Section 3: Risk Assessment, Strategy and Tactics

Section Contents

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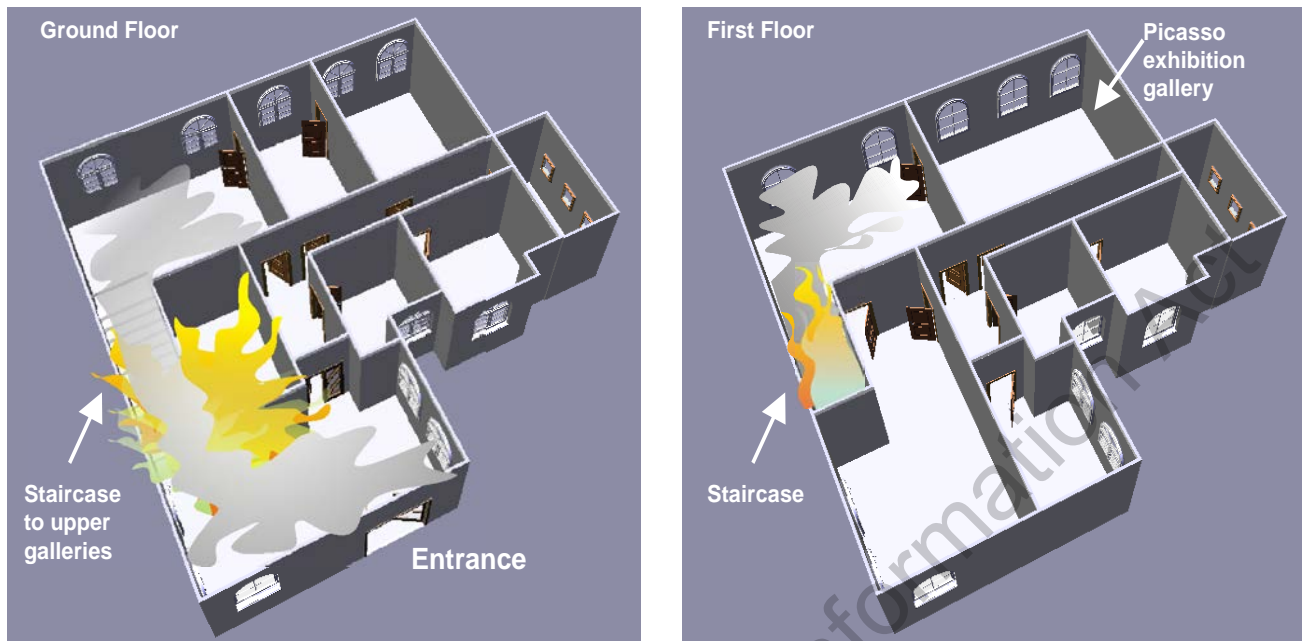
Figure 3.2: Scenario – Fire in arts museum, Ground and First floor views
(Source – NZFS 2006)

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.

An operational task includes:

3.1.8

- 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.

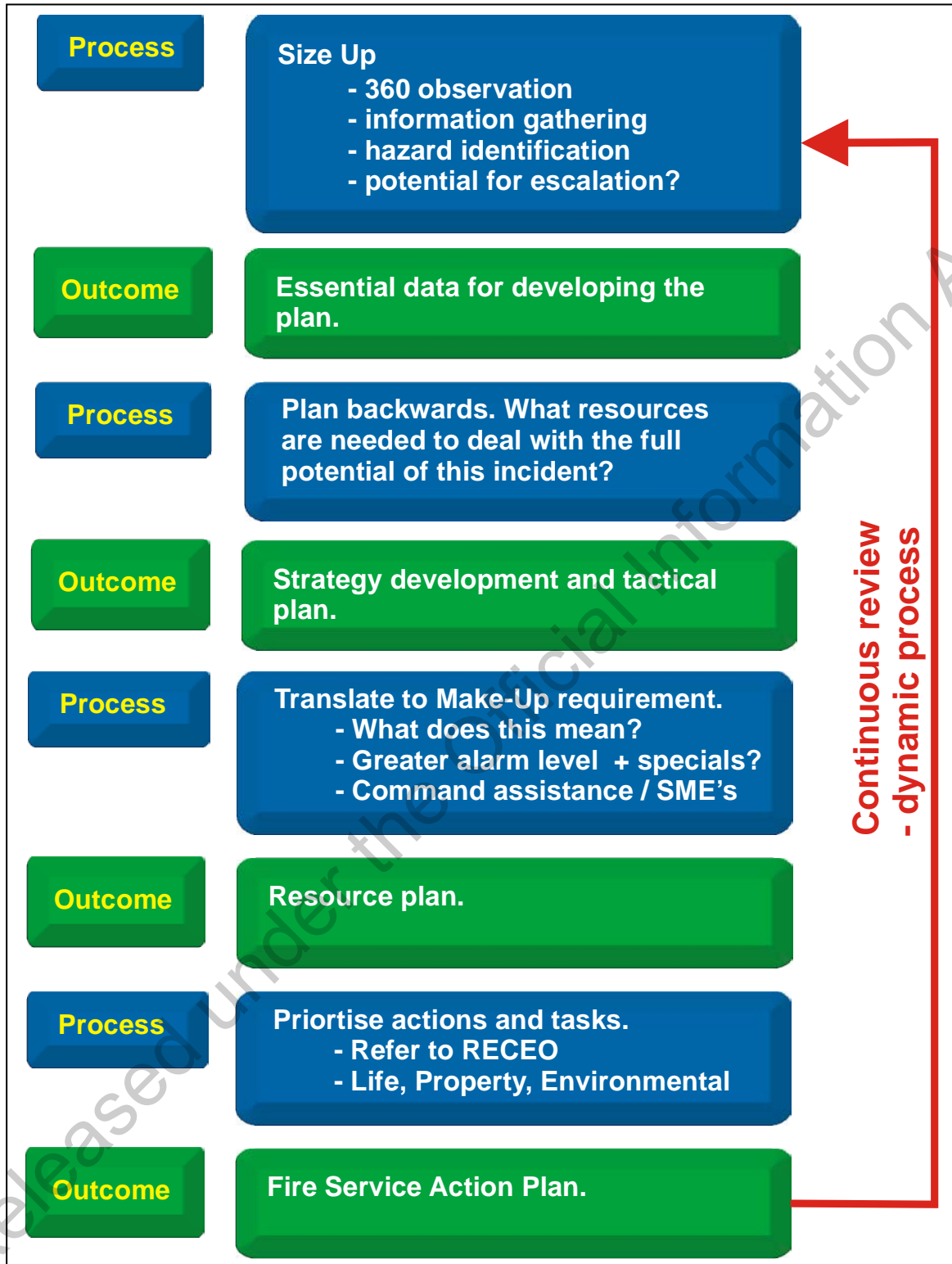| Process | Size Up
    - 360 observation
    - information gathering
    - hazard identification
    - potential for escalation? |
Outcome	Essential data for developing the plan.
Process	Plan backwards. What resources are needed to deal with the full potential of this incident?
Outcome	Strategy development and tactical plan.

