Technical manual

Note	This technical manual was consolidated for publication as one document as part of the transition to Fire and Emergency New Zealand. Outdated references and links will be updated when the manual is reviewed and updated by July 2020.

Incident Management – Command and Control

NATIONAL TRAINING

Status of this Document

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Foreword

Good command and control has never been more important. More than ever before the Fire Service is expected to conduct operations effectively, to work seamlessly with other agencies, and to operate safely at all times.

It is therefore timely to introduce this new Command and Control Technical Manual, which gives detailed guidance to Fire Service personnel on best practice incident management.

There are a number of factors influencing the production of this manual:

- Several years of Vector simulation training has promoted and developed our command and control techniques
- The recently introduced Training and Progression System (TAPS) has driven structured learning processes. This includes the officer practical command and control courses currently held in Brisbane, which incorporate the best of contemporary incident management theory and practice in Australasia
- CIMS (Coordinated Incident Management System) has been established in New Zealand for 10 years, and provides the framework for all Fire Service command and control practices.

This manual has the status of an Operational Instruction. It is designed to be the authoritative source of command and control theory and practice in the Fire Service. It will be the basis of operational procedures and training materials and programmes.

This manual is aimed at all Fire Service operational staff. Officers in particular have a responsibility to know its content thoroughly, and apply it operationally.

We believe this new manual draws together the best of current Fire Service command and control theory and practice in Australasia and internationally. However, this first edition will no doubt require further development and refinement. We welcome your feedback and suggestions for improvement for the next edition.

Finally, my thanks to all those involved in producing this manual. This is a key publication for the Fire Service, providing the platform for ongoing command and control learning and development.

Mike Hall
Chief Executive/National Commander

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Section 1: The Scope of Incident Management

Section Contents

Section 1: The Scope of Incident Management

Introduction

This document is Section 1 of the New Zealand Fire Service (NZFS) Incident Management – Command and Control Technical Manual.

The Scope of Incident Management

1.1 CIMS and the NZFS Command System

1.1.1 CIMS, the Coordinated Incident Management System, provides the model for command, control, and coordination of emergency incidents in New Zealand. It provides a means of coordinating the efforts of different agencies as they work towards the common goal of stabilising an incident and protecting life, property, and the environment. The NZFS subscribes to and fully supports CIMS. However, CIMS principles recognise that each agency needs to retain its own command structures and working methods in order to function effectively within its own sphere of operations.

1.1.2 The NZFS command system that functions under CIMS is known as the New Zealand Fire Service Command System. The methods and protocols within the command system apply equally to incidents in which the NZFS is responding in a single agency capacity, or as part of a multi agency response.

1.1.3 CIMS is therefore an overarching incident management system that works across all involved agencies. The functions of command operate vertically and uniquely within each agency. Consequently CIMS does not determine the manner in which the NZFS (or any other agency) functions operationally.

1.1.4 This manual describes the command system in detail and summarises the manner in which it relates to CIMS.

1.1.5 While this manual is primarily concerned with operations on the incident ground, it is important that officers and firefighters understand that the command system depends significantly upon other processes for ultimate success. Improvements in incident management will only occur if all involved are prepared to step back and take stock of the whole process.

1.1.6 It is useful to think of incident management in terms of a:

- Functional sequence of related events
- Quality management cycle.

1.2 The functional sequence

1.2.1 Three phases of incident management

Incident management has three distinct phases, each with a set of critical functions that need to be as finely tuned as possible.

1. **Before – pre-incident.** This phase includes all the various functions that contribute to the preparation for potential emergency incidents, e.g.:

- Training and skills maintenance
- Turn-out readiness
- Patch analysis
- Risk planning
- Physical fitness.

2. **During – response to and activity on the incident ground.** This phase includes all the functions that contribute to the management of actual emergency incidents, from turnout performance to effective handover and return to station.

3. **After – post incident.** This phase includes all those functions that contribute to the closing off of the incident. For example:

- Operational debriefing
- Incident reporting
- Required notifications
- Feedback to the pre-incident, preparation phase.

1.2.2 The 4 'Rs'

In effect this functional sequence is the NZFS's practical way of complying with the 4 'R' principles that underpin emergency management in New Zealand. These are:

- Reduction (of risk)
- Readiness
- Response
- Recovery.

1.3 Pre-incident — the 'iceberg' concept

1.3.1 The importance of pre-incident functions cannot be over-emphasised. This is the time when systems, standard operating procedures and equipment must be brought to the optimum state of operational readiness. It is also the time to focus on bringing the knowledge, skills and attitudes of personnel to the highest possible standards.

1.3.2 The skills deployed by officers and firefighters on the incident ground may be the most 'visible' aspect of incident management, but success depends largely upon the quality of the 'invisible' – the quality of the effort that has already gone into preparation and planning. Pre-incident work underpins incident ground performance rather like the submerged mass of an iceberg.

1.3.3 Officers and firefighters should understand that constant improvement 'below the surface' must be a high priority. Figure 1.1 below illustrates this concept.

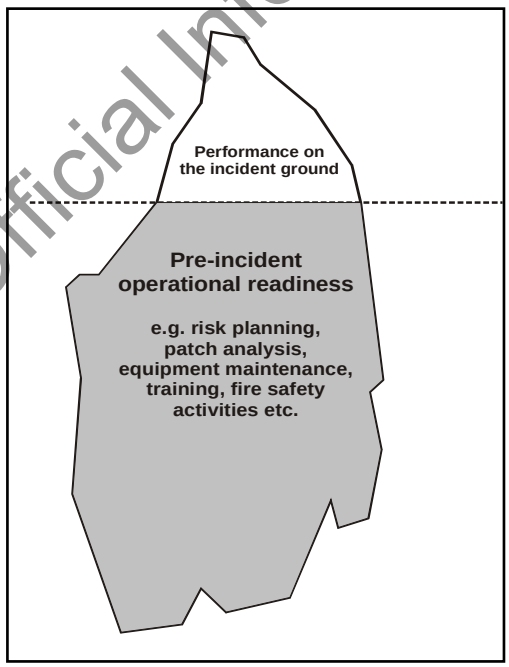


Figure 1.1: The Iceberg Concept
(Source – NZFS 2006)

1.4 Business excellence: the quality management cycle

1.4.1 The ADRI cycle

Through its commitment to the provision of a world class fire and rescue service, the NZFS has adopted the Business Excellence Framework as a basis for ensuring continuing performance enhancement. Improvements will only occur if performance is analysed, issues identified, systems or behaviour modified and lessons learned.

The Business Excellence Framework offers a powerful model for quality assurance. This cycle is shown graphically in Figure 1.2.

Fig 1.2: The ADRI Cycle
(Source – NZFS 2009)

1.4.2 Fire and rescue procedures may be mapped to the four stages of the ADRI cycle, and measures developed for continuous improvement. The four stages of the cycle are:

1. APPROACH – the thinking and planning stage. This clearly relates to the wide range of pre-incident activities.

2. DEPLOY – the implementing or doing stage. This relates directly to NZFS performance on the incident ground and to our fire safety and community education roles.

3. REVIEW – the monitoring and evaluating stage. This relates directly to NZFS self assessment and auditing processes.

4. IMPROVE – the learning and adapting stage. This relates directly to NZFS processes for implementing new practices and improving training.

The procedures described in this manual are linked to the ADRI cycle for auditing purposes under 'NZFS Business Excellence.'

1.5 The NZFS command system

1.5.1 While acknowledging the wider perspectives of incident management, this manual is intended to focus chiefly on incident ground performance. Specifically, this means a detailed explanation of the processes by which the Officer in Charge (OIC) of NZFS resources manages an incident to the best possible outcome. The skills required by the OIC Fire are complex, but can be summarised as:

- Understanding the officer's responsibilities within command and control
- Taking appropriate immediate actions
- Establishing effective scene management
- Establishing and maintaining effective communications
- Carrying out effective size-up
- Selecting appropriate strategy and tactics
- Applying dynamic risk assessment
- Formulating an effective incident action plan (IAP)
- Scaling up response as required
- Structuring the incident ground to support selected strategy and tactics

- Tasking of personnel and resources effectively
- Adapting strategy and tactics as needed
- Ensuring safety for all persons on the incident ground
- Scaling down and handing over
- Ensuring appropriate fire investigation occurs
- Ensuring that incidents are properly reported
- Generally maintaining effective command and control of all NZFS resources.

1.5.2 Officers must also understand fully how to adapt their command responsibilities to a delegated role (e.g. Sector Commander) or CIMS role if required.

1.6 Command and control focus

1.6.1 The specific task of this document is to establish agreed methods for the command, control and coordination aspects of emergency incidents that fall within NZFS jurisdiction. These are largely generic in nature and may be applied to most incidents to which NZFS personnel respond. The use of these principles is demonstrated in a range of situations, varying in complexity and scale, in the sections that follow.

1.6.2 This manual is not intended to address all incident types. Specific incident types are covered in other documents.

Section 2: Integration with CIMS

Section Contents

Section 2: Integration with CIMS

Introduction

This document is Section 2 of the New Zealand Fire Service (NZFS) Incident Management – Command and Control Technical Manual.

Integration with CIMS

2.1 Overview

2.1.1

This section is not intended to describe the Coordinated Incident Management System (CIMS) in detail. For an in-depth knowledge of CIMS principles, structures and processes, refer to the 'Blue Book' – The New Zealand Coordinated Incident Management System: Teamwork in Emergency Management.

The material is an overview of how the New Zealand NZFS Command System fits into the wider CIMS perspective, and identifies the relationships and attitudes that are critical for success.

Further information on CIMS principles, structures and processes is available in the 'Blue Book', The New Zealand Coordinated Incident Management System (CIMS).

'CIMS is a tool that defines the system for managing incidents of any size and defines the relationship, responsibilities and management rules for organisations involved at an incident.

It is important to note that CIMS will have no impact on the identity of the individual services or the way they carry out their statutory responsibilities.'

Source – CIMS 'Blue Book' 1998 edition, page 10

2.1.2 The command system aims to provide an internal framework for incident management that closely mirrors the structures and principles within CIMS, while at the same time allowing the NZFS to function as a single agency with a specific brief.

2.1.3 The command system now utilises relevant and parallel CIMS terminology for its command positions and incident ground facilities, while retaining a number of additional elements uniquely required by NZFS operations. However, the command system is an agency-specific command system that requires independent documentation. Hence the rationale for this manual.

2.2 CIMS/New Zealand Fire Service Command System — fundamental alignment

2.2.1 Four major roles

CIMS is founded upon the concept of an incident management team that encompasses the four functions required to manage a major incident. These are:

- Incident control
- Planning and intelligence
- Logistics
- Operations.

2.2.2 An Incident Controller is always appointed, even for small scale incidents. Depending on the needs of the incident, the Incident Controller may appoint individuals to fill the remaining roles of Planning and Intelligence Manager, Logistics Manager and Operations Manager.

2.2.3 The Incident Controller may also appoint individuals to assist with sourcing information, overseeing safety, and ensuring adequate liaison between agencies or with other interested parties.

2.2.4 This basic structure is shown in Figure 2.1. Numerous other positions may be activated to support the work of this team. The Blue Book provides complete information regarding these additional appointments.

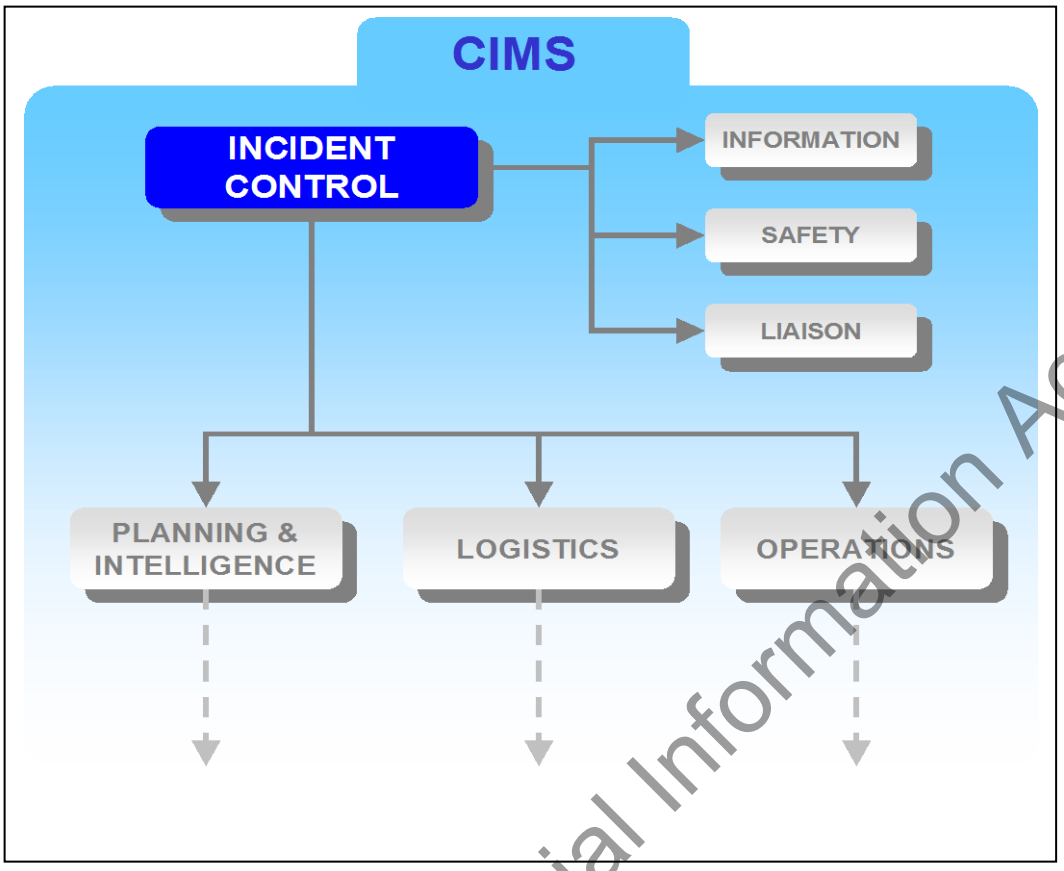


Figure 2.1: CIMS – The major roles of the Incident Management Team
(Source – NZFS 2006)

2.2.5 CIMS Incident Controller – responsibilities

Extract

'The Incident Controller is responsible for the overall direction of response activities in an incident situation and is the person in charge at an incident. The Incident Controller fulfils all the management functions and responsibilities until the incident requires additional appointments.

Major responsibilities include:

- establishing command and control
- establishing the Incident Control Point (ICP)
- protecting life and property
- controlling personnel and equipment
- maintaining accountability for responder and public safety, as well as for task accomplishment
- establishing and maintaining effective liaison with outside organisations, including the Emergency Operations Centre (EOC) if and when it is activated.'

Source – CIMS 'Blue Book' 1998 edition, page 16

2.2.6 CIMS Operations Manager – responsibilities

Extract

'The Operations Section is responsible for carrying out the response activities described in the Incident Action Plan (IAP). The Operations Manager coordinates activities and has primary responsibility for receiving and implementing the IAP. The Operations Manager reports to the Incident Controller and determines the required resources and organisational structure within the Operations Section.

The Operations Manager's main responsibilities are to:

- direct and coordinate all operations, ensuring the safety of all operations personnel
- assist the Incident Controller in developing response goals and objectives for the incident
- implement the IAP
- request resources through the Incident Controller
- keep the Incident Controller informed of the situation.'

Source – CIMS 'Blue Book' 1998 edition, page 19

2.2.7 CIMS Planning and Intelligence Manager – responsibilities

Extract

'In minor events, the Incident Controller is responsible for planning but when the event is major, the Incident Controller establishes the Planning and Intelligence Section. Its functions include gathering, evaluating and disseminating information about the incident and the status of resources. This Section's responsibilities also include creation of the IAP, which defines the response activities and the use of resources for a specified time period.'

Source – CIMS 'Blue Book' 1998 edition, page 19

2.2.8 CIMS Logistics Manager – responsibilities

Extract

'The Logistics Section is responsible for providing supplies and services including facilities, materials, services and resources – including personnel – in support of the incident. This Section takes on great significance in long-term or extended operations. The Section's functions are related to support for the incident responders.'

Source – CIMS 'Blue Book' 1998 edition, page 20

2.2.9 Small scale incidents

These principles are mirrored precisely in the NZFS internal command system, which allows CIMS to be effectively operated even at the smallest scale incidents when we are working without assistance from other agencies.

2.2.10

It is important to understand that, with the exception of Incident Controller, all CIMS roles are optional appointments – their establishment is dependent upon the needs of the particular incident. At small-scale incidents the senior NZFS officer is the Incident Controller and normally takes personal responsibility for all the CIMS functions. This is certainly the case with the vast majority of first alarm fires – even in these circumstances the principles of CIMS are in operation.

2.2.11 Large incidents

At larger scale incidents, however, the work of the NZFS may need to be coordinated with that of other agencies. Consequently, the command system effectively drops down a level to sit alongside the command systems of other agencies under the coordinating umbrella of the CIMS Incident Management Team (IMT). This concept is illustrated in Figure 2.2.

2.2.12 If the incident falls under NZFS jurisdiction, the most senior NZFS officer present will assume the role of Incident Controller and effectively manage the activities of all agencies present though the IMT. Other NZFS officers may be appointed to roles within the IMT, e.g. Operations Manager. These officers are dealing with events at incident level across all agencies present, and effectively 'take off their uniform' for the duration of the incident. Another officer will assume command of all NZFS resources and fire operations and will thus be referred to as the OIC Fire. He/she will report to the CIMS Operations Manager.

2.2.13 Figure 2.2 demonstrates the manner in which NZFS operations, at an incident requiring multi-agency response, sit beneath the overarching CIMS management team structure. Fire operations are controlled by the Operations Manager within the IMT who may or may not be a NZFS officer. NZFS personnel however are always commanded by a NZFS officer (the OIC Fire) under the NZFCS. In this particular scenario we see a rural fire incident where the NZFS and Police are assisting agencies. As the lead agency, Rural Fire provides the Incident Controller and Operations Manager. It is likely that the other key IMT roles would also be filled by Rural Fire personnel – but this is not always the case.

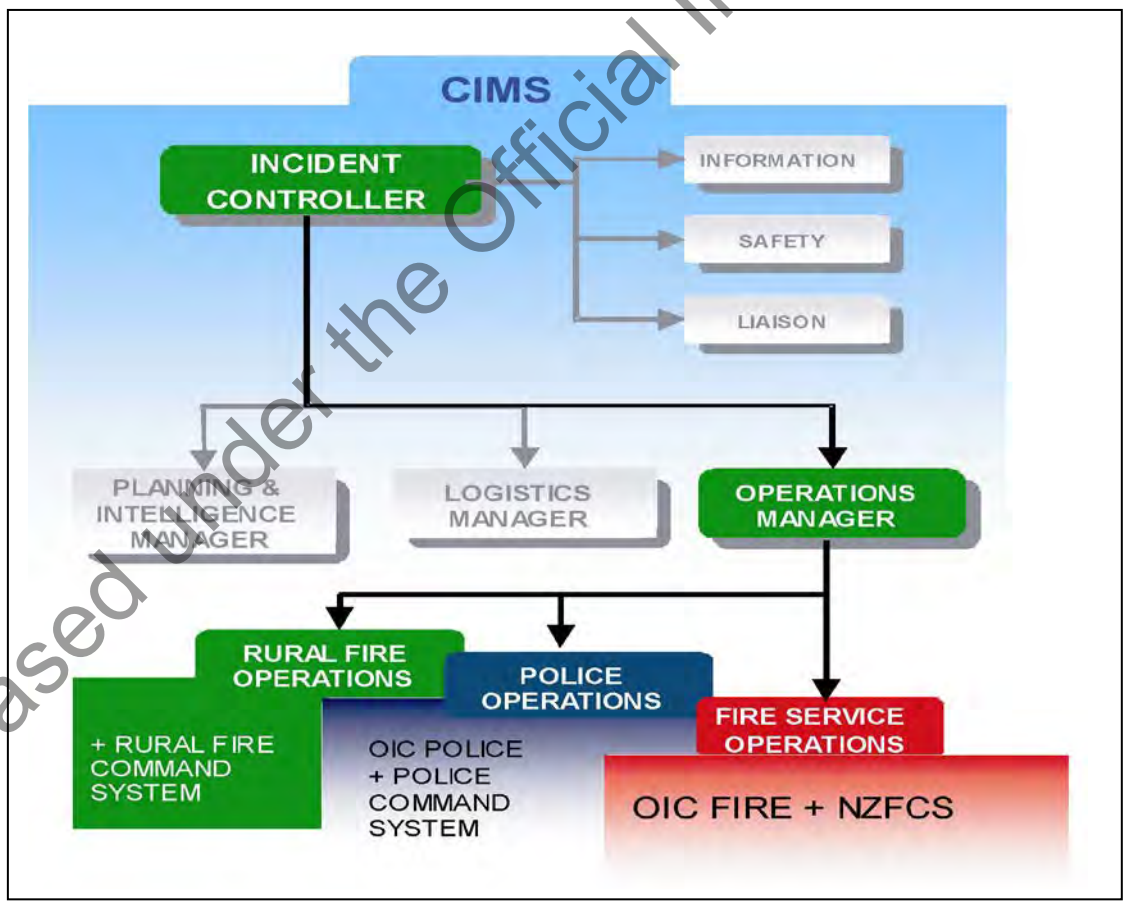


Figure 2.2: Example of integration of Agency Command Systems under CIMS
(Source – NZFS 2006)

2.2.14 Expansion of the Fire Service Command System

The safe and effective conduct of operations in general is the responsibility of the CIMS Operations Manager. However, he/she cannot be expected to possess technical competence in all operational fields. Agency specific operations remain under the command of the OIC of that agency.

The OIC Fire therefore decides what tactics, resources and command structures are required to conduct fire operations successfully (i.e. the NZFS Agency Action Plan). This information is then coordinated with other agency operations, and overseen by the CIMS Operations Manager. Figure 2.3 below illustrates, in a simplistic manner, the command systems functioning under CIMS at a large-scale incident over which the NZFS may or may not have jurisdiction and therefore may or may not be the lead agency. Note that the CIMS IMT roles are mirrored in the command system structure – but these are NZFS appointments focussed on NZFS requirements only, and are prefixed by 'Fire', i.e. 'Fire Logistics Commander'. Note also that CIMS positions are referred to as Managers (i.e. Logistics Manager) to infer that these are Control positions, and that command system positions are referred to as Commanders to infer that these are Command positions.

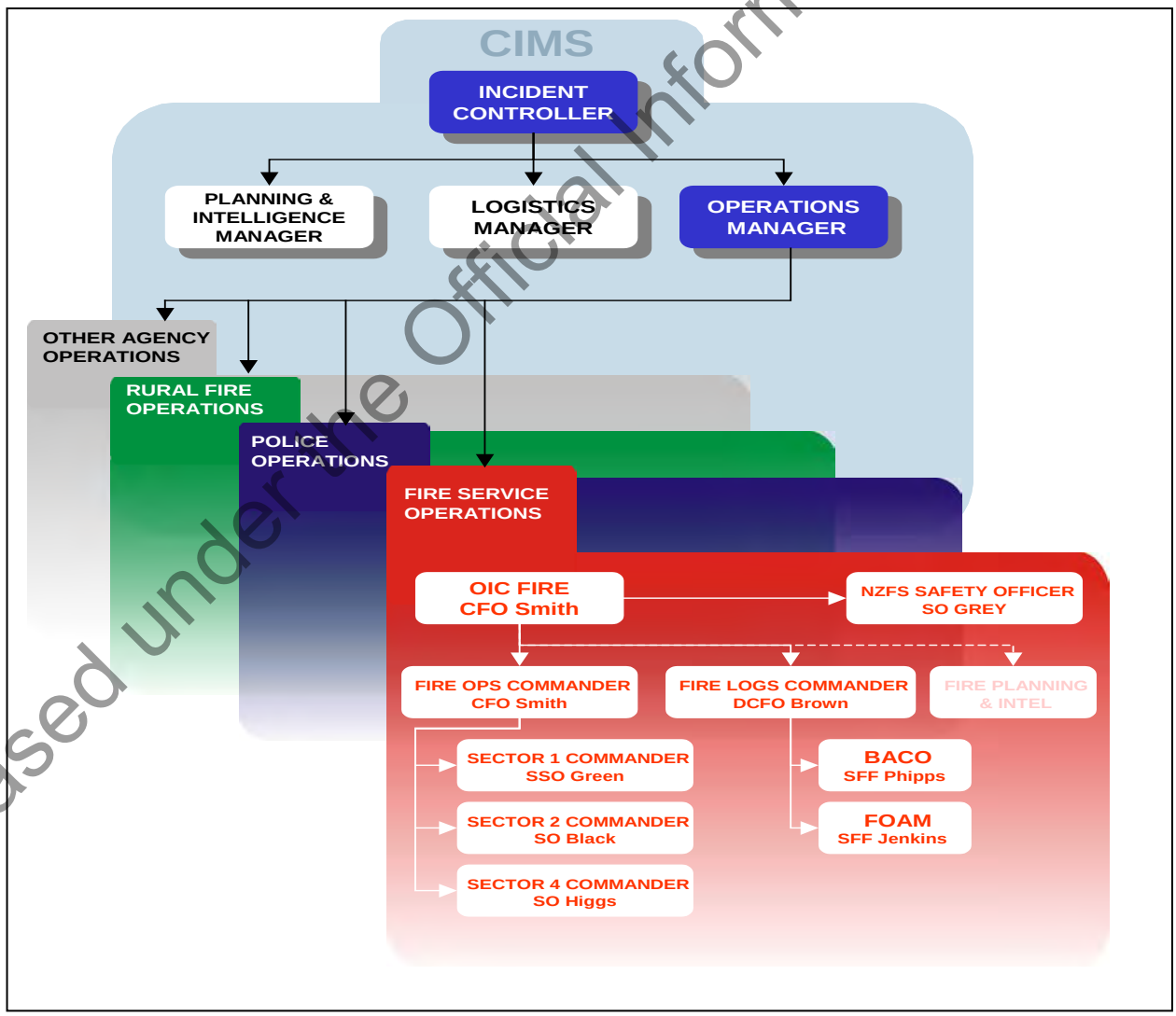


Figure 2.3: Example of Fire Service Command System working to a CIMS Operations Manager with Police as lead agency
(Source – NZFS 2006)

2.2.14 cont.

In this particular scenario the OIC Fire has also taken direct responsibility for the conduct of NZFS operations and is therefore also Fire Operations Commander. If the fire aspect of the incident grew in complexity and scale he/she might decide to delegate this role in order to remain focussed on the bigger picture. A Fire Logistics Commander has been appointed to look after resourcing and re-supply to support fire operations. The Fire Planning and Intelligence role has not been activated on this occasion.

2.3 CIMS — levels of response

2.3.1 Level 1 incidents – to be regarded as CIMS incidents

Firefighters will frequently attend incidents which require only a NZFS presence. For example, a small-scale fire with no casualties or evidence of criminal intent is therefore subject to NZFS jurisdiction. Under the Fire Service Act, 1975, the senior Fire Officer present is empowered to take charge as the lead agency. In these situations we see a single agency response under a single jurisdiction. Response at this level is referred to as level 1 (see Figure 2.4).

2.3.2 All incidents are CIMS based

Although with a scenario such as that described above there is only one agency present, it is important to view all incidents as being grounded on CIMS. This is for two primary reasons:

1. Any incident has the potential to develop to the point where the support of other agencies may be required. It is essential to employ procedures and structures from the outset that will assist the integration of other agencies
2. The constant use of CIMS procedures in a single agency context will enable NZFS personnel to scale up in a seamless and efficient manner.

2.3.3 Level 2 incidents

The need for CIMS procedures becomes quite self-evident in situations where the NZFS needs the assistance of other agencies, i.e. single agency jurisdiction with multi-agency support. For example, a large factory fire with numerous casualties and a need to shut off road access will require the support of Ambulance and Police. The NZFS will act as lead agency until the fire is extinguished and the situation stabilised. During that time the work of Ambulance and Police staff will need to be coordinated for the best effect.

In these situations jurisdiction is usually clear and the Incident Controller will be appointed from the obvious ‘lead agency’. Response at this level is referred to as level 2 (see Figure 2.4).

2.3.4 Level 3 incidents

Jurisdiction at complex incidents is often not easily determined and lead agency status can become the subject of debate. This is unlikely to assist successful response. Rather than grappling with this problem it is useful to move immediately to a more cooperative approach, which simply assumes multi-agency jurisdiction with multi-agency support. This is the most complete application of the CIMS philosophy. However, even in a unified command environment of this kind, an Incident Controller will always be appointed with the prerogative of ultimate decision-making. Response at this level is referred to as level 3 (see Figure 2.4 below).

This will not always be a comfortable environment since it will require both flexibility and adaptability from the various agency commanders. It is desirable for the senior officers who are likely to participate in the Incident Control function to have a reasonable understanding of how things are done in other agencies. This can only really be achieved through joint agency training and effective communication at command level.

On the incident ground all involved must be prepared for some degree of role adjustment. These adjustments are primarily concerned with the critical interactions between members of the IMT.

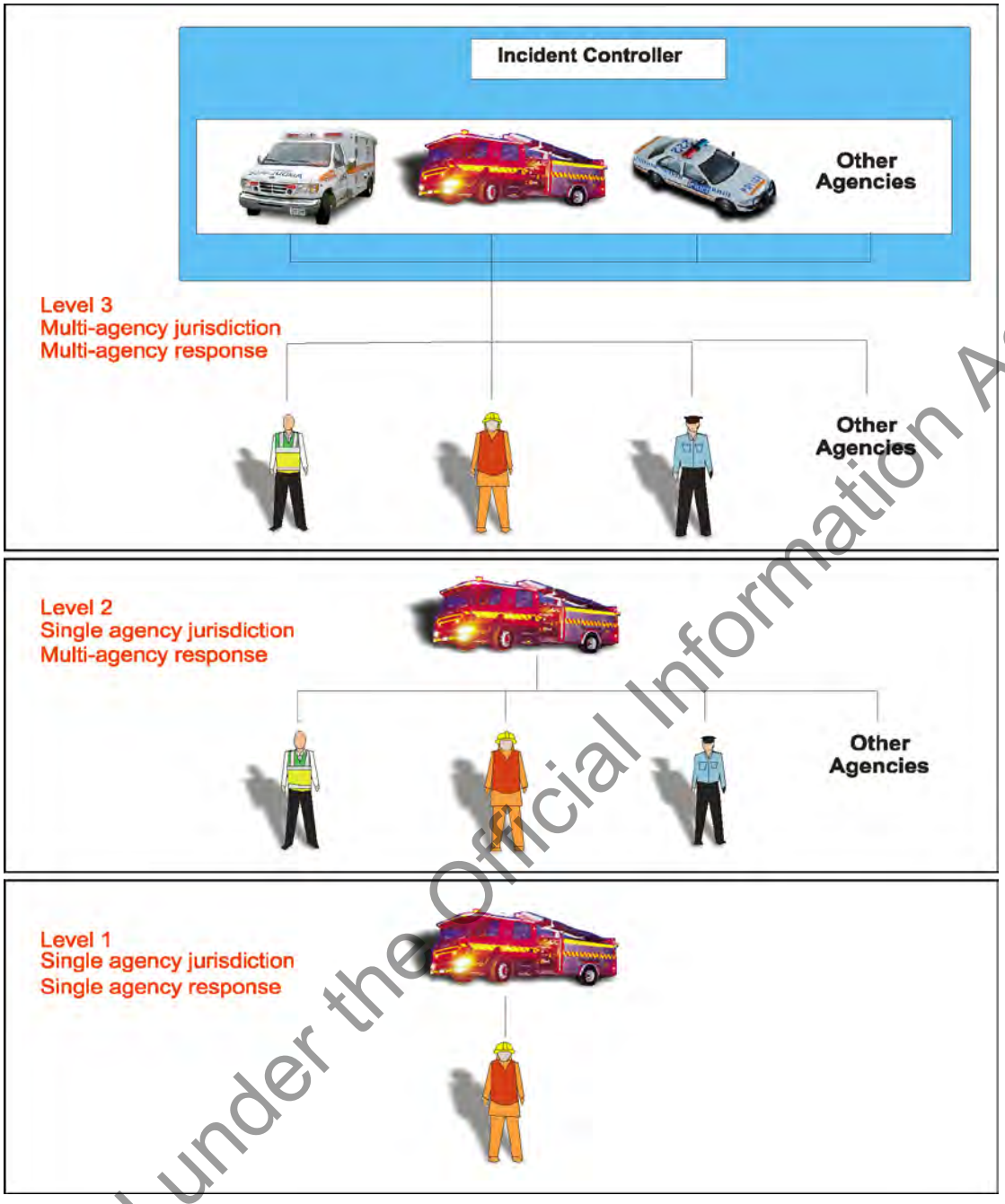


Figure 2.4: Response levels under CIMS. Example showing involvement of Fire, Police and Ambulance only
(Source – NZFS 2006)

2.4 Role adjustment

2.4.1 Interaction between key personnel

There are a number of critical adjustments that fire personnel may need to make when operating in a large-scale CIMS environment. The OIC Fire, and any fire personnel fulfilling a role within the CIMS structure, will require a readiness to accept, if necessary, direction or advice (at the strategic level) from senior officers of other agencies, or indeed from non-emergency services personnel who may be acting in an IMT capacity.

2.4.2

If the NZFS is not the lead agency, the position of Operations Manager in the IMT is unlikely to be filled by a NZFS officer. Furthermore, NZFS operations are likely to be running simultaneously with those of other agencies and may well be regarded as a lower priority in the scheme of things. This requires an adjustment of perspective. Ultimately, the OIC Fire retains command of and responsibility for his/her officers and firefighters – but overall strategic direction may come from an operations manager appointed from another agency.

2.4.3

In this situation, the critical adjustment to be established and maintained is that between the OIC Fire and the CIMS Operations Manager. It is essential that both understand the additional need for clarity of purpose and clarity of direction. It is not advisable to assume that NZFS protocols and procedures will be entirely understood by an Operations Manager from another agency. Equally, it is important that the OIC Fire does not make assumptions about what is required. The various agencies all have variations of operational language. Clarifying the operational brief is a vital command function.

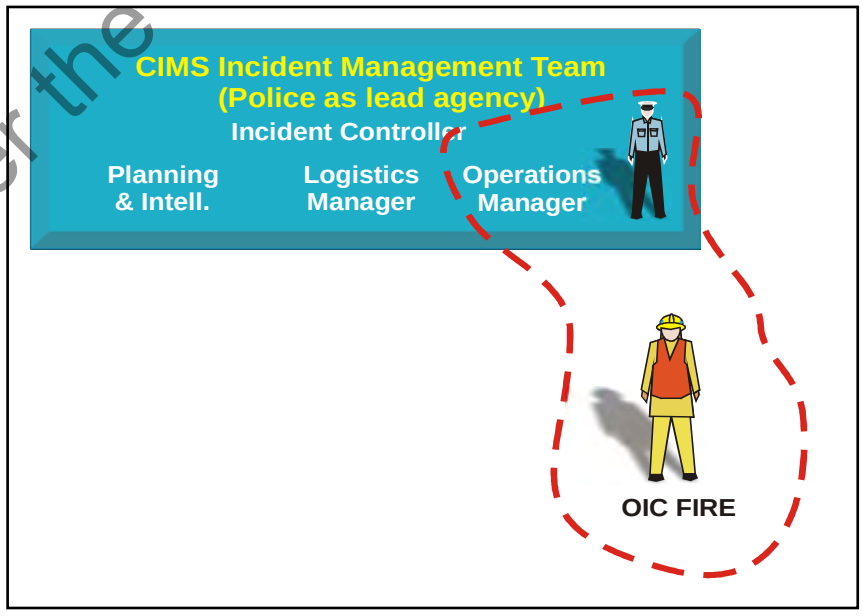


Figure 2.5: Integration with CIMS: Example of critical interaction
(Source – NZFS 2006)

2.4.4 Decision-making

Secondly, when dealing with a large-scale CIMS situation, the Incident Controller (from any agency) must adjust from a position of making decisions on a 'unilateral' basis to managing the decision-making process of a team – the incident management team. This can only be done effectively by adopting an inclusive structured process, with which, hopefully, the other members of the team will be familiar. A suitable process would be the appreciation technique, which allows all members to contribute under the structured direction of the Incident Controller.

