FIRE AUSTRALIA2026

Connections matter:
Code for building systems integration

FPANZ Code of Practice for Integration of Building Fire Safety Systems with other Services

FPA NEW ZEALAND

Nicky Marshall, Protech Design, FPANZ

Why Connections Matter

When systems connect, people are protected

- Fire safety is not a single-system discipline
- Fire, Mechanical, Electrical, Vertical transport, and other disciplines must work *together*
- Disconnection creates risk
  — integration creates confidence and safety

A system only performs as well as its weakest connection

Failures don't start with systems — they start with broken connections.

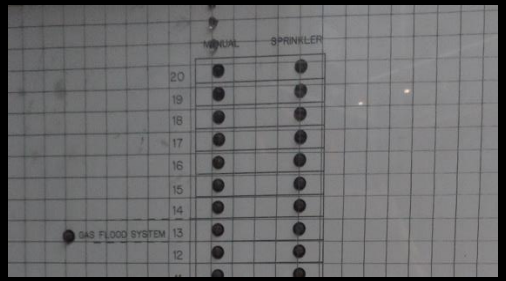
Wikipedia

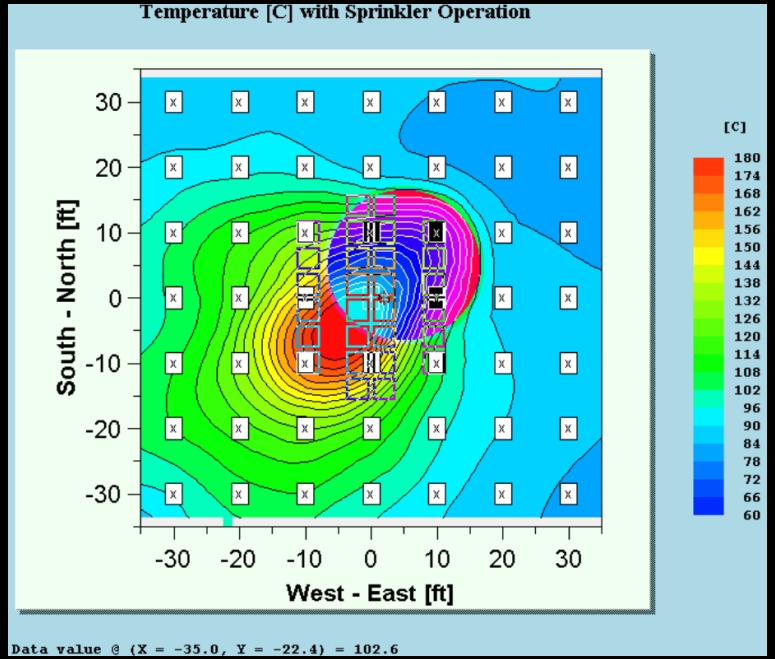
1994, following the collapse of Seongsu bridge – Poor welding

The Challenge: Fragmented systems

Before

- No process.
- No connection.
- Failures.
- Lives at risk.





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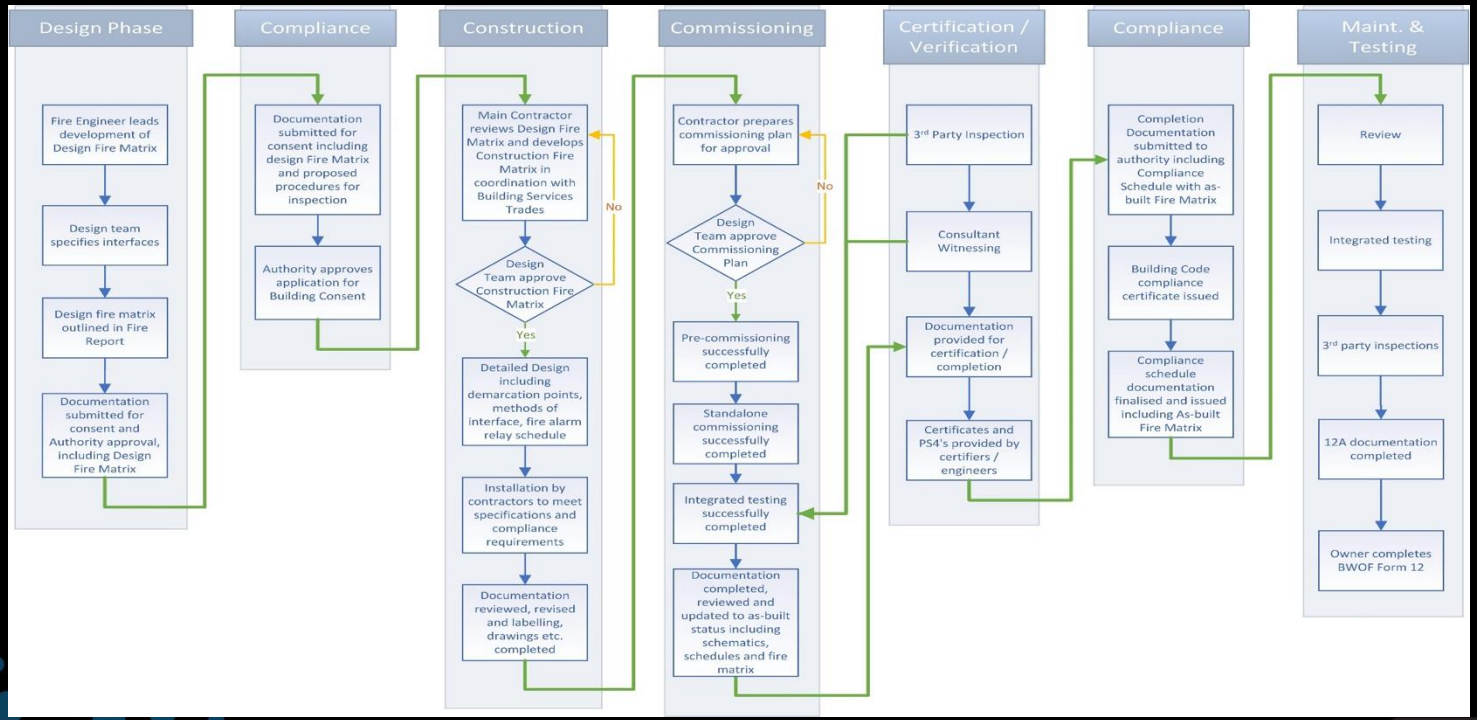
Source: Research Technical Report Impact of a High Volume Low Speed Fan on Sprinkler Performance in Rack Storage Fires, © 2011 Factory Mutual Insurance Company. All rights reserved.

