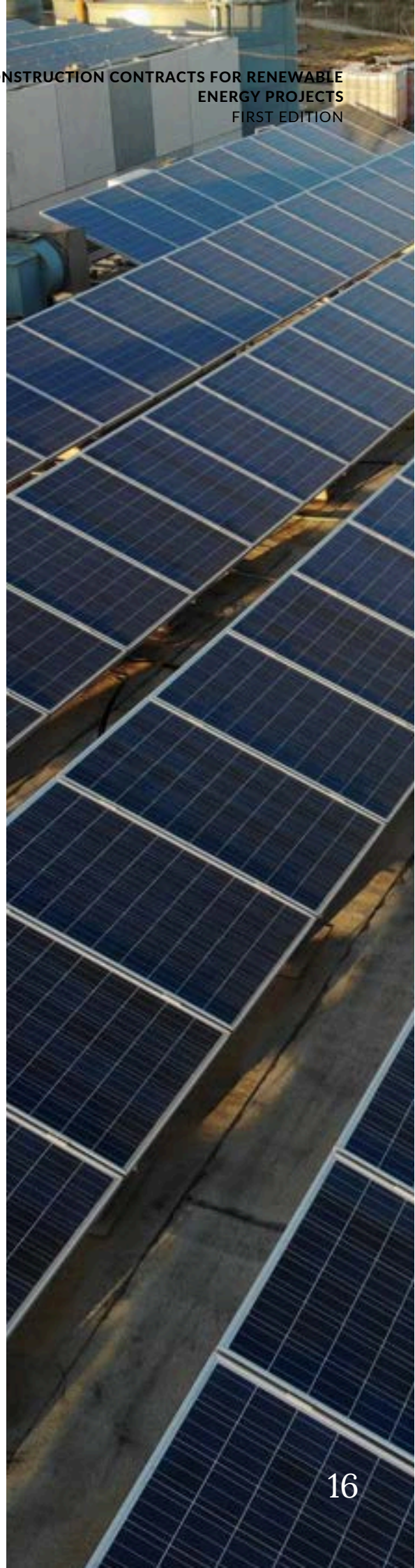
For subcontractors, this means higher labour costs, potential delays and increased responsibility for workforce compliance.

7. Political risks – The wild card of regulations and community pushback

Renewable energy projects are subject to evolving government regulations and community scrutiny. While the sector at times may benefit from political support, it is also vulnerable to policy changes, regulatory hurdles and public opposition. Key risks include:

- **Changing regulations:** A government's shift in energy policy can impact project viability mid-way through construction;
- **Community pushback:** Local opposition can lead to delays, legal battles, or costly redesigns;
- **Planning and approval uncertainty:** Lengthy permitting processes can stall projects;
- **Land access obligations:** Principals or developers may negotiate specific land access agreements with landowners, traditional land custodians, or local councils. These obligations—such as traffic management requirements, access track upgrades, or restrictions on construction hours—are often passed down to subcontractors, who may not have been involved in the original negotiations but are still expected to comply. If these obligations are not clearly defined or accounted for in contract pricing, they can become an unexpected source of risk and cost.

[6] Clean Energy Council, *Skilling the Energy Transition* (Report, August 2022).



For contractors involved in planning and site development, the above risks can mean wasted investment and long, unpredictable project timelines. Subcontractors should also ensure that land access obligations are explicitly addressed in contracts to avoid bearing costs for agreements made outside their control.

Final thought: Smarter risk allocation for a sustainable future

Unlike traditional construction, where risks are well understood, renewable energy presents unique challenges that require a different approach to contracting. Simply shifting all risks onto subcontractors—common in building and construction—may not be sustainable in this sector.

To ensure successful project outcomes, there must be a balanced approach to risk-sharing, recognising the complexities of grid integration, environmental conditions, long-term performance and political uncertainty.