2.4.5 The role of the Fire Service Incident Safety Officer

Operational Instructions clearly stipulate the circumstances under which a Safety Officer must be appointed (see paragraph 5.3.2 of this manual). These stipulations do not change in the context of a large scale CIMS incident. Under CIMS each agency retains its own command system, and the agency Safety Officer is part of that system.

2.4.6

In a CIMS environment, the Incident Controller may appoint a CIMS Safety Adviser to manage the safety of operations across the whole incident. Only one Safety Adviser would be appointed for each incident. He/she is unlikely to be familiar with the operational risks confronting each of the agencies present, and may therefore require advice from agency specific safety specialists. For example, if the Safety Adviser is a police officer, he/she will request advice from the NZFS Safety Officer regarding aspects of NZFS operations. In these circumstances the NZFS Incident Safety Officer takes on the additional role of Safety Assistant to the Safety Adviser. He/she still retains all responsibilities associated with the specific NZFS role.

2.4.7

Consequently, in a CIMS environment, the NZFS Incident Safety Officer may need to broaden his/her perspective, since it is quite possible that while NZFS operations seem to be proceeding in a perfectly safe manner, they may be endangered by the operations of another agency – or vice versa (e.g. if an armed offenders situation also exists). Decisions of that nature are the prerogative of the Safety Adviser who is tasked to see 'the big picture'. To do so he/she will need accurate and timely information from the various safety assistants.

2.4.8

See Section 5 for further information on the role of the NZFS Safety Officer.

2.5 Documentation adjustment

2.5.1 Strategic and tactical levels

The NZFS has its own agency-specific Agency Action Plan (AAP) format to support the command system (see Section 3). When acting as lead agency the Incident Controller may choose to use this as the CIMS Incident Action Plan (IAP) because most of the issues will, by definition, be fire-related. In these situations, the CIMS IAP functions at the strategic level, sets out the management objectives, while the NZFS AAP works at the tactical level. Consequently, NZFS Officers acting as Incident Controllers need to adjust their use of the Fire AAP to capture strategic intent, thus allowing the OIC Fire to plan for tactical implementation.

2.5.2 CIMS templates

However, for those other agencies without a formal AAP format for their own operations, CIMS provides formats for both action planning and situation reporting. These are generic in style and document the key aspects required by any agency. Templates are provided in the 'Blue Book'.

2.5.3 Two levels of planning

At a large-scale, complex incident involving operational input from several agencies, it is unlikely that the IAP could produce a single CIMS IAP that would encompass the activities of all agencies down to the operational level. Consequently, planning will occur on two levels.

2.5.3.1 IMT level

The IAP will focus primarily on strategy and tactics in terms of the whole incident. Nevertheless, the IMT will need to be aware of how each agency plans to implement the proposed strategy and tactics within its own operational area.

2.5.3.2 Agency level

Once tasked by the Operations Manager, those in charge of the various agencies will need to develop an action plan specifically for their own operational requirements. The OIC Fire will do this using the NZFS AAP document (see Section 3 of this manual).

If a written format is required (which it may not be), the generic CIMS document is inappropriate, as the OIC Fire will possibly have been tasked for many functions (i.e. extinguish fires, perform rescues or make safe hazardous substances etc.), which will each require a description of how these will be carried out.

2.5.4 Consolidation into the CIMS IAP

On completion, the NZFS AAP should be copied to the IMT where it can be consolidated with plans from other agencies under the higher-level consolidated CIMS IAP as required. Agency specific AAPs thus become references or appendices to the consolidated CIMS IAP. This concept is illustrated below at Figure 2.6.

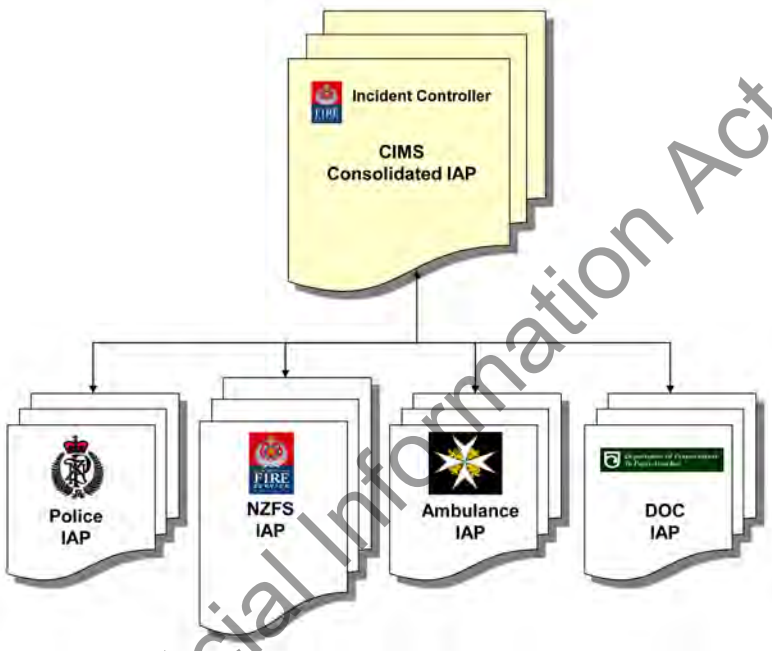


Figure 2.6: Concept example – Agency specific AAPs consolidated into CIMS IAP
(Source – NZFS 2006. Agency logos used with permission)

2.5.5

In this example the NZFS is the lead agency and therefore provides the Incident Controller. The incident requires an operational response from Police, Ambulance, NZFS and Department of Conservation (DOC). Each needs to operate according to its own internal procedures and therefore develops its own agency action plan. These plans are in turn passed to the IMT.

Section 3: Risk Assessment, Strategy and Tactics

Section Contents

Section 3: Risk Assessment, Strategy and Tactics

Introduction

This document is Section 3 of the New Zealand Fire Service (NZFS) Incident Management – Command and Control Technical Manual.

Risk Assessment, Strategy and Tactics

3.1 The decision-making hierarchy

3.1.1

It is important to understand that effective decision-making has to occur at a number of levels if an incident is to be managed successfully. Emergency services personnel will use a wide range of methods for arriving at decisions, but whatever the method, they must arrive at a clear understanding of:

- AIM
- STRATEGY
- TACTICS
- Operational TASKING.

3.1.1.1 AIM

The AIM is a concise, clear and simple understanding of the eventual outcome, based on the NZFS Mission Statement.

'What do we want to achieve?'

3.1.1.2 STRATEGY

The STRATEGY is the most effective, efficient and safe approach available to us within the limitations of our resources and skills.

'What we need to do'.

Examples of possible strategies are:

- Prevent property damage (smoke and water)
- Rescue occupants
- Administer first aid
- Extinguish the fire
- Not extinguish the fire
- Restrict access/evacuation
- Protect the environment
- Firefighter safety.

3.1.1.3 TACTICS

The TACTICS are the specific actions we need to take to make our STRATEGY work.

'How we go about it'.

Examples of possible tactics are:

- Offensive internal fire attack
- Defensive external fire attack
- Salvage
- Formalise C&C
- Ventilation
- Establish water relay
- Cordon area
- Supported search and rescue BA teams
- Set up triage
- Decontamination.

3.1.1.4 Operational TASKING

Operational TASKING is the detailed decisions concerning the tasks that need to be performed to make the TACTICS work.

'Doing it'.

Examples of possible tasking are:

- BA crew no 1, low pressure delivery, 2nd floor, internal fire attack
- Salvage and ventilation crew, ground floor, with salvage sheets, restrict water damage.

3.1.2 Decision-making on the incident ground is an example of hierarchical thinking with everything deriving ultimately from the AIM. The model shown in Figure 3.1 below illustrates this hierarchy.

Figure 3.1: Decision-making Hierarchy
(Source – NZFS 2006)

3.1.3 Example scenario There is a tendency to assume that all incidents are governed by the single AIM 'to save life and protect property,' and that we need not do any more thinking than that. In fact the AIM (and the STRATEGY and TACTICS that flow from it) may need to be more specific, or perhaps broken into staged priorities. The simple scenario below illustrates this.

3.1.3.1 Location The location is a multi-gallery city arts museum. The museum houses collections of regional paintings and sculpture of local interest but of no exceptional value. The building, however, is 120 years old and listed as being of heritage value. Operational planning focuses primarily on saving the building as a priority rather than preventing possible damage to the contents.

3.1.3.2 Situation In addition to its usual displays, the Museum is currently showing a travelling exhibition of six paintings by Picasso in an upstairs gallery. The paintings are irreplaceable and their monetary value is conservatively estimated at around NZ$80,000,000. Unfortunately the NZFS was not advised regarding the exhibition and has not amended its risk plan in any way.

Fire has broken out on the ground floor. Two galleries and the central staircase are well involved. There is no lift. The picture galleries are not sprinklered because of the risk of water damage to paintings. Fire is gaining ground rapidly. Smoke is building up on the upper floor. Pre-determined attendance is for 3 pumps. Additional resources are not likely to arrive for 10 to 15 minutes.

On arrival the OIC is met by the near hysterical Museum Manager, who tells him that everybody has been evacuated from the building but the virtually priceless Picasso paintings are still inside because nobody can get past the fire on the staircase. The paintings may well already be suffering smoke damage.

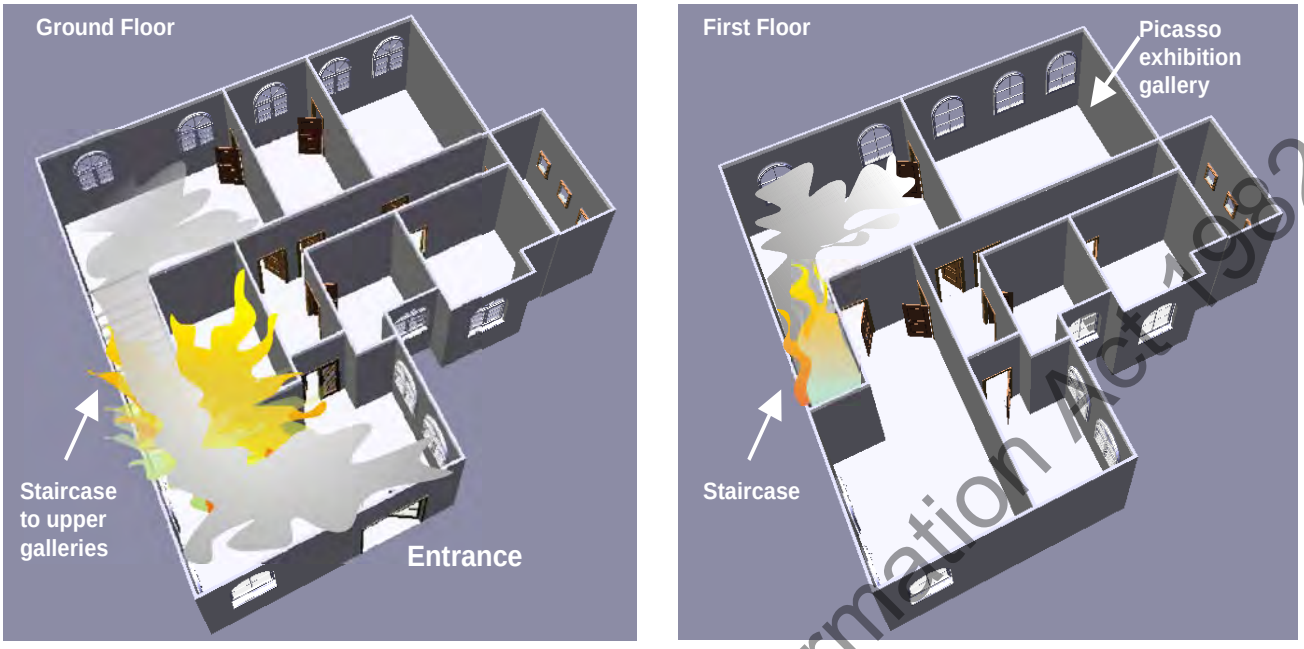


Figure 3.2: Scenario – Fire in arts museum, Ground and First floor views
(Source – NZFS 2006)

3.1.4 Example AIM

This situation probably calls for the (temporary) abandonment of the operational plan. Instinct directs you to attack the fire immediately, but you have few resources and must think clearly to prioritise what you really need to achieve. As a general rule, the AIM can be stated in one sentence:

My AIM is to 'Rescue' the Picasso paintings before damage can occur, and then save the remainder of the building.

3.1.5 Example STRATEGY

STRATEGY is usually expressed in non-technical terms.

My STRATEGY is to use all initially available resources (1 crew) for the snap rescue of the paintings with all possible speed, then attack fire with all resources as they become available.

3.1.6 Example TACTICS

TACTICS are the methods selected to successfully carry out the STRATEGY. At this point things usually become more technical, but can still be expressed simply. Some of the terms discussed here will be further explained later in this section.

My TACTICS are to:
Commence a search and rescue for the paintings in the first floor Picasso gallery, supported by an interior cut-off.

When sufficient resources are available, commence an interior attack on the ground floor to knock down the fire. Retreat to exterior attack if required.
Incoming resources to assist according to situation on arrival.
Undertake ventilation and salvage as required.

3.1.7 Operational TASKING

The Operational TASKING component of incident management is essentially the specific allocation of resources to the various aspects of the TACTICAL plan.

3.1.8

An operational task includes:

- The person (and crew size) to whom the task is being allocated
- Whomever that person will report to (e.g. Sector Commander)
- The location of the task (may include a grid reference)
- The priority level assigned to the task
- The risk associated with the task
- An indication of when the task was commenced (to indicate when relief should be implemented).

Sector	Task	Location	Grid	Team Leader	No in Crew	Tasked at:
3	Search and rescue for Picasso paintings and pass out window to museum staff	Top floor rear. Access via ladder.	G9/ 2	SFF Smith	2	13:00
3	Interior cut-off to protect search and rescue team.	Top floor rear. Access via ladder.	G9/ 2	SFF Brown	2	13:02
3	Interior attack to extinguish fire before extending up the stairs	Ground floor. Access from front entrance.	G9/ 1	SFF James	2	13:03
	Ventilation and salvage starting on the ground floor	Ground floor	G9/ 1	SFF Smith	2	13:10

Figure 3.3: The Operational TASKING process (example)

3.1.9

The tasks are captured regardless of the availability of current resources. The list reflects what is already deployed, as well as a 'wish list' of resources that are required to deal with the incident. The tasks are prioritised according to their importance. This method is referred to as 'planning backwards'. Figure 3.4 describes this method.

With an incident such as the scenario cited above, this would all be done mentally, and accompanied by verbal instructions, due to the absolute urgency and relative simplicity of the situation. However, as incidents grow in scale and complexity there will be an increasing need to document the management process. This is covered in more detail in later sections.

To minimise misunderstanding and confusion, it is important to understand the terminology being used. In much the same way that the terms 'dash roll' and 'roof flap' became synonymous with techniques for vehicle extrication, terms such as 'Offensive Interior Cut-Off' are being introduced to general firefighting for the same reasons.

The process of determining operational tasking will highlight resource requirements (make up requirements) and the risks associated with each task. Using this process may in fact (and often does) require more tasking to be deployed. For example, the risk associated with an offensive Interior Attack on a building with a high fire loading will require higher supervision, communication and back-up. Each of these tasks draws down the resources available.

3.1.10 Devolving responsibility

The first arriving officer at a small-scale incident will retain the responsibility for strategy, tactics and most operational decisions until relieved by a more senior officer from his/her District. However, if the incident warrants additional resources, the Incident Controller will need to think about delegation of command decision-making once these arrive.

3.1.11

As the span of control hierarchy grows, the Incident Controller should delegate as much of the lower level decision-making as possible. This is essential if he/she is to retain overall 'big picture' responsibility for strategy and tactics, leaving the lower level operational decisions to crew leaders.

3.1.12

Consequently, as more resources are deployed, the Incident Controller should use other officers to share the burden of tactical decision-making. With large-scale and prolonged incidents he/she should increasingly delegate tactical decisions, e.g. to FIRE OPS and perhaps to Sector Commanders.

3.1.13 Key concept

The ability to delegate in accordance with incident scale and available resources is a fundamental attribute of effective command.

3.1.14 Risk assessment – The Safe Person Concept

Risk assessment is the process by which potential strategy and tactics are subjected to analysis to determine whether or not the level of risk they represent to operational personnel is acceptable. This is a process that continues throughout the management of an incident and is consequently referred to as 'dynamic,' i.e. constantly changing.

The process begins immediately on arrival, and at that stage may have to be performed very rapidly. For example, when arriving at a fire with 'persons reported', the OIC must decide very quickly whether or not to commit firefighters to a snap rescue. There is a very real tension here between the need for urgency and the need to ensure the safety of personnel. Making an appropriate decision under considerable stress is never easy. Officers must be thoroughly conversant with the principles of the Safe Person Concept, which will enable them to prioritise clearly in these situations. This is discussed in greater depth later in Section 3.5.

3.2 Incident action planning

3.2.1 Overview – From experience

Officers and firefighters will respond to most incidents on the basis of experience – they have seen this kind of incident before and know what is required to deal with it successfully. Very little planning is required. In these situations the OIC scans his/her 'mental filing cabinet' and when he/she recognises strong patterns of similarity pulls the file. This is clearly a very efficient, and perhaps the only means of decision-making when under severe time pressure. Experience and training combine to fill the filing cabinet.

3.2.2

Decision-making of this kind is referred to as 'recognition primed decision-making' (RPDM). It is an entirely natural process and is often referred to as 'naturalistic decision-making'. Nevertheless it must be balanced by the obvious merit of giving situations some fresh thinking and avoiding the 'automatic' response. For a full explanation of RPDM see Klein (1998).

3.2.3 As a process

The RPDM model tells us that when we are faced with situations we have not encountered before (i.e. there is no appropriate file in the filing cabinet) a more structured approach is required. This is especially true when the situation is highly complex and decision-making must take account of many variables. The OIC should then resort to a decision-making process that is structured to take account of variables in a disciplined and appropriate order.

3.2.4 Figure 3.4 illustrates a proven model for arriving at the most effective Incident Action Plan (AAP/IAP) for NZFS led incidents (this is not necessarily the process that other agencies will follow). The model consists of a number of processes that result in outcomes which in turn enable subsequent processes. Order and structure are essential for success. This does not mean that individual processes could not be delegated, e.g. in the context of the CIMS IMT – but the various components would have to be integrated in correct process order.

3.2.5 Each process within the model is explained further in the following pages.

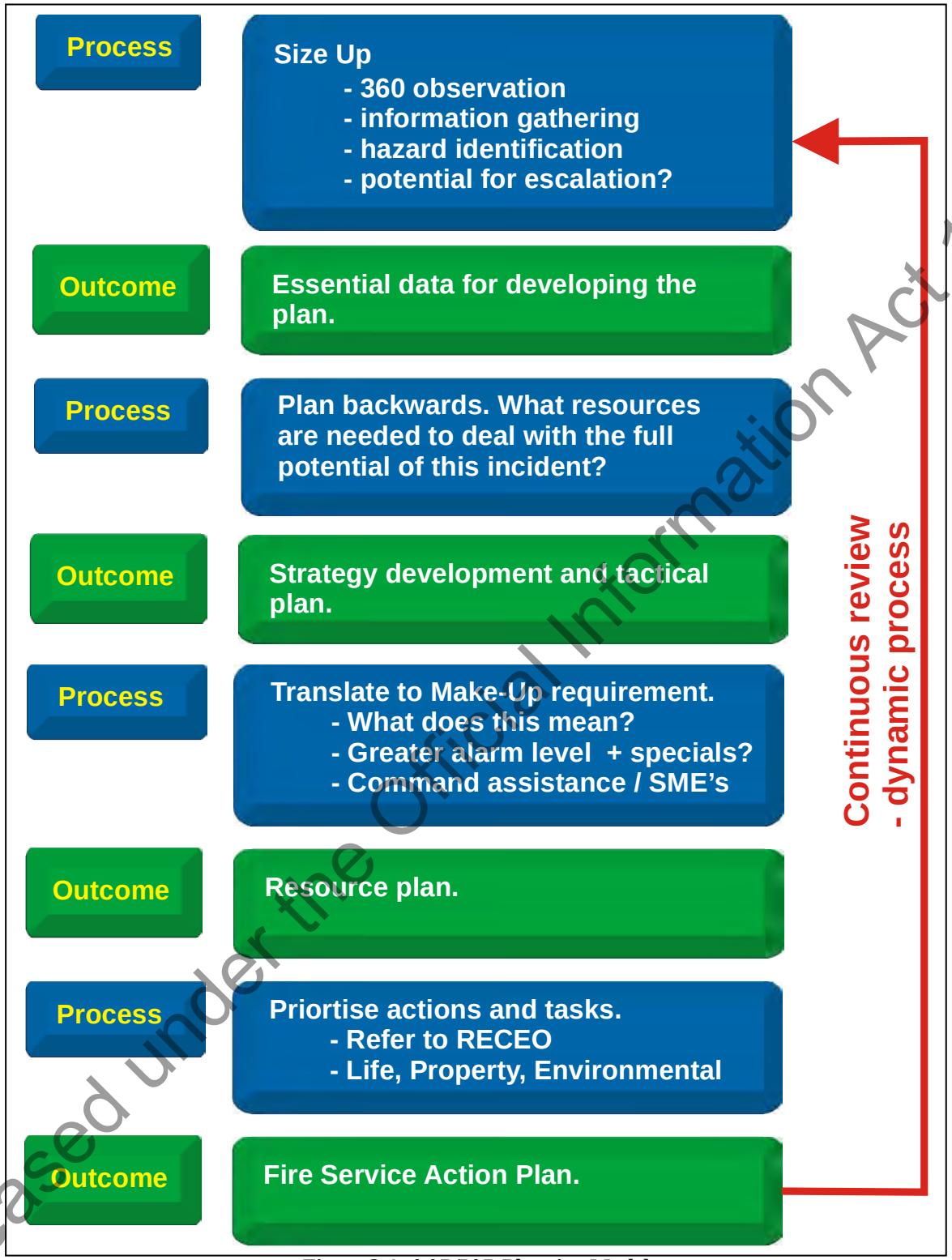


Figure 3.4: AAP/IAP Planning Model

3.2.6 NZFS Agency Action Plan (AAP) – Size-up

'Size-up' is an assessment, usually by the OIC, of the various factors that impact upon the incident in question. This involves, as far as possible, an assessment of the whole incident site. Failure to grasp the whole situation may lead to strategic or tactical errors (or indeed to pursuing an inappropriate aim).

The need for urgent action (e.g. search and rescue) will often be a legitimate but significant distraction from the wider tasks of size-up. Consequently, the OIC should delegate as many immediate actions as possible to his/her firefighters, within the limits of their competence. For example, a size-up of a significant fire at a tank farm may reveal one person needing rescue, but also the potential for major explosions. With ensuing widespread damage and injury, the Incident Controller must prioritise where his/her attention should be primarily focussed. The rescue task must be delegated to allow the incident controller to attend to the bigger picture.

Size Up
- **360 observation**
- **information gathering**
- **hazard identification**
- **potential for escalation?**

Information gathering through size-up must attempt to assess the whole incident site. Failure to do this may lead to ineffective planning and response.

3.2.7 360° observation

Whenever possible, officers should always conduct a 360º assessment (i.e. do a complete circuit around the incident, or at least as much as possible). Alternatively, obtain information from others who are better positioned. Figure 3.5 below illustrates the 360° principle.

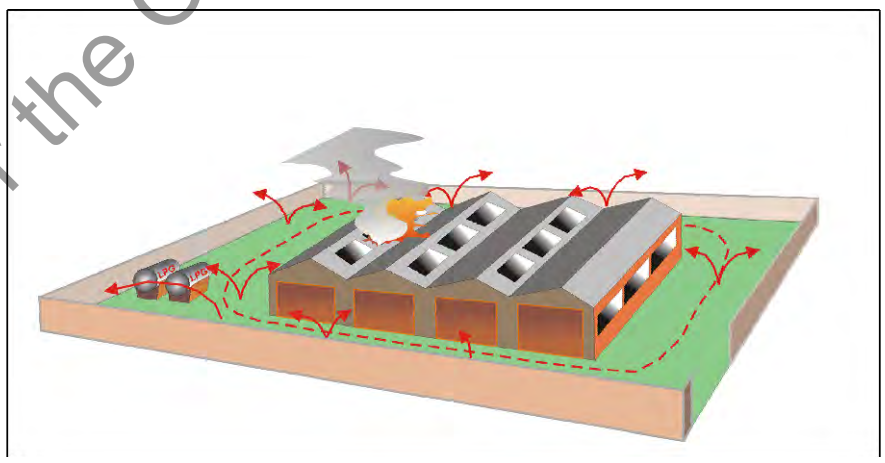


Figure 3.5: 360° assessment
(Source – NZFS 2006)

3.2.8 Information gathering

Officers must realise that the key to effective decisions on the incident ground is in seeking and processing useful information. Obtaining this information is never straightforward, but is much easier with an understanding of what information is needed.

This requires an understanding of 'access opportunities' – windows of opportunity through which information can and should be gathered. This process continues throughout the incident and ensures that previously gathered information is validated and updated as progress is made.

3.2.9 BSAHF

BSAHF is a memory aid to read a fire. It stands for:

- **B**uilding
- **S**moke
- **A**ir track
- **H**eat
- **F**lame

3.2.10 BSAHF – Building

The type, age and purpose of a building can inform firefighters about the type of fire that they could encounter inside.

3.2.11 BSAHF – Smoke

Smoke is a useful indicator of the intensity of the fire as well as what type of substance is on fire

3.2.12 BSAHF – Air Track

Read the air track with the neutral plane. A sudden change in the air track can be a sign of flashover.

Lazy flowing air tracks show good oxygen supply and erratic air tracks show a fire searching for oxygen.

No air track shows a fire in decay or a contained fire burning its available oxygen.

3.2.13 BSAHF – Heat

Heat can show the stage and fire intensity as well as the type of fuel.

3.2.14 BSAHF – Flame

Lengthening flame signals gases approaching their LFL (lower flammable limit).

Red flame is a sign of energy-rich fuels or fuels burning close to their UFLs (upper flammable limit). Yellow flame is seen with normal-energy fuels or fuels burning close to their LFLs.

3.2.15 Access opportunities

Information relevant to any given incident may be gathered from a wide range of sources, to make risk assessments, strategies and tactical options for that or similar locations. Useful (perhaps vital) information can be gathered:

- Pre-incident – through risk planning, topographical knowledge, liaison with key personnel at the potential incident ground, local emergency plans, site visits etc.
- Pre-incident – through understanding of NZFS policies and Operational Instructions
- En-route – through contact with the Comcen, other appliances, other agencies etc.
- On the incident ground – through effective 360° assessment
- On the incident ground – from bystanders, wardens, casualties, evacuees, or employees fleeing the building, other rescue service personnel etc.
- On the incident ground – through sensory data – i.e. what you and others can see, hear, smell, or feel. For example, there may be closed curtains, shoes at the front door, the smell of petrol, lights turned on, a car in the garage, establishment of interior building layout from outside (360° assessment), signage (e.g. HazChem)
- Post-incident – through lessons learned from operational debrief, analysis and reporting.

3.2.16 Hazard identification

When gathering information, either directly or through other personnel, the identification of actual and potential hazards must be at the forefront of the OIC's mind. Failure to identify a hazard may result in inadequate risk assessment and thus place firefighters or other attending personnel in danger.

The presence of hazards does not necessarily impede operations, but if they are significant they must be eliminated, isolated or minimised. The logging (or verbal notification) of the hazard and the selected mitigation strategy should be communicated to staff at the incident and captured in the Hazard Register section of the AAP.

3.2.17 Potential for escalation

Whenever possible, the OIC should aim to move from being reactive (responding to the incident as it develops) to being proactive (predicting how the incident will develop and bringing in sufficient resources to deal with that potential).

This can be difficult to do when the OIC is also dealing with immediate actions – but shows again the obvious merits of effective delegation to create 'thinking space'. The decision process can be assisted by simple questions such as:

- 'What could make this situation get worse?'
- 'How bad could it get?'
- 'What are the implications if it gets to that stage?'

There is obvious wisdom in recognising Murphy's well known 'law,' i.e. 'If it could go wrong, it most likely will go wrong'. It seems pessimistic, but it is in fact a responsible and professional attitude to see possible developments of the situation and to be prepared for them if they were to eventuate.

3.2.18 Planning backwards

Once the potential for escalation has been assessed the obvious questions are:

- 'Are my current resources sufficient to contain it if it does get that bad?'
- 'Are the resources that I am tasking going to need 'rolling over' or replacing before the task is completed?' This will need to be factored into the 'make up' decision
- 'What additional resources would I need to deal with the full potential of the incident?'
- 'If I can get them how and when would I best use them?'
- 'To successfully conclude this incident, I will need to…'

Of course there may be limitations on available additional resources. There is also a natural tendency to resist calling for more resources just in case it turns out that they are not needed. Nevertheless, turning resources around is always preferable to watching property burn down unnecessarily.

The Operational Tasking table shown in Figure 3.3 indicates a method that can be used to capture the 'planning backwards' technique, while also capturing the crew numbers and therefore providing information to determine the appropriate alarm level.

Note: Refer to Region Greater Alarm system.

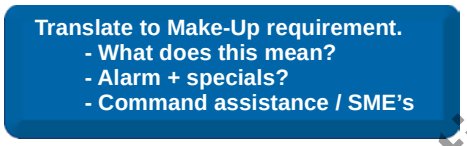
Plan backwards. What resources are needed to deal with the full potential of this incident?

3.2.19 Translate to make-up

Having identified the resources required to manage the full escalation potential of the incident, these need to be translated into make-up terms and the requirement communicated immediately to the Comcen.

Fundamentally the questions to be answered are:

- 'What level of alarm do I need?'
- 'What if any, special appliances do I need?'
- 'What, additional command support do I need?'
- 'What, if any, specialist expertise do I need?'



3.2.20 Prioritise actions and tasks

Successful decision-making will depend on the officer's ability to match what he/she already knows (pre-incident information) with what he/she can find out on the incident ground (size-up) and then to prioritise actions accordingly. Other personnel, e.g. fire safety, should provide much of the pre-incident information, but incident ground size-up will be entirely the responsibility of the first arriving officer. It is essential then that he/she has a thorough understanding of what constitutes effective prioritisation. The NZFS model for this process is RECEO.

3.2.21 RECEO

RECEO is a mnemonic intended to assist prioritisation of tasks. It is expanded as follows:

- **R** - Risk to life? Search and rescue required?
- **E** - Exposures? Exterior exposure protection required?
- **C** - Containment? Interior/exterior cut-off required?
- **E** - Extinguishment? Interior/exterior attack?
- **O** - Overhaul? Ventilation/damping down etc.

3.2.22

Although these considerations imply a linear thinking process, it is important to understand that simultaneity = speed, i.e. officers should aim to process information on a multi-task basis rather than an absolute focus on single aspects. Once again this requires 'thinking space' which can only be gained through effective delegation.

3.2.23

RECE**O** should be regarded as a dynamic process because the progress of an incident can never be entirely predicted. Priorities may need to be adjusted, and the only way to do this effectively is to maintain information gathering.

The notes below expand on these key information areas and detail the kind of information that should be sought under the broad headings above.

3.2.24 RECEO – Risk to life

This is the paramount consideration. The protection and preservation of the life of firefighters and of the public must be uppermost in the mind at all times. When 'scanning' the incident ground, officers should gather information both as it presents itself, and also in a more structured way. Information should be sought in relation to:

1. Immediacy of any threat – how urgently must you act?

2. Who is at risk/under threat?
   - How many?
   - Age(s)?
   - Physical/psychological condition?

3. Is rescue required?
   - For how many?
   - From where?
   - What threats does the rescue environment offer to fire crews?
   - To where? Is there an obvious area to which those rescued can be safely removed and attended to while awaiting evacuation?
   - Are there obvious priority cases?
   - Do I need to carry out a search? Can I be sure that there are no persons unaccounted for?

- What threats does the rescue environment offer to my crew(s)?
- State of building?
- Particular hazards e.g. electricity, gas, flooding etc.
- Stability of the rescue environment? e.g. possible collapse, spread of fire and smoke.
- Resources/scale of incident? Do I have the resources (crew and equipment) to do what is needed here? Do I call for assistance?

3.2.25 RECEO – Exposures

It is important to realise that any incident will raise the question of exposures. Simply defined, an exposure is any property or facility whose proximity to the fire or hazard places them in danger if the fire or hazard should develop.

Whether acting in offensive or defensive tactical mode, officers must take adequate steps to protect exposures whenever possible.

Officers should seek information on the following:

- Likelihood of the fire/hazard escalating?
- Likely pattern or direction of fire/hazard development?
- Aggravating factors e.g. wind strength and direction, presence of volatile fuels etc.
- Distances between exposures and the fire/hazard?
- Structure type, and current use?
- Human content of exposed buildings e.g. hospital wards etc.
- 'Value' of contents of exposed buildings e.g. museums, libraries, art galleries etc.

3.2.26 RECEO – Containment

Linked directly to the identification of exposures, containment is generally defined as any action taken to prevent a fire or hazard from spreading to previously unaffected areas. Typical containment tactics would include:

- Extinguishing the fire/eliminating, isolating or minimising the hazard
- Removing fuel from the likely path of the fire
- Redirecting the fire
- Creating fire-breaks/cut-offs
- Offensive attack to push fire back into previously burnt areas
- Shielding with water curtains or jets
- Shielding with water soaked materials.

3.2.27 RECEO – Extinguishment

Whether attacking the fire offensively, or seeking to contain it via more passive tactics, the eventual aim will still be to extinguish it. This is not a simple matter and will involve the officer and his/her crew in a decision-making process based upon a wide range of factors. The main factors to be considered are:

- Size and intensity of the fire
- Type of fuel(s) involved
- Amount of fuel involved or potentially involved
- Distribution of the fuel(s) within the fire environment
- Availability of required extinguishing medium
- Location of the fire – how easy is it to get at?
- Availability of required equipment
- Availability of firefighting personnel
- The environment and exposures – how critical is it to extinguish rather than contain? This question might well give different answers for high-density urban areas compared to unpopulated rural areas
- General access – can you maintain sufficient re-supply of equipment and materials through the access routes?

3.2.28 RECEO – Overhaul

Overhaul is the latter stage of incident management which ensures that all parts of the fire are fully and finally extinguished. Typical overhaul tactics will involve:

- Searching for and fully extinguishing any remaining isolated pockets of fire
- Turning over and spreading out remaining debris looking for hot spots
- Opening up walls and ceiling spaces to check for hot spots
- Use of the thermal imaging camera (TIC).

At this stage it is important to remember that any subsequent fire investigation will need to examine the site for evidence. Consequently, as far as possible, it is important to restrict the use of jets in favour of spray or foam application in an effort to preserve evidence in place.

3.2.29 AAP process at 1st and 2nd alarm levels

Typically, these smaller incidents are managed by the senior officer in attendance and require little or no delegation. Generally, there is no requirement for a formal (written) action plan, but the AAP process should be followed mentally, in a simpler form, to ensure a successful outcome.

The process consists of three significant steps:

- Size-up
- Action planning
- Make-up.

Action planning

To determine strategy, tactics and related operational tasking. This also involves the deployment of resources.

Make-up

Make-up of any additional resources required to manage the incident to a successful conclusion. This decision evolves from an effective size-up.
Note: the make-up requirement results from the operational tasking process.

3.2.30 Example scenario – Situation

- An intense kitchen fire on the ground floor of a substantial two-storey private dwelling
- Persons reported
- The building is located in a reticulated residential area
- Pre-determined attendance is for two pumps.

3.2.30.1 Size-up

The main conclusions are:

- Fire will spread and may threaten missing persons and the stairway
- Fire will cause property damage both vertically and horizontally
- No exposures
- Hazards are stairway and electrical.

3.2.30.2 STRATEGY

Rescue missing persons and minimise property damage.