Process	Translate to Make-Up requirement.
	    - What does this mean?
	    - Greater alarm level + specials?
	    - Command assistance / SME's

Outcome	Resource plan.

Process	Priortise actions and tasks.
	    - Refer to RECEO
	    - Life, Property, Environmental

Outcome	Fire Service Action Plan.

Continuous review - dynamic process

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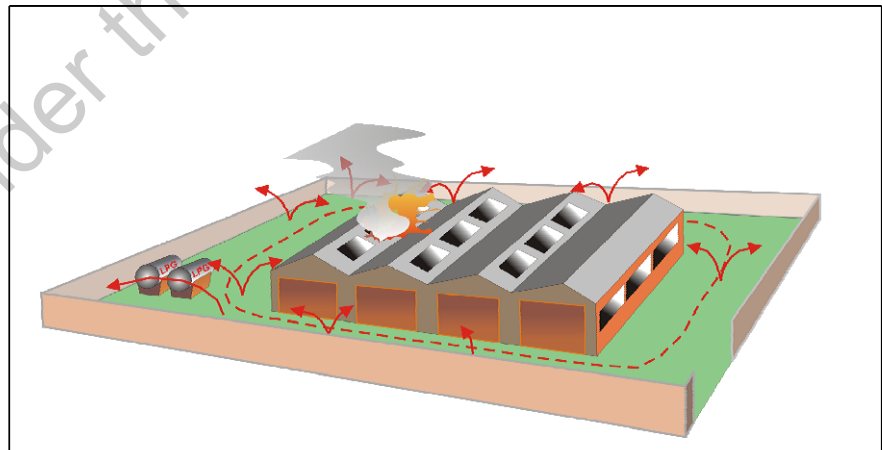
Figure 3.5: 360° assessment
(Source – NZFS 2006)

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 B SAHF – 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?'

> **Translate to Make-Up requirement.**
> **- What does this mean?**
> **- Alarm + specials?**
> **- Command assistance / SME's**

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.

> **Priortise actions and tasks.**
> **- Refer to RECEO**
> **- Life, Property, Environmental**

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.
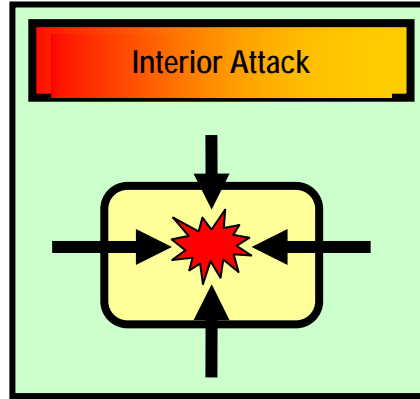
3.4.5 Exterior attack

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.
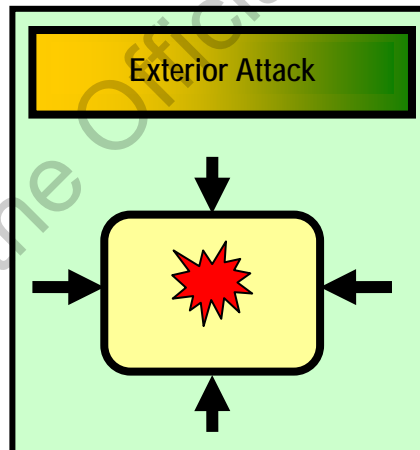
3.4.6 Interior cut-off

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.
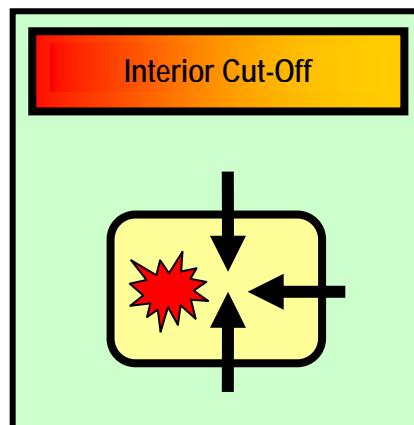
3.4.7 Exterior cut-off

