

An Independent Review of Building Regulations of Fire  
Safety through the lenses of Process Safety and  
Systems Thinking

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# The personal background story

- Lessons learned as a student
- Process Engineer and Operations management in industry
- Representing the industry
  - Learning to listen to stakeholders
  - Lessons not learned
- Chair of HSE – 2007-2016
  - Reclaiming the importance of real health and safety
  - Focus on the big risks
- Independent Review of Building Regulations and Fire Safety in the wake of Grenfell Tower

# The Independent Review was commissioned in the wake of the Grenfell Tower fire but with a broader remit to look at the regulatory system for high rise buildings

## **The brief**

- Review commissioned by Government and announced in July 2017.
- End-to-end review – regulatory system\* and people.
- Assess effectiveness of building and fire safety regulations, focusing on high-rise residential buildings.
- Make recommendations that will ensure we have a robust and effective regulatory system for the future.
- Look at and learn from other international regulatory systems
- Separate from the Public Inquiry and Police Investigation into the detail of the Grenfell tragedy

The independent review was commissioned in the wake of the Grenfell Tower fire but with a broader remit to look at the regulatory system for high rise buildings

### **A challenging remit**

- End to end review of the whole system
- Mindful of other reviews and processes taking place eg Expert panel providing detailed advice/guidance and Public Inquiry into Grenfell
- Consideration of new build and life cycle management of occupied buildings including refurbishment work and ongoing integrity management throughout the lifecycle

### **My credentials**

- Many years experience as a chemical engineer in industry in a highly regulated environment
- Decade of leading HSE – a world class regulator
- No previous detailed engagement in Construction
- No political interests
- Independent, objective

## What makes a good regulatory system?

- Primary purpose is to drive the right behaviours
- Much more than what is written in the rules and guidance
- Effective regulator
- Incentives and sanctions
- Clarity on responsibilities and accountabilities
- Lack of ambiguity
- Coherent
- Prescription versus outcomes

From July 2017, the review covered a lot of ground in a very short time...

## **Timeline**

- 30 August 2017 – Terms of Reference
- Autumn 2017 – Mapping, call for evidence, stakeholder bilaterals, industry and resident roundtables
- December 2017 – Interim Report published
- 17 May 2018 – Final Report published
- 17 December 2018 – Government announce that all 53 recommendations will be implemented in full
- May 2019 – Consultation on regulatory change imminent

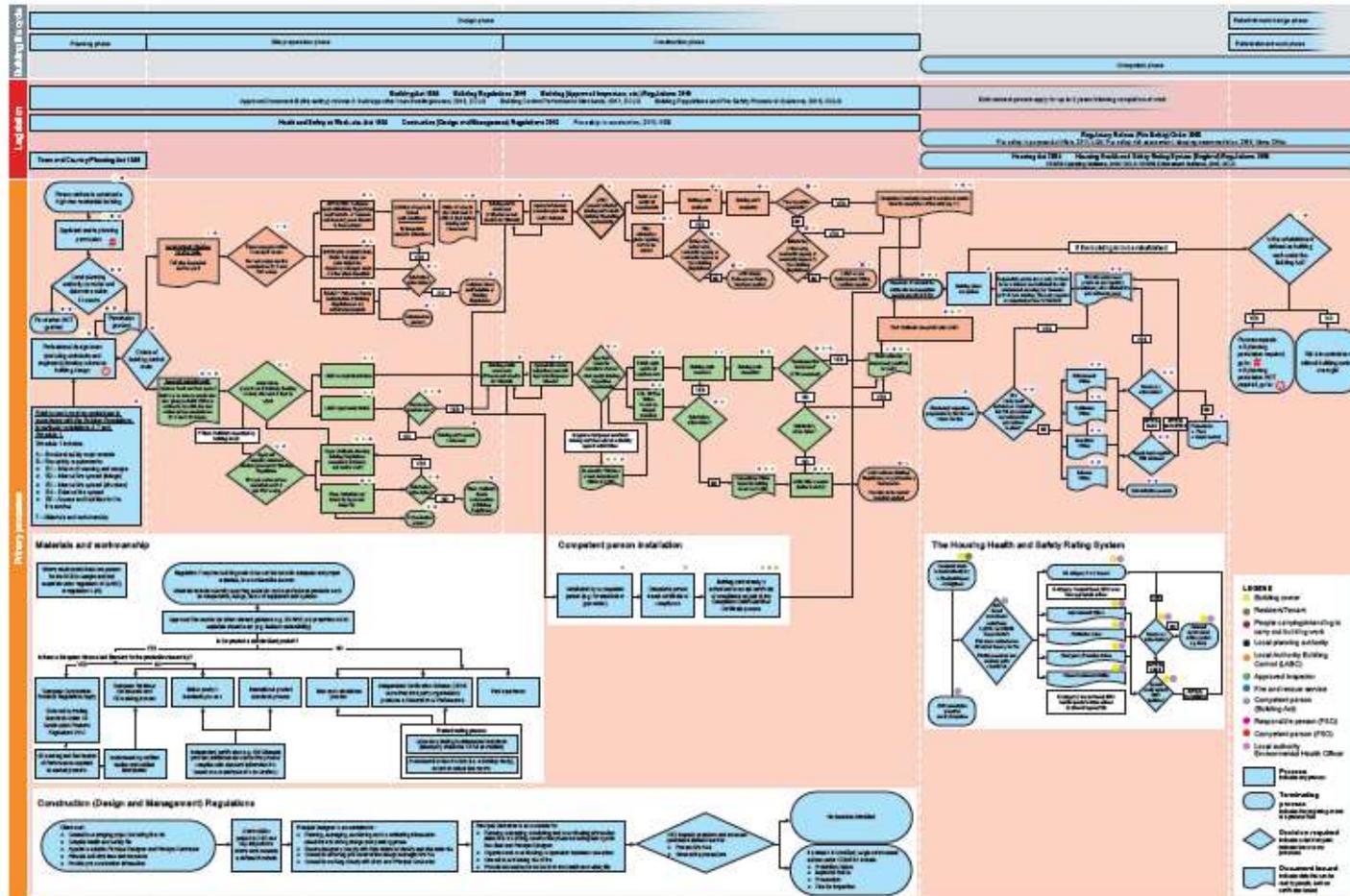
# The system was clearly broken and not fit for purpose