3.2.30.3 TACTICS

- Search and rescue area of greatest risk first and remove/rescue persons reported
- Administer primary first aid
- Establish an adequate water supply and position interior attack deliveries to contain and extinguish fire
- Complete ventilation and salvage.

3.2.30.4 Operational TASKING

Requirements are detailed in Figure 3.6.

Sector	Task	Location	Grid	Team Leader	No in Crew	Tasked at:
GND	Search and rescue (SARU)	Gnd floor rear	G3/1	SFF White	2	13:00
TOP	Search and rescue (SARU)	Top floor rear	G9/2	SFF White	2	13:00
GND	Interior attack	Gnd floor stairwell side	C4/1	SFF Green	2	13:00
GND	Interior attack	Gnd floor rear	G9/1	SFF Black	2	13:00
	Pump Op					
	ECO					
	Safety Officer					
	BA emergency crew					
	Incident controller					
	Sector commanders					

Figure 3.6: Example of operational tasking record for typical second alarm incident

Total requirement = 16
Available on first alarm = 8

3.2.30.5 Make-up

In this example there is an immediate shortfall of eight firefighters. Therefore an additional two pumps are required. The priority is to transmit a 2nd alarm.

3.2.30.6 Agency Action Plan

The need at this stage is to prioritise those tasks identified and deploy from the resources immediately available. For example:

- Pump operator/water supply/Entry Control Officer
- Team 1 – firefighting to protect stairway – containment
- Team 2 – search and rescue. Ground floor, closest to the fire and working outwards
- Team 3 – search and rescue. First floor working above fire outwards. Note: safe egress to be assured at all times.

Note that at any time during this incident, the Incident Controller is working within a plan, and is able to minimise risk and to hand over effectively if required. Naturally, the plan needs to be continually reviewed. This process should be used for all incident types, expanding to a written version when command delegations are necessary.

3.3 Selecting STRATEGY: key principles

3.3.1 Selecting an appropriate STRATEGY is critical, since TACTICS and operations flow inevitably from that decision. Even if the AIM is clear there may be (indeed usually are) several possible strategies that could be employed to achieve it.

3.3.2 For example, if we refer to the simple Museum fire scenario we looked at earlier, a clear AIM has emerged – to save the immensely valuable Picasso paintings. There are however at least two plausible strategies to achieve this aim:

1. Extinguish the fire before it can reach the gallery where the paintings are displayed, or
2. Remove the paintings before the fire can reach them.

3.3.3 In this scenario the OIC chose the second strategy because of the immediate risk of smoke damage. If the first strategy was adopted, the paintings might suffer considerable damage even if the fire did not reach them.

3.3.4 Consideration of impact factors

This simple scenario illustrates the need to consider all the factors that impact on the situation. This is no easy matter when subjected to the pressure for action that is inevitable on the incident ground.

It is at this stage that automatic reliance on previous experience could be a hindrance – for example, the OIC reacts to pressure by doing the apparently obvious and in the process misses a critical factor.

3.3.5 Example

Remember that ‘there is always more than one way to get a cat out of a tree!’:

- Retrieval by ladder
- High pressure delivery + net
- Shake the tree + net
- Pole-saw the branch + net
- Wait for it to get sufficiently hungry to come down of its own accord.

3.3.6 Which STRATEGY is finally adopted must depend on a wide range of impact factors, including:

- Access to the tree
- Working space around the tree
- Location of the cat
- Tools and resources available
- Attitude and anxiety level of the owner
- Attitude and anxiety level of the cat.

3.3.7 The most suitable STRATEGY emerges very quickly from the interaction of the impact factors. The principle here is to take enough time to ensure that the critical factors are identified early in size-up.

3.3.8 The CIMS context With a large inter-agency response, the designated Planning and Intelligence Manager/Section, assisted by the other members of the Incident Management Team (IMT), will conduct the selection and continual review of appropriate strategy. The Incident Controller would then approve any revisions to the strategy. However, the complexity of the incident may increase to the point where the issue of the fire itself becomes just another aspect of the overall situation. In this case the OIC Fire will be tasked with dealing with the fire situation, while the Incident Controller coordinates the total incident with all of the other agencies present.

3.3.9 Consequently, decision-making in these circumstances is a team effort. The Incident Controller needs to manage the thinking of others, and this can only be done effectively by using a commonly understood process. When acting as Incident Controller, NZFS officers will find that using the CIMS process at the higher level and delegating the NZFSCS incident action planning process (shown in Figure 3.4) to another officer will enable the Incident Controller to manage team planning in a structured and inclusive fashion.

3.3.10 Within the appreciation process there is of course room for individuals to contribute Recognition Primed Decision Making (RPMD) (refer to 3.2.2) ideas arising out of their personal experience and perception. These become part of the identification of possible courses of action.

3.4 Selecting tactics and tactical modes

3.4.1 Overview

When related to firefighting alone, the typical tasks demanded of firefighting fall into common categories. These categories have traditionally only been referred to informally on an incident ground.

In much the same manner that descriptive terms such as 'Dash Roll' or 'Inverted Roof Flap' have revolutionised motor vehicle extrication management, similar terms can be adopted for classical fire attack tactics. The notes below add some formality and structure to these otherwise informal terms.

It is intended that these terms become key words in the vocabulary of officers and firefighters resulting in effective and unambiguous directions – 'I know exactly what you mean when you say……...'.

The tactical options icons are also included to emphasise, in a graphic manner, the intention of the tactics. These same icons are used for the incident plan in the Command and Control Pack to denote what tactical option is being deployed at different locations at the incident.

The colour coding on the icons (page 23 – 26) indicates typical risk of the activity, e.g. an offensive Interior Attack is at the red/orange end of the scale indicating a medium to high risk, while some other activities are at the orange/green end of the scale indicating a medium to low risk. This risk appreciation can then be applied accurately and effectively to the safe person concept. (Refer to Figure 3.8.)

3.4.2 Tactical options Definitions – Offensive mode

As the term implies, 'offensive' mode involves a concerted and aggressive attack on the fire (or part of the fire) with a view of achieving control, knockdown and extinguishment. The OIC would adopt offensive mode if he/she believes that current resources will prove adequate to attack the fire and the incident status will allow this to be conducted without undue risk.

The prime considerations for the Incident Controller are the need to pursue a goal offensively or aggressively and the ensuing risk that this entails. In other words, an offensive attack implies a heightened risk, which therefore requires a heightened consideration of supervision, communication and support.

The most offensive response to a structure fire situation is to enter the building, seek out the source of the fire and seek to extinguish it by aggressive and concerted direct firefighting techniques (offensive Interior Attack).

The decision to opt for offensive or defensive tactics will clearly be related to the aim and selected strategy. The OIC must be clear about what it is he/she is trying to achieve, the best method of achieving it, and whether that method warrants an offensive or defensive approach.

3.4.3 Definition – Defensive mode

There will be occasions where firefighters may need to enter a building that is well involved in fire but cannot do so for more than short periods, or perhaps do not intend to extinguish the fire as a priority. For example:

- Rescue situations – where a firefighter will protect a rescue team
- To hold ground while awaiting sufficient resources to mount a more offensive attack
- To protect particularly valuable parts of a property
- To hold the fire at bay long enough to remove valuable or hazardous substances.

In these circumstances the general mode of working is 'defensive' in the sense that the objective is not (at this time) to overcome the fire.

Assuming that a lower level of aggression will achieve the aim, the OIC may decide that an offensive attack would expose firefighters to unacceptable risk, and therefore he/she may opt to attack the fire using a more defensive mode. The Incident Controller in this case has accepted that safety of the crew is paramount and they are not to expose themselves to a risk of injury, perhaps because the objective is not worth a heightened risk to the crew. (Consider the Safe Person Concept.)

This may involve retreating and changing the fundamental tactics from using an interior attack to an exterior attack and therefore directing jets through windows and doors, or perhaps removing parts of the external structure in order to allow greater volumes of water to be applied. A defensive mode is therefore synonymous with a more cautious approach to risk.

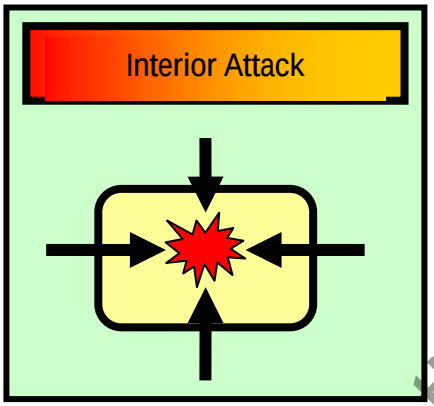
The above discussion does not suggest that the terms 'offensive' and 'defensive' must be related to the overall incident tactics. In fact, many tactical options and the associated modes may be applied at the same incident. Having stated that however, it is appropriate that a Sector Commander or OIC can communicate that an incident is being managed in a predominately offensive or defensive mode.

Given the rising level of risk that would normally be associated with the move from defensive to offensive tactics, we might think of the tactical options as if they were a continuum from high risk to low risk. Clearly, risk assessment will need to be increasingly acute as the OIC moves toward a decision for offensive interior attack. This concept is illustrated at Figure 3.7 below.

3.4.4 Interior attack

Interior attack means:

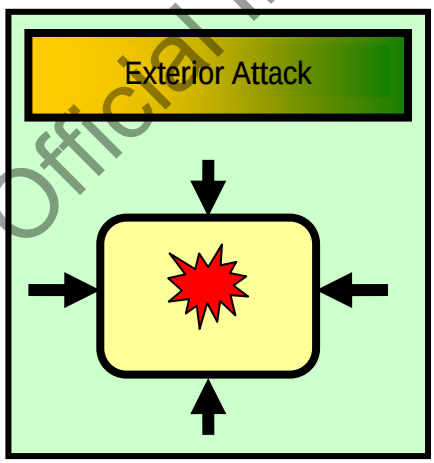
Committing firefighters to entering the building/structure in order to attack the fire. The clear intent is to achieve rapid knockdown and extinguishment.



3.4.5 Exterior attack

Exterior attack means:

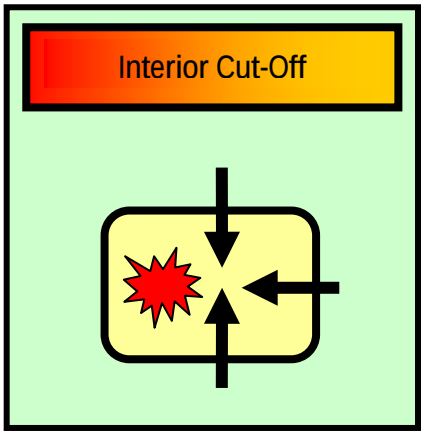
Attacking the fire from outside the building/structure e.g. through windows, doors etc. The clear intent is to achieve rapid knockdown and extinguishment when an interior attack is not an acceptable option.



3.4.6 Interior cut-off

Interior cut-off means:

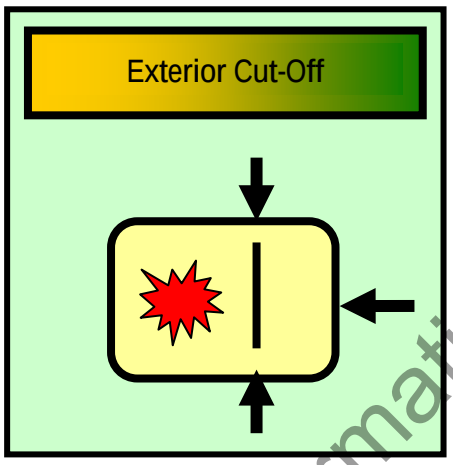
Committing firefighters to entering the building/structure in order to contain the fire within a specific area. This may be done to prevent fire spread, to protect search and rescue teams, or perhaps to enable the removal of valuables.



3.4.7 Exterior cut-off

Exterior cut-off means:

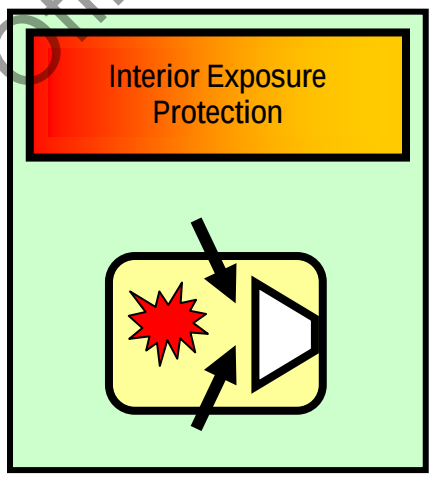
Preventing interior fire spread from outside the building/structure by the use of jets through windows, doors, forced entry apertures etc.



3.4.8 Interior exposure protection

Interior exposure protection means:

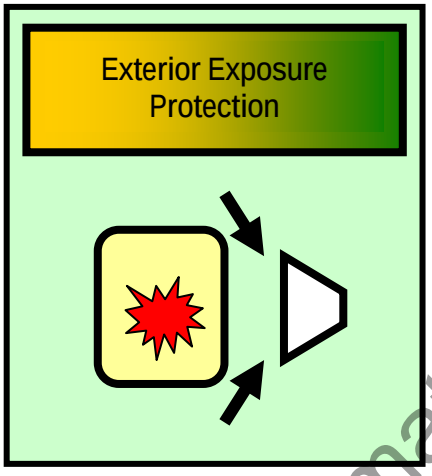
Committing firefighters to entering the building/structure in order to protect assets/property close to the fire itself, as an example or to cool a fixed LPG tank, which is at risk. This would often be associated with interior cut-off or interior attack.



3.4.10 Exterior exposure protection

Exterior exposure protection means:

The protection of assets or property outside the building/structure but close enough to be at risk.



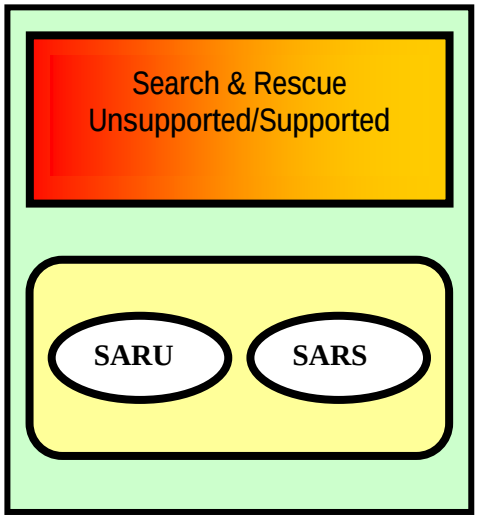
3.4.11 Search and rescue (unsupported and supported)

Search and rescue (unsupported) means:

Committing a rescue team to the interior of a building/structure without the protection of an additional team tasked to protect them while the rescue is carried out.

Search and Rescue (supported) means:

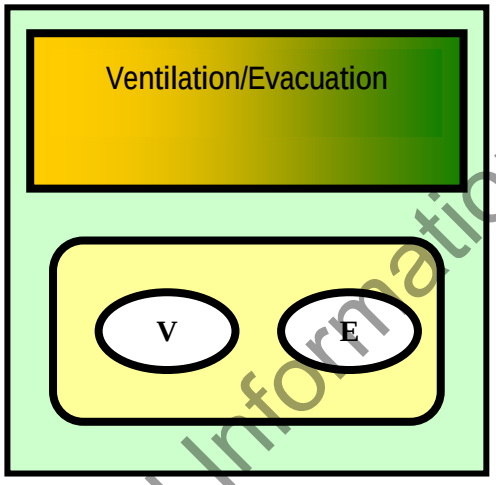
Providing an additional team tasked to protect firefighters carrying out the rescue or the search team providing their own fire protection.



3.4.12
Ventilation/evacuation

Ventilation means:
The removal of gases, noxious fumes etc. in order to prevent re-ignition and to render the atmosphere safe for working without breathing apparatus, e.g. for salvage work.

Evacuation means:
The controlled removal of people from the fire-affected building/danger area in order to ensure their safety and to allow operations to proceed.



3.4.13 Tactical mode

To emphasise the importance of a task to the overall strategy, the OIC Fire can select and communicate the most appropriate tactical mode. This indicates the boundaries of how the tactical options will be deployed. These boundaries are determined by the value of what is at risk and its relationship to the risk imposed on the firefighters deploying the tactics. In other words, the OIC can communicate to the crew officer, in very simple and unambiguous terms, the level of risk to which he/she should expose the crew, on the basis of the value at risk. (Refer to the Safe Person Concept discussed later in this section.)

From the previous notes on tactics, the OIC Fire can determine that a goal warrants a tactical option to be pursued in an offensive manner, and therefore combines the tactics and the mode together, e.g. an offensive Interior Cut-off. The power of using defined terms such as these enhances communication and in fact distils important concepts and guidelines into unambiguous terminology. This also introduces a hierarchy of risk associated with different tactics when considered along with the mode of deployment. In the example above the OIC could categorise the task as being of high risk which may prompt a control measure to minimise that risk (such as providing a higher level of supervision).

The most important consideration is always whether the tactical option should be tackled by offensive or defensive modes, or perhaps some combination of both at different locations within the same incident. Incidents are of course never entirely predictable in the way they unfold, and the OIC may need to adapt or entirely change his/her attack modes or even tactics to suit the changing conditions. The OIC may insist on a defensive mode when an offensive mode could push the fire onto another crew operating nearby, or when the value of the exposure is not worth the risk to the firefighters making entry.

3.4.14 Responsibility for determining tactics

While the responsibility to dictate the Tactical Option and the mode that the option is deployed remains firmly with the OIC, Sector Commanders, Crew Officers or Safety Officers (Fire) can use their experience and judgement to order a change in tactical approach only when the safety of firefighters is compromised.

Any spontaneous changes must be immediately communicated to the OIC. i.e. ‘I am unable to maintain an offensive mode and am now in defensive mode’ or ‘I am retreating and commencing an offensive Exterior Attack’. Failure to do so may result in increased risk in other sectors or to other crews even in the same sector. It is imperative that whenever possible, proposed changes should be discussed with the appropriate commander before any unilateral change of tactical mode or option is implemented.

The OIC may then choose to reinforce the position with more resources or accept the resultant reduction in progress at that point. (Refer to the SHURTS Sector Commander SitRep format for terminology relating to this and the progress at the point deployed.)

3.4.15 'Continuum of risk'

Given the rising level of risk (likelihood and consequence) that would normally be associated with the move from defensive to offensive tactics, we must think of the tactical options as closely aligned to the deployment of any control measures to mitigate the risk. Clearly, the balancing of risk and the mitigating control measure will need to be increasingly acute as the OIC moves toward a decision for offensive interior attack. This concept is illustrated at Figure 3.7 below.

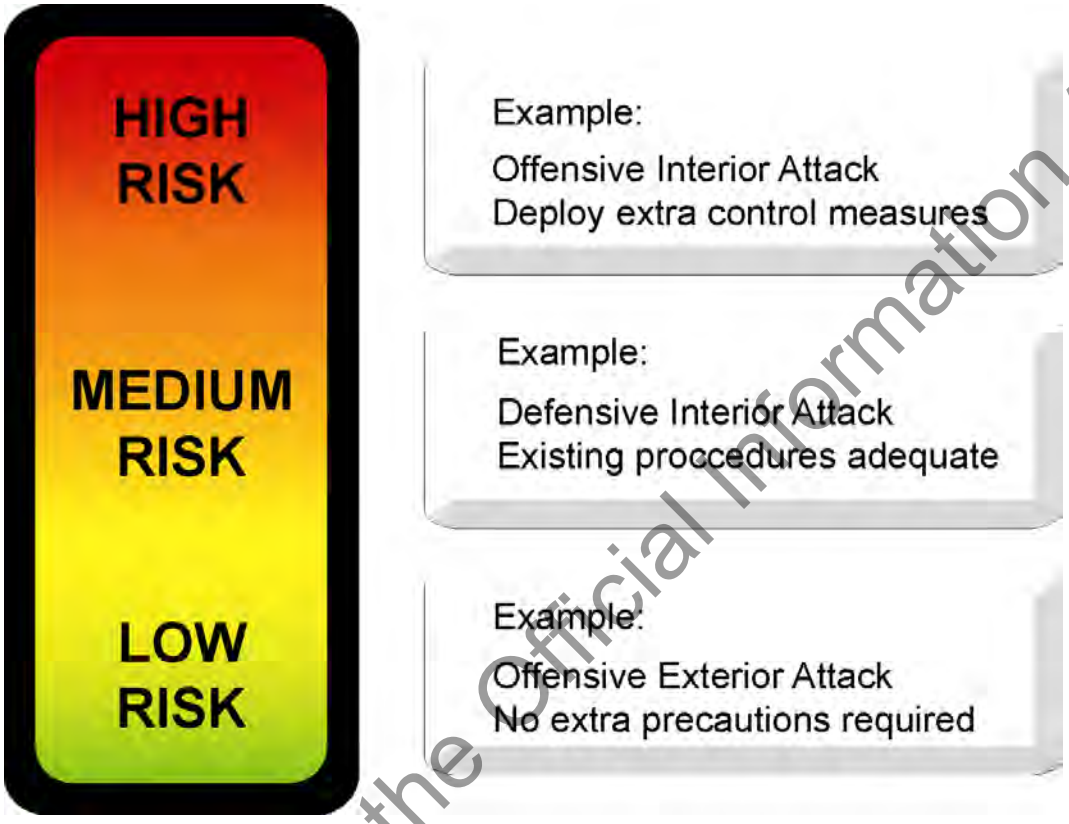


Figure 3.7: Tactical 'Risk Continuum'
(Source – NZFS 2006)

The last step in finalising tactics is to think carefully about the level of risk to which firefighters will be exposed because of their deployment.

3.5 Safe Person Concept

3.5.1 Safe Person Concept

The Safe Person Concept (SPC) is about thinking and acting safely. In your role as a firefighter, you will be faced with hazards that could cause serious harm or injury. You will need to be aware of potential hazards and make decisions that will keep you, your crew, and the public safe. The SPC will help you to do this successfully.

The SPC involves all the things needed to do the job safely. This includes:

- maintaining 'situational awareness' (knowing what is going on around you)
- being aware of hazards
- making decisions to reduce risks
- making decisions about what risks are acceptable
- using Dynamic Risk Assessment (DRA)
- being prepared for unexpected changes
- following operational procedures
- taking direction from your officer
- being trained to do the tasks assigned to you
- using personal protective equipment (PPE)
- using the right equipment for the tasks you perform.

The SPC underpins everything you do in the NZFS. It is the principle of 'safety first'.

3.5.2 Safe Person Concept overview

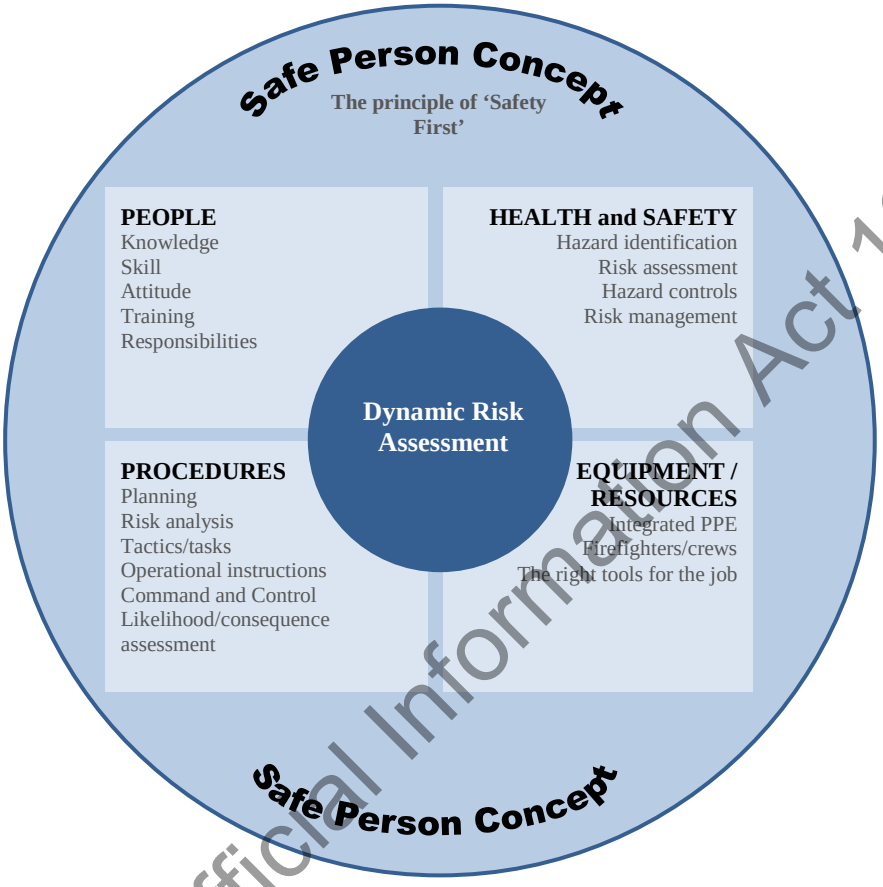


Figure 3.8: Safe Person Concept overview

3.5.3 Levels of responsibility

At an incident, there will always be an Officer in Charge (OIC). The OIC will decide on the right people for each task, the procedures to follow, and so on. They will do as much risk management planning as is practical to make sure the job is as safe as possible for you and your crew.

However, it is important that you don't ever just blindly follow instructions. Sometimes you may see a hazard your OIC missed, or you may identify a new hazard when your OIC is not nearby. Using the SPC, you will make the decision on how to proceed, so that you can do the job as safely as possible. At times, you may decide not to continue with a task if it is too unsafe to do so.

You are responsible for safety at three levels:

Task level	doing the job safely
Team level	helping to ensure the safety of those you work with
Individual level	ensuring personal safety, e.g., wearing correct PPE

Officer level responsibilities are also set out below.

3.5.4 Task level

You need to ask yourself:

- what does it take to do this task safely?
- have I been trained to do it (e.g., procedures/skills)?
- what equipment will I need (e.g., correct PPE, breaking and entry tools, fire extinguisher, hose deliveries)?
- do I need help with the task (e.g., when lifting heavy equipment)?

Be careful not to be totally task-focused, because this creates the possibility of individual or team safety being ignored because of the drive to get the job done.

3.5.5 Team level

The team approach to incidents is the basis of how NZFS operates. Each crew is a team, with each member of the team having a role to play. There will be a variety of skills and experience in the team, and the OIC will take these into account when allocating tasks.
Members of a team must develop a high degree of trust in each other and must also take responsibility for watching out for each other.

3.5.6 Individual level

Your responsibilities are to:

- be aware of hazards
- assess the risk for all tasks you perform
- adapt to changing circumstances
- use training do the job safely
- work with equipment safely
- work within NZFS systems and procedures
- be an effective team member
- identify when you are not trained/skilled for a particular task
- be vigilant regarding personal, team, and public safety.

To be safe, individuals must accept responsibility for safety at all levels.

An individual who takes needless risks endangers not only themselves but also their crew, who may have to step in to rescue them. This may also affect the ability of the team to complete the task (by drawing resources away from that task).

3.5.7 Officer level

The OIC is responsible for risk assessment and risk management at an incident. The OIC will rely on a number of tools to help manage risks, such as:

- operational instructions
- Command and Control (including the overall strategy, tactics and tasking)
- information provided by the crew
- experience
- training
- available resources and equipment
- the Dynamic Risk Assessment process.

The officer is also responsible for the safety of those involved at the incident.

An OIC must provide adequate communication, supervision and support if putting people in harm's way.

3.5.8 Communication

Communication is an essential tool for risk assessment and risk management.

Responsibilities:

- firefighters report all hazards to their officer as soon as possible
- OIC Fire communicates hazards, hazard controls and risk management procedures, to all staff at the incident.

This is an ongoing process throughout the incident as the situation changes, in some cases, from minute to minute.

3.5.9 Acceptable risk

There are limits to the level of risk that you and the NZFS are expected to accept and times when we will, and will not, risk our safety.

Acceptable risk

In a highly considered way, firefighters:

- *will take some risk to save saveable lives*
- *may take some risk to save saveable property*
- *will not take any risk at all to try and save lives or properties that are already lost.*

Source - HM Government, Fire and Rescue Manual, Volume 2, Fire Service Operations, Incident Command, 3rd edition 2008

The cardinal rule of rescue is 'do not become a victim'.

3.6 Dynamic Risk Assessment

3.6.1 Dynamic Risk Assessment overview

To keep safe, you will need to manage the risks on the incident ground, even when the situation is changing rapidly. This is called Dynamic Risk Assessment (DRA).

DRA is an important part of the SPC, because you will encounter situations when hazards arise that were not planned for, that are outside of your training, and that need immediate response.

Dynamic risk assessment involves four main steps at recruit level:

1. identifying hazards
2. assessing the risk presented by hazards
3. identifying options to reduce the risk
4. deciding if the risk is acceptable or not acceptable.

Note: At officer level, DRA is used to decide on tactics and tasking at a rapidly changing event.

Step 1: Identify hazards

The first step is to be aware of existing hazards and identify the potential for unforeseen ones.

To apply the Safe Person Concept you must always be looking out for hazards. This is true for any incident you respond to, whether it is going according to plan, or whether it is a dynamically changing situation.

Just as you look both ways before crossing the road, you should always look for potential dangers in your immediate working environment.

Examples of common hazards include, but are not limited to:

- traffic
- heat
- electricity
- smoke
- environment
- falling debris
- weakened structures
- people

You must notify your OIC of hazards identified.

Step 2: Assess the risk

Once you have identified a hazard, you must assess how serious the risk is. This will help you to decide what steps to take to reduce the risk.

The Risk Matrix, set out in the following section, is a useful tool for assessing the risk.

Step 3: Identify options to reduce the risk

If your OIC is not available, you may need to take action to reduce the risk before you can proceed with the task.

Think about how you can eliminate, minimise or isolate the hazards to reduce the risk. You may be able to lower the risk by reducing the likelihood and/or consequence of something happening.

For example, when handling hot lights, you can minimise the likelihood (chance) of getting burned, by wearing gloves.

Step 4: Decide if the risk is acceptable

In an emergency incident it will not be possible to completely eliminate all risk. Rather, with any particular hazard, risk assessment is about identifying what risk is acceptable before proceeding with a task.

As a firefighter, you would not want to enter into a high risk situation, unless there is no alternative. Before proceeding, you will need to consider whether or not the existing risks are acceptable. Remember, we:

- *will take some risk to save saveable lives*
- *may take some risk to save saveable property*
- *will not take any risk at all to try and save lives or properties that are already lost.*

3.6.2 DRA for OICs

As discussed above, recruits assess rapidly changing risk using a process known as Dynamic Risk Assessment. This process is also used by OICs.

Your OIC will make decisions according to several risk management planning techniques, including the Dynamic Risk Assessment process. The DRA process flowchart is shown below to give you a picture of how decisions are made at a higher level.

3.6.3 DRA process flowchart (OIC level)

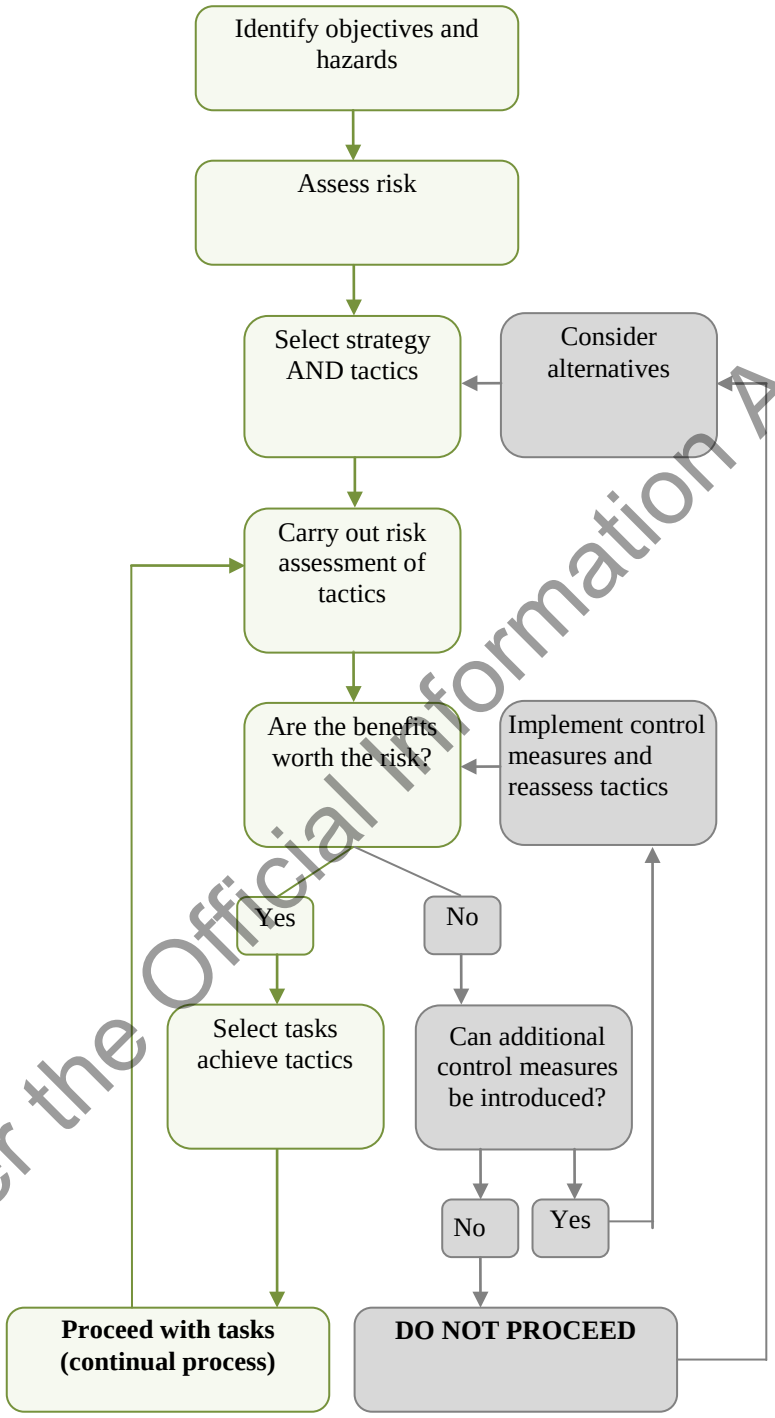


Figure 3.9: Dynamic Risk Assessment model

As part of the scene size-up, the OIC will evaluate the tasks that need to be undertaken and the risks associated with those tasks. The OIC will then select tactics using DRA, and will only apply the tactics when the benefits are worth the risk.

When carrying out a DRA, it may not be practical to take the time to formally apply the risk matrix to assess the seriousness of the risk, then apply the DRA process, and if the benefits are not worth the risk to introduce and implement additional control measures and the reassess your tactics.

Familiarity with applying the risk matrix in controlled situations, such as training or discussion with others will help build your knowledge of the steps in the process and confidence that in a rapidly changing situation, you can apply new controls knowing that the risk is reduced and your tactics have resulted in safer tasking.

3.6.4 Likelihood x consequence = risk

At times, you may be required to put yourself at some risk to carry out required tasks. The Risk Matrix is a visual tool to give you an idea about how to assess the seriousness of a risk.

'Likelihood x Consequence = Risk' is a way of thinking. In every response situation, a firefighter must be actively thinking about potential hazards in terms of likelihood, consequence and risk.

Likelihood	the chance of something happening
Consequence	the outcome or impact if it does happen
Risk	this is the chance of something going wrong

The OIC will carry out the initial risk assessment at an incident. Then they will select the tactics and tasks that will reduce the likelihood and/or consequence of hazards, to reduce the risk.

Likelihood

Likelihood is the *chance*, *frequency* or *probability* that something will happen.

For example, if a car is approaching as you cross a road, there is some likelihood that you could be hit.

Every day people safely cross the road. The likelihood of being hit is 'rare', provided the risk is minimised by crossing while the car is still a safe distance away.

Consequence

Consequence is the outcome or impact of something happening. A consequence could be financial, operational (damage to equipment, impact on strategy), personal, physical or psychological.

With the example above, a consequence of being hit could be physical injury. Depending on the impact, the physical consequences could be minor, moderate, major or catastrophic. Even if the physical consequences are minor, the psychological consequences could be major.

