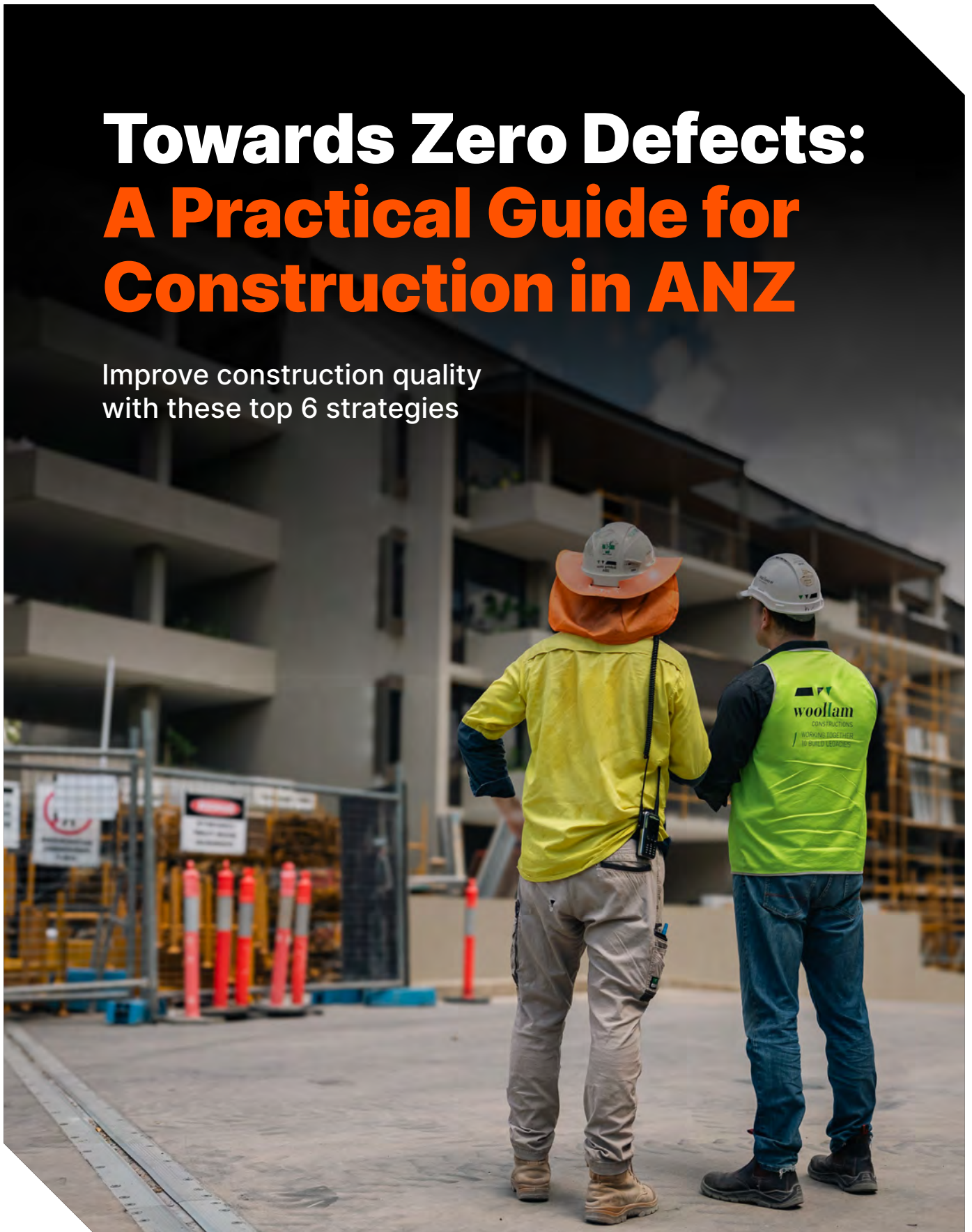


Towards Zero Defects: A Practical Guide for Construction in ANZ

Improve construction quality
with these top 6 strategies



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Quality: It's non negotiable

Time, cost and quality are the fundamental elements of a successful (and safe) construction project. When you, as the builder, contractor or owner can see a good balance between these three elements, the project is deemed successful. Though it is the quality of the build that will have the most long-lasting impact.

Throughout the delivery of the project, planning, quality assurance, documentation, communication and teams all make a critical contribution to the quality of the final product. When one is out of sync with the others, it shows.