## Interim report findings

- Current regulatory system for ensuring fire safety in high rise and complex buildings is weak and ineffective.
- Little or no enforcement
- Industry behaviour characterised as a “race to the bottom” with significant evidence of gaming the system
- Conflicts of interest abound
- Guidance is prescriptive but siloed, confusing and inconsistent
- Design, change management and record keeping is poor, both during construction, occupation and refurbishment
- Experts are not listened to
- Residents are not listened to and have no reliable means to recourse
- Problems are connected to the culture of the construction industry, building management and the ineffectiveness of the regulators that oversee
- Product testing, marketing, labelling and approval processes are flawed, unreliable and behind the times

# We made a map of the current system..

## Mapping the building and fire safety regulatory system – high-rise residential buildings



# The final report recommended fundamental reform of the whole system...

- Clear accountability for clients, designers and contractors during construction.
- A stronger regulator:
  - Joint Competent Authority comprising Local Authority Building Control, Fire and Rescue Authorities and the Health and Safety Executive.
  - A stronger enforcement and sanctioning package – criminal sanctions and large fines
  - Regulator to hold dutyholders to account to deliver and maintain safe buildings
- Introduction of the principles of a “safety case” regime for high rise complex buildings
  - those wanting to build must demonstrate a safe design
  - Occupation cannot commence until as-built building is demonstrated to be safe
- Clear responsibilities to actively manage on-going safety during occupation:
  - Ongoing ‘safety case’ regime whereby building owners will need to demonstrate to the regulator that buildings are being managed to ensure safety and integrity