Risk

Risk, in the context of dealing with an emergency incident, is about the danger involved. To understand the overall risk, the likelihood of something happening must be considered along with the consequences it would have if it did happen.

The decision you make about when to cross the road is based on the level of risk you are prepared to take. By looking both ways before crossing the road, you can lessen the risk of injury, by reducing the likelihood of being hit. The consequences of being hit are affected by other factors, like the speed of the car.

3.6.5 Categories of likelihood

The following tables describe likelihood, consequence and risk.

LIKELIHOOD		
Descriptor	**Description**	**The chance of something happening**
Almost certain	Is expected to occur	Greater than a 90% chance of occurring
Likely	Will probably occur	Between a 70% to 90% chance of occurring
Possible	Might occur	Between a 30% to 70% chance of occurring
Unlikely	Could occur	Between a 10% to 30% chance of occurring
Rare	May occur in exceptional circumstances	Less than a 10% chance of occurring

3.6.6 Categories of consequence

CONSEQUENCE	
Descriptor	**Examples***
Catastrophic	Fatality(ies) to staff; catastrophic loss of operational capability (e.g., three appliances out of use)
Major	Multiple serious injuries (e.g., permanent disability); major loss of operational capability (e.g., loss of one appliance)
Moderate	Serious injury (e.g., hospital, off work); moderate loss of equipment (e.g., broken ladder)
Minor	Minor injury; minor loss/damage to equipment (e.g., standpipe knocked out of ground)
Insignificant	Insignificant injury or damage/loss to equipment (e.g., burst length of hose)

*Descriptions in this table relate to the degree of injury or loss of operational capability. Consequences may also occur in other context (e.g. financial, loss of reputation, public image).

3.6.7 Risk Matrix

The matrix below can be used to assess the risk associated with the likelihood and consequences of an event. Risks with the highest ratings should be dealt with first.
In an emergency incident, you will not be referring to the risk matrix to make decisions. But, it is important to understand the concept. The higher the likelihood and consequence, the greater the risk.

For example, if a hazard presents a high likelihood of causing a problem, and the consequences would be high, you must consider the risk very high and take the appropriate steps to manage the risks.

LIKELI-HOOD	**CONSEQUENCES**				
	In-significant	Minor	Moderate	Major	Cata-strophic
Almost certain	Low	Medium	Very high	Very high	Very high
Likely	Low	Medium	High	Very high	Very high
Possible	Low	Medium	High	Very high	Very high
Unlikely	Low	Low	Medium	High	Very high
Rare	Low	Low	Medium	High	High

3.6.8 Example

The following example demonstrates the Dynamic Risk Assessment at work.

You have responded to a garage fire in a residential area. Upon arrival you do a risk assessment and decide to proceed with an internal attack.

The first crew in relay back that there is an acetylene cylinder in the garage. You use the Dynamic Risk Assessment to decide what new strategy and tactics to use (if any).

Likelihood

Has the cylinder been involved in the fire? **Yes/No**

- If **Yes** then the likelihood of risk would be **Likely** that something may occur relating to the cylinder because of exposure to the heat from the fire.
- If **No** then the likelihood would be **Unlikely** that anything will occur as a result of exposure to the heat from the fire.

Consequences

What would the consequences be if the cylinder became or was involved in fire? In this case the consequences would be **Major/Catastrophic** due to the potential for an explosion that could cause physical injury or death.

Risk matrix

For the example we will assume that the cylinder **is** involved in fire. Using the risk matrix you can see that the risk would be **Very High**.

LIKELI-HOOD	**CONSEQUENCES**				
	In-significant	Minor	Moderate	Major	Cata-strophic
Almost certain	Low	Medium	Very high	Very high	Very high
Likely	Low	Medium	High	Very high	Very high
Possible	Low	Medium	High	Very high	Very high
Unlikely	Low	Low	Medium	High	Very high
Rare	Low	Low	Medium	High	High

In this situation you would then look at ways to minimise the risk by altering your tactics.

Alternate tactics

Some alternative tactics, or control measures, you could consider that would lessen the risk to fire crews:

- withdraw to a safe distance and apply water using monitors
- increase the number of deliveries and flow rates to reduce the fire intensity as quickly as possible
- task additional crews to apply cooling water directly onto the cylinder.

Once an alternative tactic (control measure) has been selected, reassess the risk against the risk matrix. If the risk is acceptable carry out the control measure.

3.7 Snap rescue

3.7.1 Definition

"Snap rescue" is defined for the purposes of NZFS operations as:

"A rescue that is initiated in exceptional circumstances, where time or other imperatives demand that immediate action be taken, without putting in place the controls or safety measures that would normally be essential for the incident type."

The primary driver for snap rescue is usually time - that is - if rescue is not carried out as soon as possible, the victim's life may be at risk or their health may rapidly deteriorate.

3.7.2 Snap rescue situations

Situations where the OIC may decide that snap rescue is an option include:

- a rapidly developing fire
- impending risk of structural collapse
- a HazMat incident where victims are already incapacitated and the threat from the hazardous substance is escalating (see example below)
- other threats to persons that are within scope of NZFS training

Note: 3.4.11 describes "offensive interior unsupported rescue" as a tactical option. This allows for snap rescues within structures.

Example

A hazmat example of snap rescue is:

An ammonia leak at an ice cream factory - a worker has collapsed after being incapacitated by the fumes and their life is in danger unless they are removed immediately. Two firefighters perform a snap rescue in BA and level 2 PPE (normal operations would involve two firefighters entering the area dressed in level 4 gas suits).

3.7.3 Safety and risk assessment

All NZFS personnel involved in a snap rescue will apply the Safe Person Concept at all times.

In all instances the OIC will carry out a dynamic risk assessment, to determine if the risk to the rescuer(s) is acceptable. Factors that the OIC needs to consider when deciding on a snap rescue include:

- the ability to implement tactics that may reduce the risk to personnel
- the condition of the patient
- whether the location of the patient is known
- the potential arrival time of additional resources
- communication and/or visual contact with the rescuers and the OIC
- distance to be travelled in the "hot zone" or "fire and/or rescue zone"
- experience and/or training of the rescuers.

Note: Snap rescue will not be undertaken if the location of the patient is not known. In addition, no search is to be carried out beyond the expected location.

3.7.4 Implementation

If the OIC determines that the risks of the attempted snap rescue are acceptable, variations to the search and rescue procedure and/or normal PPE wearing requirements may be directed to enable the rescue to be carried out within an urgent timeframe.

Tasking must include precise instruction for the rescue crew, detailing:

- the tactics required to effect the rescue
- what procedure and PPE differs from normal practice.

3.8 Sectorisation

3.8.1 Definition

Linked directly to the need to minimise risk is the need for effective spans of control on the incident ground. Increasing complexity is inevitably accompanied by a matching reduction in the OIC's ability to maintain effective command. This is not only inefficient in terms of delivering the Agency Action Plan (AAP) – it is also potentially dangerous. The OIC must always be prepared to break the incident into sectors, each with its own command, thus allowing him/her to focus on the bigger picture. This process is known as sectorisation.

3.8.2

Sectorisation therefore is the organisation of the incident ground, by the OIC, into distinct areas of work in order to manage the whole incident more effectively and to ensure the safety of all those involved in dealing directly with the incident.

3.8.3 Types of sector

Two kinds of sector may be created:

1. Operational sectors i.e. areas where work is going on directly to bring the incident under control – firefighting, rescue, exposure protection, salvage, ventilation. This type of sector can be geographical, e.g. 'Sector 1,' or functional, e.g. 'Search & Rescue' or 'Ventilation'
2. Logistical sectors, i.e. areas established to provide materials and processes required to sustain ongoing operations – BA recommissioning, water supply, foam supply, decontamination, canteen facilities etc.

Naturally, in a level 2 or level 3 incident other agencies may set up and run their own operational and support sectors, e.g. triage, medical re-supply, evacuation etc.

3.8.4 Guidelines for establishing operational sectors – buildings

The general principles are as follows:

- The standard arrangement is to number sectors clockwise from the front of the building. Since most buildings have four sides, this usually results in each side being recognised as a potential sector
- Sector 1 commonly serves the 'front' of the building. If the building has no obvious front, the Incident Controller should designate the location and if appropriate, mark it. Once Sector 1 is established any incoming personnel can then orientate from that sector. (i.e. 'Sector 1, Willis Street')
- The other sectors are allocated to the remaining sides of the building in a clockwise manner as shown in Figure 3.10
- The identification of a sector should be further clarified by the addition of obvious descriptors if this assists, e.g. 'Sector 2 – west side' or perhaps 'Sector 3 – Palmerston Road side'.

3.8.5 Alternative sectorisation

Most incidents will not require all four sectors to be set up and activated. In these circumstances, the OIC may use any of a range of variations on the standard sector 'grid'. The most commonly used variants are shown overleaf at Figures 3.11 – 3.13. Incident Ground SitReps will also communicate to all staff how many sectors are in operation.

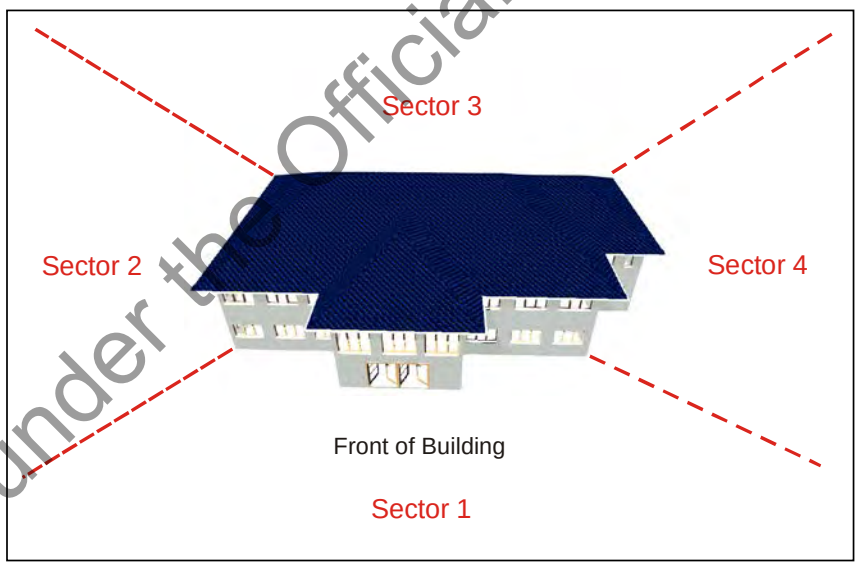


Figure 3.10: Standard allocation of sectors

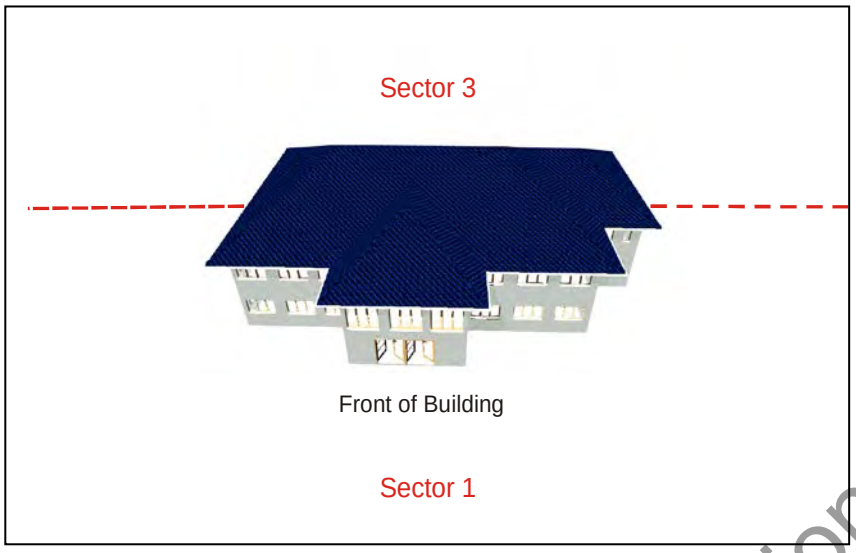


Figure 3.11: Common variation on standard sectorisation

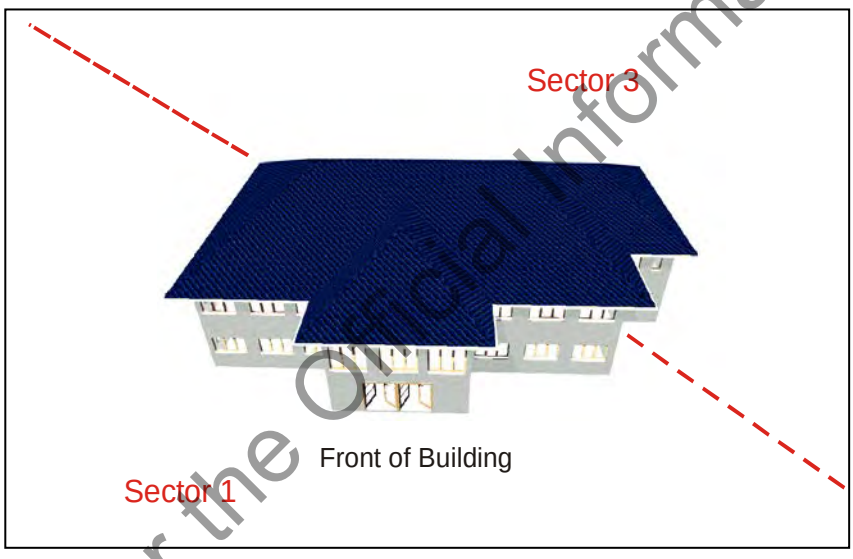


Figure 3.12: Common variation on standard sectorisation

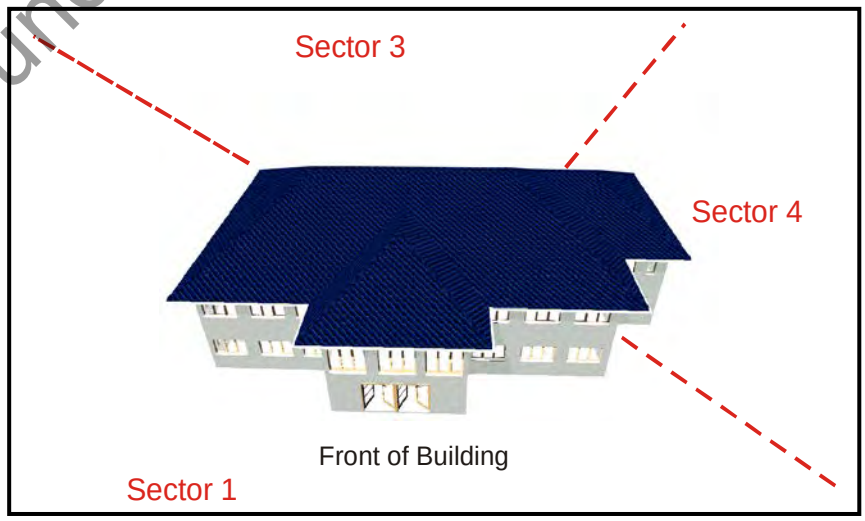


Figure 3.13: Common variation on standard sectorisation

3.8.6 Sectorisation of fires on several floors

Incidents where fire may have involved floors above (or below) may be sectorised using any appropriate variant plus a floor/level descriptor, e.g. Sector 1 level 2. This is illustrated at Figure 3.14 below.

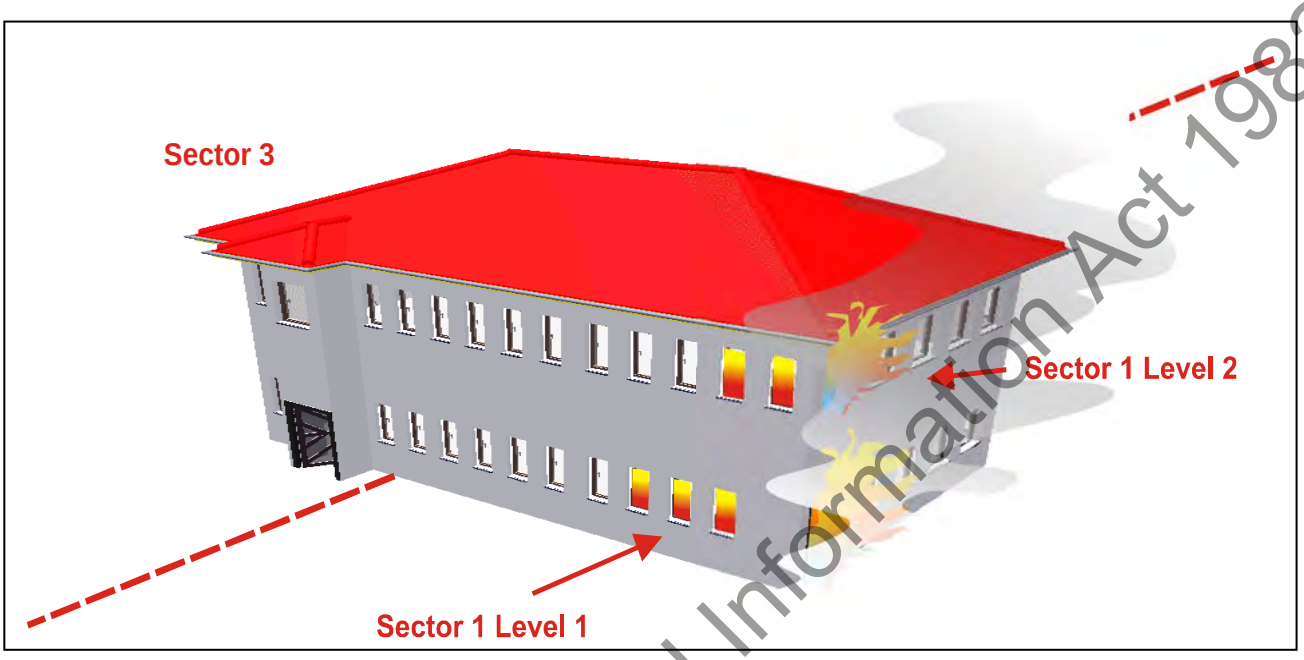


Figure 3.14: Example of sectorising with fire on more than one level of a building
(Source – NZFS 2006)

3.8.7 Location of logistical sectors

This is essentially a matter of common sense. The guiding principles must always be:

- Safety of sector personnel – the sector should not be established so close to the event that they are directly affected by it or its potential development. Wherever possible, logistical sectors should be located upwind of any fire or hazardous substance spillage
- Incidents occurring on public highways pose particular threats to personnel. The OIC must ensure (preferably by using the Police) that traffic flow is not allowed to threaten those working in a support sector
- Efficiency – ensuring ease of access and minimising distances that personnel and materials need to be moved
- Optimising command – it is not essential that the sector has line of sight with the ICP, but the OIC must ensure that radio communications will function effectively, e.g. there are no dead ground or screening/interference factors.

3.8.8 Guidelines for sectorising MVA incidents

Generally, motor vehicle accidents do not need to be sectorised. However, in the event of multiple collisions or collision-related emergencies, it may be necessary to sectorise in order to maintain an effective span of control. This is illustrated at Figure 3.15. Generally however, it is easier to sectorise by function or vehicle description.

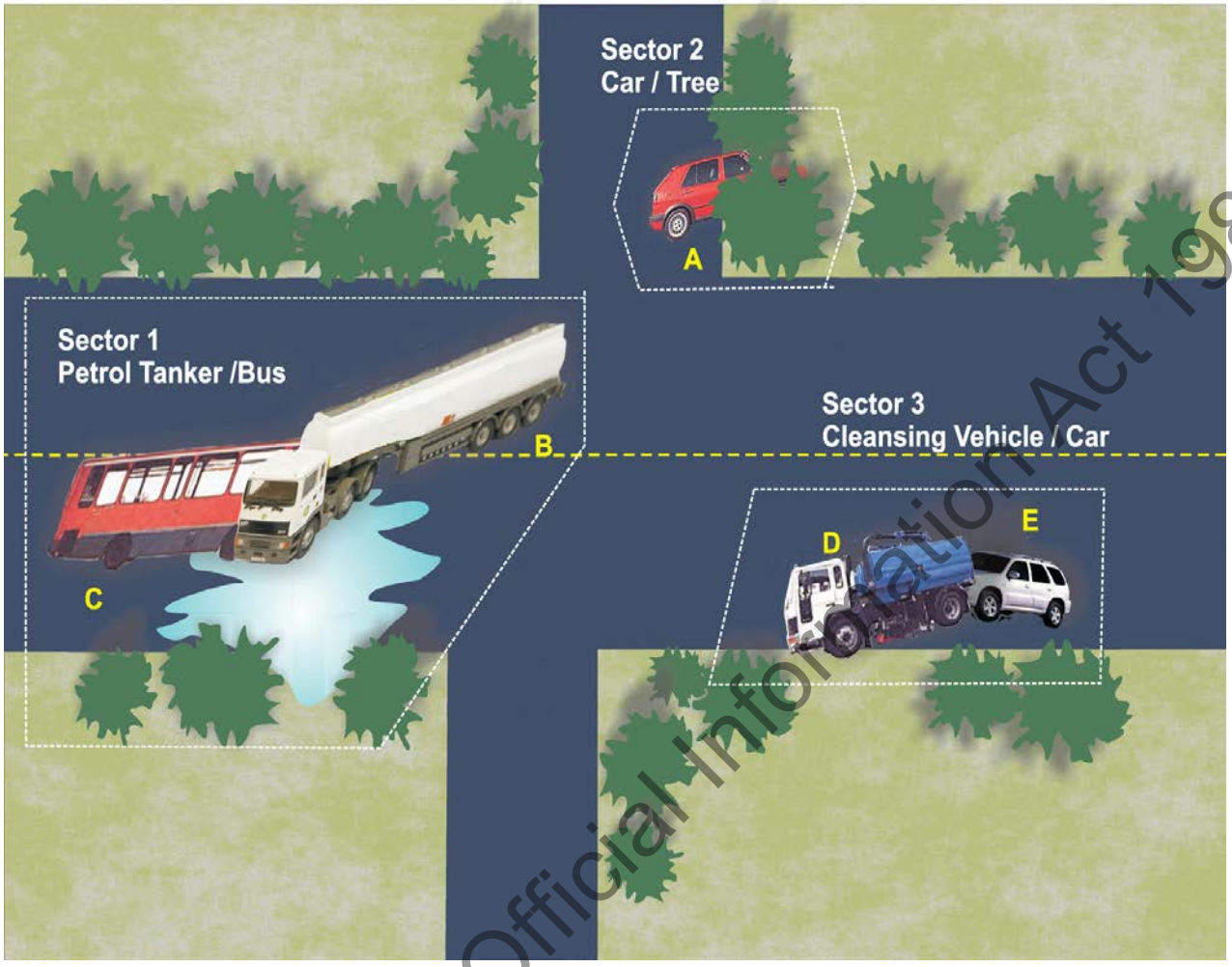


Figure 3.15: Example of sectorisation at a multiple motor vehicle accident
(Source – NZFS 2006)

3.8.9 USAR incidents

Urban search and rescue incidents utilise a different approach to sectorisation. Please refer to the USAR Awareness Training Manual for further guidance.

3.9 The NZFS Agency Action Plan (AAP)

3.9.1 Rationale

This is largely a matter of common sense. To respond to emergency situations without some degree of planning is to invite disaster. Clearly, the greater the scale of an incident, the greater the need for comprehensive planning. However, even the simplest incident requires thought before action.

3.9.2

In summary, the purpose of an AAP is to provide a common understanding of intended actions for everybody in the chain of command by:

- Defining the AIM/objectives for the incident or for the coming operational period
- Defining the STRATEGY and TACTICS selected to meet those objectives
- Defining the operational TASKING of deployed resources
- Defining the resources required to accomplish assigned tasks
- Describing the command structure in place
- Defining required communications via a communications plan
- Identifying significant risks and the methods taken to reduce them
- Providing a current situation analysis
- Providing adequate mapping/location guides
- Providing an efficient means of briefing and handover to relief crews or the owner/owner's representative (refer to Section 5.4.3)
- Providing a tangible record of events for any subsequent operational debrief.

3.9.3 Application

The development of an AAP should follow size-up and risk assessment of selected tactics, and should be done for all incidents. For a small scale incident there is rarely any need to go to the lengths of a written plan. As a guide, the OIC Fire should consider going to written documentation for a second alarm, when there are more than five pumps or an incident command unit is in attendance.

3.9.4 Associated risk assessment

The AAP should assess and document any identified risks and methods used to mitigate them. The dynamic risk assessment matrix (Safe Person Concept) should be used for this purpose. The AAP template provides a section for the risk assessment to be documented.

It is especially important for any significant risks to health (e.g. suspected presence of asbestos) to be documented so that they can be followed up through monitoring of personnel and cleansing of equipment.

3.9.5 CIMS environment

On those occasions when the NZFS is the lead agency and provides the Incident Controller, he/she may need to consolidate the action plans forwarded by other agencies into what would be a CIMS IAP. This issue has been dealt with in greater detail in Section 2.5.4.

3.9.6 Fire Service Command System – scalability of AAP/command tools

As previously noted, the majority of small-scale, routine incidents need little or no planning – they can be dealt with adequately on the basis of common experience (recognition primed decision-making).

3.9.7

Apart from such commonplace incidents however, the OIC should always engage positively with the NZFS Agency Action Planning process (see Figure 3.4). It is recognised that there is a need for different scales of planning appropriate to the nature of the incident. The command system planning system intends to use three tools currently under development to match the range of planning needs. These are:

- ‘Level’ 1 – OIC’s field notebook or Aide de Memoir: sufficient for 1st/2nd alarms
- ‘Level’ 2 – Incident Command Pack – sufficient for 3rd/4th alarms (to be developed)
- ‘Level’ 3 – Incident Control Unit on-board manual or electronic (eIAP) Incident/Agency Action Plan systems– intended for the management of major incidents.

3.9.8 Allocation of IAP/command tools

It is envisaged that the field notebook will be of use to all officers on a regular basis and be used initially for the majority of larger or developing incidents.

The level 2 command packs will be strategically located for deployment at larger incidents while awaiting the arrival of an Incident Command Unit.

Command Units will be located in the larger Districts and their systems operated by trained personnel.

N.B. For details relating to the IAP tools outlined above please refer to Annex A to this manual 'Planning Tools'.

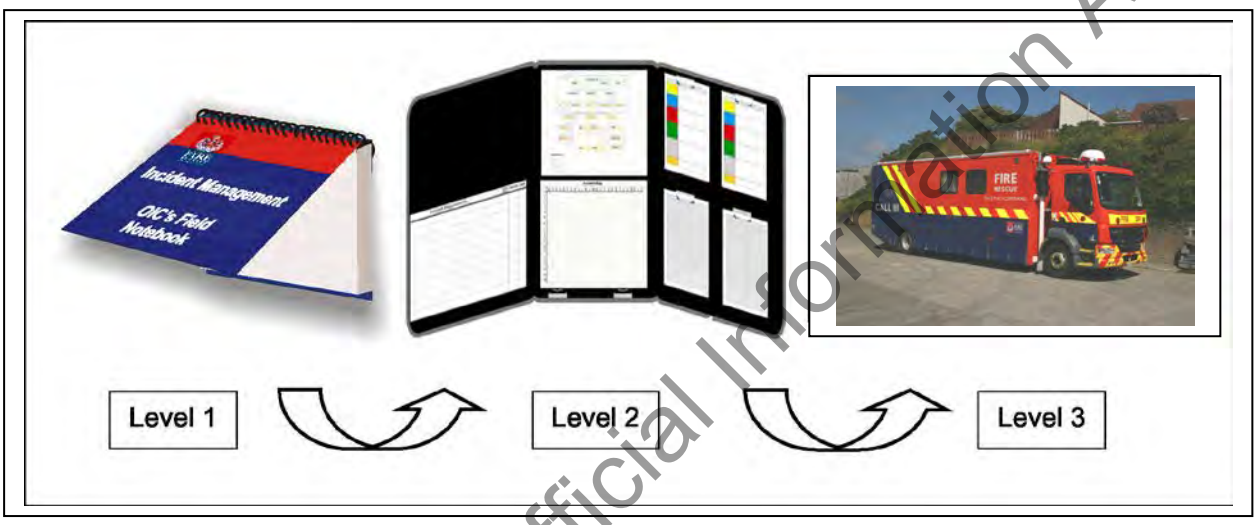


Figure 3.16: Levels of incident action planning tools in the Fire Service Command System
(Source NZFS 2006)

3.9.9 Continuity of method

It is important to understand that while three levels of planning tools are provided, they are linked by common principles. The difference in levels is a reflection of increasing depth – not of varying technique.

3.9.10 Standard components

AAPs at all three levels should address and document the following standard areas of concern:

- Incident location
- Incident organisation chart
- Brief description of incident
- AIM and STRATEGY
- Selected TACTICS – including any make up
- Operational TASKING – to be constantly amended as incident progresses
- Communications plan
- Incident sketch map – with grid referencing if warranted by scale/complexity of ground
- Hazard management plan.

3.9.11 Example AAP – level 1

Shown overleaf at Figures 3.17 – 3.20 is an example of a completed AAP using the appropriate consumable forms from the level 1 or 2 OIC's Aide de Memoir or Field Notebook (final design pending). This incident is sufficiently complex to warrant a documented approach. Incidents any larger than this would certainly benefit from the use of the command pack.

Note that this level requires no more than the AAP aide memoire pack. It is ideal for use when managing an incident from an initial arriving appliance. Allocation of radio channels will depend on local arrangements. This example illustrates the basic concept and structure that would be followed, in an expanded fashion, at the higher levels.

Communications will be dealt with in greater detail in the next section.

Action Plan

Strategy

Priority 1: Ensure evacuation complete including rescue as required.

Priority 2: Extinguish fire. Minimise damage to property and environment

Priority 3: Monitor HazSubs issues – fumes from store etc.

Tactics

1. Sectorise clockwise from Tyne St entrance. ICP adjacent to gate.
2. 2 x BA teams enter through lobby (sector 1). 1 team to protect stairwell from advancing fire (passive interior attack) 1 team to carry out S&R of top floor
3. On completion of rescue BA teams withdraw. 1 team redeploys for fire attack from sector 3. 1 x Pumps in sector 1 to redeploy to sector 3.
4. Cooling of materials store from interior while awaiting completion of rescue.
5. Once S&R completed, aggressive interior attack through sector 3 to push fire away from materials store and LPG.
6. Incoming resources to assist with protection of exposures (LPG) and fire attack as required.

Resources required – make up to 2nd alarm

Hazard Management

No.	Hazard Description	Location	Grid	Control Measure
1.	Volatile plastics – materials store	NE corner	H3	Cooling + pushing fire back as soon as resources allow
2.	LPG tanks	West side	D8/9	Cooling as soon as resources allow

Figure 3.17: Example of action plan form from OIC's field notebook

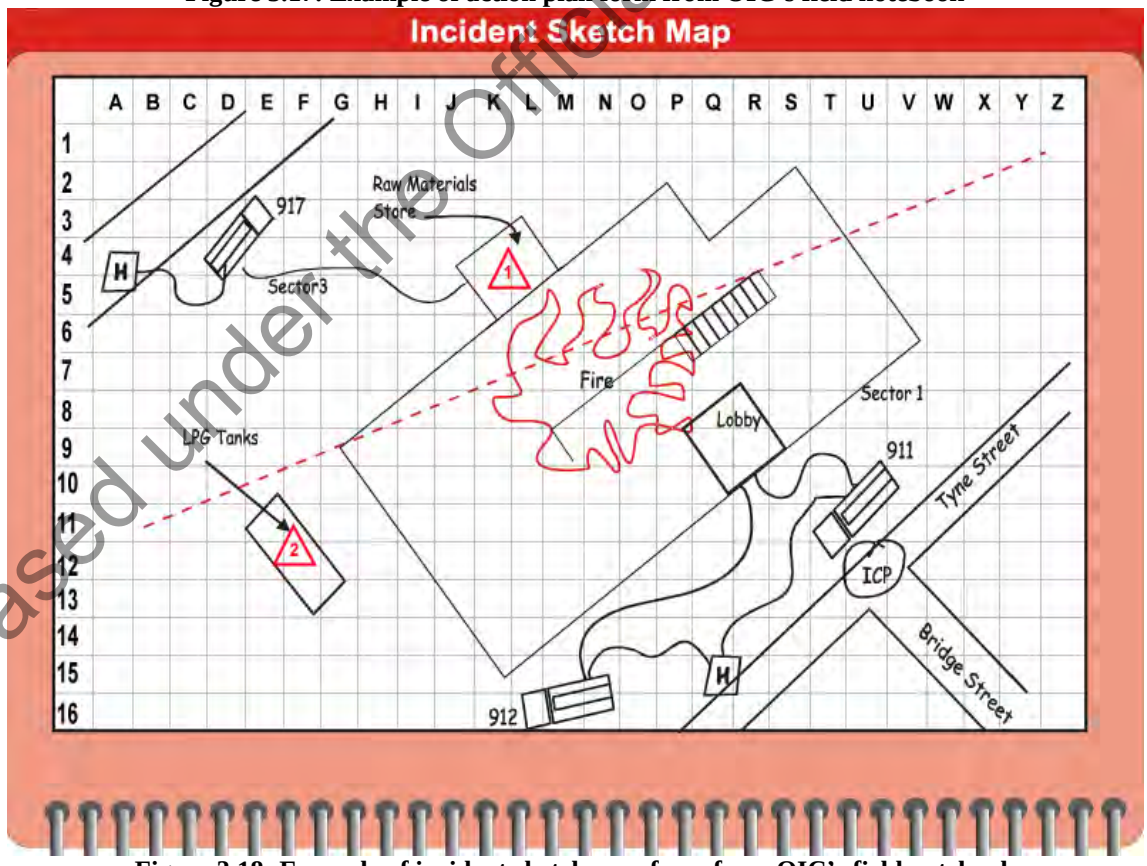


Figure 3.18: Example of incident sketch map form from OIC's field notebook

Operational Tasking

Sector	Task	Location	Grid	Team Leader	No in Crew	Tasked at:
1	S&R	Top floor		1-SFF Johns	2	11:35
1	Protect escape route S&R team	Lobby and stairwell	K5 K6	2-SFF Davis	2	11:30
3	Protect materials store	Interior rear (norht-east corner)	H3	3-SFF Smith	2	11:37
3	Aggressive interior attack once S&R completed	Rear of building (north side) attack through rear entrance		4-SFF Adams	2	11:40
2	On arrival – cooling LPG tanks	Exterior west side	D8 D9	5-SFF Samms	2	?