Chapter 5: Allocating common risks using the Abrahamson Principles and Bunni Criteria

In renewable energy projects, risk allocation can determine whether a project runs smoothly or becomes entangled in disputes, delays and cost overruns. As explored in Chapter 4, these projects introduce unique risks that may not always fit the traditional risk transfer models used in building and construction. Applying the Abrahamson Principles and Bunni Criteria provides a structured approach to fairly distributing these risks, ensuring contracts are equitable, practical and aligned with project success.

The Abrahamson Principles suggest that risks within the control of the parties should be allocated to the party best able to control, bear, insure against, mitigate or manage it. Meanwhile, the Bunni Criteria propose that risks outside the control of the parties should be assigned to the party:

1. Best able to control the risk and its consequences.
2. Best placed to absorb and mitigate the risk cost-effectively.
3. Most likely to benefit from assuming the risk.

Applying these frameworks to the common risks in renewable energy projects, we examine how risks should ideally be allocated—and how they are often unfairly assigned in practice.

Some of the risks discussed in this Chapter are common to other construction projects. However, in renewable energy projects, these risks are often amplified due to the scale of potential losses from delays, the complexity of regulatory approvals and the long-term viability of energy infrastructure. Understanding how these factors interact with risk allocation is essential for contractors engaging in this sector.

Further, effective risk management is not solely about contractual allocation but also about proactive measures, such as integrating risk monitoring systems, engaging with stakeholders early and developing adaptive response plans. The more a contractor invests in risk identification and mitigation, the lower the likelihood of disputes and cost overruns.

1. Grid connection risk – Who should own the uncertainty?

Reality: Subcontractors, particularly electrical and civil contractors, may inherit risks related to delays in grid approvals, even though they have no control over regulatory processes or utility company timelines.

Ideal allocation: The principal contractor or developer should retain this risk, as they have the relationships, influence and contractual arrangements with network operators. Subcontractors should negotiate contract clauses that shield them from liability for delays beyond their control.

However, the appropriate allocation of grid connection risk may depend on the capability of the subcontractor and whether they have internal expertise and experience in managing grid-related approvals. It may also be influenced by the specific regulatory environment and market conditions. Where regulatory and political risks are highly uncertain, approval timeframes may be more difficult to predict, increasing the potential risk for subcontractors. In such cases, it is essential to assess whether subcontractors are well-positioned to take on these risks or whether they should be retained at the developer or principal contractor level.

2. Environmental and site risks – The cost of unseen challenges

Reality: Site conditions, such as unstable ground, flooding risks, or indigenous heritage issues, often become the subcontractor's responsibility, even when those risks were unknown at the time of contract signing.

Ideal allocation: The principal contractor or developer should bear responsibility for unforeseen site risks, particularly where proper site investigations were not conducted or shared. Where site risks are allocated to subcontractors, they should be clearly defined with fair contractual mechanisms (e.g., latent conditions, variation clauses, extensions of time).

3. Performance risk – Unfair guarantees on long-term outcomes

Reality: Many renewable energy contracts impose strict performance guarantees on subcontractors, requiring them to meet efficiency or output benchmarks over extended periods—even when factors like weather variability, maintenance, or grid fluctuations are beyond their control.

Ideal allocation: Subcontractors should be responsible only for performance directly related to the quality of their work and materials used. Broader risks related to weather conditions, energy market fluctuations and grid instability should remain with the developer or asset owner. Performance warranties should be limited in scope and timeframe.

4. Procurement and supply chain risks – The challenge of global uncertainty

Reality: Supply chain delays and price volatility often fall on subcontractors, even when materials were specified by the principal or delays arise from global shortages.

Ideal allocation: The party controlling procurement decisions should assume the associated risks. If subcontractors must source materials, they should negotiate provisions that allow for price adjustments or extensions in cases of documented supply chain disruptions beyond their control.