Across Australia and New Zealand, apartment buildings have been making the headlines for all the wrong reasons and each example represents a clear imbalance of the above elements. Opal and Mascot in Australia; New Lynn's Merchant Quarter in New Zealand have all fed into a growing sense of distrust. And with legislative changes such as the extra powers given to the NSW Building Commission coming into effect, quality is now more than ever a non-negotiable. Those who can achieve **zero defects**, comply with **changing legislation**, and **build trust and accountability** will dominate their sector.

Why is it going wrong?

Construction businesses are facing tough times. In 2023 28% of Australian business failures were construction firms.¹ Persistent increases in labour and material costs are driven by labour shortages, rising interest rates, and supply chain issues. And on top of this, rework is still stealing a significant portion of productive hours across Australia and New Zealand with 1 in 8 hours being spent on rework.²

Defects have become normalised as inevitable. Whether it is neglecting detailing, minor gaps in waterproofing, major flaws such as flammable cladding used in a non-compliant application or structural concrete reinforcing that is not installed correctly, the cumulative impact has been a loss of faith in the competency and workmanship of construction practitioners. At the same time, project teams have become accustomed to rework as a fact of life, with some contractors experiencing margin erosions of up to 30% due to rework.³ Research is also suggesting there is a strong correlation between defects and safety incidents.

SOURCE: ¹[Australian Securities & Investments Commission \(20 December 2023\) ASIC's annual corporate insolvency statistics shows COVID-19 impact on small business ASIC Newsroom](#)

²[Procore Technologies \(2023\) How We Build Now, Technology and Industry Trends Connecting ANZ Construction in 2023 accessed 18 July 2024](#)

³[Lean Construction ANZ \(15 July 2021\) Rework Hurts People and projects accessed 18 July 2024. \[leanconstructionanz.org\]\(http://leanconstructionanz.org\)](#)

Mistakes do happen

It is natural for mistakes to happen on the jobsite. But when you're dealing with razor-thin profit margins, changing demands of consumers and regulators, and increased safety protocols on the jobsite, there is little room for error. Here are six of the most common mistakes that cause defects:

1. Ineffective quality control
2. Inadequate documentation
3. Flaws in the scope of work
4. Communication failures
5. Variations
6. Unskilled contractors

Challenge yourself to hit zero defects

There are several reasons why the above mistakes can occur. The bar needs to be raised—a new culture and practice of zero defects should become the norm. It may seem like an audacious goal, but we have already taken on the target of zero injuries and seen the benefits. The result of zero harm approaches to safety has been a heightened awareness of risk and a deliberate focus on identifying and addressing the most common causes of injuries and deaths. Taking a similar approach to defect prevention is ambitious and achievable.

This playbook will show you how to make a start and why committing to zero defects will have broader benefits for productivity, profitability and your teams and stakeholders.



“Rework continues to impact businesses of all sizes – and rework is closely linked with building quality. Communication, consultation and coordination to ensure we don’t have to go back and fix defects.”



Matthew Rayment 

COO
PBS Building
Australia



01 Mistake #1 — Ineffective Quality Control

“ A construction defect occurs whenever finished or partially completed construction fails to perform as required by applicable contract documents or accepted standards. It is the bridge whose cables flex and snap, the concrete that is understrength or structurally deficient, the roof that leaks, the adhesives that do not bond and the paint that peels...”

Robert C. Epstein, Greenberg Traurig LLP⁴

Construction experts classify defects into two camps:



1. Obvious defects noticed before completion.

These cost you time in rework.



2. Latent defects discovered post-completion,

sometimes years later. These can result in further investigation and potentially, legal action.

SOURCE: ⁴Epstein C. R (13 December 2016) [Construction Defects: Who Is Responsible for What?](#), Greenberg Traurig LLP, accessed 2 August 2021



You need effective Quality Control processes

Start by finding the weakest links in your value chain, then tackle them first. Just as reporting on near-miss safety incidents helps improve safety protocols and practices, tracking quality issues reveals where you need to pay more attention.



Nailing Quality Control

Digital Quality Control processes help ensure each stage, from design through to commissioning, meets the appropriate standards for code compliance, workmanship and product performance. You can also incorporate checks and balances that ensure flaws are identified and rectified quickly, before practical completion. Concerningly, while 72% of construction companies capture records in a compatible digital format, parts of the industry are still lagging with 12% admitting they don't have a digital system for compliance and quality records.⁵

How to make a start: Identify where quality issues generated rework on recent projects. Make a digital Action Plan for introducing quality assurance checklists and hold points, then track how project results change so you can spot any important trends.