Figure 3.19: Example of operational tasking form from OIC's field notebook

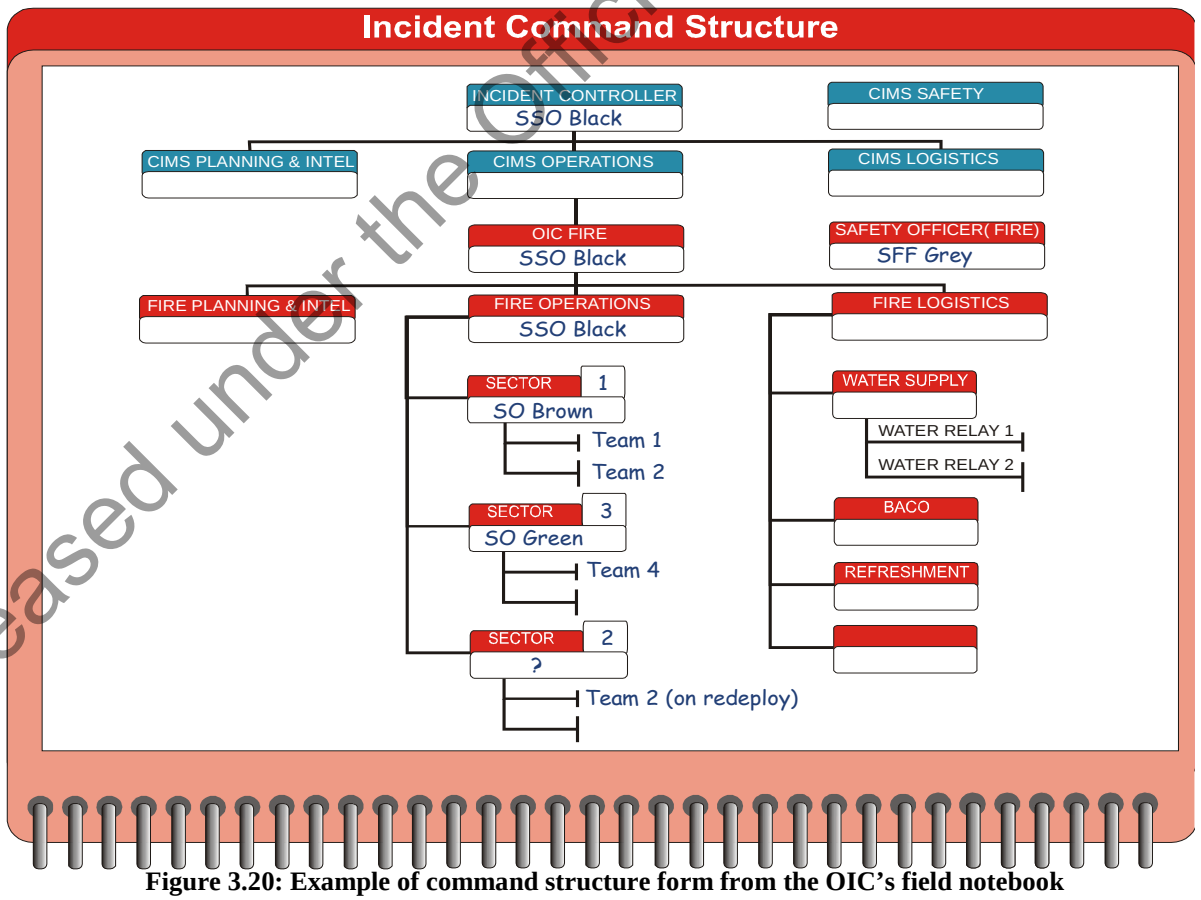


Figure 3.20: Example of command structure form from the OIC's field notebook

Section 4: Exercising Command and Control

Section Contents

Section 4: Exercising Command and Control

Introduction

This document is Section 4 of the New Zealand Fire Service (NZFS) Incident Management – Command and Control Technical Manual.

Exercising Command and Control

4.1 Defining command and control

4.1.1 What is command and control?

To avoid confusion, it is essential that officers have a clear and agreed understanding of operational vocabulary.

The term command and control refers specifically to the systems established within the larger picture of incident management that allow the selected strategy, tactics and associated operational tasking to be carried out effectively.

Control relates to higher-level decision-making, while command refers to the structures required to translate decisions into action.

At level 1 incidents (i.e. where the NZFS is the only agency present), the OIC will exercise both command and control functions. At level 2, where there is a multi agency presence, these functions are separated. Control is exercised by the Incident Controller and the IMT, while command remains within the individual agencies present.

The various emergency response agencies will have devised scalable command systems to cope with the full range of potential incidents within their sphere of responsibility. For the NZFS, this system is the NZFS Command System, which always sits below CIMS and allows the NZFS OIC to command his/her own firefighters while at all times acting under the general control of the CIMS Incident Controller.

This section will describe the NZFS Command System and its manner of implementation.

4.1.2 Factors affecting command and control

All incidents will vary from one another to some degree. Officers must consider the range of variables that are generated by each and every incident, and set up command and control systems capable of dealing with that unique situation. The factors that always affect the 'profile' of an incident (and thus the required command and control systems) are:

- Ground factors
- Incident complexity and scale
- Resources and capacity
- Communications
- Required span of control
- Physical conditions/weather
- Safety issues.

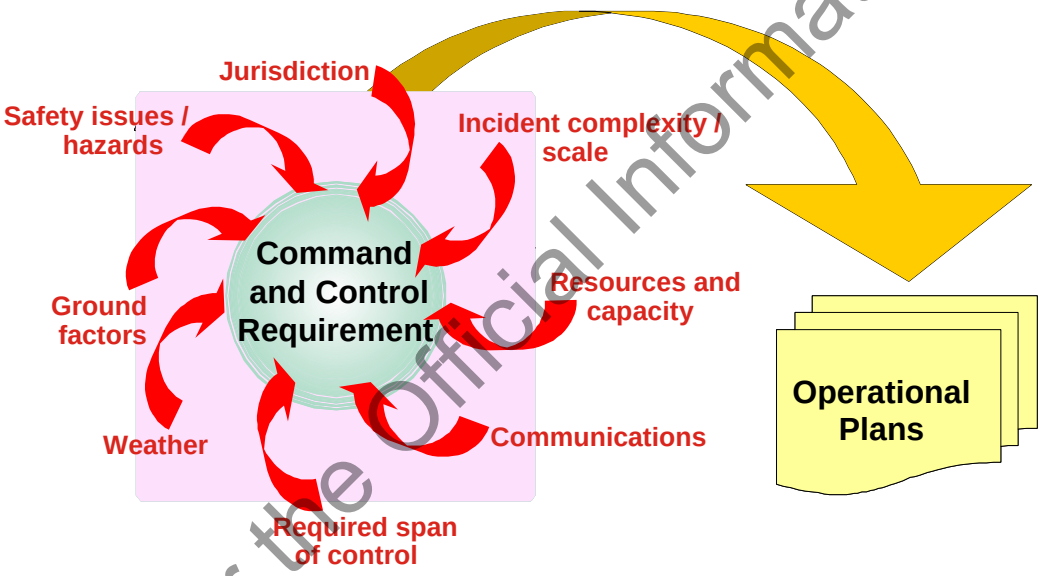


Figure 4.1: Factors affecting command and control

4.1.2.1 Ground factors

These are likely to be more significant at rural/semi-rural locations, but may nevertheless be critical considerations in the urban environment. The principal factors are:

- Distances
- Topography
- Access
- Dead ground.

4.1.2.2 Distances — The distance between the incident and additional resources.

4.1.2.3 Topography — The nature of the terrain at and approaching the incident location.

4.1.2.4 Access — The ease with which resources can approach the incident to an optimum control position.

4.1.2.5 Dead ground — Especially where line of sight is needed for effective command. This may also be an issue for local communications, especially rural fire incidents where intervening high ground may inhibit effective radio communication.

4.1.3 Incident complexity and scale — Complexity relates to the multiplicity of critical issues arising from an incident, and the problems associated with ensuring personnel safety. Scale relates to its actual size – in terms of physical dimensions, level of fire involvement, amount of resource present etc.

Thus a well-involved single site fire burning in a rurally isolated area might be large in scale but essentially simple to deal with.

Conversely, an MVA involving two vehicles on a motorway might be relatively small in scale but complex because one of the vehicles has spilled hazardous chemicals, there are casualties, ongoing threat from heavy traffic etc.

Obviously, a large scale, high complexity incident, with considerable resources in attendance, will require higher levels of both command and control.

4.1.4 Resources and capacity — The availability of firefighting resources, e.g. number of appliances, availability of water or foam stocks etc. affects selection of tactics rather than command and control. Nevertheless, as more personnel arrive and are deployed, the command and control requirement increases proportionately.

The number of personnel on the incident ground is not the only issue. At a NZFS incident the Incident Controller also needs to be aware of their capacity. This has a dual aspect:

- Physical performance and endurance
- Expertise (underpinning knowledge and skills).

4.1.4.1 Physical performance — What can be expected of each crew? Are they fresh or have they arrived direct from another incident? How long have they been at work without a relief? While this will influence tactical decisions as well, it is an issue for command and control because tired firefighters will need additional levels of supervision.

4.1.4.2 Expertise — Once again, Incident Controllers need some understanding of the levels of expertise and experience of arriving crews. They will need to understand not only the environment that they are working in and the inherent dangers, but also their ability to carry out tasks. If there is any doubt about operational ability, additional supervision will be needed.

4.1.5 Communications

Experience has shown that in all fields of emergency response, nothing contributes more to a successful outcome than effective and reliable communications. The more complex the incident, the greater the need for effective communications.

As an incident escalates, the Incident Controller must be aware of the need to escalate communications to deal with it. It is essential that the various command levels and functions be separately channelled to avoid network overload and resulting confusion.

Depending on the type of incident, he/she may need to establish any or all of the following:

- Command (strategic) network
- Tactical network
- Operational networks.

4.1.5.1 Command (strategic) network

The command (strategic) network should link incident control (IMT) operating at the strategic level of decision-making, with the OIC of the various agencies present.

4.1.5.2 Tactical network

The tactical network should link the OIC operating at the tactical level of decision making with his her subcommanders (Sector Commanders in the case of the NZFS).

4.1.5.3 Operational networks

Operational networks should link Sector Commanders with their tasked teams, e.g. BA, Rescue etc.

Figure 4.2 demonstrates this principle. Note that the requirement for 'talking one up, and one down' is built in. It would be bad practice at larger incidents to allow personnel operating at the task level to communicate on the same channel as incident control. This would only encourage confusion and potential 'bogging down' of command.

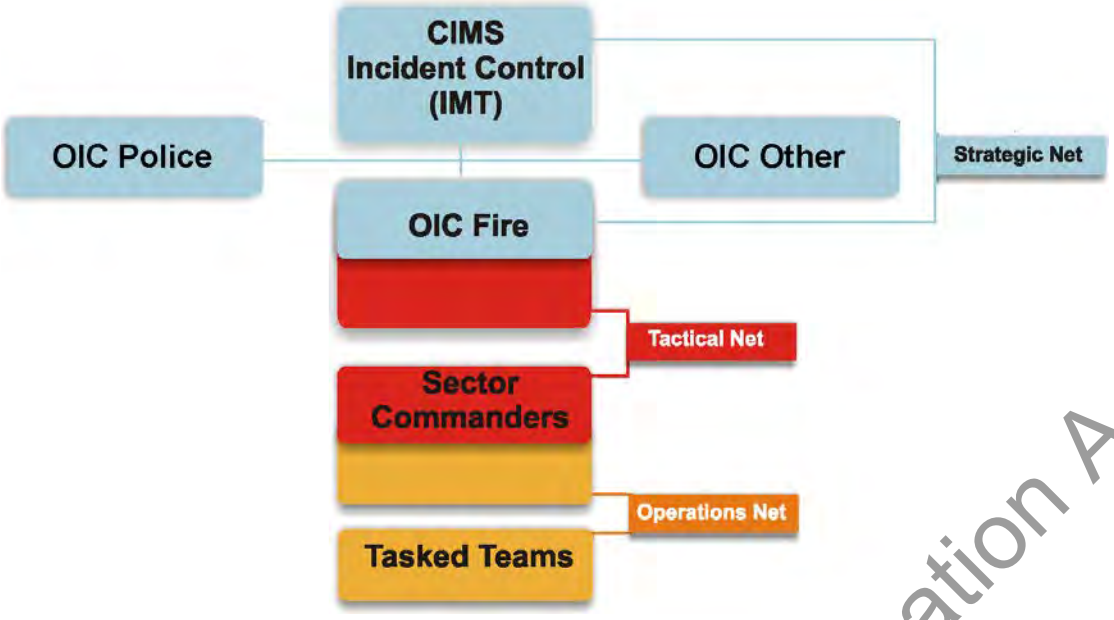


Figure 4.2: Network layer principle
(Source – NZFS 2006)

4.1.6 The build-up of networks, allocation of channels, and inter-operability of equipment needs to be pre-planned as far as possible. All staff need to be trained to a level of competence appropriate to their potential role on the incident ground.

4.1.7 All personnel need to understand that effective communications depend on relaying the right information at the right time.

Efficiency, on the other hand, depends upon clearly relaying information via the most appropriate channel, with the least amount of time on air.

Incident Controllers must also have an established 'belt and braces' communications plan, i.e. a generally understood plan for what to do and what to use should any aspect of the primary system fail (e.g. use of emergency channels, use of incident ground runners etc).

Communications issues are discussed in greater detail in Section 4.4.

4.1.8 Required span of control

Increases in incident scale or complexity will decrease the Incident Controller's ability to maintain effective command and control. Escalation must be met with delegation. It is essential that the Incident Controller focuses constantly on the 'big picture' and does not become bogged down at the tactical or operational level. This means that subordinate commands must be established to take over these lower level responsibilities. These commanders must, in turn, examine their own responsibilities to see whether further delegation is needed.

4.1.9

The general principle here is that no single individual should be expected to manage so many aspects of an incident that he/she cannot give them adequate attention. This translates to a best practice 'span of control' of no more than 1:5 for tactical command roles, with 1:3 direct reports being the optimum. Teams acting in unison (e.g. BA teams, snap rescue teams) can be considered as a single report. The span of control might be greater for less critical roles e.g. logistics.

4.1.10

The basic span of control principle for a simple incident is illustrated below at Figure 4.3. The span of control should be scalable with the nature of the incident. An example of delegating command to maintain effective span of control for a typical three pump incident is shown overleaf at Figure 4.4. An example of typical span of control principles operating for a 3rd/4th alarm is shown at Figure 4.5.

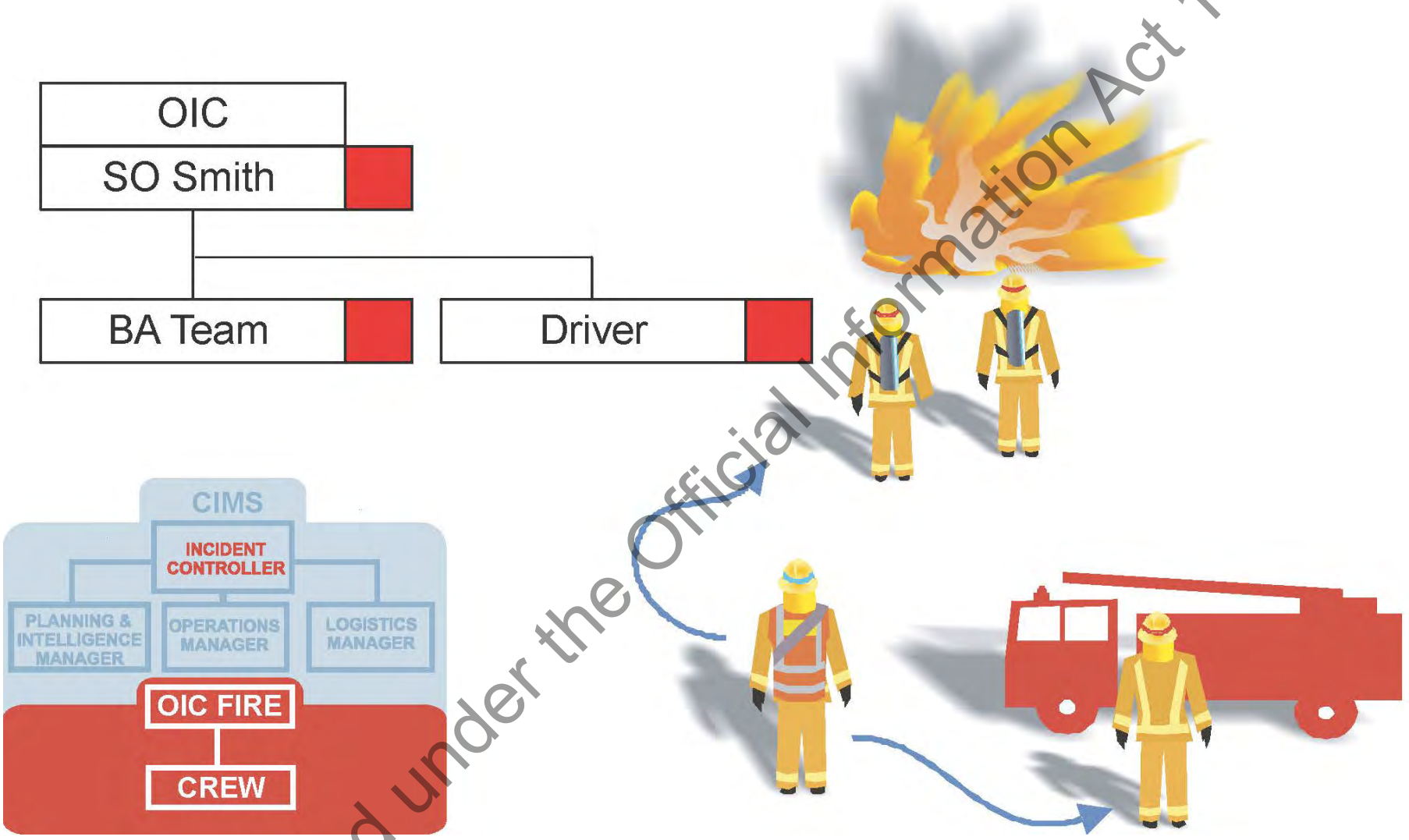


Figure 4.3: Basic span of control principle (1 pump response)
(Source – NZFS 2006)

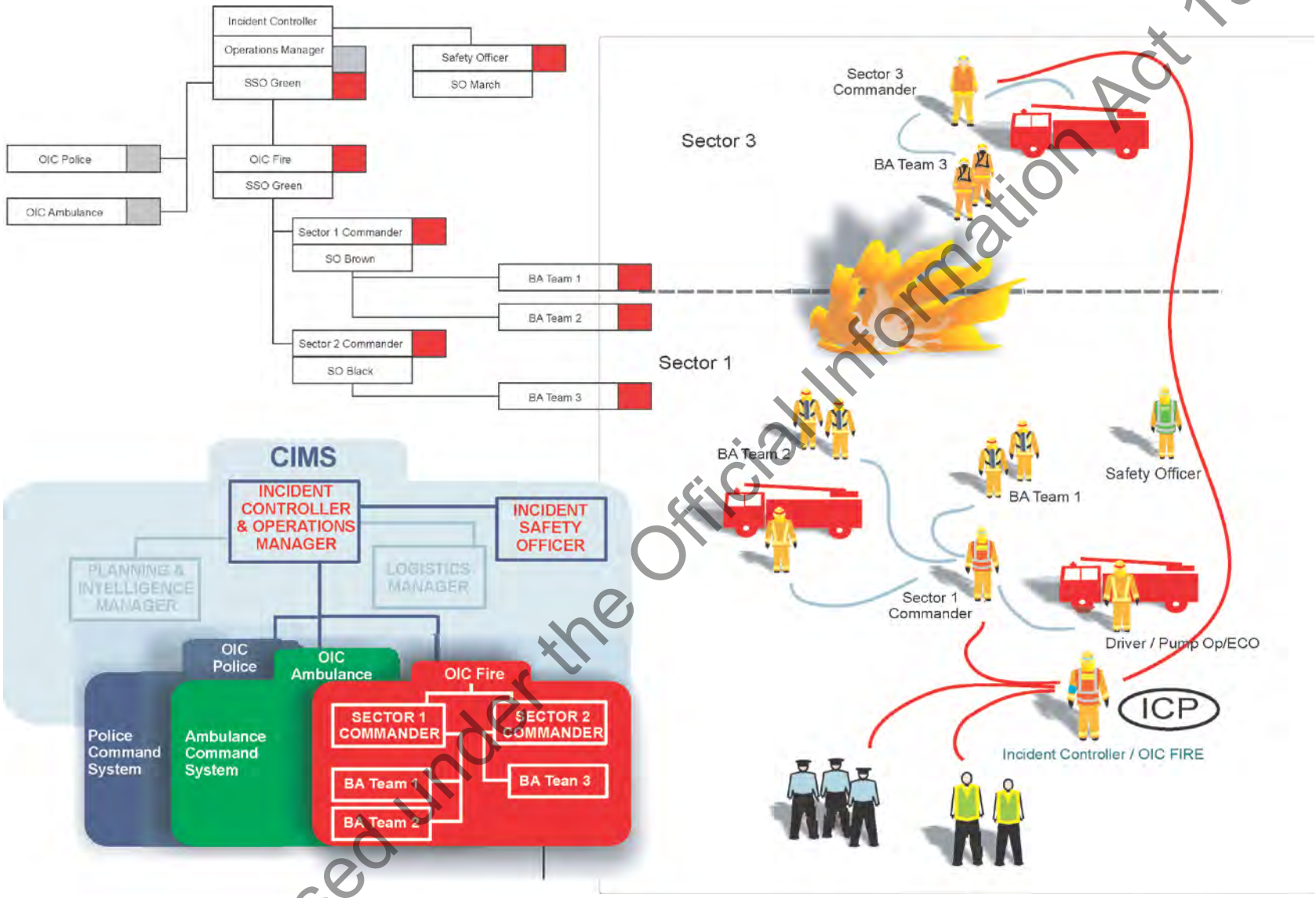


Figure 4.4: Example of span of control principles at work at a three pump response with multi agency support. The NZFS is the lead agency and, therefore, provides the Incident Controller who (in this scenario) is also acting as Operations manager and OIC Fire. He has not activated other CIMS IMT roles.

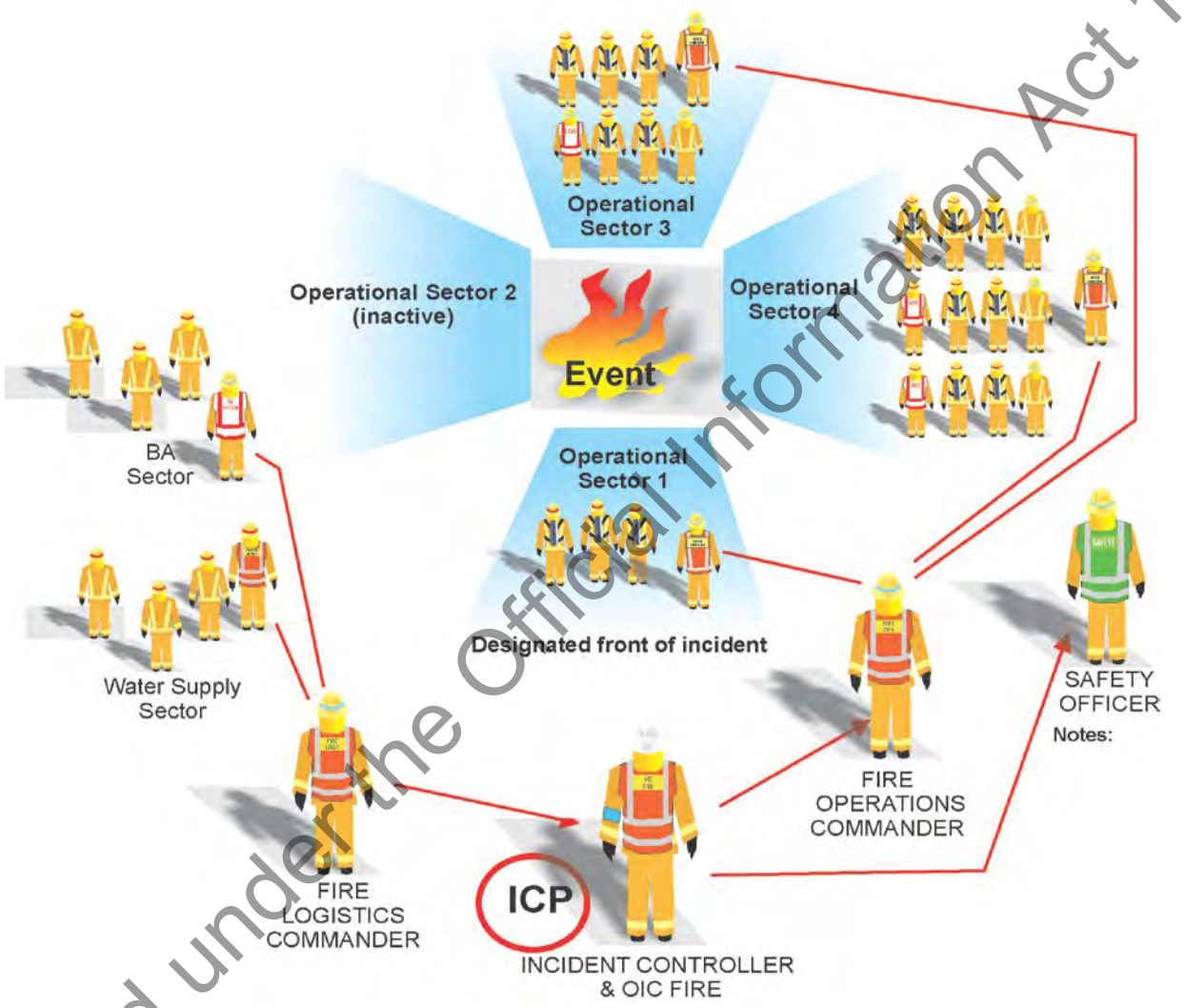


Figure 4.5 (a): Typical command structure with effective span of control at a 3rd/4 alarm incident. Police also attending, therefore OIC Fire assumes the role of Incident Controller (CIMS). Incident is sectorised with operational sector 2 remaining inactive. Main involvement is in sector 4 with potential exposures in sectors 3 and 1. Sector Commanders report to the Fire Ops Commander. Logistical sectors have been established for BA and water supply. These report to the Fire Logs Commander. A Safety Officer is appointed.

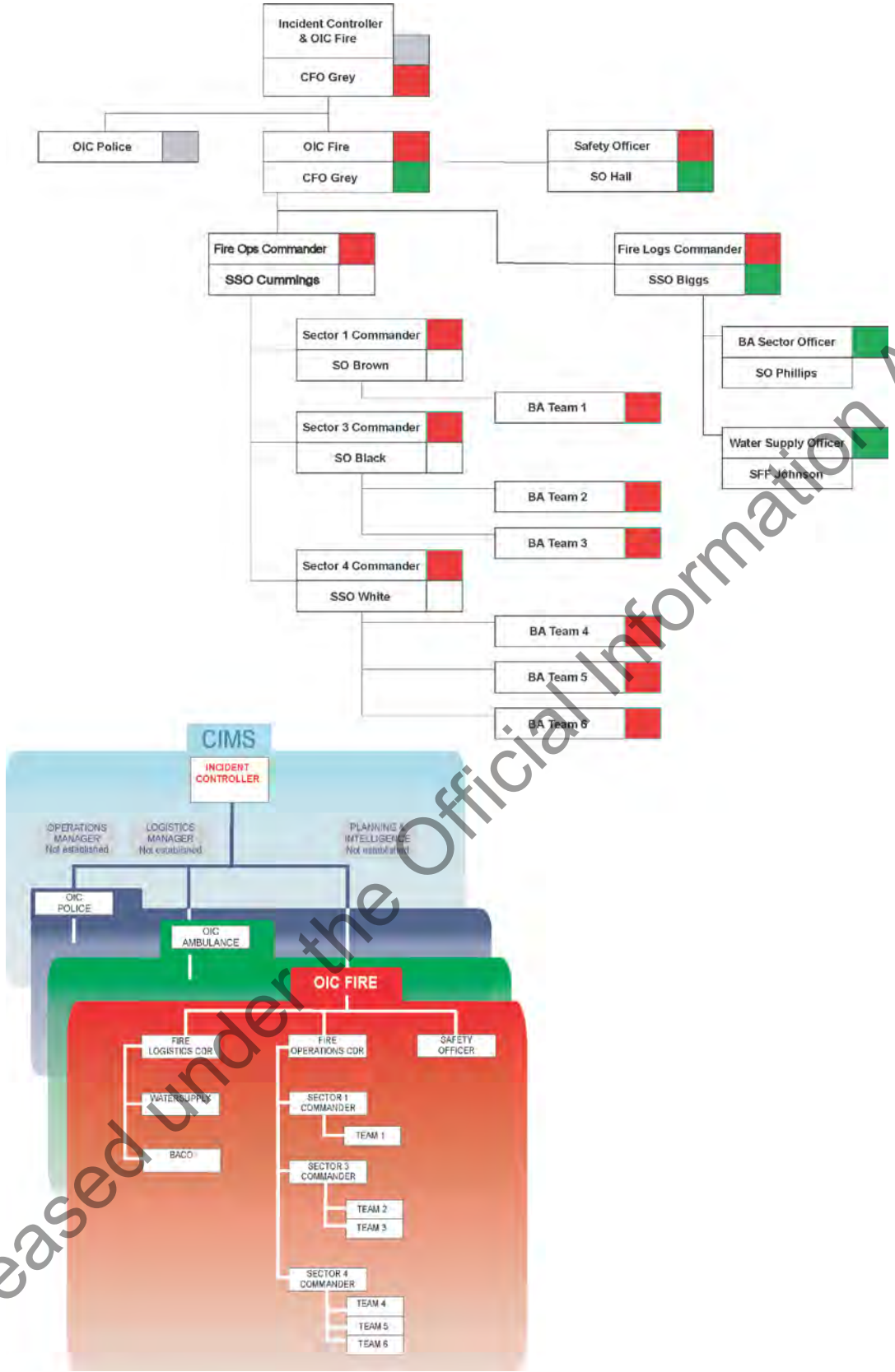


Figure 4.5 (b): Typical command structure with effective span of control at a 3rd/4 alarm incident. Police also attending, therefore OIC Fire assumes the role of Incident Controller (CIMS). Incident is sectorised with operational sector 2 remaining inactive. Main involvement is in sector 4 with potential exposures in sectors 3 and 1. Sector Commanders report to the Fire Ops Commander. Logistical sectors have been established for BA and water supply. These report to the Fire Logs Commander. A Safety Officer is appointed.

4.1.11 Physical conditions/weather

The impact of physical conditions on command and control should never be underestimated. The following factors are particularly important (especially of course for large scale vegetation fires):

- Temperature
- Humidity
- Atmospheric conditions
- Precipitation
- Visibility.

These factors are critical because high temperatures and humidity can increase the rate of fatigue dramatically. This may result in a faster than normal turn around of BA crews etc. More specifically it will increase the need for closer supervision and monitoring of firefighters and perhaps the appointment of a Safety Officer – even if the span of control is manageable.

4.1.12 Safety issues

The chief impact of safety issues will be upon the selection of strategy and tactics. In other words, unsafe strategies or tactics cannot be implemented. However, as the level of potential risk escalates, the Incident Controller must allow for greater levels of localised supervision, which impacts directly on the complexity of the command and control systems.

The Incident Controller responsibility extends to safely handing over the incident site to the owner/owner's representative, other responsible authority, or leaving the site safe from all identified hazards.

4.2 Structuring the incident ground for optimum command and control

4.2.1 Why structure?

Command and control cannot be effectively exercised without a framework understood by everybody contributing to the operational effort. The Incident Controller needs to know that everybody on the incident ground will behave predictably, in accordance with agreed protocols, and using a common operational language. Only then can the Incident Controller be confident that the selected strategy will be effectively and safely translated into the appropriate tactical action.

Furthermore, the Incident Controller has ultimate responsibility for everybody on the incident ground. This requires procedural discipline that can only be guaranteed through rigorous structure.

Obviously, the need for clear structures increases with incident scale and complexity. Since incidents can escalate rapidly, Incident Controllers should seek to anticipate events and put structures in place that can accommodate projected developments and manage additional resources efficiently.

4.2.2 Incident ground facilities

The manner in which the incident ground is organised or 'structured' will depend on the nature of the incident, local topography and the resources available.

A single pump response to a small rubbish fire is unlikely to require any formal structure at all above a crew commander. Required actions will be routine and rapidly executed.

If, the first arriving officer can see that the incident will escalate rapidly in scale and complexity, and additional resources will be needed, then he/she must address the 'big picture' need of incident ground structure. This must be done coincidentally with (or immediately subsequent to) attending to any required immediate actions such as rescue, scene management issues etc. Clearly, the Incident Controller should delegate as much as possible at this stage to free up time and space to anticipate events.

Having 'sized up' the incident and projected its likely development, the Incident Controller must consider which of the following facilities need to be established to enable effective command and control.

4.2.3 The Incident Control Point (ICP)

The ICP is a critical command and control decision. This is the point from which the Incident Controller will manage the whole event. What constitutes an ICP will vary according to incident scale and resources available. Initially the ICP will rove with the Incident Controller as he/she communicates instructions using incident ground radios and/or R/T as a size-up is completed. An ICP may be the first arriving pump, the CFO's car, a convenient building or structure (common, if another agency has the Incident Control) or, with a greater alarm, the dedicated Incident Command Unit (ICU). At smaller incidents the OIC may need to be very mobile as he/she manages the incident dynamically. As a result, the ICP simply moves with the OIC.

When establishing a substantive ICP for a larger scale incident, optimum positioning from the start is essential. Poor positioning may necessitate having to move the ICP, which will of course result in an interruption of command and control. Generally, the position of the ICP should:

- Be clearly visible and clearly identified
- Be easily accessible to incoming and outgoing personnel
- Be located so as to ensure the safety of personnel and resources
- Be located or set up so that access to the incident ground can be controlled
- Be so located that it can expand if required as the incident escalates e.g. multi-agency
- Be located strategically between inner and outer cordons, but in the rear of the Safe Forward Point (see Figure 4.5)
- Be located to provide (if possible) line of sight visibility of the incident.

The principal functions of staff at the ICP are:

- To co-ordinate operations on the incident ground
- To act as the communication centre for the incident ground
- To manage, record and control the arrival and departure of all personnel and resources
- To provide the Incident Controller with required information and data (e.g. water supplies, risk, tactical or emergency plans, and operational resources)
- To develop the Agency Action Plan (AAP).

Note: An ICP with dedicated staffing (not also supervising a crew) may be established at any incident, but must be established (as soon as possible) for any incident beyond a 2nd alarm or where there are more than 5 pumps present.

4.2.4 Zones

Zones have traditionally only been established to assist the management of hazardous materials emergencies. However, other agencies have increasingly established zones as a method of managing safe areas within an incident.

A zone is a designated area on the incident ground in which entry and type of work carried out is categorised according to the level of hazard present and the type of operations required. The incident ground may be organised into commonly three, but sometimes five contiguous zones separated by cordons:

- Hot zone
- Warm zone
- Cold zone
- Traffic Exclusion zone
- Fire and/or rescue zone.

4.2.4.1 Hot zone

'Hot zone' is defined for the purposes of NZFS operations as:

"*An identified area where the risk to people is high and enhanced PPE and/or procedure may be required.*"

Examples of hot zones include:

- The area of contamination identified at a hazmat incident.
  Note: working hazmat incidents normally have designated hot, warm and cold zones with prescribed ppe within those zones. Refer to h1 tm hazmat technical manual
- An identified area of extreme risk (e.g. From falling glass, on the street, beside a high rise fire)
- A weak radiation source within a fire affected industrial building.

4.2.4.2 Warm zone

The 'warm zone' surrounds the hot zone, is the area that presents only a minimal hazard to personnel, and is seen as a transitional area between the hot and cold zones. The warm zone is where decontamination takes place. The outer boundary of the warm zone (the Inner Cordon), should be marked by 'Restricted Area' tape to indicate the potential risk to anyone entering the zone.

4.2.4.3 Cold zone

The 'cold zone' surrounds the warm zone and is encompassed by the Outer Cordon and is the area that presents no imminent hazard to emergency services personnel and equipment. In this area, the management of the incident and the equipment needs of the responders can be supported, such as changing air cylinders and replacing worn or damaged PPE.

4.2.4.4 Traffic exclusion zone

The 'traffic exclusion zone' is an area outside of the 'Outer Cordon', where motor traffic is excluded to enable the free response of emergency vehicles to the incident gateways. Police using roadblocks establish a traffic exclusion zone.

4.2.4.5 Fire and/or rescue zone

A ‘Fire and/or rescue zone’ is defined for the purposes of NZFS operations as:

"*An identified area where NZFS and other permitted agencies are carrying out operations and/or recovery. Prescribed PPE will be required. Zone tape and/or the use of other physical boundaries may be in place.*"

Examples of fire and/or rescue zones include:

- The interior of a house or the floor of a high rise building
- The identified area around a motor vehicle incident
- The identified area around a rural incident.

Note: A ‘Hot zone’ may be located within a ‘Fire and/or rescue zone’.

4.2.5 Cordons

At a HazMat incident a cordon is a physical demarcation of the border between zones.

- Hazard cordon – separates the hot zone from the warm zone (using hot zone tape)
- Inner cordon – separates the hot zone and the warm zone from the cold zone (using restricted area tape)
- Outer cordon – separates the cold zone from the public area (patrolled by Police or Fire Police).

See Figure 4.6.