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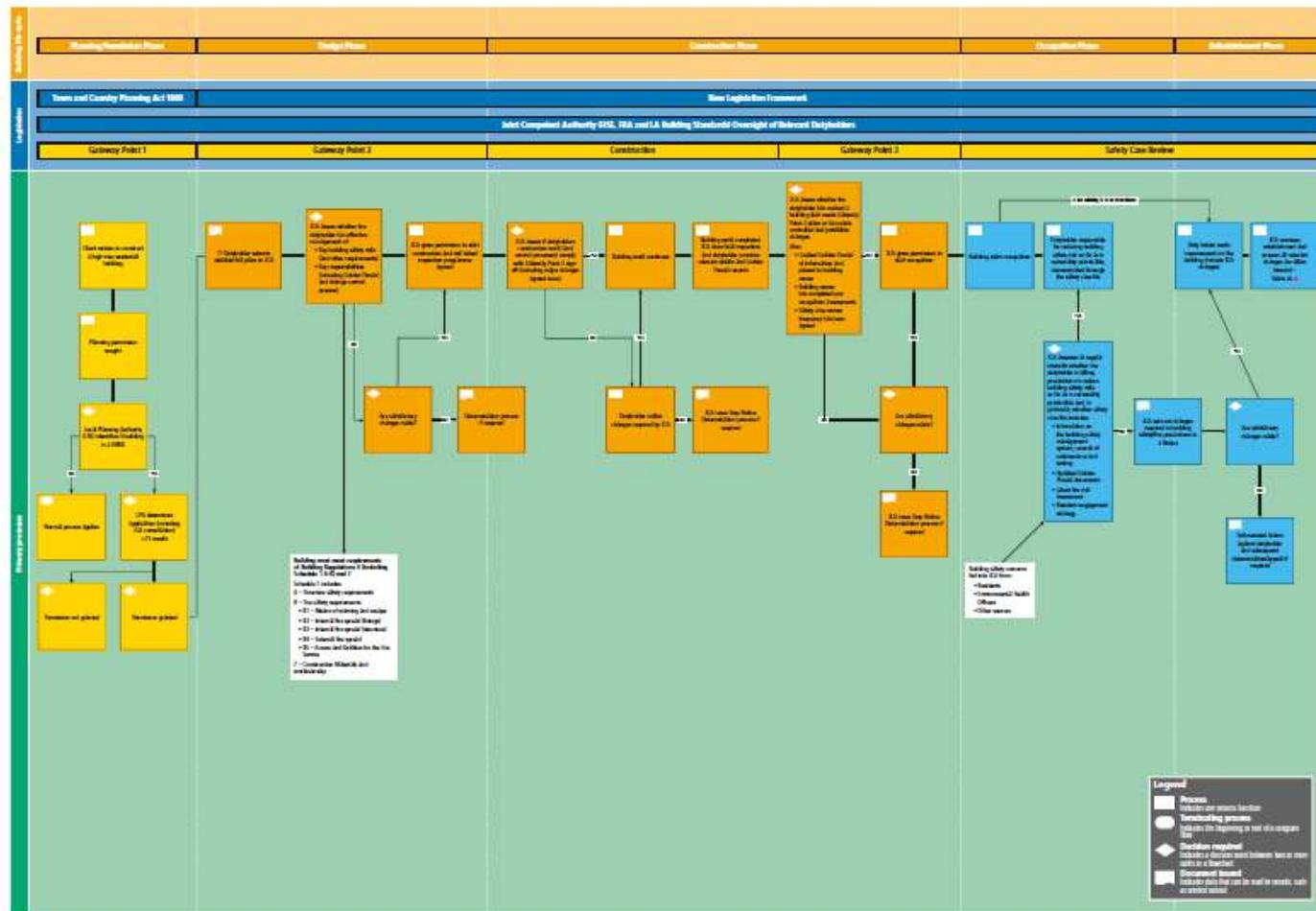
- Empowered residents:
  - Greater access to safety information about the buildings they live in.
  - A culture of engagement and government funding to support residents and landlords working together
  - An independent, no-risk route for redress on safety issues.
  - Responsibilities to maintain safety features in their dwellings.
- Government to strengthen existing guidance before responsibility for technical guidance moves to industry
  - Dependent on industry demonstrating its capability to take ownership
- Industry to lead on strengthening competence of professionals and set out a credible proposal within a year.
  - Industry to determine the competence framework and accreditation required for the 'building safety manager' role.
- Stronger testing, labelling and traceability of products used in construction which are critical to building safety.

## ...underpinned by a set of key principles...

- A systems based approach to both regulations and to buildings
- Accountability and responsibility at the heart of the system
- A culture change underpinned by:
  - Positive incentives for good building practices.
  - Punitive sanctions for those who try to game the system.
- A risk-based, proportionate regulatory framework
  - Simpler
  - More robust
  - Joined up regulation
- An outcomes-based framework to encourage real ownership and accountability – overseen by the regulator with those undertaking building work needing to demonstrate they can handle.