Try This:

Download a sample template for a [Concrete and Formwork Inspection Test Plan \(ITP\)](#) or a [Pre Wall Sheeting Inspection Test Plan \(ITP\)](#)



“Once you know what 80-90% of the rework issues are, then you can narrow it down and program them at startup. Planning for them seems to bring a lot more reward for us.”



Emile Cloete
Digital Lead
Woollam
Australia



— AIMING FOR ZERO

82% of construction companies believe that better use of data can help to avoid problems with onsite communication and QA processes.⁵

Read how [Woollam used data analysis](#) to discover and improve rework and defect offenders.

SOURCE: ⁵Procore Technologies (10 August 2021), [New research highlights tech gap hindering construction compliance and quality assurance](#) Procore Newsroom

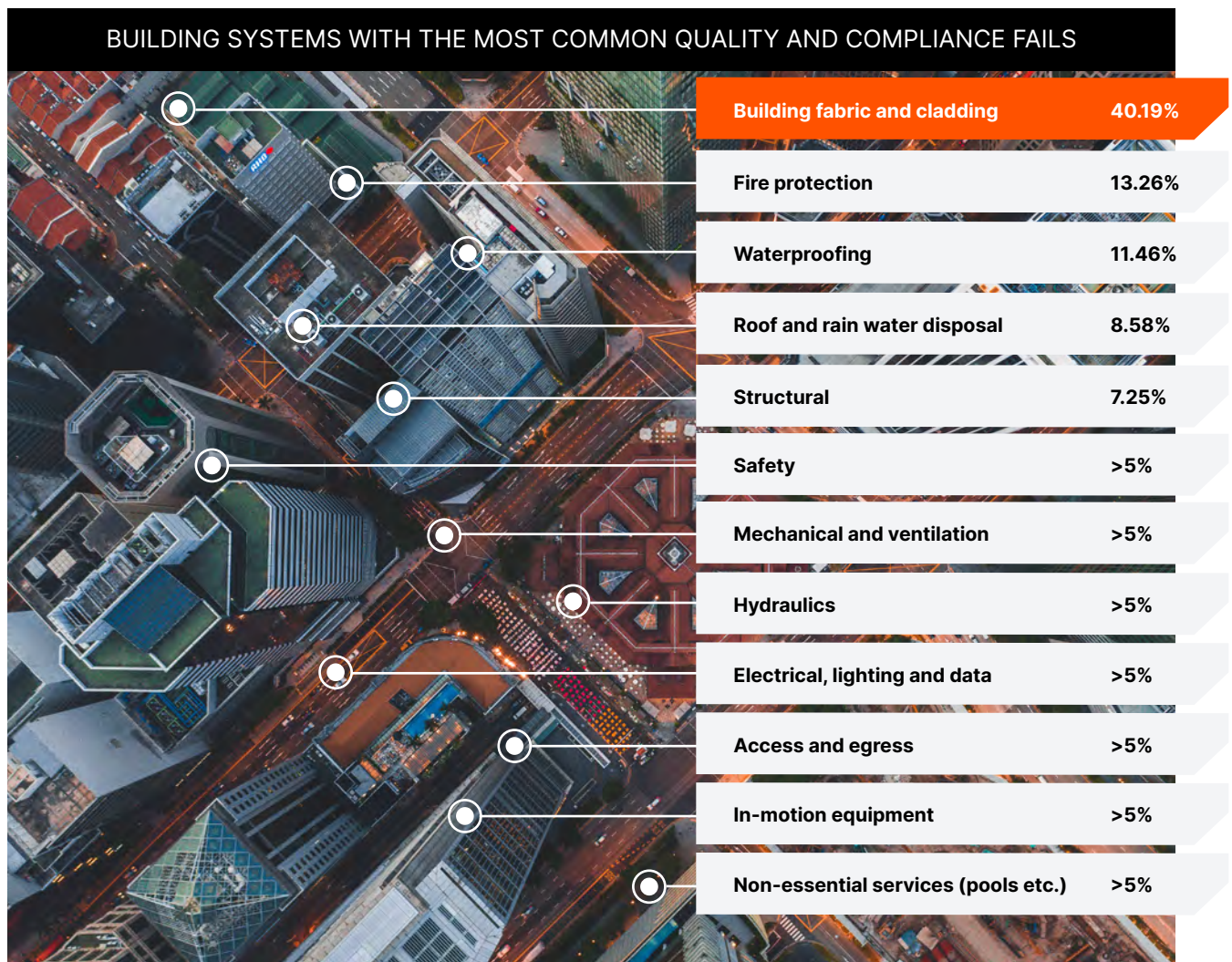
02 Mistake #2 — Inadequate Documentation

It's been considered normal for many commercial and multi-residential projects to start without having complete, detailed designs for the final building. As the Shergold and Weir Building Confidence report notes, the documentation blanks often get filled in along the way by subcontractors, consultants or in response to a variation.⁶

This is a massive problem because design documentation can cause at least half the most common defects.