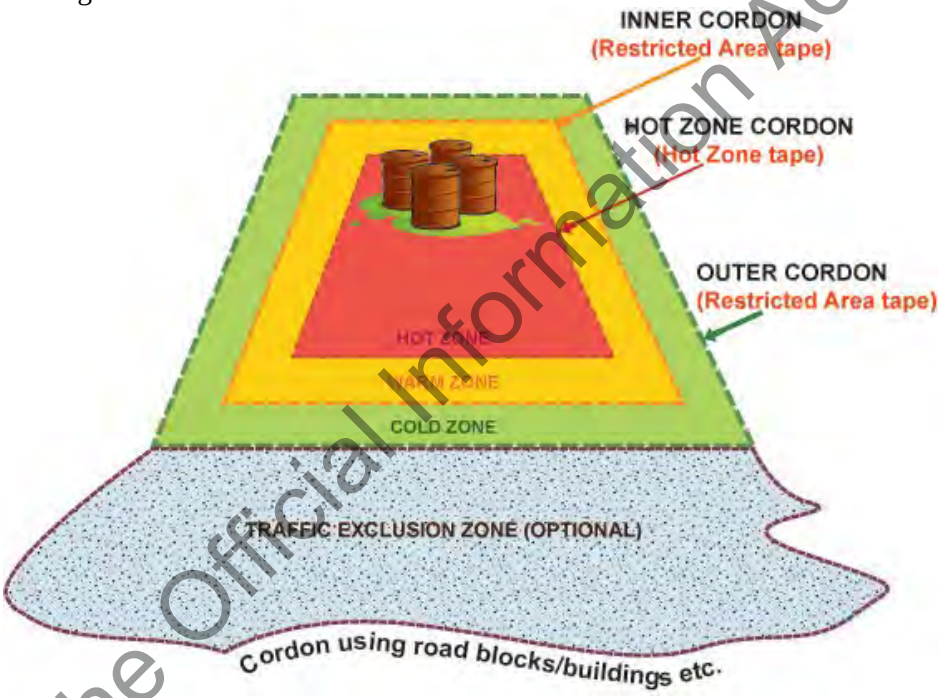


Figure 4.6 – Zones and Cordons
(Source – NZFS 2009)

Cordons may be used more generally to assist the management of other incident types. In these circumstances the inner cordon controls access to the area of ongoing operations adjacent to the incident itself. Hazards, such as falling glass from a high-rise incident or an area of imminent building collapse, may necessitate an area of restricted entry. The area inside the inner cordon will be designated as high risk and the entry will therefore be strictly controlled and monitored.

The Incident Controller should fix the location of inner and outer cordons according to the following criteria:

- Characteristics of the hazardous materials, e.g. volatility, air dispersion properties etc.
- Weather conditions and wind direction
- Quantity of the substance
- Presence of, or potential for, fire outbreak or explosion
- Evacuation needs
- Access for incoming resources
- Requirements for overhaul and clean-up
- A typical zoning structure is illustrated at Figure 4.10.

Whenever there is a risk of members of the public impeding operations or straying into areas of risk, the police should be asked to establish a traffic exclusion cordon outside the outer cordon. This is intended to prevent general traffic from impeding access or operations. See Figure 4.10.

4.2.5.1 Incident entry and exit points

Locations on the outer cordon control access to the incident ground. At large-scale incidents with significant resource flows, entry and exit points may be separated to avoid congestion. Personnel passing through the entry point (possibly from an Assembly Area) would normally be directed to a Safe Forward Point (SFP) or to the Staging Area.

4.2.5.2 Safe forward point (SFP)

A point inside the outer cordon, in the cold zone, designated as a known safe place to which personnel may be directed without perceptible risk. Normally, personnel would be directed here before moving to the ICP for tasking and deployment.

Typically this is the point that Comcens use to direct other services or subject matter experts that have been requested to attend the incident.

It is imperative that Incident Controllers designate an SFP as soon as possible and communicate the location to the Comcen.

4.2.5.3 Assembly Area

A holding point, outside the outer cordon, at which incoming additional resources are directed to form up ready for deployment to the incident ground. This is an important control function. On arrival at the Assembly Area, officers should confirm their availability to the ICP. This is usually established well away from the incident or any potential danger.

4.2.5.4 Staging area

An area within the outer cordon designated as a gathering point for resources before they are forwarded to other areas for operational deployment. Generally, it should meet the following criteria:

- If possible have separate entry and exit routes to avoid confusion, danger or delay
- Be able to expand as the incident escalates.

There are two additional types of staging:

- Base staging – at incidents requiring considerable equipment/consumable resources, it is normal practice to assemble and manage these from one location. Equipment may then be deployed to multiple locations on the incident ground as required. This is typically deployed at a high-rise incident.
- Forward staging – the point to which selected equipment and resources are moved for tactical deployment inside the inner cordon. Typically below a Forward Control Point (FCP) at a high rise incident.

4.2.5.5 Entry control point (ECP)

A checkpoint from which the entry to the most dangerous areas of the incident can be rigorously controlled. Most often this applies to the mandatory use of breathing apparatus by firefighters before moving to deal directly with the incident.

4.2.5.6 Forward control point (FCP)

A point immediately adjacent to the event where final checks and task briefings can occur prior to deploying through the Entry Control Officer. Most often established for high rise incidents. See Figure 4.9.

4.2.5.7 Signage

Once designated, all the areas/cordons referred to above must be clearly signed to avoid any possible confusion.

4.2.5.8 Not always needed

It is seldom necessary to establish all of the above incident ground components. Only the most complex incidents require them. Nevertheless it is essential that officers understand their intended purpose so that they can be established with speed and confidence if required.

The principle, as always, is to ‘keep it simple’. As an exception, an inner cordon must always be established for a hazardous materials incident.

The need for simplicity must be set against the need for control and discipline. Control can only be guaranteed if personnel access and depart from the incident via an established route that includes the ICP.

On the larger scale incident ground, discipline can only be guaranteed if;

- arriving resources are assembled at an Assembly Area (AA)
- called forward to a Staging Area (SA) or Safe Forward Point (SFP)
- tasked at the ICP
- equipped with additional equipment if necessary, at a SA and moved to a Forward Control Point (FCP) close to the event for final deployment.

Given these essentials, it is easy to see that many of these structural components will be indispensable for managing larger incidents.

4.2.5.9 Examples

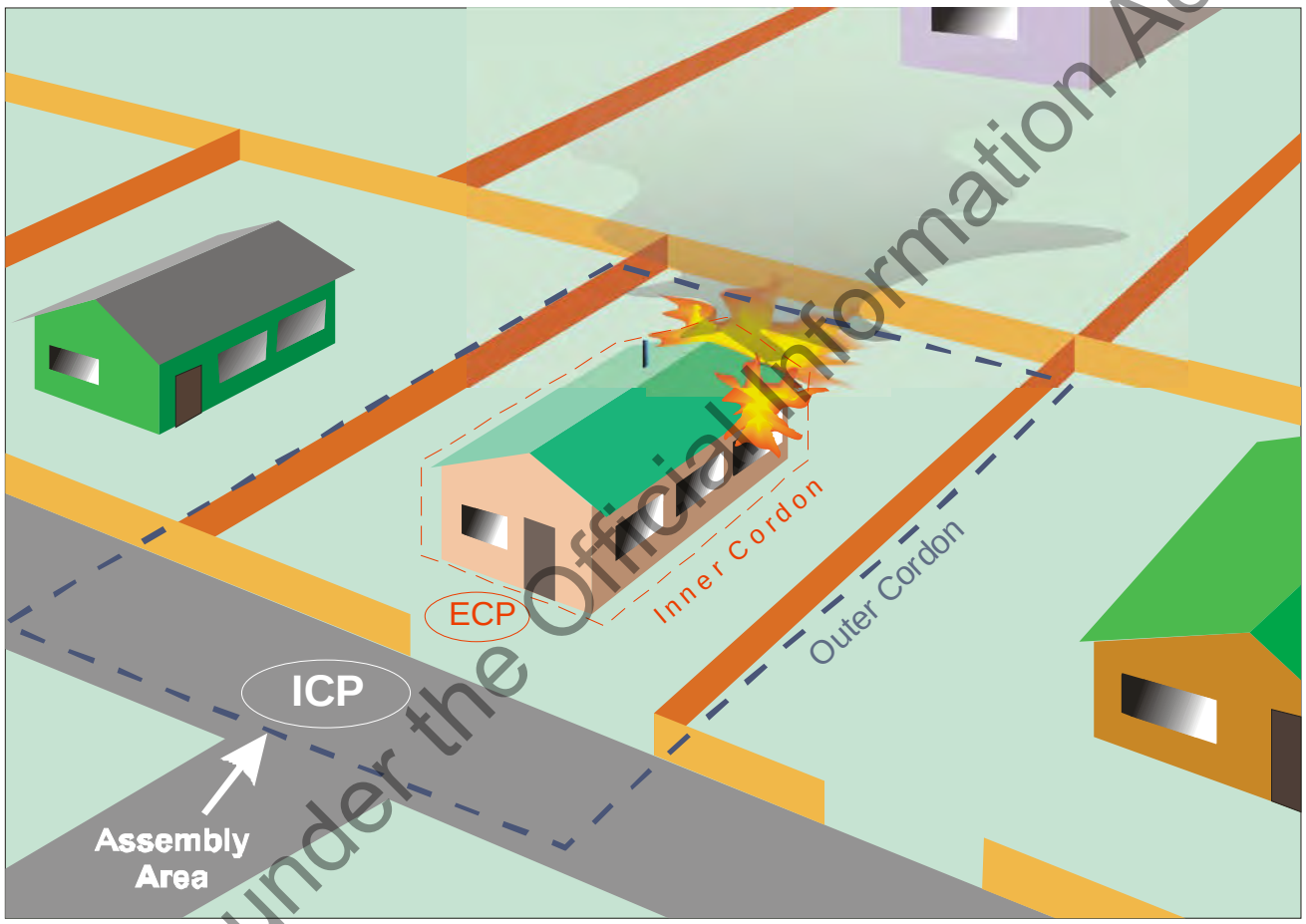


Figure 4.7: A typical (but not prescriptive) NZFSCS incident ground structure for a relatively simple 1st/2nd alarm incident
(Source – NZFS 2006)

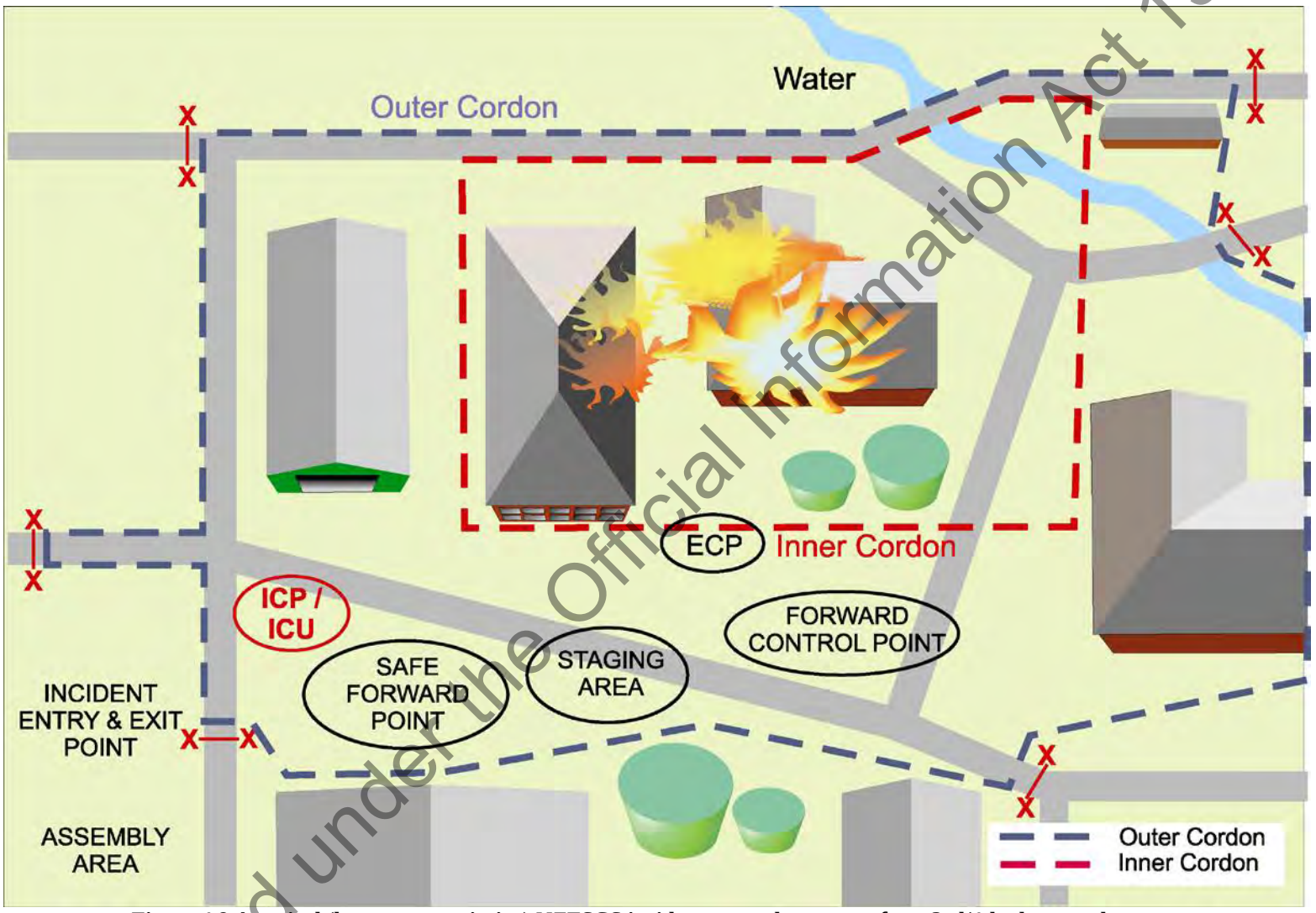


Figure 4.8 A typical (but not prescriptive) NZFSCS incident ground structure for a 3rd/4th alarm and greater

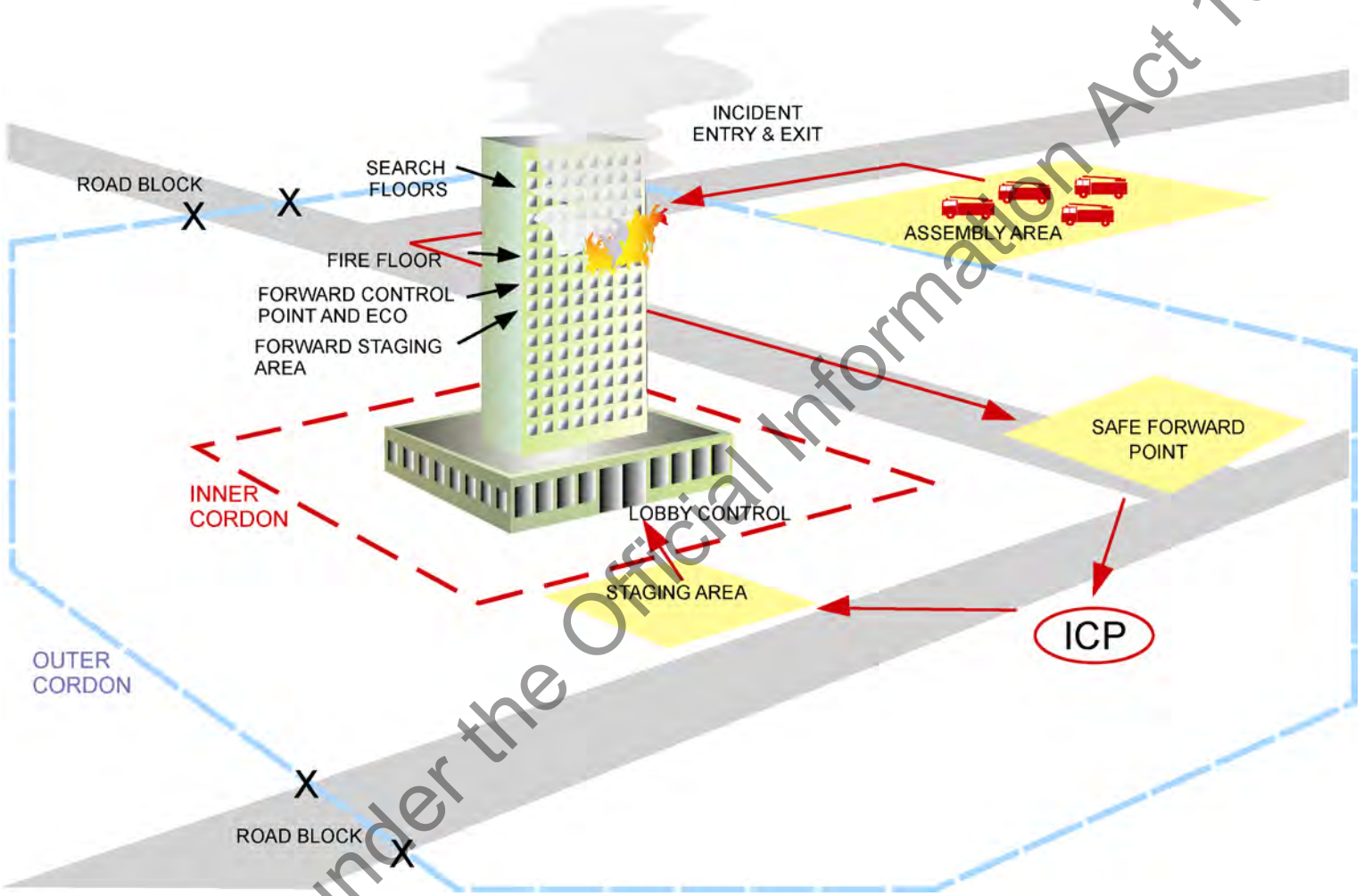


Figure 4.9: A typical incident ground structure for a significant high-rise fire
(Source – NZFS 2006)

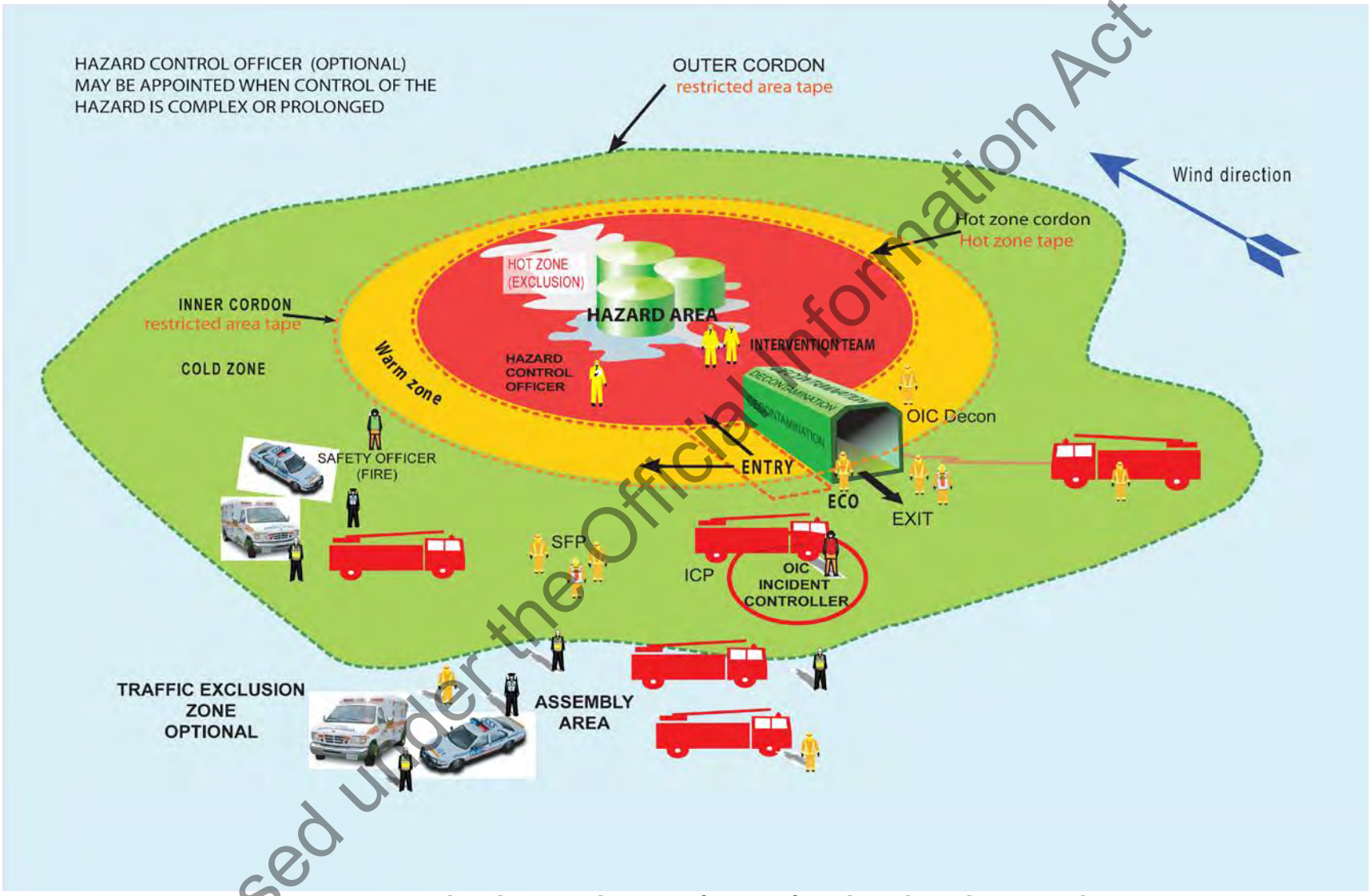


Figure 4.10: A typical incident ground structure for a significant hazardous substance incident
(Source - NZFS 2009)

4.3 Command appointments under NZFSCS

4.3.1 Key appointments

As an incident escalates in scale and complexity, the OIC Fire may appoint personnel to a wide range of roles in order to optimise command and control. In practice however, the majority of incidents will require no more than three roles to be deployed for successful management. These are:

- OIC Fire – may also be acting as the Incident Controller in a CIMS environment
- Sector Commanders
- Safety Officer (mandatory when there are more than 16 persons committed to an incident).

The main responsibilities of each are outlined below.

4.3.2 Responsibilities

All incidents that the NZFS attends must have a designated OIC Fire, regardless of whether the NZFS is the lead agency (in which case the OIC Fire may have a duel role of Incident Commander). This will initially be the first arriving officer. In certain circumstances he/she may be replaced by a more senior officer (or by a more junior officer when scaling down).

4.3.3 The OIC

The OIC's main responsibilities are:

- To assume control of NZFS personnel – i.e. to make it clear to all personnel that he/she has accepted responsibility for the command and direction of all NZFS personnel at the incident
- To set up an appropriate NZFS command structure – i.e. to appoint appropriate personnel to take charge of all the NZFS functions required to deal with the incident successfully
- The structure put in place should allow for manageable spans of control.

  Note: As an incident grows in complexity, assistants may need to be appointed to the various command roles.

4.3.3 The OIC continued

- To size-up the incident and make appropriate early judgements about required resources. It is essential to 'get ahead of the incident' as quickly as possible by projecting incident development and calling for the resources needed to manage the incident that you will be dealing with – not the one you are dealing with now
- To delegate required immediate actions e.g. rescue, scene management etc. that have arisen from initial size-up. If possible do not become involved at the 'hands-on' level here – your responsibility is to manage all NZFS involvement
- To select appropriate aim and strategy, i.e. to develop the NZFS AAP and focus on what eventual outcome is needed (aim) and what approach will achieve that aim for you (strategy)
- To select appropriate tactics i.e. the best methods to carry out your selected strategy. For larger scale incidents the selection of Tactics is developed by the NZFS Management Team (an agency management team)
- To apply dynamic risk assessment (Safe Person Concept). This needs to be done on an ongoing basis but is critical when deciding on tactics
- To create the fire AAP. For smaller scale incidents this will be done mentally and not formally documented. With greater alarms (3rd alarm upwards) OICs should create a written plan using the tools illustrated in Section 3. The AAP should not be regarded as fixed. Circumstances will change and plans may need to be adapted. For the larger incident it is important to keep the written AAP updated. This task can be delegated to support personnel at the ICP
- To ensure that effective communications are established and maintained with all parts of the incident ground and also the Comcen
- To allocate/task incoming resources. This is essential for a 'balanced' approach to any conflicting priorities. It also ensures disciplined deployment and accurate location updates, e.g. via the T card system. For details of the T card system see Section 3 and Annex A to this manual
- To ensure the general well-being and safety of all personnel e.g. by taking adequate steps to provide relief, re-hydration, feeding etc. as required. These will be delegated responsibilities but the OIC should nevertheless check that these things are being properly dealt with
- To hand over command in a professional manner when required. This could be to a more senior officer from your Fire District or any officer representing the Regional Commander; to another officer from your Fire District by agreement, or to a junior officer when scaling down etc.

In some of the latter circumstances this implies that a CIMS command and control regime will replace NZFSCS. In fact, CIMS command and control principles are in place at all incidents, and since NZFSCS is a microcosm of CIMS structures it remains intact within CIMS (as do the command systems of other agencies). In these circumstances the NZFS OIC retains command of NZFS personnel but is no longer responsible for strategic level decision-making.

4.3.4 Incident Controller and OIC Fire (combined role)

If an incident that falls within NZFS jurisdiction escalates to a level requiring multi-agency response, the OIC also has the role of Incident Controller taking on the higher-level responsibility of control for all agencies present. He/she may then choose to delegate all agency operations control (not Command) to an Operations Manager within the CIMS IMT. In these circumstances another NZFS Officer would normally be appointed as the OIC Fire to exercise direct command over NZFS personnel deployed on the incident ground.

Logistical sectors:

- Establishing the sector as directed and implement appropriate subordinate command structures as required
- Establishing and maintain effective communications with the OIC/ICP
- Supporting the implementation of the tactical plan by anticipating and meeting operational requirements according to sector designation e.g. water, foam, BA recommissioning etc.
- Liaising effectively with other sector commanders and other command appointees as required.

4.3.5 The Safety Officer

Incident Controllers must always regard the safety of all personnel on the incident ground as being of paramount importance. Consequently, no matter how straightforward the incident may appear to be, he/she must use the techniques of dynamic risk analysis (Safe Person Concept) on an ongoing basis. This technique is dealt with fully in Section 5.

Bearing in mind the potential workload of the Incident Controller, a dedicated Safety Officer must be appointed once the number of personnel committed at an incident exceeds 16. This is a mandatory appointment.

A dedicated Safety Officer must also be appointed when:

- Hazardous substances are involved and a hot zone is established.

  Note: this is in addition to the Hazard Control Officer who operates in the hot zone
- Live fire training is being undertaken
- Personnel are operating in unusual/unfamiliar circumstances, e.g. silo rescue, cave rescue, cliff rescue, white water rescue, trench collapse, etc.
- The NZFS is not the lead agency and a Safety Officer is required specifically for NZFS operations.

The main responsibilities of the appointed Safety Officer are:

- To familiarise him/herself with the adopted AAP and the tactics required by it
- To observe ongoing operations and to inform the OIC Fire of any event, changing circumstance or tactic that might jeopardise the safety of deployed personnel, or members of the public
- To take immediate action, when required, to halt obviously unsafe operations or practices and to inform the OIC Fire immediately of the action taken
- To identify and recommend appropriate control measures.

The role of the Safety Officer is dealt with in greater detail in Section 5.

4.3.6 Other mandatory appointments

The OIC must appoint personnel to certain other roles once designated criteria are met.

- Entry Control Officer (ECO) – must be appointed for stage 1 BA
- BA Control Officer (BACO) – must be appointed when there are more than 2 ECOs deployed or when there are more than 5 BA teams deployed.

4.3.7 Discretionary appointments

As an incident grows, the 'chain of command' is likely to grow with it. According to specific incident requirements (rather than fixed criteria) the OIC may appoint personnel to any of the following roles:

- Fire Operations Commander
- Fire Logistics Commander
- Fire Planning and Intelligence
- Sector Commanders
- Safety Officer (Fire) – mandatory in certain circumstances (see 4.3.5 above)
- Water Supply Officer
- Water Relay Officer
- BA Recommissioning Officer
- Decontamination Officer
- Decontamination Crew
- Hazard Control Officer
- Salvage Officer
- Lobby Control Officer
- Control Point Officer
- Information Officer
- Staging Area Officer
- Foam Supply Officer
- Liaison Officer (Fire)
- Ventilation Officer
- Safe Forward Point Officer.

4.3.8 Role identification

It is essential that individuals assigned to specific command and control functions are readily identifiable. This is particularly crucial at larger incidents where personnel may not know each other.

Clear identification is also very valuable to personnel from other agencies who would not necessarily be familiar with NZFS protocols and systems.

Identification jerkins for the various roles are shown overleaf. Many will use the same base jerkin with an interchangeable role label.

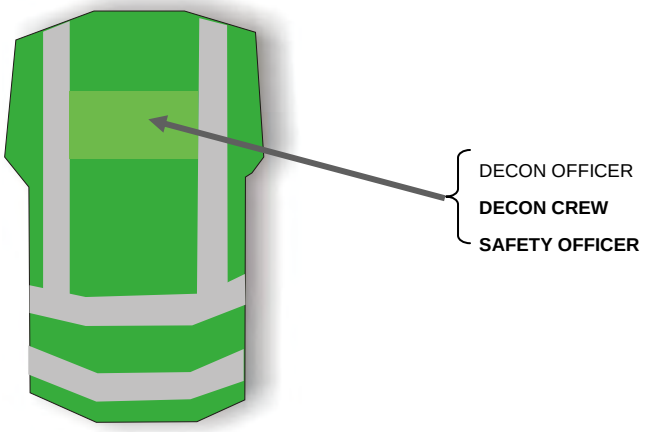
4.3.9 Red/orange jerkins – yellow patch

The following roles are identified by their title printed on a fluorescent yellow patch on a red/orange jerkin.

- **OIC FIRE**
- **FIRE OPERATIONS COMMANDER**
- **FIRE LOGISTICS COMMANDER**
- **FIRE PLANNING AND INTELLIGENCE**
- **SECTOR COMMANDER**
- **SALVAGE OFFICER**
- **WATER RELAY OFFICER**
- **WATER SUPPLY OFFICER**
- **LOBBY CONTROL OFFICER**
- **HAZARD CONTROL OFFICER**
- **CONTROL POINT OFFICER**
- **VENTILATION OFFICER**
- **INFORMATION OFFICER**
- **SAFE FORWARD POINT OFFICER**
- **STAGING OFFICER**
- **FOAM SUPPLY OFFICER**
- **LIASON OFFICER**

4.3.10 Green jerkins

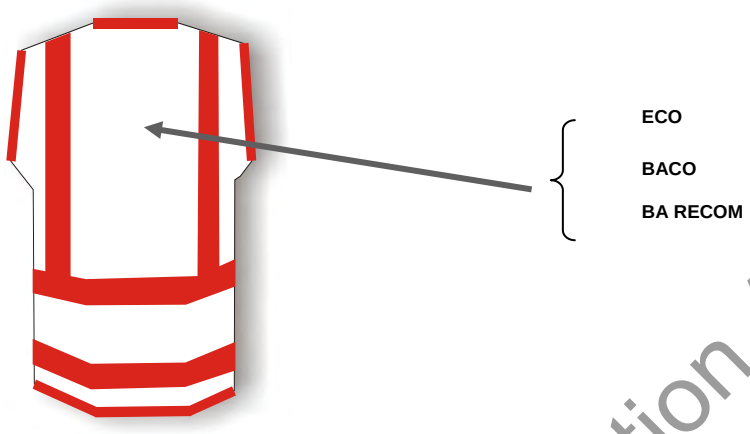
The following roles are identified by their title printed in white lettering directly on to a green jerkin.



- DECON OFFICER
- **DECON CREW**
- **SAFETY OFFICER**

4.3.11 White jerkins

The following roles are identified by their title printed directly in red lettering on to a white jerkin.



4.4 Incident ground communications (IGC)

4.4.1 Communication – the engine of command and control

There are numerous factors that impact upon successful command and control on the incident ground (see Figure 4.1). The most significant of these will be the effectiveness of communication systems and protocols.

Even the most professional Incident Controller will fail if commands and requests cannot be efficiently transmitted and information efficiently received.

It is useful to think of the incident ground communication system as the 'engine room' of incident management – nothing happens without it, and the smoother the engine runs the smoother the journey will be.

It is vital that all officers and firefighters understand how the communication system is structured and, as far as possible, adhere to the protocols that ensure it functions properly. The notes that follow refer to an ideal situation. Lack of resources or local conditions may mean this ideal is not always obtainable.

4.4.2 The structure of incident ground communication systems

Communications must be set up in a manner that will limit the potential for overload and confusion. The system should also support the concept of limited span of control. The Incident Controller and subordinate commanders should not be distracted by constant radio traffic that is not relevant to their level of command. Neither should they be required to wait for a channel to clear in order to issue instructions. Overload can only be avoided through discipline and structure. These are achieved by the practice of 'layering' command networks and, for larger scale incidents establishing independent nets or 'fenced areas' within layers.

In simple terms, the principle of layering links communications to the established concepts of strategic, tactical and operations command levels. Although this linkage does not really become clearly defined until an incident escalates to significant proportions. Nevertheless, the principle applies even on the smaller stage. At a single pump incident the strategic, tactical and operations layer effectively become compressed into one and generally one radio channel will suffice. However, as more resources are deployed and the incident ground becomes structurally more complex, it is essential to separate out the layers to maintain spans of control and effective communication.

Figure 4.11 illustrates 'layering' of communications at a typical incident, e.g. 2nd alarm. The OIC would have access to other channels e.g. for communication with other agencies on the scene. For the sake of clarity only fire channels are documented.

4.4.3 Dual radio/2 channel system

Separation of layers can be achieved by changing channels – but this can be frustrating. The command team (in the case of Figure 4.11 this is the OIC and his/her Sector Commanders + Safety Officer) also need to monitor at least two channels on a constant basis so changing channels is undesirable. Consequently, the command team members should be issued with two radios: one to monitor the layer above and another for the layer below. Thus in Figure 4.11 only the OIC communicates with the Comcen (via the ICP). He/she communicates with the Sector Commanders via one portable radio.

To deal with this incident, three operational sectors (1, 3 and 4) have been established. A Safety Officer has been appointed. Sector Commanders can communicate with the OIC (1 up) and with their sector BA teams (1 down). BA teams communicate only 1 up with their Sector Commander. The Safety Officer communicates with the OIC and all Sector Commanders. This structure is shown on the Comms Plan inset at Figure 4.11.

Note: Figure 4.11 shows an inactive sector, i.e. one that does not require a Sector Commander because (perhaps) there is no activity in that sector. However, it is still relevant to refer to that location by the sector description even though it is not established.