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.
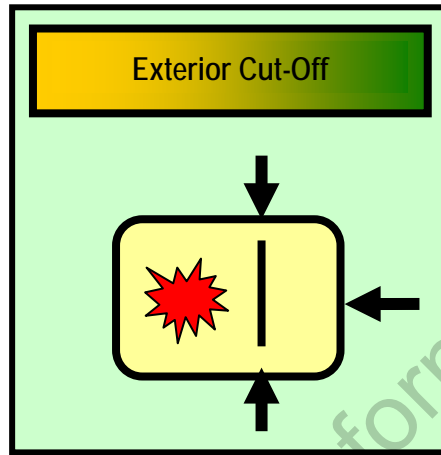

3.4.8 Interior exposure protection

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.
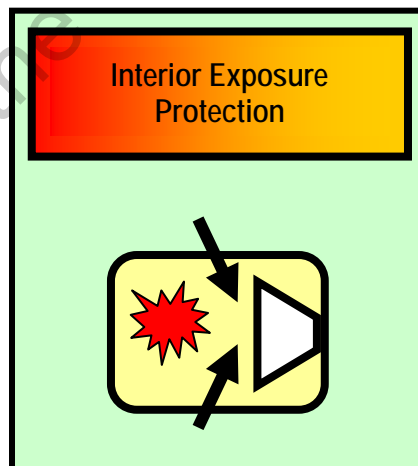
3.4.10 Exterior exposure protection

Exterior exposure protection means:

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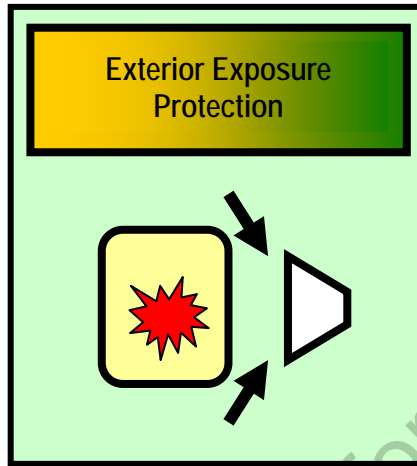

3.4.11 Search and rescue (unsupported and supported)

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.
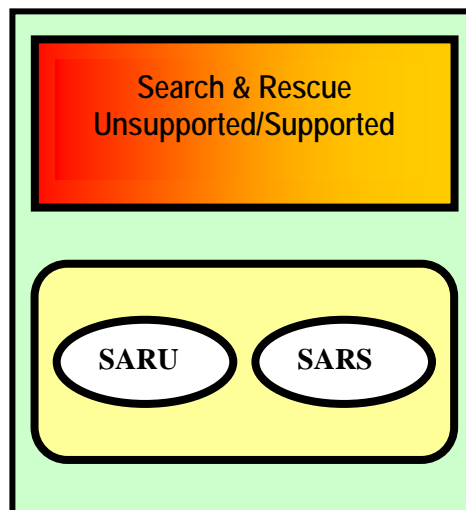
3.4.12
Ventilation/evacuation

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.
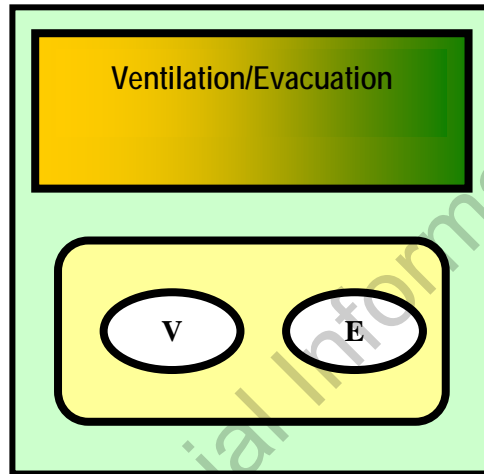
3.4.13 Tactical mode

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.