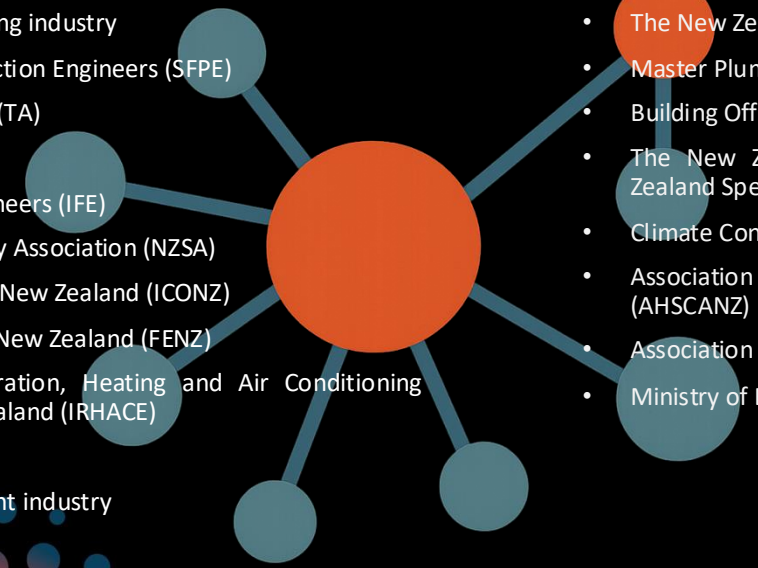
The Solution: Connections and Process



How did we get here? We connected

Association/Industry connections

- Fire Protection Association New Zealand (FPANZ)
- Fire Equipment Manufacturers' Association (FEMA)
- System Commissioning industry
- Society of Fire Protection Engineers (SFPE)
- Territorial Authority (TA)
- Lift industry
- Institute of Fire Engineers (IFE)
- New Zealand Security Association (NZSA)
- Insurance Council of New Zealand (ICONZ)
- Fire and Emergency New Zealand (FENZ)
- Institute of Refrigeration, Heating and Air Conditioning Engineers of New Zealand (IRHACE)
- Electrical industry
- Facilities management industry



Reviews/support from connections

- Chartered Institution of Building Services Engineers (CIBSE)
- Construction Industry Council (CIC)
- The New Zealand Institute of Building (NZIB)
- Master Plumbers, Gasfitters and Drainlayers NZ Inc (Master Plumbers)
- Building Officials Institute of New Zealand (BOINZ)
- The New Zealand Building Subcontractors' Federation (now The New Zealand Specialist Trade Contractors Federation (NZSTCF))
- Climate Control Companies Association New Zealand (CCCANZ)
- Association of Hydraulic Services Consultants of Australia and New Zealand (AHSCANZ)
- Association of Building Compliance (ABC)
- Ministry of Business, Innovation and Employment (MBIE)

Introduction to the COP

When systems connect, people are protected

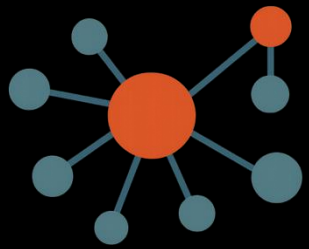
- A guide for specifiers, designers, installers, approvers, certifiers, service providers, and owners of fire protection systems and buildings.
- Currently no specific New Zealand or Australian, Codes or Standards that detail how to …
- Purpose of this Code of Practice is to provide guidance for the integration of fire safety systems installed to protect human life and property
    - specification,
    - installation,
    - certification,
    - maintenance, and
    - design,
    - commissioning,
    - documentation,
    - routine testing
- Intention :
    - Various systems in a building are considered together as a whole
    - *Help with the crucial component of documentation to convey functional connections and purposes, and the regular testing requirements for these.*
    - Supplement standards and Building Code requirements

Scope of the COP

- Focus: life safety and Compliance Schedule Specified Systems, and how particular building systems need to be integrated and connected to achieve the correct operation required in a 'Fire' or 'danger' state

- *Ministry of Business, Innovation and Employment - Compliance Schedule Handbook* identifies Specified Systems

- Other building services or plant and equipment connections - even if life-safety is not their main purpose
  - Building Systems that may be required to start, stop, or remain operating on demand
    - Plant, pumps and equipment, storm water detention, etc.
    - Utilities (gas, steam, etc.)
    - Building equipment (conveyors, robots, cranes, cooking appliances, etc.)
    - Refrigeration systems
    - Electrical systems (including EV charging)
    - Emergency generators
  - Security systems (access control and notifications)
  - Communication systems (public address systems, audio loop systems, TV, etc.)
  - Other fire prevention and active life safety systems (hypoxic, etc.)
  - External systems (Fire Brigade monitoring, security systems, mobile phones, websites, etc.)