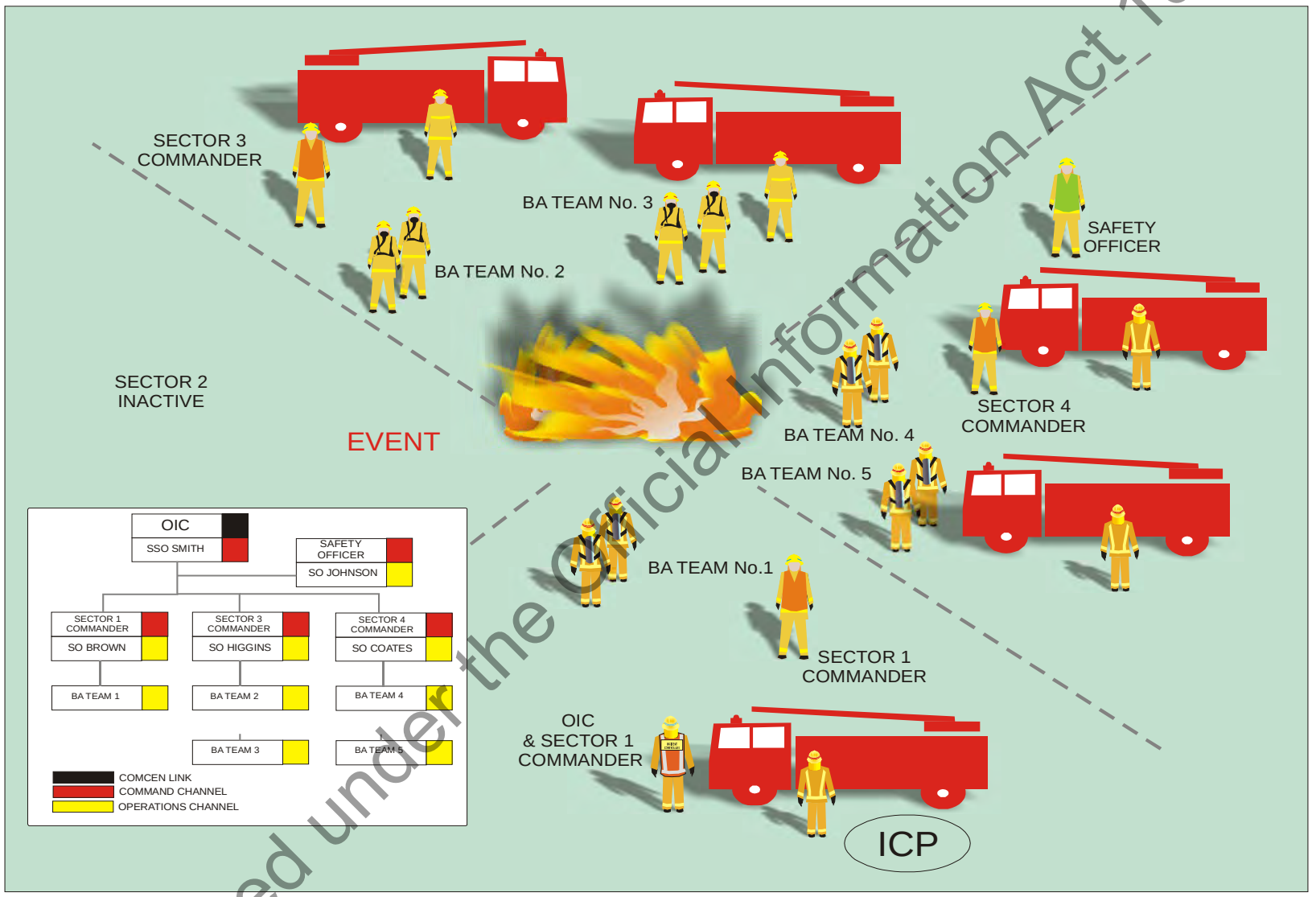


Figure 4.11: Layering principle for incident ground communications by using the two channel system
(Source – NZFS 2006)

4.4.3 Dual radio/2 channel system continued

With an incident such as this, the OIC needs to focus on overall strategy and tactics. This would be very difficult to do if he/she had to constantly monitor communications at the operations level, e.g. the BA teams. The OIC should not become involved with close-quarter tactics or the direction of the BA teams – that is the responsibility of the appointed Sector Commanders.

4.4.4 Larger scale incidents

As an incident escalates, the communication system must match its requirements. However, while the system may be more complex, it should still be based on the principle of layering. Increasing complexity can be effectively handled through the 'fencing off' of independent areas within the strategic, tactical and operational layers.

Figure 4.12 shows the principles of layering and fencing of communications at work with a larger scale incident. In this particular scenario the NZFS is the lead agency, but Police and Ambulance personnel are in attendance. The OIC therefore assumes the role of Incident Controller (CIMS), but has chosen to retain the role of OIC Fire. The fire is both complex and large scale. Consequently the command structure reflects this. In this instance the Incident Controller has appointed the following CIMS roles:

- Operations Manager
- Logistics Manager
- Safety Adviser.

The Operations and Logistics Managers have appointed a number of subordinate commands to support the proposed strategy and tactics.

The command structure at larger scale incidents will vary considerably according to strategic and tactical needs. The communications plan will also vary. The principles of layering and fencing off should however always be adhered to as far as possible. The critical issue is that of effective command – this cannot be achieved if the channels are confused and congested.

When large numbers of personnel are committed to operational sectors it may be advisable to allocate separate channels to each sector. This might apply for instance to the scenario in Figure 4.12 overleaf.

4.4.5 Communication plans – need for local procedures and pre-planning

It is important that Incident Controllers establish a communications plan for all incidents. In practice this will be extremely simple at 1st/2nd alarm level. Nevertheless it is essential that all personnel on the incident ground understand and adhere to established protocols.

For all incidents at 3rd alarm and above, a diagrammatic communications plan should be posted at the ICP and all incoming resources briefed on its requirements.

Note: The communications plan is embedded into the organisation structure by colour coding for each channel attached to each organisational position.

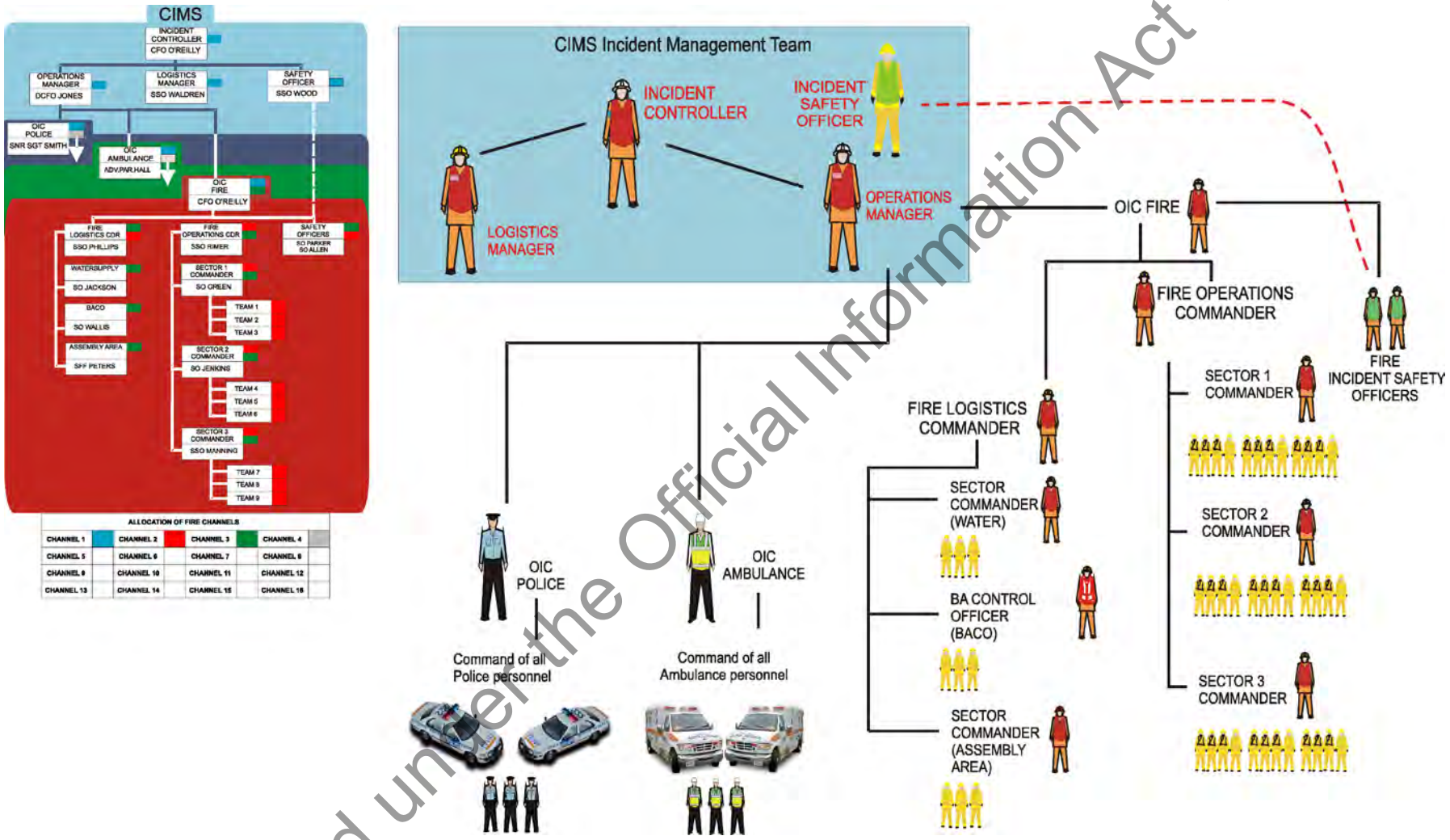


Figure 4.12: Example 3rd/4th alarm scenario command structure with Fire as lead agency
(Source – NZFS 2006)

4.4.5 Communication plans – need for local procedures and pre-planning continued

At present both UHF and VHF radio systems are used in accordance with local needs. In addition, arrangements for communication with other agencies vary between regions. These circumstances make the development of a standardised communications plan difficult if not impossible. Brigades must ensure that they have well thought out local procedures for communications that will meet all contingencies. This is an aspect of risk and operational planning and should involve all likely responding agencies.

In practice, most communication needs can be foreseen and pre-planned for established channel allocation etc. Protocols should be agreed and practised locally with all primary agencies.

4.4.6 Support personnel at the ICP

The OIC Fire is in place to provide continuous command and control – not to operate a radio. At a small-scale incident he/she will be able to handle communications directly while at the same time performing the command and control function. However, the complexities of larger-scale incidents would make this very difficult, if not impossible. In any case it is bad practice.

It is important therefore that any communication is directed to the 'one-up' position in the organisation structure, even when it is known that the same person is filling many roles (i.e. Sector Commander 1 to Fire Operations Commander or Fire Operations Commander to OIC Fire).

If an ICP is established or an ICU is available, the Incident Controller should appoint suitable personnel to provide support and assist with handling communications. At the very least, support personnel should:

- Be familiar with the way in which incident grounds and command communications are structured
- Be familiar with NZFS communications protocols
- Be able to chart a communications diagram for the incident action plan (IAP)
- Be familiar with and able to use NZFS recording systems e.g. T Cards
- Have sufficient experience to prioritise messages for the Incident Controller's attention
- Have sufficient experience to deal independently with (directly or indirectly) the range of messages to the ICP that actually fall outside the immediate command line. For example: arrivals of additional resources, requests for directions to incident ground facilities, incoming information from other agencies in attendance or from the general public, requests for access to incident control e.g. media, other agencies etc.
- Be able to record messages effectively in salient point format.

4.4.7 Sitreps

There are two principle forms of Situation Reports (SitRep). The Comcen SitRep using HAULET and the Incident Ground SitRep using SHURTS.

4.4.7.1 Comcen SitReps

This SitRep is commonly used to provide information from the incident ground to the Comcen.

Generally the first SitRep to the Comcen will take the form of HAULET:

- **H**eight (floors)
- **A**rea (length x breadth)
- **U**sed as
- **L**ocation of fire
- **E**quipment in use
- **T**actical mode

Subsequent SitReps are used to provide updates as the incident progresses. These may be in a shortened format, e.g. equipment in use changes or tactical mode changes.

For more information on the Comcen SitRep see the Operational Instruction E2 *Communication Equipment* on FireNet.

4.4.7.2 Incident ground SitReps

The Incident Ground Situation Report (IG/SitRep), sometimes known as an Incident Ground Broadcast, is quite distinct from a SitRep transmitted from the incident ground to the Comcen.

4.4.7.3

An IG SitRep is intended to provide incident ground personnel with a description of the command structure in place, the current status of the incident and the actions being taken to deal with it. It is also used to signal any requirement for additional resources and any hazards encountered.

4.4.7.4

The level of detail required in each IG SitRep will depend on the complexity and scale of the incident and the particular context in which the SitRep is being provided. It is however based on a standard template and is communicated in a standard format. For example:

- A comprehensive IG SitRep would be required at an incident where the level of risk to firefighter safety is high, or where the incident is complex in nature and personnel need to have an overall appreciation of events
- A simple and less formal IG SitRep may suffice at a smaller incident. When it is obvious that all NZFS personnel are fully aware of the situation and no hazards are reported, a SitRep may not be required at all.

4.4.7.5 The IG SitRep is transmitted at appropriate times during an incident with an emphasis on the developing period soon after arrival. This time is likely to be the period of maximum confusion as crews arrive and are deployed in an environment with limited information available. As information comes to hand a further SitRep can be broadcast, perhaps indicating to crews the urgency of a particular aspect of operations, or to advise of newly identified hazards.

The IG SitRep broadcast message should be preceded by an alerting message (e.g. 'Stand by for an Incident Ground SitRep') indicating that an IG SitRep will follow. This allows for urgent radio traffic to clear and for crews to stand by for the report.

4.4.8 Other SitReps

Situation reports will be needed in other circumstances besides the incident ground broadcast. While the format of the report will remain essentially the same, the level of detail and particular emphasis will vary according to need.

4.4.8.1 The Change of Command SitRep

An officer taking over command will obviously need to be briefed on the situation from the officer handing over. This should be done using the standard format to ensure completeness. This SitRep is sometimes referred to as a HOTO (hand-over/take-over) report or briefing. This report is likely to be focussed on incident development and the details of crew deployments.

4.4.8.2 Sector SitRep

The sector SitRep refers specifically to the update from a Sector Commander to the Fire Operations Commander. This report will obviously be focussed on more local developments and requirements.

4.4.9 SitRep format

To ensure completeness and a standardised vocabulary, the acronym SHURTS is used to structure SitReps of all kinds. The acronym expands as shown in Figure 4.13 below.

S	Size up	Summary of information gathered through the size-up process
H	Hazards	Hazards identified and recorded (in the FAP) as requiring treatment and communication to personnel working in the hazard area. Also describes the Control Measure
U	Using	Currently using – a description of resources deployed and tasks allocated, usually captured on either the electronic or manual FAP systems
R	Requirements	Requirements – description of additional resources needed and the tasks that will be assigned to them. This forms the 'wish list' in the planning backwards process
T	Tactics	A description of the predominant tactical options and Mode being deployed – This also includes the progress being made using the standard terminology of Retreating/Holding/Advancing
S	Structure	A description of the command structure established to date to deal with the incident

Figure 4.13: Standardised SitRep format through the SHURTS acronym
(Source – NZFS 2007)

4.9.10 Example of a comprehensive IG SitRep

SHURTS	*I.G. SitRep*
SIZE UP	The Current Situation at this Incident is: Height – A building of 2 floors About 30m x 30m Used as a Fire Station Location of Fire is top floor right There are no Persons reported
HAZARDS	Hazards and Control measures are: LPG Cylinders on ground floor. CM = Cooling
USING	This is a 3rd Alarm. Brigade currently Using: 4 x LPD Ventilation Search and Rescue in progress
REQUIREMENTS	Brigade Requirements are: Ventilation on top floor Search and Rescue on Top floor Covering LPD in Sector Two
TACTICS	Tactics are predominately: Offensive/Defensive Interior/Exterior attack The Incident progress is: Retreating/Holding/Advancing (Making progress)
STRUCTURE	Command Structure is: NZFS is Lead Agency Incident Controller: CFO Smith OIC Fire: CFO Smith Fire Operations: DCFO Jones Fire Logistics: DCFO Black Sector One: (Front) SSO Green Sector Two: (Side) SSO White (Ver: IGSR:1.3)

Figure 4.14: Example of a comprehensive IG SitRep

4.4.11 Simple incident ground SitRep

Shown below at Figure 4.15 is an example of a brief incident ground SitRep using the same SHURTS format for a simple fire incident.

SHURTS	*I.G. SitRep*
SIZE UP	The Current Situation at this Incident is: Fire on top floor of private dwelling
HAZARDS	Hazards and Control measures are: No hazards
USING	This is a 3rd Alarm. Brigade currently Using: 1 x LPD Search and Rescue in progress
REQUIREMENTS	Brigade Requirements are: Ventilation on top floor
TACTICS	Tactics are predominately: Offensive/Defensive Interior/Exterior attack The Incident progress is: Retreating/Holding/Advancing (Making progress)
STRUCTURE	Command Structure is: OIC Fire: SSO Smith (Ver: IGSR:1.3)

Figure 4.15: Simple incident ground SitRep using SHURTS

4.4.12 Sector SitRep

Figure 4.16 shows an example of a Sector SitRep using the SHURTS format for a simple fire incident.

Note that the section referring to 'Using' is used by the OIC Fire to determine what resources are being utilised already, while the section referring to 'Requirements' forms the wish list in the planning backwards process described earlier in this manual.

SHURTS	*SECTOR Strep*
SIZE UP	The Current Situation in Sector 3 is: Well involved fire in conference room at Grid Ref C8 and C9 There are No Persons reported
HAZARDS	Hazards & Control measures are: (Hazard, Control & Measure) LPG Cylinder at Grid Ref D9 CM = LPD Cooling
USING	This Sector is currently Using: 1 x LPD using Offensive Interior Attack 1 x HPD using Offensive Interior Attack
REQUIREMENTS	My Sector Requirements are: 1 x Unsupported Search and Rescue Team 1 x Ventilation Team
TACTICS	Sector Tactics are predominately: Offensive/Defensive Interior/Exterior attack The Incident progress is: Retreating/Holding/Advancing (Making progress)
STRUCTURE	Sector Command Structure is: Sector Commander Green Sector Command Point at: Top floor stairs (Ver: IGSR:1.3)

Figure 4.16: Sector SitRep (Sector level) using SHURTS

4.5 Handover

4.5.1 Who to handover to

At the end of an incident the OIC Fire will hand over to an external party.

If the appropriate party is available, the OIC Fire ensures handover to:

- an agency:
  - Police
  - Department of Labour (Workplace; injury, electrical/gas ignition and/or HazMat)
  - Electricity Safety Service (non-workplace; electrical/gas ignition)
  - Local Authority (public areas), OR
- owner, owner's agent, occupier, or insurance representative.

4.5.2 Handover contents

When conducting the handover the OIC Fire should include:

1. Briefing the handover party of (in writing when practicable):
   - the incident's likely remaining hazards, such as:
     - irrespirable or toxic atmospheres (CO, asbestos, fire by-products, etc)
     - unsafe structures (floor, stairs, roofs, etc)
   - Security arrangements for the scene
   - Any special instructions, e.g. protecting evidence.
2. Collecting details for:
   - the incident report
   - charging for services.

For major incidents, handover details are recorded and form part of the AAP/IAP.

4.5.3 Handover without the appropriate party

If the appropriate party is not available for handover after everypracticable effort to contact them, the OIC Fire must ensure:

1. The scene is left as secure as is practicable from:
    - hazards
    - damage
    - unauthorised entry.
2. A notice is displayed at the building or property entrance, if practicable, listing any remaining hazards.

4.5.4 More information

For more information about handovers see the Operation Instruction M1 SOP *Command and Control* on FireNet.

4.6 Calling up: the greater alarm system

4.6.1 Rationale

It is essential that senior managers are able to respond to escalating emergencies in a planned and standardised manner. It is equally important for Comcen staff to share a common understanding of resource deployment with their operational colleagues.

A nationally standardised method of calling for additional resources is available in the form of the greater alarm system. This system sets out the standard resources to be allocated (according to availability) from 1st alarm to 5th alarm – but allows for the use of pre-determined attendances (PDAs) for particular risks.

4.7 Operational planning

4.7.1 Relevance to command and control

The Approve Deploy Review Improve (ADRI) principle (see section 1) demands that we should do as much as possible to ensure successful incident management at the 'approach' stage. Clearly, the ability to take rapid and effective command of a situation will be greatly enhanced by familiarity and pre-planning.

Probably the most significant command and control factors to be addressed by planning will be ground conditions, communication issues and of course potential safety issues. Operational plans also provide key information in relation to the location and availability of water and services.

4.7.2 Critical information

While there are (as yet) no standard templates for operational plans, operational needs dictate that there are certain standard criteria that are critical to effective operational planning. These are:

- Pre-determined attendance/deployment – a careful consideration of the most appropriate response to the particular location for successive alarm levels
- Hazard identification – listing of all known hazards with their site locations, together with any significant notes relating to their management
- Exposures – identification of property, facilities etc that are likely to be affected by an incident at the site, together with any notes relating to their protection
- Building construction – details of dimensions, construction method and materials, noting any potential hazards
- Safety features present and operational – identification, description and location of installed safety/protection systems
- Evacuation plans – notes on any operative scheme
- Water supply – location of hydrants, tanks, pools etc.
- Sketch map – this should be drawn as accurately as possible, particularly in terms of the location of buildings, their relative size and position in relation to significant features.

The sketch map should also clearly indicate the location of hydrants and other utilities. Standard symbols are available in SMS.

4.7.3 Rapid location

At larger sites it is useful to apply a simple overlay grid system to assist with locating specific buildings, entrances, equipment, hazards etc. This is particularly true when out of District resources are responded since they may be entirely unfamiliar with the site layout.

Examples of a two-page operational plan are provided overleaf for a school (Figures 4.17 (a and b) and a chemical plant (Figures 4.18 (a and b).

OPERATIONAL 1480/05

Common Place	Sunnybrae Normal School	**Review Date**
Address	36 SUNNYBRAE ROAD	29 Jul 2006
Suburb, City	SUNNYBRAE, NORTH SHORE CITY	

Critical Information

Deployment

1st	**2 Pumps**	**2nd**	**2 Pumps, 1 ICU**
3rd	**3 Pumps, 2 Aerials, 1 Bat, 1 Canteen**	**4th**	**3 Pumps, 1 Aerial**
5th	**3 Pumps**		

Hazards

Quantity: 200 KG C8 **UNSI:** 1017 **Chemical Name:** Chlorine

Exposures /Sectorisation

Building Construction

Construction Timber frame unprotected (normal housing)
Est. Height 3-7 metres **Floors** 1 **Basements** 0 **Area of One Floor** 625

Safety Features

Other Alarm: Type – 02 Manual fire alarm (self monitored)
Other Alarm: Type – 23 Security system- Heat/Smoke
Fire Hydrant System/Riser None

Evacuation Plan

Operative Scheme

Notes

Water supply: 15 l/s school car park
Supplementary water: 351/s Sunnybrae Road
Access to rear classrooms via path at the end of Ellen Avenue

Figure 4.17(a): Example of an operational plan: page 1 layout for Sunnybrae School
(Source NZFS 2006)

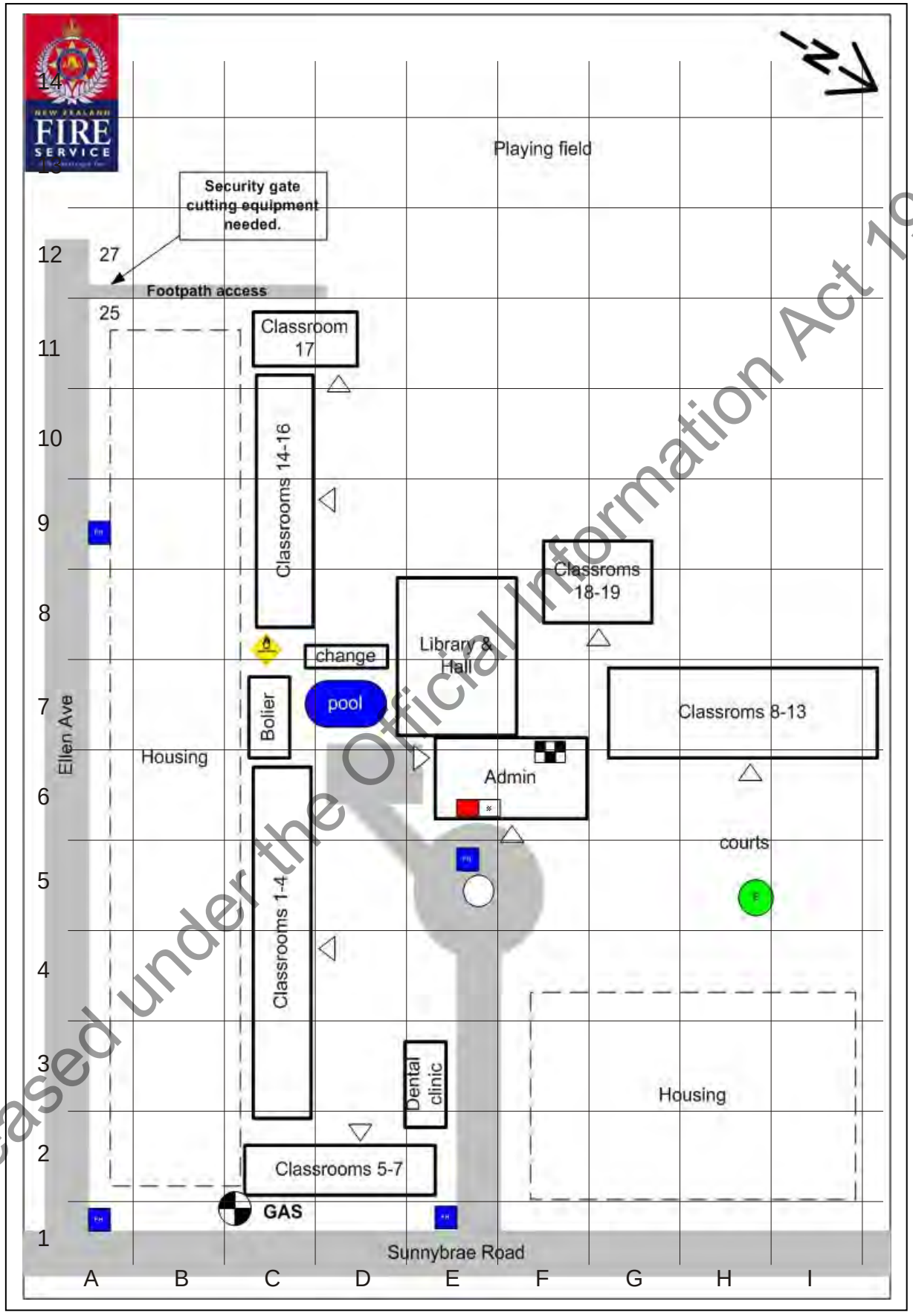


Figure 4.17(b): Example of an operational plan: page 2 layout for Sunnybrae School
(Source NZFS 2006)

OPERATIONAL PLAN 1480/10

Common Place Chemcolour Industries NZ
Address 24-26 POLAND ROAD
Suburb, City GLENFIELD, NORTH SHORE CITY

Review Date 29 Jul 2007

Critical Information

Floor drains connected to underground tank of only 4500 litre capacity. Firefighting water may cause overflow. Ensure sewer isolation valve closed

Deployment

1st 2 Pumps
2nd 2 Pumps, 1 ICU, 1 Haz
3rd 3 Pumps, 2 Aerials, 1 Bat, 1 Canteen
4th 3 Pumps, 1Aerial
5th 3 Pumps

Hazards

Quantity: 20 tonnes **UNSI:** 1738 **Chemical Name:** BENZYL CHLORIDE GRID REF H/8
Quantity: 12 tonnes **UNSI:** 1221 **Chemical Name:** ISOPROPYLAMINE GRID REF C/6
Quantity: 2 tonnes **UNSI:** 1431 **Chemical Name:** SODIUM METHYLATE GRID REF D/9
H1 – Transformers
Large quantities of toxic and flammable chemicals in high rack storage in chemical store at laboratory

Exposures / Sectorisation

Consider down wind evacuation
Internal fire doors separate flammable liquid storage area

Building Construction

Construction Block walls, Steel roof, wooden upper floor
Est. Height 3-7 metres **No. of Floors** 2 **Basements** 0 **Area of One Floor** 1000

Safety Features

PFA: 110057 THERMAL/SMOKE PANEL: FRONT OF SOUTH WING OF BUILDING
Fire Hydrant System / Riser None
Service isolation points as shown over leaf

Evacuation Plan

Operative Scheme Assembly area- outside Dodsons Autoparts

Notes

Water supply: 40 l/s on Poland Road
Supplementary water 60l/s on Hillside Road
Insufficient bunds at building openings to contain firefighting water runoff
High rack storage

Figure 4.18(a): Operational plan page 1 layout for ChemColour Industries (example)
(Source NZFS 2006)

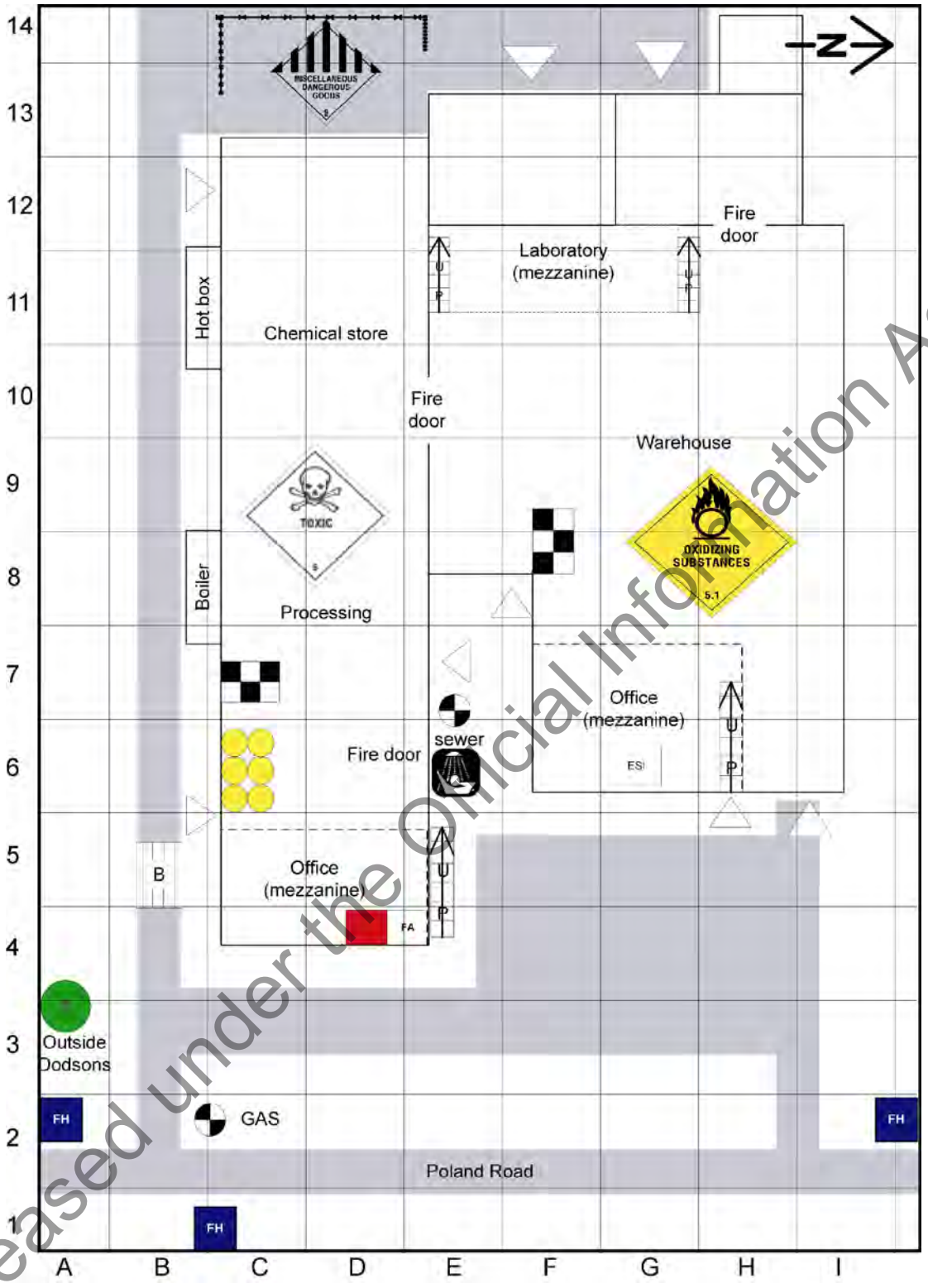


Figure 4.18(b): Operational plan page 2 layout for ChemColour Industries (example)
(Source – NZFS 2006)

Section 5: Ensuring Incident Ground Safety

Section Contents

Section 5: Ensuring Incident Ground Safety

Introduction

This document is Section 5 of the New Zealand Fire Service (NZFS) Incident Management – Command and Control Technical Manual.

Ensuring Incident Ground Safety

5.1 Safety as an absolute priority

5.1.1 Big picture thinking

It is important that the OIC at any given incident takes a holistic view of safety issues. It is not simply a matter of appointing somebody to 'keep an eye on things'. In the operational setting, safety of personnel should condition all decision-making, from turn-out to return to station. It should also be linked to the process of information gathering (see Section 3.2.9 and 3.2.10).

5.1.2 All personnel involvement

In keeping with the requirements of the Health and Safety in Employment Act 1992, all NZFS personnel must accept and exercise responsibility (within their limits of competence) for the health and safety of themselves and others. This applies to every environment that may be deemed (under the Act) a 'place of work'.

However, given the nature of emergency response situations, it is the incident ground that presents the greatest area of risk to personnel. Consequently, all firefighters must maintain the highest level of alertness throughout the entire duration of an incident. This responsibility will be greatest for officers with command responsibilities, since the decisions they make might place personnel 'in harm's way'.

5.1.3 'Rules of engagement' – the safe person concept

The assessment of risk associated with the selection of tactics has been discussed at length in the previous chapter. The three basic principles of the Safe Person Concept provide clear 'rules of engagement' for the Incident Controller which must be complied with.

However, while the benefits to be derived from selected tactics are usually easy to see, the risks may be less obvious. The judgements required are certainly more complex and demand high levels of professional competence. Competence can only be assured through appropriate training and qualification. Once a hazard is recognised, a control measure must be deployed to 'eliminate, isolate or minimise' its effects and the control communicated to those on the incident ground.

5.2 Incident ground safety: the big picture

5.2.1 Tiered approach

Incident ground safety cannot be effectively managed on a haphazard basis. The service takes a tiered approach by which all personnel contribute to the safety of the firefighter at the 'sharp end'.

This approach is illustrated at Figure 5.1 below.

Figure 5.1: Tiered approach to incident ground safety

5.2.2 The strategic level

Senior management has a responsibility to formulate and promulgate the framework in which incident ground safety can be managed. This is the strategic level, and will provide for the following:

- Policy – describing the attitude and intent of the NZFS in regard to health and safety. These policies are available on FireNet
- Generic Hazard Register – identifying common hazards associated with incident types and appropriate controls that have been applied
- Priorities – identifying through ongoing monitoring and auditing safety issues of greatest concern and promulgating measures to address them
- Resourcing and commitment – ensuring that appropriate resources are provided to meet the implications of policy and emerging priorities. This will include training, and dealing with urgent actions
- Proactive culture – promoting the required level of awareness and value that should be attached to health and safety generally and on the incident ground specifically
- Standards of competence – identifying the standards that define the required levels of operational competence at all ranks and enforcing them.

5.2.3 The tactical level

At the tactical level officers and firefighters must devise and utilise tools intended to enhance safety. These include:

- Hazard identification – working to maintain awareness of actual and potential hazards within the turnout area
- Risk and tactical planning – documenting key operationally relevant data for identified risk locations and the optimum responses to likely emergency situations occurring at those locations
- Implementation of control measures – working with identified risk locations to isolate, eliminate, or minimise potential hazards that might be encountered during emergency response. This is the primary aspect of Safety Officer duties. Adequate control measures, e.g. heightened supervision, signage, targeted briefings etc. will allow operations to continue in a safe manner
- Operational Instructions – best practice regulations intended to maximise response effectiveness and safety of personnel
- Local procedures – arrangements between fire Districts and local stakeholders intended to address peculiar or extraordinary local situations.

5.2.3.1 Example

BA crews report a large hole on the second floor of an industrial building. The hazard is reported to the Safety Officer and all crews assigned to the sector are briefed on the hazard and the controls put in place. Typical controls might be:

- A safety briefing or verbal warning on the need to take extra care when in the area
- Physical barriers put in place when conditions allow.

5.2.4 The operational level

On the incident ground itself, i.e. at the operational level, officers and firefighters are necessarily more reactive and must respond in a dynamic manner as the incident develops. The principal tools deployed here will be:

- Dynamic risk assessment – the Safe Person Concept (already covered in Section 3)
- The exercise of Safety Officer responsibilities – either directly as the IC of smaller scale incidents, or through the appointment of a dedicated person or persons and specific control measures.