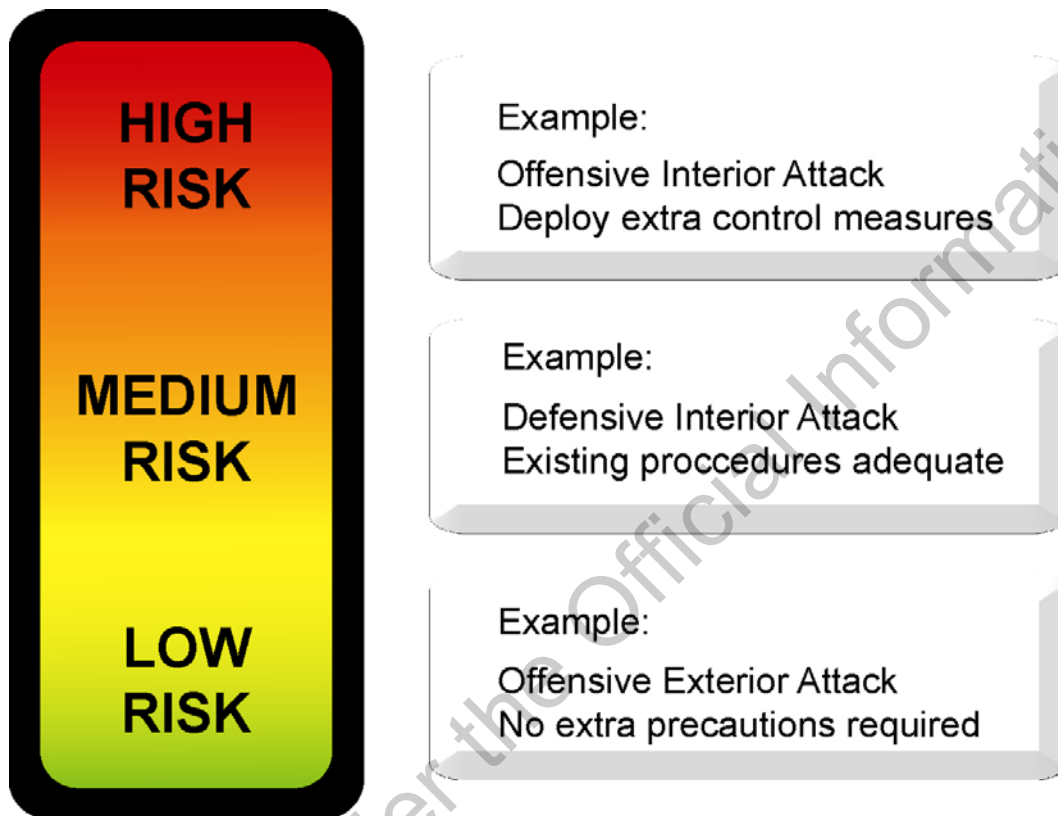3.4.14 Responsibility for determining tactics

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.

HIGH RISK

MEDIUM RISK

LOW RISK

Example:
Offensive Interior Attack
Deploy extra control measures

Example:
Defensive Interior Attack
Existing proccedures adequate

Example:
Offensive Exterior Attack
No extra precautions required

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.
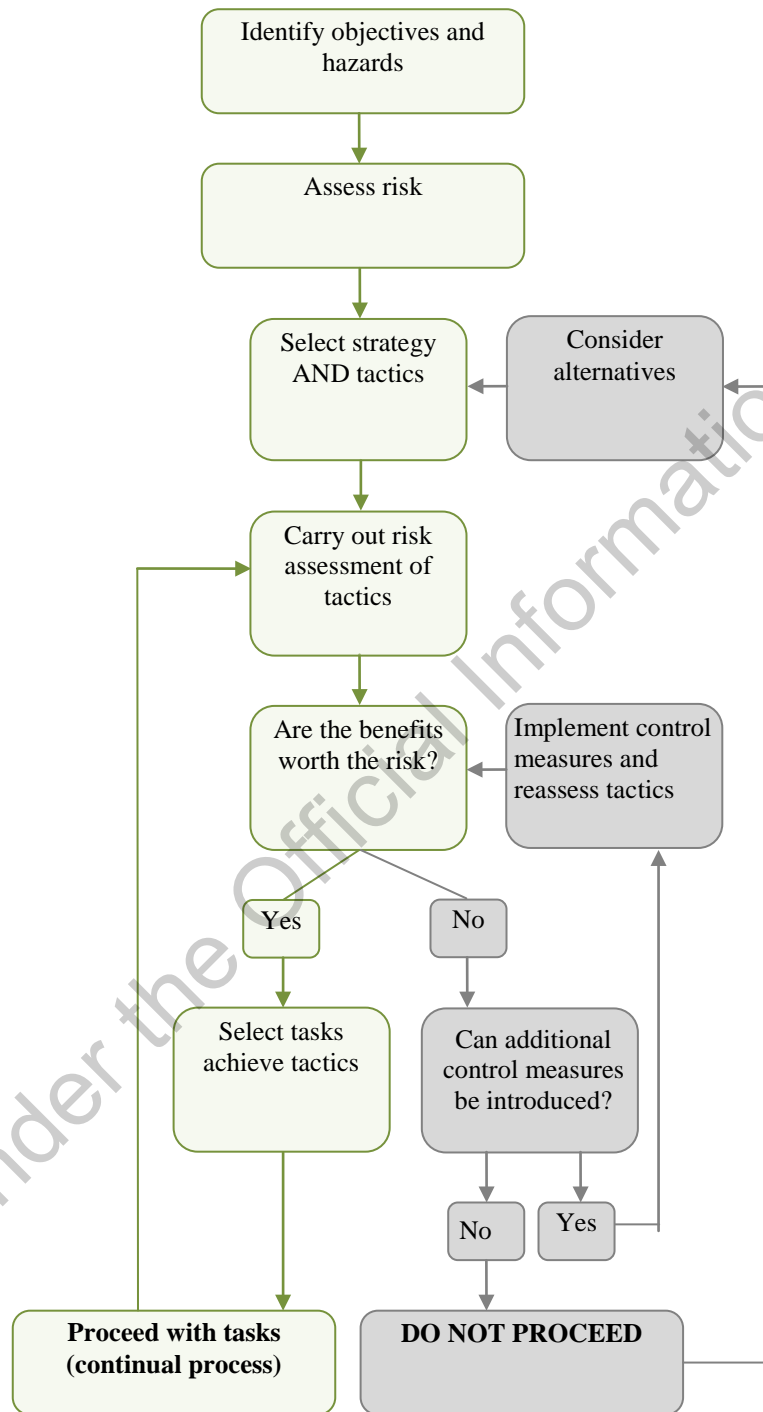
3.6.3 DRA process flowchart (OIC level)

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.

<u>Note</u>: 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.