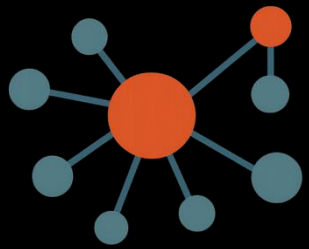
- New and existing buildings

It starts with Design

- This Code of Practice relies on the development of an Integrated Building Systems Fire Matrix
- Fire Engineer drives the Fire Matrix (as the driver of life safety)
- The building services design engineers specify systems and assist with Matrix
- Refer to Appendix B (Fire Matrix considerations) & Appendix C (Design Document examples)
- Design Fire Matrix Included in Fire Report
- Fire Matrix included in consent documentation

Design - Fire Matrix Considerations (Appendix B)

- Fire suppression and control systems
- Fire detection and Emergency warning systems, visual alerting systems
- Mechanical/HVAC systems and Smoke Control Systems (Mechanical/Passive)
- Monitoring, BMS
- Refrigeration systems
- Electrical Systems, including EV charging
- Building Systems (Plant, Pumps & Equipment storm water detention, etc.)
- Automated Systems, Building equipment (conveyors, robots, cranes, cookers, etc.)
- Lifts/Escalators
- Fire prevention systems, Hypoxic
- Utilities, Gas, Water, Solar, etc.
- Integrated Passive Systems (e.g. fire and smoke doors/curtains)
- External systems/parties
- Miscellaneous integration considerations



Every row is a connection.
Every column is a consequence.

Design - Fire Matrix Considerations (Appendix B2.1)

Item	Reference
a) Sprinkler system operation to generate building fire alarm	NZS 4541 clause 4.7.3 NZS 4515 clause 3.8 NZBC AS F7/AS1 clause 1.2.8
b) Fire Brigade to receive an alarm	NZS 4541 clause 4.7.2.2 NZS 4515 clause 3.9 Fire report
c) Shutdown of conveyor systems	NZS 4541 clauses 2.5.3.3, 5.10.5.5, and 9.4.1.23.3
d) Shutdown of hazardous processes	NZS 4541 clause 2.13
e) Shutdown of air handling plant for Extra High Hazard	NZS 4541 clauses 9.3.8 and 9.4.1.14
f) Zone/floor flow switches to be indicated on fire alarm panel	NZS 4541 clause 2.11.1
g) The sprinkler system design may require the shutdown of building systems and equipment (fryers, robots, cranes, etc.)	NZS 4541 clause 2.13 Sprinkler specification / Certifier
h) Zone/floor flow switches may need to perform functions such as evacuating particular areas, connecting with nurse call systems, etc.	Fire report / Evacuation philosophy
i) The owner may require notification of alarm, defect, pump running, pump room access, etc.	Owner brief

What connections are needed for life safety?

Design - Fire Matrix

Design Fire Matrix		Effect				
		FENZ notification	Fire contractor notification	Building wide alarm	Building HVAC fans/dampers	Doors / gates
Cause	Manual call point (MCP) operation	Fire	Fire	Fire	off	release
	Smoke/Heat detector operation	Fire	Fire	Fire	off	release
	Main Indicating Unit Brigade Silence Alarms Bulgin switch on	Defect	Defect	off	-	-
	Main Indicating Unit "Evacuation" Bulgin switch on	-	-	Fire	-	-
	Fire alarm defect	Defect	Defect	-	-	-
	Fire alarm isolate	Isolate	Isolate	-	-	-
	Power failure	-	-	-	-	release

The content is an example only and may not suit the system, application, or use of a building - adaptation will be required.

Every row is a connection.
Every column is a consequence.