5. Financial risks – The danger of cash flow constraints

Reality: Many contracts place subcontractors at financial risk through:

- Delayed milestone payments
- Uncapped liquidated damages for delays
- Broad indemnities covering risks beyond their control

Ideal allocation: Payment structures should ensure fair cash flow to all parties. Subcontractors should not be liable for delays caused by grid approvals, force majeure events, or scope changes imposed by the principal. Liquidated damages should be proportionate and only apply where the subcontractor has direct responsibility.

6. Workforce and safety risks – Managing people in remote locations

Reality: Contractors working on remote projects are expected to manage all aspects of workforce logistics, often without adequate allowances for the extra costs and challenges of labour supply.

Ideal allocation: The principal contractor should be responsible for site-wide workforce provisions (e.g., accommodation, transport), while subcontractors manage direct safety risks within their work scope. Contracts should fairly allocate costs for mobilisation and worker retention in remote regions.

7. Political and regulatory risks – Who bears the burden of change?

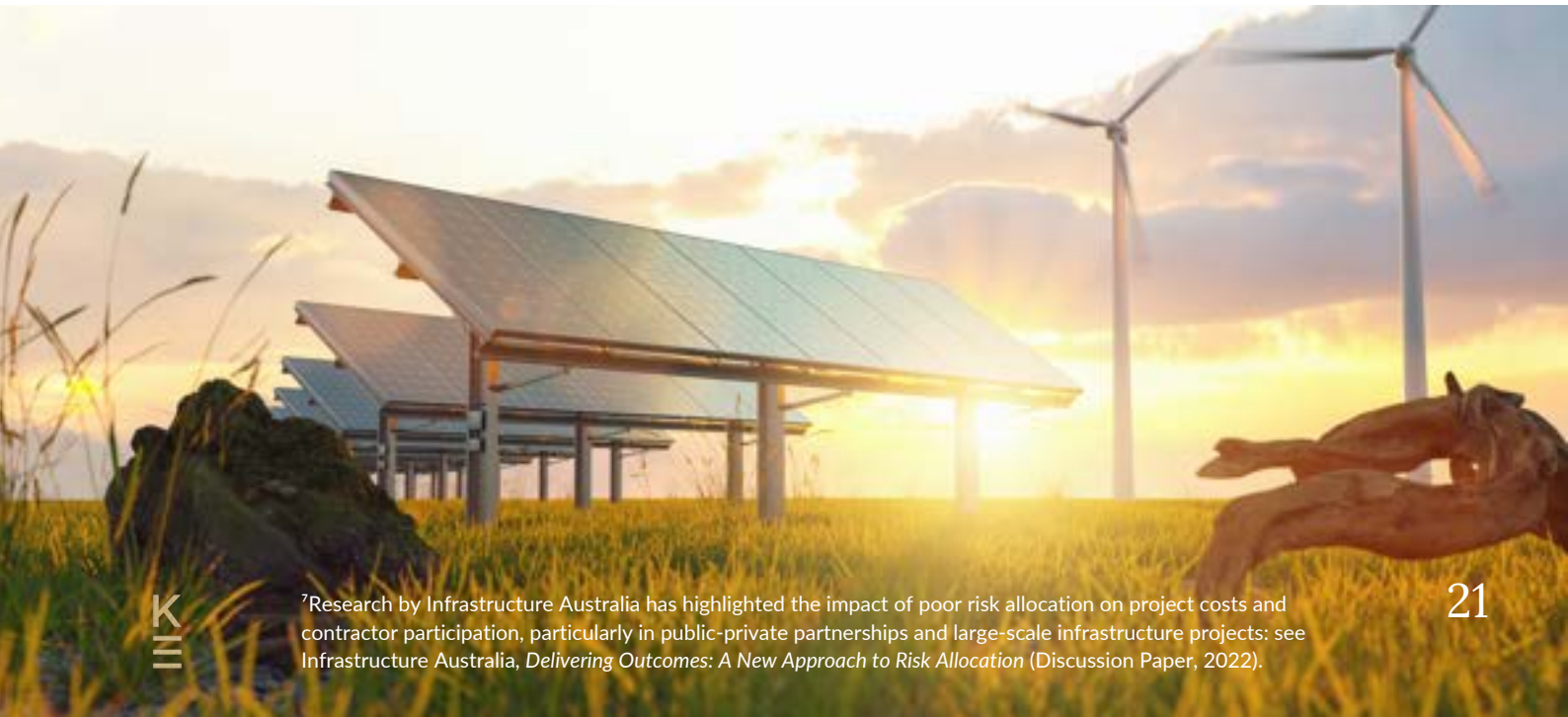
Reality: Many contracts fail to account for political and regulatory risks, leaving subcontractors exposed to new compliance requirements, changes in government policy, or community-driven project delays.[7]