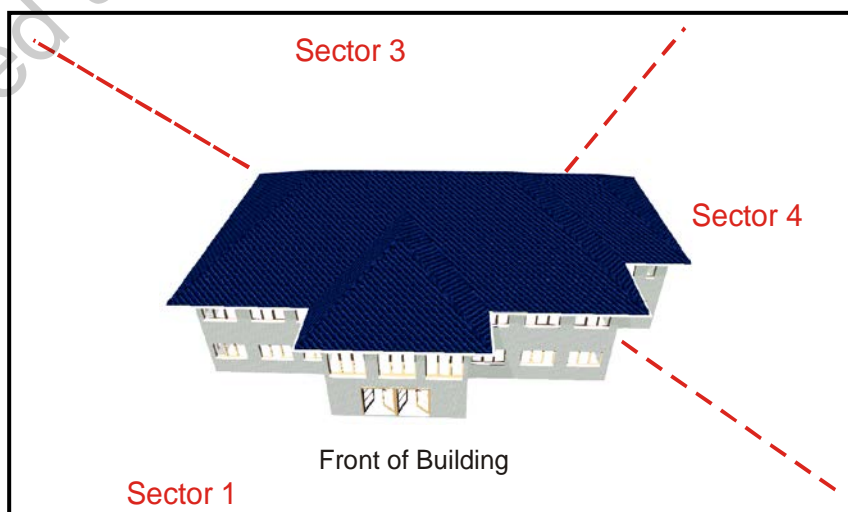Sector 3

Sector 2

Sector 4

Front of Building
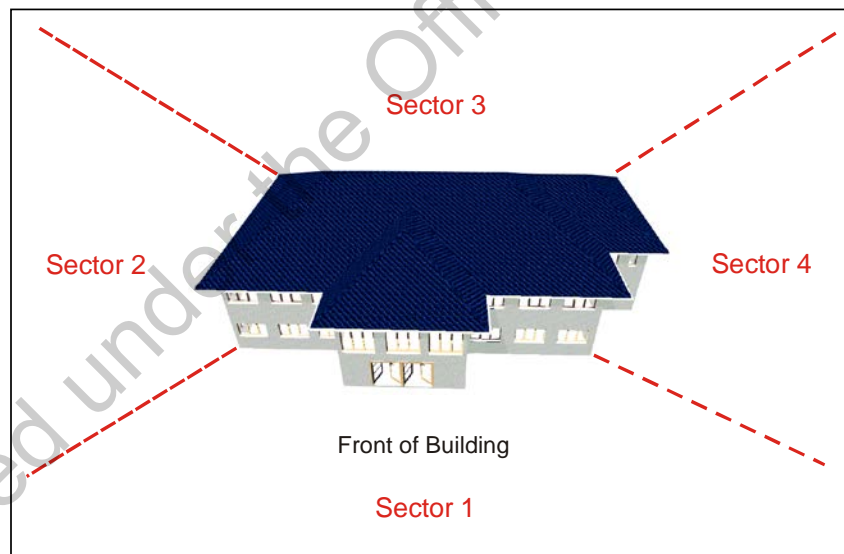
Sector 1

Figure 3.10: Standard allocation of sectors
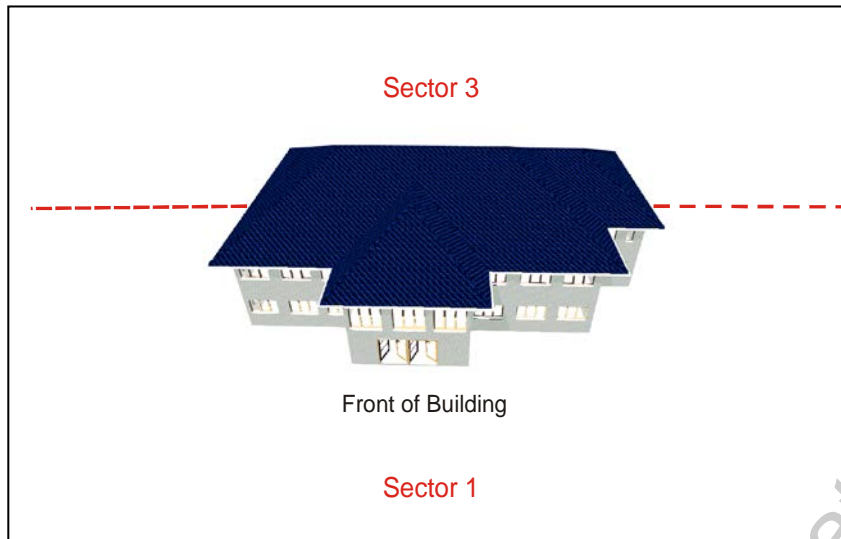