Why is it going wrong?

Research has found there are 13 building systems most frequently associated with defects in Australian multi-residential projects.



SOURCE: ⁶Australian Government Department of Industry, Science and Resources (1 April 2018), Building confidence: Building Ministers's Forum expert assessment accessed 18 July 2024. industry.gov.au/

“ Studies have shown 50 to 60% of building defects are attributed to design issues or would have been preventable better design.”

NICOLE JOHNSTON, Deacon University.⁷

How to get your documentation right

[Shergold + Weir](#) recommended that every commercial building is handed over with a comprehensive digital manual that includes:

- + Fire safety system details and maintenance requirements
- + Assumptions made in any performance solution
- + Building product information, including certificates and details of maintenance or safety requirements
- + Conditions of use—such as occupant numbers, loads, replacement of products after certain periods (for example, glass after 25 years)

Try This:

Create a process for design using digital software platforms to coordinate, collate and verify documentation. It gives everyone involved on the project a shared, single source of truths.

It is NOT a job for paper, and levelling up to digital processes ensures you comply with regulatory changes as governments and oversight bodies shift to digital systems for project consents and verification.

03 Mistake #3 — Flaws in the Scope of Work

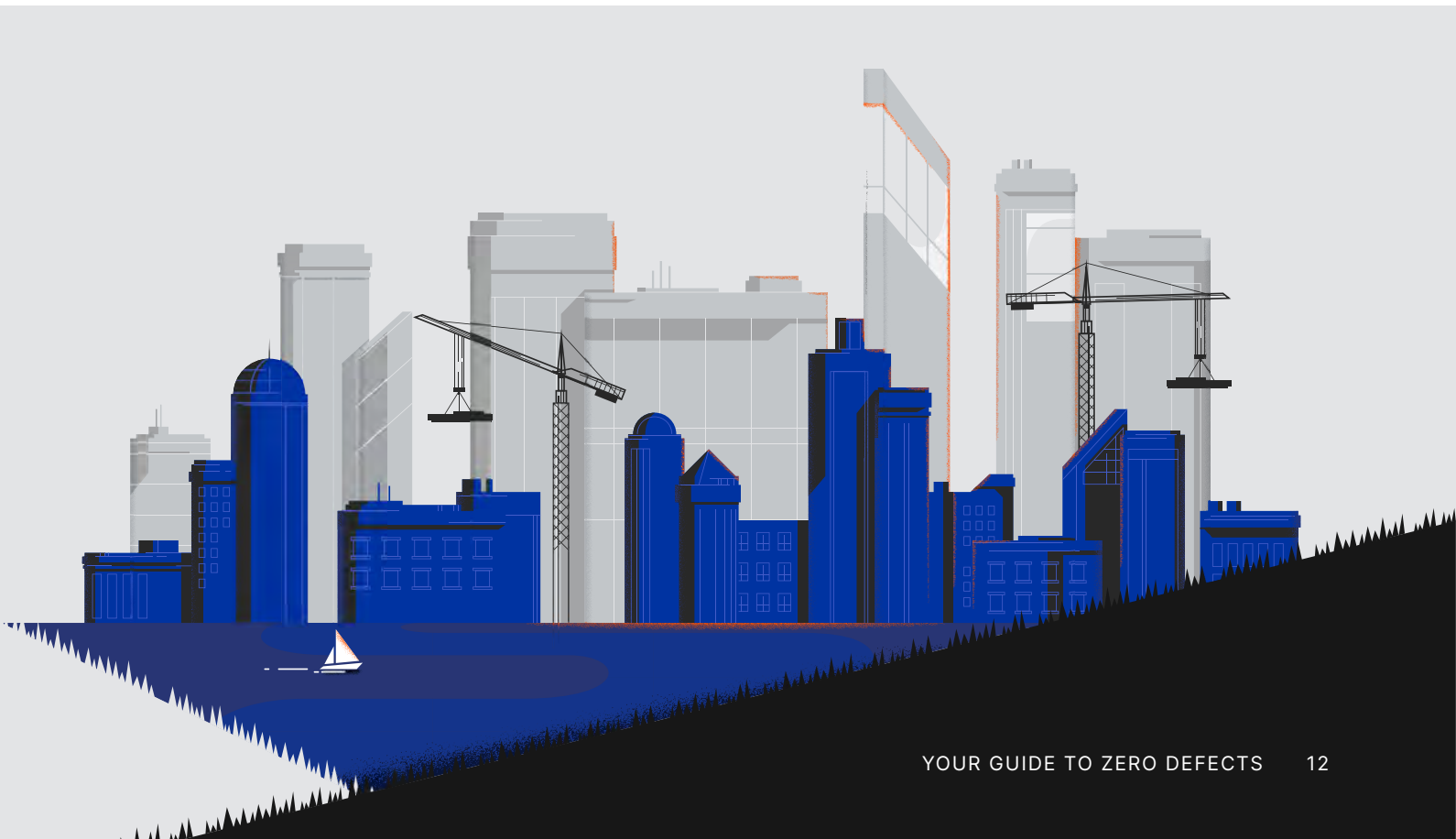
A loose scope in your contract can be a recipe for errors. It may not specify that practical completion means delivered without defects, or it may not explicitly define the relevant benchmarks, standards and quality verification processes a works package must achieve.

