

Keeping Our Projects Flying

Applying how the aviation industry
thinks to the construction industry and
megaprojects

Kiri Parr
June 2022

Introducing the Mud Dauber Wasp.



Figure 1. Mud dauber wasp emerging from an uncovered pitot tube.
(Source:backcountrypilot.org)



Figure 2. Australian Mud Dauber Wasp
(Source: BrisbaneInsects.com)

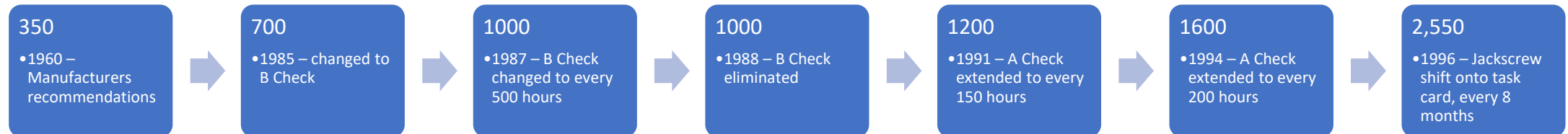
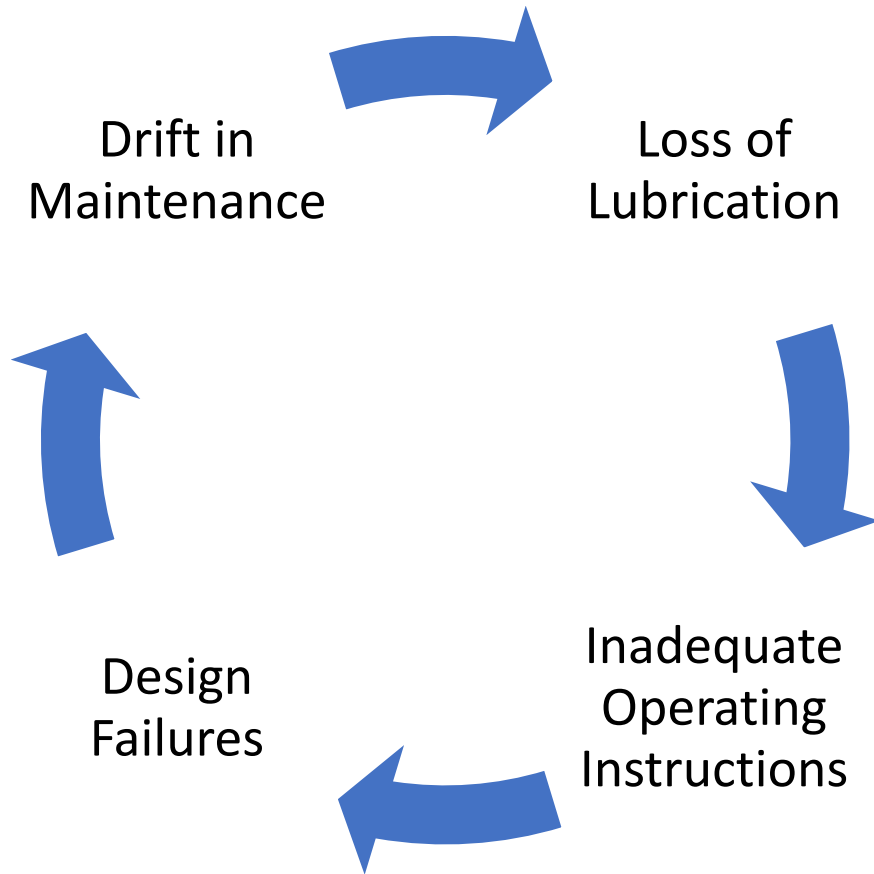
“everything we know in aviation, every rule in the rule book, every procedure we have, we know because someone somewhere died.”

Captain Chesley “Sully” Sullenberger

Complex Systems – a primer



Alaska Flight 261





Preoccupation with Failure

- constantly on the search for lapses for lapses and errors, the little things that can be warning of things to come



Reluctance to Simplify

- the real story is down in the details, close to the action and in the interactions in the system



Sensitivity to Operations

- you know what is going on and are continuously sensitive to change



Commitment to Resilience

- it is about how you solve and learn from errors, not blame



Deference to Expertise

- Value expertise over authority.