Design Fire Matrix		Effect																																		
		Sprinkler	Fire alarm						Mechanical										Electrical								Misc.										
		FENZ notification from Sprinkler FBA	FENZ notification from fire alarm system	Fire contractor notification	Alerting Devices - Building wide	Alerting Devices - Zone X notification	Alerting Devices - Zone Y notification	Fire alarm LED indicators Flow and level/zone	HVAC - Building fans/dampers	HVAC - Zone X fans/dampers	HVAC - Zone Y fans/dampers	Fire fans, make up air...	Smoke purge system	Pressurisation system - Stairwell	Pressurisation system - Lift shaft	Fans - Carpark supply air	Fans - Jet fans, etc.	BMS	Active signage	Electrical lighting	UPS control	Emergency generator Diesel supply	Doors / gates	Security monitoring company	Communication system (PA, TV, Audio)	Integrated Passive systems (curtains, doors, dampers...)	Refrigeration system	Utilities (Gas, Water, Solar...)	Systems (burners, pumps, boilers, UPS...)	Automated Equipment (conveyor, crane...)	Equipment (fryers, oven...)	Hazardous process	Lift	Fire prevention systems	Owner
Cause	Sprinkler FBA Pressure Switch Operation	Fire	-	Fire	-	-	-	-	-	-	-	-	-	-	-	-	-	Fire	-	-	-	-	-	Fire	-	-	-	-	-	-	-	-	-	-	Fire
	Sprinkler Level/Zone X flow switch operation	-	-	Fire X	-	Fire	Alert	on	-	off	-	on	on	on	on	on	off	Fire X	on	on	off	off	release	Fire X	Fire X	-	off	off	off	stop	off	off	recall	-	Fire X
	Sprinkler Level/Zone Y flow switch operation	-	-	Fire Y	-	Alert	Fire	on	-	-	off	on	on	on	on	-	-	Fire Y	on	on	-	-	release	Fire Y	Fire Y	-	off	off	off	stop	off	off	recall	-	Fire Y
	Sprinkler FBA Brigade Silence Alarms Bulgin switch on	Defect	-	Defect	off													Defect						Defect											Defect
	Sprinkler Pump running	Defect	Fire	pump on	-	-	-	on	-	-	-	-	-	-	-	-	-	pump on	-	-	-	-	-	pump on	-	-	-	-	-	-	-	-	-	-	pump on
	Sprinkler supervised valve operation[2]	Fire	-	valve op[2]	-	-	-	on	-	-	-	-	-	-	-	-	-	valve op[2]	-	-	-	-	-	valve op[2]	-	-	-	-	-	-	-	-	-	-	valve op[2]
	Sprinkler defect	-	-	Defect	-	-	-	on	-	-	-	-	-	-	-	-	-	Defect	-	-	-	-	-	Defect	-	-	-	-	-	-	-	-	-	-	Defect
	Sprinkler isolate	-	-	Isolate	-	-	-	on	-	-	-	-	-	-	-	-	-	Isolate	-	-	-	-	-	Isolate	-	-	-	-	-	-	-	-	-	-	Isolate
	Sprinkler Isolate switch on	Isolate	-	Isolate	-	-	-	on	-	-	-	-	-	-	-	-	-	Isolate	-	-	-	-	-	Isolate	-	-	-	-	-	-	-	-	-	-	Isolate
	Level/Zone X manual call point operation	-	Fire X	Fire X	-	Fire	Alert	on	-	off	-	on	on	on	on	on	off	Fire X	on	on	off	off	release	Fire X	Fire X	-	off	off	off	stop	off	off	recall	on	Fire X
	Level/Zone Y manual call point operation	-	Fire Y	Fire Y	-	Alert	Fire	on	-	-	off	on	on	on	on	-	-	Fire Y	on	on	-	-	release	Fire Y	Fire Y		off	off	off	stop	off	off	recall	on	Fire Y
	All-out evacuation switch on (White MCP)	-	Fire	Fire	Fire	-	-	on	off	off	off	on	on	on	on	on	off	Fire	on	on	off	off	release	Fire	Fire	-	off	off	off	stop	off	off	recall	on	Fire
	Main Indicating Unit Brigade Silence Alarms Bulgin switch on	-	Defect	Defect	off	off	off	-	-	-	-	-	-	-	-	-	-	Defect	-	-	-	-	-	Defect	-	-	-	-	-	-	-	-	-	-	Defect
	Main Indicating Unit "Evacuation" Bulgin switch on	-	-	-	Fire	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Main Indicating Unit "Alert" Bulgin switch on	-	-	-	-	Alert	Alert	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Level/Zone X detector operation	-	Fire X	Fire X	-	Fire	Alert	on	-	off	-	on	on	on	on	on	off	Fire X	on	on	off	off	release	Fire X	Fire	-	off	off	off	stop	off	off	recall	on	Fire X
	Level/Zone Y detector operation	-	Fire Y	Fire Y	-	Alert	Fire	on	-	-	off	on	on	-	-	-	-	Fire Y	on	on	-	-	release	Fire Y	Fire	-	off	off	off	stop	off	off	recall	on	Fire Y
	Detectors adjacent Zone Y fire door operation	-	Fire Y	Fire Y	-	Alert	Fire	on	-	-	off	on	on	-	-	-	-	Fire Y	on	on	-	-	release	Fire Y	Fire	close	off	off	off	stop	off	off	recall	on	Fire Y
	Fire alarm defect	-	Defect	Defect	-	-	-	on	-	-	-	-	-	-	-	-	-	Defect	-	-	-	-	-	Defect	-		-	-	-	-	-	-	-	-	Defect
	Fire alarm isolate switch on	-	Isolate	Isolate	-	-	-	on	-	-	-	-	-	-	-	-	-	Isolate	-	-	-	-	-	Isolate	-	-	-	-	-	-	-	-	-	-	-	Isolate
	Gas suppression detection stage 1	-	Note 1	Alert	-	-	-	on	-	-	-	-	-	-	-	-	-	Alert	on	-				Alert												Alert
	Gas suppression detection stage 2	-	Note 1	Fire	-	Alert	-	on	-	off	-	-	-	-	-	-	-	Fire	on	-																
	Gas suppression discharge pressure switch	-	Note 1	Fire	-	Alert	-	on	-	off	-	-	-	-	-	-	-	Fire	on	-																
	Gas suppression defect	-	Note 1	Defect	-	-	-	on	-	-	-	-	-	-	-	-	-	Defect	on	-																
	Gas suppression isolate	-	Note 1	Isolate	-	-	-	on	-	-	-	-	-	-	-	-	-	Isolate	on	-																
	Air handling duct detector operation	-	-	-	-	-	-	-	-	-	-	off	off	off	off	off	-	Alert	-	-	-	-	-	Alert	-	close	-	-	-	-	-	-	on	Alert
	Fan control switch on	-	-	-	-	-	-	-	-	-	-	on	on	on	on	on	on	Alert	-	-	-	-	-	Alert	-	-	-	-	-	-	-	-	on	Alert
	Fan control switch off	-	-	-	-	-	-	-	-	-	-	off	off	off	off	off	off	Alert	-	-	-	-	-	Alert	-	-	-	-	-	-	-	-	on	Alert
	Fire prevention system defect/isolate	-	-	Alert	-	-	-	on	-	-	-	-	-	-	-	-	-	Alert	on	-	-	-	-	Alert	Alert	-	-	-	-	-	-	-	-	Alert	Alert
	Ammonia warning	-	-	Warning	Warning	-	-	on	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Warning	Warning	-	-	-	-	-	-	-	-	-	Alert
	Power failure	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Alert	-	-	-	-	release	Alert	-	-	-	-	-	-	-	-	-	-	Alert
	Firefighters' Service lift key switch	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	control	-	-	-

Every row is a connection.
Every column is a consequence.