According to construction law experts Clarks Legal in the UK, the contract definition of practical completion sometimes assumes there will be defects that the builder and trades will return to fix post-handover. This approach is like assuming a project will result in a certain number of worker hospitalisations—and that is not a target anyone wants to have.

It's time to tighten your specs.

Try This:

Standards and codes are moving to the digital domain to improve usability and access. For example, the Australian National Construction Code is now completely digitised. Look into your options for also obtaining access for your team to cloud-hosted standards.





Do your homework

You won't find everything you need to know in the National Construction Code or state building codes. They don't include specific details of every standard you need to meet, and they also don't provide deemed-to-satisfy solutions for every element of project design and construction. Building codes rely on multiple supporting documents being consulted and addressed including, ISO or AS/NZ Standards, Technical Guidance protocols, local regulations and other publications



Make a Plan

The Australian Institute of Project Management recommends developing a Scope Management Plan that includes:

- + A structured task list that incorporates the roles and responsibilities of the project team
- + A communications process for approving project deliverables
- + A document that sets out how change requests are to be documented and controlled



Use the power of digital document management

Increase upstream collaboration and boost your team's productivity by having real-time access to your general contractor and back office's most up-to-date information. Use historical productivity data to prove your team's ability to produce quality work, close out on time, and stick to the budget. Go fully digital to ensure no change order, RFI, or drawing update is missed and get paid for all the work you put in place.



04 Mistake #4 — Communication Failures

So much of a project rides on the results of design and construction. So having clear communications and a record of every decision is vital. A poll survey conducted by Procore revealed that 74% of respondents believe the biggest issues with on-site compliance is a lack of communication.⁵

“But they didn’t tell me that!” and “we lost the paperwork” are not acceptable defences if a defect leads to litigation. You need to protect your business in the event of a miscommunication. Here’s how.

The Golden Thread: Digitising Project Documentation and Variations

In response to the Grenfell Tower tragedy, Secretary of State for Housing, Communities and Local Government Dame Judith Hackitt’s final report, Building a Safer Future, noted that digitising all project documentation from the outset, and collating all changes and variations creates a “golden thread of information” that can be accessed and applied across the building lifecycle.⁸ Going digital now sets you up for the future too. The Australian and UK construction industries are both [shifting to a digitised documentation and project compliance environment](#).

SOURCE: ⁵Procore Technologies (10 August 2021), [New research highlights tech gap hindering construction compliance and quality assurance](#) accessed 2 August 2021. Procore Newsroom

⁸UK Government Ministry of Housing, Communities & Local Government (17 May 2018), [Independent Review of Building Regulations and Fire Safety: final report](#) accessed 2 August 2021

ANZ construction companies that improve access to project information and engage in efficient data management find that on average 14% of total project spend could be saved.²



Did they hear you?

