



FIRE
AUSTRALIA2024

Bush Fire Design, Assessment, & Compliance - Confessions

Fire Australia 2024

But first – the ‘obligatory’ fire pics!



(<https://static.toiimg.com/photo/msid-73297441,width-96,height-65.cms>)



(https://p-cms-production.imgix.net/image_browser/Australian%20bushfire.jpg?auto=format&fit=crop&q=40&sharp=10&vib=20&ixlib=react-8.6.4)



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What we're planning to cover

Reflections

- The 'Game'
- Bush fire regulatory journey - building bush fire protection & associated land-use planning
- Prescription vs 'performance'
- Fire Code Reform & the design, regulatory, & compliance space we're in
- Transitioning from a 'prescriptive' mindset to 'performance'
- A great assessment & decision-making model (for life also...)
- Where to from here?



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Who am I speaking with?

Possibilities?

- Bush fire consultants
- Fire engineers
- Fire protection engineers
- Architects & building designers
- Industry representatives
- Product suppliers
- Regulators
- Developers
- Home owners & the public



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Who are you listening to?

A bit of context

- Firefighter/Emergency Medical Technician/Paramedic
- Fire engineer
- Fire engineering consultant
- Chartered Professional Engineer/National Engineering Register
- Fire engineer assisting NSW Fire Brigades
- NSW Rural Fire Service Manager Development Planning & Policy
- CEO & Principal Advocate Helping Hands Planning & Design PTY LTD
- Just an old someone who likes helping people & our industry using his skills & abilities leveraging off too many years of experience



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What do you prefer?

- Sermon?
- Presentation?
- Interactive discussion?
- Questions & Answers?
- Combination?
- Happy w/ whatever you prefer 🧐



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Confessions?

NSW Rural Fire Service – An Accident?

- Separate directorates - ‘policy’ & ‘assessments’
- ‘Wall’ between the two
- ‘Assessments’ held ‘Keys to the Kingdom’
- Work with 2019/2020 Bush Fires Rebuilding Compliance Support Scheme (BAL-capping, etc)
- Re-structure a few years ago - two separated Directorates into one
- Introduction of Assistant Commissioner as Director - bush fire & occupant behaviour, building performance under bush fire conditions, fire brigade intervention
- Got involved in the ‘technical stuff’
- Supported BNE Advice Request Service - vehicle for PBDB, etc
- Got ‘to play’ in the development assessment & planning ‘space’
- Never would have considered working in current capacity



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Confessions? (cont.)

AFAC

- Built Environment and Bushfire Planning Technical Group - Built Environment Division
 - ✓ Expert Panel assisting Australian Building Codes Board developing/drafting *Specification 43* (NCC 2022)
 - ✓ Fire Brigade Intervention Model (FBIM)
 - ✓ *Bushfire Verification Method*
 - ✓ Performance Requirements for bushfire
- Fire Engineering Network
 - ✓ Drafting, review, & comment - *International Fire Engineering Guidelines 2005* (IFEG 2005)
 - ✓ Oversee fire engineered performance-based designs & assessments for compliance
 - ✓ Witnessed transition into performance-based design, assessment, & compliance from fire services' perspective



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The 'Game'?

Building bush fire protection

- Bush Fire Consultant
- Concept design advice
- Planning approvals
- Building approvals
- Consultation with Fire Services/Regulators (including Councils)
- Certifying Authority/Relevant Building Surveyor (building approvals)
- The 'Institution'?

Associated strategic land-use planning

- **Good question?**



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Building Code Reform

Fire Code Reform in Australia

- Major Regulatory Reform Period 1988-2002
- Implementation in a Performance Based Regime 1996 /1997
- Australian Research centres active in fire safety through 80s included:
 - ✓ CEBS→ EBS → CSIRO
 - ✓ Scientific Services Laboratories → CSIRO
 - ✓ CSIRO Vic
 - ✓ BHP Laboratories – Wellington Rd
 - ✓ Universities – e.g. VUT and UTS
 - ✓ Commercial labs: AWTA, CSR Fire Research, BHP fire testing → Warringtonfire
 - ✓ Various research facilities supporting manufacturing capabilities



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Building Code Reform (cont.)

Fire Code Reform in Australia (cont.)