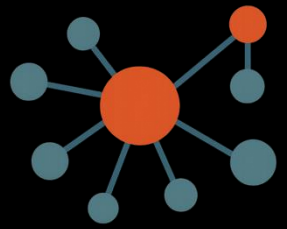
Construction

- Main contractor reviews the Design Fire Matrix
- In conjunction with Building Services trades, Main contractor develops Construction Fire Matrix (Appendix D)
- Detail demarcation points, methods of interface, fire alarm relay schedule
- Design team approve Construction Fire Matrix - remaining connected with project
- Installation to meet specifications and compliance requirements
- Documentation reviewed, revised and labelling, drawings etc. completed.

Connection checks

Construction matrix

Construction Fire Matrix		Effect				
		FENZ notification via monitor co 'ABC'	Fire contractor notfication via monitor co 'ABC'	Alerting Devices – Building wide	Building HVAC fan (SF-R01) / damper (FD-01) via 1 x relay	Door (MD-01) via relay
Cause	Manual call point (MCP) operation	Fire	Fire	Fire	off	release
	Smoke/Heat detector operation	Fire	Fire	Fire	off	release
	Main Indicating Unit Brigade Silence Alarms Bulgin switch on	Defect	Defect	off	-	-
	Main Indicating Unit "Evacuation" Bulgin switch on	-	-	Fire	-	-
	Fire alarm defect	Defect	Defect	-	-	-
	Fire alarm isolate	Isolate	Isolate	-	-	-
	Power failure					release



Connection checks

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Construction Fire Alarm Relay Schedule

FAR Reference	Location	Trade Interface	Relay type	Description
FAR-1	Level 5 Plant room	Mechanical	Normally Closed	Mechanical supply air shutdown (SF-01) damper close (FD-01)
FAR-2	Basement plant room	Mechanical	Normally Open	Car park supply air on (SF-R02)
FAR-3	Basement plant room	Mechanical	Normally Closed	Jet fans shutdown (JF-01 & JF-02)
FAR-4	Basement switch room	Electrical	Normally Open	Corridor Electrical lighting to 100%
FAR-5	Ground level Equipment cupboard	Security	Normally Closed	Access Control: Door MD01 release, site gates release
FAR-6	Level 5 Lift Controller 1	Lift	Normally Open	Automatic lift recall to ground level
FAR-7	Level 5 Lift Controller 1	Lift	Normally Open	Automatic lift recall to level 1
FAR-8	Basement plant room	Hydraulic	Normally Closed	Gas solenoid G-01 shutdown, manual reset
FAR-9	Level 1 services cupboard	Builder	Normally Closed	Fire door 103 hold open device release
FAR-810	Sprinkler Pump Room	Builder	Normally Closed	Normally closed louvre to spring open
HL-1	Basement plant room	Mechanical	Normally Closed	Owner notification through high level link to BMS

Instructions:
1. Fire Alarm Contractor to identify all Fire Alarm Relays (FAR) required to achieve Approved Integrated Fire Matrix functionality.
2. FAR locations to be agreed with interfacing trades e.g. adjacent to a Mechanical Distribution Board, or a security controller.
3. Fire Contractor to program FAR according to Fire Matrix requirements and test functionality independently of interface trade.
4. Relay type (Normally Closed, Normally Open, Energised) to be agreed between trades
5. Interface trade to install and terminate cabling between FAR and interface equipment and test independently of Fire Alarm trade
6. Combined or end-to-end testing to be carried out e.g. activation of a MCP to verify mechanical fan shutdown, or release of specific access controlled doors.

Connection checks

Commissioning

- Contractor prepares commissioning plan for approval
- Design Team approve commissioning plan – remaining connected with project
- Pre-commissioning successfully completed (install complete, interfaces installed, systems operational)
- Standalone commissioning successfully completed (individual systems to verify Construction Matrix)
- *Integrated testing successfully completed (100% end-to-end)*
- Documentation completed, reviewed, updated to as-built status including schematics, schedules & Fire Matrix
- *Documentation provided* - laminated As-built Fire Matrix next to alarm panel

Connection is only proved when tested end-to-end

Commissioning Fire Alarm Relay Checklist

					<----------Fire Alarm Contractor-------->				<---Interfacing Contractor--->			Integrated Testing	
FAR ~~Reference~~	Location	Trade Interface	Relay type	Description	FAR Address	FAR Installed	FAR Programmed	FAR Successful Test	Installed	Terminated	Successful Test	End-To End Successful test	Comments
FAR-1	Level 5 Plant room	Mechanical	Normally Closed	Mechanical supply air shutdown (SF-01) damper close (FD-01)	xx-xx-xxx	✓	✓	✓	✓	✓	✓	✓	Witness by ABC Main Contractor hh-DD-MM-YYYY
FAR-2	Basement plant room	Mechanical	Normally Open	Carpark supply air on (SF-R02)	xx-xx-xxx	✓	✓	✓	✓	✓	✓	✓	Witness by XYZ Fire Engineer, hh-DD-MM-YYYY
FAR-3	Basement plant room	Mechanical	Normally Closed	Jet fans shutdown (JF-01 & JF-02)	xx-xx-xxx	✓	✓	✓	✓	✓	✓	✓	Witness by XYZ Fire Engineer, hh-DD-MM-YYYY
FAR-4	Basement switch room	Electrical	Normally Open	Corridor Electrical lighting to 100%	xx-xx-xxx	✓	✓	✓	✓	✓	✓	✓	Witness by ABC Main Contractor hh-DD-MM-YYYY
FAR-5	Ground level Equipment cupboard	Security	Normally Closed	Access Control: Door MD01 release, site gates release	xx-xx-xxx	✓	✓	✓	✓	✓	✓	✓	Witness by XYZ Fire Engineer, hh-DD-MM-YYYY
FAR-6	Level 5 Lift Controller 1	Lift	Normally Open	Automatic lift recall to ground level	xx-xx-xxx	✓	✓	✓	✓	✓	✓	✓	Witness by XYZ Fire Engineer, hh-DD-MM-YYYY
FAR-7	Level 5 Lift Controller 1	Lift	Normally Open	Automatic lift recall to level 1	xx-xx-xxx	✓	✓	✓	✓	✓	✓	✓	Witness by XYZ Fire Engineer, hh-DD-MM-YYYY
FAR-8	Basement plant room	Hydraulic	Normally Closed	Gas solenoid G-01 shutdown, manual reset	xx-xx-xxx	✓	✓	✓	✓	✓	✓	✓	Witness by ABC Main Contractor hh-DD-MM-YYYY
FAR-9	Level 1 services cupboard	Builder	Normally Closed	Fire door 103 hold open device release	xx-xx-xxx	✓	✓	✓	✓	✓	✓	✓	Witness by XYZ Fire Engineer, hh-DD-MM-YYYY
FAR-~~8~~10	Sprinkler Pump Room	Builder Closed	Normally Closed	Normally closed louvre to spring open	xx-xx-xxx	✓	✓	✓	✓	✓	✓	✓	Witness by ABC Fire Inspector hh-DD-MM-YYYY
HL-1	Basement plant room	Mechanical	Normally Closed	Owner notification through BMS	xx-xx-xxx	✓	✓	✓	✓	✓	✓	✓	Witness by ABC Main Contractor hh-DD-MM-YYYY