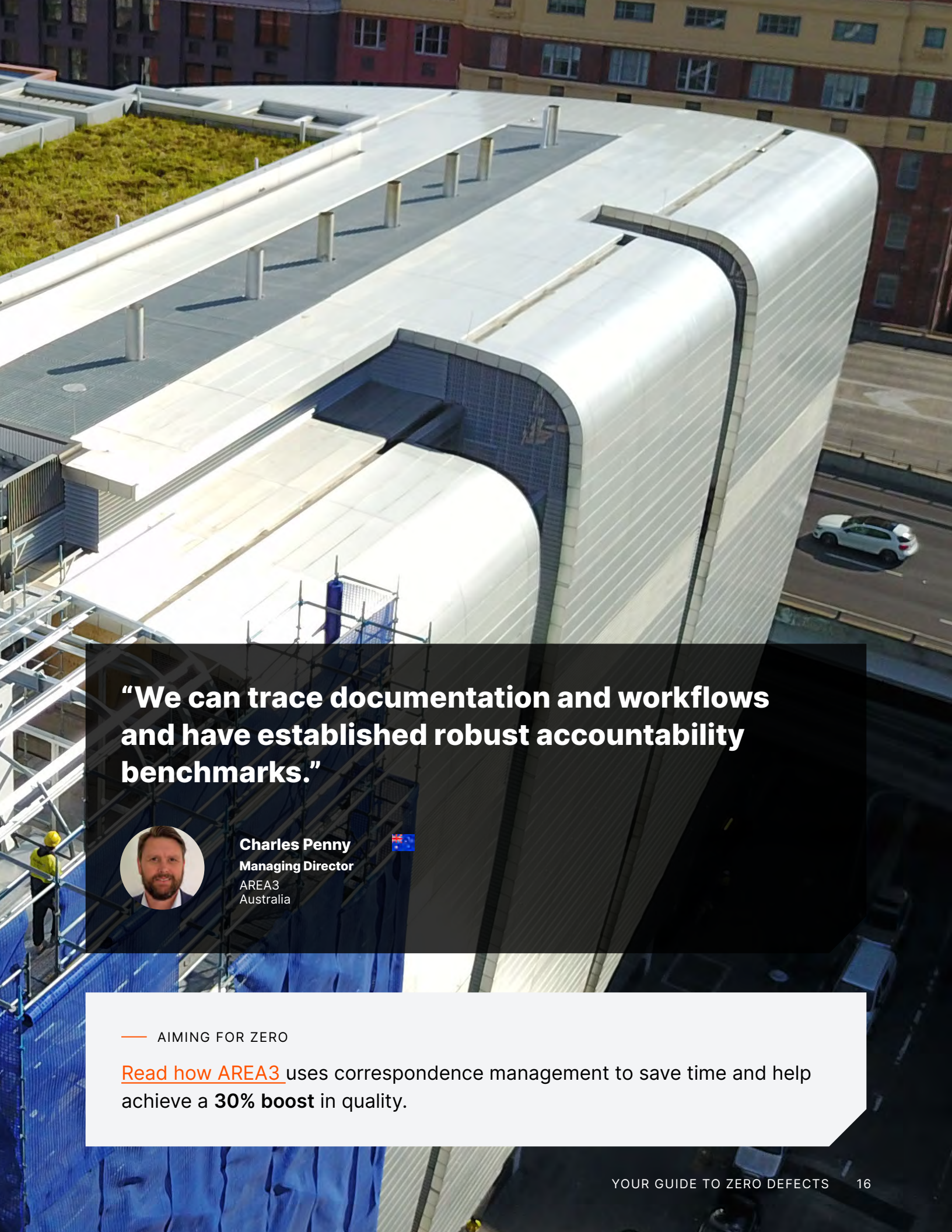
Structure and organise communication processes to verify that communications were received and people were held accountable. You can do this with a digital pre-start checklist for the works.

Try This:

Digital pre-start checklists put everyone on the same page. Just like a Safe Work Method Statement, the checklist covers:



SOURCE: ²Procore Technologies (2023) [How We Build Now, Technology and Industry Trends Connecting ANZ Construction in 2023](#), accessed 18 July 2024



“We can trace documentation and workflows and have established robust accountability benchmarks.”



Charles Penny
Managing Director
AREA3
Australia



— AIMING FOR ZERO

[Read how AREA3](#) uses correspondence management to save time and help achieve a **30% boost** in quality.



05 Mistake #5 — Variations

Variations can make or break your project budget or program. They can be essential when a product or subcontractor becomes unavailable, or when a client changes their mind about something. However, they can also be a major source of defects, particularly when they are purely a cost-saving or ‘value engineering’ measure.