- Increased application of computers to engineering problems; Reflected in changes to PC performance;
- Regulatory (administrative functions)
- Regulatory (technical requirements)
- Technical Developments in Fire Engineering
- Education
- Engineers Australia Society of Fire Safety
- Registration of Fire Engineers and others
- Fire Code Reform Centre (Warren Centre, University of Sydney)



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Prescription vs 'performance'

Prescription

- Reactive
- Consensus & committee-based
- 'Deemed' to be appropriate & acceptable
- Challenging/impossible to address specific situations & designs
- Based on 'typicals' for 'typicals'
- Internationally - catastrophe/loss based
- Anecdotal/limited technical basis - broad brush
- Technical input - generally limited to 'informing' broad-brushed requirements
- ***'Cannot build it that way since DTS Provisions don't include it that way'***
- Old days - had to somehow make unique building types 'fit' prescriptive (DTS) codes & standards
- Emphasis on what codes/standards 'say' rather than what they want to 'achieve'
- Not for everything



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Prescription vs 'performance'

Performance

- Pro-active
- Merit-based
- Evidence-based acceptability & appropriateness
- Reliant on performance-based design, assessment, compliance, & approvals processes - not 'check-box'
- Addresses specific situations & designs
- 'Engineering' type technical assessment
- Address benchmarks set in codes and standards that were based on catastrophes/losses
- Often tailored to specific situations/designs
- Technical input basis of performance-based approach
- ***'Can build it that way since Performance-based Provisions allow as long as processes are followed'***
- 'New' days - unique building types can now 'fit' performance-based codes & standards
- Emphasis on what codes/standards want to 'achieve' as well as what they 'say'
- Not for everything



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Transitioning from a 'prescriptive' mindset to 'performance'

Challenges/Issues

- Power & authority
- Fear
- Emphasis from 'design solution & outcomes' to 'ground-rules for 'testing' designs
- 'Negotiation' to 'Assessment'
- 'Fairness Doctrine'
- Mindsets
- Different approaches fundamentally
- Resistance to change generally
- Bush fire one of last remaining 'levers' affecting ability to limit/obstruct development
- It all starts with what fire scenarios are relevant for what Performance Requirements & Compliance Approaches
- Confusion between terms: 'performance-based design & assessment' for design versus general evaluation & analysis



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What about building bush fire & associated land-use planning?

Emphasis & focus continues to be on prescriptive approach

- AS3959 Method 2
- NSW 'Short Fire Run Methodology'
- Market doesn't appear to support time & effort needed for performance-based design/assessment process
- Process adopted in NSW - *International Fire Engineering Guidelines 2005 (now Australian Fire Engineering Guidelines 2021 in NCC)*
- Regulators appear resistant to transition - focus is on 'process', 'methodology', & 'acceptance criteria' rather than outcomes themselves
- 'Last bastion of holding to a prescriptive regulatory environment, including Building Code requirements, in an otherwise performance-based arena'
- Handshake between 'planning' & 'building'
- Still appears to be 'seen' as mainly a 'planning' activity
- Is considered to be an engineering/technical exercise sometimes impacting on 'planning' type issues



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A great assessment & decision-making model (for life too...)

The Performance-based Design Brief Process

- *“So, ‘Policy’ works with the designer to agree on the ‘ground-rules’ for how to assess a proposed design for compliance, then the ‘Assessment Team’ assesses to those ‘ground-rules’?”* (Commissioner RFS Rob Rogers AFSM, date not recorded, circa 2021)
- **The ‘Process’ - turning ‘subjective’ to ‘objective’**
 - ✓ **‘Assessment’ versus ‘opinion’** (we know what they say about ‘opinions’, “...*everyone has one*”)
 - ✓ Relevant stakeholders
 - ✓ ‘Trial’ Design - for assessment
 - ✓ Scope & Limitations
 - ✓ Evaluation & acceptance criteria
 - ✓ Methodology to adopt - to ‘test’ design against criteria
 - ✓ Fire scenario development/identification
 - ✓ Design fires - to ‘test’ issues at hand
 - ✓ Appropriate models to use/apply
 - ✓ Assessment & documentation



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Where to from here?

Up to who?

Ideas, thoughts, feelings?

Thank You!



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