Figure 3.11: Common variation on standard sectorisation
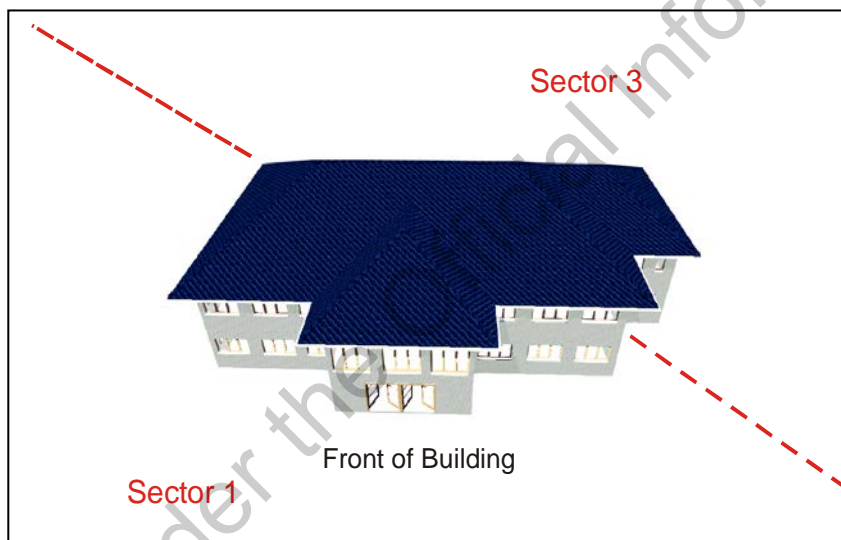
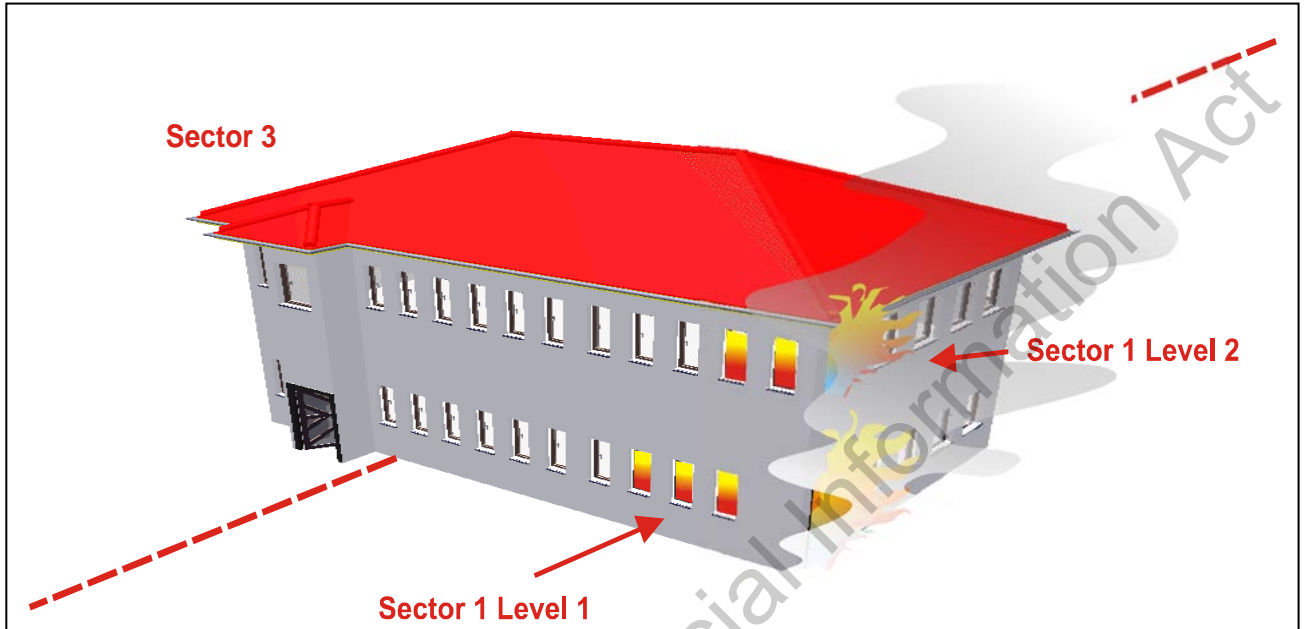**Figure 3.12: Common variation on standard sectorisation**