# ...and a new regulatory map. Simpler but more robust and effective

Mapping the new building safety regulatory framework – construction and occupation of a higher-risk residential building (HRRB)



## Progress so far...

- Confirmation that the recommendations will be implemented in full
- Stakeholders strongly support the direction of travel but want more
- Competence working groups set up but struggling to bring coherence (>100 groups)
- Joint Regulatory group set up and conducting pilot work
- Industry Safety Steering group set up involving senior people from other industry sectors
- Government has established a portfolio Board to implement review recommendations and deal with buildings of immediate concern
- Ban on cladding now in place
- Early adopters
- Consultation process about to start
- Interest in systems thinking applied more broadly to policy making
  
- Still lots to do and a long way to go

## Dealing with 2 (or more) systemic failures

- Failure to maintain the integrity and coherence of the regulatory system
- Failure to regard high rise buildings themselves as complex systems/processes with potential for catastrophic consequences
- Failure to learn lessons and translate them across sectors in a systematic way

# Regulatory System Failure

- Fire Safety and Building regulation separate
- Safety of the workforce covered by separate regulation
- Clients able to choose their regulator
- No gateways in the process
- Regulation “evolved” in response to events/priorities
- Policymakers trying to stay ahead of industry and anticipate next moves

# Building System Failure

- Siloed responsibilities – structural vs fire engineering
- Original design not formally approved
- Complete lack of change management discipline and no record keeping
- Serious lack of competence in every trade and no overall supervision/oversight
- Compartments and common parts
- Handover on completion often phased
- Building operator not provided with key information to manage building
- Changes made during occupation not properly reviewed
- Concerns not listened to
- “Non-worsening” vs continuous improvement

## New lessons or a failure to learn old lessons??

- The Grenfell Tower tragedy bears striking similarities to other industrial tragedies with which those in the chemical and oil and gas sectors are already familiar
- Here are just some of them:
  - Inadequate review of design and no assessment of inherent safety features
  - Fire risk assessments focussing on trivial and minor issues not on the whole picture and worst case scenarios
  - Lack of clarity about responsibilities for system safety
  - Failure to manage and review changes during design and ongoing operation
  - Failure to consider buildings as complex systems which need ongoing management and monitoring of their operational integrity
  - Lack of understanding of safety critical features
  - Failure to take opportunities to make improvements

## Silos of knowledge

- Chemical and Process Engineers have known about Process Safety for decades
- We have developed sophisticated tools and techniques to help us become more effective at Process Safety
- We have developed specific qualifications which recognise the importance of this knowledge
- We've been through cycles where we have had to be reminded of just how important it is
- ***But we have failed to share that knowledge with others and help them to see how to apply it more broadly to their areas of responsibility***
- An International problem – not just for the UK

## Failure to learn, share knowledge and look beyond disciplinary boundaries

- Knowledge and concern existed before the tragic events took place at Grenfell
- Principles of process safety and systems thinking slow to catch on in other sectors including construction, gas distribution and power generation
- Other buildings and systems were a cause for concern
- So called “solutions” fixing the wrong problem
- Inability of professionals to see beyond narrow boundaries of their discipline
- Blindness to lessons which could have been learned – and implemented – from other sectors
- Absence of leadership

# What can we do to make a difference?

- There is a need for significant culture change in construction – and it is needed globally - but the lessons apply even more broadly
- We need to share knowledge and experience especially about systems thinking
- If ever there was a need for interdisciplinary working and knowledge sharing – this is it and it is urgent
- We also need to rethink the way we train and recognise professional skills and competences across disciplines
  - Some competences like systems thinking should be common to all
  - process safety and systems thinking should not be sole reserve of chemical engineers
  - Sharing knowledge and working together will make us all better at what we do – **and deliver safe solutions for everyone**

## Some broader lessons and concerns to reflect on

- Regulatory “Christmas Trees” – how do we use systems thinking to get to better policy making?
- Construction safety is too focused on the workforce not those who will use the buildings – are there other parallels?
- Failure to see buildings as complex integrated systems – parallels?
- Public expectations of “quick fixes”/simple solutions
- Cross sector learning is clearly not happening effectively – lessons of this review have already been seen in other sectors – but how widely have they been learned?
- Siloed thinking leads to siloed responsibilities – “not my concern”
- Procurement processes which drive cost and corner cutting
- Industry and regulatory fragmentation must be addressed
- More collaboration and focus on outcomes – move away from current adversarial approach
- Everyone has to raise their game

## Closing thoughts

- Are there other industry sectors we need to work with?
- Sharing our knowledge with Government and policy makers?
- How do we encourage collaboration and knowledge sharing?
- Are our education and accreditation processes designed to share knowledge or protect it?
- Our reputation as engineers of all disciplines relies on public trust in our ability to deliver solutions and benefits to everyone – not to put people at risk
- We are facing a significant challenge and a great opportunity
- Call for leadership and action
  
- Time for us all to wake up and share the lessons