According to Dame Judith Hackitt’s report *Independent Review of Building Regulations and Fire Safety: Final Report*, in many cases, value engineering results in lowered quality.⁸

Variations are not always properly documented and verified. Shergold and Weir found that in some cases, documentation is done after the variation is complete, which means there was no proper review of its suitability or compliance with standards.⁶

Get real value from variations

The Royal Institute of Chartered Surveyors has developed comprehensive guidance on variations that aims to put the “value” into “value engineering”.⁹

The key message is: do it right and plan as early as possible.

“ The exercise is not about removing necessary cost from a project by reducing its scope, omitting work items or downgrading the specification below the level of performance required by the client.”⁵

Jeremie Henry, Industry Partnerships Manager at Procure

SOURCE: ⁸UK Government Ministry of Housing, Communities & Local Government (17 May 2018), [Independent Review of Building Regulations and Fire Safety: final report](#) accessed 2 August 2021

⁶Australian Government Department of Industry, Science and Resources (1 April 2018), [Building confidence: Building Ministers’s Forum expert assessment](#) accessed 18 July 2024. [industry.gov.au/](#)

⁹Royal Institute of Chartered Surveyors (2017) [Value management and value engineering](#), RICS professional standards and guidance, UK, accessed 2 August 2021.

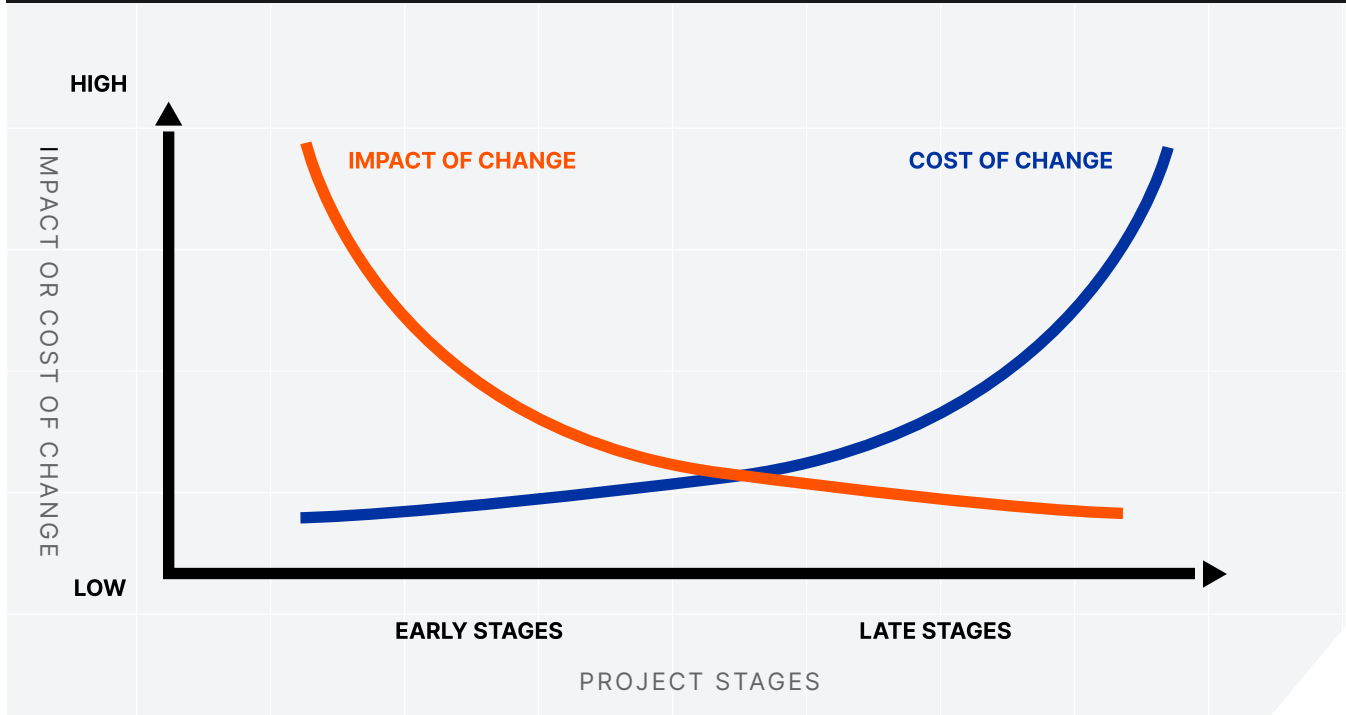
⁵Procure Technologies (10 August 2021), [New research highlights tech gap hindering construction compliance and quality assurance](#) accessed 2 August 2021. Procure Newsroom

Cost vs Impact

RICS identified a cost/impact curve for variations.