High Reliability Organisation Theory

...and the Empire State Building



Supervision was Enormous

The overseers, from job foreman to architect, were on the site constantly collecting every detail of the job.



Supply Chain Detail

Limestone was pre-cut and delivered with prefabricated metal ready to instal.



Specialised equipment for project

Rather than renting, they bought new equipment specifically made for the job - from narrow rail tracks and special hoists.



Strategic Alliance

The architect and the contractor were both appointed at the outset and were selected on skill, not price.



Designed for speed of construction

Windows, spandrels, steel mullions and stone designed for duplication and an assembly line production approach.



Who's watching counts!

The advantage of effective regulators.

Article 37 of the Chicago Convention, requires contracting states to:

collaborate with the other contracting states:

...to secure the highest practicable degree of uniformity in regulations, standards, procedures and organisation in relation to aircraft, personnel, airways and auxiliary service...

CASA's explicit no blame culture:

CASA embraces, and encourages the development throughout the aviation community of, a 'just culture', as an organisational culture in which people are not punished for actions, omissions or decisions taken by them that are commensurate with their experience, qualifications and training, but where gross negligence, recklessness, wilful violations and destructive acts are not tolerated.

Compare the Pair

Building a Safer Future – Independent Review of Building Regulations and Fire Safety: Final Report 5



Building a Safer Future Independent Review of Building Regulations and Fire Safety: Final Report

Presented to Parliament
by the Secretary of State for Housing, Communities and Local Government
by Command of Her Majesty

May 2018

Cm 9607

A personal view from Dame Judith Hackitt



In my interim report published in December 2017 I described how the regulatory system covering high-rise and complex buildings was not fit for purpose. In the intervening period, we have seen further evidence confirming the deep flaws in the current system:

- lack of an audit trail as to whether essential safety work was carried out on the Ledbury Estate, and other large panel systems tower blocks;
- a door marketed as a 30-minute fire door failed prior to 30 minutes when tested, revealing concerns around quality assurance and the ability to trace other fire doors manufactured to that specification;
- another tower block fire where fire spread between floors via wooden balconies; and
- a major fire in a car park in Liverpool which came close to encroaching on a block of flats nearby.

It is not my intention to repeat here all of the shortcomings identified in the interim report. However, it is important to emphasise that subsequent events have reinforced the findings of the interim report, and strengthened my conviction that there is a need for a radical rethink of the whole system and how it works. This is most definitely not just a question of the specification of cladding systems, but of an industry that has not reflected and learned for itself, nor looked to other sectors. This does not mean that all buildings are unsafe. Interim mitigation and remediation measures have been put in place where necessary for existing high-rise residential buildings to assure residents of their safety regarding fire risk. It is essential that this industry now works to implement a truly robust and assured approach to building the increasingly complex structures in which people live.

The key issues underpinning the system failure include:

- **Ignorance** – regulations and guidance are not always read by those who need to, and when they do the guidance is misunderstood and misinterpreted.

- **Indifference** – the primary motivation is to do things as quickly and cheaply as possible rather than to deliver quality homes which are safe for people to live in. When concerns are raised, by others involved in building work or by residents, they are often ignored. Some of those undertaking building work fail to prioritise safety, using the ambiguity of regulations and guidance to game the system.
- **Lack of clarity on roles and responsibilities** – there is ambiguity over where responsibility lies, exacerbated by a level of fragmentation within the industry, and precluding robust ownership of accountability.
- **Inadequate regulatory oversight and enforcement tools** – the size or complexity of a project does not seem to inform the way in which it is overseen by the regulator. Where enforcement is necessary, it is often not pursued. Where it is pursued, the penalties are so small as to be an ineffective deterrent.

The above issues have helped to create a cultural issue across the sector, which can be described as a 'race to the bottom' caused either through ignorance, indifference, or because the system does not facilitate good practice. There is insufficient focus on delivering the best quality building possible, in order to ensure that residents are safe, and feel safe.