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
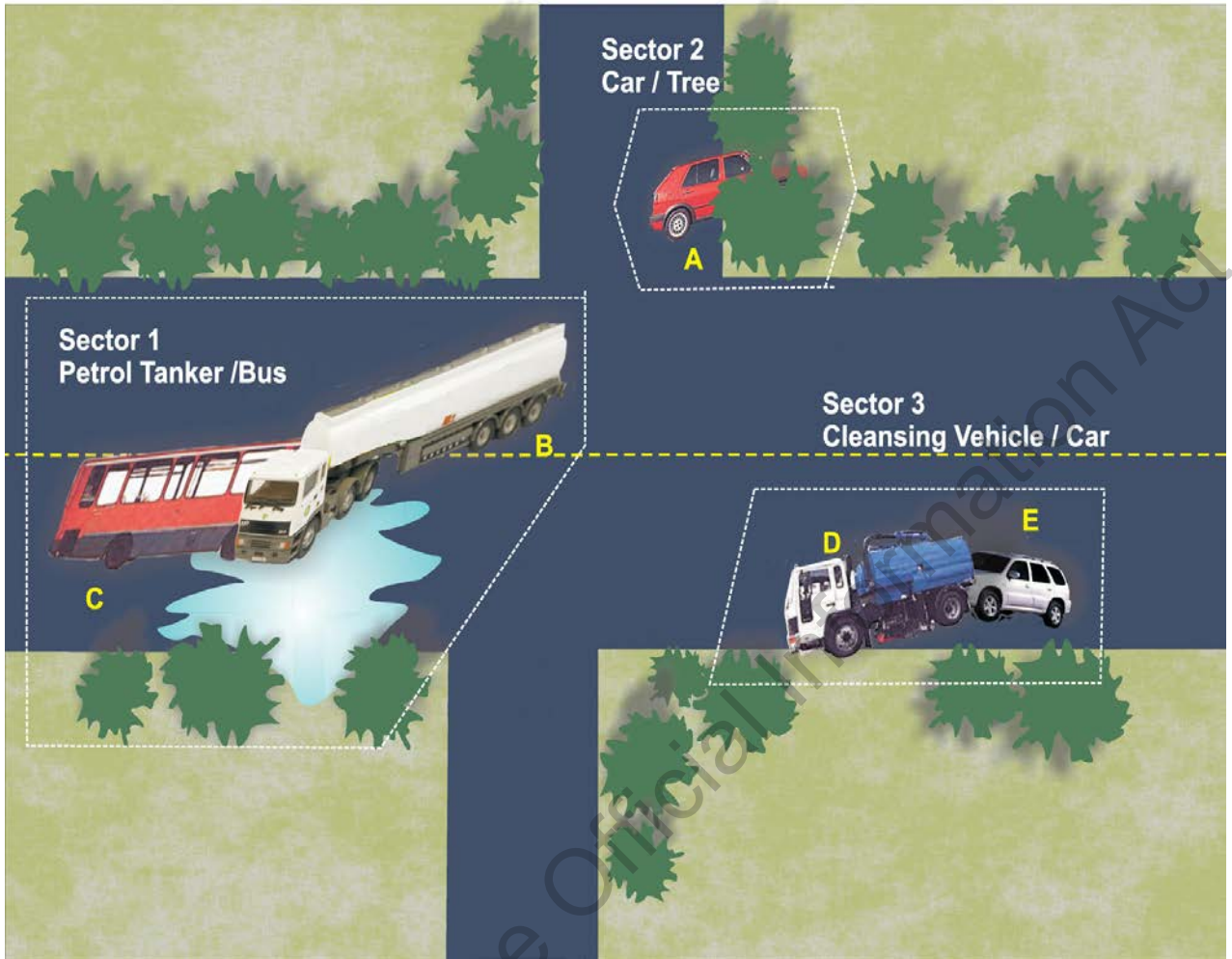(Source – NZFS 2006)

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'.
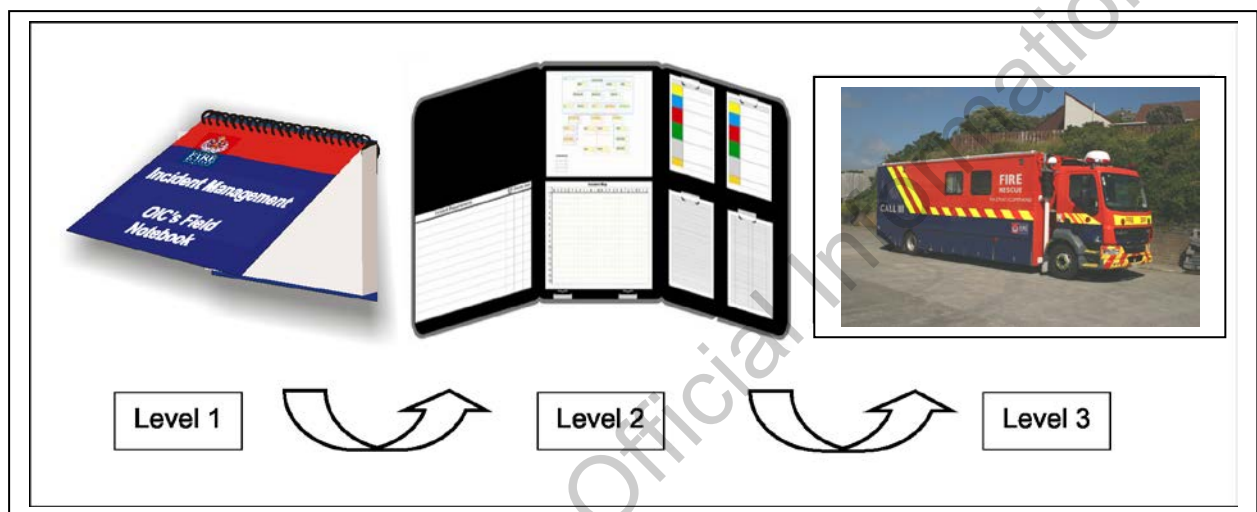

Figure 3.16: Levels of incident action planning tools in the Fire Service Command System
(Source NZFS 2006)