Instructions:	All interfaces have been successfully tested in accordance with the Fire Matrix	
1. Fire Alarm Contractor to identify all Fire Alarm Relays (FAR) required to achieve Approved Integrated Fire Matrix functionality.	Project	
2. FAR locations to be agreed with interfacing trades e.g. adjacent a Mechanical Distribution Board, or a security controller.	Signed/Name	
3. Fire Contractor to program FAR according to Fire Matrix requirements and test functionality independently of interface trade.	Company	
4. Relay type (Normally Closed, Normally Open, Energised) to be agreed between trades	Date	
5. Interface trade to install and terminate cabling between FAR and interface equipment and test independently of Fire Alarm trade		
6. Combined or end-to-end testing to be carried out e.g. activation of a MCP to verify mechanical fan shutdown, or release of specific access controlled doors.		

Connection is only proved when tested end-to-end

Commissioning Integrated Systems Checklist

E.2 ***Integrated Systems Testing checklist example***

The content is an example only and may not suit the system, application, or use of a building - adaptation will be required.
Where buildings are zoned or equipment is to operate independently, more detailed cause and effects will need to be entered.

Project	
Address	
Signed/Name	
Company	

Notes to include which items have been tested:

System input	System output	Action	Notes	Test results	Date	Initials
1. Sprinkler operation (FBA signals fire)	a) FENZ notification	Fire				
	b) Fire contractor notification	Fire				
	c) Building wide alarm	Fire				
	d) Building HVAC fans/dampers	Off				
	e) Car park supply air	On				
	f) Jet fans	Off				
	g) Corridor Electrical lighting to 100%	On				
	h) Doors / gates	Release				
	i) Lift	Recall				
	j) Security monitoring co	Fire				
	k) Owner	Fire				
	l) Utilities (Gas)	Off				
2. Sprinkler supervised valve operation	a) FENZ notification	Fire				
	b) Fire contractor notification	Fire				
	c) Building wide alarm	Fire				
	d) Building HVAC fans/dampers	Off				
	e) Car park supply air	On				
	f) Jet fans	Off				
	g) Corridor Electrical lighting to 100%	On				
	h) Doors / gates	Release				
	i) Lift	Recall				
	j) Security monitoring co	Fire				
	k) Owner	Fire				
	l) Utilities (Gas)	Off				
3. Sprinkler defect/isolate	a) Fire contractor notification	Defect				
	b) Security monitoring co	Defect				
	c) Owner	Defect				

Integrated Systems Testing checklist example - continued

4. Manual call point (MCP) operation	a) FENZ notification	Fire					
	b) Fire contractor notification	Fire					
	c) Building wide alarm	Fire					
	d) Building HVAC fans/dampers	Off					
	e) Car park supply air	On					
	f) Jet fans	Off					
	g) Corridor Electrical lighting to 100%	On					
	h) Doors / gates	Release					
	i) Lift	Recall					
	j) Security monitoring co	Fire					
	k) Owner	Fire					
	l) Utilities (Gas)	Off					
5. Smoke/Heat detector operation	a) FENZ notification	Fire					
	b) Fire contractor notification	Fire					
8. Air handling duct detector operation	a) Car park supply air	Off					
	b) Security monitoring co	Alert					
	c) Owner	Alert					
9. Fan control switch on	a) Car park supply air	On					
	b) Jet fans	On					
10. Fan control switch off	a) Car park supply air	Off					
	b) Jet fans	Off					
11. Power failure	a) Doors / gates	Release					
	b) Security monitoring co	Alert					
	c) Owner	Alert					
	d) Utilities (Gas)	Off					
	e) Integrated Passive systems (Door hold open devices)	Close					

System input	System output	Action	Notes	Test results	Date	Initials
1. Sprinkler operation (FBA signals fire)	a) FENZ notification	Fire				
	b) Fire contractor notification	Fire				
	c) Building wide alarm	Fire				
	d) Building HVAC fans/dampers	Off				