Ideal allocation: The principal or developer should retain regulatory and political risks, as they have greater influence over government and community relations. Subcontractors should be protected through contract clauses that allow adjustments for new legal requirements introduced after signing.

Final thought: A smarter approach to risk allocation

The traditional approach to contracting in Australia—where risks are pushed down to subcontractors—may work in predictable construction projects, but renewable energy demands a different strategy. A contract that looks good on paper but overburdens subcontractors with risks they cannot control may not ensure successful project delivery.

By applying the Abrahamson Principles and Bunni Criteria, contracts can balance risks more fairly, ensuring that those best equipped to manage, mitigate and absorb risks are the ones responsible. This approach fosters a more sustainable industry where subcontractors are incentivised to participate, rather than priced out or burdened with unsustainable liabilities.



[7]Research by Infrastructure Australia has highlighted the impact of poor risk allocation on project costs and contractor participation, particularly in public-private partnerships and large-scale infrastructure projects: see Infrastructure Australia, *Delivering Outcomes: A New Approach to Risk Allocation* (Discussion Paper, 2022).

Conclusion

As the renewable energy sector continues to grow, civil contractors must adapt to the evolving landscape of risk allocation. Traditional contracting approaches—where risks are aggressively pushed onto subcontractors—may not be sustainable in this industry. Unfair risk allocation can discourage contractor participation, drive up costs, and ultimately lead to project delays and failures.

By applying the Abrahamson Principles and Bunni Criteria, contractors can engage in more balanced negotiations, ensuring risks are allocated to the party best suited to manage them. This not only reduces financial and operational exposure but also fosters a more collaborative approach to delivering renewable energy projects on time and on budget.

For contractors considering entry into the renewable energy space, knowledge is key. Understanding risk, negotiating fair contracts, and identifying opportunities for risk mitigation can position businesses for long-term success. This guide serves as a foundation for building that knowledge—empowering contractors to make informed decisions and confidently navigate this dynamic industry.

In a future eBook, we will take this discussion further by exploring specific contractual clauses and risk mitigation strategies that can help address the key risks identified in this guide. This will provide contractors with practical tools and negotiation insights to structure contracts in a way that protects their interests while fostering sustainable project delivery in the renewable energy sector.

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With over 16 years of experience, Tristan is a seasoned legal expert specialising in energy, construction, property and planning law. His career spans top-tier law firms as well as in-house roles within ASX-listed and internationally listed companies. Tristan has provided end-to-end legal advice to a diverse range of clients, including energy companies, developers, builders and contractors, showcasing his versatility and depth of knowledge across industries.

Tristan's expertise lies in preparing and negotiating contracts, conducting contract reviews and assisting with contract management. He has also advised on planning matters, including conducting planning appeals and defending planning prosecutions. His recent work included reviewing legal agreements as part of the due diligence process for a large-scale wind, solar and green hydrogen development exceeding 5GW.

As an articulate communicator and skilled public speaker, Tristan has a unique ability to distil intricate legal and commercial concepts into clear, engaging and actionable insights. He brings a balanced approach to his work, combining a commercial big-picture mindset with attention to detail. Committed to continuous learning, Tristan actively contributes to thought leadership and industry best practices, further solidifying his reputation as a trusted expert in property, construction and energy law.

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