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
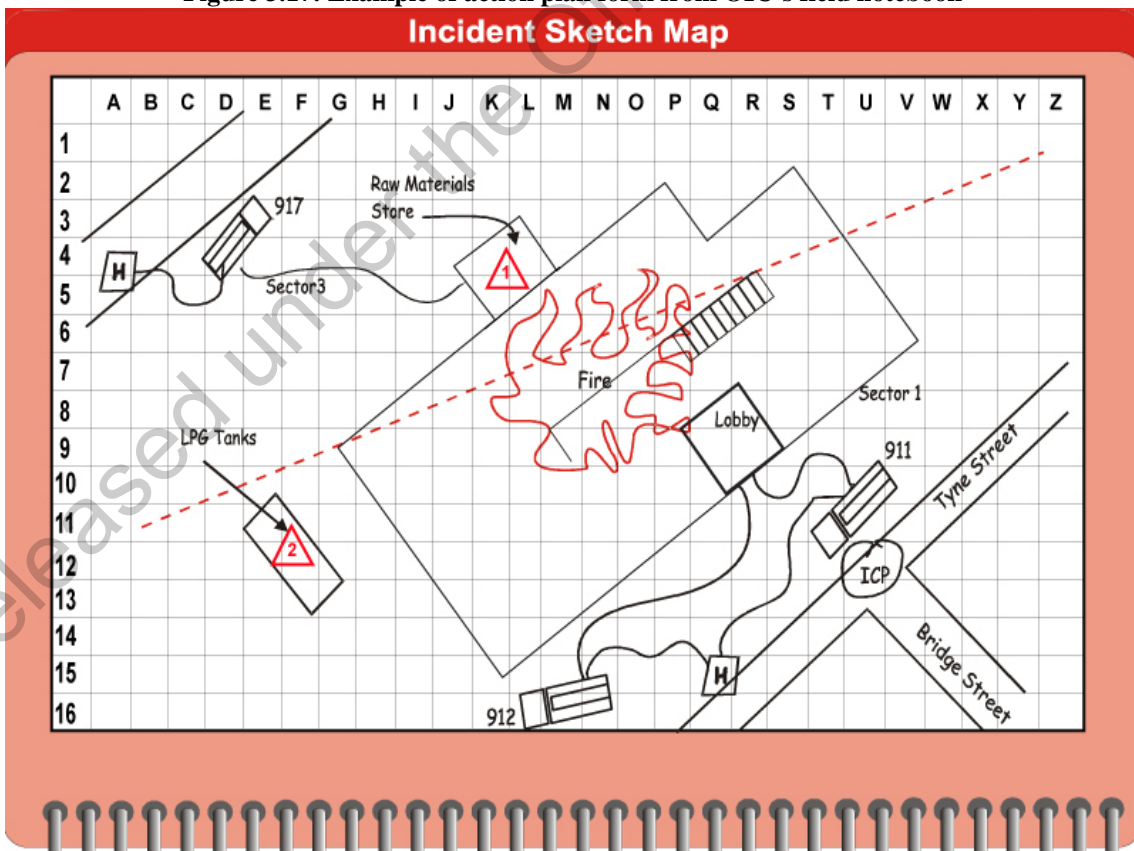

Figure 3.18: Example of incident sketch map form from OIC's field notebook

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
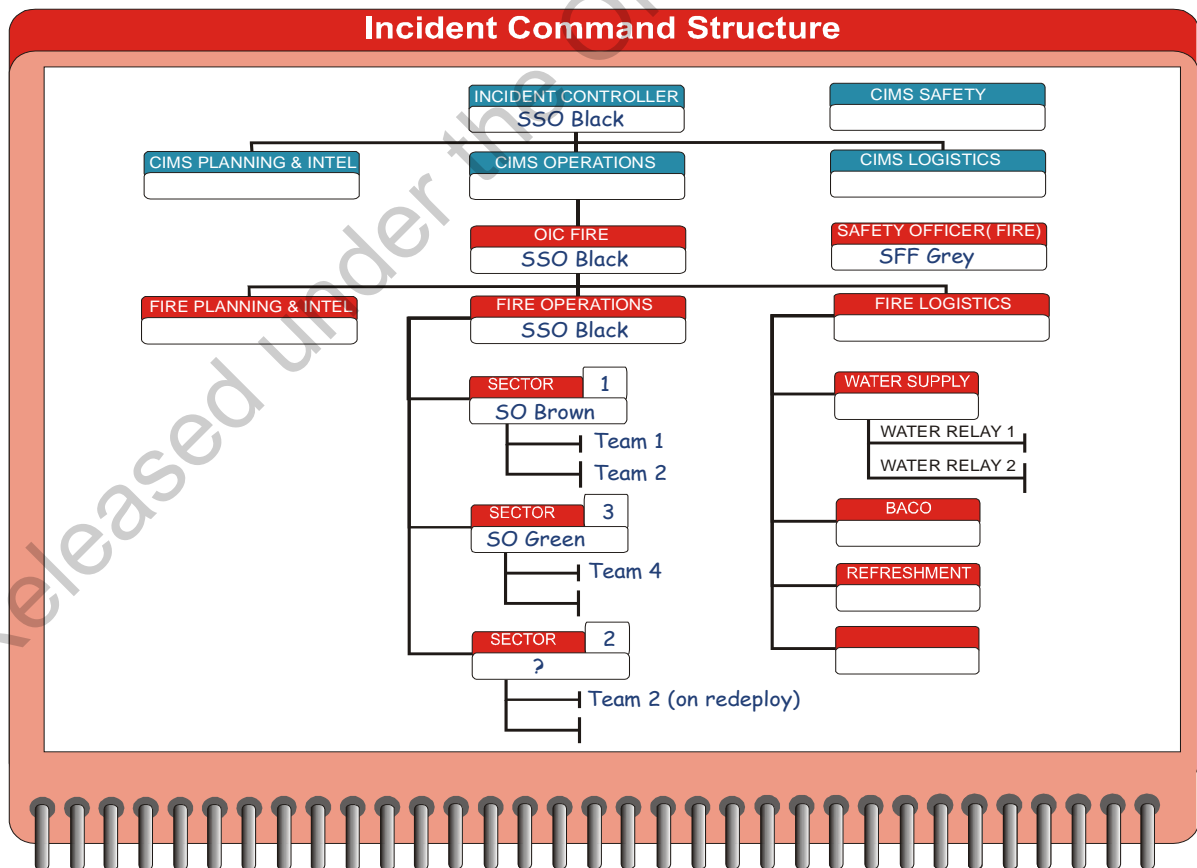
Incident Command Structure

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