Commissioning Issues Register

#	Date Observed	Interface	Description	Reason/Corrective Action	Responsible	Date Rectified	Checked	Status	Comments
1	12/06/2019	Lifts	Lift failed to return to ground floor on fire signal	Wiring between the fire alarm relay and lift controller was found to be incorrectly terminated at lift controller. Lift Contractor to rectify and re-test.	Lift Contractor	13/06/2019	✓	Closed	
2	13/06/2019	Mechanical	AHU-2-3 continued to run when the duct smoke detector was activated.	Faulty duct smoke detector to be replaced	Mechanical Contractor			Open	Awaiting delivery of replacement detector.
3	13/06/2019	Security	Egress door D-110.1 remained locked on activation of the fire alarm.	Fire Alarm incorrectly programmed	Fire Contractor	13/06/2019	✓	Closed	

Connection is only proved when tested end-to-end

Certification / Verification

- 3rd Party Inspection – NZS 4512:2021 requires 100% end-to-end Fire alarm system interface testing to be done by Accredited Inspection Body by OR independent reports provided to Accredited Inspection Body
- Consultant Witnessing (if required: fire engineer, insurer, consultant)
- Documentation provided for certification/completeness
- Certificates and Observation Producer Statements (PS4's) provided by certifiers/engineers

Connection is only proved when tested end-to-end

Compliance

- Completion Documentation submitted to authority - including compliance schedule with as-built Fire Matrix
- Building Code Compliance Certificate issued
- Compliance schedule documentation finalised and issued including As-built Fire Matrix
    - MBIE *Compliance Schedule Handbook* provides guidance
    - Inspection, maintenance, and reporting procedures will need to include integrated testing requirements
    - Typically, an annual test is required to confirm the interfaces between integrated building systems are working. Some important systems interfaces may require more frequent testing.

Compliance Schedule documentation

- The Association of Building Compliance has produced a 'Compliance Schedule Reference Guide', which includes references to interfaces and matrices (https://www.abciqp.org.nz/resourcelib/325619c0107ab95b9.32428533/ABC-Compliance-Schedule-Reference-Guide-November-2021.pdf).
- The Ministry of Business, Innovation & Employment has also produced an 'Exemplar Compliance Schedule' document which includes references to interfaces (https://www.building.govt.nz/assets/Uploads/building-officials/guides/exemplar-compliance-schedule.pdf). A matrix needs to be added to complete the documentation.
- Common example

3. Specified System/s
The following Specified System/s is/are contained in the building.

	Specified System	Inspection, maintenance & reporting standards (please list standard if not referenced Always maintain to latest standard, not standard of installation)	System notification (tick as applicable)		
			New	Altered	Removed
1	Automatic systems for fire suppression				
1.1	A water sprinkler system Performance standard:	NZS 4541 NZS 4515 FPANZ Integrated Systems CoP			

Maintenance and testing

- Review – Compliance Schedule should contain the as-built Fire Matrix, and testing & maintenance instructions
  - amend if necessary
- Integrated testing
  - Tests should ensure that the connections continue to operate as intended at the time of commissioning and are likely to do so through the full life-cycle of the building.
  - The building owner (or the integrated testing agent, on their behalf) should coordinate testing of the interfaced fire alarm system as well as any other integrated systems.
  - Use the Fire Matrix.
- 3rd party inspections recommended for all but the simplest
  - Alarm system survey is to confirm the correct function of the systems.
  - *The Accredited Inspection Body is expected to test, witness, or receive (and retain) written results of the successful Integrated Testing in the Fire Matrix*
- Building Code 12A documentation certifying that inspection and maintenance completed for the year
- Owner completes Building Warrant of Fitness (BWoF) Form 12

Connections still working = life safety

Certificate Form 12 A

Present	SS	IS	Specified System
☐	1	☐	Automatic systems for fire suppression (for example, sprinkler systems).
☐	2	☐	Automatic or manual emergency warning systems for fire or other dangers (other than a warning system for fire that is entirely within a household unit and serves only that unit).
☐	3	☐	Electromagnetic or automatic doors or windows (for example, ones that close on fire alarm activation).
☐	4	☐	Emergency lighting systems.

SS = Specified System number,
IS = Integrated System with interface to another system

Appendix G. Form 12A

Certificate of compliance with inspection, maintenance, and reporting procedures

Section 108(3)(c), Building Act 2004

The building

Street address of building:

Legal description of land where building is located:

Building name:

Location of building within site/block number:

Level/unit number:

The owner

Name of owner:

*Contact person:

Mailing address:

Street address:

†Registered office:

Compliance

The inspection, maintenance, and reporting procedures of the Compliance Schedule, (including the testing of Integrated Building System interfaces in accordance with the FPANZ Integrated Building Systems Code of Practice), have been fully complied with during the 12 months prior to the date stated below in relation to the following Specified Systems:

Present	SS	IS	Specified System
☐	1	☐	Automatic systems for fire suppression (for example, sprinkler systems).
☐	2	☐	Automatic or manual emergency warning systems for fire or other dangers (other than a warning system for fire that is entirely within a household unit and serves only that unit).
☐	3	☐	Electromagnetic or automatic doors or windows (for example, ones that close on fire alarm activation).
☐	4	☐	Emergency lighting systems.
☐	5	☐	Escape route pressurisation systems.
☐	6	☐	Riser mains for use by fire services.
☐	7	☐	Automatic backflow preventers connected to a potable water supply.
☐	8	☐	Lifts, escalators, travelators, or other systems for moving people or goods within buildings.
☐	9	☐	Mechanical ventilation or air conditioning systems.
☐	10	☐	Building maintenance units providing access to exterior and interior walls of buildings.
☐	11	☐	Laboratory fume cupboards.
☐	12	☐	Audio loops or other assistive listening systems.
☐	13	☐	Smoke control systems.
☐	14	☐	Emergency power systems for, or signs relating to, a system or feature specified in any of clauses 1-13.
☐	15	☐	Any or all of the following systems and features, so long as they form part of a building's means of escape from fire, and so long as those means also contain any or all of the systems or features specified in clauses 1 to 6, 9, and 13:
☐	15a	☐	a. Systems for communicating spoken information intended to facilitate evacuation; and
☐	15b	☐	b. Final exits (as defined by clause A2 of the building code); and
☐	15c	☐	c. Fire separations (as so defined); and
☐	15d	☐	d. Signs for communicating information intended to facilitate evacuation; and
☐	15e	☐	e. Smoke separations (as so defined).