5.3 Role and responsibilities of the Safety Officer

5.3.1 General responsibilities

Under CIMS, the Safety Adviser is responsible for monitoring safety conditions and developing measures for ensuring the safety of all assigned personnel (Blue Book page 18). He/she reports directly to the IC. Despite the presence of a dedicated Safety Officer, all personnel are charged with the responsibility for assessing and managing the risk they encounter directly on the incident ground. To this end, Operational Instruction *IS 1 – Operational Safety* requires Region Commanders to ensure that all operational personnel are adequately trained in the Safe Person Concept.

Any firefighter or officer encountering a previously unidentified hazard on the incident ground must immediately notify the IC or (in the case of larger scale incidents) their immediate commander.

Officers acting as IC have additional levels of responsibility. Whether or not a Safety Officer is appointed, the incident controller must ensure that:

- All firefighters act in crews under the control of a crew OIC – who may be a Senior Firefighter
- Operational instructions are correctly adhered to
- The identity and location of all personnel present on the incident ground is known at all times
- BA entry control procedures are correctly adhered to
- An appropriate incident management structure is established
- The incident is evaluated for priorities
- Hazards are identified, control measures developed and communicated to all personnel on the incident ground
- Adequate direction is given for the safe conduct of operations
- Effective control is maintained at all times
- Progress is monitored against selected strategy and tactics.

5.3.2 Appointment of a dedicated NZFS Incident Safety Officer (ISO)

The complexity or scale of an incident may escalate risk or place the monitoring of risk beyond the capacity of the Incident Controller. In these circumstances he/she should appoint a dedicated NZFS Incident Safety Officer (ISO). This is a role that differs from that described in Section 2.4.6 above, in that the NZFS ISO reports directly to the OIC Fire and is responsible for the safety of NZFS operations. They have an indirect link to the CIMS Safety Officer. At a small incident that may have other agencies in attendance, the NZFS ISO will have an oversight role for them as well if they have not appointed their own agency Safety Officer.

5.3.2.1

Officers must recognise that their ability to process and evaluate information has natural limits. A refusal to delegate responsibilities through a subordinate command structure can only increase risk.

5.3.2.2

Where it is necessary to appoint a NZFS ISO, the OIC Fire must give consideration to someone who has the necessary levels of skill and experience. These skills should include:

- Building construction
- Hazard assessment
- Fire behaviour
- Incident types
- Fire attack or incident management tactics
- Command and control.

5.3.2.3

At times the OIC will be faced with the need to appoint an ISO from a less experienced pool of firefighters. On these occasions, the ISO will need to work closely with Sector Commanders and the OIC Fire until he/she can be relieved by a more experienced person.

5.3.3 Mandatory appointment of a dedicated NZFS Incident Safety Officer (ISO)

Operational Instruction *IS 1 – Operational Safety* sets out conditions under which the appointment of a dedicated NZFS Safety Officer is mandatory. A Safety Officer must be appointed when:

- More than 16 personnel are committed to operations at an incident (from all agencies present)
- Hazardous substances are involved and a hot zone cordon is established
- Live fire training is being undertaken
- Operating in unusual/unfamiliar circumstances e.g. silo rescue, cave rescue, cliff rescue, white water rescue, trench collapse etc.
- The NZFS is not the lead agency (CIMS incident) and a Safety Officer is required specifically for NZFS operations. This person then becomes the NZFS Incident Safety Officer and adviser to the appointed Incident Safety Officer on safety issues related to Fire operations
- The incident involves high rise operations.

N.B. On appointment, the dedicated Safety Officer must don the appropriate identification jerkin (see Section 4.3.5).

5.3.4 Safety Officer – Primary responsibility

The Incident Controller will task the Safety Officer to monitor operations on the incident ground (or part of the incident ground) to ensure that the tactics employed are not exposing firefighters, or others, to unacceptable levels of risk.

If unacceptable risk is encountered, the Safety Officer has a responsibility to recommend appropriate actions to OIC Fire to eliminate, isolate or minimise observed risks.

5.3.4.1

If the risk is deemed unacceptable (and imminent), he/she may order the immediate withdrawal of firefighters to a place of safety, bearing in mind any potential to increase the risk to other crews by so doing. In these circumstances the OIC Fire must be informed as soon as possible of actions taken. Usually, however, the NZFS Safety Officer should advise the Fire Operations Commander, who will decide what action should be taken.

5.3.4.2 Primary functions

In order to discharge this responsibility successfully, the Safety Officer should:

- Be aware of specific objectives to be achieved, and the overall plan
- Be able to identify the hazards which may lead to injury or illness
- Maintain direct communications with the OIC Fire and make appropriate recommendations regarding actions to eliminate, isolate or minimise hazards, thereby reducing the risks
- Monitor hydration levels, the use of protective clothing and safety equipment to ensure that the best available protection is utilised
- Make appropriate recommendations to the OIC Fire on any matter affecting the safety or welfare of NZFS personnel or members of the public
- Maintain a hazard register (showing hazard controls) and a safety activity log for the incident. He/she should also ensure that all relevant Significant Hazard Exposure Protocols (SHEPS) forms are completed as required
- Ensure the need for post-incident monitoring of those attending an incident is notified to the Region Health and Safety Manager – when the nature of the potential exposure warrants it
- Ensure that the nature of any potential exposure is notified to any treatment provider at the time of the incident
- Advise the Region Health and Safety Manager of any actions taken in respect of potential exposures
- Inform the OIC Fire of any ongoing reporting matters post-incident.

5.3.4.3 Appropriate persons

Any member of the NZFS may be appointed as a Safety Officer at the direction of the OIC Fire. Personnel appointed as a dedicated Safety Officer are to be relieved of all crew responsibilities in order to carry out their role.

It is important that persons appointed as a Safety Officer both:

- Are able to identify unsafe conditions and practices as well as hazards (refer to NZFS training module Hazard Management), and
- Have a current working knowledge of the Safe Person Concept and Operational Instructions.

5.4 Principal hazards for firefighters on the incident ground

5.4.1 The incident ground hazardscape

The Safety Officer must be prepared to recognise and deal with a wide-ranging catalogue of potential hazards on the incident ground. When these are encountered he/she must apply the principles of the Safe Person Concept through dynamic risk assessment. Most hazards, if identified and managed properly, will not pose sufficient threat to call a halt to operations or a change of tactical mode. However, Safety Officers must be competent to recognise those that do represent a significant threat, and then to act quickly to prevent firefighters coming to harm.

5.4.1.1

The incident ground hazardscape is complex but can be more easily understood if potential hazards are clustered into groups that can be reasonably expected to occur in association with different types of incident, e.g. structure fires, chemical spills, vegetation fires etc. In the stressful context of the incident ground, Safety Officers may struggle to apply this analysis and be proactive against hazards without some assistance.

5.4.1.2 Accidents

These refer to those apparently unpredictable events that result in injury and might occur in any workplace.

5.4.1.3 Common incident ground hazards

These refer to hazards commonly presented by the incident environment itself. These are largely predictable and can usually be managed through adherence to controls listed in the Generic Hazard Register (when published). Effective management nevertheless requires constant vigilance.

5.4.1.4 Chemical hazards

These refer to the common safety issues arising from the presence of hazardous chemicals. They represent a high level of unpredictability and early identification is essential for safe management.

5.4.1.5 Biological hazards

These refer to pathogens and organisms that pose significant dangers to the health of firefighters exposed to them.

5.4.1.6 Radiological hazards

These are hazards notified to the Comcen and Regions by the National Radiological Laboratory.

5.4.1.7 Physiological hazards

These refer to injuries sustained through incorrect physical techniques or by exceeding individual capacity.

5.4.2 Constant physiological risk

All officers must be aware that the physical capacity of firefighters is not a constant – not only does it vary from individual to individual, it will vary according to environmental conditions and duration of work. The ever-present threats to health and well being are:

- Heat stress
- Cardiac arrest (particularly in older firefighters).

It is essential that firefighters are tasked appropriately and monitored carefully for signs of physical distress. If signs of significant fatigue are detected the Safety Officer, should report this to the Sector Commander/OIC Fire, requesting withdrawal of the whole crew for rehabilitation.

5.5 Safety: key tactical principles

5.5.1

Clearly, the potential for injury increases as the number of personnel deployed increases. Risks increase further relative to the complexity of the incident.

The OIC Fire and the dedicated Safety Officer (if appointed) must ensure that:

- No NZFS personnel move beyond the Forward Control Point to the incident ground unless they are actually tasked to do so
- All personnel move on to the incident ground via the designated entry point and the ICP, unless directed otherwise by the OIC Fire
- All personnel on the incident ground are identified to and tasked by the ICP
- All personnel being rested or re-equipped are held in staging or a designated recommissioning/rehabilitation sector while this occurs
- No personnel are allowed to ‘freelance’
- All personnel operate with appropriate PPE.

5.5.2 Monitored tactical positioning

Once the risks associated with selected tactics have been deemed acceptable, the Safety Officer must focus on observing how firefighters are deployed to put those tactics into action. Experience shows that considerable caution must be exercised if firefighters are, for example:

- Working in large, complex structures in which disorientation is possible
- In a position where fire can move in behind them (a common occurrence in vegetation fires)
- In structures with only one means of entry/exit
- In areas where retreat may be difficult
- Working above the fire – either the floor above or on the roof
- Working beneath involved roof structures
- Fighting basement fires
- In areas where there is a potential for flashover or backdraft to occur
- In areas where hazardous substances may be stored
- Using an aggressive exterior attack from opposing positions
- Working in the vicinity of aerial appliances.

5.5.2.1

When performing exceptionally hazardous tasks (e.g. snap rescue, hot zone work, making safe LPG tanks) only the absolute minimum number of personnel should be used, and they should be withdrawn as quickly as possible.

The situation in any of the above scenarios can degenerate rapidly. Consequently, Safety Officers must be prepared to act quickly and decisively to withdraw firefighters or improve their positions if the risk becomes unacceptable. Any such decision must be immediately reported to the Incident Controller.

5.5.3 Monitored structural status

Structural collapse is an increasing risk to firefighter safety. This is largely due to the increasing use of lightweight materials and changes in construction methods and standards. OICs/Safety Officers therefore need sufficient understanding of building design and the likely effects of fire upon structural members to be able to recognise impending collapse. The following are examples of clear indicators of potential building collapse:

- Sagging roof ridge lines
- Cracks or bulging exterior walls
- Water or smoke leaking out through exterior walls
- Creaking or snapping sounds
- Excessive flexing of floors or roof areas
- Twisting or flexing of interior walls
- Large scale signage attached to walls.

5.5.4 Structural collapse – the likely construction types

When making tactical decisions or monitoring tactical positioning, Incident Controllers/Safety Officers need to look for the structural features that are known to contribute significantly to structural collapse. Among the most common are:

- Large, roofed, unsupported spaces e.g. supermarkets, warehouses, sports halls etc.
- Cantilevered decks or canopies
- Secondary ornamental walls
- Roofs supported by lightweight or bowstring trusses
- Unprotected metal columns/support systems
- Large integrated sandwich panels (LISPS)/foam sandwich panels
- Tilt slab construction.

If structural collapse seems imminent, Safety Officers must ensure that the OIC Fire is advised that all personnel are to be immediately withdrawn to a safe position well beyond the collapse zone, and then accounted for.

5.5.5 Roof operations

Roof operations may place firefighters at extreme risk and should only commence with great caution. Officers should assess roof structures carefully before committing firefighters. Firefighters should either not be committed or be immediately withdrawn if any sign of structural compromise is encountered.

5.5.6 High-rise operations

All fires in high rise buildings should be regarded as high risk, and a Safety Officer should therefore always be appointed. Safety considerations revolve mainly around:

- Accessing the various levels via stairways and lifts
- The risk of injury caused by falling debris.

Officers should be fully conversant with Operational Instructions - *S1 Multi Story Buildings*.

5.5.7 General evacuation

Safety Officers have the authority to order evacuations if it is necessary for a general evacuation from the building in the event of imminent danger. It would in practice be carried out through the OIC. Any decision taken by the Safety Officer that might impact on incident management must be notified as soon as possible to the OIC Fire.

5.5.7.1

The recognised general evacuation signal is the simultaneous sounding of all appliance sirens and the use of the evacuation command over all incident ground radio channels.

5.5.7.2

In the event of a general evacuation, the Safety Officer must work with the OIC Fire and subordinate commanders to ensure that:

- Firefighters shut down deliveries at the branch
- All personnel withdraw to a place of safety and report to Entry Control and uplift tallies
- All personnel return to their appliance
- Crews uplift nominal roll tallies/T cards
- All personnel are accounted for
- The OIC Fire/ICP are advised that all personnel are accounted for (or who remains unaccounted for).

5.5.8 Follow-up responsibilities

The person appointed to the role of NZFS ISO reports to the Incident Controller, who in turn must ensure that:

- Any accidents, injuries and near misses to NZFS personnel or members of the public are reported (see NZFS Health & Safety Manual October 2004 edition section 1.13, 5.1-5.3)
- They brief the Regional Health and Safety Adviser of any assessment or action that may have an ongoing impact on those who attended the incident, e.g. exposure to hazardous materials
- The building owner or agent is briefed on hazards that remain, subsequent to the cessation of NZFS operations. The owner should subsequently be notified of these hazards in writing.

Safety Officers should be prepared to attend the OIC's incident debrief to assist with the clarification of health and safety issues that may have arisen.

Section 6: Incident Debriefing

Section Contents

Section 6: Incident Debriefing

Introduction

This document is Section 6 of the New Zealand Fire Service (NZFS) Incident Management – Command and Control Technical Manual.

Incident Debriefing

6.1 The learning organisation

6.1.1 NZFS values and business excellence

Among our organisational values, the NZFS places great emphasis upon skill and integrity. This implies that we take pride in our professional abilities (skill) and that we are always prepared to examine our performance critically for potential improvement (an aspect of integrity).

This philosophy is in keeping with the Business Excellence (BE) requirement for continuous improvement. Ongoing review of our performance directly addresses the following BE criteria:

- Category 2. – strategy development & deployment
- Category 3. – customer relationships and satisfaction
- Category 4. – measurement, analysis and knowledge management
- Category 5. – workforce focus
- Category 6. – process management
- Category 7.1 – product and service outcomes
- Category 7.5 – organisational effectiveness results.

Consequently, Business Excellence provides a framework in which NZFS values can operate in a practical and meaningful manner.

6.1.2 Ownership

Continuous improvement depends absolutely upon commitment from the whole organisation – but particularly from those at the service delivery end. Every firefighter must be encouraged to contribute to the processes available and to take real responsibility for performance improvement. The collective nature of continuous improvement also underpins the NZFS values of serving our communities, integrity, adaptability, skill and comradeship.

Ownership of this kind underpins the contemporary concept of the learning organisation. All officers must acquire the skills needed to bring firefighters 'into the loop' of continuous improvement.

'Learning organisations are organisations where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning to see the whole together.'

Peter Senge.

The Fifth Discipline – Currency Doubleday, New York 1990

6.2 Need for process: operational evaluation

6.2.1 NZFS systemic approach

Section 170 (b) of the Fire Service Act 1975, requires the National Commander to 'ensure that the Fire Service is maintained in a state of operational efficiency and readiness and conforms with the Act.'

Operational 'readiness' must reflect the constant changes in the emergency response environment, and our ability to adapt to them. An accurate assessment of operational readiness cannot be made without a carefully considered and authorised process. The service has evolved a 4-tier system with which all officers should be familiar. This is illustrated at Figure 6.1 on the following page.

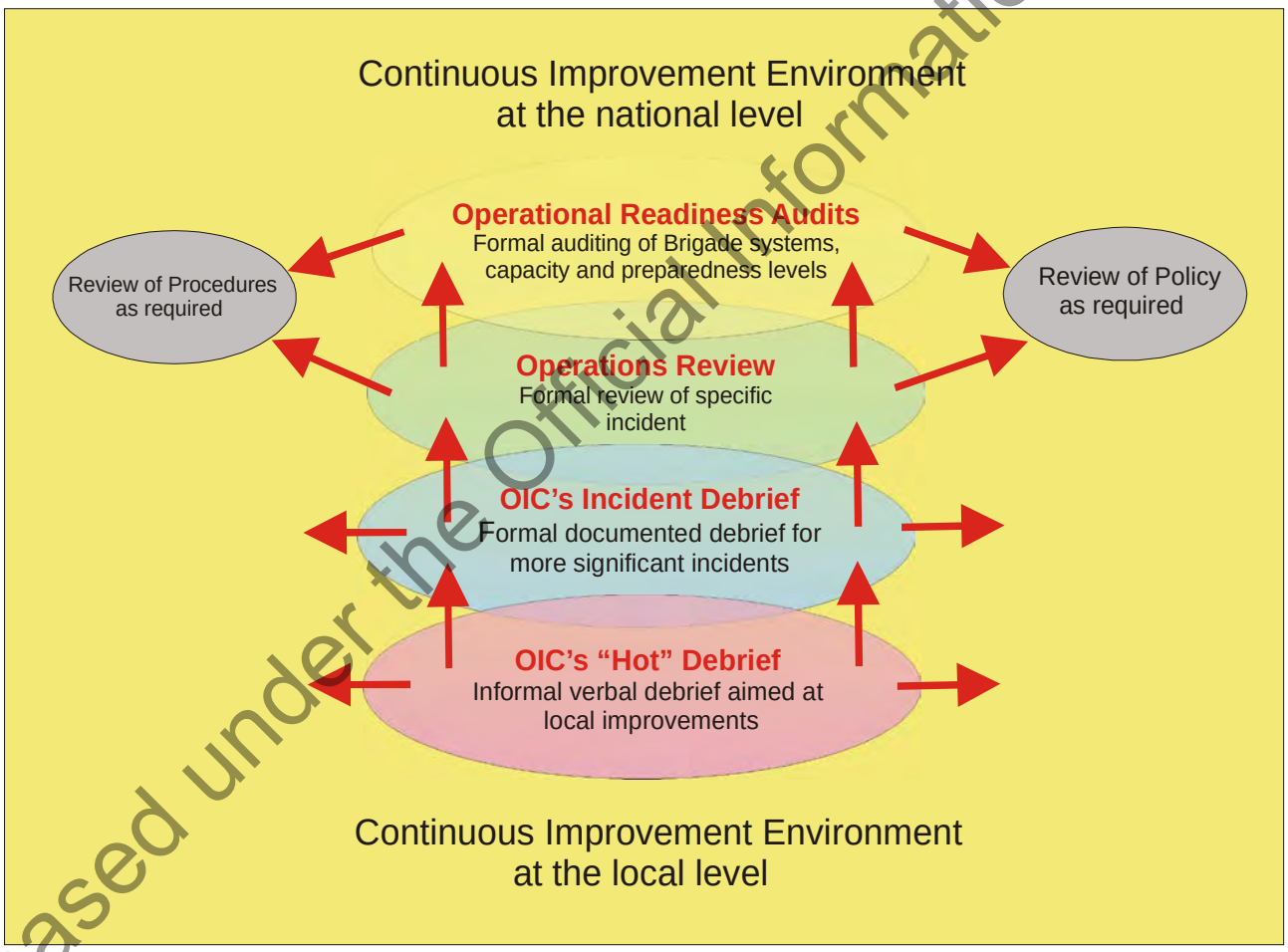


Figure 6.1: The continuous improvement environment
(Source – NZFS 2006)

6.2.2 Operational readiness audit

This is the highest internal level of operational evaluation. Its main objectives are:

- To ensure that the National Commander's obligations are being met
- To assess the operational readiness of an operational unit (the vehicle(s), personnel, and equipment assigned to that unit).

The audit system requires every Brigade to be assessed for its operational readiness at least every three years. The audit addresses every aspect of preparedness, e.g.:

- Recorded training levels
- Equipment records
- Testing and maintenance records
- Availability of resources.

Following the audit a report is compiled to identify areas for improvement and actions required to ensure these improvements occur. Reporting is documented through the Station Management System (SMS).

6.2.3 The operations review

An operations review is intended to examine particular incidents that have thrown up occurrences from which lessons may be learned, and to ensure that good practice is documented for the benefit of operations in general.

The stated objectives of an operations review are to:

- Improve operational effectiveness and efficiency in an end-to-end service delivery
- Improve operational procedures, particularly in regard to safety and best practice
- Achieve compliance with the Fire Service Act 1975
- Provide a measure of operational performance
- Identify training needs
- Provide evidence of hazard management as part of the NZFS health and safety policies as described in the Health and Safety Manual.

Note: The operations review is also intended to identify innovations and good practice and to ensure that these are communicated nationally.
According to perceived significance, an operational review may be sponsored by:

- The National Commander
- The Fire Region Commander
- The Chief Fire Officer.

On completion of the review a report is compiled and forwarded to the sponsor. The sponsor then assumes a responsibility for developing a Corrective Action Plan and ensuring that it is successfully put into effect.

6.2.4 The OIC's incident debrief

This is a formal, structured debrief managed by the OIC of the incident in question. It would normally be conducted on-station at a time when all concerned are able to give the matter full attention.

The debriefing process can be greatly assisted by the use of a structured format that ensures all aspects are properly addressed. A template is provided at Appendix 1 to this section and will become available electronically.

Formal debriefing of this kind should be reserved for the more significant incident when an opportunity for learning and improvement clearly exists. The completed debriefing document should be retained and used to ensure that emergent training needs, health and safety issues etc. are subsequently acted upon.

6.2.5 The OIC's 'hot' debrief

This is the lowest (but arguably most important) level of operational evaluation. Essentially this is a 'hot' debrief, intended to occur shortly after the incident. It should be conducted by the officer that acted as Incident Controller, or by the NZFS Commander. If possible, all firefighters who were in attendance should contribute to the debriefing process.

Debriefing should occur for all those incidents which (at the level of OIC and crew) are acknowledged as indicating issues or problems which need to be resolved, or which offer opportunities for improvement. It is also a natural opportunity for congratulating firefighters for a job well done.

The hot debrief should be regarded as informal, with no need to document the process. As such it should be a natural commonplace occurrence in the workplace.

6.2.6 When to debrief

If the OIC is convinced that nothing of value can be learned, a debriefing is of course unnecessary.

As a guide, the OIC should definitely debrief an incident at which:

- Firefighters have been injured
- The fire has involved fatalities
- Members of the public have been injured through firefighter handling
- Selected strategies or tactics have not worked well
- Equipment has failed or broken down
- SOPs have failed to provide adequate response
- The crew lacked expertise/skills
- There was a breakdown of communications
- There was ineffective interaction with other agencies on the incident ground
- Adverse criticism has been received, e.g. from the public or from associated experts such as a Fire Investigator, Scene of Crime Officer etc.
- Significant damage has occurred to NZFS equipment
- Unnecessary damage has occurred to private property
- Significant ongoing hazards have been identified
- Associated risk plans have proven to be inadequate or ineffective
- There have been National Review triggers.

6.3 The OIC's incident debrief: debriefing process

6.3.1 Basic concepts

It is important that all personnel contributing to the debrief understand the basic purpose and process flow involved.

The objectives are straightforward:

- To identify and acknowledge areas of performance excellence and (if appropriate) ensure that these are promulgated on a wider basis
- To identify areas of performance that require improvement and to action plan for these improvements to occur.

The necessary process flow is summarised by the simple concepts shown in Figure 6.2 overleaf.

6.3.2 Guidelines

All officers need to develop sound debriefing skills. Guidelines for effective debriefing are given below.

Timing: Officers must weigh up operational needs (i.e. for the incident to be fresh in the minds of the crew) against the physical (and perhaps emotional) needs of firefighters to recover and think over what has happened.

If the debrief is likely to be a significant affair it is probably advisable to warn firefighters that it will be taking place during the next shift. This gives you time to get properly organised and for the crew to think things through.

- Select appropriate location i.e. relaxed, comfortable but with adequate facilities, e.g. whiteboard
- Mark-up whiteboard (or flip-chart sheets) to structure session and to capture information. Use the structure of the Incident Debrief Summary form to assist
- Set the scene by pointing out the purpose of the debrief – ensure everybody has 'tuned in'
- Work through the structure indicated by the Incident Debrief Summary form. Build up the picture by gathering agreed information from the rest of the crew. 'Ask don't tell' is a good policy here
- Ensure that discussion is kept positive and a 'no-blame' culture is maintained
- Focus on recommendations for improvement
- Provide an effective summary and indicate 'where to from here' in terms of recommendations
- Invite other agencies where appropriate.

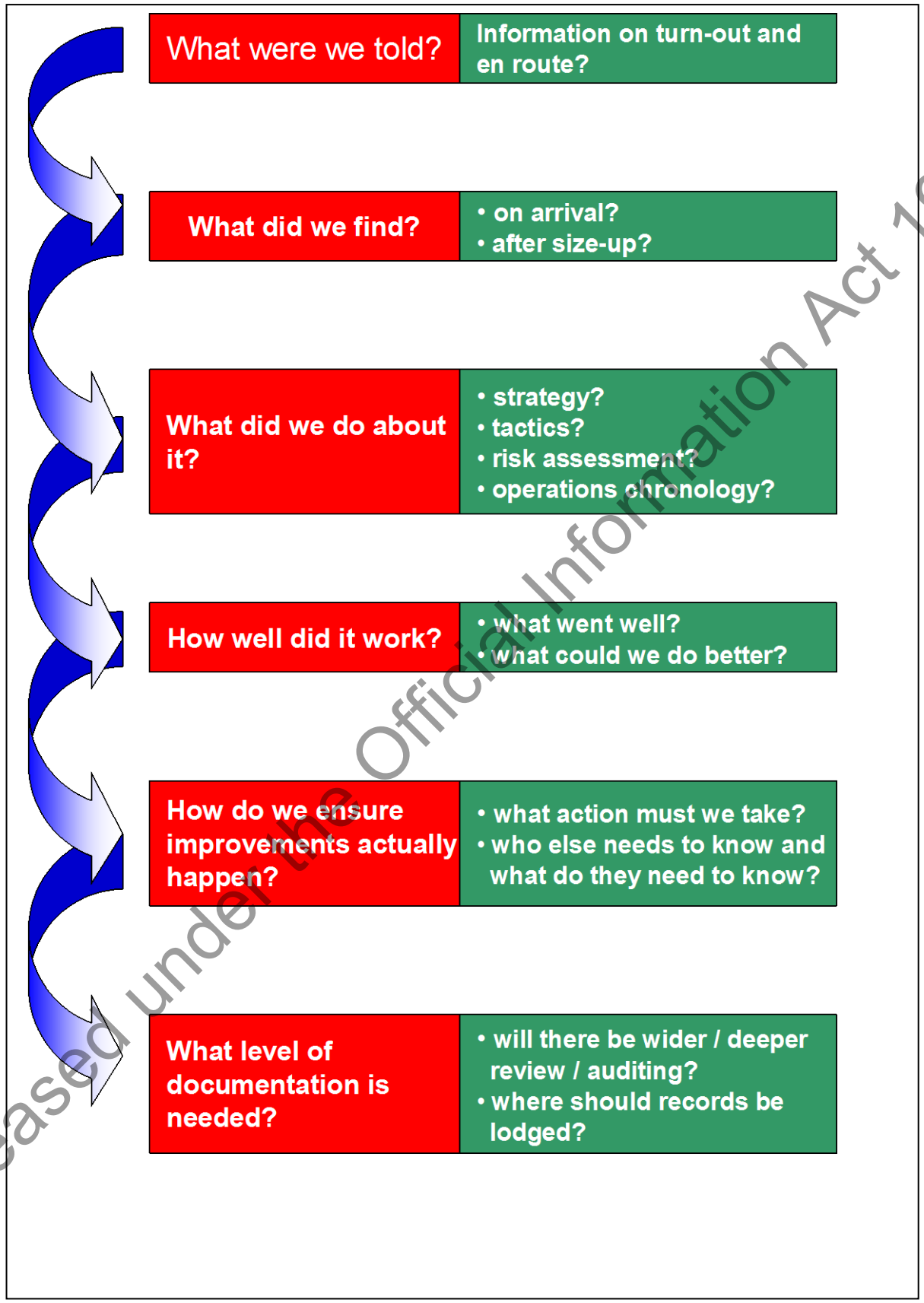


Figure 6.2: Debriefing Process Flow
(Source – NZFS 2006)

6.3.3 Documentation

Appendix 1 to this section shows the OIC's Incident Debrief Summary form. This is intended to:

- Assist personnel conducting debriefing by providing a structure that will effectively cover all the issues
- Provide a means of capturing conclusions obtained in a logically sequential manner.

Completed summaries should be attached to the SMS Incident Report so that they are available for and providing information to other forums e.g. District health and safety meetings, for future reference or as an indicator that improvements have occurred.

Appendix 1

New Zealand Fire Service
OIC's Incident Debriefing Summary

Note: Where possible this should be attached to the SMS Incident Report

New Zealand Fire Service Incident Debrief Record
(Note: this form should be available through MSWord\file\new\reports\debrief)

INCIDENT DETAILS

CAD No.	(click here for report)	Date
Region	Western	Time
Incident Type		
Address/Location of Incident		

Alarm Level

Responses:

Report Submitted by: [UserName]

1 This form should be used for debriefing crews at all 3rd alarm (or greater incidents) or where the OIC believes there are opportunities to improve performance or share experiences.

2. Use this summary form to record conclusions reached as you work through your debrief. It is important to record things as they occur rather than trying to remember them later.

3. Be concise. This is not an official report. It is a summary of the discussion you have had with firefighters concerning a particular incident. Its purpose is to document and feed forward, through the chain of command, matter that may lead to improvements to processes, performance and equipment. It is also intended to identify areas of excellence or innovation that could be adapted for wider use.

In most cases not all the sections will apply. Where this occurs, simply mark the section 'N/A' – (not applicable).

4. Be sure to confirm the contents for accuracy with all concerned before filing or feeding forward.

5. On completion forward a copy of the completed form to your CFO/DCFO and ensure that all necessary reporting/referrals are discussed and actioned.

The form should be attached to the SMS Incident Report in case it is required to assist a formal operations review or provide information to other forums.

Guide to criteria for evaluation of performance

Ref.	Strategic Level Evaluation	Ref.	Tactical Level Evaluation		Operational (Task) Level Evaluation
1	Appropriateness and clarity of selected strategy	1	Effectiveness of risk and tactical planning; appropriateness and clarity of selected strategy relative to selected strategy	1	Turn-out effectiveness
2	Implications of national importance e.g. policy, Operational Instructions etc.	2	Appropriateness and clarity of selected strategy relative to selected strategy	2	Driving skills. And topographical knowledge
3	Implications at regional level e.g. legal, cost recovery etc.	3	Effectiveness of incident action planning	3	Equipment handling e.g. ladders, waterway etc.
4	Implications at District level e.g. local procedures	4	Appropriate structuring of the incident ground	4	Pump operation
5	Inter-Brigade co-operation	5	Command and control systems; chain of command, comms etc.	5	Systems of work e.g. search and rescue; entry control; decon. etc.
6	Significant resource deficiencies	6	Effectiveness of incident ground support systems support systems	6	Safety monitoring - awareness of significant safety risks
7	Significant health & safety issues	7	Safety monitoring	7	BA procedures
8	Significant communications issues	8	Effectiveness of dynamic risk assessment	8	First aid and casualty handling
9	Environmental impact	9	General scene management	9	Discipline
10	Significant impact on the public	10	Understanding of Operational Instructions and local procedures	10	Team working and cooperation with other Brigades
11	Media and PR issues e.g. perception of the Fire Service	11	Media and PR issues e.g. perception of the Brigade	11	Communications; radio procedures etc.
				12	Interacting with the public
N.B. The above issues are for guidance only. The list should not be regarded as comprehensive.					

Incident response

	Yes	No	Not Applicable
Comcen: Time of Call to Station alert: Acceptable			
Station Alert to K1 Time: Acceptable			
K1 to Arrival Time: Acceptable			
Time for All Required Notifications: Acceptable			
Any Delays in requested attendances to incident ground?			
Recommendations?			

Operational planning

		Yes	No	Not Applicable
2.1 PDA:	Correct?			
	Effective?			
	Recommendations?			

		Yes	No	Not Applicable
2.2 Risk Plan:	In place?			
	Current?			
	Recommendations			

Additional staffing (if applicable)

Call Back/Call out staff	
Time of call back/call out:	
Number attending:	
Time to respond (K1):	
Recommendations/Comments:	

Fire Police/Operational Support	
Time of recall:	
Time to respond (K1):	
Recommendations/Comments:	

Other agencies (if applicable)

Agencies attending:	
Issues arising?	

Incident ground performances

	Information obtained From Comcen: On arrival – from on site sources: From size-up: • Rescue: • Exposures: • Containment: • Extinguishment: • Overhaul:
	Resources available On arrival: Called for and dispatched:

	Evaluation – strategy (see Appendix A for guidance on what to consider here) Areas for improvement:
	Evaluation – tactics and risk assessment (attach sketch map if this assists) (see Appendix A for guidance on what to consider here) Areas for improvement:
	Evaluation – operations/tasks (see Appendix A for guidance on what to consider here) Areas for improvement:

Command structure

Draw simple chart of structure established to deal with the incident.

Was this structure effective?

Yes:
For the most part:
No:

If 'No', what changes would you make if faced with a similar incident in future?

Incident Ground Communications

Issues identified (if any):

Recommendations:

Required actions (to ensure operational improvements are attained)

	Injuries sustained/health issues (if any) Action taken:
	Equipment failure/inadequate performance (if any) Issues identified: Recommendations:

Follow up/referrals

.	**Hazards identified requiring notification** (enter brief details). Serious: Non-serious: Data entered into OSH Kiosk: H& S Co-ordinator advised:

	Support offered (enter brief details) CISM: FAIP: Victim Support: Other:
	Referrals (enter brief details) Health Safety functional group: Health and Safety Coordinator: Equipment and Appliance Functional Group: Region Training Staff: Volunteer Support Officers: Operational Planning Officer: Fire Safety: Community Education Officer:

Appendix 2

Appendix to Incident debrief summary form

Suggested evaluation criteria

Ref.	Strategic Level Evaluation	Ref.	Tactical Level Evaluation		Operational (Task) Level Evaluation
1	Appropriateness and clarity of selected strategy	1	Effectiveness of risk and tactical planning Appropriateness and clarity of selected strategy relative to selected strategy	1	Turn-out effectiveness
2	Implications of national importance e.g. policy, Operational Instructions etc.	2	Appropriateness and clarity of selected strategy relative to selected strategy	2	Driving skills and topographical knowledge
3	Implications at regional level e.g. legal, cost recovery etc.	3	Effectiveness of incident action planning	3	Equipment handling e.g. ladders, waterway etc.
4	Implications at District level e.g. local procedures	4	Appropriate structuring of the incident ground	4	Pump operation
5	Inter-Brigade co-operation	5	Command and control systems; chain of command, comms etc.	5	Systems of work e.g. search and rescue; entry control; decon. etc.
6	Significant resource deficiencies	6	Effectiveness of incident ground support systems support systems	6	Safety monitoring - awareness of significant safety risks
7	Significant health & safety issues	7	Safety monitoring	7	BA procedures
8	Significant communications issues	8	Effectiveness of dynamic risk assessment	8	First aid and casualty handling.
9	Environmental impact	9	General scene management	9	Discipline
10	Significant impact on the public	10	Understanding of Operational Instructions and local procedures	10	Team working and cooperation with other Brigades.
11	Media and PR issues e.g. perception of the Fire Service	11	Media and PR issues e.g. perception of the Brigade	11	Communications; radio procedures etc.
				12	Interacting with the public
N.B. The above issues are for guidance only. The list should not be regarded as comprehensive.					

Section 7: Authority for Incident Management

Note: The Fire and Emergency New Zealand Act 2017 replaces previous powers granted.

From 1 July 2017, officers and firefighters get their powers to fight fires and deal with other incident types by being authorised persons. The Notice of Authorisation sets out all of the duties, functions and powers of an authorised person and list the names of all of the operational personnel in the station, brigade or fire force who are authorised persons.

See the interim *M1 POP Command and control policy* for details on who from Fire and Emergency New Zealand is in control of an incident.