- + Variation during scoping or design stage: low cost, potential high positive impact
- + Variation during works: cost rises as project proceeds, positive impacts are reduced

FIGURE 1: COST OF CHANGE INCREASES AS IMPACT OF CHANGE DECREASES



Try This:

Having a shared digital solution to access project documentation and data that can integrate and analyse variations in real-time is a major time-saver.

[Read how Balmain & Co did it and also achieved 100% Quality benchmarking.](#)



“Having access to measurable data at any stage of the project is very important and helps us track quality, minimise potential risk and build a database to support future growth.”



Mick O'Connell
Construction Manager
Balmain & Co
Australia





06 Mistake #6 — Unskilled Contractors

Shergold and Weir found that issues around licensing requirements and practitioners not keeping up to date with codes and standards are major contributors to the high rate of construction defects.⁶ As a result, formal frameworks are being put in place to specify the required licenses, qualifications, experience and knowledge for builders, consultants and trades.

How to get your documentation right

Some contractors just don't cut it. According to researchers⁷, this can be because:

- × The person lacks knowledge about the products they need to use
- × They are rushed and cut corners
- × Their skills are not up to scratch
- × They don't have the right credentials or training
- × No effective supervision
- × They've never been held accountable



The cause of the majority of defects reported to BSA is simply a lack of care and attention to detail when carrying out work, coupled with inadequate supervision. The result of the defects however is significant, requiring time-consuming and costly repair.”

Building Services Authority and Construction Skills Queensland.
Prevent Defects in Brick and Concrete. Queensland

SOURCE: ⁶Australian Government Department of Industry, Science and Resources (1 April 2018), [Building confidence: Building Ministers's Forum expert assessment](#) accessed 18 July 2024. [industry.gov.au/](#)

⁷Griffith University (2019) An Examination of Building Defects in Residential [Multi-Owned Properties](#) accessed 2 August 2021. [Griffith.edu.au](#)



Make defect-free a part of your business culture

A shared standard of high-quality work is essential to ensuring all your contractors carry their work out effectively, according to Prime Build. Working towards defect-free builds is not a solo job, it requires everyone to share in the effort.

Try This:

Have systems in place to capture the credentials and qualifications of all subcontractors and consultants and introduce a process for verification and record-keeping. This ensures you can provide information quickly to building regulators, clients or other parties if that subcontractor or consultant needs to be held accountable for defects.

“If we want to hit zero defects, we have to take pride in not only what we do, but who we are as people. So if you’re working on a job and you discover a defect you don’t leave it. Instead, you say, ‘You know what? I’m proud of my job and this is my career. I’m going to fix this.’”



Dean Willemsen
Managing Director
Prime Build
Australia



Are you ready for the Zero Defects Challenge?

Aiming for zero defects may seem like a massive challenge, but if you don't aim for the best, defects will remain a challenge to your business. And there are rewards to be had in terms of time saved, costs avoided and building a positive reputation in this highly competitive industry.

Meet the construction management platform with quality at its core

Delivering quality projects takes more than just a good team. It takes the right technology, too. Procore connects teams to eliminate delays and increase productivity. Break down data and communication silos, reduce risk and rework, and take care of compliance so your team can deliver the highest standards in quality every time.

[Learn More](#)



Digitise Quality Assurance

Build digitised quality assurance processes to help reduce defects.



Drive Accountability + Trust

Drive accountability and trust in all stakeholders by collaborating and executing quality assurance processes together.



Report, Measure, Improve

Report, measure and improve on quality/defect outcomes in real time on one single platform.



Use Data-driven Insights

Use data-driven insights to cultivate a zero-defect mindset with an integrated platform.

Produced by
PROCORE TECHNOLOGIES, INC.

Procore Technologies, Inc. (NYSE: PCOR) is a leading provider of construction management software. Over 1 million projects and more than \$1 trillion USD in construction volume have run on Procore's platform. Procore's platform connects key project stakeholders to solutions Procore has built specifically for the construction industry—for the owner, the head contractor, and the subcontractor. Procore's Marketplace has a multitude of partner solutions that integrate seamlessly with Procore's platform, giving construction professionals the freedom to connect with what works best for them. Headquartered in Carpinteria, California, Procore has offices around the globe. Learn more at [Procore.com](https://procore.com).

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