A global concern

England is by no means alone in needing to improve building safety. Scotland has provided some excellent examples of good practice which are included in this report, in particular around supporting resident participation and collaboration. However, at the time of writing, the Scottish Government had commissioned a further review of building regulation, driven by serious structural failures which have occurred there. The Building Products Innovation Council in Australia

12 Building a Safer Future – Independent Review of Building Regulations and Fire Safety: Final Report

- Those **who procure, design, create and maintain** buildings are responsible for ensuring that those buildings are safe for those who live and work in them.
- **Government** will set clear outcome-based requirements for the building safety standards which must be achieved.
- The **regulator** will hold dutyholders to account, ensure that the standards are met and take action against those who fail to meet the requirements.
- **Residents** will actively participate in the ongoing safety of the building and must be recognised by others as having a voice.

Recommendations

The recommendations for this new regulatory framework are explained over the following ten chapters of this report and are summarised below.

The key parameters of a new regulatory framework (set out in Chapter 1) will establish:

- A **new regulatory framework** focused, in the first instance, on **multi-occupancy higher risk residential buildings (HRRBs) that are 10 storeys or more in height**.
- A **new Joint Competent Authority (JCA)** comprising Local Authority Building Standards, fire and rescue authorities and the Health and Safety Executive to oversee better management of safety risks in these buildings (through safety cases) across their entire life cycle;
- A **mandatory incident reporting mechanism** for dutyholders with concerns about the safety of a HRRB.

Improving the focus on building safety during the design, construction and refurbishment phases (set out in Chapter 2) through:

- A set of **rigorous and demanding dutyholder roles and responsibilities** to ensure a stronger focus on building safety. These roles and responsibilities will broadly align with those set out in the Construction (Design and Management) Regulations 2015;

- A **series of robust gateway points to strengthen regulatory oversight** that will require dutyholders to show to the JCA that their plans are detailed and robust; that their understanding and management of building safety is appropriate; and that they can properly account for the safety of the completed building in order to gain permission to move onto the next phase of work and, in due course, allow their building to be occupied;
- A **stronger change control process** that will require robust record-keeping by the dutyholder of all changes made to the detailed plans previously signed off by the JCA. More significant changes will require permission from the JCA to proceed;
- A **single, more streamlined, regulatory route to oversee building standards** as part of the JCA to ensure that regulatory oversight of these buildings is independent from clients, designers and contractors and that enforcement can and does take place where that is necessary. Oversight of HRRBs will only be provided through Local Authority Building Standards⁴ as part of the JCA, with Approved Inspectors available to expand local authority capacity/expertise or to newly provide accredited verification and consultancy services to dutyholders; and
- **More rigorous enforcement powers**. A wider and more flexible range of powers will be created to focus incentives on the creation of reliably safe buildings from the outset. This also means more serious penalties for those who choose to game the system and place residents at risk.

Improving the focus on building safety during the occupation phase (set out in Chapter 3) through:

- A **clear and identifiable dutyholder** with responsibility for building safety of the whole building. The dutyholder during occupation and maintenance should maintain the fire and structural safety of the whole building, and identify and make improvements where reasonable and practicable;

⁴ The proposed new name for Local Authority Building Control – see Chapter 2.



The importance of the independent review and checking roles.



Another way to think about why Dispute Avoidance Boards work?



- Preoccupation with failure – their explicit role is to find problems and solve them quickly.
- Reluctance to Simplify – their experience means they are able to understand the detail and ask for more information as and when needed.
- Sensitivity to Operations – structured involvement on project built around explicit project knowledge, regular site visits and a relationship based approach.
- Commitment to Resilience – their prime focus is dispute avoidance.
- Deference to expertise – a 3 person DAAB brings 3 areas of expertise to the project and who hold a position of trust.

The Tale of the Boeing 787 Dreamliner – even airlines can forget their lessons.



5 question to feel uneasy about:

1. Am I worried enough?
2. Who's watching, what are they watching and will they speak up?
3. Does information get to me and how long does it take?
4. Am I finding problems and solving them?
5. What am I missing if I only see polished summaries?

THANK YOU