SS = Specified System number, IS = Integrated System with interface to another system

Signature of independent qualified person

Name:

Date:

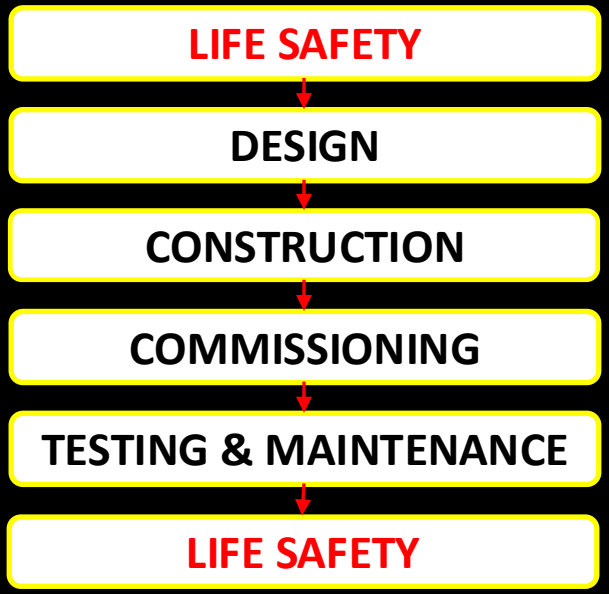
*Delete if the owner is an individual.

†Delete if inapplicable.

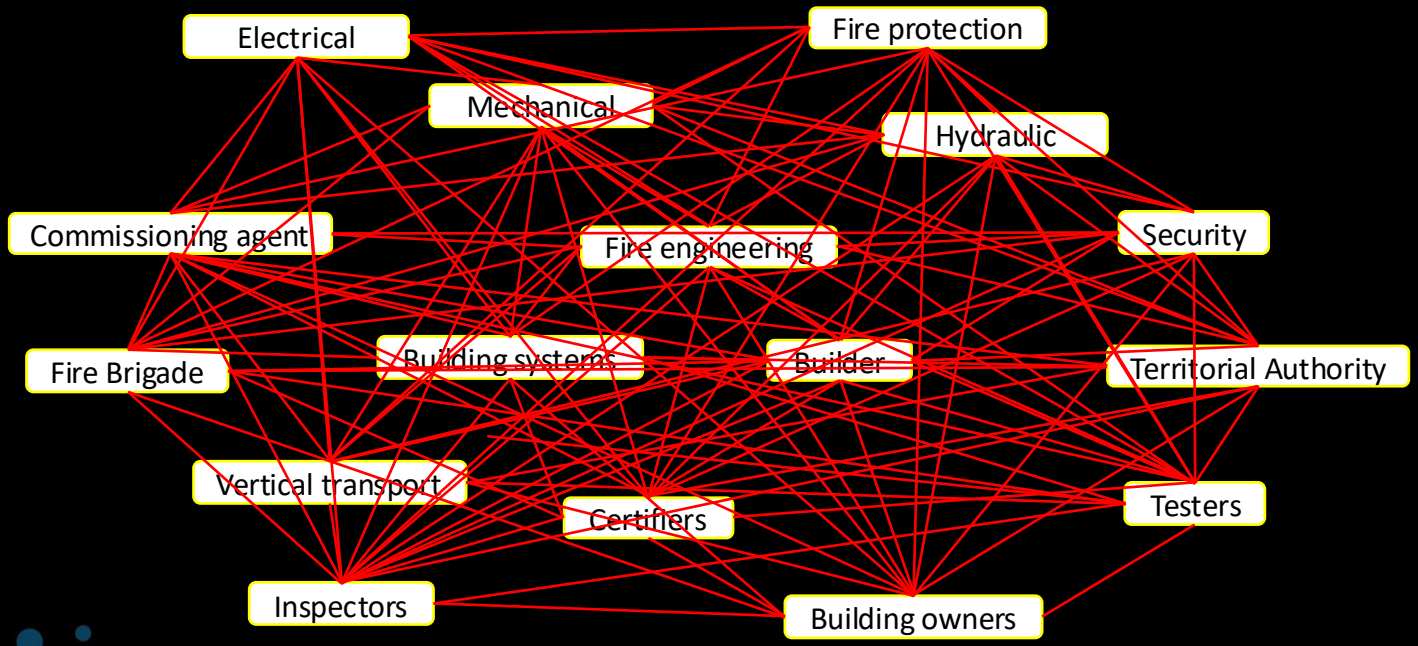
Resources

- FPANZ Code of Practice for Integration of Building Fire Safety Systems with other Services
    - www.fpanz.org/docs/codes-of-practice
- Spreadsheets and word document examples

A Connected future – by process



A Connected future – by systems & relationships



A Connected future = Life safety

- Designs and documentation that clearly identifies how systems are integrated!
- Clarity from design, though construction, commissioning, certification, compliance and testing!
- Systems that are correctly integrated – connected and operating how they should – for the life of the building!
- Fire engineers and designers with a clear conscience!
- Life safety!

Minneapolis I-35W bridge over the Mississippi River

Undersized gusset plates, increased concrete surfacing load, and weight of construction supplies/equipment caused this collapse.

Let's connect and discuss…